RSO:MWB
I-6

Publications of the
DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS
WASHINGTON

Letter
Circular
LC639

(January 24, 1922.)

List of Sources of Elementary Radio Information.

A very considerable number of persons are interested in the operation of radio stations, who are not directly concerned with the operation of either Government or regular commercial radio stations. Some are interested in maintaining a private system of radio communication over comparatively short distances. Many are interested in radio because it offers a very fascinating experimental field. Different kinds of useful information, such as time signals, weather reports, and market reports, are transmitted daily by radio, and are received by many persons in all parts of the United States.

PERIODICALS.

Persons interested in radio communication along the lines mentioned above can keep in touch with radio developments which will be of value to them by arranging to see regularly the issues of one or more of the following periodicals:

Q.S.T. Published by the American Radio Relay League, Hartford, Conn.
Radio News, 235 Fulton Street, New York.
Wireless Age, 326 Broadway, New York.
Pacific Radio News, 50 Main St., San Francisco, Calif.
Wireless World, 12 Henrietta St., London, England.

Persons who have had technical training in electricity and radio communication will be interested in the "Proceedings of the Institute of Radio Engineers," 140th St. and Convent Ave., New York, N.Y., and the "Radio Review," 12 Henrietta St., Strand, W.C.2, London, England.

Persons in the vicinity of Chicago will be interested in "Radio Topics" published at 4533 North Sawyer Avenue, Chicago. Persons in Maryland, Virginia, and adjacent states, will be interested in the "Radio Condenser," published at 3909 Cottage Avenue, Baltimore, Md.

Books.

The Superintendent of Documents, Government Printing Office, Washington, D.C., will send without charge, on request, a copy of his "Price List No.64," which lists Government publications of radio interest. The Bureau of Standards issues a list of the publications of the Bureau of Standards which are of technical radio interest; a copy of this list may be secured by addressing the Radio Laboratory, Bureau of Standards, Washington, D.C.

The Bureau of Standards has prepared an elementary book treating of the principles of radio communication, entitled "The

Principles Underlying Radio Communication." Copies of this book may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., after November 1931.

The following are other elementary radio books which will be found useful:

Books Suitable for the Beginner.

E. E. Bucher. Practical Wireless Telegraphy. New York, 1918, Wireless Press Inc

E. E. Bucher. Wireless Experimenters Manual. New York, 1920, Wireless Press Inc.

Charles B. Hayward. How to become a Wireless Operator. Chicago, 1918, American Technical Society.

Robison's Manual of Radio Telegraphy and Telephony. Annapolis, Md., 1920, United States Naval Institute.

The Admiralty Manual of Wireless Telegraphy. London, 1920, Published by His Majesty's Stationery Office.

M. B. Sleeper. Design Data for Radio Transmitters and Receivers. New York, 1920, Norman W. Henley Publishing Co.

M. B. Sleeper. Radio Hook-Ups. New York, 1920, Norman W. Henley Publishing Co.

P. E. Edelman. Experimental Wireless Stations. New York, 1920, Norman W. Henley Publishing Co.

Elementary Texts for Study.

G. D. Robinson. Modern Theory and Practice in Radio Communication. Annapolis, Md., 1920, United States Naval Institute.

E. W. Stone. Elements of Radio Telegraphy. New York, 1919, D. Van Nostrand Co.

J. C. Hawkhead and H. M. Dowsett. Handbook of Technical Instruction for Wireless Telegraphists. London, 1918, Wireless Press Limited.

A. N. Goldsmith. Radio Telephony. New York, 1918, Wireless Press Inc.

More Advanced Texts Suitable for Reference.

H. M. Dowsett. Wireless Telegraph and Telephony. London, 1920, Wireless Press Limited.

Rupert Stanley. Textbook of Wireless Telegraphy (2 volumes). London and New York, 1919, Longmans Green & Co.

J. H. Morecroft. Principles of Radio Communication. New York 1931, John Wiley & Sons.

Year Book.

A valuable reference book on matters of radio interest is the "Year Book of Wireless Telegraphy," published in May of each year by the Wireless Press Limited, 12 Henrietta St., London, England.

Codes.

In radio telegraphy, signals are transmitted by dots and dashes arranged according to the "International Morse Code," sometimes called the "Continental Code." The International Morse Code is different from the "American Morse Code" which is used on land lines in the United States. The International Morse Code is given in the books by Robison, Robinson, and Hayward, mentioned above, and also in the pamphlet, "Radio Communication Laws of the United States" mentioned below. The International Morse Code is also given on a small card (Form 773a) published by the Bureaunof Navigation. A copy of this card may be procured without charge on application to the Bureau of Navigation, Department of Commerce, Washington, D. C., or to any of the District Radio Inspectors whose addresses are given below.

Difficulties in Transmission.

Persons contemplating the installation of radio stations which are expected to maintain reliable radio communication at all times, particularly radio telephony, are reminded that radio communication is often subject to serious interference from atmospheric electric disturbances, which are particularly serious in the summer. Other difficulties in transmission may also exist. Information regarding the actual operating conditions in a given locality should be obtained whenever possible from the operators of radio stations in the locality in question.

Radio Laws and Regulations.

Every person engaged in the handling of radio traffic should be thoroughly familiar with the radio communication laws of the United States, and the International Radiotelegraphic Convention. These are printed in a pamphlet, "Radio Communication Laws of the United States," of which copies may be purchased for 15 cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C.

The law provides that in order to operate a radio transmitting station, both a station license, and an operator license must be secured. The law provides penalties for the operation of a transmitting station without proper licenses.

Provision is now made for eight classes of land stations:
(1). Public Service Stations, General.
(2). Public Service Stations, Limited.
(3). Limited Commercial Stations.
(4). Experiment Stations.
(5). Technical and Training-School Stations.
(6). Special Amateur Stations.
(7). General Amateur Stations.
(8). Restricted Amateur Stations.

Station licenses for classes 4, 5, and 6, are issued only under exceptional circumstances, as set forth in the pamphlet mentioned above.

General Amateur stations are restricted to a transmitting wave length not exceeding 200 meters and a transformer input not exceeding 1 kilowatt.

Restricted amateur stations are amateur stations located within five nautical miles of a naval or military station, and are restricted to a wave length not exceeding 200 meters and to a transformer input not exceeding one-half kilowatt.

If a transmitting station radiates more than one wave length, the energy in no one of the lesser waves shall exceed ten percent of the energy in the principal wave.

The logarithmic decrement per complete oscillation must not exceed two tenths.

A station used only for receiving does not require a station license. Operators of stations used only for receiving do not require operator's licenses, but must maintain secrecy in regard to messages.

Operators' licenses are divided into the following classes: Commercial extra first grade, commercial first grade, commercial second grade, commercial cargo grade, commercial temporary permit, experiment and instruction grade, amateur first grade, and amateur second grade. In order to obtain an operator's license of any grade, it is necessary to pass an examination, showing certain qualifications, as set forth in the pamphlet mentioned above. For the amateur licenses an operator must be sufficiently familiar with the International Morse Code to receive at a speed of at least ten words per minute.

Both station licenses and operators' licenses are issued by the Bureau of Navigation of the Department of Commerce, Washington, D. C. The United States is divided into nine radio

districts. Each district has a Radio Inspector, who has charge of the issuing of both station licenses and operators' licenses in his district. Application for either kind of license should be addressed to the Radio Inspector of the District in which the station is located, or if this is not known, to the Bureau of Navigation, Department of Commerce, Washington, D. C.

The offices of the Radio Inspectors are located as follows:

First District, Radio Inspector, Custom House, Boston, Mass.
Second District, Radio Inspector, Custom House, New York, N.Y.
Third District, Radio Inspector, Custom House, Baltimore, Md.
Fourth District, Radio Inspector, " " " ".
Fifth District, Radio Inspector, Custom House, New Orleans, La.
Sixth District, Radio Inspector, Custom House, San Francisco, Cal.
Seventh District, Radio Inspector, 3301 L.C.Smith Bldg., Seattle, Wa.
Eighth District, Radio Inspector, Federal Building, Detroit, Mich.
Ninth District, Radio Inspector, Federal Building, Chicago, Ill.

It is probable that the radio laws will be revised in the near future. For authoritative information regarding the provisions of the current laws and regulations, inquiry should be made of the Bureau of Navigation, Department of Commerce, Washington, D. C.

Canadian Radio Laws.

The laws regulating the operation of private radio stations in Canada are in several respects quite different from those in force in the United States. For instance, a station which is used only for receiving must have a station license, but is not restricted as to the length of its antenna. Every person operating any kind of a radio station in Canada, for either receiving or transmitting, must have a "certificate of proficiency," or operator's license. A "certificate of proficiency" can not be issued to a person who is not a British subject. Amateur experimental stations used for transmitting are restricted to wavelengths of 50, 100, 150, or 200meters, according to their distances from commercial land stations or routes of Navigation. Stations located within five miles of a commercial coast or land station or a route of navigation can not use a transmitting wave length greater than 50 meters. The Canadian laws and regulations are printed in the "Year Book of Wireless Telegraphy." For authoritative information inquiry should be made of the Deputy Minister of the Naval Service, Ottawa, Ontario, who will supply for ten cents a pamphlet containing the Canadian laws and regulations.

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 used by that station at all times. This call consists usually of a number followed by two letters, as 1AB, but may consist of a number followed by three letters, as 1ABC. The number is the number of the radio district in which the station is located. Experiment stations have calls

consisting of a number followed by two or three letters of which the first one 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 one is Y, as 1YA. Special amateur stations have calls consisting of a number followed by two or three letters of which the first one is Z, as 1ZA. It is unlawful for any transmitting station at any time to sign any call except the call assigned in its station license. No station is allowed to transmit until a station license is issued. The radio regulations formerly provided that after an application for a station license had been filed and pending the issue of the station license, a provisional call could be used and the station could transmit; this provision has been repealed.

Canadian Amateur Calls.-- Canadian amateur stations are assigned calls consisting of a number followed by two or three letters, like the calls assigned to amateur stations in the United States. The Canadian stations having calls beginning with the numbers 1, 2, and 3, are in the southeastern part of Canada, somewhat near to the United States stations having calls beginning with 1, 2, 3. Therefore it is possible for a Canadian station having a call, say 1AB, to work with a United States station having the same call 1AB. Operators who make a practice of working Canadian stations have devised various means for avoiding confusion.

Lists of Radio Calls.

Every radio amateur should also have a copy of the pamphlets "Amateur Radio Stations of the United States," and "Commercial and Government Radio Stations of the United States." The price of each of these pamphlets is fifteen cents, and orders should be sent to the Superintendent of Documents. These pamplets contain lists of the amateur, and commercial and Government stations in the United States, and of the call letters assigned to the stations; a new edition of each pamphlet is published on June 30 of each year. A monthly publication called the "Radio Service Bulletin" is issued which contains information regarding changes in the radio regulations, traffic information, and lists additions to or other changes in the list of "Commercial and Government Radio Stations." Copies of the "Radio Service Bulletin" may be secured from the Superintendent of Documents for five cents per each issue, or subscriptions may be ordered for 25 cents per year.

A "Consolidated Radio Call Book," is published by the Consolidated Radio Call Book Co., 41 Park Row, New York, N.Y. This gives the calls of both United States and foreign stations.

A list of commercial and government stations operating in the United States and in foreign countries is given in the "Year Book of Wireless Telegraphy," mentioned above.

Washington, D. C.