HOFF'S
RADIO
TROUBLE FINDER
LOG and STATION BOOK
DICTIONARY

ILLUSTRATED

RADIO TROUBLE FINDER

Introduction

This book is written for the purpose of familiarizing the general radio public with complete details on radio troubles.

This little book will prove to you it is worth its price many times over, in solving your complicated troubles from time to time, as you refer to it for information.

The wonderful results and lasting satisfaction, you will obtain truthfully, efficiently and scientifically in reference to your many radio troubles.

It is the greatest value ever offered to the radio public.

Whatever type of set you have, just refer to that type in the chart; there you will find your troubles and remedy of same for that type of set.

The Dictionary of Radio Terms will be found of great convenience, as well as the list of America's Broadcasting Stations.

This book is dedicated to the American Radio Fans, and the author hopes for a welcome reception.

M. M. HOFF.

Ten Valuable Suggestions for Any Radio Set

1—Clean your socket springs and tube prongs frequently.

2—Keep a check on the condition of your batteries.

3—Clean the battery connections regularly, especially the positive post on a storage battery.

4—Inspect the aerial as well as the ground connection from time to time.

5—Don't force the tubes in an attempt to reach a little farther as this shortens the tube life and also causes distorted signals.

6—Do not let dust accumulate in set.

7—Be sure the phone and loud speaker cords are correctly connected for polarity.

8—Go over the set occasionally looking for loosened parts or connections.

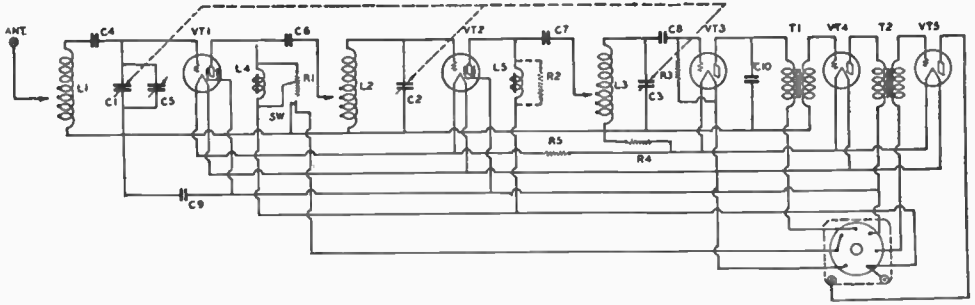
9—Keep batteries away from heat.

10—Don't let the "experts" among your friends "fix" your set.

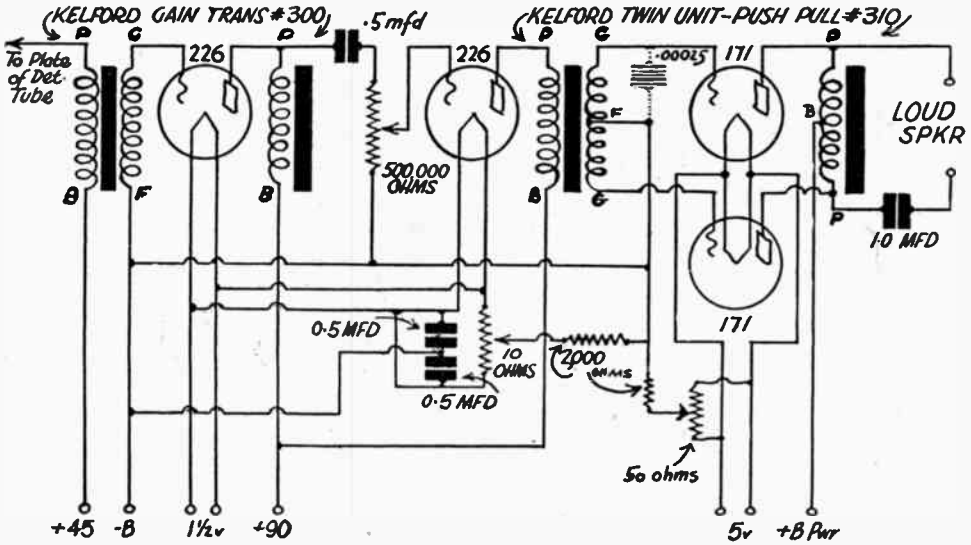
Instructions for the Use of Trouble Chart and Remedy Pages

When your set goes bad or is causing you trouble, get your book out; you may know what type of circuit it is you are using in your set, as most fans do. Take your book and turn to the page that has that type of circuit in it; read over the trouble causes. If you are not sure just what the trouble seems like, try out all causes listed for that circuit; you are then sure to meet with success. After looking up your trouble cause page, refer to your Remedy page and follow out the numbers given in the trouble page. This will tell you in the Remedy page by the same number, what your cause is and the remedy of same. If, after you have looked up the Trouble and Remedy pages and you do not know what the parts look like, then refer to the Parts Used in a Radio Set pages; there you will find the same numbers as are listed in the Trouble and Remedy pages. By looking over these Parts pages and numbers you will be able to tell just what your parts look like and you will then have no trouble in locating them in your set. If you want to then know what each part is for and how it works, refer to your pages of Dictionary of Radio Terms; you will there find the name of each part and its use in your radio set.

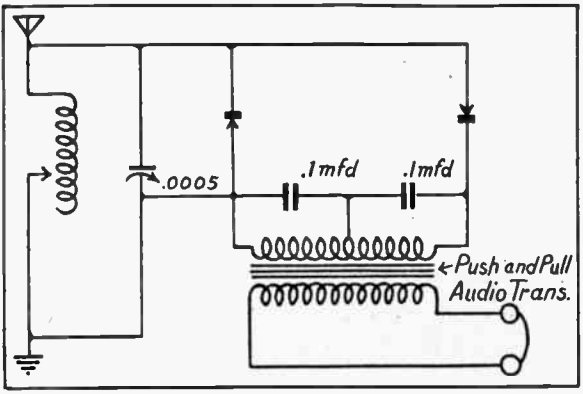
SHIELDED GRID CIRCUIT A. C. OR D. C.



AC PUSH-PULL AUDIO



Double Crystal Set Hook-Up



Double Crystal Circuit

No signals—10-8-12-17-26-25-29-30-9-11

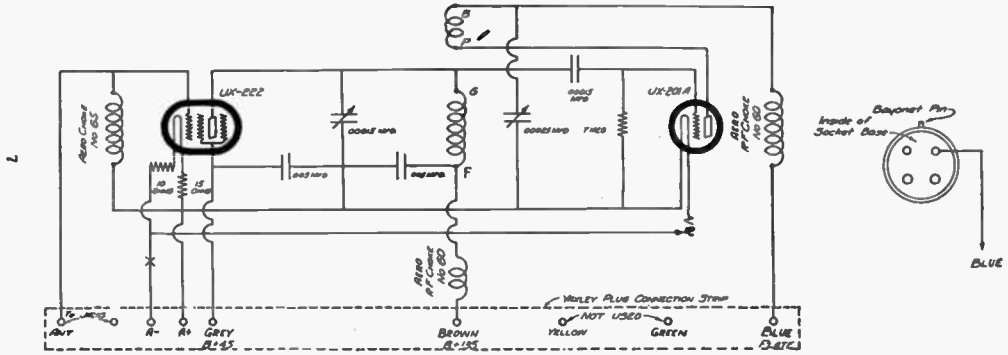
Rasping noises—28-31

Humming sounds—36-37

Muffled signals—23

Broad tuning—42-40-41

Short Wave Shielded Grid A. C. or D. C. Set Hook-Up



Tuned and Double Impedence Audio A. C.

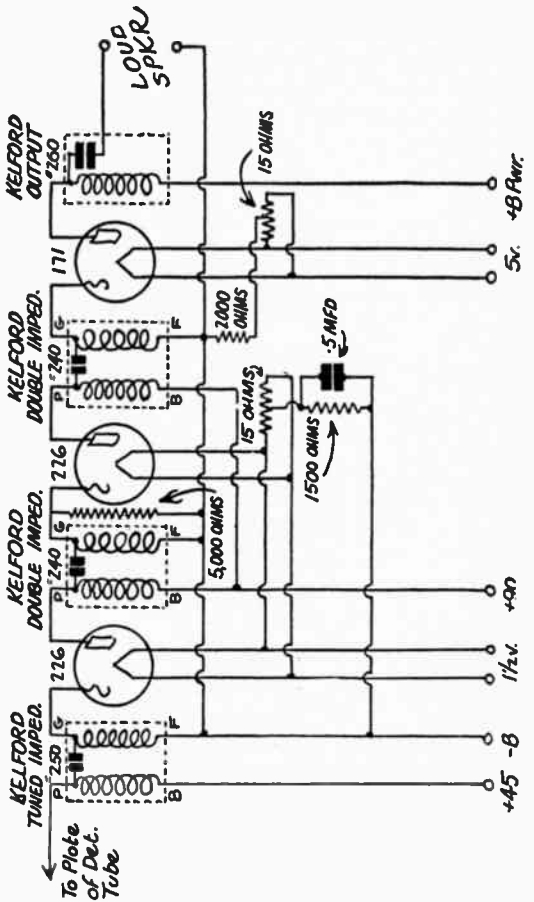
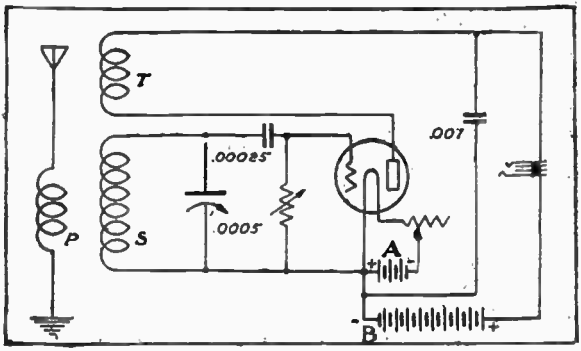
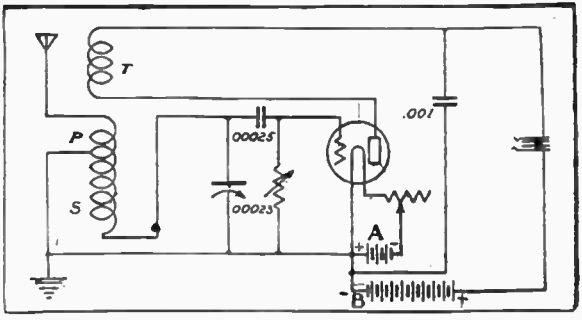


PLATE FEED BACK CIRCUIT



HAYNES CIRCUIT HOOK-UP



Three Circuit Regeneratve and Short Wave

No signals—

29-25-7-15-33-43-8-32-16-4-12-17-34

Rasping noises—13-28-35-2-1

Humming sounds—3-36-37-45

Lack of regeneration—5-45-14-16-18-27-31-38

Too much regeneration—18-21-39

Muffled signals—1-18-22-21-2

Broad tuning—41-20-42-45

Hand capacity—55-56-58-57

SPECIAL NOTICE

Whenever you have trouble with your A-B-C Eliminators consult an expert at once.

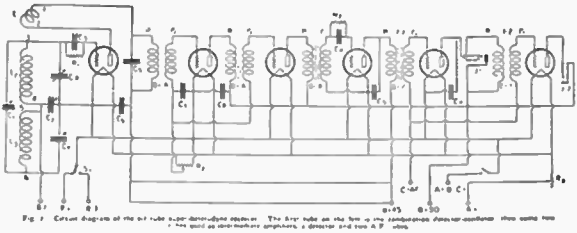
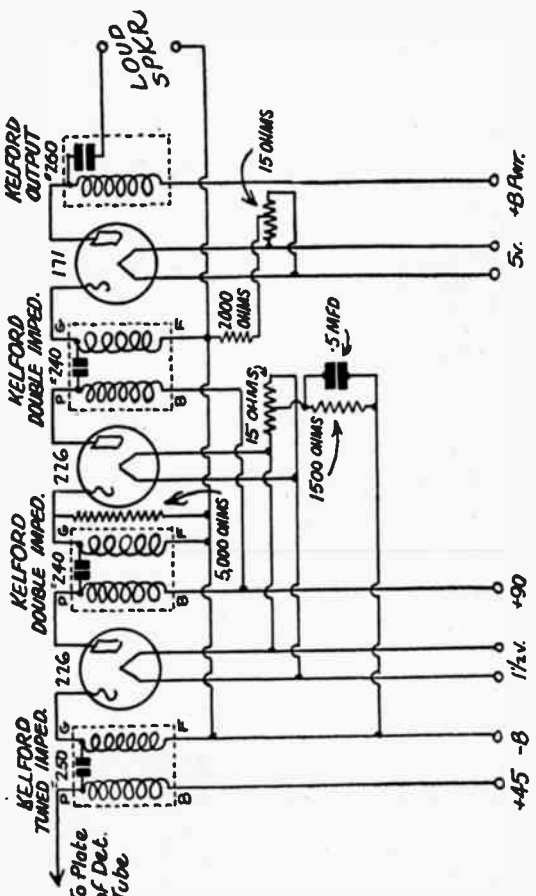


Fig. 1. Circuit diagram of the six-tube super-heterodyne receiver. The first tube on the left is the combination detector-oscillator, then come two tubes used as intermediate amplifiers, a detector and two A. F. tubes.

A. C. Standard Transformer Audio



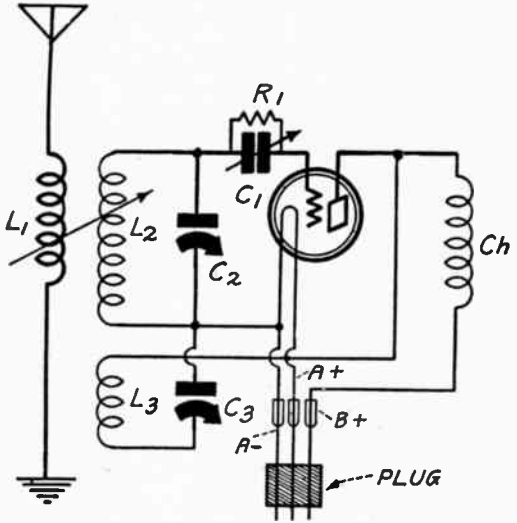
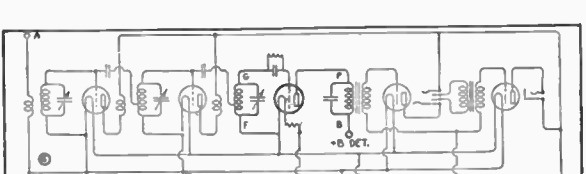


FIG. 1

THE SIMPLER THE CIRCUIT THE MORE EFFECTIVE IS A SHORT WAVE RECEIVER. THIS CIRCUIT HAS BEEN FOUND TO BE HIGHLY SUITABLE FOR A SHORT WAVE RECEIVER OR ADAPTER.

AC or DC.

Neutrodyne Circuit



Radio Frequency Amplifiers Trouble, A. C. or D. C.

Neutrodyne—1st and 2nd Stages of Radio-Frequency and Detector

Oscillates very easily—89-90-21-91-58-54-73

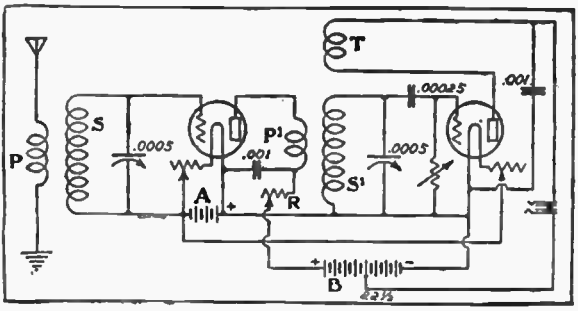
Broad tuning—92-50-51

Tube may be removed from socket and signals heard—98-93-94-15

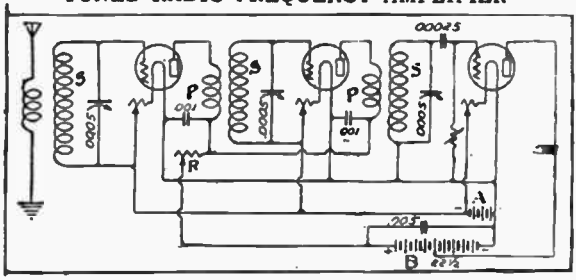
Scratchy-rasping noises—
13-28-35-43-52-62-80-79

Muffled signals—1-2-6-16-18-21-22

RADIO FREQUENCY AND PLATE FEED BACK CIRCUIT



TUNED RADIO FREQUENCY AMPLIFIER



1st and 2nd Stages and Detector

Oscillates very easily—95-96-97-21-73

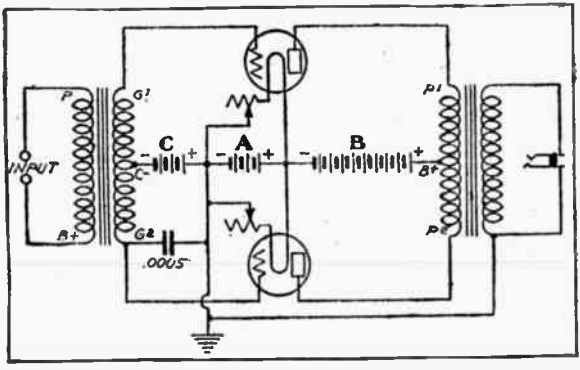
Tunes broadly—98-99-13-20-50-51-54

Tube may be removed from socket and signals heard—7-15-100-103

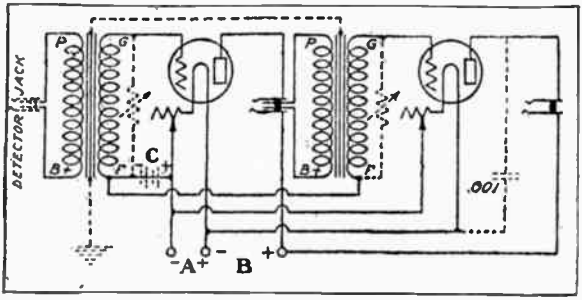
Scratchy, rasping noises—
2-13-16-28-35-43-62

Muffled signals—6-22-16-21-23-18-1-2

Audio Push Pull Amplifier



TWO STAGE AUDIO AMPLIFIER



Audio Frequency Transformer Trouble, A. C. or D. C.

1st Stage

Distortion—65-66-67
No amplification—70-74-77-78
Poor amplification—75-80-81-78
Constant howling—65-66-67-68-73
Choked signals—84-81-78

Audio Frequency Transformer Trouble, A. C. or D. C.

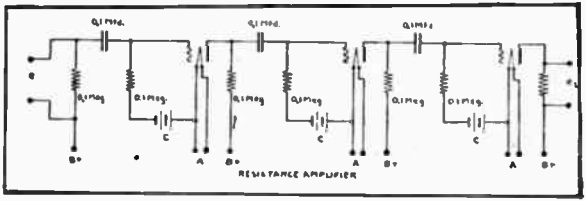
2nd Stage

Distortion—65-66-67-82
No amplification—71-74-77-78
Poor amplification—75-80-81-78
Constant howling—65-66-67-68-73
Choked signals—84-81-78

Audio Frequency Transformer Trouble, A. C. or D. C.

3rd Stage

Distortion—83-65-66-69-73-82-67
No amplification—74-72-77-78
Poor amplification—75-80-81-78
Constant howling—65-66-67-68-73
Choked signals—84-81-78-67



Audio Resistance Coupled Amplifier Trouble A. C. or D. C.

1st Stage

Distortion—81-82
No amplification—87-2-74-77
Poor amplification—85-14
Constant howling—73
Choked signals—85-21

Audio Resistance Coupled Amplifier Trouble, A. C. or D. C.

2nd Stage

Distortion—85-81-82
No amplification—87-2-74-77
Poor amplification—85-14
Constant howling—73
Choked signals—85-21

Audio Resistance Coupled Amplifier Trouble, A. C. or D. C.

3rd Stage

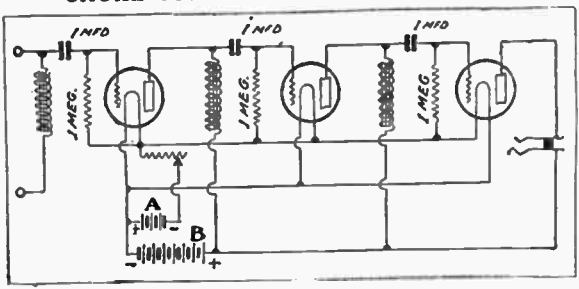
Distortion—81-82-88
No amplification—87-2-72-74-77
Poor amplification—85-14
Constant howling—73
Choked signals—21-85

Choke-Coil-Coupled Audio Frequency Trouble, A. C. or D. C.

1st Stage

Distortion—81-82
No amplification—87-2-70-74-77
Poor amplification—85-14-86
Constant howling—73
Choked signals—85-21

CHOKE COIL AUDIO AMPLIFIER



Choke-Coil-Coupled Audio Frequency Trouble, A. C. or D. C.

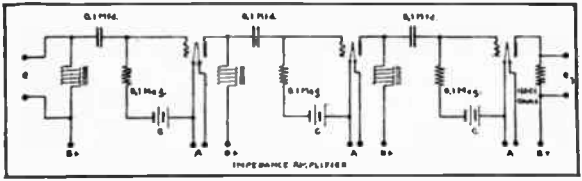
2nd Stage

Distortion—86-85-81-82
No amplification—87-2-71-74-77
Poor amplification—85-14-86
Constant howling—73
Choked signals—86-21-85

Choke-Coil-Coupled Audio Frequency Trouble A. C. or D. C.

3rd Stage

Distortion—86-81-82-88
No amplification—87-2-72-74-77
Poor amplification—85-14-86
Constant howling—73
Choked signals—86-21-85



Impedence Coupled Audio Frequency Trouble, A. C. or D. C.

1st Stage

Distortion—81-82
No amplification—87-2-74-77
Poor amplification—85-14
Constant howling—73
Choked signals—85-21

Impedence Coupled Audio Frequency Trouble, A. C. or D. C.

2nd Stage

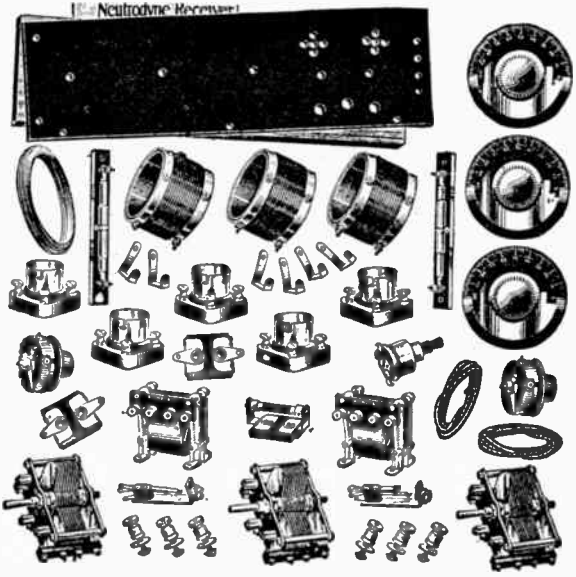
Distortion—85-81-82
No amplification—87-2-74-77
Poor amplification—85-14
Constant howling—73
Choked signals—21-85

Impedence Coupled Audio Frequency Trouble, A. C. or D. C.

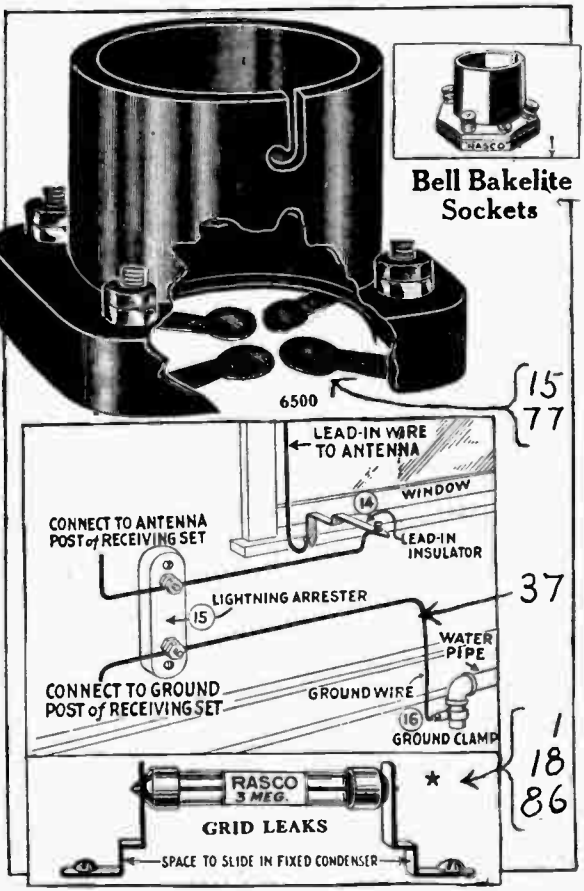
3rd Stage

Distortion—81-82-88
Poor amplification—85-14
No amplification—87-2-72-74-77
Constant howling—73
Choked signals—21-85

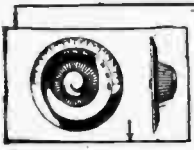
Diagram of Radio Parts Used in Building Sets



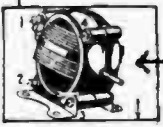
Parts Used in a Radio Set Showing Trouble Numbers



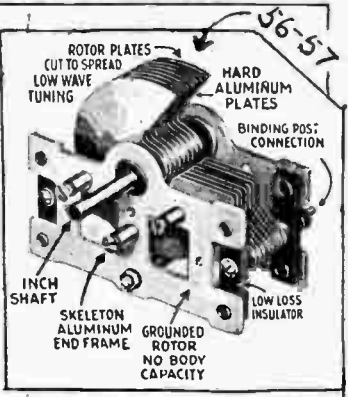
Parts Used in a Radio Set Showing Trouble Numbers

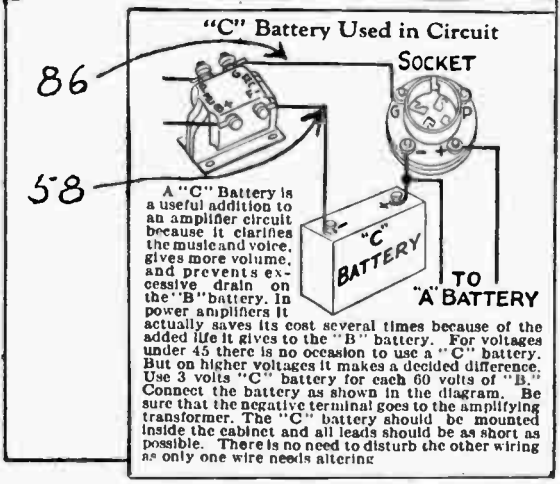


Moulded Dials



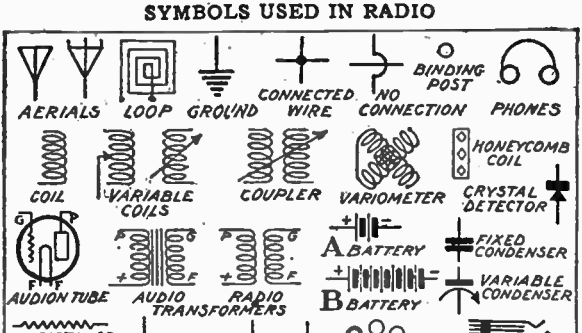
Moulded Variometer





A "C" Battery is a useful addition to an amplifier circuit because it clarifies the music and voice, gives more volume, and prevents excessive drain on the "B" battery. In power amplifiers it actually saves its cost several times because of the added life it gives to the "B" battery. For voltages under 45 there is no occasion to use a "C" battery. But on higher voltages it makes a decided difference. Use 3 volts "C" battery for each 60 volts of "B." Connect the battery as shown in the diagram. Be sure that the negative terminal goes to the amplifying transformer. The "C" battery should be mounted inside the cabinet and all leads should be as short as possible. There is no need to disturb the other wiring as only one wire needs altering

SYMBOLS USED IN RADIO



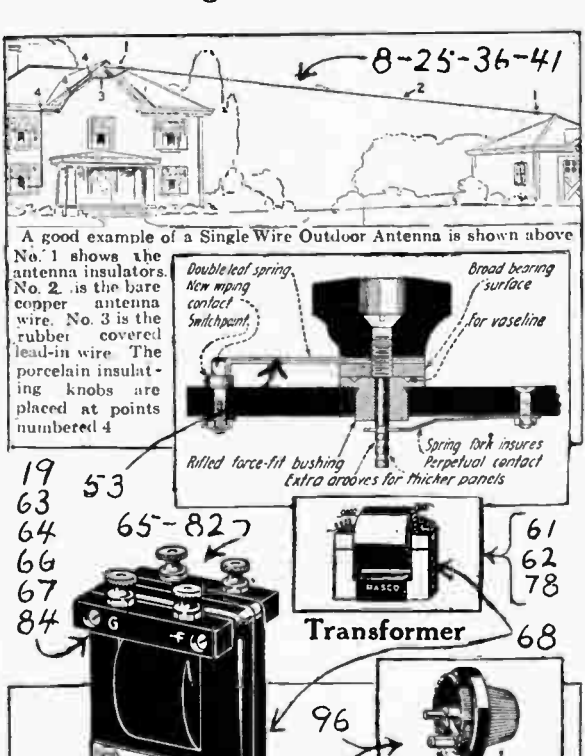
Familiarity with these symbols will enable fans to follow radio circuits or "hook-ups" intelligently. The symbols are shown above in the forms which have been agreed on as correct by the American Radio Relay League and other authorities. In some hook-ups, a grid leak is regarded as a variable resistance. The symbol is the same however.

Renewing "Tired" Radio Tubes, D. C.

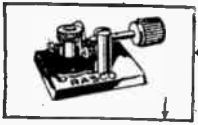
Radio Fans May Rejuvenate Their Tubes by Simple Method

Here is a simple method of rejuvenating your dead tubes which is well worth a trial. Your tubes may lack some of their original pep, even though the filaments still light up or burn. Reverse the polarity of the "B" Battery on the set; that is, connect the positive "B" to the negative terminal on the receiver or set and connect the negative "B" to the positive terminal of the receiver or set. Turn on the filaments of the tubes to full brilliancy and let the set stay this way for one hour. It will be found that an hour is sufficient time in most cases to rejuvenate the tubes, but in cases where the tubes are unusually dead, the treatment should be continued for one and a half hours or even more. After treating, the "B" battery can be changed back to its normal connections and the gain in signal strength will be great. In the laboratory tests, a set of tubes were used which were so dead that absolutely no signals could be picked up when they were placed in a receiver or set. These tubes were then given the above treatment and when tried again in the receiver or set, gave just as good results as a set of brand new tubes.

Parts Used in a Radio Set Showing Trouble Numbers

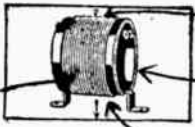


Parts Used in a Radio Set Showing Trouble Numbers



26
33
44

Radiocite Detector

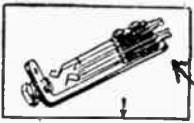


90
32
47
59
92
98
100

Neutro-Transformer

17
23
31

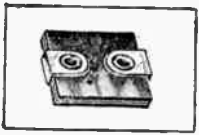
Condensers

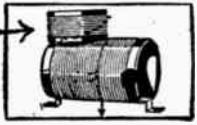


12
70
71
72

Jacks and Plugs

48
49





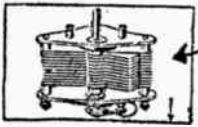
Cockaday Coil

4
27
34
38
39

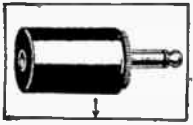
9

Bakelite 180 Coupler, De Luxe Style

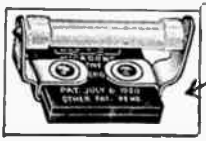
10
11
43
52



Panel Mounting Condensers



2
22
85



Phone Plugs

Key for Identification of Numerical Trouble Chart.

Giving Cause and Remedy

1. **Defective grid-leak.**
   Replace by new one.

2. **Defective grid-condensor.**
   Replace by new one.

3. **Open in grid circuit.**
   Solder broken wire lead.

4. **Tickler leads reversed.**
   Change leads opposite to what they are now.

6. **"A" battery polarity reversed.**
   Change leads opposite to what they are now.

7. **"B" battery polarity reversed.**
   Change leads opposite to what they are now.

8. **Short circuited antenna inductance.**
   Examine your antenna and lead-in wire; it may be loose or touching against the roof or a metal object of some kind, such as a tin roof, etc. A wire in Primary Coil may be broken or ground wire connection may be loose. Be sure and have all connections well soldered.

9. **Short circuited secondary inductance.**
   Examine secondary coil for broken wire or connection and solder same.

10. **Short circuited antenna condensor.**
    Examine condensor by turning it; if plates click, they are hitting each other. They can be adjusted by the screw on the back of the shaft in the condensor. Examine wires for broken connection on the Primary Coil running to condensor. If broken, solder same. Should this not work, replace with new condensor or wires.

11. Short circuited secondary condensor.
Examine condensor by turning it. If plates click they are hitting each other. They can be adjusted by the screw on the back of the shaft in the condensor. Examine wires for broken connection on the Secondary Coil running to condensor. If broken, solder same. Should this not work, replace with new wires on condensor.

12. Plug not making contact with jack.
Press Jack prongs closer together for better contact.

13. "B" batteries run down or "B" Power not working.
Replace by new "B" batteries.

14. "B" voltage too low.
Try a higher voltage tap or replace by new batteries.

15. Tube not making proper contact with socket.
Use finger or screw-driver and bend upward on tube socket prongs just a little.

16. "A" battery run down.
If using "A" battery dry cells, replace by new ones. If using "A" storage battery, have same re-charged or "A" Power not working.

17. Short circuited phone condensor.
Replace by new condensor.

18. Grid leak incorrect value.
Test out by using different Gridleak values until you find the correct one.

19. Reversed secondary connections to audio transformer.
Change leads opposite to what they are now on Secondary of Audio Transformer.

20. Coils damp.
Set has been in a damp place; remove to a drier location.

21. "B" voltage too high.
Try a different "B" voltage tap until you get the correct voltage.

22. Grid condensor too high a capacity.
Test until you find correct condensor capacity.

23. Phone condenser too high a capacity.
Test until you find correct condensor capacity.

24. Apparatus touching shielding on panel.
Be sure and keep all apparatus from touching panel shield.

25. Poor aerial, or ground.
Examine Antenna and Ground wires for loose or broken connections. Have same soldered well or replace by new one.

26. Poor crystal.
Replace by new one.

27. Short circuited tickler coil.
Examine tickler coil for broken wire or broken connection and solder same.

28. Broken phone or speaker cords.
Replace by new ones.

29. Defective phones or speaker.
Replace by new ones.

31. Defective phone condensor.
Replace by new one.

32. Open in primary circuit.
Primary wires connected wrong. Check up your circuit print again.

33. Open in secondary circuit.
Secondary wires connected wrong. Check up on your circuit print.

34. Open in tickler coil.
Tickler Coil wires connected wrong. Check up on your circuit print.

35. Loose connections.
Examine for loose connections and solder same.

36. Aerial paralleled to high voltage lines.
Change position of your Antenna other than what it is now.

37. Ground wire in proximity to high voltage lines.
Change position of Ground wire other than what it is now. If that does not work drive a six-foot piece of piping into the ground and clamp ground-wire to the top of that.

38. **Insufficient turns on tickler coil.**
Keep adding more turns on Tickler Coil until you get the correct amount of turns.

39. **Too many turns on tickler coil.**
Take off turns of tickler coil until you get the correct amount of turns.

40. **Wave trap necessary.**
Wave trap is necessary to check interference and make better tuning.

41. **Aerial too long.**
Cut down on the length of your Antenna until you get proper results.

42. **High resistance in aerial or ground.**
Change location of Antenna and Ground wires.

43. **Poor contact on secondary condensor.**
Examine wires for broken connections and solder same.

44. **Secondary reversed.**
Change leads opposite to what they are now

47. **Insufficient turns on primary.**
Keep adding turns on primary coil until you have the correct amount.

48. **Stabilizer coil reversed.**
Change leads opposite to what they are now.

49. **Short circuited stabilizer coil.**
Examine Stabilizer Coil for broken wires and connections. Solder same. If this does not work, replace by new one.

50. **Poor grade of coil tubing used.**
Replace by new one of better grade.

51. **Inferior parts used; especially condensor.**
Replace by new one.

52. **Secondary condensor short circuited.**
Replace by new one.

54. Plate and grid leads too close.
Space leads further apart.

55. Shield panel and ground.
In shielding panel and ground, be careful not to have shielding touching parts on panel.

56. Rotary plates of secondary condensor should be connected to the filament; while the stationary plates should be connected to the grid.

57. If condensor is connected in aerial circuit, the rotary plates should be connected to aerial. If the condensor is connected in ground end, the rotary plates should be connected to ground.

58. Ground the filament.
Run wire from filament to ground binder post.

59. Coil too near panel.
Space coil further away from panel.

60. Characteristic of this type of receiver.
Receiving set is of this nature.

61. Defective radio-frequency transformer.
Replace by new one.

62. Loose connections on transformer.
Examine for loose connections and solder same.

63. Burned out secondary in audio-frequency transformer.
Replace by new one.

64. Condensor shunting the secondary of the audio transformer too large. (Try removing.)
Try a smaller capacity condenser until you find the proper one, or remove condensors entirely from Transformer.

65. Pimary of audio-frequency transformer reversed.
Change leads opposite to what they are now.

66. Secondary of audio-frequency transformer reversed.
Change leads opposite to what they are now.

67. **Shunt secondary with a .001 fixed mica condensor.**
Place a .001 MFD fixed mica condensor across posts marked "G" and "F."

68. **Ground cores of transformers and the filament.**
Run wire from center or namely, Core of Transformer and from "F" filament to ground binder post.

69. **Use a "C" battery or "C" Power Unit.**
Over 67½ volts, use 4½ "C" battery up to 90 volts. A 9-volt "C" battery or two 4½-volt "C" batteries connected together in this manner: "—" to "X" to "—" to "X" makes 9 volts, up to a 135-volt "B" battery. 40½-V for 180-V.

70. **Inner springs of first jack not making contact with outer prongs.**
Press jack prongs closer together.

71. **Inner springs of second jack not making contact with outer prongs.**
Press jack prongs closer together.

72. **Inner springs of third jack not making contact with outer prongs.**
Press jack prongs closer together.

73. **Plate lead near and parallel to grid wire.**
Always have plate and grid leads running opposite of each other.

74. **Amplifier "B" battery polarity reversed.**
Change leads opposite to what they are now.

75. **Amplifier "A" battery polarity reversed.**
Change leads opposite to what they are now.

76. **Amplifier: Mount transformers at right angles to each other.**
Place Transformers opposite position of each other.

77. **Amplifier tube not making contact with prongs on socket.**
Use finger or screw-driver and press up on tube socket prongs a little.

78. **Transformer defective.**
Replace by new one.

79. Loud speaker cords broken.
Replace by new ones.

80. Amplifier "B" battery run down.
Replace by new one.

81. Amplifier "A" battery run down.
If using dry cell "A" batteries, replace by new ones, or if "A" storage battery, have same re-charged.

82. Input may be distorted.
Replace by a new one.

83. High ratio transformer used.
Use a lower ratio Transformer. About 3 to 1 ratio.

84. High resistance leak (about 250,000 ohms) across secondary of audio transformer.
Place a resistance leak about (250,000 ohms) across posts of Transformer, marked "G" and "F."

85. Grid condensor too small capacity on the succeeding amplifier tube.
Try a larger capacity condensor until you find the proper capacity.

86. Grid leak necessary on amplifier tube.

87. Resistance defective.
Replace by new one.

88. Power tube necessary, such as the 171-210, or 250.

89. Internal tube capacity not neutralized.
Replace by new one.

90. Wrong tap taken on secondary coil.
Change taps until you find proper tap, or check up on circuit print.

91. Amplifier tubes may not be uniform or matched right.
Change tubes from one socket to another until they properly match, for best results.

92. Incorrect number of turns on Neutroformers.
Re-wind coils or replace by new ones.

93. Defective tube.
Replace by new one.

94. **No "B" voltage applied to tube.**
Check up on your circuit print.

95. **Operator not familiar with the operation of the receiver.**
Study the operation of your receiver carefully.

96. **Potentiometer or neutralizing condensor necessary.**
Study your circuit blue-print; it will indicate whether you are to use a Potentiometer or a Neutralizing condensor, and also show you how the same is to be connected.

97. **Potentiometer or neutralizing condensor defective.**
Replace by new one.

98. **Incorrect number of turns on the radio-frequency transformer.**
Re-wind your coil to proper number of turns, or replace by new one.

99. **Interstage coupling due to proximity of parts.**
Replace by better parts. It always pays to buy the best.

101. **Try decreasing "B" voltage.**
Examine wires for proper connection or broken wire and solder same.

101. **Try decreasing "B" voltage.**
Try different voltage taps until you find the proper tap.

102. **Long grid leads; these must be as short as possible.**
Be sure and have all Grid leads as short as possible.

103. **No "B" voltage on plate of radio-frequency tube.**
Check up on your Circuit Print for the wrong wire connection.

Broadcasting Stations

With Call Letters, Kilometers and Power

K D K A	Pittsburgh	980-305.9
K D Y L	Salt Lake City, Utah	1290-232.4
K E X	Portland, Ore.	1180-254.1
K F A B	Lincoln, Neb.	770-389.4
K F A U	Boise City, Idaho	1250-239.9
K F B U	Laramie, Wis.	600-499.7
K F D M	Beaumont, Texas	560-535.4
K F I	Los Angeles, Cal.	640-468.5
K F J F	Oklahoma City, Okla.	1470-204.0
K F K X	Chicago, Ill.	1000-299.8
K F M X	Northfield, Minn.	1250-239.9
K F K B	Milford, Kans.	1130-265.3
K F Q B	Fort Worth, Texas	1240-241.8
K F U M	Colorado Springs, Col.	1270-236.1
K G A	Spokane, Wash.	1470-204.0
K G O	Oakland, Cal.	790-379.5
K G R S	Amarillo, Texas	1410-212.6
K J R	Seattle, Wash.	970-309.1
K L A R	Little Rock, Ark.	1390-215.7
K L Z	Dupont, Col.	560-535.4
KMBC-KLDS	Independence, Mo.	950-315.6
K M M J	Clay Center, Neb.	740-405.2
K M O X-K F Q A	Kirkwood, Mo.	1090-275.1
K N X	Hollywood, Cal.	1050-285.5

K O A	Denver, Col.	830-361.2
K O B	State Col., N. Mex.	1180-254.1
K O I L	Council Bluffs, Iowa	1260-238.0
K P O	San Francisco, Cal.	680-440.9
K P R C	Houston, Texas	920-325.9
K Q V	Pittsburgh, Pa.	1380-217.3
K R L D	Dallas, Texas	1040-288.3
K S B A	Shreveport, La.	1450-206.8
K S C J	Sioux City, Iowa	1330-225.4
K S L	Salt Lake City, Utah.	1130-265.3
K S O	Clarinda, Iowa	1380-217.3
K S O O	Sioux Falls, S. D.	1110-270.1
K S T P	Westcott, Minn.	1420-211.1
K T H S	Hot Springs, Ark.	800-374.8
K T N T	Muscatine, Iowa	1170-256.3
K T S A	San Antonio, Texas	1290-232.4
K V O O	Tulsa, Okla.	1140-263.0
K W K	St. Louis, Mo.	1350-222.1
K W K H	Kennonwood, La.	850-352.7
K Y A	San Francisco, Cal.	1230-243.8
K Y W-K F K X	Chicago, Ill.	1020-293.9
W A A M	Newark, N. J.	1250-239.9
WABC-WBOQ	New York, N. Y.	860-348.6
W A D C	Akron, Ohio	1320-227.1
W A I U	Columbus, Ohio	640-468.5
W A P I	Auburn, Ala.	1140-263.0
W B A K	Harrisburg, Pa.	1120-267.7

W B A L	Glen Morris, Md.	1060-282.8
W B A P	Fort Worth, Texas	800-374.8
W B A W	Nashville, Tenn.	1490-201.6
W B B C	Brooklyn, N. Y.	1400-214.2
W B B M-W J B T	Glenview, Ill.	770-389.4
W B B R	Rossvile, N. Y.	1300-230.6
W B C N	Chicago, Ill.	870-344.6
W B O Q	Richmond Hill, N. Y.	860-348.6
W B R E	Wilkes-Barre, Pa.	1310-228.9
W B T	Charlotte, N. C.	1080-277.6
W B Z	E. Springfield, Mass.	990-302.8
W B Z A	Boston, Mass.	990-302.8
W C A C	Storrs, Conn.	1330-225.4
W C A D	Canton, N. Y.	1220-245.6
W C A L	Northfield, Minn.	1250-239.9
W C A M	Camden, N. J.	1280-234.2
W C A P	Asbury Park, N. J.	1280-234.2
W C A U	Philadelphia, Pa.	1170-256.3
W C B D	Zion, Ill.	1080-277.6
W C C O	Anoka, Minn.	810-370.2
W C F L	Chicago, Ill.	970-309.1
W C G U	Coney Island, N. Y.	1400-214.2
W D A E	Tampa, Fla.	620-483.6
W D A F	Kansas City, Mo.	610-491.5
W D A G	Amarillo, Tex.	1410-212.6
W D A Y	Fargo, N. D.	1280-234.2
W D B O	Orlando, Fla.	620-483.6

W D E L	Wilmington, Del.	1410-212.6
W D O D	Chattanooga, Tenn.	1280-234.2
W D R C	New Haven, Conn.	1330-225.4
W D S U	New Orleans, La.	1270-236.1
W E A F	Bellmore, N. Y.	660-454.3
W E A N	Providence, R. I.	1160-258.5
W E A O	Columbus, Ohio	550-545.1
W E A R	Cleveland, Ohio	1070-280.2
W E B C	Superior, Wis.	1280-234.2
W E B H	Chicago, Ill.	1000-299.8
W E E I	Boston, Mass.	590-508.2
W E L K	Philadelphia, Pa.	1370-218.8
W E M C	Berrien Spring, Mich.	590-508.2
W E N R	Chicago, Ill.	870-344.6
W E V D	Woodhaven, N. Y.	1300-230.6
W E W	St. Louis, Mo.	760-394.5
W F A A	Dallas, Texas	1040.288.3
W F A N	Philadelphia, Pa.	610-491.5
W F B L	Syracuse, N. Y.	900-331.1
W F B M	Indianapolis, Ind.	1050-285.5
W F I	Philadelphia, Pa.	560-535.4
W F J C	Akron, Ohio	1450-206.8
W F I W	Hopkinsville, Ky.	940-319.0
W G B I	Scranton, Pa.	880-340.7
W G B S	Astoria, N. Y.	1180-254.1
W G H P	Fraser, Mich.	1240-241.8
W G N-W L I B	Elgin, Ill.	720-416.4

W G R	Buffalo, N. Y.	550-545.5
W G Y	S. Schenectady, N. Y.	790-379.5
W H A	Madison, Wis.	570-526.0
W H A M	Rochester, N. Y.	1150-260.7
W H A P	New York, N. Y.	1300-230.6
W H A S	Louisville, Ky.	820-365.6
W H A Z	Troy, N. Y.	1300-230.6
W H B	Kansas City, Mo.	950-315.6
W H M L	Sheboygan, Wis.	1410-212.6
W H B W	Phidelphia, Pa.	1500-199.9
W H O	Des Moines, Iowa	1050-285.5
W H T	Deerfield, Ill.	1480-202.6
W I B O	Desplaines, Ill.	1480-202.6
W I B W	Topeka, Kan.	1300-230.6
W I C C	Easton, Conn.	1430-209.7
W I O D	Miami Beach, Fla.	1240-241.8
W I L	St. Louis, Mo.	1350-222.1
W I P	Philadelphia, Pa.	610-491.5
W J A D	Waco. Texas	1240-241.8
W J A S	Pittsburgh, Pa.	1290-232.4
W J A X	Jacksonville, Fla.	1260-238.4
W J A Z	Mt. Prospect, Ill.	1480-202.6
W J B T	Glenview, Ill.	770-389.4
W J J D	Mooseheart, Ill.	1180-254.1
W J R-W C X	Pontiac, Mich.	750-399.8
W J Z	New York, N. Y.	760-394.5
K K B H	LaCrosse, Wis.	1380-217.3

WKBW	Amherst, N. Y.	1470-204.0
WKEN	Buffalo, N. Y.	1040-288.3
WKY	Oklahoma City, Okla.	900-331.1
WLAC	Nashville, Tenn.	1490-201.6
WLB-WGMS	Minneapolis, M.	1250-239.9
WLBL	Stevens Point, Wis.	900-331.1
WLBW	Oil City, Pa.	1260-238.0
WLIB-WGN	Elgin, Ill.	720-416.4
WLIT	Philadelphia, Pa.	560-535.4
WLS	Crete, Ill.	870-344.6
WLW	Mason, Ohio	700-428.3
WMAC	New York, N. Y.	1100-272.6
WLWL	Cazenovia, N. Y.	1440-208.2
WMAF	Dartmouth, Mass.	1360-220.4
WMAK	Martinsville, N. Y.	900-331.1
WMAQ	Chicago, Ill.	670-447.5
WMAZ	Macon, Ga.	890.336.9
WMBI	Chicago, Ill.	1080-277.6
WMBS	Lemoyne, Pa.	1430-209.7
WMCA	New York, N. Y.	570-526.0
WNAC-WBIS	Boston, Mass	1230-243.8
WNAX	Yankton, S. D.	890-336.9
WNBR	Memphis, Tenn.	1430-209.7
WNOX	Knoxville, Tenn.	560-535.4
WNRC	Greensboro, N. C.	1440-208.2
WNYC	New York, N. Y.	570-526.0
WOAI	San Antonio, Texas	1190-252.0

WOAX	Trenton, N. J.	1280-234.2
WOC	Davenport, Iowa	1000-299.8
WODA	Paterson, N. J.	1250-239.9
WOI	Ames, Iowa	560-535.4
WOKO	Mt. Beacon, N. Y.	1440-208.2
WOO	Philadelphia, Pa.	1500-199.9
WOQ	Kansas City, Mo.	610-491.5
WOR	Newark, N. J.	710-422.3
WORD	Batavia, Ill.	1480-202.6
WOW	Omaha, Neb.	590-508.2
WOV	New York, N. Y.	1130-265.3
WOV	Secaucus, N. J.	1130-265.3
WOWO	Fort Wayne, Ind.	1160-258.5
WPCH	New York, N. Y.	810-370.2
WPCH	Hoboken, N. J.	810-370.2
WPG	Atlantic City, N. J.	11001272.6
WPSC	State College, Pa.	1230-243.8
WPTF	Raleigh, N. C.	680-440.9
WQAN	Scranton, Pa.	880-340.7
WQAO-WPAP	New York, N.Y.	1010-296.9
WRAX	Philadelphia, Pa.	1420-211.1
WRC	Washington, D. C.	950-315.6
WRHM	Fridley, Minn.	1250-239.9
WRR	Dallas, Texas	1190-252.0
WRUF	Gainesville, Fla.	1470-204.0
WRVA	Richmond, Va.	1110-270.1
WSAI	Mason, Ohio	800-374.8

W S B	Atlanta, Ga.	740-405.2
W S G H-WSDA	Brooklyn, N. Y.	1400-214.2
W S M	Nashville, Tenn.	650-461.3
W S M B	New Orleans, La.	1320-227.1
W S U N	Clearwater, Fla.	560-535.4
W S Y R	Syracuse, N. Y.	570-526.0
W T A M	Cleveland, Ohio	1070-280.2
W T A Q	Eau Claire, Wis.	1330-225.4
W T A S	Elgin, Ill.	720-416.4
W T M J	Brookfield, Wis.	620-483.6
W W J	Detroit, Mich.	920-325.9
W W L	New Orleans, La.	850-352.7
W W N C	Asheville, N. C.	570-525.0
W W V A	Wheeling, W. Va.	1160-258.5

SOME CANADIAN STATIONS

C F C N	Calgary, Alberta	690-434.5
C F R B	King, York Co., Ont.	1030-291.1
C J C R	Red Deer, Alberta	840-356.9
C K A C	Montreal, Quebec	730-410.7
C K C D	Vancouver, B. C.	730-410.7
C K G W	Bowmanville, Ont.	960-312.3
C K L C	Red Deer, Alberta	840-356.9

CUBAN STATION

P W X	Havana	1320-400 750

Dictionary of Radio Terms

AERIAL—One or more wires, with proper supports, used to receive or to radiate oscillating electrical impulses. An aerial for receiving can be set up outdoors or indoors. When erected outdoors, it is insulated from supports, and suspended at an advantageous height. The most common forms are the flat-top, inverted "L," the "T," the umbrella and the cage. The most common indoor aerial is the loop, consisting of a length of wire wound on a frame, usually in the form of a cross or diamond. A wire suspended in the attic or along the picture moulding of a room, also will serve.

Aerials are measured from their further extremity (one wire alone being considered in a multi-wire structure) to the point of connection with the set. In a "T" aerial, one-half the horizontal span is added to the lead-in. In an inverted 'L," the total horizontal span is added. In an umbrella or cage type, add only the length of a single radial or spreader wire.

A. C.—Alternating Current—One which periodically changes its direction of flow.

AMMETER—Instrument for measuring current in amperes in an electric circuit. It is always connected in series with the circuit.

AMPERE—Quantitative unit of current flow. One ampere equals the amount passed through resistance of one ohm under pressure of one volt. The ampere corresponds to the term of gallons per minute as applied to water.

AMPERE HOUR—Commercial unit of quantity. One ampere hour equals the flow of current of one ampere over the period of one hour.

AMPLIFIER—Device by which the intensity of signals is increased. May be magnetic, microphonic or based on the operation of the vacuum tube.

Radio frequency (R. F.) amplification strengthens signals before they are rectified, thus adding to the distance range of the set. It has little effect on volume.

Audio frequency (A. F.) amplification strengthens signals after they are rectified, thus increasing the volume, but has little effect on distance covered.

A power amplifier is one employing a special circuit, and using a large amount of electricity, for the purpose of securing an unusually large current for use in a loud speaker.

AMPLITUDE—Maximum value of any oscillation during a cycle. It is the distance from the beginning to the peak of a wave. (See Wave-length.)

ANTENNA—The entire primary system, including aerial, lead-in, primary coils, primary condenser and ground lead. The aerial is the feeler of the antenna, intercepting radio waves, and carrying them in the form of an alternating current to the lead-in, from which they go through the receiving set to the ground. In transmission, just the opposite is the

case, the alternating current from the transmitter going through the lead-in, to the aerial, from which it is sent forth into the ether in form of radio waves.

APERIODIC—Any circuit which has no definite time period. Having sufficientiy high resistance to prevent natural oscillations. Any circuit having no tuning condenser or tuning inductance coil is said to be aperiodic.

BANK WINDING—Method of winding wire on a coil, one layer atop another, in staggered form, to minimize distributive capacity of coils.

Example: Wind turn No. 1 on coil, and turn No. 2 beside it; then wind No. 3 atop Nos. 1 and 2.

BATTERY—One or more voltaic or storage cells from which electric current may be drawn.

The "A" battery is used for fighting the filament of the vacuum tube. It may be a dry cell or storage battery, depending on type of tube used in receiving set.

The "B" battery supplies the energy for the plate of the tube. It may be a block of dry cells or a storage battery, the dry "B" battery being most common.

The 'C" battery is a dry battery, which, if used, is inserted in the grid circuit of audio frequency amplifying tubes, for the purpose of reducing "B" battery drain and also correcting distortion of sounds. It is not necessary when less than forty-five volts of "B" battery is used.

The dry cell consists of a zinc container with a lining of plaster of paris and flour sautrated with sal ammoniac, in the center of which is a carbon rod surrounded by manganese dioxide and crushed carbon. The carbon terminal (center) is the positive or "plus" connection; the zinc (outer) is the negative or "minus" pole. Single dry cells have a uniform voltage of 1.5 although the amperage varies according to size.

A storage battery consists of a number of cells capable of being charged or discharged through the same circuit. Each cell consists of a number of lead plates immersed in an electrolyte, a solution of sulphuric acid and distilled water.

BEAT RECEPTION—A sensitive, selective method of detecting signals by causing them to interact with other oscillations of slightly different frequency, produced locally. The resultant note is called the beat. Its frequency is the difference between the frequencies of the two interacting oscillations. Also known as heterodyne reception.

When waves of two transmitting stations interact they cause a squeal on the signals of both, which is referred to as the heterodyne. As some forms of receivers are also miniature transmitters, they are capable of interacting with others in this way, producing interference.

BIAS—Means of influencing grid of vacuum tube. Usually consists of small battery so connected that a negative voltage is applied. A bias also is obtained

through the connection on a radio set that exists between the minus lead of the lighting battery and either the grid tuning element or secondary of an audio frequency amplifier.

BINDING POST—Screw device for fastening wires to electrical instruments.

BUS—Bus bar, Bus wire—Single bar or piece of wire used to connect a large number of pieces of apparatus. Flat bus wire makes the neatest appearance in a radio set, but is harder to work than round bus wire.

BUZZER — Electro-magnetic device, resembling electric bell without gong. Used for testing the sensitivity of a crystal or in locating short circuits in wiring.

CALIBRATION—Act of determining wave-length, dial adjustment or frequency of a radio set.

CALIBRATION CHART—One on which the dial-settings for various wave-lengths are recorded in graph form. After several are recorded in this way, the fan can determine the approximate dial settings for other stations by continuing the curve of the graph to the point representing that wave-length.

CAPACITY—Ability to contain. A condenser is rated at 1 farad when a quantity of 1 coulomb of electricity creates a difference of 1 volt between its terminals. For practical uses in radio, the unit is the microfarad, or one millionth farad.

CHARGER—Device, of the motor generator, tube or vibrating type, used to restore a storage battery to its full operating condition.

CARBORUDUM—An artificial silicate of carbon used as a crystal rectifier; tints from deep gray to violet purple. the silver gray being the most sensitive for radio use.

CALL-LETTERS—Letters by which a radio station identifies itself while broadcasting.

Call letter groups for all nations are assigned by the International Radio-telegraphic Union. The United States Government has the exclusive right to assign calls beginning with K, between KDA and KZZ, with N, and with W. Generally, broadcasting stations in the eastern part of the country are assigned calls beginning with W, and those in the west, calls beginning with K, although there are exceptions. Combinations beginning with N are reserved for Government use, and in addition, combinations from WUA and WVZ and from WXA to WZZ are reserved for Army stations.

Calls in the United States beginning with a numeral instead of a letter are reserved for amateur stations, except those in which the letter X or Z follows the numeral. X or Z after the numeral denotes an experimental station.

CATSWHISKER—A fine wire, usually coiled in spring form, whose tip, resting on the crystal in the detector cup, is used to search out the most sensitive spots.

CIRCUIT—The complete path over which a current flows from the positive to the negative pole of the source of supply of electricity.

COIL—Copper wire wound in various shapes, over an insulated form or self-supported, used to direct the flow of currents in a radio set.

A choke coil is one wound to produce maximum self-inductance, and prevent the flow of current by a property of the coil known as impedance.

A duo-lateral coil or honeycomb coil is one wound somewhat in the shape of a honeycomb. It rates low in distributed capacity.

A reactance coil is one whose reactance is large compared to its resistance.

A spiderweb coil is one wound spirally on a form having an odd number of spokes or fans. It rates low in distributed capacity.

A loading coil is one inserted in a circuit to increase its inductance, and which is not inductively coupled to any other coil.

COMPASS, RADIO—Loop direction finder by which the hearing of a transmitting station may be ascertained.

CONDENSER—Two or more sheets of metal separated by an insulator or dielectric, forming a collector of electric energy. The most common insulators are mica, wax paper, or air.

A fixed condenser is one in which the capacity cannot be changed.

In a variable (disk) condenser, the capacity can be changed. It consists of two sets of interleaving plates, separated by air insulation. One set is stationary and the other can revolve through 180 degrees.

An aerial condenser is a variable condenser placed in aerial circuit to vary the oscillation constant.

A blocking condenser is one usually of small capacity, inserted in a circuit to separate it from another to prevent waste of energy. Is sometimes used to allow an alternating current to enter a circuit and block out any direct currents.

Straight line condensers are of two kinds, straight line wave length and straight line frequency condensers. In the first a unit of the dial is represented by a constant variation (over the entire range) in the wave length to which the condenser will tune. In the straight line frequency condenser a dial unit represents a constant frequency variation over the entire range. This aids in keeping settings of the dial where broadcasting stations are evenly distributed.

CONDUCTANCE—Property of conducting electricity, its unit is the mho, which is the reciprocal of the ohm.

CONDUCTOR—Material through which electricity passes freely. Water and many forms of metal are good conductors.

C. W.—Continuous Waves—A wave train whose amplitudes are constant, having no damping.

CORROSION—Action of eating or wearing away gradually, as applied to metals. Can be caused by chemical elements in the air, by the acid of a storage battery, etc.

COULOMB—Quantitative electrical unit; the amount of current conveyed by 1 ampere in 1 second. The coulomb corresponds to the gallon as applied to water.

COUNTERPOISE—Arrangement of wires, somewhat like an antenna, placed directly under it and used in place of an earth ground. Usually placed 10 to 15 feet above the ground.

COUPLING—A measure of the mutual inductance between two oscillatory circuits; the connecting of two oscillatory circuits.

Close coupling is where primary and secondary coils are close together when inductively coupled, or, if direct coupled, when a large proportion of turns are in common.

Direct coupling is where primary and secondary coils are metallically connected.

Direct loose coupling is when inductances, although metallically connected, are at a distance from each other, or in which only a few turns are common to both circuits.

Direct tight (close) coupling is when one inductance is formed by tapping a number of turns from the coil actually employed in another inductance, or when the ratio between common turns is large.

Inductive coupling is when two oscillatory circuits are coupled only by bringing one inductance coil within the electric field of the other.

CRYSTAL—Pieces of mineral through which currents will pass in one direction only. Among the minerals used are bornite, carborundum, copper pyrites, galena, iron pyrites, silicon tellurium and zincite. When alternating current passes through a crystal it is rectified, being converted into direct current. A crystal loses its sensitivity when dirty, but can be restored by cleaning with alcohol or carbon bisulphide.

CYCLE—As applied to alternating current, it is the period required for one complete change in the direction of the current.

DAMPING—Dying down of amplitude in a train of waves.

DETECTOR—A crystal or vacuum tube rectifier, which makes radio signals audible to the human ear.

DIELECTRIC—Any material which offers high resistance to passage of electric currents.

DIODE—Vacuum tube consisting of two elements only, a filament and a plate, sometimes used instead of a crystal. Cannot be substituted for the usual three-element vacuum tube.

D. C.—Direct current—Electricity which flows continuously in one direction.

ELECTRIC FIELD—Space immediately about an electrified body in which its influence is manifest.

ELECTRIC INDUCTION—Production of electrical effects in the field of an electrified body with metallic connection.

ELECTRICITY—From the Greek term "elektron," meaning amber. Rubbing an amber object with silk was one of the earliest methods of producing an electrical discharge.

ELECTRODE—Terminals constructed to pass an electric current through any desired substance.

ELECTROLYSIS—Decomposition of a substance when an electric current is passed through it.

ELECTROLYTE—Compound which can be decomposed by passing electric currents through it. The active liquid in a storage battery, consisting of sulphuric acid in water, is called an electrolyte.

ELECTROMAGNET—A soft iron core, temporarily rendered magnetic by the induction of a current flowing through the coil wound around it.

ELECTRON—Smallest component of matter known to science. Heating the filament of a vacuum tube causes a flow of electrons to the plate, accounting for its action. In a three-element tube, the flow of the elctrons is controlled by the grid.

E. M. F.—Electromotive force, the unit being the volt.

EMISSION—Throwing off and circulation of electrons in a vacuum tube.

ETHER—An imponderable medium assumed to permeate all matter and space, theoretically forming a pathway for radio waves.

EXTERNAL CIRCUIT—That part of a circuit, including instruments, outside the source of supply.

FADING—Fluctuation of strength of a radio wave due to natural causes.

FARAD—Unit of capacity.

FEED-BACK—Method of returning plate current through a coil, inductively coupled to the grid circuit, in a regenerative receiver.

FILAMENT—The negative electrode in a vacuum tube. The element from which electrons are thrown off.

FREQUENCY—Number of oscillations or cycles per second of an alternating current. In radio, frequency equals velocity of waves (186,000 miles per second) divided by wave-length. A station whose frequency is 790 emanates waves at a rate of 790 kilocycles (790,000 cycles) per second. The natural frequency of an oscillating circuit is that at which it is in tune by virtue of its inductance and capacity.

Audio frequencies are those which are normally audible to the human ear. Vibrations below 10,000 cycles per second.

Radio frequencies are those above 10,000 cycles per second. They are not audible to the human ear, but can be converted into audio frequencies by means of radio equipment, and thus made audible.

FUSE—Short piece or cap of conducting metal of low melting point, so inserted in a circuit that any abnormal flow of current will melt it and break the circuit, preventing damage to tubes or other parts.

GALENA—Crystalline sulphide of lead. Is the most sensitive crystal rectifier for radio purposes.

GRID—Element in a vacuum tube used to control flow of electrons from filament to plate.

GRID BIAS—A negative potential applied to the grid.

GRID LEAK—A non-inductive resistance used to pass off excess grid charges. Is so inserted in the circuit that it operates between the grid and filament of the tube.

GROUND—Connection between the aerial or set and the earth. May be a pipe especially driven into the earth, or may be a water-pipe, as this pipe, in turn, is "grounded." A gas pipe is not permitted, as it presents an element of fire danger.

GROUND CLAMP—Metallic band used to effectively secure ground wire to a water pipe.

"HAM"—Slang term for amateur radio operator.

HARMONIC—A set of incidental waves, whose length and frequency differ from the natural wave of the transmitting station. The harmonic of a broadcasting station frequently can be heard in the form of a duplicate concert on a much lower wave than the station's regular wave length.

A wave length harmonic is always below the regular wave length of the transmitting station.

A frequency harmonic is always above the regular frequency of the transmitting station.

HYDROMETER—Instrument for measuring specific gravity of the solution used in a storage battery. When fully charged battery should read 1,275 to 1,300. Needs recharging at 1,175 or less.

HOOK-UP—Detailed wiring diagram, used to show diagrammatically the relation of various pieces of apparatus in a circuit.

HETERODYNE RECEPTION—See "beat reception."

IMPEDANCE—Resistance offered to a current by a coil of wire because of back electric motive force other than that offered by the ohmage. Is due to reactance.

INDUCTANCE—Property of a coil of wire which determines the strength of the magnetic field around it when a given amount of current is flowing through the coil.

INDUCTION—Interaction upon each other of electromagnetic lines of force, resulting in production of electric currents.

INSULATOR—Any substance which does not pass electric current to any great extent.

INTERFERENCE—Electrical disturbances originating outside the receiving set, which prevents clear reception of the desired signal.

INTERRUPTER — Device which intermittently breaks an electrical current.

JACK—Semi-automatic switch, closed by the insertion of a telephone plug.

JAMMING—Interference from another station. QRM.

KNIFE SWITCH—One in which the movable arm wedges between spring clips.

LEAD-IN—Insulated wire leading from the aerial to the receiving set.

LIGHTNING ARRESTER—Instrument designed so that weak currents, such as those in a radio signal, can pass through it without interruption, but which will cause heavy currents, such as lightning, to follow another path to the ground. The Fire Underwriters require use of a lightning arrester on all antennae erected out of doors.

MEGOHM—Unit of resistance: 1,000,000 ohms.

MHO—Unit of conductivity; the reciprocal of the ohm. A wire having a resistance of 2 ohms, has a conductance of ½ mho.

MICROFARAD—Practical unit of capacity: .000001 farad.

MICROPHONE—Instrument for converting sounds into equivalent electric currents; a sensitive telephone transmitter.

MODULATOR—Device for varying the amplitude of one current in accordance with that of a current of a different frequency.

NEGATIVE POLE—One by which current is said to return to its source after having passed through a circuit.

NON-INDUCTIVE CIRCUIT—One possessing negligible inductance; may be made by doubling a single length of wire and winding it on a coil so that curtance of one ohm when a pressure of one volt is rerent flowing through it makes a like number of turns in opposite directions, neutralizing the magnetic field.

OHM—Unit of resistance. A circuit has a resis- quired to force one ampere of current through it.

OHM'S LAW—Current in amperes is equal to pressure in volts divided by resistance in ohms.

OSCILLATIONS—Alternating currents of high frequency.

Undampened oscillations are those in which the amplitude is constant.

Dampened oscillations are those in which the amplitude falls away.

Forced oscillations are those having frequency of the circuit in which they are set up, as in the case of an untuned primary.

Free oscillations are those having the same frequency as the circuit in which they are set up.

OSCILLATOR—A device for generating high frequency currents.

OXIDIZATION—Process of a compound becoming chemically united with oxygen.

PANEL—Placque of glass or composition on which instruments of a radio receiver are mounted. Is usually of a material which is not a conductor of electricity.

PARALLEL—When two or more paths are open to a circuit, they are said to be in parallel.

PLATE—The positive electrode in a vacuum tube. The element to which electrons are attracted.

POTENTIAL—Pressure which determines the flow of current through a given resistance or impedance.

POTENTIOMETER—Resistance which has, in addition to its two terminals, a movable arm by means of which any desired fraction of a potential drop between the terminals may be tapped off and applied to the points desired.

PRIMARY—That winding of a coil or transformer on which current is impressed.

PUSH-PULL AMPLIFIER—An audio amplifier in which one tube makes use of one-half the cycle of the alternating current and another tube makes use of the following half of the cycle.

RADIATION—Transmission of energy through space in the form of electro-magnetic waves.

REACTANCE—That part of the total impedance which is due to capacity and inductance.

RECTIFIER—A device, usually a crystal or a vacuum tube, which converts alternating current into direct, pulsating current.

REGENERATION—A system by which the amplitude of a current in a vacuum tube is increased by returning it through a coil, thus boosting, by induction, succeeding phases of the current.

RELAY—Electro-magnetic switch by means of which a local power circuit is controlled.

RESISTANCE—Property of a conductor which causes a dissipation of energy when a current passes

through it. It can be compared roughly to friction. In general, resistance is proportional to the length of the conductor and inversely proportional to its cross section. It also varies with the temperature and nature of the conductor. It is the reciprocal of conductivity. Unit, the ohm.

RESONANCE—Synchronous oscillation of two circuits. Exists where the natural frequency of a circuit has the same value as the frequency of the alternating current which is set up in the circuit. Two circuits are said to be "in resonance" when they are oscillating "in step."

RHEOSTAT—Variable resistance for regulating the flow of current.

ROTOR—The moving part of any piece of radio apparatus, such as the movable plates of a variable condenser or the moving coils of a variometer or variocoupler.

SECONDARY—The winding of a coil or transformer which delivers energy.

SHUNT—A by-pass or an instrument connected in parallel with another.

SPREADER—Spar or pole used to keep the wires of a multi-wire aerial parallel to each other.

STAND-BY—Position of the tuner whereby waves of widely varying length are received. In operator's parlance, means "wait and listen" or "don't interrupt."

SELECTIVITY—Ability of a set to select any desired wave-length with a minimum of interference.

SOCKET—Device provided with electrically connected terminals for readily placing a vacuum tube in an electrical circuit.

STATIC—Electrical disturbances caused by atmospheric discharges. Heard in a radio set in the forms of crackles.

TICKLER—A coil in the plate circuit used to feed energy back to the grid circuit in a regenerative receiver.

TELEPHONE PLUG—A two electrode plug (shaft and sleeve) to which are connected the tips of headset or speaker cord for connection to jacks.

TRANSFORMER—Two separate coils, one wound over or close to the other to permit maximum induction, and having a common core.

A push-pull transformer is one especially designed for use in a push-pull amplifier. They are usually sold in pairs. One is the input, the other the output transformer.

A radio frequency transformer is one having a few turns of wire in the primary and many more in the secondary to step up the voltage. Both windings are on the same form or may be wound one inside the other. They have only air as a core.

An audio frequency transformer is one having a few turns of wire in the primary and many more in the secondary wound directly over the primary. This type of transformer contains a coil of laminated soft iron.

VACUUM TUBE—A specially constructed glass enclosed bulb, used to rectify radio signals and in most cases also to amplify them. The most common type in radio is the three electrode tube, consisting of a filament, a piece of fine wire capable of throwing off elctrons; a sheath of metal called the plate, which attracts the electrons; and a grid, a meshwork of wire which controls the flow of the electrons from filament to plate.

VARIOCOUPLER—Two separate inductances, one movable, so that the inductive relation between them can be changed at will. The fixed inductive stator is called the primary, and usually is tapped; the movable one (rotor) is called the secondary.

VARIOMETER—Two inductances connected in series and in such a mechanical manner that the total inductance of the circuit may be changed by varying the inductive relation between the two.

VELOCITY OF RADIO WAVES—186,000 miles per second. (Same as light.)

VERNIER—Device for accomplishing fine adjustment of instruments.

VOLT—Unit of potential or pressure. One volt is that pressure which, steadily applied to a resistance of one ohm, produces a current of one ampere.

VOLTMETER—Instrument for measuring voltage or potential.

WATT—Unit of electric power; equals volts multiplied by amperes.

WAVE-LENGTH—Distance between the crests or troughs of two adjacent waves in a wave train. The natural wave-length of an aerial or circuit is known as its fundamental wave-length. It equals the normal period of oscillation of a circuit, depending only on the amount of inductance and capacity.

WAVE-TRAP—A resonant circuit usually composed of a coil shunted by a variable condenser, used to absorb an interfering signal.

WHEATSTONE BRIDGE—An instrument for determining the resistance of a body by balancing it with another of known resistance.

WIRED RADIO—Application of the principles of radio to communication over wires, whether telegraph, telephone, or power.

RADIO LOG

Station	City	Meters	1st Dial	2nd Dial	3rd Dial	Time

REMARKS

RADIO LOG

Station	City	Meters	1st Dial	2nd Dial	3rd Dial	Time

REMARKS

RADIO LOG

Station	City	Meters	1st Dial	2nd Dial	3rd Dial	Time

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Station	City	Meters	1st Dial	2nd Dial	3rd Dial	Time

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