

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, October 2, 1922—No. 66

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ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name	= Name of station.
Loc.	= Geographical location: O = west longitude, N = north latitude, S = south latitude.
Call	= Call letters assigned.
System	= Radio system used and sparks per second.
Range	= Normal range in nautical miles.
W. l.	= Wave lengths assigned: Normal wave lengths in italics.
Service	Nature of service maintained: PG = General public. PR = Limited public. RC = Radio compass station. P = Private. O = Government business exclusively.
Hours	= Hours of operation. N = Continuous service. X = No regular hours. m = a. m. (12 m = midday). s = p. m. (12s = midnight).
Rates	= Ship or coast charges in cents: c = cents. (The rates in the international list are given in francs and centimes.)
I. W. T. Co.	= Independent Wireless Telegraph Co.
R. C. A.	= Radio Corporation of America.
S. O. R. S.	= Ship Owners' Radio Service.
C. w.	= Continuous wave.
I. c. w.	= Interrupted continuous wave.
V. t.	= Vacuum tube.
FX.	= Fixed station.

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NEW STATIONS.

Commercial land stations, alphabetically by names of stations.

[Additions to the List of Radio Stations of the United States, edition of June 30, 1922, and to the International List of Radiotelegraph Stations published by the Bureau.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Katalla, Alaska.....	KFAI	300, 600, 900.....	PG & PB	X	Chukar Oil Co.
Oakland, Calif.*	KFAA	230.....	P	X	Tribune Publishing Co.
San Francisco, Calif..	KFI	.....	P	X	United Press.
Mo.,.....	KTA	300, 600, 900.....	P	X	Examiner Printing Co.

* Loc. (approx.) C. 144° 30' 00", N. 65° 10' 00" range, 150 system, Telefunken, 1000; rates, ship service, 6 c. per word; station to station, 6 c. per word (minimum, 60 c.), domestic coast; night letter 60 c. for 10 words and 12 c. for each additional 10 words or fraction thereof.

* System, v. t. telegraph.

* Range, 200 system, cross-pole, v. t. telephone and telegraph; rates, same. All of the above-named stations, with the exception of Katalla, Alaska, are portable.

Commercial ship stations, alphabetically by names of vessels.

[Additions to the List of Radio Stations of the United States, edition of June 30, 1922, and to the International List of Radiotelegraph Stations published by the Bureau.]

Name of vessel.	Call signal.	Rates.	Service.	Hours.	Owner of vessel.	Station controlled by—
Bella.....	WAX	Center.	PG	X	Antonio Carver	L. W. T. Co.
Blue Hill.....	KFBA	5	PG	X	Libby S. S. Co.	R. C. A.
Garden.....	KFCB	6	PG	X	Peterson Shipbuilding Co.	Owner of vessel.
John A. Kling*.....	KFFI	.....	PG	X	Knapp S. S. Co.	R. C. A.
Lincoln Land*.....	KUFL	.....	PG	X	Pacific Transportation & Navigation Co.	
Nepenthe II.....	KFBB	.....	PG	N	Van Lempere Hobbs	Owner of vessel.
Niagara*.....	KFBE	.....	PG	N	American S. S. Co.	

* Range, 200 system, Marconi, 150; w. l., 200, 600.

* Range, 150 system, Navy-Siren, 1000; w. l., 300, 600.

* Range, 150 system, R. F. A., 1500; w. l., 300, 600; rates, Great Lakes, 2 c. per word.

* Range, 200 system, Navy-William & Clark, 1000; w. l., 300, 600.

* Range, 150 system, Navy-William Specialty Apparatus Co., R. F. A., w. l., 300, 600; rates, Great Lakes, 2 c. per word.

Commercial land and ship stations, alphabetically by call signals.

[a—ship station; c—land station.]

Call signal.	Name.	Call signal.	Name.
KFBB	Nepenthe II.....	KFI	San Francisco, Calif. (portable).....
KFCB	Garden.....	KFAI	Katalla, Alaska.....
KFBA	Blue Hill.....	KTA	San Francisco, Calif. (portable).....
KFBE	Niagara.....	KUFL	Lincoln Land.....
KFFI	John A. Kling.....	WAX	Bella.....
KFAA	Oakland, Calif. (portable).....		

Broadcasting stations, alphabetically by names of cities.

[Additions to the List of Radio Stations of the United States, edition June 30, 1922.]

City.	Call signal.	City.	Call signal.
Andover, Tex.	WQAQ	Liberal, Kans.	WMAQ
Ann Arbor, Mich.	WJAT	Leesport, N. Y.	WMAK
Anderson, Okla.	WGAH	Leesville, Ky.	WLAP
Bellows Falls, Vt.	WIAK	Marshalltown, Iowa	WLAR
Boston, Mass.	WMAJ	Marionville, Mo.	WLAG
Burlington, Vt.	WNAH	New York, N. Y.	WLAN
Burlington, Iowa	WJAT	Norcross, Ga.	WMAJ
Cazenovia, N. Y.	WMAQ	Oklahoma, Okla.	WMAJ
Chicago, Ill.	WLSA	Pensacola, Fla.	WJAT
Du.	WMAQ	Phoenix, Ariz.	KFBC
Columbus, Ohio	WMAJ	Prescott, Ariz.	KFBC
Cresco, Iowa	WMAJ	Richmond, Va.	WMAJ
Dartmouth, Mass.	WJAT	Salem, Oreg.	KFBC
Duluth, Minn.	WJAT	San Antonio, Tex.	WJAT
Easton, Pa.	WMAJ	Scranton, Pa.	WJAT
Ind. Okla.	WNAK	Springfield, Ohio	WMAJ
Fairbanks, Alaska	WJAT	Trenton, N. J.	WMAJ
Freeman, Neb.	WJAT	Trinidad, Colo.	KFBC
Greenwood, Ind.	WLAN	Tulsa, Okla.	WMAJ
Hartford, Conn.	WLAN	Walla Walla, Wash.	KFBC
Houston, Tex.	WJAN	Waterloo, Iowa	WMAJ
Hutchinson, Kans.	WJAN	Warren, Ohio	WJAT
Kalamazoo, Mich.	WJAT	Washington Court House, Ohio	WMAJ
Kansas City, Mo.	WMAJ	Wilkes-Barre, Pa.	WMAJ
Laramie, Wyo.	KFBC		

Lists of stations broadcasting market or weather reports (485 meters) and music, concerts, lectures, etc. (360 and 369 meters), alphabetically by call letters.

[Additions to the List of Radio Stations of the United States, edition June 30, 1922.]

Call signal.	Station operated and controlled by—	Location of station.	Wave length.
KFBC	Savage Electric Co.	Prescott, Ariz.	360
KFBC	Triangle Electric & Supply Co.	Trinidad, Colo.	360
KFBC	The Cathedral Bookshop (Thomas)	Laramie, Wyo.	360
KFBC	Nelson Radio Supply Co.	Phoenix, Ariz.	360
KFBC	Auto Supply Co.	Walla Walla, Wash.	360
KFBC	Salem Electric Co.	Salem, Oreg.	360
WMAJ	Radio Electric Co.	Washington Court House, Ohio	360
WLAN	Cullum & Washington Radio Corp.	Minneapolis, Minn.	360
WLAN	Verwood Loan Machine Corp.	Bellows Falls, Vt.	360
WLAN	Tulsa Radio Co.	Tulsa, Okla.	360
WLAN	Marlow Radio Co.	Springfield, Ohio	360
WLAN	Puritan Hardware Co.	Hartford, Conn.	360
WJAT	Authentic Radio Shop	Scranton, Pa.	360
WJAT	W. V. Jordan	Leesport, Ky., 206 West Breckenridge Street	360
WJAT	A. E. Seidling	Kalamazoo, Mich., 905 North Park Street	360
WLAR	Michel Music Co.	Marshalltown, Iowa	360
WLAS	Hutchinson Grain Radio Co.	Hutchinson, Kans.	360, 485
WJAT	Charles G. Bosch Co.	Burlington, Iowa	360
WJAT	Electric Shop	Pensacola, Fla.	369
WJAT	Police Department of New York City	New York, N. Y.	375
WLAN	Pittman Electric Co.	Greenacres, Ind.	375
WLAN	Northern Commercial Co.	Fairbanks, Alaska	375
WLAN	Hutton & Jewell Electric Co.	Warren, Ohio	375
WMAJ	Radio Supply Co.	Oklahoma, Okla.	375
WMAJ	J. Day, Edge of Ice B. Marshall	Cazenovia, N. Y., 221 West Street	375
WMAJ	Round Table Radio Corp.	Dartmouth, Mass.	375
WMAJ	Truck Theatre Co.	Liberal, Kans.	375
WMAJ	Provere Televison Co.	Kansas City, Mo.	360, 485
WMAJ	Stanton Laboratories	Leesport, N. Y.	375
WMAJ	Trenton Hardware Co.	Trenton, N. J.	375
WLAN	Grand Street Baptist Church	Columbus, Ohio	360
WMAJ	Edith Estelle Sargent	Easton, Pa.	360
WMAJ	The Fair Commercial and Chicago Daily News	Chicago, Ill.	360
WMAJ	Waterloo Electrical Supply Co.	Waterloo, Iowa	360
WMAJ	Radio Equipment Co.	Richmond, Va.	360
WMAJ	Pennwood Radio Corp.	Fairfield, Mass.	360

Lists of stations broadcasting market or weather reports (485 meters) and music, concerts, lectures, etc. (260 and 460 meters), alphabetically by call letters—Continued.

Call signal.	Station operated and controlled by	Location of station.	Wave lengths.
WNAB	Park City Daily News.....	Bowling Green, Ky.....	360
WNAC	Shepard Stores.....	Boston, Mass.....	360
WNAD	Oklahoma Radio Engineering Co.....	Nation, Okla.....	360
WNAF	Radio Radio Distributing Co.....	Enid, Okla.....	360, 485
WNAO	Radio Radio & Electric Shop.....	Cress, Iowa.....	360
WNAH	Wilkes-Barre Radio Repair Shop.....	Wilkes-Barre, Pa.....	360
WCAA	Dr. Walter Hardy.....	Ardmore, Okla.....	360
WCAE	Midland College.....	Fremont, Nebr.....	360
WCAI	Southern Equipment Co.....	San Antonio, Tex.....	360
WPAV	Lavy Bros. Dry Goods Co.....	Houston, Tex.....	360
WQAO	West Texas Radio Co.....	Abilene, Tex.....	360
WRAU	Amarillo Daily News.....	Amarillo, Tex.....	360

Government ship stations, alphabetically by names of stations.

[Additions to the List of Radio Stations of the United States, edition of June 30, 1922, and to the International List of Radiotelegraph Stations published by the Bureau.]

Station.	Call signal.	Station controlled by
Alexander Hamilton.....	NIVR	U. S. Coast Guard.
Sturgeon Bay.....	NITZ	U. S. Navy.
Hinnis.....	WYAX	U. S. Army.

¹ System, U. S. Navy; w. l., 140, 500.

² System, U. S. Army.

Special land stations, alphabetically by names of stations.

[Additions to the List of Radio Stations of the United States, edition of June 30, 1922.]

Station.	Call signal.	Wave lengths.	Station controlled by—
Camp Hill, Pa.....	3ZD	400, 375.....	J. Cox, Thompson
Cape Girardeau, Mo.....	3VAQ	400, 375.....	Southeast Missouri State Teachers College.
Catskills, N. Y.....	8XH	200, 375, 375.....	Chas. B. Meredith.
Chicago, Ill.....	8XO	Variable.....	Mockam Co.
Chesland, Ohio.....	8XM	400, 375.....	City Water Department.
Dartmouth, Mass.....	1XV	Variable.....	Round Hills Radio Corp.
East Pittsburgh, Pa.....	8XS	Variable.....	Westinghouse Electric & Manufacturing Co.
Elkade, Kans.....	9XP	Variable.....	Midland Heating Co. (G. I. Carrington).
El Paso, Tex.....	5ZACA	500, 375.....	Mine & Smelter Supply Co.
Enid, Okla.....	5ZAI	200, 375.....	Keough B. Griffin, 50 Bay Building.
Lexington, Ky.....	9ZI	500, 375.....	Ray E. Anderson, 707 Franklin Avenue.
Los Angeles, Calif.....	6XY	Variable.....	Earl C. Anthony (Lae 7), 1000 South Hope Street.
Memphis, Tenn.....	5ZABA	400, 375.....	John C. Phipps, 531 Pontiac Avenue.
Montgomery, Ala.....	5ZABA	400, 375.....	Paul H. Brooks, 600 South Malbone Street.
New York, N. Y. (Municipal Building)	2XW	Variable.....	Western Electric Co.
Pine Bluff, Ark.....	5XAI	400, 375.....	Arkansas Light & Power Co.
Stockbridge, Mass.....	1XU	Variable.....	Thomas S. L. Kleckha.
Syracuse, N. Y.....	8XL	275.....	Andrew J. Potter, 213 Westinghouse Avenue.
Theon, Ariz. (portable)	6XZ	Variable.....	R. D. Whitacre and L. R. Wilson, 417 East Speedway.
Washington, D. C.....	2ZH	150-375.....	Herbert Hoover, jr., 2400 S Street NW.
Wichita Falls, Tex.....	5ZADA	400, 375.....	Landy L. Ziegler, 207 Hall Avenue.

Special land stations, grouped by districts.

Call signal.	District and station.	Call signal.	District and station.
1XU	First district:	6XY	SIXTH district:
1XV	Stockbridge, Mass.	6XZ	Los Angeles, Calif.
2XW	Dartmouth, Mass.		Tucson, Ariz. (spectator).
	Second district: New York, N. Y.		Eighth district:
	Third district:	8XH	Cincinnati, N. Y.
3ZD	Camp Hill, Pa.	8XI	Scranton, N. Y.
3ZH	Washington, D. C.	8XM	Cleveland, Ohio.
	Fifth district:	8XS	East Pittsburgh, Pa.
5XABA	Montgomery, Ala.		Ninth district:
5XAI	Fort Hill, Ark.	9XO	Chicago, Ill.
5XAB	Memphis, Tenn.	9XP	El Dorado, Kans.
5XAC	El Paso, Tex.	9YAO	Cape Girardeau, Mo.
5XAD	Wichita Falls, Tex.	9ZL	Lexington, Ky.
5XAL	Fort, Okla.		

ALTERATIONS AND CORRECTIONS.

COMMERCIAL LAND STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 1922, and to the International List of Radiotelegraph Stations, published by the Burea Bureau.]

- CAPE MAY, N. J.—W. L. 300, 525, 666, 1610; service, PG & PR; PR service is with Marion, Mass., on 1610 meters.
- CHICAGO, ILL.—Strike out all particulars.
- CHICAGO, ALASKA.—Range, 200; service, PG & PHL.
- DALLAS, TEX. (KUNP).—Strike out all particulars.
- FAIRPORT, VA.—Hours, X.
- FLAT ROCK, MICH.—Strike out all particulars.
- FORT WORTH, TEX. (KDMK).—Strike out all particulars.
- GALVESTON, TEX. (KDLZ).—Strike out all particulars.
- MANITOWOC, WIS.—Hours, N.
- MARSHALL, ALASKA.—Strike out all particulars.
- MEXIA, TEX.—Strike out all particulars.
- NARAT INLET, ALASKA.—Strike out all particulars.
- NEW ORLEANS, LA.—System, composite v. t. and composite spark, 1000.
- NEW YORK, N. Y. (WNY).—*Local* New York, N. Y. (Borough of Brooklyn); w. l., 300, 600.
- NEW YORK, N. Y. (WSK).—Strike out all particulars.
- NOBLESK, NARR.—Strike out all particulars.
- ORANGE, TEX.—Strike out all particulars.
- ORANGE FIELD, TEX.—Strike out all particulars.
- SEACIT POWER SITE, WASH.—Range, 150; w. l., 300, 425, 500, 660.
- SEATTLE, WASH. (KYW).—W. L. 300, 425, 500, 600.
- SEWARDSD, TEX.—Strike out all particulars.
- SWANS ISLAND, MO.—Strike out all particulars.
- TULSA, OKLA. (KDTI).—Strike out all particulars.
- TULSA, OKLA. (WBAT).—Strike out all particulars.

COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 22, 1922, and to the International List of Radiotelegraph Stations, published by the Burea Bureau.]

Note.—(U. S. L. A.) operating company denotes that the change applies to the List of Radio Stations of the United States only; does not apply to the Burea List. However when the rate is given without the word "essentially" added—(U. S. L. A.) North and South American and transoceanic services—It should be understood that the rate is for both classes of service. When the rate is for one class of service only, the classification will be stated.

- AQUAVIVA.—W. L. 300, 450, 666.
- AQUAVIVA.—Range, 250; system, Kilsbuenne & Clark, 1000; w. l., 300, 600; hours, X.
- AMERICAN LEXINGTON.—Range, 400; w. l., 300, 450, 660, 1800.
- ANACONDA.—System, Navy-Wireless Improvement Co., 1000.
- ANWARA.—Strike out all particulars.
- BARON CHICO.—Range, 300; system, Navy-Lowenstein, 1000; w. l., 300, 450, 660.

- BROAD ARROW.**—Hours, X.
CALORNIA.—Vaccaro Bros. & Co., owner of vessel.
CARGO D. BRADLEY.—System, R. C. A., v. t. telephone, c. w., i. c. w., and spark, 1000.
CASCO.—Strike out all particulars.
CATHAY.—Name changed to Diana Dollar, hours, X.
CHEBAULP.—W. I., 300, 450, 600.
CITY OF LOS ANGELES.—Station operated and controlled by R. C. A.; effective September 11, 1922.
COAHOMA COUNTY.—W. I., 300, 450, 600.
COAMO.—Strike out all particulars.
COL. R. L. DRAKE.—Range, 300; system, R. C. A., 1000.
CONILLA.—M. and J. Tracy, owners of vessel.
COTE BLANCHE.—Name changed to Michael Tracy; M. and J. Tracy, owners of vessel.
COTTONWOOD.—System, Navy-R. C. A., 1000; James Davidson, owner of vessel.
COUSHATTA.—M. and J. Tracy, owners of vessel.
COURTIS.—Station operated and controlled by R. C. A. (U. S. L.).
COVALT.—Morton Salt Co., owner of vessel.
COWEE.—Name changed to Makaweli; station operated and controlled by R. C. A., effective July 29, 1922; Mason Navigation Co., owner of vessel.
EASTERN COAST.—Range, 300; system, Marconi, 1000, w. I., 300, 450, 600.
EASTERN GLEN.—System, Navy-R. C. A., 1000; hours, X.
EASTERN KING.—System, Navy-Marconi, 1000; w. I., 300, 450, 600.
EASTERN PLANET.—Range, 600; w. I., 300, 450, 600, 1500; hours, X.
EASTERN SHORE.—System, Navy-Marconi, 1000; w. I., 300, 450, 600; hours, X.
EDGEFIELD.—W. I., 300, 450, 600; hours, X.
EUGENE.—Standard Transportation Co., owner of vessel.
F. D. ASCHB.—Strike out all particulars.
HOMESTEAD.—W. I., 300, 450, 600; hours, X.
HONOLULU.—Name changed to Commercial Trader.
IDA.—Strike out all particulars.
ILLINOIS (WCZ).—System, R. C. A., 1000.
INVINCIBLE.—System, Navy-R. C. A., 1000; w. I., 300, 450, 600.
ITALIA.—Name changed to Sacaracca.
ISONOMIA.—Strike out all particulars.
LAKEBRIDGE.—E. K. Wood Lumber Co., owner of vessel.
LAKE DUNMORE.—Name changed to El Cicuta; Erie M. Low, owner of vessel.
LAKE FISHER.—Lake Fisher Navigation Co., owner of vessel.
LAKE HORNEY.—Station operated and controlled by R. C. A.; effective September 14, 1922.
LAKE GEORGE.—James Davidson, owner of vessel.
LAKE SHORE.—Station operated and controlled by R. C. A. (U. S. L.).
LAKE SLAVI.—Range, 200; system, R. C. A., 1000; w. I., 300, 450, 600.
MAJOR WHEELER.—Station operated and controlled by R. C. A., effective September 1, 1922.
MAKENA.—Station operated and controlled by R. C. A., effective July 29, 1922.
MONMOUTH.—Range, 300; system, R. C. A., 1000; w. I., 300, 450, 600; hours, X.
NORMA.—Station operated and controlled by I. W. T. Co., effective September 15, 1922.
PACIFIC.—Range, 300; system, R. C. A., 1000; w. I., 300, 600; station operated and controlled by R. C. A.
PATROL.—Name changed to Maconi; system, R. C. A., 1000; w. I., 300, 450, 600; service, PG; hours, X; rate, 8 c. per word.
PAWNEE (WLL).—Strike out all particulars.
PEQUONNOCK.—Range, 150; system, Cutting & Washington, 1000, w. I., 300, 450, 600; hours, X; rate, 8 c. per word.
PEQUOT.—Strike out all particulars.
PERE MARQUETTE S.—Service PG.
PHILIP PUBLICKER.—Adolphia S. S. Corp., owner of vessel.
PILONM.—Goodrich Transit Co., owner of vessel.
PORTO RICO.—W. I., 300, 450, 600.
POZNAN.—Name changed to Paul Luekenbach.
REMUS.—Station operated and controlled by I. W. T. Co. (U. S. L.).
SABOTAWAN.—W. I., 300, 450, 600.
SCHODACK.—W. I., 300, 450, 600.
SREANDBEE.—System, R. C. A. v. t. telephone, c. w., i. c. w., and spark, 1000.
SINASTA.—Station operated and controlled by I. W. T. Co. (U. S. L.).

STORCKO.—Range, 300; system, Navy-W. S. A. Co., 1000; w. l., 300, 450, 600.
 THEODORE F. REYNOLDS.—Strike out all particulars.
 THORO.—Baltimore & Carolina S. S. Co., owner of vessel.
 TUNICA.—Strike out all particulars.
 WEST ELIASCO.—System, Navy-Marconi, 1000; w. l., 300, 450, 600; hours, X.
 WEST HADAWAY.—Range, 300; system, Navy-Kilbourne & Clark, 1000; w. l., 300, 450, 600.
 WEST HEMBRLE.—System, Navy-Lowenstein, 1000; w. l., 300, 450, 600; hours, X; station operated and controlled by S. O. R. S., effective September 5, 1922.
 WEST HORNMAN.—Range, 300; system, Navy-Marconi, 1000; w. l., 300, 450, 600.
 WEST HURDAN.—System, Navy-Marconi, 1000; w. l., 300, 450, 600; hours, X.
 WEST ISLAY.—Station operated and controlled by R. C. A. (U. S. L.).
 WEST ISLERA.—W. l., 300, 450.
 WEST LOQUASSUCK.—Station operated and controlled by S. O. R. S., effective September 5, 1922.
 WEST MACHOMET.—System, Navy-Marconi, 1000; w. l., 300, 450, 600; hours, X.
 WEST MUMFORD.—System, Navy-Lowenstein, 1000; w. l., 300, 450, 600.
 WEST NONENTEM.—Range, 300; system, Navy R. C. A., 1000; 300, 450, 600.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KDLY, *read* El Centro; KDWN, *read* Diana Dollar; KIN, *read* Macom; KUPB, *read* Succorso; WLY, *read* Paul Luckenbach; WMAO, *read* Makawabi; WMBE, *read* Michael Tracy; WMZ, *read* Commercial Trader; strike out all particulars following the call signals, KDDG, KDGU, KDLZ, KDLY, KDMK, KDW, KEL, KGA, KIS, KSUA, KUXP, WBAR, WBAS, WBAT, WCP, WFD, WFM, WJP, WKH, WLU, WLV, WLX, WQX, WSK, WTI, WWD.

BROADCASTING STATIONS, BY CALL SIGNALS.

[Attention and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1922.]

KIYL (Salt Lake City, Utah).—W. l., 300, 450.
 KDZJ (Eugene, Oreg.).—Station operated and controlled by Excelsior Radio Manufacturing Co.
 KOQ (Modesto, Calif.).—Strike out all particulars.
 KSD (St. Louis, Mo.).—W. l., 400, 485.
 KYW (Chicago, Ill.).—W. l., 460, 485.
 WAAB (St. Louis, Mo.).—Strike out all particulars.
 WAAP (Wichita, Kans.).—Station operated and controlled by United Electric Co.
 WDAY (New York, N. Y.).—W. l., 400.
 WDCX (Detroit, Mich.).—W. l., 400, 485.
 WDAI (Schenectady, N. Y.).—W. l., 300, 485.
 WDAF (New York, N. Y.).—W. l., 400.
 WDAQ (Berlin, N. H.).—Strike out all particulars.
 WFAA (Dallas, Tex.).—W. l., 300, 485.
 WFAK (Brentwood, Mo.).—Strike out all particulars.
 WGAU (Brooklyn, N. Y.).—Strike out all particulars.
 WGIAR (Fort Smith, Ark.).—W. l., 300, 485.
 WGU (Chicago, Ill.).—Strike out all particulars.
 WGY (Schenectady, N. Y.).—W. l., 300, 485.
 WHAY (Huntington, Ind.).—W. l., 300.
 WHAZ (Troy, N. Y.).—W. l., 400.
 WJZ (Newark, N. J.).—W. l., 300, 485.
 WOO (Philadelphia, Pa.).—W. l., 400, 485.
 WOR (Newark, N. J.).—W. l., 400.
 WOS (Jefferson City, Mo.).—W. l., 300, 485.
 WWJ (Detroit, Mich.).—W. l., 400, 485.

GOVERNMENT LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Attention and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1922, and to the International List of Radio-telegraph Stations, published by the Bureau.]

AMAGANSSETT, N. Y. (regular station).—Strike out all particulars.

GOVERNMENT SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1922, and to the International List of Radiotelegraph Stations, published by the Berne Bureau.]

VICKSBURG.—(NVN) Strike out all particulars.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all particulars following the call signals, NBM and NVN.

SPECIAL LAND STATIONS, BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1922.]

BALA, PA. (3ZA).—W. L., 209, 375.
 BALTIMORE, MD. (3XAA).—Address 1616 Madison Avenue.
 BALTIMORE, MD. (3ZN).—Changed to Philadelphia, Pa., 2105 West Tioga Street.
 BERKLEY, CALIF. (3XK).—Strike out all particulars.
 BOSTON, MASS. (1YC).—W. L., 209, 375.
 DEARBORN, MICH. (8XD).—Station operated and controlled by Ford Motor Co.
 DECATUR, GA. (4ZU).—Address 142 Adams Street.
 DENVER, COLO. (9ZAF).—Call signal erroneously given as 9ZAG in August bulletin (Reynolds Radio Co.).
 DENVER, COLO. (9ZD).—Strike out all particulars.
 DUNMORE, PA. (8ZQ).—Address 117 South Blakely Street.
 EAST PALESTINE, OHIO (8ZJ).—Strike out all particulars.
 INDEPENDENCE, MO. (9ZH).—Strike out all particulars.
 LEXINGTON, KY. (9YA).—Strike out all particulars.
 MADISON, WIS. (3XL).—W. L., variable.
 MIDDLETOWN, CONN. (1XN).—W. L., variable.
 MOBILE, ALA. (5XAF).—W. L., 209, 375, 450.
 MUNCIE, IND. (9YR).—Strike out all particulars.
 NEW PHILADELPHIA, OHIO (8ZA).—Address 258 North Fifth Street.
 NEW YORK, N. Y. (2XK).—Station operated and controlled by Cocksaday & Quinby, 1522 Jessup Avenue.
 NEW YORK, N. Y. (2XR).—W. L., variable.
 NORTONVILLE, MICH. (8XL).—Station operated and controlled by Ford Motor Co.
 OLYMPIA, WASH. (7ZP).—Address 2201 Columbia Street.
 FORT ARTHUR, TEX. (5XV).—W. L., 209, 375, variable.
 PULLMAN, WASH. (7ZS).—Address 701 State Street.
 SAN JOSE, CALIF. (portable) (5XE).—Address 467 South First Street.
 SHREVEPORT, LA. (5ZS).—W. L., 209, 375; address 1513 Laurel Street.
 ST. LOUIS, MO. (8XS).—Strike out all particulars.
 VANCOUVER, WASH. (7ZK).—Address 436 West Twelfth Street.
 WASHINGTON, D. C. (8XO).—W. L., 250.
 WASHINGTON, D. C. (3ZW).—W. L., 150, 209, 275, 375.

MISCELLANEOUS.

BROADCASTING REGULATIONS AMENDED.

The specifications applying to class B radiotelephone broadcasting stations are amended to read as follows:

Music. The use of mechanically operated instruments is prohibited.

D. B. CARSON,
 Commissioner of Navigation.

Approved:

HERBERT HOOVER,
 Secretary of Commerce.

SEPTEMBER 22, 1922.

INFORMATION FROM THE BUREAU INTERNATIONAL BUREAU.

Since August 1, this year, a radiotelegram service destined to vessels outside of the range of French coast stations is assured by the powerful station situated at Basco-Lande, Nantes, France. The address of all long distance radiotelegrams must carry the name Basco-Lande as the name of the sending station. These telegrams are sent daily from 9 to 10 p. m. and, if necessary, from 4 to 5 p. m., Greenwich. Each message is transmitted twice and repeated the following day. This station does not guarantee the reception of ships.

The charges of long-distance telegrams are as follows: (a) Charges of ordinary telegrams. (b) Charges for radiotelegraph transmission, 1 franc 50 centimes per word. Ship charges are collected from the receiver of message, and the rate is 50 centimes per word.

The status of this station is as follows: Name of station, Basco-Lande; geographic position, 0.01° 43' 00" N, 57° 10' 40" W; call, UA; range, 1,500 miles; system, French Navy, spark 750; w. l., 2800; service, PR.

STATIONS IN ALASKA CLOSED FOR THE SEASON.

- Alitak (KYL), closed September 15.
- Chignik (KHC), closed September 7.
- Chisk Island (KICP), closed September 10.
- Porter (KXK), closed September 20.
- Kussilon (KKAQ), closed September 7.

ADDRESS OF I. W. T. CO. CHANGED.

The Independent Wireless Telegraph Co. is now located at 85 Water Street, New York, N. Y.

OPERATORS' LICENSES SUSPENDED.

During the past month two operators' licenses were suspended for operating with licenses that had expired. Operators are warned that similar action will be taken against anyone violating the regulations in this regard.

Details of time, weather, press, and hydrographic bulletins schedules broadcast by Naval Communication Service.

Name of station.	Call letters.	Wave length.	Type of emission.	Time (Greenwich meridian)	Nature of service.
Alpena, Mich.	NBM	1,200	Spark	0845	Weather.
				1145	Do.
				1245	Do.
				1445	Do.
				1645	Do.
				1845	Do.
Annapoli, Md.	N85	17,745	C. w.	2045	Do.
				1135	Time.
				1700	Ice report.
Achaeteo, Va.	NAA	5,955 2,690	C. w. spark	2155	Time, press.
				0800	Weather, hydrographic.
Balboa, Canal Zone.	NBA	10,110	C. w.	1155	Time, weather, hydrographic, press.
				2155	Time, weather, hydrographic, press.
Baltimore, Md.	N10Z	300	Spark	0435	Time, press.
				1255	Time.
Bar Harbor, Me.	N101	2,750	C. w.	0400	Weather, hydrographic.
				1600	Do.
Boston, Mass.	N3AD	1,020	C. w.	0904	Press.
				0904	Press.
Buffalo, N. Y.	NNZ	1,290	C. w.	1100	Weather, hydrographic.
				1155	Time, if Atlantic bul.
				1702	Weather, hydrographic.
				1915	Do.
				1730	Do.
				2245	Do.

¹ The times as shown in this table is given as from 1 to 21 o'clock in lieu of 1-12 a. m. and 1-12 p. m. For example, 0545 is 5 a. m.; 1200 is noon, 1145 is 2:45 p. m., etc.

Details of time, weather, press, and hydrographic bulletins schedules broadcasted by Naval Communication Service—Continued.

Name of station.	Call letters.	Wave length.	Type of modulation.	Time (75°W meridian).	Nature of service.
Cavite, P. I.	NPO	3,200	C. w.	0655	Time.
				2155	Do.
				2655	Do.
Charleston, S. C.	NAD	2,220	Spark	2155	Do.
				1670	Weather, hydrographic.
				1555	Time, if Arlington falls.
Cleveland, Ohio.	NRH	1,080	do.	1800	Weather, hydrographic.
				1100	Do.
				1730	Do.
Colum, Canal Zone.	NAN	1,540	do.	2300	Do.
				0445	Time, hydrographic, press.
				1535	Do.
Duluth, Minn.	NUX	1,200	do.	1045	Weather, hydrographic.
				1645	Do.
				0630	Do.
Dutch Harbor, Alaska.	NDR	2,250	do.	1230	Do.
				1200	Do.
				1455	Time.
Eureka, Calif.	NPDW	2,650	do.	1700	Weather.
				2030	Do.
				1130	Weather, hydrographic.
Galveston, Tex.	NKB	1,515	do.	1800	Do.
				1100	Do.
				1155	Time, weather.
Great Lakes, Ill.	NAT	1,980	do.	1730	Weather, hydrographic.
				2300	Do.
				2330	Do.
Guantanamo, Cuba.	NAW	1,870	do.		Hurricane warnings as issued every four hours.
Honolulu, Hawaii.	NPM	2,250	do.	0130	Weather, hydrographic.
				1330	Do.
				1730	Do.
Key West, Fla.	NAR	11,500	C. w.	1855	Time.
				1855	Do.
				1155	Do.
Miami, Fla.	NGF	1,620	do.	2155	Time, press.
				1130	Weather.
				1830	Do.
New Orleans, La.	NAT	1,512	do.	1130	Weather, hydrographic.
				2155	Time.
				1700	Weather, hydrographic.
Newport, R. I.	NAF	1,504	do.		Time, if Arlington falls.
New York, N. Y.	NAH	1,502	do.	2030	Weather, hydrographic.
				1045	Time, if Arlington falls.
				1700	Weather, hydrographic.
Norfolk, Va.	NAM	1,451	do.	0630	Weather.
				1045	Weather, hydrographic.
				1255	Time, if Arlington falls.
North Head, Wash.	NPE	2,700	Spark and modulated C. w.	1455	Weather, hydrographic.
				2000	Weather.
				2300	Do.
Pensacola, Fla.	NAF	2,250	do.	0630	Do.
				0830	Do.
				1230	Do.
Philadelphia, Pa.	NAT	1,948	do.	1145	Time.
				1800	Do.
				0445	Do.
Point Isabel, Tex.	NAY	2,250	do.	1700	Weather.
				0000	Weather.
				1200	Do.
Port au Prince, Haiti.	NHC	2,270	do.	1900	Do.
					Hurricane warnings as issued every four hours.
					Weather.
Portland, Me.	NAB	300	do.	1500	Weather.
				2000	Do.
				0600	Press.
San Diego, Calif.	NPL	4,800	C. w.	1455	Time.
				1455	Do.
				1455	Do.

*Hurricane warnings as issued every two hours.

Details of time, weather, press, and hydrographic bulletins schedules broadcasted by Naval Communication Service—Continued.

Name of station.	Call letters	Wave length.	Type of emission.	Time (75th meridian).	Nature of service.
San Francisco, Calif.	NPG	1,928	Spark	0055	Time.
				0415	Press.
				1455	Time.
		4,650	C. w.	2230	Weather, hydrographic.
				0055	Time.
				0415	Press.
San Juan, P. R.	NAU	5,200	do.	1200	Weather, hydrographic.
				1455	Time.
				1900	Hurricane warnings.
San Pedro, Calif.	NPK	1,851	Spark	2100	Weather.
				1130	Do.
				1700	Do.
Savannah, Ga.	NEV	1,513	do.	2230	Do.
				1100	Do.
				1800	Do. ¹
Seattle, Wash.	NVL	4,985	do.	1000	Hydrographic.
St. Augustine, Fla.	NAP	1,851	do.	2100	Do.
St. Croix, Virgin Islands.	NNI	470	do.	1130	Weather.
St. Petersburg, Fla.	NGL	2,700	do.	1900	Do. ¹
St. Thomas, Virgin Island.	NBB	1,658	do.	1130	Hurricane warnings as issued every four hours.
Tafeloh, Wash.	NPD	1,654	do.	1900	Weather.
				0500	Do.
				1200	Do.
Tutuila, Samoa.	NPU	2,200	do.	1600	Do.
				2000	Do.
				2300	Do.

¹Hurricane warnings as issued every two hours.

RADIO WEATHER BULLETINS, SWAN ISLAND, CARIBBEAN SEA.

The United States Weather Bureau has made arrangements with the United Fruit Co. for broadcasting and disseminating daily, beginning September 18, 1922, of special weather bulletins from the radio station located on Swan Island (United States) for the special benefit of shipping in the Caribbean Sea.

The a. m. bulletins will be in two parts. The first part will be broadcasted only during the hurricane season, June to November, inclusive, and will consist of weather observations taken at (approximately) 8 a. m., seventy-fifth meridian time (7 a. m., ninetieth meridian time), at the following places which are indicated by key letters:

Swan Island.....	SI	Port au Prince, Haiti.....	PP
Belize, Honduras.....	BZ	Onofre, Cuba.....	CO
Riofield, Nicaragua.....	RFD	La Fe, Cuba.....	LF
Willemstad, Curacao.....	W	Kingsdon, Jamaica.....	KN
San Juan, P. R.....	SJ	Turks Island, Bahamas.....	TI

The names of the stations, as well as the key letters, will be radioed from September 18 to October 15, 1922, inclusive, in order that shipmasters may identify the stations; after that time only the key letters will be used.

The key letters will be followed by a group of five figures showing barometric pressure, wind direction, and wind force. The first three figures express actual barometric readings, in inches, reduced to sea level. The fourth figure is wind direction: 1=north; 2=northeast; 3=east; 4=southeast; 5=south; 6=southwest; 7=west; 8=northwest; 0=calm. The fifth and last figures show wind force in the Beaufort Scale; except when winds of force greater than 9 occur words instead of figures will be used. If any portion of a report can not be furnished, such portion will be replaced by an equivalent number of letter "X." Example: SI 29.80 (translated): Swan Island, barometer 29.80 inches, wind direction southeast, wind force 3.

The second part of the bulletin will consist of wind and weather forecasts for the western Gulf of Mexico (west of longitude 90°), eastern Gulf of Mexico (east of longitude 90°), the Caribbean Sea (west of longitude 75°), and for the Windward Passage.

Whenever the conditions warrant the forecasts will be preceded by advices and warnings regarding any storm or hurricane that may be in progress and of "northers" during the winter months. The second part of the bulletin will be broadcasted daily throughout the year.

A night bulletin based on observations taken at 8 p. m., seventy-fifth meridian time, will also be broadcasted daily throughout the year from Swan Island and will consist only of forecasts, advices, and warnings of the same character and for the same areas as are contained in the second part of the a. m. bulletin.

When a hurricane is in progress the Weather Bureau will issue advices regarding its location, direction, progress, and intensity at frequent intervals, and these advices will be broadcasted from Swan Island every two hours and on the even hour.

Swan Island (United States), 2,910 meters, spark 11:30 a. m. (ninetieth meridian time). Swan Island (United States), 2,240 meters, spark 10:45 p. m. (ninetieth meridian time).

The daily bulletins will be received by Swan Island from the Tropical Radio Telegraph Station at New Orleans (WNU) on 2,850 meters, spark at 10:30 a. m. and p. m., and any ship station is at liberty to pick up these messages and repeat them to other ships, should they desire to do so.

Beginning October 1, 1922, information displays will be made from the radio towers at Swan Island for the special benefit of ships in that region that are not equipped with radio. The signals will consist of large red pennant by day and a red lantern by night. These signals will indicate that important weather information regarding a hurricane or a "norther" is in the possession of the radio operator which can be obtained by boat calls ashore. However, ships equipped with radio that see the signals are permitted to call the Swan Island Station (United States) for the information. The United Fruit Co. also permits ships that fail to obtain the regular weather broadcasts to call the Swan Island Station at time for the latest weather forecasts.—*From Hydrographic Bulletin, September 27, 1922.*

DESIGN OF A PORTABLE SHORT-WAVE RADIO WAVE METER.

The Bureau of Standards has prepared a pamphlet of the above title for the use of persons occupied with radio experimentation. It is Letter Circular No. 78 of the Bureau of Standards, Department of Commerce. Like the other publications in the letter circular series, it is in mimeographed form and is not obtainable by purchase. A limited supply of these is available at the bureau to persons who have actual use for such information.

A wave meter is a device for measuring the frequency or the length of radio waves. Radio waves always travel with the same speed, and there is a definite wave length corresponding to every wave frequency. Amateur radio stations in the United States are at present required by law, when transmitting, to use wave lengths not exceeding 200 meters, and it is therefore important that amateur operators should have a wave meter available, so that they may adjust their transmitting sets to comply with the law, and it is necessary that this wave meter should be adapted to measure short wave lengths, such as 200 meters. Other comparatively short wave lengths, such as 330 and 485 meters, are now used for radio telephone broadcasting, and it is important to have a wave meter which can measure these wave lengths. The Radio Telephony Conference, which met in Washington in February, 1922, recommended narrow bands of waves for particular services, some bands being only 10 meters wide. Stations which must work within such narrow wave bands must be provided with well designed wave meters if they are to comply with the requirements of the law. The design of a portable short-wave wave meter is therefore a matter of importance. It is the purpose of this letter circular to point out important considerations in the design of such a wave meter and to describe the construction of a wave meter suitable for the measurement of frequencies from about 3,000 kilocycles per second to 530 kilocycles per second (wave lengths from 100 to 570 meters).

PUBLICATIONS ON SIMPLE CRYSTAL DETECTOR RADIO RECEIVING SETS.

Inquiries are received at the Bureau of Standards for information regarding the construction of a simple radio receiving set which can be constructed from materials easily obtainable.

The first of these, Bureau of Standards Circular 120, Construction and Operation of a Simple Home-Made Radio Receiving Outfit, describes a single-circuit crystal detector set having an inductor variable by steps and no condenser.

The second publication, Bureau of Standards Circular 121, *Construction and Operation of a Two-Circuit Radio Receiving Equipment with Crystal Detector*, describes a set equipped with a coupler and a variable condenser. This set has greater selectivity than the single circuit set. The equipment used in constructing the single-circuit set can be used in constructing the two-circuit set.

Copies of these publications may be purchased for 5 cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C.

REFERENCES TO CURRENT RADIO PERIODICAL LITERATURE.

The following list of references is prepared by the Radio Laboratory of the Bureau of Standards and is intended to cover the more important papers of interest which have recently appeared in technical periodicals.

For about two years these lists have been prepared in mimeographed form, and a very limited number of copies have been available for distribution. Recently there has arisen a very considerably increased demand, and it has seemed desirable to publish the lists in the Radio Service Bulletin. The publication of these references will be continued if the readers of the Radio Service Bulletin find them useful. The Bureau of Navigation will be pleased to receive suggestions from readers as to the desirability of continuing their publication. A complete file of the previous mimeographed lists can be consulted at the Bureau of Standards in Washington. Files of earlier lists can also be consulted at the Library of Congress in Washington, the Engineering Societies Library in New York, and the John Crerar Library in Chicago.

These references are classified according to a decimal system outlined in a report prepared at the Radio Laboratory of the Bureau of Standards, *An Extension of the Dewey Decimal Classification Applied to Radio*. It is expected that this classification will be published later. In this list the subjects corresponding to the 10 principal classes of the radio classification are given, and preceding each reference is given a number which corresponds to the classification of the reference. The subjects corresponding to the various decimal divisions of the 10 principal classes are not given in these lists, but can be found in the classification. In case a reference could properly be assigned to two or more of the numbers of the classification, it appears only once in this list, with the number corresponding to the subject in connection with which the reference is of greatest importance. In this list, under the first eight principal classes, the numbers assigned to the references are preceded by the letter "R," which is an abbreviation for the number 621.384 which is assigned to radio communication in the regular Dewey Decimal Classification. Under the class "R 800—Nonradio Subjects," the numbers shown in this list are not preceded by an "R," but are the numbers assigned to the subject of the reference in the regular complete Dewey Classification.

R000.—*Radio communication.*

- R007.4 Radio telegraph regulations (Canadian). *Radio* (Toronto), 5, p. 13; July, 1922.
- R007.5 Broin, E., Notes sur la législation et la réglementation applicables aux communications radioélectriques. *L'Onde Electrique*, 1, pp. 401-408; July, 1922.
- R007.9 Union International de Radiotélégraphie Scientifique (URSI), *L'Onde Electrique*, 1, pp. 441-443; August, 1922.
- R020 An introduction to radio (book for beginner). Published by Wireless Press, N. Y. Price \$1 (2 vols.). Noted in *Wireless Age*, 9, p. 93; September, 1922.
- R020 Branch, J. G., *Radio telephony and telegraphy* (book). Published by J. G. Branch, Chicago, Ill. Price \$2. Noted in *Science and Invention*, July, 1922.
- R020 Radio book of facts (loose leaf form). Published by Radio Equipment & Supplies (Ltd.), Toronto, Canada. Price \$2. Noted in *Radio News of Canada*, 1, p. 37; September, 1922.

R100.—*Radio principles.*

- R113 Austin, L. W., Receiving measurements and atmospheric disturbances at the Naval Radio Research Laboratory, Bureau of Standards, Washington, March and April, 1922. *Proceedings Institute Radio Engineers*, 10, pp. 239-243; August, 1922.

- R113 Baunler, The simultaneous occurrence of atmospherics, *Jahrbuch der drahtlose Telegrafien*, **10**, pp. 162-169; February, 1922; *Sci. Abs. B*, No. 822, July, 1922.
- R113.2 Malgou, G., Les parasites: Leur origine—leur élimination, *Radioélectricité*, **3**, pp. 341-347; August, 1922.
- R113.4 Wireless telegraph and the heaviside layer (editorial), *Electrician*, **89**, p. 157; August 18, 1922.
- R113.4 Howe, G. W. O., The heaviside layer (editorial), *Electrician*, **89**, pp. 260-261; September 8, 1922.
- R114 Southwell, L., Absc for the application of the Austin-Cohen formula, *Radioélectricité*, **3**, pp. 153-162, April, 1922; *Sci. Abs. B*, No. 823, July, 1922.
- R120 Guerin, M., Antennes horizontales, basses, souterraines ou immergées, *Radioélectricité*, **3**, pp. 321-328; August, 1922.
- R120 Banks, A. E., High versus low antenna, *Radio (San Francisco)*, **4**, p. 28; August, 1922.
- R124 Brown, S. L., and Boner, C. P., Free modes of oscillation in loop aeriads, *Physical Review*, **20**, p. 90; July, 1922.
- R125.1 McLaughlin, F. S., Radio telegraphy (direction finding), U. S. Patent No. 1427333 issued September 5, 1922.
- R127 Grover, F. W., The calculation of the capacity of antennas, *Physical Review*, **20**, pp. 92-93; July, 1922.
- R127 Brillouin, L., Origin of radiation resistance, *Radioélectricité*, **3**, pp. 147-152, April, 1922; *Sci. Abs., B*, No. 821, July, 1922.
- R133 Breit, G., Amplitude of electrical oscillations generated by electron tubes, *Wireless World and Radio Review*, **10**, pp. 517-523; July 22, 1922.
- R134.6 McNamee, H. E., A regenerative set with "bimirectional" tickler coil for short waves, *Radio (San Francisco)*, **4**, p. 25; September, 1922.
- R134.7 Elra, G. J., The Armstrong super-regenerative circuit (book). Published by Wireless Press, N. Y. Price \$1. Noted in *Wireless Age*, **9**, p. 75; September, 1922.
- R134.7 Warner, K. B., Progress on superregeneration, *QST*, **6**, pp. 22-25; September, 1922.
- R135 Westing, A. G., Theory of end-loss corrections and their application to tungsten filaments in vacuo, *Physical Review*, **20**, p. 81; July, 1922.
- R138 Dykeman, S., A general relation for electron emission from metals, *Physical Review*, **20**, pp. 109-116; July, 1922.
- R138 Davison, C., and Kuzman, C. H., The secondary electron emission from nickel, *Physical Review*, **20**, p. 110; July, 1922.
- R138 Wolfers, F., L'émission thermo-électronique, *L'Onde Electrique*, **1**, pp. 453-472; August, 1922.
- R138 Lagnaud, L., The electron emission from thoriated tungsten filaments, *Physical Review*, **20**, pp. 107-108; July, 1922.
- R138 Robertson, H. C., Electron-discharge device circuits, U. S. Patent No. 1426836, issued August 22, 1922.
- R140 Field, C. E., The principles of tuning in wireless telegraphy, *Wireless World and Radio Review*, **10**, pp. 620-623; August 12, 1922.
- R141.1 Cady, W. G., Elastic constants of rods at high frequencies, *Physical Review*, **20**, pp. 38-46; July, 1922.
- R142 Belknap, J., Radiotelegraphic coupling, U. S. Patent No. 1427330, issued August 29, 1922.
- R142 Takagishi, E., On the damping coefficients of the oscillations in three-coupled electric circuits, *Philosophical Magazine*, **44**, pp. 373-376; August, 1922.
- R144 Skin effect and proximity effect in tubular conductors (discussion), *Journal American Institute Electrical Engineers*, **41**, pp. 651-673, September, 1922.
- R144 Resistance neutralization properties of thermionic amplifier circuits (editorial), *Electrician*, **89**, p. 261; September 8, 1922.
- R147 Belz, M. H., The heterodyne beat method and some applications to physical measurements, *Philosophical Magazine*, **44**, pp. 379-501; September, 1922.
- R148 Mather, R. C., Circuits for electron-discharge devices, U. S. Patent No. 1426754, issued August 22, 1922.

R200.—*Radio measurements and standardization.*

- R201.2 Hull, A. W., The measurement of magnetic field strength by means of electron tubes (abstract), *Physical Review*, 20, pp. 108-109; July, 1922.
- R201.2 Trautwein, P., Application of thermionic tubes to high-frequency measurements, *Zeitschrift Technische Physik*, 3, pp. 123-127; 1922; *Sci. Abs. A*, No. 1712, July, 1922.
- R203 Glage, G., and Edler, H., Hysteresis and harmonics in coupled-circuit valve transmitters, *Archiv für Elektrotechnik*, 10, pp. 419-431, March 6, 1922; *Sci. Abs. B*, No. 620, July, 1922.
- R220 Campbell, G. A., Direct capacity measurement, *Physical Review*, 20, p. 93; July, 1922.
- R225 Morecroft, J. H., Resistance and capacity of coils at radio frequencies and discussion, *Proceedings Institute Radio Engineers*, 10, pp. 261-289; August, 1922.
- R270 Hammond, J. H., System for sound transmission, U. S. Patent No. 1425522, issued August 15, 1922.
- R281 Insulating materials: Development in Great Britain, *Electrical Review (London)*, 91, pp. 297-298; September 1, 1922.
- R281 Fernie, F., Dielectrics in the United States, *Electrician*, 89, pp. 182-183; August 18, 1922.
- R281 Flight, W. S., The effect of heat on the electric strength of some commercial insulating materials, *Electrical Review (London)*, 91, pp. 227-228; August 18, 1922.
- R281 Fleming, A. P. M., Developments in insulating materials and processes, *Electrician*, 89, pp. 211-213; August 25, 1922.
- R281 Properties of composite insulating materials (Specifications issued by the British Electrical and Allied Research Association, also defines methods of test), *Electrician*, 89, pp. 183-184; August 15, 1922.
- R281 Salathé, P., Insulating material, U. S. Patent No. 1427230, issued August 29, 1922.
- R281.38 Bowles, O., Varieties of mica and their uses, Serial 2357, Bureau of Mines, *Electrical World*, 80, p. 441; August 26, 1922.
- R284 Radu, J. W., Leading in conductor, U. S. Patent No. 1426771, issued August 22, 1922.

R300.—*Radio apparatus and equipment.*

- R300 New apparatus, *QST*, 6, pp. 24-26; August, 1922.
- R325.1 Marguet, P., Radiogoniomètre: Tracé du segment capsulaire sphérique, *Radioélectricité*, 3, pp. 330-337; August, 1922.
- R325.1 Kolster, F. A., and Dunmore, F. W., Le radiogoniomètre et ses applications à la navigation, *L'Onde Electrique*, 1, pp. 416-417; July, 1922.
- R325.1 Wright, G. M., Radiogoniometer, U. S. Patent No. 1426137, issued August 15, 1922.
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THE A. R. R. L. TRANS-ATLANTICS, 1922.

The A. R. R. L. operating department will conduct the third series of trans-Atlantic tests with the cooperation of the English, French, and Dutch amateurs in December this year. While no definite dates for the final tests have been decided upon, pending suggestions from England, France, and Holland, the probable dates are December 12 to 31, inclusive.

During the first 10 days of the tests American and Canadian amateurs will transmit signals for reception in England, France, and Holland. The best American transmitters, as determined by reception reports from the European amateurs, will be selected to broadcast the result of the reception of signals transmitted by English and French amateurs during the last 10 days of the tests, the same as MUI and WII did last year.

Transmitting will be from 7 p. m. of one day to 1 a. m. the following day, during the first 10 days; "listening in" will be from 8 p. m. of one day to 2 a. m. the following day in the second 10-day period. That is the tentative plan for the final tests.

For the purpose of determining the transmitters that are to be allotted individual transmitting periods, preliminary tests will be held from October 25 to November 3, inclusive.

Instead of requiring each transmitter desiring to participate in the finals to file an entry blank for preliminary tests as was done last year, a scheme has been adopted that will give every transmitter a chance to participate in the preliminary tests by dividing 24 hours (9.30 p. m. to midnight) into 10 periods of 15 minutes each, during each of which 15-minute periods every test night every transmitter in each inspection district is entitled to transmit. All other districts are to copy signals from stations transmitting.

To qualify for an individual schedule and code letters during the final tests, a transmitter must show documentary evidence that its signals have been copied at a distance of at least 1,200 air-line miles during the preliminary tests. This evidence may be in the form of a post card received from a receiving station located at least 1,200 air-line miles from the transmitter.

It may happen that one of the best transmitters may be out of commission during the preliminary tests so that it would be quite impossible to produce a record card. In this event an operator may file application for entry in the final tests by sending in at least two records showing the signals from his transmitter have been copied at a distance of at least 1,200 air-line miles during the months of September or October.

The schedule for the preliminary tests is given in Central Standard time, which is one hour behind Eastern time, one hour ahead of Mountain time, and two hours ahead of Pacific time.

Here is what to do during the preliminary tests:

Transmit your own call letters according to the preliminary test schedule for exactly 15 minutes. Start promptly and do not overlap. If you are located in the fifth district you will transmit from 10.45 p. m. to 11 p. m. on October 25; from 10.30 to 10.45 p. m. on October 26; and so on through the 10 nights. Carry on your regular league traffic until 9.30 p. m., then QRTX for the tests. Do not transmit tests at any other time than that shown on the schedule.

While one entire district is transmitting, all stations in the other districts are to copy as many stations as possible. After the tests each night, each receiving station should send a confirming record to every station that was heard at a distance of 1,200 air-line miles or over. Operators will need all the receiving practice they can get before the final tests, as signals are expected to be copied from English and French amateur transmitters.

Any station which can show at least one record of 1,200 air-line miles or better during the preliminary tests or as mentioned previously, and desires to enter in the final tests, shall furnish the following information when making application for entry:

Complete name and address of owner and station, call letters, type of transmitter (spark, c. w., i. c. w., a. c. c. w.), wave-length, complete description of antenna with ground or counterpoise, power input, and antenna current.

Trans-Atlantic preliminary test schedule by inspection districts.

Hour.	Oct. 25.	Oct. 26.	Oct. 27.	Oct. 28.	Oct. 29.	Oct. 30.	Oct. 31.	Nov. 1.	Nov. 2.	Nov. 3.
9.30-9.45 p. m.	(C)	1	2	3	4	5	6	7	8	9
9.45-10.00 p. m.	1	2	3	4	5	6	7	8	9	(C)
10.00-10.15 p. m.	2	3	4	5	6	7	8	9	(C)	1
10.15-10.30 p. m.	3	4	5	6	7	8	9	(C)	1	2
10.30-10.45 p. m.	4	5	6	7	8	9	(C)	1	2	3
10.45-11.00 p. m.	5	6	7	8	9	(C)	1	2	3	4
11.00-11.15 p. m.	6	7	8	9	(C)	1	2	3	4	5
11.15-11.30 p. m.	7	8	9	(C)	1	2	3	4	5	6
11.30-11.45 p. m.	8	9	(C)	1	2	3	4	5	6	7
11.45-12.00 p. m.	9	(C)	1	2	3	4	5	6	7	8

(C) represents Canadian amateurs. Time given is central standard.

CHANGE IN WAVE LENGTH OF MARION (WCC).

Since the first of the current month the Marion coast station call signal, WCC, has been maintaining a constant watch on 2,100 meters for continuous wave equipped ships running to the southward of Cape Cod. This service is in addition to the watches heretofore maintained, which have been more or less directionally to the eastward.

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