

RADIO
Encyclopedia
and
Call Book

All Broadcasting Stations in
United States and Canada
How Call Letters are Assigned
The Arlington Time Signals
fully Explained
NuMethod Code—the Simple Way
of Learning the Code
Simplified Electricity
The Ohms Law
Formulas, Charts, Tables, Etc.

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UNITED STATES GOVERNMENT AND COMMERCIAL CALLS

The call letters assigned to the United States are all three and four letter combinations beginning with the letters N or W. All combinations beginning with the letter N are reserved for United States Government stations. The letter N, however, was assigned mainly to stations of the U. S. Navy, while the combinations from WUA to WVZ and WXA to WZZ are reserved for stations of the U. S. Army. In addition to calls consisting entirely of letters, certain Army and Navy stations use calls consisting, in part, of numbers.

Calls assigned to the United States beginning with K or W and not assigned to Government stations are reserved for commercial stations open to public and limited commercial service.

UNITED STATES AMATEUR CALLS

The station license issued for the operation of an amateur transmitting station in the United States designates a call which is to be issued by that station at all times. The call consists usually of a number followed by two letters, as 1AB; it may also have three letters, as 1ABC. The number is always the number of the radio district in which the station is located. Amateur stations are permitted to use a power input of 1 kilowatt; they may not use a wave length in excess of 200 meters.

Experiment stations have calls consisting of a number followed by two or three letters, of which the first letter is X, as 1XA.

Technical and training school stations have calls consisting of a number followed by two or three letters, of which the first letter is Y, as 1YA.

Special amateur stations have calls consisting of a number followed by two or three letters, the first letter being Z, as 1ZA. These stations are permitted to transmit on a wave length up to approximately 350 meters.

It is unlawful for any transmitting station, at any time, to sign any call letter except the one assigned in its station license. No station is allowed to transmit unless a station license has been issued.

The radio regulations formerly provided that after an application for a station license had been filed and was pending the issue of a station license, a provisional call could be used and the station could transmit. This provision has been repealed.

ARLINGTON TIME SIGNALS

The time signals and weather bulletins are sent out twice daily by the high powered Naval Station at Arlington, Va., on a wave length of 2500 meters.

Signals begin at 11.55 A. M. and 9.55 P. M. The final dashes are sent out at 12 o'clock noon and 10 P. M., and are astronomically correct for the meridian of 75 degrees west of Greenwich.

The signals are sent out as follows: Beginning at 11.55 A. M. or 9.55 P. M. a dot is sent every second for the first 29 seconds, then one dot is omitted, and beginning with the thirty-first second to the fifty-fifth second, the dots are again sent out, one to each second. The last five seconds of the first minute are omitted and the signals begin again at exactly the beginning of the fifty-sixth minute. The same schedule is maintained through the fifty-seventh and fifty-eighth minutes, up until the fiftieth second of the last minute is attained. Then comes a silence of 10 seconds, after which comes a dash, which is exactly 12 o'clock noon, or 10 o'clock in the evening.

Immediately following the time signals is the weather report, given out in code that is readily learned. A sample code is here given: QST, de, NAA, USWB, SO1081, TO2261, DBO251, HOO844, CO1261, KOO441, PO1242.

EXPLANATION, QSTdeNAAUSWBSO1081:

QST—General call.
de—from.

NAA—Arlington Station.
USWB—United States Weather Bureau.

S—Sidney, Nova Scotia.
O10—30.10 inches Barometer reading.

8—Direction of wind. N. W.
1—Velocity of wind. 8 miles per hour.

KOO441:

K—Key West.

OO4—30.04 inches Barometer reading.
4—Direction of wind. S. E.

1—Velocity of wind. 8 miles per hour.

Time signals and weather reports are also broadcasted from other Naval Stations located at Great Lakes, station NAJ; North Head, Wash.; San Francisco, Calif., and San Diego, Calif.

HOW NUMERALS ARE USED TO SHOW POINTS

OF COMPASS INDICATING DIRECTION

OF WIND USWB

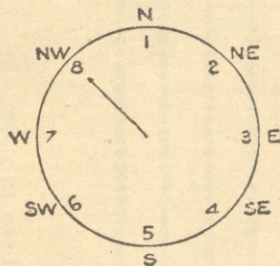


CHART SHOWING VELOCITY OF WIND

	Statute M.P.H.
0 Calm	0—3
1 Light Air	8
2 Light Breezes	13
3 Gentle Breezes	18
4 Moderate Breezes	23
5 Fresh Breezes	28
6 Strong Breezes	34
7 Moderate Gale	40
8 Fresh Gale	48
9 Strong Gale	56
10 Whole Gale	65
11 Storm	75
12 Hurricane	90
Statute Miles per Hr:—1.15.	Nautical—M. P. H.

ARLINGTON TIME SIGNALS

11 55 AM

9 55 PM 10°

20°

30°

40°

50°

.....
 55
 57
 58
 59
 12 noon
 10 AM
 000000

N. A. A.
 This dash = 3 dots

ABBREVIATIONS USED IN USWB

Du—Duluth
 D—Detroit
 Ch—Chicago
 U—S. S. Marie
 G—Green Bay
 M—Marquette
 V—Cleveland
 L—Alpena
 F—Buffalo
 K—Key West, Fla.
 S—Sidney, Nova Scotia.
 T—Nantucket, R. I.
 DB—Delaware Breakwater.
 H—Cape Hatteras, N. C.
 C—Charleston, S. C.
 P—Pensacola, Fla.
 B—Bermuda.

NU METHOD INTERNATIONAL MORSE CODE.
 FOR GENERAL SERVICE AND RADIO
 COMMUNICATION.

- 1 A dash is equal to three dots.
- 2 The space between parts of letters equals one dot.
- 3 The space between two letters equals three dots.
- 4 The space between two words equals five dots.
- 5 A dot sounds the same as the word "dit."
- 6 A dash sounds the same as the word "dah."
- 7 There are 26 letters in the code. By the Nu Method Code we find that 11 of the letters have oppositives. Four letters have no oppositives (H-V-C-Z).
- 8 Example:—The letter "N" is the opposite of "A."

THE CODE
 A . .
 B . . .
 C
 D
 E
 F
 G
 H
 I
 J
 K
 L
 M
 N
 O
 P
 Q
 R
 S
 T
 U
 V
 W
 X
 Y
 Z

NU METHOD CODE
 E . . T -
 I . . M - -
 1 S . . . O - - -
 H
 2 A . . N . .
 J W . . . D . . .
 J B
 3 U . . . G . . .
 V
 4 R . . . K . . .
 L Y
 5 P X
 F Q
 6 C
 Z

NUMERALS

1 6
 2 7
 3 8
 4 9
 5 10

Period
 Comma
 Distress
 Warning
 Question
 Wait
 Transmit

It is very essential in learning the code to use the ear to distinguish the sound of the letters. The dot sounds as the word "DIT." The dash sounds as the word "DAH." Always remember that the dot is three times as fast as the dash. When two dots come together, the last part of the first dot only is heard, and sounds as the word "TER." Example:—The letter "I" sounds at "TER DIT."

The same formula holds good when a dot and a dash come together. Example.—The letter "A" sounds as "TER DAH."

THE ACTUAL SOUND OF EACH LETTER

E . dit	T - dah
I .. ter dit	M - - dah dah
1 S ... ter dit dit	O - - - dah dah dah
H ter dit dit dit	
A . - ter dah	N . - . dah dit
2 W . - - ter dah dah	D . - . dah ter dit
J . - - - ter dah dah dah	B . - - . dah ter dit dit
3 U . - . ter dit dah	G . - . dah dah dit
V . - - . ter dit dit dah	
4 R . - . ter dah dit	K . - - dah ter dah
L . - - . ter dah ter dit	Y . - - - dah ter dah dah
5 P . - - . ter dah dah dit	X . - - . dah ter dit dah
F . - - . ter dit dah dit	Q . - - . dah dah ter dah
6	C . - . . dah ter dah dit
	Z . - - . dah dah ter dit

By practising the following method a few times a day NO KEY IS NEEDED. Simply repeat the sound of the letters to yourself, regardless of where you are, and you will be surprised at the results. AFTER you have mastered the alphabet, try learning a combination of two letters, then three and four letters. Now you are ready for complete sentences. If you get a friend to work with you, so much the better. One can send, the other receive.

Everything contains electricity. By "everything" we mean everything, your pencil, coat, or shoes.

Electricity shows itself only when in motion, or when there's more or less than usual of it in an object. This is exactly what air does. If air moves, we have wind; if there's more than the usual amount, we have pressure, as in an automobile tire. If we have less than the usual amount, we have a suction effect. Electricity in motion is a current of electricity, just as we speak of a current of air or a current of water. Current electricity is composed of three kinds: Continuous or direct current, the current which flows in one direction only. Alternating current, the current which flows in opposite directions, changing its current periodically. Pulsating current, the current which flows in one direction, but which is interrupted periodically.

When we comb our hair and notice a cracking sound, or the fact that the hair follows the comb when it is near it but not touching it. This is due to the pressure of more than the usual amount or less than the usual amount of electricity.

Take a piece of hard rubber, a comb will do, and a piece of flannel in any heated room (as damp air let's the electricity leak away), rub the comb with the flannel. The comb now contains more than the usual amount of electricity. The comb contains more than its usual amount of electricity, while the flannel contains less. When an object contains more than the usual amount of electricity, it is said to have negative or minus (—) electricity. That is, the comb has a negative charge. When an object contains less than the usual amount of electricity, it is said to have a positive or plus (+) electricity. Negative electricity repels negative electricity. Positive electricity repels positive electricity. Like electricity repels unlike electricity attracts.

Electricity is made up of very small particles, called electrons, just as water is made up of small drops of water. The flow of electrons make a current. One of the things needed to make a current of electricity is a conductor; another thing is that one object must have a greater or less charge than the

other object to which it is connected. If we measure the number of electrons flowing, we will measure the current in amperes, which is the number of electrons flowing by a certain place in a second.

Besides having current, electricity also has pressure. If we take as an example, a tank of water several feet above the ground. If a pipe be connected to the tank and is brought to a lower level, there will be considerable pressure exerted in the water coming through the pipe. This pressure may be gauged in pounds per square inch. In electricity we find a current similar to water, the pressure varying likewise, according to the source of supply. This pressure is gauged in volts, and is also referred to as a potential. Volts therefore are the units used to denote the pressure of an electrical current. The greater the voltage and the larger the conductor, the more current will pass. Everything through which electrons travel offers resistance. A certain amount of pressure or force is necessary to overcome this resistance. This force is called the electromotive force, and is measured by the volt.

The electrical resistance of wire depends on three things, namely: (a) kind of wire, (b) length of wire, (c) size of wire. Resistance is measured by the Ohm, which is the unit of resistance. The fact that 1000 feet of No. 10 soft copper wire has a resistance of 10 Ohms will give you an idea of how much an Ohm is.

TIME DIFFERENCES

Standard Time

The United States adopted standard time in 1883, on the initiative of the American Railway Association, and at noon of November 18, 1883, the telegraphic time signals sent out daily from the Naval Observatory at Washington were changed to the new system, according to which the meridians of 75°, 90°, 105° and 120° west from Greenwich became the time meridians of Eastern, Central, Mountain, and Pacific standard time respectively.

By Act of Congress, approved March 19, 1918, standard time is made the legal time throughout the United States; in addition to the four time meridians already mentioned, the meridian 150° west from Greenwich is established the time meridian of standard Alaska time; authority to readjust the boundary line between the time zones is lodged with the Interstate Commerce Commission. The Commission has made the readjustment so as to bring the new limits of the zones about half way between the standard meridians. Since Jan. 1, 1919, U. S. standard Eastern time is used from the Atlantic Ocean to a line through Toledo and Columbus, O.; Huntington, W. Va.; Norton, Va.; Johnson City, Tenn.; Asheville, N. C.; Atlanta and Macon, Ga., and Apalachicola, Fla. U. S. standard central time is used from this first line to a line through Mandan, N. Dak.; Pierre, S. Dak.; McCook, Neb.; Dodge City, Kan.; Sweetwater and San Angelo, Texas. U. S. standard mountain time is used from the second line to a line through Helena and Butte, Mont.; Pocatello, Idaho; Ogden and Salt Lake City, Utah; Parker and Yuma, Ariz. U. S. standard Pacific time is used from the third line to the Pacific Ocean.

Almost all countries throughout the world use standard time based on the meridian 15° apart from Greenwich, while some use standard time based on the longitude of their national observatories.

12 o'Clock Noon U. S. Standard Eastern Time Compared With Clocks in Foreign Cities:

Aden	8.00 P. M.	Dublin	4.35 P. M.	Melbourne	3.00 A. M.*
Alexandria	7.00 P. M.	Hamburg	6.00 P. M.	Mexico City	10.24 A. M.
Amsterdam	5.20 P. M.	Havana	11.31 A. M.	Natal	7.00 P. M.
Antwerp	7.00 P. M.	Hayra	5.00 P. M.	Paris	5.00 P. M.
Berlin	6.00 P. M.	Hongkong	1.00 A. M.*	Petrograd	7.01 P. M.
Bombay	6.00 P. M.	Honolulu	6.30 A. M.	Rto de Janeiro	2.00 P. M.
Borneo	12.03 P. M.	Lima	12.00 Noon	Rome	6.00 P. M.
Buenos Ayres	10.30 P. M.	Lisbon	4.24 P. M.	Santiago (Chile)	12.00 Noon
Brussels	5.00 P. M.	Liverpool	5.00 P. M.	Sitka, Alaska	7.00 A. M.
Constantinople	7.00 P. M.	London	5.00 P. M.	Stockholm	6.08 P. M.
Canton	7.00 P. M.	Madrid	5.00 P. M.	Vienna	6.00 P. M.
Cebu	6.00 P. M.	Manilla	1.00 A. M.*	Yokohama	2.00 A. M.*

* At places marked * the time noted is in the morning of the following day.

Twelve o'Clock Noon United States Standard Eastern Time as Compared With the Clocks in the Following Cities of the United States.

Atlanta, Ga.	11.00 A. M.	Detroit, Mich.	12.00 Noon	Norfolk, Va.	12.00 Noon
Atlantic City, N. J.	12.00 Noon	El Paso, Tex.	10.00 A. M.	Omaha, Neb.	11.00 A. M.
Baltimore, Md.	12.00 Noon	Galveston, Tex.	11.00 A. M.	Philadelphia, Pa.	12.00 Noon
Birmingham, Ala.	11.00 A. M.	Indianapolis, Ind.	11.00 A. M.	Pittsburgh, Pa.	12.00 Noon
Boston, Mass.	12.00 Noon	Kansas City, Mo.	11.00 A. M.	Richmond, Va.	12.00 Noon
Buffalo, N. Y.	12.00 Noon	Los Angeles, Calif.	9.00 A. M.	Salt Lake City, Utah	10.00 A. M.
Charleston, S. C.	12.00 Noon	Louisville, Ky.	11.00 A. M.	San Francisco, Calif.	9.00 A. M.
Chicago, Ill.	11.00 A. M.	Memphis, Tenn.	11.00 A. M.	Savannah, Ga.	12.00 Noon
Cincinnati, O.	11.00 A. M.	Milwaukee, Wis.	11.00 A. M.	Seattle, Wash.	9.00 A. M.
Cleveland, O.	12.00 Noon	Minneapolis, Minn.	11.00 A. M.	St. Louis, Mo.	11.00 A. M.
Dallas, Tex.	11.00 A. M.	Nashville, Tenn.	11.00 A. M.	Topeka, Kans.	11.00 A. M.
Denver, Col.	10.00 A. M.	New Orleans, La.	11.00 A. M.	Washington, D. C.	12.00 Noon

United States Standard Eastern Time is time of the meridian 75° west from Greenwich. If Summer time be desired one hour must be added to the time given in the two tables above. Summer time, or Daylight saving time, is still in use throughout Europe; also, in some American cities and commonwealths.

VARIABLE CONDENSERS

Vraible condensers have proven invaluable in all radio work.

When the condenser is in series, the wave length is reduced considerable and fine variations may be obtained by adjusting the condenser. When the condenser is across or in parallel, it augments the wave length in proportion to the amount of capacity use. The maximum capacity is secured when the plates are nearest to each other or when the plates are entirely meshed.

CALCULATION OF CAPACITY

Capacity of Condensers

Units.—The capacities given by the following formulas are in micromicrofarads. This unit is 10^{-12} of the farad, the farad being defined as the capacity of a condenser charged to a potential of 1 volt by 1 coulomb of electricity. The micromicrofarad and the microfarad (one-millionth of a farad) are the units commonly used in radio work. Radio writers have occasionally used the eggs electrostatic unit, sometimes called the "centimeter." This unit is 1.1124 micromicrofarads.

In the formulas here given all lengths are expressed in centimeters and all areas in square centimeters. The constants given are correct to 0.1 per cent.

Parallel Plate Condenser

Let S = surface area of one plate
 τ = thickness of the dielectric
 K = dielectric constant ($K=1$ for air, and for most ordinary substances lies between 1 and 10).

$$C = 0.0885K \frac{S}{\tau} \text{ — micromicrofarads.}$$

If, instead of a single pair of metal plates, there are N similar plates with dielectric between, alternate plates being connected in parallel,

$$C = 0.0885K \frac{(N-1)S}{\tau}$$

The Difference in Longitude Between New York City and the Following Cities of the United States, Measured East or West From New York as Indicated:

	H.	M.		H.	M.
Atlanta, Ga.....	2	42 W.	Detroit, Mich.....	1	36 W.
Atlantic City, N. J.....	1	2 W.	El Paso, Texas.....	1	17 W.
Baltimore, Md.....	1	10 W.	Galveston, Tex.....	2	10 W.
Birmingham, Ala.....	1	52 W.	Indianapolis, Ind.....	1	23 W.
Boston, Mass.....	1	12 E.	Kansas City, Mo.....	1	48 W.
Buttalo, N. Y.....	2	20 W.	Los Angeles, Calif.....	2	47 W.
Charleston, S. C.....	1	24 W.	Louisville, Ky.....	1	57 W.
Chicago, Ill.....	1	55 W.	Memphis, Tenn.....	1	4 W.
Cincinnati, O.....	1	42 W.	Minneapolis, Minn.....	1	17 W.
Cleveland, O.....	1	30 W.	Nashville, Tenn.....	1	51 W.
Dallas, Tex.....	1	31 W.	New Orleans, La.....	1	4 W.
Denver, Colo.....	2	4 W.	Norfolk, Va.....	1	9 W.
			Omaha, Neb.....	1	28 W.
			Philadelphia, Pa.....	1	5 W.
			Pittsburgh, Pa.....	2	24 W.
			Richmond, Va.....	2	14 W.
			Salt Lake City, Utah.....	3	32 W.
			San Francisco, Calif.....	3	14 W.
			Savannah, Ga.....	3	28 W.
			Seattle, Wash.....	3	13 W.
			St. Louis, Mo.....	1	5 W.
			Topeka, Kans.....	1	27 W.
			Washington, D. C.....	1	12 W.

In these formulas no allowance is made for the curving of the lines of force at the edges of the plates; the effect is negligible when τ is very small compared with S .

Variable Condenser With Semicircular Plates

This formula does not take into account the effect of the edges of the plates, but as the capacity is also affected by the containing case it will not generally be worth while to take the edge effect into account. It gives the maximum capacity between the plates with this form of condenser. As the movable plates are rotated the capacity decreases, and ordinarily the decrease in capacity is proportional to the angle through which the plates are rotated.

Let N = total number of parallel plates

r_1 = outside radius of the plates

r_2 = inner radius of plates

τ = thickness of dielectric

K = dielectric constant

Then, for the position of maximum capacity (movable plates between the fixed plates),

$$C = 0.1390K \frac{(N-1)(r_1^2 - r_2^2)}{\tau}$$

By simply changing the dielectric material, and without changing the geometric arrangement of the plates, we find that the capacity has been increased. Air is commonly used as the standard of comparison, and the factor K is called the "dielectric constant"* of the material. The dielectric constant of any substance may then be defined as the ratio of the capacity of a condenser using this substance as the dielectric, to the capacity of the same condenser with air as the dielectric. This ratio is seen to be the factor by which the capacity of an air condenser must be multiplied in order to find the capacity of the same condenser when the new substance is used. Some values are given below.

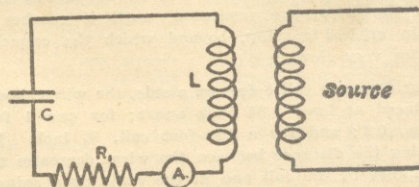
Substances

Values of dielectric constant

Air	1.0
Glass	4 to 10
Mica	4 to 8
Hard rubber	2 to 4
Parraphin	2 to 3
Paper, dry	1.5 to 3.0
Paper (treated as used in cables)	2.5 to 4.0
Porcelain, unglazed	5 to 7
Sulphur	3.0 to 4.2
Marble	9 to 12
Shellac	3.0 to 3.7
Beeswax	3.2
Silk	4.6
Celluloid	7 to 10
Wood, maple, dry	3.0 to 4.5
Wood, oak, dry	3.0 to 6.0
Molded insulating material, shellac base	4 to 7
Molded insulating material, phenolic base ("bakelite")	5.0 to 7.5
Vulcanized fibre	5 to 8
Castor oil	4.7
Transformer oil	2.5
Water, distilled	81.0
Cottonseed oil	3.1

* Sometimes called also "inductivity" or "specific inductive capacity."

CIRCUIT USED FOR MEASUREMENT OF HIGH-FREQUENCY RESISTANCE OF A CONDENSER



HOW TO FIND THE RESISTANCE OF A CONDENSER

Simple Methods.—The simplest method is that of substitution. The condenser to be tested is connected in series with a coil and an ammeter of some sort,

and loosely coupled to a source. The condenser is then replaced by the standard condenser and a series resistance. The resistance required to make the deflection at resonance the same as before is taken as the resistance of the condenser.

LOOP AERIALS

The usual type of loop aerial consists of one or more turns of copper wire wound on a square or rectangular frame. One or two turns of copper wire wound on a single wooden frame 3 or 4 feet square will make a simple coil which will be suitable for indoor use. The wire used for a loop aerial may be No. 20 or 22 ordinary insulated copper wire with solid conductor.

The spacings of the turns of a coil on the allowable capacity of the coil. Spacings of one-half inch and one inch are common. In some cases quarter inch spacings are advisable.

The capacity of a coil of given dimensions increases with the number of turns, at first rapidly, and then, more slowly. With the wires close together the capacity is a maximum and grows rapidly less when the wires are separated, until it reaches a certain critical spacing, beyond which the capacity changes very slowly.

For a square coil 8 feet on a side, the wires should be placed at least 0.35 inch apart; for one 4 feet square, 0.2; and for a two-foot coil, $\frac{1}{8}$ inch. Increasing the distance between the wires decreases the inductance of the coil and at the same time reduces the capacity. However, it is found that, for a given length of wire properly spaced, as just indicated, the fundamental wave length of the coil is about the same with different dimensions. The fact is illustrated in the following table:

Characteristics of Coil Antennas

Length of a side of the square (feet)	Number of turns	Spacing of wires (inch)	Inductance (microhenries)	Capacity (microfarads)	Fundamental wave length (meters)
8	3	$\frac{1}{2}$	96	75	160
6	4	$\frac{1}{4}$	124	66	170
4	6	$\frac{1}{4}$	154	55	174
3	8	$\frac{1}{8}$	193	49	183

These coils should be used with a condenser of sufficient capacity to bring them into resonance at 500 to 600 meters. The first coil would be most suitable for these wave lengths on account of its small high-frequency resistance and greater effective area.

The following observations, taken on actual coils, show the effective wave-length ranges of different types of construction for a given capacity of tuning condenser, connected directly across the coil terminals.

Coil, 5 feet square, spacing of turns in each case, one-half inch. Using variable condenser having maximum capacity 0.00065 microfarad, minimum capacity 0.00004 microfarad.

With 4 turns..... $\lambda=200$ to 400 meters.
 With 8 turns..... $\lambda=350$ to 700 meters.
 With 16 turns..... $\lambda=500$ to 1,000 meters.

Coil, 5 feet square. Spacing of turns, one-half inch. Using variable condenser having maximum capacity 0.00140 microfarad, minimum 0.000045 microfarad.

With 4 turns..... $\lambda=380$ to 650 meters.
 With 8 turns..... $\lambda=400$ to 950 meters.
 With 16 turns..... $\lambda=675$ to 2,300 meters.

Coil, 4 feet square. Four turns, spaced 1 inch. Using variable condenser having maximum capacity 0.00140 microfarad, minimum 0.000045 microfarad, $\lambda=180$ to 500 meters.

Coil, 4 feet square. Four turns, spaced 1 inch. Using variable condenser having maximum capacity 0.00060 microfarad, minimum 0.00004 microfarad, $\lambda=150$ to 350 meters.

The Ohms Law.

The Ohms law states that:
VOLTAGE = AMPERES × RESISTANCE

$$\text{AMPERES} = \frac{\text{VOLTAGE}}{\text{RESISTANCE}}$$

$$\text{RESISTANCE} = \frac{\text{VOLTAGE}}{\text{AMPERES}}$$

RESISTANCE is always expressed in the term OHMS.

Explanation. In arithmetic we have learned if we place a number under a line we must divide the number over the line by the number under the line.

$$\text{Example: } \frac{25}{5} = 5 \quad \frac{24}{4} = 6 \quad \frac{30}{10} = 3 \quad \frac{300}{100} = 3$$

To find the answer to the following question:

If 5 amperes of current are passing through a circuit at a voltage of 15 volts what is the resistance.

VOLTAGE

AMPERES × RESISTANCE

To find RESISTANCE:

Cover RESISTANCE with finger we have $\frac{\text{VOLTAGE}}{\text{AMPERES}}$

Substituting 15 for the VOLTAGE and 5 for the

AMPERES we have $\frac{15}{5} = 3$ OHMS. Resistance is al-

ways expressed in OHMS.

TO FIND AMPERES: Cover AMPERES with

finger we have $\frac{\text{VOLTAGE}}{\text{RESISTANCE}}$

Substituting 15 for the voltage and 3 for the resistance we have $\frac{15}{3} = 5$ AMPERES

TO FIND VOLTAGE: Cover Voltage with finger we have AMPERES × RESISTANCE. Substituting 5 for the amperes and 3 for the resistance we have $5 \times 3 = 15$ VOLTAGE.

RADIO UNITS

Without giving any historical information as to the development of electric and magnetic units, it may be said that those now used are the so-called international electric units. The international units are based on four fundamental units—the ohm, ampere, centimeter, and second. The first of these is the unit of resistance, and is defined in terms of the resistance of a very pure conductor of specified dimensions. The ampere is the unit of current and is defined in terms of a chemical effect of electric current, the amount of silver deposited from a certain solution for a current flow for a definite time. The other electric units follow from these in accordance with the principles of electrical science. Some of the units thus defined are given in the following definitions, which are those adopted by international congresses of science and universally used in electrical work.

The "ohm" is the resistance of a thread of mercury at the temperature of melting ice, 14.4521 grams in mass, of uniform cross section and a length of 106.300 centimeters.

The "ampere" is the current which when passed through a solution of nitrate of silver in water in accordance with certain specifications deposits silver at the rate of 0.00111800 of a grain per second.

The "volt" is the electromotive force which produces a current of one ampere when steadily applied to a conductor the resistance of which is one ohm.

The "coulomb" is the quantity of electricity transferred by a current of one ampere in one second.

The "farad" is the capacity of a condenser in which a potential difference of one volt causes it to have a charge of one coulomb of electricity.

The "henry" is the inductance in a circuit in which the electromotive force induced is one volt when the inducing current varies at the rate of one ampere per second.

The "watt" is the power expended by a current of one ampere in a resistance of one ohm.

The "joule" is the energy expended in one second by a flow of one ampere in one ohm.

The watt and joule are not primarily electric units, but they need to be learned in connection with electric units because the energy required or the power expended in electrical processes are among the most important phases of the actions.

The "horsepower" is sometimes used as a unit of power in rating electrical machinery. The horsepower is equal to 746 watts.

The "gram-calorie," or simply "calorie," is the energy required to raise one gram of water one degree centigrade in temperature. One gram-calorie is, very nearly, equal to 4.18 joules.

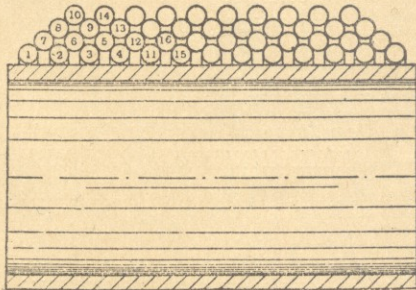
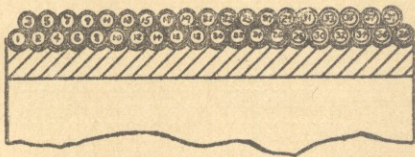
Another unit of quantity of electricity, in addition to the coulomb, is the "ampere-hour," which is the quantity of electricity transferred by a current of one ampere in one hour, and is therefore equal to 3600 coulombs.

The units of capacity actually used in radio work are the "microfarad" (a millionth of a farad) and the "micromicrofarad" (a millionth of a microfarad), since the farad is found to be too large a unit. Another unit sometimes used is the "C. G. S. electrostatic unit of capacity," often called the "centimeter of capacity," which is approximately equal to 1.11 microfarads.

The units of inductance commonly used in radio work are the "millihenry" (a thousandth of a henry) and the "microhenry" (a millionth of a henry). Another unit sometimes used is the "centimeter of inductance," which is one one-thousandth of a microhenry.

Method of banking the winding of a coil in order to reduce its distributed capacity

Instead of winding one layer complete and then winding the next layer back over the first, one turn is wound successively in each of the layers, the winding proceeding from one end of the coil to the other. The best results are obtained in a coil of a few layers. The method is illustrated below for a coil of two layers, the succession of the turns being indicated by the numbers. The turns in the lower layer are prevented from slipping during the winding by grooving the coil form or covering it with rubber tape. The maximum voltage between adjacent wires in this two-layer coil is the voltage corresponding to three turns.



SYMBOLS USED FOR PHYSICAL QUANTITIES

Physical Quantity	Sy.	or
area.....	S	A
base of napierian logarithms=2.718.....		t
capacity.....		C
conductance.....		g
coupling coefficient.....		k
current, instantaneous value.....		i
current, effective value.....		I
decrement.....		δ
density.....		d
dielectric constant.....		K
electromotive force, instantaneous value.....		E
electromotive force, effective value.....		E
energy.....		W
force.....		F
electric field intensity.....		E
frequency.....		f
gravity, acceleration of.....		g
height.....		h
impedance.....		Z
inductance, self.....		L
length.....		l
magnetic field intensity.....		H
length.....		l
magnetic induction.....		B
mass.....		m
magnetic flux.....		Φ
frequency $\times 2\pi$		ω
mutual inductance.....		M
permeability.....		μ
phase angle.....		θ
phase difference.....		Ψ
number of revolutions.....		n
period of complete oscillation.....		T
potential difference.....		V
power, instantaneous value.....		p
power, average value.....		P
quantity of electricity.....		Q
ratio circumference of circle to diameter=3.1416.....		π
reactance.....		X
temperature coefficient.....		α
resistance.....		R
time.....		t
velocity.....		v
velocity of light.....		c
wave length.....		λ
work.....		W

ABBREVIATIONS OF UNITS

Unit	Abbreviation
amperes.....	amp.
ampere-hours.....	amp-hr.
centimeters.....	cm
centimeter-gram-second.....	cgs
cubic centimeters.....	cm ³
cycles per second.....	~
wave length in meters.....	λ m
cubic inches.....	cu. in.
degrees Centigrade.....	° C
degrees Fahrenheit.....	° F
feet.....	ft.
foot-pounds.....	ft-lb.
grams.....	g
henries.....	h
inches.....	in.
kilograms.....	kg
kilometers.....	km
kilowatts.....	kw
kilowatt-hours.....	kw-hr
kilovolt-amperes.....	kva
meters.....	m
microfarads.....	μ f
micromicrofarads.....	$\mu\mu$ f
millihenries.....	mh
millimeters.....	mm
pounds.....	lb.
seconds.....	sec.
square centimeters.....	cm ²
square inches.....	sq. in.
volts.....	v
watts.....	w
10 ⁻¹² part, that is, one million-millionth. Thus, "pico" abbreviated $\mu\mu$.	

RADIO TABLE OF WEIGHTS AND MEASURES

These units are comparatively familiar to the radio man. Thus the meter is universally used for the expression of the length of radio waves. The meter is a little more than one yard in length. The gram is not far from one-thirtieth of an ounce. The relations between these units and the American and English units are given approximately in the following:

- 1 inch=2.540 centimeters=25.40 millimeters.
- 1 foot=30.48 centimeters=0.3048 meter.
- 1 yard=91.44 centimeters=0.9144 meter.
- 1 mile=1.609 kilometers=1609 meters.
- 1 ounce (avoirdupois)=28.34 grams.
- 1 pound=0.4536 kilogram=453.6 grams.
- 1 liquid quart=0.9463 liter.

- 1 dry quart=1.101 liters.
 1 millimeter=0.03937 inch.
 1 centimeter=0.3937 inch.
 1 meter=3.281 feet=1.094 yards.
 1 kilometer=0.6214 mile.
 1 gram=15.43 grains=0.03527 ounce (avoirdupois)
 1 kilogram=2.205 pounds.
 1 liter=1.057 liquid quarts=0.2642 gallon.
 1 hectoliter=90.81 dry quarts=2.838 bushels.

In connection with the units of the metric system the prefixes given below are used to indicate smaller or larger units. Besides those listed, the prefix "pico" (abbreviation p) is coming into use to mean the 10- part, that is, one million-millionth. Thus "pico" means the same as "micromicro," which latter is abbreviated

Prefix	Abbreviation	Meaning
micro	μ	One millionth
milli	m	One thousandth
centi	c	One hundredth
deci	d	One tenth
deka	dk	Ten
hekto	h	One hundred
kilo	k	One thousand
mega	M	One million

- GJ, Presidio of San Francisco, Cal. 50 mi. Signal Corps, U. S. A. Sun, 7-9 pm, instruction. Pacific.
- ASB, Camp Travis, Texas. 480 only. 100 mi. U. S. Army. Tues, Fri. 7:30-8:30 pm. Thurs, 8:30-9:30 pm. Central.
- CFAC, Calgary, Alta., Can. 430 only. 400 mi. Western Radio Co., Ltd. Daily ex Sun, 3:30-4:30 pm. Daily, 7:45-8:45 pm. Mountain.
- CFCA, Toronto, Ont., Can. 400 only. 500 mi. Toronto Star. Daily ex Sun, 12 m. reports; 2 pm, music, reports; 4-15 music, news; 6-55, bedtime story; 7-8, concert. Eastern.
- CFCB, Vancouver, B. C., Can. 440 only. 1,000 mi. Marconi Co. Daily ex Sun, 8:30-9:30 pm, news, weather, concert. Pacific.
- CFCE, Halifax, N. S., Can. 440 only. 150 mi. Marconi Co. Mon, Wed, Sun night, music, entertainment.
- CFCF, Montreal, P. Q., Can. 440 only. 500 mi. Marconi Co. Daily ex Sun, 1-1:30 pm. Mon, Wed, Fri. 7:30-9 pm. Eastern.
- CFCH, Iroquois Falls, Ont., Can. Abitibi Power & Paper Co., Ltd.
- CFCI, Walkerville, Ont., Can. Motor Products Corp.
- CFCN, Calgary, Alta., Can. 440 only. 1,500 mi. W. W. Grant Radio, Ltd. Wed, Sat, 10:30-11:30 pm, concert. Mountain.
- CFCX, London, Ont., Can. The London Advertiser.
- CFPC, Fort Frances, Ont., Can. International Radio Develop. Co
- CFTC, Toronto, Ont., Can. The Bell Telephone Co.
- CFYC, Vancouver, B. C., Can. Victor Wentworth Odium.
- CFZC, Montreal, Que., Can. Can. Westinghouse Co., Ltd.
- CHBC, Calgary, Canada. 410 only. 1,000 mi. W. W. Grant Radio, Ltd. (Morning Albertan.) Daily, 8:45-10 pm, news, stock quotations, music. Mountain.
- CHCA, Vancouver, B. C., Can. Radio Corp. of Vancouver, Ltd.
- CHCB, Toronto, Canada. 440 only. 500 mi. Marconi Co. Tues, 8-10 pm, concert. Eastern.
- CHCC, Edmonton, Alta., Can. Can. Westinghouse Co., Ltd.
- CHCF, Winnipeg, Man., Can. Radio Corp. of Winnipeg, Ltd.
- CHCQ, Calgary, Alta., Can. 400 only. 150 mi. Western Radio Co., Ltd. Daily ex Sun, 3:30-4:30 pm. Daily, 7:45-8:45 pm. Mountain.
- CHCS, London, Ont., Can. London Radio Shoppe.
- CHCX, Montreal, Que., Can. B. L. Silver.
- CHCZ, Toronto, Ont., Can. Globe Printing Co.
- CHOC, Vancouver, B. C., Can. Can. Westinghouse Co., Ltd.
- CHVC, Toronto, Canada. 410 only. 200 mi. Metropolitan Motors Co. Daily ex Sat and Sun, 5-5:30 pm, news, concert. Eastern.
- CHXC, Ottawa, Ont., Can. 400 only. 50 mi. J. R. Booth, Jr. Mon, Wed, Sat, 8:30-10 pm, music, entertainment. Eastern.

- CHYC**, Montreal, Que., Can. Northern Elec. Co.
CJBC, Montreal, P. Q., Can. 290 and 420. 40 mi. Dupuis Freres. Wed, Fri, 9-10 pm or 8-9, music, etc. Eastern
CJCA, Edmonton, Alta., Can. 450 only. 1,000 mi. Edmonton Journal, Ltd. Daily ex Sun, 12 m, reports, concert; 8:30-10 pm, concert. Western
CJCB, Nelson, B. C., Can. 400 only. 100 mi. James Gordon Bennett. Daily, 8-9 pm, music, news, reports Pacific.
CJCD, Toronto, Canada. 410 only. 200 mi. T. Eaton Co Daily ex Sat and Sun, 4-4:30 pm, concert. Sat, 12-12:30 pm, concert. Eastern.
CJCE, Vancouver, B. C., Can. 420 only. 150 mi. Vancouver Sun. Daily ex Sun, 12:30-1:30 pm, 3:30-5, 8-10 music, news. Pacific.
CJCF, Kitchener, Ont., Can. 420 only. 100 mi. News Record Limited. Mon, Tues, Fri, Sat, 9-9:30 pm. Thurs 8 pm on, concert. Eastern.
CJCG, Winnipeg, Canada. 410 only. 1,000 mi. Manitoba Free Press. Daily ex Sun, 10-10:30 am, news; 12-1 pm reports. Mon, Thurs, 8-10 pm, concert. Tues, 7-8 pm, music. Fri, 5:30-6:45 pm, music. Sun, 8 pm, every other week starting August 20. Central.
CJCH, Toronto, Ont., Can. United Farmers of Ontario.
CJCI, St. John, N. B., Can. 400 only. 75 mi. McLean Holt & Co., Ltd. Daily, 8-9 pm, music, news, weather Eastern.
CJCN, Toronto, Ont., Can. Simons, Agnew & Co.
CJCS, Halifax, N. S., Can. Eastern Telephone & Telegraph Co.
CJCY, Calgary, Alta., Can. Edmund Taylor.
CJCG, London, Ont., Can. 430 only. 75 mi. London Free Press Daily ex Sun, 9:30-10 am; 12-1 pm, news; 3:30-8 pm, weather, news; 8-9, music, entertainment. Eastern
CJHC, Winnipeg, Man., Can. 400 only. 1,065 mi. Tribune Newspaper Co. Daily ex Sun, 9:30-10 am, 1-2 pm Mon. 5:30-6:45 pm, Tues, 8-10 pm. Fri, 7-8 pm. Sun, 3-4 pm. Central.
CJSC, Toronto, Ont., Can. Evening Telegram.
CKAC, Montreal, P. Q., Can. 430 only. 2,000 mi. La Presse Pub. Co. Daily 9 am to 11 pm at intervals Eastern.
CKCB, Winnipeg, Man., Can. T. Eaton Co. Ltd.
CKCD, Vancouver, B. C., Can. 410 only. 150 mi. Vancouver Daily Providence. Daily ex Sun, 8:30-9:30 pm, music, entertainment, news. Pacific.
CKCE, Toronto, Ont., Can. Can. Ind. Telephone Co.
CKCK, Regina, Sask., Can. 420 only. 1,500 mi. Leader Pub. Co. Daily ex Sun, 10-10:30 am, news; 1:15-2 pm markets, news, music. Mon, Wed, Thurs, 7:30-8:15 pm, sports, music. Tues, Fri, 7:30-9 pm, Concert, Mountain
CKCR, St. John, N. B. Can. 400 only. 75 mi. Jones Elec Radio Co., Ltd. Daily 4-5 pm, concert, reports, Atlantic
CKCS, Montreal, Que., Can. The Bell Telephone Co
CKCZ, Toronto, Ont., Can. Westinghouse Co., Ltd.
CKKC, Toronto, Ont., Can. Radio Equipment & Supply Co., Ltd.
KOC, Hamilton, Ont., Can 410 only. 100 mi. Wertworth Radio Supply Co., Ltd. Mon, Wed, Fri, 8:30-9:30 pm, concert, Sun, church services. Eastern.
CKQC, London, Ont., Can. 410 only. 50 mi. Radio Supply Co. Mon, Wed, Fri, 7:30-8:30 pm, music, entertainment. Eastern.
CKZC, Winnipeg, Man., Can. Salton Radio Eng. Co.
DB5, Denver, Colo. 340 only. 200 mi. Fitzsimmons General Hospital. Daily ex Sun, 8:15 pm, weather, news, concert. Thurs, 8:15-9:30 pm, special concert, speech. Mountain.
DM-7, San Antonio, Tex. 200 mi. Brooks Field U. S. Army. Daily ex Sun, 6:30-7:30 pm, concert Sun, 7:30-8:30 Wed, 7:30-8:15 pm, concert. Sun, 11-11:15 pm, church service. Pacific.
DN4, Denver, Colo. 340 only. 200 mi. Colorado National BKG, Tacoma, Wash. Guard. Daily ex Sun, 8:15 pm, weather, news, concert. Thurs, 8:15-9:30 pm, special concert, speech. Mountain.
KDKA, E. Pittsburgh, Pa. 400 and 485 only. 2,000 mi. Westinghouse Elec & Mfg. Co., Daily ex Sun, 10:15 am; 12:30-1 pm, music; 3:30, sports; 7:15-9, news, features, markets, entertainments; 9:55-10 pm, time Sun, 10:45 am, church service; 2:45 pm, Bible story; 3-7:30 pm, church service Eastern.
KDN, San Francisco, Calif. 485, 510 also. 500 mi. Leo J. Meyberg Co. daily 1-2 pm, 8:30-9, 4:30-5:30, 7-7:15 music, reports, concert. Pacific.
KDOW, New York City.
KDPT, San Diego, Calif. 250 mi. Southern Elec. Co. daily 7:30-9 pm, news, weather, concerts, lecture. Pacific.
KOVL, Salt Lake City, Utah. 485 also. 500 mi. Telegram Pub. Co.
KOYM, San Diego, Calif. Savoy Theater.
KOYN, Red Wood City, Calif. Great Western Radio Corp.
KOYO, San Diego, Calif. Carlson & Simpson.
KDYQ, Portland, Ore. Oregon Inst. of Technology.
KOYR, Pasadena, Calif. Pasadena Star-News Pub. Co.
KOYS, Great Falls, Mont. 485 also. 1,000 mi. Great Falls Tribune. Daily 12 m, weather, time. Daily ex Tues. 8-10 pm, correct etc. Sun, 4 pm, church services. Mountain.
KOYU, Klamath Falls, Ore. Herald Pub. Co.
KOYV, Salt Lake City, Utah. Cope & Cornwell Co.
KOYX, Honolulu, Hawaii. 750 mi. Star-Bulletin. Daily ex Sun, 12:15-1:15 pm, stocks, markets, business news; 6:30-7:30, concert, lecture. Sun, 11-12 am, church service; 4-6 pm, concert, lecture. Honolulu.
KDYM, Phoenix, Ariz. Smith, Hughes & Co.
KDZA, Tucson, Ariz. Arizona Daily Star.
KDZB, Bakersfield, Calif. Frank E. Siefert.
KDZD, Los Angeles, Calif. W. R. Mitchell.
KDZE, Seattle, Wash. 300 mi. Rhodes Co. Daily ex Sun, 10:30-11 am, news, 3:30-4:30 pm, style talks, music. Mon, Wed, Fri, 7:15-8:15 pm, concert. Pacific.
KDZF, Los Angeles, Calif. Automobile Club of Southern California.

FROM	TO																
	Boston	Buffalo	Chicago	Cincinnati	Denver	Detroit	El Paso	Kansas City	Los Angeles	New Orleans	New York	Philadelphia	Pittsburg	Portland Ore.	St. Louis	San Francisco	Washington
Albany, N. Y.	202	297	832	743	1,850	548	2,212	1,264	3,071	1,517	145	236	567	3,124	1,028	3,111	373
Atlanta, Ga.	1,111	934	733	488	1,527	750	1,691	888	2,503	456	876	785	801	2,823	611	2,810	648
Baltimore, Md.	423	398	802	593	1,820	649	2,179	1,211	3,018	1,184	188	97	334	3,094	934	3,081	40
Birmingham, Ala.	1,225	927	653	481	1,374	752	1,549	735	2,361	354	990	899	794	2,687	475	2,674	762
Boston, Mass.	499	459	1,034	945	2,052	750	2,414	1,466	3,273	1,607	235	326	679	3,326	1,230	3,313	463
Buffalo, N. Y.	525	525	446	1,543	251	1,915	967	2,774	1,281	442	416	270	2,817	731	2,804	438	390
Chicago, Ill.	1,034	525	298	1,018	272	1,465	452	2,265	912	912	821	468	2,292	284	2,279	790	438
Cincinnati, O.	945	446	298	1,257	271	1,586	618	2,425	835	757	666	313	2,590	341	2,577	553	537
Cleveland, O.	682	183	357	263	1,575	173	1,703	755	2,562	1,098	524	493	135	2,649	548	2,636	437
Columbus, O.	820	321	214	116	1,332	184	1,673	705	2,512	551	637	546	193	2,606	428	2,553	487
Denver, Colo.	2,052	1,543	1,018	1,257	1,290	783	639	1,417	1,350	1,930	1,839	1,486	1,389	916	1,376	1,808	585
Detroit, Mich.	750	251	272	271	1,290	1,662	1,662	714	2,521	1,106	693	669	921	2,564	488	2,551	655
Duluth, Minn.	1,513	1,004	479	777	1,026	751	1,663	715	2,275	1,427	1,391	1,300	947	1,897	728	2,243	1,699
El Paso, Tex.	2,414	1,915	1,465	1,586	783	1,662	1,662	948	812	1,195	2,310	2,215	1,866	1,939	1,245	1,287	2,139
Fort Worth, Tex.	1,976	1,471	1,040	1,033	803	1,228	613	506	1,425	547	1,805	1,714	1,361	2,192	740	1,900	1,634
Galveston, Tex.	2,017	1,595	1,148	1,157	1,123	1,352	870	806	1,682	410	1,782	1,661	1,485	2,512	864	2,157	1,554
Helena, Mont.	2,574	2,065	1,540	1,838	953	1,812	1,736	1,272	1,288	2,152	2,452	3,200	2,008	761	1,549	1,256	2,330
Indianapolis, Ind.	965	466	183	111	1,156	277	1,485	517	2,324	888	825	734	381	2,475	740	2,462	664
Jacksonville, Fla.	1,218	1,193	1,097	841	1,859	1,112	1,811	1,220	2,623	616	923	892	1,057	1,187	975	3,098	755
Kansas City, Mo.	1,466	967	458	618	639	714	945	1,807	1,807	880	1,342	1,251	898	1,999	277	1,966	1,171
Los Angeles, Cal.	3,273	2,774	2,265	2,425	1,417	2,521	812	1,870	2,007	3,149	3,052	2,665	1,127	2,084	475	2,978	1,278
Louisville, Ky.	1,059	560	304	114	1,190	385	1,519	551	2,358	778	871	780	427	2,486	274	2,473	663
Memphis, Tenn.	1,392	940	527	494	1,223	743	1,152	484	1,964	396	1,157	1,066	807	2,483	311	2,429	929
Milwaukee, Wis.	1,119	610	85	385	1,103	357	1,550	543	2,350	997	997	906	553	2,216	369	2,364	875
Minneapolis, Minn.	1,454	945	420	718	882	692	1,521	573	2,133	1,285	1,332	1,241	888	1,881	586	2,101	1,210
Mobile, Ala.	1,466	1,231	929	785	1,491	1,056	1,236	868	2,148	141	1,231	1,140	1,098	2,859	647	2,623	1,003
Newark, N. J.	244	405	903	748	1,921	656	2,301	1,333	3,140	1,360	9	82	435	3,195	1,056	3,182	219
New Haven, Conn.	159	447	980	832	1,998	696	2,360	1,412	3,219	1,448	76	167	520	3,272	1,141	3,259	304
New Orleans, La.	1,607	1,281	912	835	1,350	1,106	1,195	880	2,007	1,372	1,281	1,148	2,739	699	2,482	1,148	1,248
New York, N. Y.	235	442	912	757	1,930	693	2,310	1,342	3,149	1,372	1,372	1,444	3,204	1,665	3,191	2,228	1,448
Norfolk, Va.	582	58	966	668	1,921	833	2,250	1,282	3,089	1,099	347	256	503	3,258	1,005	3,245	201
Ogden, Utah	2,527	2,018	1,493	1,791	590	1,765	1,325	1,200	818	1,891	2,465	2,314	961	815	843	786	2,283
Oklahoma, Okla.	1,773	1,274	858	884	750	1,031	780	344	1,537	752	1,608	1,517	1,164	2,139	543	1,846	1,416
Omaha, Neb.	1,527	1,018	493	791	538	765	1,148	200	1,818	1,080	1,405	1,314	961	1,796	413	1,786	1,283
Philadelphia, Pa.	326	416	821	666	1,839	669	2,219	1,251	2,058	1,281	91	353	3,113	974	3,100	137	377
Pittsburg, Pa.	679	270	468	315	1,486	321	1,866	898	2,705	1,148	444	353	2,760	621	2,747	302	402
Portland, Me.	115	614	1,149	1,066	2,167	865	2,529	1,581	3,388	1,722	350	441	794	3,441	1,345	3,428	578
Portland, Ore.	3,326	2,817	2,292	2,590	1,389	2,564	1,939	1,999	1,127	2,739	3,204	3,113	2,760	2,212	1,717	3,882	3,082
Providence, R. I.	45	490	1,034	926	2,052	750	2,414	1,466	3,273	1,562	190	281	634	3,326	1,230	3,313	418
Richmond, Va.	578	55	879	581	1,834	752	1,163	1,150	3,002	1,046	343	252	417	1,717	918	3,158	115
Rochester, N. Y.	430	68	603	514	1,621	319	1,984	1,035	2,842	1,349	373	361	338	2,895	799	2,882	894
St. Louis, Mo.	1,230	731	284	341	916	488	1,245	277	2,074	699	1,065	974	621	2,212	2,199	894	2,94
St. Paul, Minn.	1,444	935	410	708	874	682	1,511	563	2,23	2,275	1,322	1,231	878	1,891	576	2,091	1,200
San Francisco, Cal.	3,313	2,804	2,279	2,577	1,376	2,551	1,287	986	475	2,482	3,171	3,100	2,747	772	1,999	3,069	3,069
Savannah, Ga.	1,080	1,057	1,027	755	1,221	1,018	1,856	1,182	2,668	661	845	754	919	3,117	905	3,104	614
Seattle, Wash.	3,258	2,749	2,224	2,522	1,736	2,496	1,224	2,055	1,312	2,35	3,136	3,045	2,992	1,852	3,322	957	3,017
Spoکان, Wash.	2,919	2,410	1,885	2,183	1,336	2,157	1,219	1,655	1,505	2,535	2,797	2,706	2,533	378	1,932	1,150	2,675
Springfield, Mass.	99	400	935	846	1,953	651	2,315	1,367	3,174	1,511	139	230	583	3,227	1,131	3,214	367
Toledo, O.	795	296	244	211	1,262	60	1,611	663	2,470	1,046	705	614	261	2,536	437	2,523	595
Washington, D. C.	463	438	790	553	1,808	355	2,139	1,171	2,978	1,114	228	137	302	3,082	894	3,069

UNITED STATES WAR DEPARTMENT MILEAGE, 1913

KDZG, San Francisco, Calif. Cyrus Pierce & Co.

KDZH, Fresno, Calif. 485 also 50 mi. The Herald-Butford Co. Daily ex Sun, 4-5 pm, news, sports, music. Mon, Wed, Thurs, Sat, Sun, 7-8 pm, music. Tues, 8-9 pm, music. Fri, 8-8:30 pm, music. Sun, 10-11 am, sermon. Pacific.

KDZI, Wenatchee, Wash. 306 mi. Elec. Supply Co. Daily ex Sun, 4:30-5:30 pm, music. Mon, Wed, Fri, 8-9 pm, concert. Sun, 11 am, 12, church service. Pacific.

KDZJ, Eugene, Ore. Excelsior Radio Mfg. Co.

KDZK, Reno, Nev. 50 mi. Nev. Mehy & Elec. Co. Wed, Fri, Sat, Sun, 8-9 pm, music, entertainment. Pacific.

KDZL, Ogden, Utah. Rocky Mountain Radio Corp.

KDZM, Centralia, Wash. 50 mi. Hollingsworth Hdwe. & Radio Supply Store. Daily ex Sat & Sun, 8-9 pm, music. Pacific.

KDZP, Los Angeles, Calif. Newberry Elec. Corp.

KDZQ, Denver, Colo. 500 mi. Wm. D. Pyle. Daily ex Sun, 6:45-7:15 pm, news, 9-10 pm, concert. Mountain.

KDZR, Bellingham, Wash. 209 mi. Bellingham Pub. Co. Daily ex Sun, 7-8 pm, 8:30-9 pm, music, news, sports reports. Sun, 8 pm, church service. Pacific.

KDZT, Seattle, Wash. Seattle Radio Assn.

KDZV, Salt Lake City, Utah.

KDZW, San Francisco, Calif. Claude W. Gerdes.

KDZX, San Francisco, Calif. Glad Tidings Tabernacle.

KDZZ, Everett, Wash. 50 mi. Kinney Bros. & Seppell. Daily ex Sun, 2:30-3:30 pm, 4:30-5:30, 8:15-9:15. Pacific.

KFAB, Portland, Ore. Pacific Radiophone Co.

KFAC, Glendale, Calif. 335 and 485. 250 mi. Daily Press. Daily ex Sun, 4:15-5:15 pm, news, etc. Mon, Wed, Fri, 7-8 pm, concert. Pacific.

KFAD, Phoenix, Ariz. 485 also. 100 mi. Mon, Wed, Fri, 8-9:15 pm, concert, weather, stocks, markets. Sun, morning, church serv. MOUNTAIN.

KFAE, Pullman, Wash. 200 mi. State College of Wash. Program irregular.

KFAF, Denver, Colo. 1,000 mi. Western Radio Corp. Daily ex Thurs. & Sun., 8-9 pm, music, reports, news. Mountain.

KFAJ, Boulder, Colo. Univ. of Colo.

KFAN, Moscow, Idaho. The Elec. Shop.

KFAP, Butte, Mont. Stardard Pub. Co.

KFAQ, San Jose, Calif. City of San Jose.

KFAR, Hollywood, Calif. Studio Lighting Service Co.

KFAS, Reno, Nev. 300 mi. Reno Motor Supply Co. Mon, Tues, Thurs, 8-9 pm, music. Pacific.

KFAT, Eugene, Ore. 100 mi. Pac. Radio Co. Tues, Thurs, Sat, 7-8 pm, music. Sun, 8:45-9:15 pm, church service. Pacific.

KFAU, Boise, Ida. 485 also. 200 mi. Boise H.S. Mon, Wed, Fri, 9:30-10 am, 2:30-3:00 pm, reports, news 8:15-5 pm, concert. Tues, Thurs, Sat, 9:30-10 am, 2:30-3:00 pm, reports, 7:45-8:15 concert. Mountain.

KFAV, Venice, Calif. Cooke & Chapman.

KFAW, Santa Ana, Calif. 485 also. 100 mi. Radio Den. Daily ex Sun, 4-4:30 pm, news, reports, music. Mon, Thurs, 8-9 pm, concert. Pacific.

KFAY, Medford, Ore. 300 mi. Virgin Radio Service. Mon, Fri, 9-10 pm, concert. Wed, 9-12 pm, dance music. Sun, church service. Pacific.

KFBA, Lewistown, Idaho. Ramey & Bryant Radio Co.

KFBB, Havre, Mont. F. A. Buttrely & Co.

KFBC, San Diego, Calif. 100 mi. W. K. Azbill. Thurs, Bible lesson for foll. Sun. Sat. lectures.

KFBD, Hanford, Calif. 100 mi. Calif. Radio Lab. Daily ex Sun, 3-4 pm, 8-9, Sun, 5-6 pm. Pacific.

KFBE, San Luis Obispo, Calif. 50 mi. R. H. Horn. Daily ex Sun, 4-5 pm, 7-8. Pacific.

KFBF, Butte, Mont. Butte School of Telegraph.

KFBG, Tacoma, Wash. First Presbyterian Church.

KFBH, Marshfield, Ore. Thomas Musical Co.

KFBJ, Boise, Idaho. 170 mi. Boise Radio Supply Co. Daily ex Sun, 5-5:30 pm, police reports, music. Mon, Wed, Fri, 7:45-8:15 pm, concert. Tues, Thurs, Sat, 8:15-9 pm, concert. Mountain.

KFBK, Sacramento, Calif. 300 mi. Kimball-Upson Co. Daily ex Sun, 3-4 pm, 6-6:30, concert, news. Sun, 8-9 pm, church service. Pacific.

KFBL, Everett, Wash. Leese Bros.

KFBM, Astoria, Ore. Cook & Foster.

KFBN, Oakland, Calif. Borch Radio Corp.

KFBQ, Prescott, Ariz. Savage Elec. Co.

KFBU, Laramie, Wyo. Bshop N. S. Thomas.

KFBV, Colorado Springs, Colo. Clarence O. Ford.

KFBC, Seattle, Wash. 700 mi. Northern Radio & Electric Co. Daily, eight hours, miscellaneous. Pacific.

KFCB, Phoenix, Ariz. 500 mi. Nielsen Radio Supply Co. Mon, Wed, Fri, 8-9 pm, music. Tues, 8-10, sports. Mountain.

KFCG, Wallace, Ida. 380 only. 100 mi. Auto Supply Co. Co. Daily, 7:30-8:30. Pacific.

KFCD, Salem, Ore. Sales Elec. Co.

KFDA, Baker, Ore. Adler's Music Store.

KFDB, San Francisco, Calif.

KFDD, Boise, Ida. St. Michaels Cathedral.

KFDS, San Francisco, Calif. John D. McKee.

KFEB, Taft, Calif.

KFEC, Portland, Ore. Meier & Frank Co.

KFED, Taft, Calif. City of Taft.

KFEI, Los Angeles, Calif. 500 mi. Earle C. Anthony, Inc. Daily ex Sun, 1-1:30 pm, Daily ex Mon & Fri, 7:40-8:20 pm, Tues, Sat, 2-3 pm, Sun, 10:45-11 am, 4-5 pm, 7:40-8:20. Pacific.

KFV, Yakima, Wash. 250 mi. Foster-Bradbury Radio Store. Daily ex Sun, 3-4 pm. Mon, Wed, Fri, 8-9 pm. Pacific.

KFVV, Harre, Mont.

KFZ, Spokane, Wash. 300 mi. Doerr Mitchell Elec. Co. Tues, Wed, Fri, Sat, 7-8:30 pm, music etc. Pacific.

KGB, Tacoma, Wash. 200 mi. Wm. A. Mullins Elec Co. (Tacoma Ledger). Daily ex Sun, 4-5 pm, 7-9, Sun, 5:30-7 pm. Pacific.

KGF, Pomona, Cal. 150 mi. Pomona Fixture & Wiring Co. Thurs, 7:30-8:15 pm, news, markets, concert. Mountain.

KGK, Portland, Ore. 500 mi. Hallock & Watson Rad. Service. Daily ex Sun, 5-6 pm, music, entertainment, 7:30-8 pm, reports. Sun, 9-10, music. Pacific.

KGN, Portland Ore, 100 mi. Northwestern Radio Mfg. Co. Irregular schedule.

KGQ, Altadena, Calif. 350 only. 300 mi. Altadena Radio Lab. Mon, Wed, Fri, 5:15-6 pm, reports, code lessons, aerograms. Tues, Thurs, 7:40-8:20 pm, concerts. Sat, 7:40-9 pm, concert. Sun, 2-3 pm, church service. Pacific.

KGU, Honolulu, Hawaii. 485 also. 150 mi. The Honolulu Advertiser. Daily, 7:30-9 pm. Tues, Thurs, Sat, special program, 150th meridian. (Three hours later than Pacific.)

KGW, Portland, Ore. 200 mi. Ship Owners' Radio Service, Inc. (Daily Oregonian.) Daily. 3:30-4:30 pm, news etc. Mon, 7:30-8:30 pm, concert. Wed, 8-10 pm, concert. Fri, 8-9 pm, concert. Sun, 7-8 pm, church service. Pacific.

KGY, Lacey, Wash. 50 mi. St. Martins College. Tues, Fri, Sun, 8:30-9:30 pm, news, concert, bedtime story. Pacific.

KHD, Colorado Springs, Colo. 485 also. 50 mi. Daily ex Sun, 8:15 am, weather. Daily ex Sun, Mon, 7-7:30 pm, music. Mountain.

KHJ, Los Angeles, Calif. 485 also. 500 mi. C. B. Kierulff & Co. Daily ex Sat. & Sun, 1:30-2:15 pm. 6:40-7:20. Sat, 6:40-7:20 pm. Sun, 10:10-10:45 am. Pacific.

KHQ, Seattle, Wash. Louis Wasmer.

KIC, Los Angeles, Calif. 100 mi. Standard Radio Co. Barke Bros. Daily ex Sun, 11:30-12 noon. Mon, 10-11 am. Wed, 9-10 am. Sun, 1-2 pm, 5-6. Pacific.

KJJ, Sunnyvale, Calif. 500 mi. Radio Shop. Tues, 8:15-9 pm. Fri, 7:30-8:15 pm. Pacific.

KJQ, Stockton, Calif. C. O. Gould.

KJR, Seattle, Wash. 200 mi. Northwest Radio Service Co. Daily ex Sun, 8-9 pm, miscellaneous. Pacific.

KJS, Los Angeles, Calif. 100 mi. Bible Inst. of Los Angeles. Tues, Wed, 12-12:30 pm, sacred music, lecture. Sun, 11:30-12:30 pm, sacred music, sermon. Pacific.

KLB, Pasadena, Calif. 300 mi. J. J. Dunn Co. Mon and Fri, 7:30-8:15 pm, concert. Sun, 3-4 pm and 8-9, concert. Pacific.

KLN, Del Monte, Calif. Monterey Elec. Shop. Daily, 12-1 pm, weather, markets, news; 7-8 pm, concert. Pacific.

KLP, San Francisco, Calif. 500 mi. Colin B. Kennedy Corp. Mon, 7:30-8:30 pm. Thurs, 8:30-9 pm. Sun, 4-5 pm. Pacific.

KLS, San Francisco, Calif. 300 mi. Warner Bros. Radio Supply Co. Daily, 12-1 pm. Sat, 7:30-8:15 pm. Pacific.

KLX, Oakland, Calif. 500 mi. Oakland Tribune. Daily ex Sun, 7:15-7:30 pm, news, entertainments. Tues, 7:30-8:15 pm. Fri, 8:15-9 pm, and Sun, 3-4 pm, concert. Pacific.

KLZ, Denver, Colo. 485 also. 200 mi. Reynolds Radio Co. Daily ex Sun, 7:30 pm on, news, markets, bedtime story, concert. Sun, 8-9 pm, church service. Mountain.

KMC, Reedley, Calif. 100 mi. Lindsay-Weatherill & Co. Mon, Wed, Fri, 8:30-9 pm, concert. Pacific.

KMJ, Fresno, Calif. 200 mi. San Joaquin Lt. & Pr. Corp. Tues, Fri, 7-8 pm, music. Sun, 5-6 pm, music. Pacific.

KMO, Tacoma, Wash. 200 mi. Tacoma Times. (Love Elec. Co.) Daily ex Sun, 11-1 pm, 6-7, 9:15-10, concert, news, lecture. Pacific.

KNI, Eureka, Calif. T. W. Smith.

KNJ, Roswell, New Mex. 485 also. 750 mi. Roswell Public Service Co. Daily, 8 pm, news, reports, concerts. Mountain.

KNK, Co. Daily, ex Sun, 7-9 pm, weather, financial, markets, news. Sun, 7-9 pm, church service. Mountain.

KNN, Los Angeles, Calif. 100 mi. Bullock's Mon, 2:30-3:30 pm. Wed, 2:15-3 pm. Thurs, 4-5 pm. Pacific.

KNT, Aberdeen, Wash. 400 mi. Grays Harbor Radio Co. Daily, 5-5:30 pm, 7:30-8:15, news, concert. Pacific.

KNV, Los Angeles, Calif. Radio Supply Co.

KNX, Los Angeles, Calif. Elec. Lighting Supply Co.

KOB, State College, N. M. 485 also. 500 mi. N. M. College Agri. & Mech. Arts. Daily ex Sun, 11:55-12 noon, reports. Mon, Wed, Fri, 7:30-8:30 pm, concert. Mountain.

KOE, Spokane, Wash.

KOG, Los Angeles, Calif. 300 mi. Western Radio Elec. Co. Daily ex Sun, Wed, 5-5:30 pm, code, news. Mon, Fri, 7:40-8:20 pm, music. Wed, 4:30-5 pm, code, 8:20-9 pm, music. Pacific.

KON, Los Angeles, Calif. 290 mi. Holzwasser, Inc. Daily ex Sun, 4-5 pm and 8:15-9, concert, news. Sun, 10-11 am, 4-5 pm and 8:15-9, church service. Pacific.

KOP, Detroit, Mich. Detroit Police Dept.

KPO, San Francisco, Calif. 300, 600 also. 500 mi. Hale Bros, Inc. Daily ex Sun, 11-12 m. 3:30-4:30 pm, concert. Pacific.

KPI, Berkeley, Calif. Univ. of Calif.

KQP, Hood River, Ore. 350 only. 50 mi. Hood River News. Daily ex Sat, Sun, 7 pm, news. Tues, Fri, Sun, 8:30-9:30, entertainment. Pacific.

KQT, Yakima, Wash. Elec. Power and Appliance Co.

KQV, Pittsburgh, Pa. 300 mi. Doubleday-Hill Elec. Co. Daily ex Sun, 12-12:30 pm, 2:30-3, music, lectures. Mon, Wed, Fri, 10-11 pm, music, entertainment. Eastern.

KWQ, San Jose, Calif. 345 also. 500 mi. Chas. D. Herold. Daily ex Sun, 1-1:30 pm. Wed, 8:15-9 pm, concert. Pacific.

KQY, Portland, Ore. 200 mi. Stubbs Elec. Co. Daily, 1-2 pm, 6-7. Pacific.

KRE, Berkeley, Calif. 200 mi. Maxwell Elec. Co. Every other Sat, 8:15-9 pm. Sun, 1-2 pm, 6-7. Pacific.

KSD, St. Louis, Mo. 400 & 485 only. 1,500 mi. St. Louis Post-Dispatch. Daily ex Sun, 9-9:30 am. 10:40, 11:40, 12:40 pm, 1:40, 2:40, 4, 8. Sun, 8:15 pm. Central.

KSJ, San Francisco, Calif. 50 mi. The Emporium. Daily ex Sun, 10-11 am, concert, news; 2-3 pm, concert, educational talk. Sun, 2-3 pm, concert and educational talk. Pacific.

KSS, Long Beach, Calif. 25 mi. Prest & Dean Radio Research Lab. Daily ex Sun, 3:30-4:30 pm, news, concert. Pacific.

- KTW**, Seattle, Wash. 500 mi. First Presbyterian Church Sun, 11-12:30 pm, 3-4:30, 7-9:30, church service. Pacific.
- KUO**, San Francisco, Calif. 485, 525 also, 1,500 mi. Fran. Examiner. Daily ex Sun, 9-10 am, concert, chat to housewives; 11-12, reports; 3-3:30 pm, lecture, news; 5:30-6:45 pm, concert; 9 am, 12 m, 6:45 pm, weather report. Wed, 3:30 pm, health bulletins. Sun, 9-10 am, concert; 5-6 pm, concert, news. Pacific.
- KUS**, Los Angeles, Calif.
- KUY**, El Monte, Calif. 500 mi. Coast Radio Co. Daily ex Sun, Sat, 4-4:45 pm. Mon, Thu, 8:20-9 pm. Sat, 3-4 pm. Pacific.
- KVQ**, Sacramento, Calif. 300 mi. Sacramento Bee. Daily ex Sun, 6:30-7:30 pm, news, reports, music. Sun, 6-7 pm, reports, music. Pacific.
- KWG**, Stockton, Calif. 1,500 mi. Portable Wireless Telephone Co. Daily ex Sun, 4-5 pm, news, concert, markets. Tues and Fri, 8-9 pm, concert. Sun, 2-3 pm, concert. Pacific.
- KWH**, Los Angeles, Calif. 485 also. 250 mi. Examiner. Daily ex Sun, 1:30-1:40 pm, 5:30-6, 6-6:15, 8:20-9, reports, entertainment. Sun, 8:30-9 pm, church service. Pacific.
- KXD**, Modesto, Calif. Herald Pub. Co.
- KXS**, Los Angeles, Calif. Braun Corp.
- KYF**, San Diego, Calif. Thearle Music Co.
- KYG**, Portland, Ore. 700 mi. W. P. Hawley, Jr. Tues, Thu, Sat, 9-10 pm, concert. Pacific.
- KYL**, Bakersfield, Calif. Bakersfield Californian.
- KYJ**, Los Angeles, Calif. 485 also. 1,000 mi. Leo J. Meyberg Co. (Hamburgers). Daily ex Sun, 4-5 pm, concert, markets, weather news. Mon, Thurs, Sat, 8-9 pm, same program. Pacific.
- KYW**, Chicago, Ill. 400, 485 only. 1,500 mi. Westinghouse Elec. & Mfg. Co. Daily ex Sun, 9:35 am-1:20 pm, market quotations every half hr; 2:15, news, markets; 3, baseball; 4:15 and 6:30, news, final markets and stocks; 7:30, baseball, bedtime story; 7:45, feature; 8-9, concert; 9, news. Sun, 3:30 pm, church service. Central.
- KYY**, San Francisco, Calif. The Radio Telephone Shop.
- KZC**, Seattle, Wash. 100 mi. Public Market & Department Store Co. Daily ex Sun, 6:45-7:15 pm, music, news, agriograms. Pacific.
- KZM**, Oakland, Calif. 200 mi. Western Radio Institute (Hotel Oakland). Daily ex Sun, 6:45-7 pm, news. Pacific.
- KZN**, Salt Lake City, Utah. 485 also. 1,000 mi. Desert News. Daily ex Sun, 3-4pm, reports, mus.c. 8-9:30 pm, music, news, bedtime stories, etc. Mountain.
- KZV**, Wenatchee, Wash. Wenatchee Battery & Motor Co.
- KZY**, San Francisco, Calif.
- NOF**, Anacostia, D. C. 412 only. 600 mi. U. S. Navy Dept. Mon, Tues, Thur, 7:15-7:30 pm, lecture. Mon, Thur, 6:45-7 pm, lecture. Tues, Thur, 7:45-8 pm, health lecture. Wed, Fri, 8:30-9:45 pm, band concert. Eastern.
- TWX**, Havana, Cuba.
- WAH**, El Dorada, Kans. Midland Refining Co.
- VAJ**, Dayton, O.
- VAQ**, Brownsville, Pa. 200 mi. Hartman-Riker Elec. & Mach. Co. Daily ex Sun, 10:30-6:50 am, music; 12:50-1:10 pm, music, news, weather; 5:05-5:30, music. Tues, Thurs, Fri, 9:15-10 pm, concert. Sun, 5 pm, chapel. Eastern.
- WAAB**, New Orleans, La. Valdemar Jensen.
- WAAC**, New Orleans, La. Tulane Univ.
- WAAD**, Cincinnati, O. 200 mi. Oh. Mechanics Inst. Fri 2:30-4:30 pm, and Sat, 8:15-10:15 pm, Cincinnati Symph. Orchestra concert. Central.
- WAAF**, Chicago, Ill. 485 only. 300 mi. Chi. Daily Drivers Journal. Daily ex Sat & Sun, 8:30 am, 10:30, 10:45, 12:30 pm, 3, 4:30, stock reports. Central.
- WAAG**, Shreveport, La. 50 mi. Bordeaux Co. Daily ex Sun, 7:30-9 pm, sports, concert. Central.
- WAAH**, St. Paul Minn. 200 mi. Commonwealth Elec. Co. Mon, Fri, 12-12:45 pm, concert. Mon, Tues, 8-9:30, music. Wed, 1-1:45 pm, lecture. Sun, 3:30-4:30 pm, concert. Central.
- WAAJ**, Boston, Mass. 50 mi. Eastern Radio Inst. Mon, Wed, Fri, 9-10 pm, music. Eastern.
- WAAK**, Milwaukee, Wis. 485 also, 300 mi. Gimbel Bros. Daily ex Sun, 10 am, markets, weather; 11, markets; 12:10 pm, markets; 1:25, closing markets; 2, and every hr. after, concert, test; 7, weather; 7:15, baseball; 7:30, concert. Central.
- WAAL**, Minneapolis, Minn. Minnesota Tribune Co.
- WAAM**, Newark, N. J. 300 mi. I. R. Nelson Co. Daily ex Sun, 11-11:55 am, 3-4 pm, music. Wed, 8-9 pm, special program. Eastern.
- WAAN**, Columbia, Mo. Univ. of Mo.
- WAAP**, Charleston, W. Va. 40 mi. Radio Service Co. Daily ex Sun, 6:45-7:45 pm, music, news, weather, baseball. Eastern.
- WAAP**, Wichita, Kan. 200 mi. United Elec. Co. Daily, 12-1:30 pm, music, news; 5, weather; 7:15-7:30, sports, markets; 9:45-12, talks, music, and code on C. W.; 10:30, weather. Tues, Fri, 8 pm on, concert, etc. Central.
- WAAP**, Greenwich, Conn. 600 mi. New England Motor Sales Co. Daily ex Sun, 9:30 am-5:30 pm, every half hr. Eastern.
- WAAR**, Huntington, W. Va. Groves-Thornton Hdw. Co.
- WAAS**, Decatur, Ga. Georgia Radio Co.
- WAAT**, Jersey City, N. J. 70 mi. Jersey Review. Wed, 7-8 pm, concert, lecture. Sun, 7-8, church service, concert. Eastern.
- WAAV**, Athens, O. 500 mi. Athens Radio Co. Daily, 7-9 pm miscellaneous. Central.
- WAAW**, Omaha, Neb. 485 also. 500. Omaha Grain Exchange. Daily ex Sun, 9:45, 10:45, 11:45, 12:45, 1:20, 8 pm, market reports. 8:15-9 pm, music. Central.
- WAAX**, Crafton, Pa. Radio Service Corp.
- WAAY**, Youngstown, O. 500 mi. Yoehring Rayner Music Co. Daily ex Sun, 5:30 pm, reports; 8:15-9 pm, music. Eastern.

- WAAZ**, Emporia, Kans. 250 mi. Hollister-Miller Mfg. Co. Daily ex Sun, 7-8 pm, weather, entertainment. Central.
- WAJT**, Marshall, Mo. Kelly-Vawter Jewelry Co.
- WAJU**, Yankton, S. D. Yankton College.
- WBAA**, W. Lafayette, Ind. 50 mi. Purdue University. Fri. 7:15-7:30 pm, educational lecture. Central.
- WBAB**, Syracuse, N. Y. 1,000 mi. Syracuse Radio Tel. Co. Mon, Wed, Sat, 7:30-9:30 pm, concert, ariograms, etc. Eastern.
- WBAD**, Minneapolis, Minn. 'Steeling Elec. Co. (Journal Printing Co.)
- WBAE**, Peoria, Ill. Bradley Polytechnic Inst.
- WBAF**, Moorestown, N. J. Fred M. Middleton.
- WBAG**, Bridgeport, Pa. 485 also 300 mi. Diamond St. Fibre Co. Daily, 11:45-12 m, markets, weather. Eastern.
- WBAH**, Minneapolis, Minn. 200 mi. The Dayton Co. Daily ex Sun, 1-1:30 pm, 3-3:30, 5-5:30, 9:30-10. Sat, 11-11:30 am. Wed, 8-10 pm. Central.
- WBAJ**, Toledo, O. 300 mi. Marshall-Gerken Co. Daily ex Sun, 12:05-2 pm, 6-7:30, news, music, reports. Tues, Thur, Sat, 8-9 pm, concert. Eastern.
- WBAK**, Harrisburg, Pa.
- WBAM**, New Orleans, La. 100 mi. I. R. Rennyson. Daily ex Sun, 10-11 pm, real estate bulletins, lecture, concert. Central.
- WBAN**, Paterson, N. J. 100 mi. Wireless Phone Corp. Daily ex Sun, 10:30 am, on the wire to 9:30 pm, concert, baseball. Eastern.
- WBAO**, Decatur, Ill. James Millikin Univ.
- WBAP**, Fort Worth, Texas. 400 and 485 only. 1,500 mi. Ft. Worth Star Telegram. Daily ex Sun, 9:45-10 am, 11-11:30, 3-3:30 pm, 3:45-4, 5:15-5:30, 6:30-6:45, 9:30-10:30, news, reports, concert. Central.
- WBAQ**, South Bend, Ind. 200 mi. Myron L. Harmon. Tues, Thurs, Sat, 7 pm. Sun, 2 pm. Central.
- WBAU**, Hamilton, O. Republican Pub. Co.
- WBAV**, Columbus, O. 485 also 300 mi. Erner & Hopkins Co. Daily ex Sun, 12:30 pm, news weather. Mon, 7 pm, music. Central.
- WBAW**, Marietta, O. Marietta College.
- WBAX**, Wilkes-Barre, Pa. 200 mi. John H. Stenger, Jr. Three nights of week, not regular.
- WBAZ**, New York, N. Y. 400 only. 1,500 mi. A. T. & T. Co. Daily, 11-12 am, 4:30-5:30 pm. Thurs, 7:30 pm on Eastern daylight saving.
- WBAZ**, Richmond, Va. 300 mi. Times-Dispatch. Daily, 7-9 pm, news, concert, markets, etc. Eastern.
- WBL**, Anthony, Kans. 200 mi. T. & H. Radio Co. Mon, Wed, Fri, 10-11 pm, concert, lecture. Sat, 11-12 pm, concert. Sun, 10 am, 4-5 pm, church service. Central.
- WES**, Newark, N. J. 100 mi. D. W. May, Inc. Mon, Wed, Thur, 7:30-8:30 pm, reports, music. Sun, 9-10:30 am, 1-3 pm, church service. Eastern.
- WBT**, Charlotte, N. C. 485 also 500 mi. Southern Radio Corp. Daily ex Sun, 11 am, reports, 8 pm, music. Sun, 7:30 pm, church service. Eastern.
- BU**, Chicago, Ill. City of Chicago.
- WBZ**, Springfield, Mass. 500 mi. Westinghouse Elec. & Mfg. Co. Daily ex Sun, 7:30 pm, children's hour; 7:45, markets, weather, lecture; 8-9, concert. Sun, 3 and 8, church service. Eastern.
- WCAB**, Newburgh, N. Y. 150 mi. Newburgh Daily News. Daily ex Sun, 1 pm, 2, 3, 7. Mon, Fri, 10:30 pm. Eastern.
- WCAC**, Fort Smith, Ark. 500 mi. John Fink Jewelry Co. Fri, Sun, 8-10 pm, music, talks, sermon. Central.
- WCAD**, Canton, N. Y. 200, 480 also 300 mi. St. Lawrence Univ. No regular schedule. Eastern.
- WCAE**, Pittsburgh, Pa. Kaufman & Baer Co.
- WCAG**, New Orleans, La. Daily States Pub. Co.
- WCAH**, Columbus, O. 150 mi. Entekin Elec. Co. Tues, Fri, 7-9 pm, music. Wed, Thur, Sat, 7-8 pm, music. Sun, 10-12:30, church service. Central.
- WCAI**, San Antonio, Tex. Southern Equipment Co.
- WCAJ**, Univ. Place, Neb. 485 also 100 mi. Neb. Wesleyan Univ. Daily ex Sun, 11 am, weather, news. Wed, 9 pm, music, lecture. Central.
- WCAK**, Houston, Tex. 100 mi. Alfred P. Daniel. Daily ex Sun, 7-7:15 pm, music. Wed, 8-9:15, concert. Sun, 3-4:30 pm, concert. Central.
- WCAL**, Northfield, Minn. 500 mi. St. Olaf College. Thur, 11 pm, music. Sun, 8:30 pm, music, concert, lecture. Central.
- WCAM**, Villanova, Pa. Villanova College.
- WCAN**, Jacksonville, Fla. Atlantic Nat'l Bk. Bldg., Southeastern Radio Telephone Co.
- WCAO**, Baltimore, Md. 100 mi. Sanders & Stayman Co. Daily ex Sun, 12-12:20 pm, 5-5:20. Mon, Wed, 7:30-8:30 pm. Eastern.
- WCAP**, Decatur, Ill. Central Radio Service.
- WCAQ**, Defiance, O. 200 mi. Tri-State Radio Mfg. Co. Daily, 11:30-12:30 pm, 3, baseball; 6-6:30, baseball, concert; 8, special program. Central.
- WCAR**, San Antonio, Tex. 500 mi. Alamo Radio Elec. Co. Daily ex Sun and Thur, 8:30-9:30 pm, music. Thur, 9:30-10:30 pm, music. Sun, 2:30-3:30 pm, church service. Central.
- WCAS**, Minneapolis, Minn. 200 mi. Wm. H. Dunwoody Industrial Inst. Mon, 8-8:45 pm, music, lectures. Central.
- WCAT**, Rapid City, S. Dak. 485 also 300 mi. S. Dak. School of Mines. Daily ex Sun, 9:30-12:30 pm, weather. Mountain.
- WCAU**, Philadelphia, Pa. Phila. Radiophone Co.
- WCAV**, Little Rock, Ark. J. C. Dice Elec. Co.
- WCAW**, Quincy, Ill. 200 mi. Quincy Elec. Sup. Co. (Quincy Herald). Daily ex Sun, 8:45 am, markets; 11, markets; 1 pm, markets; 5, music, baseball. Tues, Wed, Thurs, Sat, 8:30-9:45 pm, concert. Sun, 6:30-7:30 pm, religious. Central.
- WCAX**, Burlington, Vt. Univ. of Vt.

- WCAY**, Milwaukee, Wis. Kesselman O'Driscoll Co.
- WCAZ**, Quincy, Ill. Whig-General.
- WCE**, Minneapolis, Minn. Findley Elec. Co.
- WCJ**, New Haven, Conn. 400 mi. A. C. Gilbert Co. Mon, Wed, Thurs, 7:30-8:30 pm, news, music. Eastern.
- WCK**, St. Louis, Mo. 485 also. 50 mi. Stix Baer & Fuller (Grand Leader). Mon, Wed, Fri, 6:45-8 pm, concert, lecture, bedtime story. Central.
- WCM**, Austin, Tex. Univ. of Tex.
- WCN**, Worcester, Mass. 485 also. 100 mi. Clark Univ. Daily, 11:15 am, 5:15 pm, weather. Evening program irregular. Eastern.
- WCX**, Detroit, Mich. Detroit Free Press.
- WDA**, Nashville, Tenn. Ward Belmont School.
- WDAC**, Springfield, Ill. Ill. Watch Co.
- WDAD**, Lindsborg, Kans. Wm. L. Harrison.
- WDAE**, Tampa, Fla. 485 also. 500 mi. Tampa Daily Times. Wed, Fri, 8-10 pm, music, lecture. Eastern.
- WDAF**, Kansas City, Mo. 400 and 485 only. 500 mi. Kansas City Star. Daily ex Sun, 3-4 pm, reports, 5:30 pm, music. Central.
- WDAG**, Amarillo, Tex. K. Laurance Martin.
- WDAH**, El Paso, Tex. 485 also. 300 mi. Mine & Smelter Supply Co. Daily ex Sun, 10 am, news, reports. Tues, Thurs, Sat, 7:30-8:30 pm, music. Mountain.
- WDAL**, Syracuse, N. Y. 485 also. 200 mi. Hughes Radio Corp. Daily ex Sun, 12 m. reports. Wed, Sat, evening concert.
- WDAJ**, College Park, Ga. 485 also. 300 mi. A. & W. P. R. Co. Daily, 9-10 pm, concert, etc. Central.
- WDKA**, Hartford, Conn. 150 mi. Hartford Courant. Daily ex Sun, 2:30 pm, 3:30, 4:30, 5:30, music; 7:40, bedtime story; 8:15, concert. Eastern.
- WDAL**, Jacksonville, Fla. 485 also. 250 mi. Florida Times Union. Daily, 11 am, time, weather, 3-3:45, 4-4:15, 5-5:15, 8-9:30, music. 10:05-10:20 pm, reports. Eastern.
- WDAM**, New York, N. Y.
- WDAN**, Shreveport, La. Centenary College and Glenwood Radio Corp.
- WDAO**, Dallas, Tex. Automotive Elec. Co.
- WDAP**, Chicago, Ill. 485 also. 1,000 mi. Midwest Radio Central Inc. Daily ex Sat and Sun, 9:45 am, 10:45, 11:45, 1:45 pm, 3:15, foreign exchange; 3:17, closing Chicago stocks; Sat, 9:45 am, 10:45, 11:45, 12:45 pm, foreign exchange; 12:17, closing Chicago stocks. Sun, 8:30-10:30, concert. Central.
- WDAR**, Philadelphia, Pa. Lit Bros.
- WDAS**, Worcester, Mass. Samuel A. Waite.
- WDAU**, New Bedford, Mass. 50 mi. Sloum & Kilburn. Mon, Wed, 7-9 pm, concert, etc. Eastern.
- WDAV**, Muskogee, Okla. Daily Phoenix.
- WDAW**, Atlanta, Ga. 485 also. 500 mi. Georgia Ry. & Power Co. Daily ex Sun, 6-7 pm; 9-9:55. Sun, 3:30-4:30 pm, Central.
- WDAX**, Centerville, Iowa. 500 mi. First Nat'l. Bank. Daily ex Sun, 11:30 am, reports, news. Mon, Thurs, 7:30-9 pm, concert.
- WAY**, Fargo, N. D. 485 also. 100 mi. Fargo Radio Service Co. Daily ex Sun, 12:15 pm, weather; 7-7:30, news, music. Mon, Wed, Fri, 9-10 pm, concert, etc. Sun, 12:15 pm, weather. Central.
- WDM**, Washington, D. C. 50 mi. Church of the Covenant. Sun, 10:30 am, church service; 3 pm, lecture; 7:30, church service. Eastern.
- WDT**, New York, N. Y. Ship Owners Radio Service.
- WDV**, Omaha, Neb. 100 mi. John O. Yelser, Jr. Daily 7-8 pm Tues, Sat, 12-1 am. Fri, 10-10:45 pm. Sun, 2-4 pm, music. Central.
- WDY**, Roselle Park, N. J. Radio Corp. of America.
- WDZ**, Tuscola, Ill. 70 mi. James L. Bush. Daily ex Sun, every half hr., 8:30 am-12:15, Chicago Board of Trade quotations. Tues, Fri, 7-8 pm, concert, entertainment. Central.
- WEAA**, Flint, Mich. Fallain & Lathrop.
- WEAB**, Fort Dodge, Ia. 600 mi. Standard Radio Equip. Co. Daily ex Sun, 9:40 am, 10:40, 11:40, 1:40 pm, 5:15, market reports; 6:30 pm, sports; 7:30-8:45 pm, music. Sun, 10:45 am, church service; 7:30-8:45 pm, music. Central.
- WEAC**, Terre Haute, Ind. Baines Elec. Service Co.
- WEAD**, Atwood, Kans. 485 also. 150 mi. N. W. Kansas Radio Supply Co. Daily ex Sun, 11-11:30 am, markets, music; 12, markets; 1:45 pm, markets; on half hour 3:15 to 5:45, news, sports. Tues, Wed, Thurs, Sat, 7:30-9, concert. Sun, 11 am, church service; 3 pm, sacred music; 7:30, church service. Central.
- WEAE**, Blacksburg, Va. Polytechnic Inst.
- WEAF**, New York, N. Y. Western Elec. Co.
- WEAG**, Edgewood, B. I. Nichols-Hineline-Bassett Lab.
- WEAH**, Wichita, Kans. 483 also. 500 mi. Lander Radio Co. Daily ex Sun, 9:40 am, 10:40, 11:40, 12:30 pm, 1:30, 3:15, reports, Wed, Sat, 8 pm, concert. Every third Sun, 8 pm, concert. Central.
- WEAI**, Ithaca, N. Y. Cornell Univ.
- WEAJ**, Vermillion, S. D. Univ. of S. D.
- WEAK**, St. Joseph, Mo. 100 mi. J. B. Abernambie. Daily 12-1 pm, St. Joseph live stock markets; 7:30-8:45, concert. Central.
- WEAM**, North Plainfield, N. J. 75 mi. Borough of N. Plainfield. Daily, 7:30-8 pm, music, police news, etc. Eastern.
- WEAN**, Providence, R. I. 50 mi. The Shepard Co. Daily ex Sun, 3-5 pm, 6-8 pm, music, bedtime stories. Mon, Wed, 8-10 pm, concert. Eastern.
- WEAO**, Columbus, O. Ohio State Univ.
- WEAP**, Mobile, Ala. 485 also. 50 mi. Mobile Radio Co. Daily, 4-5 pm, 7-8:55. Central.
- WEAR**, Baltimore, Md. Balt. American & News Pub. Co.
- WEAS**, Washington, D. C. 150 mi. The Hecht Co. Daily ex Sun, 3-4 pm, Wed, Sat, 7-8 pm. Eastern.
- WEAT**, Tampa, Fla. John J. Fogarty.
- WEAU**, Sioux City, Ia. 50 mi. Davidson Bros. Co. Daily ex Sun, 9 am, 10, 11, 1 pm, reports, news. Mon, Wed, Fri, 8:30 pm, concert. Central.

WEAV, Rushville, Neb. 200 mi. Sheridan Elec. Service Co. Wed, Fri, Sun, 8-9 pm, concert, news, etc. Mountain.

WEAW, Anderson, Ind. Arrow Radio Lab.

WEAX, Little Rock, Ark. T. J. M. Daly.

WEAY, Houston, Tex. Will Horwitz, Jr.

WEAZ, Waterloo, Ia. 100 mi. A. C. Sweetman. Mon, Thurs, Sat, 7-8 pm, news, concert, lecture. Central.

WEB, St. Louis, Mo. 800 mi. The Benwood Co., Inc. Daily ex Sun, 9-9:40 am, 12-12:45 pm, 3-4. Wed, 7-9 pm. Central.

WEH, Tulsa Okla. (300 S. Main St., Eldorado, Kans.) Midland Refining Co.

WEV, Houston, Tex. 485 also 500 mi. Hurlburt-Still Elec. Co. Daily ex Sun, 10 am, 5:30 pm, weather, roads. Tues, Thurs, 8 pm, concert. Central.

WEW, St. Louis, Mo. 485 also 100 mi. St. Louis Univ. Daily ex Sun, 9 am, 10, 2 pm, reports. Central.

WEY, Wichita, Kans. 485 also 500 mi. Cosradio Co. (Wichita Beacon). Daily ex Sun, hourly, 8:40 am-12:40 pm, stock markets. Daily, 10:45 am and 4:30 pm, weather; 8-10 pm, sports, concert, lecture; 10:45, weather. Sun, 8-10, church service, concert. Central.

WFAA, Dallas, Tex. 400 and 485 only. 250 mi. News and Journal. Daily ex Sun, 10:15-10:45 am, weather, cotton region bulletin; 12:30-1 pm, music, talk; 2-2:30, markets, news, sports; 3:30-3:45 pm, markets, news; 6:45-7, sports; 8-8:30, concert. Sun, 2:30-3 pm, chapel; 6:30-6:45, sports; 9:30-10, concert. Central.

WFAB, Syracuse, N. Y. 100 mi. C. F. Woese. No definite schedule.

WFAC, Superior, Wis. 400 mi. Superior Radio Co. Daily, 7-7:45 pm, news. Central.

WFAD, Salina, Kans. 250 mi. Watson Weldon Motor Supply Co. Daily ex Sun, 8:45 am, 9:45, 10:45, 11:45, 1:30 pm, reports. Tues, Thurs, Fri, 8 pm, concert. Sun, 11 am, church service; 8 pm, concert. Central.

WFAF, Poughkeepsie, N. Y. 200 mi. H. C. Spratley Radio Co. Daily ex Sun, 10-10:30 am, 11:30-11:45, 1:30-2 pm, 4-4:15. Tues, Thurs, Sat, 8:15 pm, feature program. Eastern.

W FAG, Waterford, N. Y. 340 only. 300 mi. Radio Engineering Lab. Wed, Sat, 7:45-10 pm, concert. Sun, 2-4 pm, church service. Eastern.

WFAH, Port Arthur, Tex. Elec. Supply Co.

WFAJ, Asheville, N. C. Hi-Grade Wireless Instrument Co.

WFAL, Houston, Tex. Chronicle Pub. Co.

WFAM, St. Cloud, Minn. 485 also 100 mi. Granite City Elec. Co. Daily ex Sun, 3:30-4 pm, markets; 7:30-9, entertainment. Central.

WFAN, Hutchinson, Minn. 485 also 500 mi. Hutchinson Elec. Service Co. Daily ex Sun, 1 pm, markets, etc. Central.

WFAP, Peoria, Ill. 200 mi. Radio School of Browns Business College. Daily ex Sun, 10:25 am, reports; 12-12:15 pm, concert; 1:40, reports; 4:25, business lessons; 7:45, concert. Central.

WFAQ, Cameron, Mo. Wesleyan College. Cameron Radio Co. and Mo.

WFAR, Sanford, Me. Hall & Stubbs.

WFAS, Fort Wayne, Ind. United Radio Corp.

WFAT, Sioux Falls, S. Dak. 485 also 400 mi. Argus Leader. Daily ex Sun, 10:15-12:15 pm, 2:15, reports; 7:30 pm, music. Tues, 8-9 pm, concert. Central.

WFAU, Boston, Mass. Edwin C. Lewis.

WFAV, Lincoln, Nebr. 485 also 300 mi. Univ. of Nebr. Daily ex Sun, 10-10 am, weather, markets. Sat, 9:00 pm, concert. Central.

WFAW, Miami, Fla. Daily Metropolis.

WFAX, Binghamton, N. Y. 75 mi. Arthur L. Kent. Daily, 5-5:30 pm, music. Eastern.

WFAY, Independence, Kans. 300 mi. Daniels Radio Supply Co. No definite schedule.

WFAZ, Charleston, S. C. 400 mi. S. C. Radio Shop. Daily ex Sun, 12 m, reports, news, music. Tues, Thurs, 8-10 pm. Eastern.

WFI, Philadelphia, Penna. 350 mi. Strawbridge & Clothier. Daily ex Sun, 1:16 pm, news; 3:30-4:30, concert; 5:30-6, sports. Mon, Fri, 6:30-7 pm, Radio talk. Wed, Fri, Sat, 7:30-8:30 pm, concert; Fri, Sat, (alternate weeks), 7:30 pm, concert at 8:30 pm; Sun, 4 pm, church service. Eastern.

WFO, Dayton, O. 485 also 300 mi. Rike-Kumler Co. Daily ex Sun, 9 am, 11, 4 pm, music, news, reports. Mon, Wed, Fri, 8 pm, concert. Sat, 11:30 pm, concert. Central.

WGAB, Houston, Tex. 485 and 600 also 250 mi. QRV Radio Co. Daily ex Sun, 8:30-9:30 am, police, news; 12:30-1:30 pm, music, readings; 4-5, sports, news. Mon, Wed, Fri, 8 pm, concert. Eastern.

WGAD, Ensenada, Porto Rico. 200 mi. Spanish-American School of Radio Telegraphy. Irregular, 7:30-11:30 pm, entertainment. 60th Mexican.

WGAF, Tulsa, Okla. Goller Radio Service.

WGAH, New Haven, Conn. New Haven Elec. Co.

WGAI, Shenandoah, Ia. W. H. Gass.

WGAK, Macon, Ga. Macon Elec. Co.

WGAL, Lancaster, Pa. 35 mi. Lancaster Elec. Supply & Construction Co. Mon, Wed, Fri, 7-8 pm, concert, lecture. Sun, 3-3:30 pm, church service. Eastern.

WGAM, Orangeburg, S. C. 150 mi. Orangeburg Radio Equipment Co. Daily ex Sun, 10 am, markets, weather; 11:55, time; 4 pm, Radio talk, markets, baseball; 6, music, lecture; 10, time, weather, entertainment. Sun, 11 am, church service; 11:55, time; 10 pm, time, weather, music. Eastern.

WGAN, Pensacola, Fla. Cecil E. Lloyd.

WGAP, Shreveport, La. 500 mi. Glenwood Radio Corp. Daily ex Sun, 8 pm, music. Sun, 11 am, 7:30 pm, church service. Central.

WGAR, Ft. Smith, Ark. 200 mi. Southwest American. Daily ex Sun, 12-12:30 pm, music; 12:30-1:20, news; 8-9, music, news. Sun, 3-5 pm, 8-9 pm, music. Central.

- WGAS**, Chicago, Ill. 4,000 m. Ray-di-co Organization. Inc. Daily ex Sunday, 9-9:20 am, 11:15-11:30, 1:30-1:45, 2:45-3, 5-6, music. 12:15-12:30 pm, 4-4:15, 4:30-4:45, reports. Wed, Fri, 10-11 pm, music. Central.
- WGAT**, Lincoln, Nebr. 100 m. Am. Legion, Dept. of Nebr. Mon, Wed, 9 pm, announcements. Fri, 9-10 pm, patriotic program, concert. Sun, 3-5 pm, sermon. Central.
- WGAU**, Wooster, O. Marcus G. Limb.
- WGAV**, Savannah, Ga. B-H Radio Co.
- WGAW**, Altoona, Pa. Ernest C. Albright.
- WGAX**, Washington C. H., O. 75 m. Radio Elec. Co. Daily ex Sun, 9 am, 2 pm, music, news. Mon, Wed, Fri, 9:30 pm, concert, news. Sun, 10:30 pm, sermon. Central.
- WGAY**, Madison, Wis. 100 m. North Western Radio Co. Daily ex Sun, 9-10 am, financial news; 11:30, news, opening markets; 4 pm, news, closing markets. Mon, Wed, Thurs, Sat, 7:30-8:30 pm, concert. Sun, 10:30-12 am, sermon. Central.
- WGAZ**, South Bend, Ind. 200 m. South Bend Tribunes. Daily ex Sunday, 9-9:30 am, household hints; menus; 2-3 pm, music, 7-8 pm, music. Central.
- WGF**, Des Moines, Ia. Register & Tribunes.
- WGI**, Medford Hillside, Mass. 485 also 500 m. Am-Radio & Research Corp. Daily ex Sun, 2:55 pm, music; 3, news; 7:30, sports, news; 7:45 pm, police reports. On Tues and Thurs, 7:30 and 7:45 pm, programs at 7:45 and 7:55 pm, respectively. Sun, 8 pm, church service; 8:45 am, sacred concert. Special features week nights, 7:30-9 pm. Eastern.
- WGL**, Philadelphia, Pa. 2,000 m. Thos. F. J. Howlett. Tues, Thurs, Sat, 7:45-11:30 pm, concert. Eastern.
- WGR**, Buffalo, N. Y. 485 also 300 m. Federal Tel. & Tel. Co. Daily ex Sat and Sun, 12:15 pm, weather, agriograms; 2, music; 3, lecture; 4, music; 5:30, reports; 7:30, bedtime stories; 8:10, concert. Eastern.
- WGV**, New Orleans, La. Interstate Elec. Co.
- WGW**, Schenectady, N. Y. 400 and 485 only. 1,500 m. General Electric Co. Daily ex Sat and Sun, 11:55-12 am, time signals; 12:30 pm, stock markets; 12:40, music; 12:45, weather; 2-2:30, music, features for women; 6:08, produce markets; 6:15, stock markets; 6:20, late news; 7:45-8:45, concert. Fri, in addition, 6:30 pm, child story; 7:40, health talk; 10:30-11:30, musical program. Sat, 12:30, stock markets. Eastern.
- WHA**, Madison, Wis. 485 m. Univ. of Wis. Daily ex Sun, 12:30-1 pm, weather, markets. Tues, Thurs, Fri, 12-1 pm, weather, markets, time. Tues, 8-9 pm, concert. Fri, 8-9:15 pm, news, concert. Sat, 1-1:20 pm, instruction. Central.
- WHAA**, Iowa City, Ia. 200 m. State Univ. of Ia. Daily ex Sun, 8-8:30 pm, lecture, concert, sports, news. Sun, 10:45-12 am, church service. Central.
- WHAB**, Galveston, Tex. 800, 485, 600 also 500 m. Clark W. Thompson Co. Daily ex Sun, 9:45-10:15 am, 3 pm, 5 pm, reports, music, news. Mon, Wed, Fri, 8 pm, entertainment. Sun, 10 am, church service. Central.
- WHAC**, Waterloo, Ia. 150 m. Cole Bros. Elec. Co. Daily ex Sun, 6:45 pm, news, sports. Mon, Wed, Fri, 9:30 pm, concert. Central.
- WHAD**, Milwaukee, Wis. Marquette Univ.
- WHAE**, Sioux City, Ia. 200 m. Automotive Elec. Service Co. Daily ex Sun, 12:30-5:30 pm, music, reports. Thur, 7:30 pm, music. Central.
- WHAF**, Pittsburgh, Pa. 200 m. Radio Elec. Co. Daily ex Sun, 11:30-12 m, 3-3:30 pm, music, news, Sun, 9-10, music. Eastern.
- WHAG**, Cincinnati, O. 100 m. Univ. of Cincinnati. No definite schedule.
- WHAH**, Joplin, Mo. John T. Griffin.
- WHAI**, Davenport, Ia. 30 m. Radio Equip. & Mfg. Co. Daily ex Sat and Sun, 2-2:30 pm, 4:30-5:30, 10-11, Sat, 10-11 am, 2-2:30 pm, 5-5:30, 11-11:30. Central.
- WHAJ**, Bluefield, W. Va. 200 m. Daily Telegraph. Daily, 5-5:30 pm, sports. Mon, Thurs, 7:45-9 pm, concert, lecture. Sun, 11 am, 7:30 pm, church service. Eastern.
- WHAK**, Clarksburg, W. Va. Roberts Hardware Co.
- WHAL**, Lansing, Mich. 100 m. Jefferys & Derby. Daily ex Sun, 9:15-9:45 am, 12:30-1 pm, 2:45-3:15, music, reports; 7:30-8:30 pm, concert. Sun, 2:30-3:30 pm, church service. Central.
- WHAM**, Rochester, N. Y. Univ. of Rochester.
- WHAN**, Wichita, Kans. Northwestern Radio Co.
- WHAO**, Savannah, Ga. 100 m. Frederick A. Hill. Daily, 9:30-10 pm. Eastern.
- WHAP**, Decatur, Ill. 100 m. Dewey L. Otta. No definite schedule.
- WHAQ**, Washington, D. C. 75 m. Semmes Motor Co. Mon, 7-8 pm, lecture on automobile upkeep, music. Eastern.
- WHAR**, Atlantic City, N. J. Paramount Radio & Elec. Co.
- WHAS**, Louisville, Ky. Courier-Journal & Louisville Times.
- WHAT**, Yale, Okla. Yale Democrat (Yale Telephone Co.)
- WHAU**, Cokith, Mass. Corinth Radio Supply Co.
- WHAV**, Wilmington, Del. 200 m. Wilmington Elec. Spec. Co. Daily ex Sun, 12-1 pm, music. Mon, Wed, Fri, 6-8 pm, concert. Tues, Thur, Sat, 6-7 pm, music. Eastern.
- WHAW**, Tampa, Fla. 50 m. Pierce Elec. Co. Daily ex Sat, Sun, 12-1 pm, 4-5 music, agriograms. Sat, 12-1 pm, 8-10 music, entertainment. Eastern.
- WHAX**, Holyoke, Mass. Holyoke Street Ry. Co.
- WHAY**, Huntington, Ind. 75 m. Huntington Pub. Co. Daily ex Sun, 12 m, 3 pm, music; 1:35 pm, 6, reports, sports. Mon, Wed, Sat, 8 pm, concert. Central.
- WHAZ**, Troy, N. Y. 400 only. 500 m. Rensselaer Polytechnic Inst. Mon, 8:15-9:30 pm, music. Eastern.
- WHB**, Kansas City, Mo. 485 also 1,000 m. Sweeney Auto & Tractor School. Daily, 10 am, 3 pm, 5, weather. Daily ex Sun, 2 pm, ladies' hour; 7, bedtime stories. Tues, Thurs, Sun, 8-10 pm, concert. Central.
- WHD**, Morgantown, W. Va. 100 m. W. Va. University. Daily, 4-6, 7-7:30, news, etc. Eastern.

- WHK**, Cleveland, O. 300 mi. Warren R. Cox. Daily ex Sun, 1:30-2 pm, 4-4:30, 6-6:30. Tues, Thur, Sun, 8-8:30 pm. Concert. Eastern.
- WHN**, Ridgewood, N. Y. Times Printing & Pub. Co.
- WHU**, Toledo, O. Wm. B. Duck Co.
- WHW**, East Lansing, Mich. 485 only. 150 mi. Stuart Hm. Seeley. Daily ex Sun, 11:30 am and 12:30 pm, weather and markets. Eastern.
- WHX**, Des Moines, Ia. Ia. Radio Corp.
- WIAA**, Waupaca, Wis. Waupaca Civic & Commerce Assn.
- WIAB**, Rockford, Ill. 50 mi. Joslyn Automobile Co. Tues, Fri, 8:30-9:30 pm, music. Central.
- WIAC**, Galveston, Tex. 485 also. 100 mi. Galveston Tribune. Tues, Thurs, Sat, 7 pm on, bedtime story, evening prayer, concert. Central.
- WIAD**, Ocean City, N. J. 200 mi. Ocean City Yacht Club. Fri, Sat, Sun, 8-12 pm. Eastern.
- WIAE**, Vinton, Ia. 75 mi. Zimmerman Radio Co. Tues, Thurs, Sat, 9 pm, music, news; Wed, 8 pm, band concert. Sun, 2:30 pm, music. Central.
- WIAF**, New Orleans, La. 300 mi. Nola Radio Co. Sun, 10-11 am, music, lecture. Central.
- WIAG**, Birmingham, Ala. Natheus Elec. Supply Co.
- WIAH**, Newton, Ia. 200 mi. Continental Radio & Mfg. Co. Daily 12:30-1 pm, music, news. Mon, 7:30-8 pm. Central.
- WIAL**, Springfield, Mo. 100 mi. Heer Stores Co. Daily ex Sun, 10:30-11, reports, news. Tues, Thur, Sat, 7:30-8:3 pm, music. Central.
- WAIJ**, Neenah, Wis. Fox River Valley Radio Supply Co.
- WIAK**, Omaha, Neb. 485 also. 30 mi. Daily Journal-Stockman. Daily ex Sun, 7:45 am, 9:10, 10:15, 12 m, 1:50 pm, 3:50, markets, weather. Central.
- WIAN**, Allentown, Pa. 400 mi. Chronicle-News. Schedule irregular.
- WIAO**, Milwaukee, Wis. School of Engineering of Milwaukee. (News.)
- WIAP**, Springfield, Mass. Radio Development Corp.
- WIAQ**, Marion, Ind. Chronicle Pub. Co. Central.
- WIAR**, Paducah, Ky. 150 mi. J. A. Rudy & Sons. Daily ex Sun, 11-12 am, markets, weather, news, music; 4-5 pm, same and sports; 7:30-9, concert, lectures, etc. Sun, 11-12 am, church service. Central.
- WIAS**, Burlington, Ia. 400 mi. Hawk-Eye Home Elec. Co. Tues, Thurs, 8-9 pm, concert. Central.
- WIAT**, Tarkin, Mo. Leon T. Noel.
- WIAU**, Le Mars, Io. Am. Trust & Savings Bank.
- WIAV**, Binghampton, N. Y. N. Y. Radio Lab.
- WIAW**, Saginaw, Mich. Saginaw Radio & Elec. Co.
- WIAX**, Lincoln, Neb. 200 mi. Capital Radio Co. Thur, 8 pm, music, entertainment. Sun, 2:30 pm, 8, 9, church service. Central.
- WIAY**, Washington, D. C. 200 mi. Woodword & Lothrop. Daily ex Sun, 10:30-11:30 am, 2-3 pm, music. Sat, 8-10 pm, concert. Eastern.
- WIK**, McKeesport, Pa. 500 mi. K. & L. Elec. Co. Daily ex Sun, 6:30-7 pm, Tues, Thurs, 9:30-10:30 pm. Sun, 1:30-2:30 pm and 6:30-7 pm. Eastern.
- WIL**, Washington, D. C. Continental Elec. Supply Co.
- WIP**, Philadelphia, Pa. 500 mi. Gimbel Bros. Daily ex Sun, 2:30-3:30 pm. Mon, Wed, Thurs, 7-7:30 pm. Tues, Fri, Sat, 7-12 pm. Sun, am, pm, church service.
- WIZ**, Cincinnati, O. 485 also. 200 mi. Cino Radio Mfg. Co. Daily ex Sun, 12 m, 3:30 pm, 7-8, reports, entertainment. Central.
- WJAB**, Lincoln, Neb. Am. Radio Co.
- WJAC**, University Place, Nebr. 485 also. 150 mi. Nebr. Wesleyan Univ. Daily ex Sat and Sun, 12 m, weather; 4 pm, markets. Sat, 12 m, markets, weather. Tues, Thurs, 9:30 pm, concert. Central.
- WJAD**, Waco, Tex. 485 also. 500 mi. Jackson's Radio Engrng. Lab. Daily ex Sun, 12:30-1 pm, markets, news, music; 3:30-4, news, music; 6-6:15, sports; 8:15-9:45, concert, news. Sun, 11-12 am, church service; 3:30-4 pm, music; 6-6:15, sports; 8:45-9:45, music. Central.
- WJAE**, San Antonio, Tex. 500 mi. Texas Radio Syndicate. Mon, Thurs, Fri, Sat, 7:30-8:30 pm, music, news. Tues, 9:30-10:30 pm, music, news. Central.
- WJAF**, Muncie, Ind. Muncie Press.
- WJAG**, Norfolk, Neb. 485 also. 150 mi. Norfolk Daily News. Daily ex Sun, 10:30 am, 12:15 pm, 3:30, 5:30, reports. Central.
- WJAH**, Rockford, Ill. Central Park Amusement Co.
- WJAJ**, Dayton, O. Y. M. C. A.
- WJAK**, Stockdale, O. 485 also. 250 mi. White Radio Lab. Daily ex Sun, 10:30-10:50 am, music; 11:05-11:20, reports, news; 6-6:30, music, news. Wed, 8-9 pm, concert Sun, 2-2:45 pm, church service. Central.
- WJAL**, Portland, Me. Victor Radio Corp.
- WJAM**, Cedar Rapids, Ia. 100 mi. Evening Gazette. Daily, 7-8 pm, music, local program. Central.
- WJAN**, Peoria, Ill. 300 mi. Peoria Star and Peoria Radio Sales Co. Daily ex Sun, 11:30 am, markets, weather; 1:30 pm, closing markets, ariograms, bond news; 6:15, sports. Tues, Thurs, Sat, 9:15-9:45 pm, concert. Central.
- WJAP**, Duluth, Minn. 200 mi. Kelley Duluth Co. Daily ex Sun, 8-9:30 pm, concert. Sun, 11-12 am, pipe organ; 12:20-12:45 pm, church service. Central.
- WJAQ**, Topeka, Kans. Capper Publications.
- WJAR**, Providence, R. I. The Outlet Co.
- WJAS**, Pittsburgh, Pa. Pittsburgh Radio Supply House.
- WJAT**, Marshall, Mo. 100 mi. Kelley-Vawter Jewelry Co. Daily ex Sun, 2-2:30 pm, 5:35-6, concert. Central.
- WJAX**, Cleveland, O. 485 also. 500 mi. Union Trust Co. Daily ex Sat pm, Sun, 9-9:45 am, 10-10:45, 2-2:45 pm, 3-3:45, music, financial reports, news. Eastern.
- WJAZ**, Chicago, Ill. Chicago Radio Lab.
- WJD**, Granville, O. 100 mi. Dennison University. Daily 5-6 pm, concert, lecture. Central.
- WJH**, Washington, D. C. 100 mi. White & Boyer Co. Daily ex Sun, 1-2 pm, music. Tues, 7:45-10 pm, music. Eastern.

- WJK**, Toledo, O. 300 mi. Service Radio Equipment Co. Daily ex Sun, 3-4 pm, concert. Mon, Wed, Fri, 7:30-9 pm, concert, lecture, etc. Sun, 7:30-9 pm, church service, concert. Eastern.
- WJT**, Erie, Penna. 1,000 mi. Elec. Equipment Co. Daily ex Sun, 7:30 pm, sports, markets weather, police reports. Mon, Wed, Fri, 8, bedtime stories; 8:15, concert, lecture. Sun, 7:45 pm, church service. Eastern, daylight savings.
- WJX**, New York, N. Y. De Forest Radio Telephone & Telegraph Co.
- WJZ**, Newark, N. J. 1,500 mi. Westinghouse Elec. & Mfg. Co. Daily ex Sun, 15 minutes hourly from 9 am to 6 pm; 12-12:30 pm; 7-10-15 pm. Miscellaneous program of highly varied nature. Sun, 3-10-15 pm, misc. Eastern.
- WKA**, Cedar Rapids, Ia. 200, 485 also. 200 mi. H. F. Paar. Daily ex Sun, 12-15 pm, reports; 5:30, reports, agricultural; 6-7, music. Thurs, 11-12 pm, music. Sun, 4-5 pm, church service. Central.
- WKAC**, Lincoln, Neb. 400 mi. Star Pub. Co. Tues, Fri, 8-9:30 pm, concert, entertainment. Central.
- WKAD**, East Providence, R. I. Charles Looff.
- WKAF**, Wichita Falls, Tex. W. S. Radio Supply Co.
- WKAG**, Louisville, Ky. Edwin T. Bruce.
- WKAH**, West Palm Beach, Fla. Planet Radio Co.
- WKAJ**, Fargo, N. D. 150 mi. Fargo Plumbing & Heating Co. Daily ex Sun, 5-5:45 pm, concert, sports. Central.
- WKAK**, Okemah, Okla. Okfuskee County News.
- WKAL**, Orange, Tex. Gray & Gray.
- WKAM**, Hastings, Neb. Daily Tribune.
- WKAN**, Montgomery, Ala. 200 mi. Alabama Radio Mfg. Co. Daily ex Sun, 3:30 pm, 8:30, music, news. Eastern.
- WKAP**, Granston, R. I. Wilcox Flint.
- WKAQ**, San Juan, Porto Rico. Radio Corp. of Porto Rico.
- WKR**, East Lansing, Mich. Mich. Agr. College.
- WKAS**, Springfield, Mo. 100 mi. L. E. Lines Music Co. Daily ex Sun, 6:30-7 pm, sports. Mon, Fri, Sat, 8-9:15 pm, music. Central.
- WKAT**, Frankfort, Ind. Morning Times.
- WKAV**, Laconia, N. H. Laconia Radio Club.
- WKAW**, Beloit, Wis. 100 mi. L. M. Turner. Daily 12-12:15 pm, 7-7:30, concert. Central.
- WKAX**, Bridgeport, Conn. 75 mi. Wm. A. Macfarlane.
- WKAY**, Gainesville, Ga. Brenau College.
- WKAZ**, Wilkes-Barre, Pa. 100 mi. Landrau's Music Co. No definite schedule. Sat, 8-12 pm, dance music. Sun, 11 am, 8 pm, church service. Eastern.
- WKC**, Baltimore, Md. 500 mi. Jos. M. Zamoiski Co. Tues, Thurs, Sat, 7:30-9:30 pm. Eastern, daylight saving.
- WKN**, Memphis, Tenn. Riechman-Crosby Co.
- WKY**, Oklahoma City, Okla. 485 also. 500 mi. Oklahoma Radio Shop. (Daily Oklahoman.) Daily, 12 m, weather; 7-7:30 pm, sports, specialties; 8:30-9:30, concert; WLAB, Carrollton, Mo. George F. Grossman.
- WLAC**, Raleigh, N. C. N. C. State College.
- WAD**, Hastings, Nebr. 150 mi. Arvanette Radio Supply Co. Program not established.
- WLA**, Lincoln, Neb. Johnson Radio Co.
- WLAG**, Minneapolis, Minn. 1,000 mi. Cutting & Wash. Radio Corp. Daily ex Sun, 9:30-12 am, music, market reports; 1:30-3 pm, music, farm news, styles; 3:30-4:45, markets, music; 6-7:30, farm news, children's hour. Thur, Fri, Sat, 8-9:30 pm, concert. Sun, 4:30-5:30 pm, church services. Central.
- WLAH**, Syracuse, N. Y. Samuel Woodworth.
- WLAJ**, Waco, Tex. 485 also. 1,000 mi. Waco Elec. Supply Co. Daily ex Sun, 9:30 am, 10:30, 2:30 pm, music, reports. Tues, Thur, Sat, 7:45-8:45 pm, music. Sun, 3 pm, church service.
- WLAK**, Bellows Falls, Vt. Vermont Farm Machine Co.
- WLAL**, Tulsa Radio Co. Tulsa, Okla.
- WLAM**, Springfield, O. 100 mi. Morrow Radio Co. Mon, Wed, Fri, 8-9:30 pm, dance music. Central.
- WLAN**, Houston, Me. Putnam Hdwe. Co.
- WLAO**, Scranton, Pa. Anthracite Radio Corp.
- WLAP**, Louisville, Ky. W. V. Jordan.
- WLAR**, Kalamazoo, Mich. 100 mi. A. E. Schilling. Daily, 10-12 pm, music. Central.
- WLAR**, Marshalltown, Ia. 50 mi. Melkel Music Co. No definite schedule.
- WLAS**, Hutchinson, Kan.
- WLAT**, Burlington, Ia. Chas. G. Bosch Co.
- WLAV**, Pensacola, Fla. 200 mi. Elec. Shop, Inc. Daily ex Sun, 8-9 pm, music, entertainment. Central.
- WLAW**, New York, N. Y. New York Police Dept.
- WLAX**, Greencastle, Ind.
- WLAY**, Fairbanks, Alaska. Northern Commercial Co.
- WLAZ**, Warren, O. Hutton & Jones Elec. Co.
- WLB**, Minneapolis, Minn. Univ. of Minn. 100 mi. Daily ex Sun, 12-12:30 pm, 7:30-7:50. Central.
- WLK**, Indianapolis, Ind. 485 also. 500 mi. Hamilton Mfg. Co. Daily ex Sun, 11-11:30 am, 12-12:30 pm, 2-2:30, 3-3:30, 5-5:30, reports. Tues, Thur, 8:30-10 pm, concert. Sun, 2-4 pm, 8:30-10. Central.
- WLW**, Cincinnati, O. 485 also. 500 mi. Crosley Mfg. Co. Daily ex Sun, 10 am-3 pm, music, reports. Tues, Thur, Fri, 8-10:30 pm, music, news. Sun, 11 am, church service. Central.
- WMA**, Anderson, Ind. 25 mi. Arrow Radio Lab. Mon, Wed, Fri, 7:30-8:30 pm, concert, news, etc. Central.
- WMB**, Oklahoma City, Okla. 500 mi. Radio Supply Co. Daily ex Sun, 9:30-10:30 pm, music. Fri, 11:30-12:30 pm. Central.
- WMC**, Cazenovia, N. Y. 330, 250, 275 only. 500 mi. C. B. Meredith. No definite schedule.
- WMAF**, Dartmouth, Mass. Round Hills Radio Corp.
- WMAF**, Liberal, Kan. 75 mi. Tucker Elec. Co. Daily ex Fri, Sun, 7:30-8:30 pm, music, news. Fri, 8-9 pm, concert. Central.
- WMAH**, Lincoln, Neb. 100 mi. General Supply Co. Daily ex Sun, 2:15 pm, 2:30, music, news. Mon, Wed, Thur, 7:30 pm, music. Sun, 2:30, music, news. Central.

- WMAJ**, Kansas City, Mo. 485 also. 600 mi. Dally Droy
Telegram. Dally ex Sun, 8:15 am, 9:15, 10:15, 11:15, 12:15
pm, 2:30, weather, markets. Central.
- WMAK**, Lockport, N. Y. Norton Labs.
- WMAL**, Trenton, N. J. Trenton Hdwr. Co.
- WMAM**, Beaumont, Tex. Beaumont Radio Equipment Co.
- WMAN**, Columbia, O.
- WMAP**, Easton, Pa. Utility Battery Service.
- WMAQ**, Chicago, Ill. 1,500 mi. Chicago Daily News. Dally,
7-7:30 pm, 9:30-10. Central.
- WMAR**, Waterloo, Ia. Waterloo Elec. Supply Co.
- WMAT**, Duluth, Minn. Paramount Radio Corp.
- WMAU**, Shreveport, La. La. State Fair Assn.
- WMAV**, Auburn, Ala. Ala. Polytechnic Inst.
- WMAX**, Ann Arbor, Mich.
- WMAW**, St. Louis, Mo.
- WMAW**, Wahpeton, N. D.
- WMB**, Auburn, Me. Auburn Elec. Co.
- WMC**, Youngstown, O. 500 mi. Columbia Radio Co. Mon,
Wed, Fri, Sat, 8:30-9:45 pm, concert, address, etc.
Eastern.
- WMH**, Cincinnati, O. 485 only. 500 mi. Precision Equip-
ment Co. Dally ex Sun, 11 am, 4 pm, reports. Mon,
Wed, Sat, 8:15 pm, entertainment. Central.
- WMU**, Washington, D. C. 100 mi. Doubleday-Hill Elec.
Co. Dally, 4:30 pm, concert, sports. Thurs, 8-9, concert.
Eastern.
- WNAB**, Bowling Green, Ky. Park City Daily News.
- WNAC**, Boston, Mass. 200 mi. Shepard Stores. Dally ex
Sun, 4-5 pm, dance music. Mon, Tues, Thur, 10-11 pm,
concert. Wed, Fri, Sat, 7-8 pm, 8-9, concert. Sun, 11-12
am, 6:30-8:30 pm, church service. Eastern.
- WNAD**, Rockport, Mo. Atkinson County Mall.
- WNAF**, Enid, Okla. Enid Radio Distributing Co.
- WNAG**, Cresco, Ia. Rathbert Radio & Elec. Co.
- WNAJ**, Chicago, Ill.
- WNAL**, Omaha, Neb. R. J. Rockwell.
- WNAP**, Springfield, O. Wittenberg College.
- WNAT**, Philadelphia, Pa. Fennig Bros., 9th-Spring Garden.
- WIAZ**, M'ama, Fla. Flagler St., Elec. Supply Sales Co.
- WNJ**, Albany, N. Y. 60 mi. Shotton Radio Mfg. Co. Mon,
Wed, Sat, 8-9:30 pm, music, entertainment. Eastern,
daylight saving.
- WNO**, Jersey City, N. J. Wireless Telephone Co. of Hudson
Co., N. J.
- WOA**, Ardmore, Okla. Dr. Walter Hardy.
- WOAE**, Fremont, Nebr. Medland College.
- WOAI**, San Antonio, Tex. 485 also. 1,000 mi. Southern
Equip. Co. Dally ex Sun, 10:30 am, 12:15 pm, 3, 6,
news, markets. Wed, 7:30-8:30 pm, concert. Sun, 7-8:30
pm, concert. Central.
- WOAY**, Erie, Pa.
- WOC**, Davenport, Ia. 485, 450 also. 500 mi. Palmer
School of Chiropractic. Dally ex Sun, 10:55 am, time;
11, weather; 12 m, chimes; 1:30 pm, markets; 3:30, talk;
5:45, chimes; 6:30, sports; 7, concert. Sun, 9 am,
chimes; 1 pm, 6, concert; 7, church service; 8, concert.
Central.
- WOH**, Indianapolis, Ind. 1,000 mi. Hatfield Elec. Co.
(Indianapolis Star.) Dally ex Sun, 10-11 am, music; 10:15,
financial, markets; 1-2 pm, music; 1:20, markets; 4-5
pm, music; 4:15, police notes; 4:50, sports. Mon, Wed,
Sat, 8:30-10 pm, concert. Central.
- WOI**, Ames, Ia. 485 also. 200 mi. Iowa State Collegè.
Daly ex Sun, 9:30 am, 12:45 pm, 9:30, music, weather.
- WOK**, Pine Bluff, Ark. 485 also. 500 mi. Ark. Light &
Power Co. Tues, Fri, 8-9:30 pm, concert. Sun, 10-12
am, 7-9 pm, church service. Central.
- WOO**, Philadelphia, Pa. John Wanamaker.
- WOQ**, Kansas City, Mo. 485 also. 300 mi. Western Radio
Co. Dally ex Sun, every half hour 9:30-1:15 pm, markets;
11:30 am, 2 pm, 30, markets, weather, road conditions;
7:45-9, concert, vaudeville. Sun, 7 pm, church service.
Central.
- WOR**, Newark, N. J. 400 only. 150 mi. L. Bamberger &
Co. Dally ex Sun, 20 minutes on half hour from 10:30
am to 6:30 pm, miscellaneous. Eastern, daylight saving.
- WOS**, Jefferson City, Mo. 485 also. 1,500 mi. Mo. State
Marketing Bureau. Dally ex Sun, 9:30 am, 11:30, 2 pm,
weather, markets. Mon, Wed, Fri, 5 pm, markets, 8-9
pm, concert. Central.
- WOV**, Omaha, Neb. R. B. Howell.
- WOU**, Omaha, Neb. Metropolitan Utilities Dist.
- WOZ**, Richmond, Ind. 485 also. 300 mi. Palladium Print-
ing Co. Dally ex Sun, 12-12:25 pm, 4-5, 6:30-7, music,
markets. Central.
- WPA**, Fort Worth, Tex. 485 also. 500 mi. Fort Worth
Record. Dally ex Sun, 11:30 am, 2:30-3 pm, 6-6:15, 7:15-
7:30; 9-9:30, Sun, 3:30 pm, 6:30. Central.
- WPAA**, Waco, Ky.
- WPAN**, Houston, Tex. 300, 600 also. 50 mi. Levy Bros.
Dry Goods Co. Dally ex Sun, 10:30-11 am, fashion talks,
beauty hints. Central.
- WPE**, Kansas City, Mo. 300 mi. Central Radio Co. Mon,
Fri, Sun, 4:45 pm, 30, concert. Sun, 8:15 pm, sermonette.
Dally, afternoon, sports, scores. Central.
- WPG**, New Lebanon, O. R.R. No. 2, Nushawg Poultry
Farm.
- WPI**, Clearfield, Pa. Elec. Supply Co.
- WPJ**, Philadelphia, Pa. 30 mi. St. Joseph's College. Dally
ex Sun, 2:30 pm, 8:30, sports, news. Sun, 10:45-12 noon,
7:45-8:30 pm, church service. Eastern.
- WPL**, Zanesville, O. Fergus Elec. Co.
- WPM**, Washington, D. C. 200 mi. Thos. J. Williams, Inc.
(Washington Daily News.) Dally ex Sun, 12:30 pm, news.
Mon, 8 pm, concert. Eastern.
- WPO**, Memphis, Tenn. 100 m'. United Equip. Co. Dally,
7:15-8:15 pm, music. Central.
- WQAQ**, Abilene, Tex. West Tex. Radió Co.
- WQX**, Chicago, Ill. Riverview Park, Walter A. Kuehl.

- WRAU, Amarillo, Tex. Daily News.
 WRK, Hamilton, O. 1,000 mi. Doron Bros. Elec.
 Tues, Thur, 9:10-30 pm, music, lecture. Sun, 10:30 am,
 church service. Central.
- WRL, Schenectady, N. Y. 200 mi. Union College. Sun,
 7:30 pm, sacred concert, speeches, etc. Irregular miscella-
 neous weekday program. Eastern.
- WRM, Urbana, Ill. 410 also. 300 mi. Univ. of Ill.
 Mon, Thur, 8:30-8:50 pm, 9-9:30, news, talks, music.
 Central.
- WRP, Camden, N. J. 250 mi. Federal Inst. of Radio Telg.
 Daily ex Sat, Sun, 10-10:45 pm, music, news, agri-
 grams. Eastern.
- WRR, Dallas, Tex. 485 also. 200 mi. City of Dallas.
 Daily ex Sun, 12-12:30 pm, weather; 3-3:30, sports,
 markets, news; 7-7:15, police news; 8:30-9, music. Sun,
 11 am, church service; 7-8 pm, police news, church ser-
 vice. Central.
- WRW, Tarrytown, N. Y. 1,500 mi. Tarrytown Radio Re-
 search Lab. Tues, Thurs, Sat, 10:05 pm. Sun, 10:30
 am, 2 pm, 10:05. Eastern.
- WSB, Atlanta, Ga. 485 also. 1,000 mi. Atlanta Journal.
 Daily ex Sun, 12-1 pm, concert for industrial employees;
 2:30, weather, markets; 4-4:30, theater concert; 4:30,
 markets; 5-6, sports, markets, music, bedtime stories;
 7-8, concert, etc.; 10:45-11:15, music. Sun, 11 am,
 5 pm, church service. Central.
- WSL, Utica, N. Y. 500 mi. J. & M. Elec. Co. Daily
 ex Sat, Sun, 11-11:30 am, 2-2:30 pm, 3-3:30, 4-4:30,
 5-5:30, music, news. Mon, Wed, 8-9 pm. Sat, 11-11:30
 am. 5-6 pm, 8-9. Sun, 10:30-12 am, 7:30-9 pm. Eastern.
- WSN, Norfolk, Va. 100 mi. Shipowners Radio Service, Inc.
 Mon, Wed, Sat, 8:15-9:30 pm, concert. Eastern.
- WSV, Little Rock, Ark. L. M. Hunter & G. L. Carrington.
 WSX, Erie, Pa. 5 mi. Erie Radio Co. Tues, Thurs, Sat,
 10-10:55 pm, news, concert, lecture. Sun, 12:15-1:30 pm,
 sermon. Eastern.
- WSY, Birmingham, Ala. 500 mi. Alabama Power Co. Mon,
 Wed, Fri, 3-3:30 pm, 8-8:45, reports, concert. Sun, 8-9
 pm, church service. Central.
- WSAV, Houston, Tex.
 WTAW, College Sta., Tex.
 WTG, Manhattan, Kan. 485 only. 75 mi. Kan. State Agr.
 College. Daily ex Sun, 9:55 am, weather (code). Central.
 WTK, Paris, Tex. 300 mi. Paris Radio Elec. Co. Daily
 ex Sun, 10 am to 5 pm, 7-11 pm, miscellaneous. Sun,
 11 am to 8 pm. Central.
- WTP, Bay City, Mich. 5 mi. Ra-Do Corp. Mon, Wed,
 Fri, 1:30-2 pm, reports, news; 6:30-7:30 pm, concert.
 Central.
- WVP, New York, N. Y.
 WWB, Canton, O. Daily News Printing Co.
 WWI, Dearborn, Mich. 200 mi. Ford Motor Co. Wed,
 10-11 pm, music, lectures. Eastern.
- Detroit, Mich. 400 and 485 only. 1,000 mi. De-
 News. Daily ex Sun, 9:30-10:30 am, hints to house-
 wives, concert, weather; 10:55, time signals; 12:05-12:45
 pm, concert; 3:30-4:15, markets, weather; 5-6, news,
 sports. Week of July 10 and every other week, 7-8:30
 pm, concert, lecture. Fill in weeks, 8:30-10 pm, con-
 cert, lecture. Sun, July 9, wk., etc., 9:30 am-2:30 pm,
 church services and special; 4-6 pm, special. Sun, fill in
 wk., 2-4 pm, special; 6-10, church services and special.
 Eastern.
- WWL, New Orleans, La. Loyola Univ.
 WWT, Buffalo, N. Y. McCarthy Bros. & Ford.
 WWX, Washington, D. C. 1,160 only. 600 mi. Post
 Office Dept. Daily ex Sun, 10 am, weather; 10:30, mar-
 kets; 5 pm, 7:30, 8, markets; 9:50, weather. Eastern.
- WWZ, New York City, 200 mi. John Wanamaker. Daily
 ex Sun, 1:15-2:15 pm. Tues, Fri, 7:30-8:30 pm. Eastern.
- WYAZ, Miami, Fla.
 IXAD, Pant, R. I.
 2XL, New York City. A. T. & T. Co. Test call.
 3XW, Parkersburg, Pa. 378 only. 400 mi. Horace A. Beale,
 Jr. No definite schedule. Test station.
 3YN, Washington, D. C. 100 mi. Nat'l Radio Inst. Daily
 ex Sun, 6:30-7:30 concert practice, lecture. Eastern.
 3XH, Cazenovia, N. Y. 275, 320, 220 only. C. B. Mere-
 dith. No definite schedule. Test station. Sometimes
 after 10 pm. Eastern.
- 9ARU, Louisville, Ky. 200 only. 200 mi. Darrell A. Down-
 ard. Mon, Wed, 8 pm, police news, concert. Central.
 10J, Pawtucket, R. I.
 4CB, Atlanta, Ga.
 2XJ, Deal Beach, N. J.
 9, weather, news. Sun, 3:30-4:30 pm, concert. Central.

Supplementary List

WWAD, Wright & Wright, Philadelphia, Pa.
WPAB, Penn State College, State College, Pa.
WOAT, Boyd, Martell, Hamp., Wilmington, Del.
WQAK, Appel-Highley Elec. Co., Dubuque, Ia.
WOAS, Bailey's Radio Co., Middletown, Conn.
WRAN, Black Hawk Electric Co., Waterloo, Ia.
WPAJ, Doolittle Radio Corp., New Haven, Conn.
KFDL, Knight-Campbell Co., Denver, Col.
KFDJ, Oregon Agri. College, Corvallis, Ore.
WQAB, Southwest Mo. State College, Springfield, Mo.
WOAU, Sowder-Bolling Co., Evansville, Ind.
WPAR, R. A. Ward, Beloit, Kan.
WOAX, Franklin J. Wolff, Trenton, N. J.
WQAL, Cole County Tel. and Tel. Co., Matoon, Ill.
WPAK, N. D. Agri. College, Fargo, N. D.
WPAT, St. Patrick's Cathedral, El Paso, Tex.
WPAH, Wis. Dept. of Markets, Waupaca, Wis.
WOAY, John W. Wilder, Birmingham, Ala.
KFDH, Univ. of Arizona, Tucson, Arizona.
WQAA, Horace A. Beale, Jr., Parksburg, Pa.
WQAP, American Radio Co., Lincoln, Neb.
KFGH, Stanford Univ., California.
KFBS, Trinidad, Colorado.
WMAZ, Macon, Ga.
WNAN, Syracuse, N. Y.
WPAS, J. A. M. Electric Co., Amsterdam, N. Y.
WPAS, J. & M. Electric Co., Amsterdam, N. Y.
WPAP, T. D. Phillips, Winchester, Ky.
WQAQ, Gen. Sales & Eng. Co., Frostburg, Md.
WPAU, Concordia College, Moorehead, Minn.
KFEP, Radio Equipment Co., Denver, Colo.
KFHJ, Fallon Co., Santa Barbara, Calif.
WOAP, Kalamazoo College, Kalamazoo, Mich.
KFEL, Winner Radio Corp., Denver, Colo.
KFFQ, Markshoffel Motor Co., Colorado Springs, Colo.
KFFJ, Jenkins Furniture Co., Boise, Idaho.
WQAE, Springfield, Vt.
WQAN, Scranton Times, Scranton, Pa.
WQAY, Gaston Co., Hastings, Neb.
WRAO, Radio Service Co., St. Louis, Mo.
WSAT, The Plainview Elec. Co., Plainview, Texas.
WNU, United Fruit Co., New Orleans, La.
KFEJ, Tacoma Radio News Service Co., Tacoma, Wash.
BEL, Third Signal Co., Camp Lewis, Tacoma, Wash.

List of Stations by States

State, City, Call
Alabama:
 Auburn, WMAV
 Birmingham, WIAG, WSY
 Mobile, WEAP
 Montgomery, WKAN
Arizona:
 Phoenix, KDYW, KFAD,
 KFBC
 Prescott, KFBQ
 Tucson, KDZA
Arkansas:
 Fort Smith, WCAC, WGAB
 Little Rock, WCAV,
 WEAH, WSV
 Pine Bluff, WOK
California:
 Altadena, KGO
 Bakersfield, KDZB, KYI
 Berkeley, KQI, KRE
 Del Monte, KLN
 El Monte, KUY
 Eureka, KNI
 Fresno, KDZH, KMJ
 Glendale, KFAC
 Hanford, KFBD
 Hollywood, KFAR
 Long Beach, KSS
 Los Altos, KLP
 Los Angeles, KDZD,
 KDZF, KDZP, KFI,
 KIL, KJC, KIS, KNN,
 KNY, KNX, KOG, KON,
 KUS, KWH, KXS, KYJ
 Modesto, KXD
 Oakland, KFBN, KLS,
 KIX, KZM
 Pasadena, KDYR, KLB
 Pomona, KGF
 Reedley, KMC
 Sacramento, KFBK, KVQ
 San Diego, KDPT, KDYM,
 KDYO, KFBC, KYF
 San Francisco, AGI, KDXN,
 KDZG, KDZW, KDZX,
 KFDB, KPO, KSL, KUO,
 KZY
 San Jose, KFAQ, KQW
 San Lu's Obispo, KFBE
 Santa Ana, KFAW
 Stockton, KIQ, KWG
 Sunnyvale, KJJ
 Taft, KFEB
 Venice, KFAV
Colorado:
 Boulder, KFAJ
 Colorado Springs, KFBV,
 KHD
 Denver, DD5, DN4,
 KDZQ, KFAP, KLZ
Connecticut:
 Bridgeport, WKAX
 Greenwich, WAAQ
 Hartford, WDAK
 New Haven, WCJ, WGAE
Delaware:
 Wilmington, WHAV
District of Columbia:
 Anacostia, NOF
 Washington, WDM,
 WEAS, WHAQ, WIL,
 WIAY, WJH, WUMU,
 WPN, WWX, 3YN
Florida:
 Jacksonville, WCAN,
 WDAL
 Miami, WFAW, WYAZ
 Pensacola, WGAN, WLAV
 Tampa, WDAE, WEAT,
 WHAV
 West Palm Beach, WKAE
Georgia:
 Atlanta, WAAS, WDAW,
 WSB, 4CD
 College Park, WDAJ
 Gainesville, WKAY
 Savannah, WHAO
Idaho:
 Boise, KFAU, KFBJ,
 KFFD
 Lewiston, KFBA
 Moscow, KFAN
 Wallace, KFCC
Illinois:
 Chicago, KYW, WAAF,
 WBU, WDP, WGS,
 WJAZ, WMAQ, WNJ,
 WQX
 Decatur, WBAO, WCAP,
 WHAP
 Peoria, WBAE, WFAF,
 WTAN
 Quincy, WCAW, WCAZ
 Rockford, WIAB, WJAH
 Springfield, WDAC
 Tuscola, WDZ
 Urbana, WRM
Indiana:
 Anderson, WMA
 Fort Wayne, WFAS
 Frankfort, WKAT
 Greencastle, WLAX
 Huntington, WHAY
 Indianapolis, WLK, WOH
 Marion, WIAQ
 Muncie, WJAF

State, City, Call
Richmond, WOZ
South Bend, WBAQ, WGAZ
Terre Haute, WEAC
West Lafayette, WBAA
Iowa:
Ames, WOI
Burlington, WIAS, WLAT
Cedar Rapids, WJAM,
WKAA
Centerville, WDXA
Cresco, WNAQ
Davenport, WHAI, WOC
Des Moines, WGF, WHX
Fort Dodge, WEAB
Iowa City, WHAA
Le Mars, WIAU
Marshalltown, WLAR
Newton, WIAH
Shenandoah, WGAJ
Sioux City, WEAU, WHAE
Vinton, WIAE
Waterloo, WEAZ, WHAC,
WMAR
Kansas:
Anthony, WBL
Atwood, WEAD
Eldorado, WAH
Emporia, WAAZ
Hutchinson, WLAS
Independence, WFAY
Liberal, WMAG
Lindsborg, WDAZ
Manhattan, WNAH, WTG
Salina, WPAZ
Topeka, WJAQ
Wichita, WAAP, WEAH,
WEY, WHAN
Kentucky:
Bowling Green, WNAB
Louisville, WHAS, WKAG,
WLAP, GART
Paducah, WIAR
Waco, WPAZ
Louisiana:
New Orleans, WAAB,
WAAC, WBAM, WCAQ,
WGV, WIAF, WWL
Shreveport, WAAG,
WDAN, WGAQ, WMAU
Maine:
Auburn, WMB
Boulton, WLAN
Portland, WJAL
Sanford, WFAR
Maryland:
Baltimore, WCAO, WEAR,
WKC
Massachusetts:
Boston, WAAD, WFAU,

WNAO
Dartmouth, WMAF
Holyoke, WHAX
Medford Hillside, WGI
New Bedford, WDAU
Springfield, WBZ, WIAP
Worcester, WCN, WDAS
Michigan:
Ann Arbor, WMAX
Bay City, WTP
Dearborn, WWI
Detroit, KOP, WCX, WWJ
East Lansing, WEH,
WKAR
Flint, WAAA
Kalamazoo, WLAQ
Lansing, WHAL
Saginaw, WIAW
Minnesota:
Duluth, WJAP, WMAT
Hutchinson, WFAN
Minneapolis, WBAD,
WBAH, WCOAS, WLAG,
WLB
Northfield, WCAL
St. Cloud, WFAM
St. Paul, WAAH
Mississippi:
Corinth, WHAU
Missouri:
Caneron, WFAQ
Carrollton, WLAB
Columbia, WAAN
Jefferson City, WOS
Joplin, WHAH
Kansas City, WDAF,
WHB, WMAJ, WQQ,
WPE
Marshall, WIAT
Rockport, WNAD
St. Joseph, WEAJ
St. Louis, KSD, WCK,
WEB, WEW, WMAJ
Springfield, WIAI, WKAS
Tarkio, WIAT
Montana:
Butte, KFAP, KFBB
Great Falls, KDVS
Havre, KFBB
Nebraska:
Fremont, WOAE
Hastings, WKAM, WLAD
Lincoln, WCAJ, WFAY
WGAT, WJAX, WJAB,
WKAC, WLAF, WMAH
Norfolk, WJAG
Omaha, WAAW, WIAK,
WNAL, WOU, WOV
Rushville, WEAJ
University Place, WJAC

State, City, Call
Waco, WPAZ
Nevada:
Reno, KDZK, KFAS
New Hampshire:
Laconia, WKAJ
New Jersey:
Atlantic City, WHAR
Camden, WRP
Deal Beach, 2XJ
Jersey City, WAAT
Moorestown, WBAF
Newark, WAAM, WBS,
WJX, WJZ, WOR
N. Plainfield, WEAM
Ocean City, WIAD
Paterson, WBAN
Trenton, WMAL
New Mexico:
Roswell, KNJ
State College, KOB
New York:
Albany, WNJ
Binghamton, WFAJ,
WIAV
Buffalo, WGR, WWT
Canton, WCAD
Cazenovia, WMAC
Ithaca, WEAI
Lockport, WMAK
Newburgh, WCAJ
New York, KDOW, WBAY,
WDM, WDE, WEAJ,
WLAW, WVT, WWZ,
2XI
Poughkeepsie, WFAF
Rochester, WHAM
Ridgewood, WHN
Schenectady, WGY, WRL
Syracuse, WBAB, WDAI,
WFB, WLAH
Tarrytown, WRW
Troy, WHAZ
Utica, WSL
Waterford, WFAG
North Carolina:
Asheville, WFAJ
Charlotte, WBT
Raleigh, WLAC
North Dakota:
Fargo, WDAY, WKAJ
Wahington, WMAW
Ohio:
Akron, WOE
Athens, WAAV
Canton, WWB
Cincinnati, WAAD,
WHAG, WIZ, WLW,
WMH
Cleveland, WHK, WJAX

Columbus, WBAY, WCAH,
WBAO, WMAN
Dayton, WAI, WFO,
WIAJ
Defiance, WCAQ
Fairfield, WL-2
Granville, WJD
Hamilton, WBAU, WRK
Lebanon, WPG
Marietta, WBAB
Springfield, WLAM, WNAJ
Stockdale, WJAK
Toledo, WBAJ, WHU,
WJK
Warren, WLAZ
Washington, WGAJ
Wooster, WGAU
Youngstown, WAAJ, WMO
Zanesville, WPL
Oklahoma:
Ardmore, WAAA
Enid, WNAP
Muskogee, WDAV
Okemah, WKAK
Oklahoma City, WKY,
WMAB, 5XT
Tulsa, WGAF, WLAL
Yale, WHAT
Oregon:
Astoria, KFBB
Baker, KFBA
Central Point, KFAY
Eugene, KDZJ, KFAT
Hood River, KQP
Klamath Falls, KDYU
Marshfield, KFBH
Portland, KDYQ, KFAB,
KFEC, KGG, KGN,
KGV, KQY, KYG
Salem, KFCD
Pennsylvania:
Allentown, WIAN
Altoona, WGAJ
Bridgeport, WBAG
Brownsville, WDAQ
Clearfield, WPI
Easton, WMAP
Erie, WJT, WOAY, WSX
Harrisburg, WBAK
Lancaster, WGAL
McKeesport, WIK
Parkersburg, 3XW
Philadelphia, WCAU,
WDAJ, WFI, WGL,
WIP, WNAT, WOO
Pittsburgh, KDKA, KQV,
WAAX, WCAE, WHAF,
WJAS
Scranton, WLAO
Villanova, WCAM

State, City, Call
Wilkes-Barre, WBAX.

WKAZ

Rhode Island:

Cranston, WKAP

Edgewood, WEAG

East Providence, WKAD

Pawtucket, 101, 1XAD

Providence, WEAN, WJAR

South Carolina:

Charleston, WFAZ

Orangeburg, WGAM

South Dakota:

Rapid City, WCAT

Sioux Falls, WFAT

Yankton, WAJU

Tennessee:

Memphis, WKN, WPO

Nashville, WDA4

Texas:

Abelene, WQAQ

Amarillo, WDAG, WRAU

Austin, WCM

Beaumont, WMAM

College Station, WTAW

Dallas, WDAO, WFAA,

WRR

El Paso, WDAH

Fort Worth, WFAP, WPA

Galveston, WHAB, WIAC

Houston, WCAK, WEAY,

WEV, WPAI, WGAB,

WPAN, WSAV

Orange, WKAL

Paris, WTK

Port Arthur, WFAH

San Antonio, AS6, DMT,

WCAR, WJAE, WQAI

Waco, WIAD, WLAJ

Wichita Falls, WKAF

State, City, Call

Utah:

Ogden, KDZL

Salt Lake City, KDYL,

KDZB, KZN

Vermont:

Bellows Falls, WLAK

Burlington, WCAX

Virginia:

Richmond, WBAZ

Washington:

Aberdeen, KNT

Bellingham, KDZR

Centralia, KDZM

Everett, KDZZ, KFBL

Lacey, KGY

Pullman, KFPE

Seattle, KDZE, KDZT,

KFC, KHQ, KJB, KTW,

KZC

Spokane, KFZ, KOE

Tacoma, KFBG, KBG,

KMO

Wenatchee, KDZI, KZY

Yakima, KFV, KQT

West Virginia:

Bluefield, WHAJ

Charleston, WAAO

Clarksburg, WHAK

Huntington, WAAR

Morgantown, WHD

Wisconsin:

Beloit, WKAW

Madison, WGAY, WHA

Milwaukee, WAAK,

WCAV, WHAD, WIAO

Neenah, WIAJ

Superior, WFAC

Waupaca, WIAA

Wyoming:

Laramie, KFBU

Alaska:

Fairbanks, WLAY

Hawaii:

Honolulu, KDYX, KGU

Porto Rico:

Ensenada, WGAD

San Juan, WKAQ

Canada:

Calgary, CHBC, CHCQ,

CFAC, CFCN, CJCY

Edmonton, CHCC, CJCA

Fort Frances, CFPC

Halifax, CECE, CJCS

Hamilton, CECC

Iroquois Falls, CFCH

Kitchener, CJCF

London, CFCX, CHCS,

CJGC, CKQC

Montreal, CFCE, CFZC,

CHCX, CHYC, CJBC,

CKAC, CKCS

Nelson, CJCB

Ottawa, CHXC

Regina, CKCK

St. John, CJCI, CKCR

Toronto, CPCA, CFTC,

CHCB, CHCZ, CHVC,

CJCD, CJCH, CJCN,

CJSC, CKCE, CKZC,

CKKC

Vancouver, CFCB, CFYC,

CHCA, CHOC, CJCE,

CKCD

Walkerville, CFPI

Winnipeg, CHCF, CJCG,

CKCB, CKZC, CJNC

Cuba:

Havana, TWX

