RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, October 2, 1922—No. 66

CONTENTS.

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.

CERTIFICATE: By direction of the Secretary of Commerce this publication is issued as an administrative report and is required for the proper transmission of the public business.

13563°—22——1

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 Berne bureau.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Katalla, Alaska [1]	KSC	300, 550, 600	PG & PR	X	Chilkat Oil Co.
Oakland, Calif. [2]	KGA	250	P	X	Tribune Publishing Co.
San Francisco, Calif.	KII		P	X	United Press.
Do. [3]	KTA	300, 340, 600	P	X	Examiner Printing Co.

[1] Loc. (approx.) 0.144° 30′ 00″, N. 60° 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 count; night message, 5 c. per word (minimum, 50 c.), domestic count; night letter 60 c. for 50 words and 12 c. for each additional 10 words or fraction thereof.
[2] System, v. t. telegraph.
[3] Range, 200; system, composite, v. t. telephone and telegraph; rates, none. 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 Berne bureau.]

Name of vessel.	Call signal.	Rates.	Service.	Hours.	Owner of vessel.	Station controlled by—
		Cents.				
Bella [1]	WAX		PG	X	Antonio Caraza	I. W. T. Co.
Blue Hill	KFEA	8	PG	X	L'Hote S. S. Co.	R. C. A.
Gaston [2]	KFCE	6	PG	X	Pensacola Shipbuilding Co.	Owner of vessel.
John A. Kling [3]	KFEI		PG	X	Rockport S. S. Co.	R. C. A.
Lincoln Land [4]	KUFL		PG	X	Indian Transportation & Navigation Co.	
Nepenthe II	KFBR				Van Campen Heliner	
Niagara [5]	KFEE		PG	X	American S. S. Co.	Owner of vessel.

[1] Range, 200; system, Marconi, 120; w. l., 300, *600*.
[2] Range, 150; system, Navy-Simon, 1000; w. l., 300, *600*.
[3] Range, 150; system, RCA, 1000; w. l., 300, 600; rates, Great Lakes, 2 c. per word.
[4] Range, 200; system, Navy-Kilbourne & Clark, 1000; w. l., 300, 450, *600*.
[5] Range, 150; system, Navy-Wireless Specialty Apparatus Co., 1000; w. l., 300, *600*; rates, Great Lakes, 2 c. per word.

Commercial land and ship stations, alphabetically by call signals.

[b=Ship station; c=land station.]

Call signal.	Name.		Call signal.	Name.	
KFBR	Nepenthe II	b	KII	San Francisco, Calif. (portable)	c
KFCE	Gaston	b	KSC	Katalla, Alaska	c
KFEA	Blue Hill	b	KTA	San Francisco, Calif. (portable)	c
KFEE	Niagara	b	KUFL	Lincoln Land	b
KFEI	John A. Kling	b	WAX	Bella	b
KGA	Oakland, Calif. (portable)	c			

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.
Abilene, Tex.	WQAQ	Liberal, Kans.	WMAG
Amarillo, Tex.	WRAU	Lockport, N. Y.	WMAK
Ardmore, Okla.	WOAA	Louisville, Ky.	WLAP
Bellows Falls, Vt.	WLAK	Marshalltown, Iowa.	WLAR
Boston, Mass.	WNAC	Minneapolis, Minn.	WLAG
Bowling Green, Ky.	WNAB	New York, N. Y.	WLAW
Burlington, Iowa.	WLAT	Norman, Okla.	WNAD
Cazenovia, N. Y.	WMAC	Oklahoma, Okla.	WMAB
Chicago, Ill.	WLAG	Pensacola, Fla.	WLAV
Do.	WMAQ	Phoenix, Ariz.	KFCB
Columbus, Ohio.	WMAN	Prescott, Ariz.	KFBQ
Creeco, Iowa.	WNAG	Richmond, Va.	WMAS
Dartmouth, Mass.	WMAF	Salem, Oreg.	KFCD
Duluth, Minn.	WMAT	San Antonio, Tex.	WOAI
Easton, Pa.	WMAP	Scranton, Pa.	WLAO
Enid, Okla.	WNAR	Springfield, Ohio.	WLAM
Fairbanks, Alaska.	WLAY	Trenton, N. J.	WMAL
Fremont, Nebr.	WOAE	Trinidad, Colo.	KFJB
Greencastle, Ind.	WLAX	Tulsa, Okla.	WLAL
Houlton, Me.	WLAN	Wallace, Idaho.	KFCC
Houston, Tex.	WPAN	Waterloo, Iowa.	WMAR
Hutchinson, Kans.	WLAS	Warren, Ohio.	WLAZ
Kalamazoo, Mich.	WLAQ	Washington Court House, Ohio.	WOAX
Kansas City, Mo.	WMAJ	Wilkes-Barre, Pa.	WNAH
Laramie, Wyo.	KFBU		

Lists of stations broadcasting market or weather reports (485 meters) and music, concerts, lectures, etc. (360 and 400 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 lengths.
KFBQ	Savage Electric Co.	Prescott, Ariz.	360
KFBS	Trinidad Electric & Supply Co.	Trinidad, Colo.	360
KFBU	The Cathedral (Bishop Thomas).	Laramie, Wyo.	360
KFCB	Nielsen Radio Supply Co.	Phoenix, Ariz.	360
KFCC	Auto Supply Co.	Wallace, Idaho.	360
KFCD	Salem Electric Co.	Salem, Oreg.	360
WOAX	Radio Electric Co.	Washington Court House, Ohio.	360
WLAG	Cutting & Washington Radio Corp.	Minneapolis, Minn.	360
WLAK	Vermont Farm Machine Corp.	Bellows Falls, Vt.	360
WLAL	Tulsa Radio Co.	Tulsa, Okla.	360
WLAM	Morrow Radio Co.	Springfield, Ohio.	360
WLAN	Putnam Hardware Co.	Houlton, Me.	360
WLAO	Anthracite Radio Shop.	Scranton, Pa.	360
WLAP	W. V. Jordon.	Louisville, Ky., 306 West Breckenridge Street.	360
WLAQ	A. E. Schilling.	Kalamazoo, Mich., 906 North Park Street.	360
WLAR	Mickel Music Co.	Marshalltown, Iowa.	360
WLAS	Hutchinson Grain Radio Co.	Hutchinson, Kans.	360, 485
WLAT	Charles G. Bosch Co.	Burlington, Iowa.	360
WLAV	Electric Shop.	Pensacola, Fla.	360
WLAW	Police Department of New York City.	New York, N. Y.	360
WLAX	Putnam Electric Co.	Greencastle, Ind.	360
WLAY	Northern Commercial Co.	Fairbanks, Alaska.	360
WLAZ	Hutton & Jones Electric Co.	Warren, Ohio.	360
WMAB	Radio Supply Co.	Oklahoma, Okla.	360
WMAC	J. Edw. Page (Clive B. Meredith).	Cazenovia, N. Y., Fernwood Street.	360
WMAF	Round Hills Radio Corp.	Dartmouth, Mass.	360
WMAG	Tucker Electric Co.	Liberal, Kans.	360
WMAJ	Drovers Telegram Co.	Kansas City, Mo.	360, 485
WMAK	Norton Laboratories.	Lockport, N. Y.	360
WMAL	Trenton Hardware Co.	Trenton, N. J.	360
WMAN	Broad Street Baptist Church.	Columbus, Ohio.	360
WMAP	Utility Battery Service.	Easton, Pa.	360
WMAQ	The Fair Corporation and Chicago Daily News.	Chicago, Ill.	360
WMAR	Waterloo Electrical Supply Co.	Waterloo, Iowa.	360
WMAS	Radio Equipment Co.	Richmond, Va.	360
WMAT	Paramount Radio Corp.	Duluth, Minn.	360

Lists of stations broadcasting market or weather reports (485 meters) and music, concerts, lectures, etc. (260 and 400 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	Norman, Okla	360
WNAF	Enid Radio Distributing Co	Enid, Okla	360, 485
WNAG	Rathert Radio & Electric Shop	Cresco, Iowa	360
WNAH	Wilkes-Barre Radio Repair Shop	Wilkes-Barre, Pa	360
WOAA	Dr. Walter Hardy	Ardmore, Okla	360
WOAE	Midland College	Fremont, Nebr	360
WOAI	Southern Equipment Co	San Antonio, Tex	360
WPAN	Levy Bros. Dry Goods Co	Houston, Tex	360
WQAQ	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 Berne bureau.]

Station.	Call signal.	Station controlled by—
Alexander Hamilton	NIVS	U. S. Coast Guard.
Sturgeon Bay [1]	NITZ	U. S. Navy.
Illinois [2]	WYAX	U. S. Army.

[1] System, U. S. Navy; w. l., 300, 600. [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	200, 375	J. Cox Thompson.
Cape Girardeau, Mo	9YAQ	200, 375	Southeast Missouri State Teachers College.
Cazenovia, N. Y	8XH	220, 275, 375	Clive B. Meredith.
Chicago, Ill	9XO	Variable	Morkum Co.
Cleveland, Ohio	8XM	200, 275	City Water Department.
Dartmouth, Mass	1XV	Variable	Round Hills Radio Corp.
East Pittsburgh, Pa	8XS	Variable	Westinghouse Electric & Manufacturing Co.
Eldorado, Kans	9XP	Variable	Midland Refining Co. (G. L. Carrington).
El Paso, Tex	5ZACA	200, 375	Mine & Smelter Supply Co.
Enid, Okla	5ZAL	200, 375	Kenneth B. Griffin, 39 Day Building.
Lexington, Ky	9ZI	200, 375	Ray E. Anderson, 707 Franklin Avenue.
Los Angeles, Calif	6XY	Variable	Earl C. Anthony (Inc.), 1000 South Hope Street.
Memphis, Tenn	5ZABA	200, 375	John C. Flippin, 534 Pontotoc Avenue.
Montgomery, Ala	5XABA	200, 375	Paul B. Brooks, 400 South McDonough Street.
New York, N. Y. (Municipal Building).	2XW	Variable	Western Electric Co.
Pine Bluff, Ark	5XAI	200, 375	Arkansas Light & Power Co.
Stockbridge, Mass	1XU	Variable	Thomas S. L. Kletcha.
Syracuse, N. Y	8XI	275	Andrew J. Potter, 213 Westminster Avenue.
Tucson, Ariz. (portable).	6XZ	Variable	R. D. Whitacre and L. R. Wilson, 417 East Speedway.
Washington, D. C	3ZH	150-375	Herbert Hoover, jr., 2300 S Street NW.
Wichita Falls, Tex	5ZADA	200, 375	Lundy L. Zeigler, 2007 Huff Avenue.

Special land stations, grouped by districts.

Call signal.	District and station.	Call signal.	District and station.
	First district:		Sixth district:
1XU	Stockbridge, Mass.	6XY	Los Angeles, Calif.
1XV	Dartmouth, Mass.	6XZ	Tucson, Ariz. (portable).
2XW	Second district: New York, N. Y.		Eighth district:
	Third district:	8XH	Cazenovia, N. Y.
3ZD	Camp Hill, Pa.	8XI	Syracuse, N. Y.
3ZH	Washington, D. C.	8XM	Cleveland, Ohio.
	Fifth district:	8XS	East Pittsburgh, Pa.
5XABA	Montgomery, Ala.		Ninth district:
5XAI	Pine Bluff, Ark.	9XO	Chicago, Ill.
5ZABA	Memphis, Tenn.	9XP	El Dorado, Kans.
5ZACA	El Paso, Tex.	9YAQ	Cape Girardeau, Mo.
5ZADA	Wichita Falls, Tex.	9ZI	Lexington, Ky.
5ZAL	Enid, 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 30, 1922, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

CAPE MAY, N. J.—W. l., 300, 525, *600*, 1610; service, PG & PR; PR service is with Marion, Mass., on 1610 meters.
CHICAGO, ILL.—Strike out all particulars.
CHICHAGOF, ALASKA.—Range, 200; service, PG & PR.
DALLAS, TEX. (KUXP).—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.
NAKAT INLET, ALASKA.—Strike out all particulars.
NEW ORLEANS, LA.—System, composite v. t. and composite spark, 1000.
NEW YORK, N. Y. (WNY).—*Read* New York, N. Y. (Borough of Brooklyn); w. l., 300, *600*.
NEW YORK, N. Y. (WSK).—Strike out all particulars.
NORFOLK, NEBR.—Strike out all particulars.
ORANGE, TEX.—Strike out all particulars.
ORANGE FIELD, TEX.—Strike out all particulars.
SKAGIT POWER SITE, WASH.—Range, 150; w. l., 300, 425, 500, *600*.
SEATTLE, WASH. (KVW).—W. l., 300, 425, 500, *600*.
SUGARLAND, TEX.—Strike out all particulars.
SWANS ISLAND, ME.—Strike out all particulars.
TULSA, OKLA. (KDGT).—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 30, 1922, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

NOTE.—(U. S. L.) after operating company denotes that the change applies to the List of Radio Stations of the United States only; does not apply to the Berne list. Hereafter where the rate is given without the service specifically stated—that is, 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 class of service will be stated.

AGWISUN.—W. l., 300, 450, *600*.
AQUARIUS.—Range, 200; system, Kilbourne & Clark, 1000; w. l., 300, *600;* hours, X.
AMERICAN LEGION.—Range, 500; w. l., 300, 450, *600*, 1800.
ANACONDA.—System, Navy-Wireless Improvement Co., 1000.
ARCADIA.—Strike out all particulars.
BAYOU CHICO.—Range, 300; system, Navy-Lowenstein, 1000; w. l., 300, 450, *600*.

BROAD ARROW.—Hours, X.
CALORIA.—Vaccaro Bros. & Co., owner of vessel.
CARL 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.
CHERAULIP.—W. l., 300, 450, *600*.
CITY OF LOS ANGELES.—Station operated and controlled by R. C. A.; effective September 11, 1922.
COAHOMA COUNTY.—W. l., 300, 450; *600*.
COAMO.—Strike out all particulars.
COL. E. L. DRAKE.—Range, 300; system, R. C. A., 1000.
COSTILLA.—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.
COURTOIS.—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; Matson Navigation Co., owner of vessel.
EASTERN COAST.—Range, 300; system, Marconi, 1000; w. l., 300, 450, *600*.
EASTERN GLEN.—System, Navy-R. C. A., 1000; hours, X.
EASTERN KING.—System, Navy- Marconi, 1000; w. l., 300, 450, *600*.
EASTERN PLANET.—Range, 500; w. l., 300, 450, *600*, 1800; hours, X.
EASTERN SHORE.—System, Navy-Marconi, 1000; w. l., 300, 450, *600;* hours, X.
EDGEFIELD.—W. l., 300, 450, *600;* hours, X.
EOCENE.—Standard Transportation Co., owner of vessel.
F. D. ASCHE.—Strike out all particulars.
HOMESTEAD.—W. l., 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. l., 300, 450, *600*.
ITALIA.—Name changed to Sucarseco.
ISONOMIA.—Strike out all particulars.
LAKEBRIDGE.—E. K. Wood Lumber Co., owner of vessel.
LAKE DUNMORE.—Name changed to El Cicuta; Erle M. Leaf, owner of vessel.
LAKE FISHER.—Lake Fisher Navigation Co., owner of vessel.
LAKE FORNEY.—Station operated and controlled by R. C. A.; effective September 14, 1922.
LAKE GEORGE.—James Davidson, owner of vessel.
LAKESHORE.—Station operated and controlled by R. C. A. (U. S. L.).
LAKE SLAVI.—Range, 200; system, R. C. A., 1000; w. l., 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. l., 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. l., 300, *600;* station operated and controlled by R. C. A.
PATROL.—Name changed to Macom; system, R. C. A., 1000; w. l., 300, 450, *600;* service, PG; hours, X; rate, 8 c. per word.
PAWNEE, (WLU).—Strike out all particulars.
PEQUONNOCK.—Range, 150; system, Cutting & Washington, 1000; w. l., 300, 450, *600;* hours, X; rate, 8 c. per word.
PEQUOT.—Strike out all particulars.
PERE MARQUETTE 8.—Service PG.
PHILIP PUBLICKER.—Adelphia S. S. Corp., owner of vessel.
PILGRIM.—Goodrich Transit Co., owner of vessel.
PORTO RICO.—W. l., 300, 450, *600*.
POZNAM.—Name changed to Paul Luckenbach.
REMUS.—Station operated and controlled by I. W. T. Co. (U. S. L.).
SABOTAWAN.—W. l., 300, 450, *600*.
SCHODACK.—W. l., 300, 450, *600*.
SEEANDBEE.—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.).

SUTORPCO.—Range, 300; system, Navy-W. S. A. Co., 1000; w. l., 300, 450, *600*.
THEODORE F. REYNOLDS.—Strike out all particulars.
TIPTON.—Baltimore & Carolina S. S. Co., owner of vessel.
TUNICA.—Strike out all particulars.
WEST ELCASCO.—System, Navy-Marconi, 1000; w. l., 300, 450, *600;* hours, X.
WEST HARDAWAY.—Range, 200; system, Navy-Kilbourne & Clark, 1000; w. l., 300, 450, *600*.
WEST HEMBRIE.—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 HOBOMAC.—Range, 300; system, Navy-Marconi, 1000; w. l., 300, 450, *600*.
WEST HUMHAW.—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 ISLETA.—W. l., 300, *600*.
WEST LOQUASSUCK.—Station operated and controlled by S. O. R. S., effective September 5, 1922.
WEST MAHOMET.—System, Navy-Marconi, 1000; w. l., 300, 450, *600;* hours, X.
WEST MUNHAM.—System, Navy-Lowenstein, 1000; w. l., 300, 450, *600*.
WEST NOMENTUM.—Range, 300; system, Navy-R. C. A., 1000; 300, 450, *600*.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KDIY, *read* El Cicuta; KDWX, *read* Diana Dollar; KIN, *read* Macom; KUPB, *read* Sucareco; WLY, *read* Paul Luckenbach; WMAO, *read* Makaweli; WMEE, *read* Michael Tracy; WMZ, *read* Commercial Trader; strike out all particulars following the call signals, KDDG, KDGT, 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.

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

KDYL (Salt Lake City, Utah).—W. l., 360, 485.
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., 400, 485.
WAAE (St. Louis, Mo.).—Strike out all particulars.
WAAP (Wichita, Kans.).—Station operated and controlled by United Electric Co.
WBAY (New York, N. Y.).—W. l., 400.
WCX (Detroit, Mich.).—W. l., 400, 485.
WDAI (Syracuse, N. Y.).—W. l., 360, 485.
WEAF (New York, N. Y.).—W. l., 400.
WEAQ (Berlin, N. H.).—Strike out all particulars.
WFAA (Dallas, Tex.).—W. l., 400, 485.
WFAK (Brentwood, Mo.).—Strike out all particulars.
WGAC (Brooklyn, N. Y.).—Strike out all particulars.
WGAR (Fort Smith, Ark.).—W. l., 360, 485.
WGU (Chicago, Ill.).—Strike out all particulars.
WGY (Schenectady, N. Y.).—W. l., 400, 485.
WHAY (Huntington, Ind.).—W. l., 360.
WHAZ (Troy, N. Y.).—W. l., 400.
WJZ (Newark, N. J.).—W. l., 360, 485.
WOO (Philadelphia, Pa.).—W. l., 400, 485.
WOR (Newark, N. J.).—W. l., 400.
WOS (Jefferson City, Mo.).—W. l., 360, 485.
WWJ (Detroit, Mich.).—W. l., 400, 485.

GOVERNMENT LAND STATIONS, ALPHABETICALLY 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, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

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

GOVERNMENT SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

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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., *200*, 375.
BALTIMORE, MD. (3XAA).—Address 1616 Madison Avenue.
BALTIMORE, MD. (3ZN).—Changed to Philadelphia, Pa., 2105 West Tioga Street.
BERKELEY, CALIF. (6XK).—Strike out all particulars.
BOSTON, MASS. (1YC).—W. l., *200*, 375.
DEARBORN, MICH. (8XD).—Station operated and controlled by Ford Motor Co.
DECATUR, GA. (4ZF).—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. (9YAI).—Strike out all particulars.
MADISON, WIS. (9XL).—W. l., variable.
MIDDLETOWN, CONN. (1XN).—W. l., variable.
MOBILE, ALA. (5XAE).—W. l., *200*, 375, 450.
MUNCIE, IND. (9YR).—Strike out all particulars.
NEW PHILADELPHIA, OHIO (8ZA).—Address 256 North Fifth Street.
NEW YORK, N. Y. (2XK).—Station operated and controlled by Cockaday & Quinby, 1522 Jesup Avenue.
NEW YORK, N. Y. (2XR).—W. l., variable.
NORTHVILLE, MICH. (8XL).—Station operated and controlled by Ford Motor Co.
OLYMPIA, WASH. (7ZP).—Address 2201 Columbia Street.
PORT ARTHUR, TEX. (5XV).—W. l., *200*, 375, variable.
PULLMAN, WASH. (7ZS).—Address 701 State Street.
SAN JOSE, CALIF. (portable) (6XE).—Address 467 South First Street.
SHREVEPORT, LA. (5ZS).—W. l., *200*, 375; address 1513 Laurel Street.
ST. LOUIS, MO. (9XS).—Strike out all particulars.
VANCOUVER, WASH. (7ZK).—Address 406 West Twelfth Street.
WASHINGTON, D. C. (3XO).—W. l., 250.
WASHINGTON, D. C. (3ZW).—W. l., 150, *200*, 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 BERNE 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 Basse-Lande, Nantes, France. The address of all long-distance radiotelegrams must carry the name Basse-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, Basse-Lande; geographic position, 0.01° 42′ 00″, N. 47° 10′ 40″; call, UA; range, 1,500 miles; system, French Navy, spark 750; w. l., 2800; service, PR.

STATIONS IN ALASKA CLOSED FOR THE SEASON.

Alifak (KYL), closed September 15.
Chignik (KHC), closed September 7.
Chisik Island (KUCP), closed September 10.
Funter (KXK), closed September 20.
Kussiloff (KKAO), closed September 7.

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

The Independent Wireless Telegraph Co. is now located at 35 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 broadcasted by Naval Communication Service.

Name of station.	Call letters.	Wave length.	Type of emission.	Time (75th meridian).[1]	Nature of service.
Alpena, Mich.	NSM	1,200	Spark	0845	Weather.
				1145	Do.
				1245	Do.
				1445	Do.
				1645	Do.
				1845	Do.
				2045	Do.
Annapolis, Md.	NSS	17,145	C. w.	1155	Time.
				1700	Ice report.
				2155	Time, press.
Arlington, Va.	NAA	5,950	C. w. spark	1030	Weather, hydrographic.
		2,650		1155	Time, storm warnings.
				2155	Time, weather, hydrographic, press.
Balboa, Canal Zone.	NBA	10,110	C. w.	0455	Time, press.
				1255	Time.
Baltimore, Md.	NBZ	700	Spark	1030	Weather, hydrographic.
				1600	Do.
Bar Harbor, Me.	NBD	2,750	....do	0300	Press.
Boston, Mass.	NAD	1,620	....do	1100	Weather, hydrographic.
				1155	Time, if Arlington fails.
Buffalo, N. Y.	NNZ	1,200	....do	1700	Weather, hydrographic.
				1015	Do.
				1700	Do.
				2245	Do.

[1] The time as shown in this table is given as from 1 to 24 o'clock in lieu of 1–12 a. m. and 1–12 p. m. For example, 0845 is 8.45 a. m.; 1200 is noon, 1445 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 emission.	Time (75th meridian).	Nature of service.
Cavite, P. I.	NPO	5,200	C. w.	0855	Time.
				2155	Do.
		2,700	Spark	0855	Do.
				2155	Do.
Charleston, S. C.	NAO	2,250	do	1030	Weather, hydrographic.
				1155	Time, if Arlington fails.
				1800	Weather, hydrographic.
Cleveland, Ohio	NRH	1,090	do	1100	Do.
				1730	Do.
				2300	Do.
Colon, Canal Zone	NAX	1,620	do	0455	Time, hydrographic, press.
				1255	Do.
Duluth, Minn.	NUX	1,200	do	1045	Weather, hydrographic.
				1645	Do.
Dutch Harbor, Alaska.	NPR	2,250	do	0030	Do.
				1230	Do.
Eureka, Calif.	NPW	2,650	do	1200	Do.
				1455	Time.
				1700	Weather.
				2030	Do.
Galveston, Tex.	NKB	1,813	do	1130	Weather, hydrographic.
				1800	Do.[1]
Great Lakes, Ill.	NAJ	1,988	do	1100	Do.
				1155	Time, weather.
				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.
				1856	Time.
		11,500	C. w.	1855	Do.
Key West, Fla.	NAR	1,988	Spark	1155	Do.
				2155	Time, press.
Miami, Fla.	NGE	1,620	do	1130	Weather.
				1800	Do.[1]
New Orleans, La.	NAT	1,832	do	1100	Weather, hydrographic.
				1155	Time.
				1700	Weather, hydrographic.[1]
Newport, R. I.	NAF	1,908	do	1155	Time, if Arlington fails.
New York, N. Y.	NAH	1,832	do	1030	Weather, hydrographic.
				1155	Time, if Arlington fails.
				1700	Weather, hydrographic.
Norfolk, Va.	NAM	1,851	do	0830	Weather.
				1045	Weather, hydrographic.
				1155	Time, if Arlington fails.
				1600	Weather, hydrographic.
				2000	Weather.
		597	Spark and modulated c. w.	2030	Do.[1]
North Head, Wash.	NPE	2,700	Spark	0030	Do.
				0830	Do.
				1230	Do.
				1455	Time.
				1630	Weather, hydrographic.
				2030	Do.
				2330	Do.
Pensacola, Fla.	NAS	2,250	do	1145	Do.
				1500	Do.[1]
Philadelphia, Pa.	NAI	1,948	do	1045	Do.
				1700	Do.
Point Isabel, Tex.	NAY	2,250	do	0000	Weather.[1]
				1200	Do.
				1900	Do.
Port au Prince, Haiti	NSC	2,250	do		Hurricane warnings as issued every four hours.
Portland, Me.	NAB	800	do	1200	Weather
				2000	Do.
San Diego, Calif.	NPL	9,800	C. w.	0500	Press.
				1455	Time.
		1,988	Spark	1455	Do.

[1] 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	1,906	Spark	0055	Time.
				0415	Press.
				1455	Time.
				2230	Weather, hydrographic.
		4,650	C. w	0055	Time.
				0415	Press.
				1200	Weather, hydrographic.
				1455	Time.
San Juan, P. R.	NAU	5,200	do	1000	Hurricane warnings.
				2100	Weather.
San Pedro, Calif.	NPX	1,851	Spark	1130	Do.
				1700	Do.
				2330	Do.
Savannah, Ga.	NEV	1,813	do	1100	Do.
				1800	Do.[1]
Seattle, Wash.	NVL	1,988	do	1000	Hydrographic.
				2100	Do.
St. Augustine, Fla.	NAP	1,851	do	1130	Weather.
				1900	Do.[1]
St. Croix, Virgin Islands.	NNI	450	do		Hurricane warnings as issued every four hours.
St. Petersburg, Fla.	NGL	2,700	do	1130	Weather.
				1900	Do.[1]
St. Thomas, Virgin Island.	NBB	1,688	do		Hurricane warnings as issued every four hours.
Tatoosh, Wash.	NPD	1,654	do	0800	Weather.
				1200	Do.
				1600	Do.
				2000	Do.
				2300	Do.
Tutuila, Samoa.	NPU	2,250	do	0230	Weather, hydrographic.
				1830	Do.
				2230	Do.

[1] Hurricane 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	Cienfuegos, Cuba	CFG
Bluefields, Nicaragua	BFD	La Fe, Cuba	LFE
Willemstadt, Curacao	W	Kingston, Jamaica	KN
San Juan, P. R.	SJ	Turks Island, Bahamas	FI

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 98643 (translated): Swan Island, barometer 29.86 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 73°), 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), 2,240 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 radioed 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 300 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 Brauch, J. G., Radio telephony and telegraphy (book). Published by J. G. Brauch, 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 Baumler, The simultaneous occurrence of atmospherics, Jahrbuch der drahtlose Telegraphie, **19,** pp. 102–109; February, 1922; Sci. Abs. B, No. 822, July, 1922.

R113.2 Malgorn, 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. 187; August 18, 1922.

R113.4 Howe, G. W. O., The heaviside layer (editorial), Electrician, **89,** pp. 260–261; September 8, 1922.

R114 Bouthillon, L., Abac for the application of the Austin-Cohen formula, Radioélectricité, **3,** pp. 153–162, April, 1922; Sci Abs. B, No. 823, July, 1922.

R120 Guierre, 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 aerials, Physical Review, **20,** p. 90; July, 1922.

R125.1 McCullough, F. S., Radio telegraphy (direction finding), U. S. Patent No. 1427833 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, B. F., A regenerative set with "duodirectional" tickler coil for short waves, Radio (San Francisco), **4,** p. 25; September, 1922.

R134.7 Eltz, G. J., The Armstrong super-regenerative circuit (book). Published by Wireless Press, N. Y. Price $1. Noted in Wireless Age, **9,** p. 78; September, 1922.

R134.7 Warner, K. B., Progress on superregeneration, QST, **6,** pp. 22–25; September, 1922.

R138 Worthing, A. G., Theory of end-loss corrections and their application to tungsten filaments in vacuo, Physical Review, **20,** p. 91; July, 1922.

R138 Dushman, S., A general relation for electron emission from metals, Physical Review, **20,** pp. 109–110; July, 1922.

R138 Davisson, C., and Kunsman, C. H., The secondary electron emission from nickel, Physical Review, **20,** p. 110; July, 1922.

R138 Wolfers, P., L'émission thermo-électronique, L'Onde Electrique, **1,** pp. 455–472; August, 1922.

R138 Langmuir, I., The electron emission from thoriated tungsten filaments, Physical Review, **20,** pp. 107–108; July, 1922.

R138 Edgerton, H. C., Electron-discharge device circuits, U. S. Patent No. 1426826, 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. 98–99; July, 1922.

R142 Bethenod, J., Radiotelegraphic coupling, U. S. Patent No. 1427350, 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. 671–673; 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. 479–501; September, 1922.

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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, F., 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 fur Elektrotechnik, **10,** pp. 419–431, March 6, 1922; Sci. Abs. B, No. 820, 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.

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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 18, 1922.

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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, F., Radiogoniométre: Tracé du segment capable sphérique, Radioélectricité, **3,** pp. 336–337; August, 1922.

R325.1 Kolster, F. A., and Dunmore, F. W., Le radiogoniométre et ses applications á 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.

R330 Dieckmann, M., and Gebbert, A., Ionic tubes with electrostatically deflected electron beam, Jahrbuch der drahtl. Telegraphie, **19,** pp. 194–197, March-April, 1922; Sci. Abs. B, No. 817, July, 1922.

R330 Mathes, R. C., Vacuum-tube circuits and method of operating them, U. S. Patent No. 1426755, issued August 22, 1922.

R331 Bush, V., and Smith, C. G., Control of gaseous conduction (tubes, construction, and evacuation), Journal American Institute Electrical Engineers, **41,** pp. 627–635; September, 1922.

R331 Hendry, W. F., Method of manufacturing audions, U. S. Patent No. 1426734, issued August 22, 1922.

R331 Valve manufacture: A brief description of the simpler processes adopted in the manufacture of Mullard valves, Wireless World and Radio Review, **10,** pp. 641–647; August 19, 1922.

R341 Bush, V., and Smith, C. G., A new rectifier (tube), Wireless World and Radio Review, **10,** pp. 726–729; September 2, 1922.

R342 Heising, R. A., Method and means for preventing amplifiers from oscillating, U. S. Patent No. 1426733, issued August 22, 1922.

R342.15 Experimental station design: High frequency intervalve transformers, Wireless World and Radio Review, **10,** pp. 715–719; September 2, 1922.

R342.6 Sleeper, M. B., A three-stage radiofrequency amplifier (wave length of 150 to 500 meters), Radio News of Canada, **1,** pp. 18–21; September, 1922.

R342.6 Radiofrequency amplification at amateur wave lengths, QST, **6,** pp. 7–15; September, 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 MUU 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 2½ 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 showng 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 QRX 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 England 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 imput, 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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