DEPARTMENT OF COMMERCE

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION

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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.
FS = Fog signal.
P = Private.
O = Government business exclusively.
Hours = Hours of operation:
N = Continuous service.
X = No regular hours.
F. T. Co. = Federal Telegraph Co.
I. W. T. C. = Independent Wireless Telegraph Co.
K. & C. = Kilbourne & Clark Manufacturing Co.
R. C. A. = Radio Corporation of America.
S. O. R. S. = Ship Owners' Radio Service.
W. S. A. Co. = Wireless Specialty Apparatus Co.
C. w. = Continuous wave.
I. c. w. = Interrupted continuous wave.
V. t. = Vacuum tube.
FX = Fixed station.
U. S. L. = After operating company denotes that the change applies only to the List of Radio Stations of the United States.
Kc. = Kilocycles.
Fy. = Frequency.
A. c. = Alternating current.

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, 1924, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave lengths	Service	Hours	Station controlled by—
Cleveland, Ohio	WMI	600, 875	PG	N	Great Lakes Radio Telegraph Co.
Culver City, Calif.[1]	KJU	149	P	X	Cecil B. De Mille.
Dallas, Tex.[2]	KVP	146	P	X	City of Dallas, police and fire signal department.
Naknek, Alaska (Hyades moored vessel).[3]	KPB	600, 725	FX	X	Naknek Packing Co.
Pottsville, Pa.[4]	WDS	137	FX	X	Pennsylvania Power & Light Co.

[1] Range, 50; system, composite v. t. telephone and telegraph.
[2] Loc. (approximately) O 92° 47′ 00″, N. 32° 46′ 00″; range, 25; system, composite v. t. telegraph.
[3] Loc. (approximately) O 156° 25′ 00″, N. 58° 43′ 20″; range, 150; system, W. S. A. Co., 1000.
[4] Loc. (approximately) O 76° 10′ 00″, N 40° 42′ 00″; range, 150; system, composite v. t. telephone and telegraph.

Commercial ship stations, alphabetically by names of vessels

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924, 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—
Alscotia	KFVQ				Mrs. Strickler Coles	Owner of vessel.
Campeador [1]	KZBV		PG	X	Visayan Stevedore Transportation Co.	
Cherokee	WEO	8	PG	N	Cherokee-Seminole Steamship Corporation.	
Dodeca [2]	KXO	8	PG	X	Cary Davis Tug & Barge Co.	I. W. T. Co.
Eloise [3]	KFVT		P	X	John C. Piver	Owner of vessel.
John McCartney Kennedy [4]	WPJ		PG	X	Valley Camp Steamship Co.	Intercity Radio Telegraph Co.
John W. Alles [4]	WPK		PG	X	do.	Do.
Mahoe [5]	KZR	8	PG	X	Young Bros. (Ltd.)	I. W. T. Co.
Mazama [6]	KNUO	8	PG	X	Mazama Steamship Co.	Do.
Mount Baker [7]	KEN	8	PG	X	Red Salmon Canning Co.	Owner of vessel.
Rosamond	KZZ		PG	X	Pacific Freighters Co.	
S. B. Way [4]	WPO		PG	X	Valley Camp Steamship Co.	Intercity Radio Telegraph Co.
Speejacks	WAYG				A. Y. Gowan	
Star of Russia [8]	KFFJ	8	PG	X	Alaska Packers Association	Owner of vessel.
William C. Atwater.	WPB		PG	X	Wilson Transit Co.	

[1] Range, 150; system, Navy-Lowenstein, 1,000; w. l., 300, 600, 756, 952.
[2] Range, 150; system, K. & C., 1,000; w. l., 600, 706, 800.
[3] Range, 50; system, composite v. t. telegraph; w. l., 110.
[4] Range, 150; system, Navy-Lowenstein, 1,000; w. l., 715, 800, 873; rates, Great Lakes service, 4 cents per word.
[5] Range, 150; system, Navy-Lowenstein, 1,000; w. l., 600, 706, 800.
[6] Range, 200; system, Navy-K. & C., 1,000; w. l., 600, 706, 800.
[7] Range, 200; system, Gray & Danielson, 240; w. l., 600, 706, 800.
[8] Range, 150; system, R. C. A., 1,000; w. l., 600, 706, 800.

Commercial land and ship stations, alphabetically by call signals

[b=ship station; c=land station]

Call signal	Name of station		Call signal	Name of station	
KEN	Mount Baker	b	KZBV	Campeador	b
KFFJ	Star of Russia	b	KZR	Mahoe	b
KFVQ	Alscotia	b	KZZ	Rosamond	b
KFVT	Eloise	b	WAYG	Speejacks	b
KJU	Culver City, Calif.	c	WDS	Pottsville, Pa.	c
KNUO	Mazama	b	WMI	Cleveland, Ohio	c
KPB	Naknek, Alaska (Hyades-moored vessel)	c	WPB	William C. Atwater	b
KVP	Dallas, Tex.	c	WPJ	John McCartney Kennedy	b
KXO	Dodeca	b	WPK	John W. Alles	b
			WPO	S. B. Way	b

Broadcasting stations, alphabetically by names of States and cities

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924]

State and city	Call signal	State and city	Call signal
Alabama: Birmingham	WBRC	Kansas: Junction City	KFJC
California: Chico	KFWH	Missouri:	
Colorado: Denver, Colo. (near)	KFVR	Cape Girardeau	KFVS
Illinois:		Kansas City	KWKC
Chicago (portable)	WIBJ	New York: Flushing	WIBI
Do	WIBL	Ohio: Toledo	WIBK
Deerfield	WHT	Texas: Houston	KPRC
Joliet	WJBI	Washington: Seattle	KTCL

Stations broadcasting market or weather reports, music, concerts, lectures, etc., alphabetically by call signals

Call signal	Location of station (address)	Station operated and controlled by—	Power (watts)	Wave length	Frequency (kilocycles)
KFJC	Junction City, Kans	Episcopal Church (R. B. Fegan)	10	218.8	1,370
KFVR	Denver, Colo. (near), Moonlight Ranch, Route 6.	Eugene Rossi	50	248	1,220
KFVS	Cape Girardeau, Mo., 312 South Frederick Street.	Cape Girardeau Battery Station (Oscar C. Hirsch).	50	224	1,340
KFWH	Chico, Calif	F. Wellington Morse, jr	100	254	1,180
KPRC	Houston, Tex	Post Dispatch	500	296.9	1,010
KTCL	Seattle, Wash	American Radio Telephone Co	1,000	305.9	980
KWKC	Kansas City, Mo., Werby Building.	Wilson Duncan Studios	100	236	1,270
WBRC	Birmingham, Ala., 1913 Fifth Avenue North.	Bell Radio Corporation	10	248	1,210
WHT	Deerfield, Ill. (410 North Michigan Boulevard, Chicago, Ill.).	Radiophone Broadcasting Corporation.	1,500	238	1,260
WIBI	Flushing, N. Y., 369 Amity Street.	Frederick B. Zittell, jr	5	218.8	1,370
WIBJ	Chicago, Ill. (portable), 36 South State Street.	C. L. Carrell	50	215.7	1,390
WIBK	Toledo, Ohio	University of the City of Toledo	100	265.4	1,460
WIBL	Chicago, Ill. (portable), 179 West Washington Street.	McDonald Radio Co	250	215.7	1,390
WJBI	Joliet, Ill., 104 Summit Street	H. M. Couch	100	214.2	1,400

Government land stations, alphabetically by names of stations

[Additions to the list of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
Toro Point, Canal Zone [1]	NAX	800	RC	N	United States Navy.
Point St. George, Calif. [2]	NYW	800	RC	N	Do.

[1] Loc. O 79° 56′ 38″, N 09° 22′ 31″; system, United States Navy, 1,000.
[2] Loc. O 124° 15′ 04″, N 41° 47′ 00″; system, United States Navy, 1,000.

Government ship stations, alphabetically by names of stations

[Additions to the list of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
Ammunition Lighter No. 8	NEMP		O	X	United States Navy.
Chicago	NDI		O	X	Do.
Eagle 22	NEKF		O	X	Do.
Inca	NESN		O	X	Do.
Old Constellation	NEPR		O	X	Do.
Saco	NEQJ		O	X	Do.
Wando	NEGQ		O	X	Do.
Wildcat	NIVM		O	X	United States Coast and Geodetic Survey.
Zumbrota	NELD		O	X	United States Navy.

Government land and ship stations, alphabetically by call signals

[b—ship station; c—land station]

Call signal	Name of station		Call signal	Name of station	
NAX	Torre Point, Canal Zone	c	NEPR	Old Constellation	b
NDI	Chicago	b	NEQJ	Saco	b
NEGQ	Wando	b	NESN	Inca	b
NEKF	Eagle 22	b	NIVM	Wildcat	b
NELD	Zumbrota	b	NYW	Point St. George, Calif.	c
NEMP	Ammunition Lighter No. 8	b			

Special land stations, alphabetically by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924]

Station	Call signal	Station controlled by—
Essex, Mont.	7XAN	Great Northern Railway Co.
Glacier Park, Mont.	7XAM	Do.
Hanover, N. H.	1YB	Dartmouth College.
Harrison, Ohio	8XAL	Crosley Radio Corp.
Los Angeles, Calif. (portable)	6XAU	Times-Mirror Co., 100 North Broadway.
Monmouth, Ill.	9XP	Post Office Department.
New York, N. Y.	2XAL	Experimenter Publishing Co.
Do.	2XV	Robert M. Lacey and Frank E. Miller, 17 West Fifty-fourth Street.
Pullman, Wash.	7XW	State College of Washington.
Summit, Mont.	7XAK	Great Northern Railway Co.
Whitefish, Mont.	7XAL	Do.

Special land stations, grouped by districts

Call signal	District and station	Call signal	District and station
1YB	First district: Hanover, N. H.		Seventh district—Continued.
	Second district:	7XAM	Glacier Park, Mont.
2XAL	New York, N. Y.	7XAN	Essex, Mont.
2XV	Do.	7XW	Pullman, Wash.
6XAU	Sixth district: Los Angeles, Calif. (portable).	8XAL	Eighth district: Harrison, Ohio.
	Seventh district:	9XP	Ninth district: Monmouth, Ill.
7XAK	Summit, Mont.		
7XAL	Whitefish, Mont.		

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, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

AKUTAN, ALASKA.—W. 1., *600*, 625; service, P.
BAYTOWN, TEX.—W. 1., *600*, 640.

BIG CREEK (Camp 63), CALIF.—W. l., 1,585, 1,635, 1,675.
BUFFALO, N. Y.—System, composite, 1,000; hours 6 a. m.-midnight.
CAMP EUSTIS, VA. (Flagship Division 1).—Loc. O 76° 37′ 31″, N 37° 08′ 15″; range, 300, system, Navy, 1,000; w. l., *600*, 706, 875; service, P.
CHATHAM, MASS. (WIM).—System, R. C. A. v. t. telegraph; w. l., *600*, 735.
CLEVELAND, OHIO (KDPM).—System, Westinghouse v. t. telegraph.
ELDORADO, KANS.—System, composite, v. t. telegraph; w. l., 1,599, 1,910.
FALSE PASS, ALASKA.—W. l., *600*, 650, 1,650; service, P.
FUNTER, ALASKA.—W. l., *600*, 625; service, P.
HARRISBURG, PA.—W. l., 202.3, 1,199.
HAWK INLET, ALASKA.—W. l., *600*, 725; service, P.
HILLSBORO, OREG. (KGH).—W. l., 4,300, 6,316, 8,696.
KANATAK, ALASKA (near).—W. l., *600*, 875, 1,750.
LIHUE, HAWAII.—W. l., 550, *600*, 675; service, PG; rates, ship service, 10 cents per word.
MIAMI BEACH, FLA.—W. l., *600*, 650, 1,599.
OWENSBORO, N. J.—System, De Forest v. t. telegraph.
POTTSVILLE, PA.—Changed to West Reading, Pa., loc. (approximately) O 75° 57′ 00″, N 40° 20′ 00″; w. l., 1,199.
MARION, MASS. (WCC).—System, R. C. A. v. t. telegraph; w. l., *600*, 2,200, 2,300.
MARION, MASS. (Mattapoisett—WRQ).—W. l., 13,500.
NEW BRUNSWICK, N. J. (WIZ).—W. l., 43.
ROCKY POINT, N. Y. (WQN).—W. l., 57.
ROCKY POINT, N. Y. (WQO).—W. l., 35.
ST. CROIX FALLS, WIS.—System, composite, v. t. telephone and telegraph.
SALTCHUCK, ALASKA.—Range, 150; system, Navy-Lowenstein, 1,000 w. l., *600*, 875.
SEATTLE, WASH. (KPE).—W. l., add 706, 1,900.
SIGINAKA ISLAND, ALASKA.—W. l., *600*, 650.
TULSA, OKLA.—System, composite, v. t. telegraph.
Strike out all particulars of the following-named stations: Culver City, Calif. (portable—KYI); Culver City, Calif. (portable—KYJ); Fresno, Calif.; Hauto, Pa.; Jordan, Mont.; Oakland, Calif. (portable); Port Arthur, Tex. (WKI); San Francisco, Calif. (portable—KTA).

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, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

A. E. R. SCHNEIDER.—W. l., *600*, 706, 715, 800; rates, Great Lakes, 4 cents per word.
AGWIMARS.—W. l., *600*, 706, 800.
AFOUNDRIA.—W. l., *600*, 706, 800.
ALLEGHANY.—W. l., *600*, 706, 800.
ANCON.—W. l., *600*, 706, 800; rates, North and South American service 4 cents per word; transoceanic service, 8 cents per word.
BEACONOIL.—W. l., *600*, 706, 800.
BELFAST.—W. l., *600*, 706, 800.
BETTERTON.—Station operated and controlled by owner of vessel.
BOLIVAR.—W. l., *600*, 706, 800.
BUSTAMENTE.—Range, 300; w. l., *300*, 450, 600; service, O; hours, X; station operated and controlled by owner of vessel.
CADDO.—W. l., *600*, 706, 800.
CAIRO.—W. l., 600, 1,100; Inland Waterways Corporation (Mississippi Warrior Service) owner of vessel.
CARACAS.—W. l., *600*, 706, 800.
CASSIMIR.—W. l., *600*, 706, 800.
CASTLE TOWN.—Charles Nelson Co. owner of vessel.
CEBU.—Range, 200; system, International Radio Telegraph Co., 1,000; w. l., 300, 450, *600*, 800; service, PG; hours, X; rates, 8 cents per word.
CEDARHURST.—W. l., *600*, 706, 800.
CENTAURUS.—W. l., *600*, 706, 800.
CHARLES BROWER.—Range, 300; w. l., *600*, 706, 800, 1,800, 2,100, 2,400.
CHARLES H. CRAMP.—W. l., *600*, 706, 800, 1,800, 2,100, 2,400.
CHARLES M. EVEREST.—W. l., *600*, 706, 800.
CHATTANOOGA CITY.—W. l., 450, *600*, 706, 800.
CHESTER VALLEY.—W. l., *600*, 706, 800.
CITY OF CHATTANOOGA.—W. l., *600*, 706, 800.

City of Lowell.—System, Lowenstein, 1,000; w. l., *600*, 706, 875.
City of Rome.—W. l., *600*, 706, 800.
City of Savannah.—W. l., *600*, 706, 800.
Clare.—Station operated and controlled by R. C. A.
Clauseus.—W. l., *600*, 706, 800.
Cletus Schneider.—W. l., *600*, 715, 800; rates, Great Lakes service, 4 cents per word.
Collingsworth.—W. l., *600*, 706, 800.
Comet.—W. l., *600*, 706, 800.
Cripple Creek.—W. l., *600*, 706, 800.
Deroche.—W. l., *600*, 706, 800.
Dolly C.—System, Navy-Lowenstein, 1,000; w. l., *600*, 706, 800; rates, 5 cents per word; station operated and controlled by owner of vessel.
Donna Lane.—I. C. Jacobson owner of vessel.
Dryden.—W. l., *600*, 706, 1,800, 2,100, 2,400.
Eastern Glen.—W. l., 450, *600*, 706, 800.
Edward Luckenbach.—W. l., *600*, 706, 800.
Effna.—W. l., 450, *600*, 706, 800, 875.
El Oceana.—Range, 150; system, R. C. A. v. t. telegraph; w. l., *600* 706, 800, 875.
Ethan Allen.—W. l., 450, *600*, 706, 800, 875, 2,100, 2,400.
Ethyl.—Range, 200; system, Navy-R. C. A., 1,000; w. l., *600*, 706, 800.
Fairfield City.—W. l., 450, *600*, 706, 800.
Florence D.—Range, 200; system, Marconi, 1,000; w. l., 300, 600; service, PG; hours, X; rates, 8 cents per word; Cadwallader-Gibson Lumber Co. owner of vessel; station operated and controlled by owner of vessel.
Fortuna.—Station operated and controlled by owner of vessel.
George L. Olson.—W. l., *600*, 706, 800; Oliver J. Olson & Co. owner of vessel.
Glacier.—Range, 200; system, Haleun, 120; w. l., *600*, 706, 800; rates, 8 cents per word; station operated and controlled by owner of vessel.
Grace Dollar.—W. l., 450, *600*, 706, 800, 1,800.
Gulfland.—W. l., *600*, 706, 800.
Gulftrade.—W. l., *600*, 706, 800.
Harry Luckenbach.—W. l., *600*, 706, 800.
Hastings.—W. l., 450, *600*, 706, 800.
Helen.—Station operated and controlled by R. C. A.
Herman Frasch.—W. l., *600*, 706, 800.
H. M. Flagler.—System, I. W. T. Co. arc and Lowenstein, 1,000; w. l., *600*, 706, 800, 1,800, 2,100, 2,400.
Howard.—W. l., *600*, 706, 800.
Hyades.—W. l., 600, 706, 800; Naknek Packing Co. owner of vessel; station operated and controlled by owner of vessel.
I. C. White.—W. l., *600*, 706, 800.
Idalia.—System, add composite v. t. telegraph.
Iris.—W. l., *600*, 706, 800.
Jacksonville.—New York Shipbuilding Corp. owner of vessel; station operated and controlled by R. C. A.
John Anderson.—Range, 150; system, R. C. A., 1,000; w. l., *600*, 706, 800, 875; rates, Great Lakes service, 4 cents per word; station operated and controlled by owner of vessel.
Jolee.—W. l., *600*, 706, 800.
Julia Luckenbach.—W. l., *600*, 706, 800.
Kadiak.—System, Navy-Lowenstein, 1,000; w. l., *600*, 706, 800.
Kanak.—System, R. C. A., 1,000; w. l., *600*, 706, 800.
Katherine.—W. l., *600*, 852; station operated and controlled by owner of vessel.
Kearny.—System, Navy-Wireless Improvement Co., 1,000; w. l., *600*, 706, 800.
Kvichak.—Range, 150; system, R. C. A., 1,000; w. l., *600*, 706, 800.
Lake Ogden.—Name changed to Trujillo; Atlantic & Caribbean Steam Navigation Co. owner of vessel; station operated and controlled by R. C. A.
Lake Slavi.—System, Navy-R. C. A., 1,000; w. l., *600*, 706, 800; station operated and controlled by owner of vessel.
Levisa.—W. l., *600*, 706, 800.
Leyte.—W. l., add 800.
Lillian Luckenbach.—W. l., *600*, 706, 800.
Luzon.—Range, 300; system, K. & C., 1,000; w. l., 300, 600; service, PG; hours, X; rates, 8 cents per word; station operated and controlled by owner of vessel.
Margaret Dollar.—W. l., *600*, 706, 800, 1,800, 2,100, 2,400.
Meton.—W. l., *600*, 706, 800, 2,100, 2,400.

MILLINOCKET.—System, composite, 1,000.
MINDORO.—Range, 150; system, K. & C., 1,000; w. l., 300, *600*, 950; service, O; hours, X; station operated and controlled by owner of vessel.
MONTGOMERY CITY.—W. l., 450, *600*, 706, 800.
MOOSITAUKA.—Name changed to Maoi; range, 150; system, Navy-Simon, 1,000; w. l., *600*, 706, 800; Matson Navigation Co. owner of vessel; station operated and controlled by owner of vessel.
MOUNT CLINTON.—Matson Navigation Co. owner of vessel.
MUNALBRO.—System, I. W. T. Co., 1,000; station operated and controlled by I. W. T. Co.
MUNRIO.—W. l., *600*, 706, 800; station operated and controlled by I. W. T. Co.
MUNWOOD.—Station operated and controlled by I. W. T. Co.
MYSTIC.—System, Navy-R. C. A., 1,000.
NORMAN BRIDGE.—W. l., *600*, 706, 800.
NORTH KING.—W. l., *600*, 706, 800.
NORTHLAND (WGJ).—W. l., *600*, 706, 800.
NTRA. SRA. DE ALBA.—Range, 250; system, composite, 1,000; w. l., 300, *600*; service, PG; hours, X; rates, 8 cents per word; station operated and controlled by owner of vessel.
NUUANU.—Range, 150; system, Marconi, 240; w. l., 300, *600*; service, PG; hours, X; rates, 8 cents per word; Malaysian Navigation Co. owner of vessel; station operated and controlled by owner of vessel.
OZARK.—W. l., *600*, 706, 800.
PANAY (KZBG).—Range, 150; system, Marconi, 1,000; w. l., *600*; service PG; hours, X; rates, 8 cents per word.
PASTORES.—W. l., *600*, 706, 800.
PEQUONNOCK.—System, Lowenstein, 1,000; w. l., *600*, 706, 800, 875.
PHILIP D. BLOCK.—Range, 200; system, composite, 1,000; w. l., *600*, 706, 800; rates, Great Lakes service, 4 cents per word; Pioneer S. S. Co. owner of vessel; station operated and controlled by owner of vessel.
POMPEY.—Range, 300; system, Navy, 1,000; w. l., 300, 450, *600*, 800; service, PG; hours, X; rates, 8 cents per word; National Coal Co. owner of vessel; station operated and controlled by owner of vessel.
PRESIDENT LINCOLN.—Dollar Steamship Line owner of vessel.
PRESIDENT PIERCE.—W. l., 450, *600*, 1,800, 2,100, 2,400.
PRONTO.—Range, 200; system, Telefunken, 1,000; w. l., 300, *600*; service, PG; hours, X; rates, 8 cents per word; Ramon Soriano owner of vessel; station operated and controlled by owner of vessel.
PROVIDENCE.—System, Navy-Lowenstein, 1,000; w. l., *600*, 706, 800, 875.
PRUSA.—System, Navy, W. S. A. Co., 1,000; w. l., 450, *600*, 706, 800.
RANSOM B. FULLER.—W. l., *600*, 706, 800.
RICHARD PECK.—System, Lowenstein, 1,000; w. l., *600*, 706, 800, 875.
R. J. HANNA.—W. l., *600*, 706, 800.
ROBIN GRAY.—W. l., *600*, 706, 800; station operated and controlled by I. W. T. Co.
ROSE CITY.—Range, 300; system, R. C. A., 1,000; w. l., *600*, 706, 800; station operated and controlled by owner of vessel.
SAGUACHE.—W. l., 450, *600*, 706, 800.
ST. ANTHONY.—Station operated and controlled by I. W. T. Co.
SALINA.—System, Navy-R. C. A., 1,000; w. l., 450, *600*, 706, 800, 875.
SANTA ISABEL.—System, Navy-R. C. A., 1,000; w. l., *600*, 706, 800.
SATOCO.—System, Navy, 1,000; w. l., *600*, 706, 800.
SCANTIC.—W. l., *600*, 706, 800.
S. C. T. DODD.—W. l., *600*, 706, 800.
SIDNEY M. HAUPTMAN.—W. l., *600*, 706, 800.
SISKIYOU.—W. l., *600*, 706, 800.
SIXAOLA.—System, composite, 1,000; w. l., *600*, 706, 800.
SOCONY.—W. l., *600*, 706, 800.
SOCONY 85.—W. l., *600*, 800.
SOCONY 89.—W. l., *600*, 706, 800.
SPRAY (KDYB).—System, composite, 1,000; w. l., *600*, 706.
STANLEY DOLLAR.—W. l., *600*, 706, 800.
STANWOOD.—System, U. S. Navy, 1,000; w. l., *600*, 706, 800.
STAR OF FRANCE.—W. l., *600*, 706, 800.
STAR OF SCOTLAND.—W. l., *600*, 706, 800.
STAR OF ZEALAND.—Range, 150; system, Navy-Lowenstein, 1,000; w. l., *600*, 706, 800.
STEADFAST.—W. l., 450, *600*, 706, 800.

STEEL EXPORTER.—W. l., 450, *600*, 706, 800.
SURINAME.—W. l., *600*, 706, 800.
SUSANA II.—W. l., 300, *600*, 850; rates, 8 cents per word.
UTACARBON.—W. l., *600*, 706, 800.
UTOWANA.—Range, 50; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 800, 875; service, PG; hours, X; rates, 8 cents per word; station operated and controlled by owner of vessel.
VENUS.—Range, 300; system, K. & C., 1,000; rates, 8 cents per word.
VIZCAYA.—W. l., 300, *600*, 900; rates, 8 cents per word; station operated and controlled by owner of vessel.
VOLCANO.—W. l., *600*, 1,100; Inland Waterways Corp. (Mississippi Warrior Service) owner of vessel.
WARWICK.—W. l., *600*, 706, 2,100, 2,400; station operated and controlled by F. T. Co.
WEST ARROW.—W. l., 450, *600*, 706, 800.
WEST CAMAK.—W. l., *600*, 706, 800.
WEST CARMONA.—W. l., 450, *600*, 706, 800, 1,800, 2,100, 2,400.
WEST HIKA.—System, Navy-R. C. A., 1,000; w. l., 450, *600*, 706, 800.
WEST JESTER.—W. l., 450, *600*, 706, 800, 875.
WEST NORRANUS.—W. l., *600*, 706, 800.
W. F. BURDELL.—W. l., 450, *600*, 706, 800.
WHITNEY OLSON.—W. l., *600*, 706, 800.
WINONA COUNTY.—Range, 300; system, Navy, 1,000; w. l., 450, *600*, 706, 800; service, PG; hours, N; rates, 8 cents per word.

Strike out all particulars of the following-named vessels:

Ablanset.
Abraham Lincoln.
Accomac.
Alamosa.
Ambridge.
Ameross.
Aniwa.
Arizpa.
Asabeth.
Auburn.
Auditor.
Bartholomew.
Bavington.
Bay Head.
Bayway.
Belfort.
Benoni.
Bessemer.
Bonnie Brook.
Brandywine.
Brookline.
Buffalo Bridge.
Cabrille.
Canoga.
Castana.
Castle Wood.
Charlot.
Chebaulip.
Chestnut Hill.
Chicomico.
Cocoaponset.
Clairton.
Coquina.
Corsicana.
Costigan.
Cotati.
Dan F. Hanlon.
Darden.
Dartford.
Davenport.
Davidson County.
Delanson.
Delavan.
Democracy.
Deranof.
Diablo.
Dinsmore.
East Cape.
Eastern Admiral.
Eastern Belle.
Eastern Chief.
Eastern Crag.
Eastern Cross.
Eastern Crown.
Eastern Guide.
Eastern King.
Eastern Leader.
Eastern Light.
Eastern Maid.
Eastern Pilot.
Eastern Shore.
Eastern Star.
Eastern Sun.
Eastern Tempest.
Elinor.
Englewood.
Epitacio Pessoa.
Evansville.
Everglades.
Evergreen City.
Faraby.
Federal (WDOO).
Fishkill.
Fort Armstrong.
Fort Pitt Bridge.
Fort Wayne.
Galahad.
Galesburg.
Garibaldi.
Gateway City.
Gladysbe.
Golish.
Guaro.
Guimba.
Haddon.
Hathaway.
Hatchie.
Havilah.
Hayden.
Haymon.
Haynie.
Heber.
Henry Steers.
Homestead.
Hopateong.
Ice King.
Independent Bridge.
Indiana Bridge.
Indianapolis.
Intan.
Iroquois (KUTQ).
Irvington.
Isanti.
Inspector.
Jackson.
Janclew.
John Englis.
John Jay.
John M. Connelly.
John Roach.
Kayseeka.
Kehuku.
Keketticut.
Kekoskee.
Kishacoquillas.
Kootenai.
Kosciuszko.
Lake Allen.
Lake Alvada.
Lake Blanchester.
Lake Butler.
Lake Caboon.
Lake Calistoga.
Lake Candelaria.
Lake Cannonsburg.
Lake Charlottesville.

Lake Como.
Lake Crescent.
Lake Deval.
Lake Elizabeth.
Lake Elkwater.
Lake Ellerslie.
Lake Ellicott.
Lake Ellithorpe.
Lake Ellsbury.
Lake Elmhurst.
Lake Elmont.
Lake Elmsford.
Lake Elon.
Lake Elpueblo.
Lake Fabyan.
Lake Falun.
Lake Fandon.
Lake Fanquier.
Lake Fansdale.
Lake Farabee.
Lake Farber.
Lake Faresman.
Lake Farley.
Lake Feodora.
Lake Fernando.
Lake Ferrona.
Lake Fibre.
Lake Fife.
Lake Fighting.
Lake Flag.
Lake Flanders.
Lake Floravista.
Lake Fluvanna.
Lake Folcroft.
Lake Fondulac.
Lake Foxboro.
Lake Fraley.
Lake Frazee.
Lake Friar.
Lake Frolono.
Lake Gaither.
Lake Galata.
Lake Galera.
Lake Ganado.
Lake Gano.
Lake Garza.
Lake Gazette.
Lake Geneva.
Lake Gert.
Lake Geyser.
Lake Girth.
Lake Gradan.
Lake Gravett.
Lake Greenbrier.
Lake Haresti.
Lake Ikatan.
Lake Inglenook.
Lake Kyttle.
Lake Ledan.
Lake Licoco.
Lake Lilicusun
Lake Markham.
Lake Mattato.
Lake Narka.
Lake Pickaway.
Lake Singara.
Lake Traverse.
Lake Treba.
Lakeville.
Laurel.
Lilmae.
Lithopolis.
Lockport.
Loretta.
Luella.
Lycoming.
Manham.
Manhattan Island.
Maquan.
Margus.
Mariners Harbor.
Marne.
Marsodak.
Massick.
McCreary County.
Mercer.
Merry Mount.
Middlebury.
Milwaukee Bridge.
Mohinkis.
Moline.
Monana.
Monasses.
Monomac.
Montclair.
Mooschausic
Moravia Bridge.
Mulpua.
Muscatine.
Nacata.
Narcissus.
Namasket.
Nameaug.
Nantahala
Naugus.
Nemaha.
Neshaminy.
Newburgh.
Nockum.
Nokatay.
Nonantum.
North Pole.
Norumbega.
Onekama.
Opelika.
Opequan.
Oronoke.
Osaqumsick.
Oscoda.
Oshkosh.
Oskawa.
Ossineke.
Ozaukee.
Panola.
Parksville.
Petoskey.
Pittsburgh Bridge.
Plow City.
Polar Bear.
Polar Sea.
Polar Star.
Pontia.
Portsmouth.
Potomac.
Provincetown.
Putnam.
Python.
Quinnipiac.
Quittacas.
Remus.
Ripon.
Romulus.
Rushville.
Sabotawan.
Saccarappa.
Sacramento.
Sag Harbor.
Salaam.
Semiole.
St. Johns County.
Sharon.
Sinasta.
South Pole.
Springfield.
Surinam.
Susquehanna (KOLN).
Suwied.
Tashmoo.
Tenafly.
Terre Haute.
Toledo Bridge.
Tolosa.
Union Liberty.
Vincennes Bridge.
Waco.
Wakulla.
Wampum.
Wassaic.
Waterbury.
Watonwan.
Wauconda.
Wekika.
West Alsek.
West Amargosa.
West Avenal.
Westboro.
Westbrook.
West Bridge.
West Canon.
West Cherow.
Westchester.
West Coast.
West Cobalt.
West Cressy.
West Elcasco.
Western Belle.
Western Cross.
Western Hope.
Western King.
Western Light.
Western Pride.
Western Queen.
Western Sea.
Western Scout.
Western Spirit.
West Galoc.
West Grama.
West Grove.
Westhampton.
West Hargrave.
West Harlan.

West Harte.
West Hassayampa.
West Hembrie.
West Henshaw.
West Hepburn.
Westfield.
West Indian.
West Kyska.
West Lianga.
West Loquassuck.
West Pocasset.
West Point.
West Vaca.
Westward Ho.
West Wind.
Wheeling Mold.
Wilscox.
Winston-Salem.
Winyah.
Woodmansie.
Wynooche.
Yaklok.
Yapalaga.
Yesoking.
York Harbor.
Yukon (WXEU).
Zirkel.

KHU, *read* Trujillo; KOKG, *read* Maoi; WMB, *read* West Reading, Pa.; strike out all particulars following the call signals: KDAC, KDAV, KDAY, KDBU, KDCR, KDCV, KDCY, KDDJ, KDDU, KDEV, KDFD, KDFE, KDFF, KDFS, KDGR, KDGX, KDGY, KDHK, KDHU, KDHY, KDIH, KDJD, KDJH, KDKC, KDKN, KDKU, KDMI, KDMM, KDNU, KEBN, KEBP, KEBQ, KEBX, KECL, KEDJ, KEDK, KEDP, KEDZ, KEFN, KEFS, KEFZ, KEGN, KEGX, KEJJ, KEJS, KEJV, KEKD, KEKM, KEKN, KEKQ, KEKR, KEKT, KELB, KELC, KELM, KELN, KEMX, KENC, KENG, KENS, KEPD, KEPF, KEPM, KEQM, KEQN, KEQR, KERN, KERQ, KERR, KESB, KESM, KESP, KEVN, KEVZ, KEXL, KEXN, KEZN, KFDI, KFE, KFEO, KFO, KFUI, KGA, KIBF, KIBK, KIDJ, KIDR, KIFJ, KIGK, KIGT, KIGX, KIJB, KIJJ, KIKC, KIKG, KIKQ, KIKR, KIKT, KILN, KILX, KIMM, KIMV, KINF, KINJ, KINP, KINT, KINX, KIPC, KIPF, KIPN, KIQB, KIQF, KIRB, KIRK, KIRN, KIRP, KIRQ, KITN, KITQ, KIVJ, KIXF, KIXG, KIXM, KIXP, KIXQ, KIXS, KIXX, KIZF, KIZG, KJAA, KJAE, KJAO, KJAU, KJEI, KJH, KJII, KJM, KJOO, KJUA, KJUO, KJY, KKEU, KLAA, KLEI, KLIE, KMOE, KNAA, KNEA, KOBT, KOBZ, KOCC, KOCF, KOCK, KOCM, KODK, KOFF, KOFN, KOFM, KOFP, KOFQ, KOFV, KOGB, KOGD, KOGF, KOGJ, KOGQ, KOGT, KOGX, KOJB, KOJJ, KOJV, KOJZ, KOKN, KOKR, KOLN, KOLS, KOMB, KOMF, KOMK, KOND, KONG, KOPC, KOPF, KOPJ, KOQG, KOQP, KOQT, KOQZ, KORP, KORS, KOSN, KOSQ, KOTB, KOTX, KOVD, KOVF, KOVG, KOVS, KOXC, KOXD, KOXG, KOXM, KOZF, KOZG, KOZX, KQIO, KQOI, KRAA, KROE, KROI, KROO, KROU, KRUO, KSEI, KSOA, KSR, KTA, KTAU, KTEE, KTIE, KTIU, KTOA, KTOU, KTUA, KUBT, KUCC, KUCM, KUCN, KUDR, KUDS, KUFC, KUGM, KUGN, KUGP, KUJK, KUJS, KUJT, KUJV, KUKP, KUKL, KUKP, KULD, KULF, KULJ, KULN, KUMB, KUMX, KUNG, KUNJ, KUNL, KUNM, KUNQ, KUPK, KUPS, KUPT, KUPV, KURM, KURP, KURR, KURT, KUSR, KUTF, KUTQ, KUTR, KUVG, KUXF, KUXR, KUZP, KVEI, KVG, KVII, KVOE, KVR, KWB, KWV, KXAA, KXAJ, KXEU, KXIU, KXU, KXUA, KYI, KYJ, KZAA, KZEA, KZIO, KZUE, WAP, WAQ, WBUE, WCL, WCOU, WDH, WDIA, WDII, WDOE, WDOO, WDOU, WDS, WDUA, WEP, WFEA, WFIA, WFN, WFOI, WFUU, WGAA, WGAE, WGIA, WGIE, WGOE, WGOI, WGOU, WGT, WGUA, WGUI, WJIE, WJOA, WJOI, WJOU, WJV, WKAO, WKEA, WKEE, WKI, WKII, WKIO, WKIU, WKUI, WKX, WKZ, WLAU, WLI, WLUI, WMUI, WMUO, WNEA, WNIO, WOP, WPAE, WPAO, WPII, WQEA, WQEE, WREE, WROE, WRUO, WSEO, WSP, WSUU, WTAI, WTAO, WTUE, WTW, WVAA, WVEU, WWK, WXAA, WXEA, WXEU, WZOU, WZUE.

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, 1924]

KFBL (Everett, Wash.).—Power, 50.
KFLR (Albuquerque, N. Mex.).—Power, 200.
KFOO (Salt Lake City, Utah).—W. l., 236; fy. kc., 1,270.
KFQB (Fort Worth, Tex.).—W. l., 263; fy. kc., 1,140.
KFRW (Olympia, Wash.).—Power, 50; w. l., 218.8; fy. kc., 1,370.
KFVO (Kirksville, Mo.).—Call signal changed to KFKZ.
KUOM (Missoula, Mont.).—Power, 250.
WABL (Storrs, Conn.).—Changed to Mansfield, Conn.; call signal changed to WCAC; power, 500.
WAMD (Minneapolis, Minn.).—Power, 500.
WBAK (Harrisburg, Pa.).—W. l., 275; fy. kc., 1,090.
WBBG (Mattapoisett, Mass.).—Power, 100.
WBS (Newark, N. J.).—Call signal changed to WGCP; power, 500.

WCAH (Columbus, Ohio).—Power, 500.
WCBA (Allentown, Pa.).—Power, 15.
WCBD (Zion, Ill.).—Power, 2,000.
WCBZ (Chicago Heights, Ill.).—Changed to Homewood, Ill.; call signal changed to WOK.
WCTS (Worcester, Mass.).—Power, 500.
WDAY (Fargo, N. Dak.).—W. l., 261; fy. kc., 1,150.
WDBO (Winter Park, Fla.).—Power, 100.
WGAQ (Shreveport, La.).—Call signal changed to KWKH.
WGBQ (Menomonie, Wis.).—Power, 100.
WGBW (Spring Valley, Ill.).—Station operated and controlled by Hub Radio Shop and Valley Theater; power, 10; w. l., 256; fy. kc., 1,170.
WGBX (Orono, Me.).—Power, 100.
WHAR (Atlantic City, N. J.).—Power, 500.
WHBA (Oil City, Pa.).—Power, 10.
WHBP (Johnstown, Pa.).—Power, 100.
WIBO (Chicago, Ill.).—Power, 500.
WJAK (Greentown, Ind.).—Power, 100.
WMBB (Chicago, Ill.).—Station operated and controlled by American Bond & Mortgage Co.
WRAX (Gloucester City, N. J.).—Power, 250.
WSAG (St. Petersburg, Fla.).—Power, 250.
WSAP (New York, N. Y.).—Call signal changed to WSDA.
WTAQ (Osseo, Wis.).—Power, 100.
WWAE (Joliet, Ill.).—Changed to Plainfield, Ill.; station operated and controlled by Electric Park (Lawrence J. Crowley).
Strike out all particulars of the following-named stations: KFBE (San Luis Obispo, Calif.); KFQG (Los Angeles, Calif.); KFRP (Redlands, Calif.); WABM (Saginaw, Mich.); WCBL (Houlton, Me.); WCBY (Buck Hill Falls, Pa.); WDBF (Youngstown, Ohio); WGBN (La Salle, Ill.); WGBO (San Juan, P. R.); WRAL (St. Croix Falls, Wis.); WRAN (Waterloo, Iowa); WSL (Utica, N. Y.).

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, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

AKIAK, ALASKA.—Loc. (approximately) O 161° 10′ 00″, N 61° 00′ 00″; range, 150; system, K. & C., 1,000; w. l., 300, 425, *600*; service, O; hours, X.
GREAT LAKES, ILL.—W. l., strike out *600*.

GOVERNMENT SHIP 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, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

Strike out all particulars of the following-named vessels: Ajax, Albatross, Cayuga, Choptank, Cumberland, Cyan, Hancock, Harbor Tug No. 67, Hartford, Helori, Hercules, L-5, L-6, L-7, L-8, Mansfield, Onondaga, Oregon, Peacock, Pentucket, Rocket, Samoset, Sebago, Warbler, Willet.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS

Strike out all particulars following the call signals: NAFP, NAKD, NEFS, NEKR, NGV, NIFV, NHI, NIKD, NIKM, NIKN, NMZ, NQY, NRO, NSZ, NTD, NUL, NULG, NUMV, NUT, NUU, NUV, NYR, NYS, NYT, NYU.

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, 1924]

ERIE, PA. (8XC).—Address, 649 West Ninth Street.
FORTH WORTH, TEX. (5YS).—Station operated and controlled by Brantley Draughon Business College (Oba R. Garrett).
HARRISON, OHIO (8XAY).—*Read* Cincinnati, Ohio.
LOS ANGELES, CALIF. (6XP).—Address, 2903 South Rimpau Boulevard.
NEWARK, N. J. (2XBF).—Station operated and controlled by Public Service Electric & Gas Co., 80 Park Place.

Strike out all particulars of the following-named stations: Cherrydale, Va (3XAS); Cleveland, Ohio (8XAC); Connellsville, Pa. (8XBI); Culver City Calif. (6XAB); Fresno, Calif. (6XU); Los Angeles, Calif. (6XBA); Los Angeles, Calif. (6XBP); Los Angeles, Calif. (6XBS); Los Angeles, Calif. (6XBX); Los Angeles, Calif. (6XL); Los Angeles, Calif. (6XT); Los Angeles, Calif. (portable-6XZ); Marietta, Ohio (8XB); Oakland, Calif. (6XA); Polytechnic, Mont. (7XAG); Princeton, N. J. (3XM); Richmond, Calif. (6XBU); Salt Lake City, Utah (6XBW); San Diego, Calif. (6XBT); San Fernando, Calif. (6XAN); Schenectady, N. Y. (2XAB); Seattle, Wash. (7YC); Stockton, Calif. (6XAL); Whittier, Calif. (6XJ).

MISCELLANEOUS

TIME OF TRANSMISSION OF WEATHER REPORTS BY NEW ORLEANS (NAT) NAVAL STATION

Weather and hydrographic reports will be transmitted from this station in future at 1000 G. M. T. instead of 1100 G. M. T.

300 AND 600 METERS DISCONTINUED ON GREAT LAKES

Beginning July 15, this year, 300, 600, and 706 meters will no longer be used by ship and land stations on the Great Lakes. In place of these wave lengths, 715 and 875 meter wave lengths will be used.

OPERATOR'S LICENSE SUSPENDED

Commercial first-class, first grade, license No. 11186, issued at New York, N. Y., December 29, 1924, has been suspended for a period of 30 days on account of the holder of the license having violated article 6 of the International Convention service regulations, in that he carried on an unofficial conversation with the radio operator of another station.

WIRELESS DISTRESS MESSAGES

When a wireless distress message is sent out near the coasts of the United Kingdom, the nature of the distress and the kind of assistance required should also be sent out immeiately afterward.

CAPE RAY (NEWFOUNDLAND) RADIO BEACON CHANGED

On May 1, this year, the radio beacon at Cape Ray was changed to transmit on a wave length of 1,000 meters a series of groups of 3 dashes for 2 minutes followed by a silent interval of 3 minutes. The operation will be continuous in thick and foggy weather. This station is located in approximately O 59° 18′ 20″, N 47° 37′ 02″.—*Notice to Mariners No. 19 (1925)*.

EXPERIMENTAL RADIO FOG SIGNAL ESTABLISHED AT SCILLY ISLES, ENGLAND

A radio fog signal has been established experimentally at Round Island Light Station, Scilly Isles, England (southwest coast), and will be operated only at such times as the experiments may require. The signal emitted consists of the letters GKD of the Morse Code (— — . — . — — — .) transmitted seven times in succession. The time occupied in transmission is approximately 52 seconds, followed by a silent interval of about 188 seconds. The wave length is 1,000 meters. Masters of ship stations hearing this intermittent signal are requested to forward reports of its effectiveness to the Secretary, Trinity House, London, England, E. C. 3. This station is located in approximately 49° 59′ N, 6° 19′ W.—*Notice to Mariners No. 20 (1925)*.

FOG SIGNAL ESTABLISHED ON LAKE HURON LIGHTSHIP

About June 1, this year, a radio fog signal will be established on this lightship located at the south end of Lake Huron. The signal will transmit groups of 3 dashes repeated for 60 seconds, followed by a silent interval of 60 seconds. The signal will be sent out on 1,000 meters and will be operated continuously during thick or foggy weather and in clear weather daily from 9 to 9.30 a. m. and from 3 to 3.30 p. m. Vessels are requested to report to the Commissioner of Lighthouses, Washington, D. C., or to the Superintendent of Lighthouses, Detroit, Mich., as to the effectiveness of operation of this signal.

HANSTHOLM (DENMARK) LIGHT STATION FOG SIGNAL

A radio fog signal will be established at this light station, located in the North Sea, during this year. Every minute, on a wave length of 1,000 meters, the Morse letters HM–HM–HG, followed by 20 dots, will be transmitted. The time interval between the dots will be 1.3 seconds.—*Notice to Mariners No. 21 (1925).*

GENERAL CALL SIGNAL ASSIGNED TO BRITISH NAVAL COAST STATIONS

Call signal BXA has been assigned as a general call designating any British naval coast station.

ANCONA (ITALY) STATION OPEN TO GENERAL PUBLIC SERVICE CORRESPONDENCE

This station, call signal IQW, has a range of 120 miles; system, Marconi; wave lengths, 300 and 600 meters; hours of operation, 0–6, 7–9.30, 10.30–13.30, 14–17, 17.30–24 (G. M. T.); rate, 60 centimes per word, no minimum.

RADIO CIRCUIT BETWEEN TUTUILA, SAMOA, AND PAPEETE

Beginning at midnight June 15, this year, a direct radio circuit will be opened between the United States naval radio station at Tutuila, Samoa, and the French radio station at Papeete.

PICTURE APPARATUS MAY BE USED BY AMATEURS

Until further notice amateurs may use apparatus for picture transmission connected to their regular transmitting set under their existing licenses and on any of the wave lengths authorized for amateur use.

Broadcasting stations alphabetically by States and cities

[Complete to May 31, 1925]

State and city	Call signal
Alabama:	
Auburn	WSY
Birmingham	WBRC
Alaska: Juneau	KFIU
Arizona:	
Phoenix	KFAD
Do	KFCB
Tucson	KFDH
Arkansas:	
Arkadelphia	KFWD
Camden	KFVC
Conway	KFKQ
Fayetteville	KFMQ
Hot Springs	KTHS
Little Rock	KFMB
California:	
Bakersfield	KDZB
Berkeley	KRE
Burlingame	KFQH
Chico	KFWH
Fresno	KMJ
Gridley	KFIU
Hollywood	KFQZ
Do	KFVF
Do	KFWB
Holy City	KFQU
Long Beach	KFON
Los Angeles	KFI
Do	KFPG
Do	KFPR
Do	KFSG
Do	KHJ
Do	KJS
Do	KNR
Do	KNX
Oakland	KFUS
Do	KGO
Do	KLS
Do	KLX
Do	KZM
Pasadena	KPPC
California—Contd.	
Paso Robles	KFNL
Sacramento	KFBK
Do	KFVK
San Diego	KFBC
San Francisco	KFRC
Do	KJBS
Do	KPO
Do	KFPV
Do	KUO
San Jose	KFVJ
Do	KSO
San Leandro	KFUU
San Pedro	KFVD
Santa Ana	KFAW
Santa Rosa	KFNV
Stanford University	KFGH
Stockton	KWO
Taft	KFQC
Upland	KFWC
Whittier	KFOC
Colorado:	
Boulder	KFAJ
Colorado Springs	KFUM
Denver	KFAF
Do	KFEL
Do	KFUP
Do	KFVR
Do	KLZ
Do	KOA
Greeley	KFKA
Gunnison	KFHA
Connecticut:	
Hartford	WTIC
Mansfield	WCAC
New Haven	WDRC
Delaware: Wilmington	WHAV
District of Columbia:	
Washington	WCAP
Do	WDM
Do	WMU
District of Columbia—Continued.	
Washington	WRC
Do	WRHF
Florida:	
Miami	WQAM
Miami Beach	WMBF
St. Petersburg	WHBN
Do	WIBC
Do	WSAG
Tampa	WDAE
Winter Park	WDBO
Georgia:	
Atlanta	WDBE
Do	WGST
Do	WSB
Columbus	WHBV
Macon	WMAZ
Savannah	WEBZ
Hawaii: Honolulu	KGU
Idaho:	
Boise	KFAU
Do	KFDD
Kellogg	KFEY
Moscow	KFAN
Illinois:	
Batavia	WORD
Broadlands	WSRF
Cambridge	WTAP
Carthage	WCAZ
Chicago	KYW
Do	WAAF
Do	WBBM
Do	WBCN
Do	WDBY
Do	WEBH
Do	WENR
Do	WFKB
Do	WGN
Do	WIBO
Do	WJAZ

Broadcasting stations alphabetically by States and cities—Continued

[Complete to May 31, 1925]

State and city	Call signal
Illinois—Continued.	
Chicago	WLS
Do	WMAQ
Do	WMBB
Do	WQJ
Do	WSAX
Decatur	WBAO
Deerfield	WHT
Downers Grove	WHDT
Elgin (near)	WCEE
Do	WTAS
Eureka	WFBB
Galesburg	WFBZ
Do	WRAM
Harrisburg	WEBQ
Homewood	WOK
Joliet	WIBD
Do	WJRI
Lake Forest	WABA
La Salle	WJRC
Monmouth	WBBU
Moosheart	WJJD
Oak Park	WGES
Plainfield	WWAE
Rockford	KFLV
Rock Island	WHBF
Spring Valley	WGBW
Streator	WTAX
Tuscola	WDZ
Urbana	WRM
Zion	WCBD
Indiana:	
Anderson	WEBD
Do	WHBU
Culver	WHBI
Evansville	WGBF
Fort Benjamin Harrison	WFBY
Fort Wayne	WHBJ
Greencastle	WLAX
Greentown	WJAK
Indianapolis	WBBZ
Do	WFBM
Laporte	WRAF
Logansport	WHBL
Seymour	WFBE
South Bend	WGAZ
Valparaiso	WRBC
West Lafayette	WBAA
Iowa:	
Ames	WOI
Atlantic	KFLZ
Boone	KFOQ
Burlington	WJAS
Cedar Falls	KFJX
Cedar Rapids	KFLP
Do	WJAM
Do	WKAA
Davenport	WOC
Des Moines	WHO
Fort Dodge	KFER
Do	KFJY
Iowa City	KFQP
Do	WSUI
Lamoni	KFFV
Le Mars	KFCY
Marengo	KFOL
Marshalltown	KFJB
Oskaloosa	KFHL
Sioux City	KFMR
Do	WEAU
Shenandoah	KFNF
Kansas:	
Independence	KFVG
Junction City	KFJC
Lawrence	KFKU
Manhattan	KFVH
Do	KSAC
Kansas—Continued.	
Manhattan	WTG
Milford	KFKB
Wichita	KFOT
Do	WEAH
Kentucky:	
Louisville	WHAS
Do	WLAP
Louisiana:	
Alexandria	KFFY
Baton Rouge	KFGC
Jennings	WCBJ
New Orleans	WAAB
Do	WAAC
Do	WABZ
Do	WBBS
Do	WCAG
Do	WCBE
Do	WOWL
Do	WSMB
Do	WWL
Shreveport	KFDX
Do	KWKH
Maine:	
Bangor	WABI
Ellsworth	WHBK
Orono	WGBX
Maryland:	
Baltimore	WCAO
Do	WCBM
Do	WFBR
Do	WGBA
Takoma Park	WBES
Massachusetts:	
Boston	WDBR
Do	WREI
Do	WNAB
Do	WNAC
Bridgewater	WFBN
Dartmouth	WMAF
Fall River	WSAR
Do	WTAB
Lowell	WQAS
Mattapoisett	WBBG
Medford Hillside	WARC
New Bedford	WIBH
Springfield	WBZ
Taunton	WAIT
Webster	WKBE
Worcester	WCTS
Do	WCUW
Michigan:	
Ann Arbor	WCBC
Bay City	WSKC
Berrien Springs	WEMC
Chesaning	WHBI
Dearborn	WWI
Detroit	KOP
Do	WCX
Do	WWJ
East Lansing	WKAR
Escanaba	WRAK
Flint	WEAA
Do	WTHS
Grand Rapids	WBDC
Do	WEBK
Houghton	KFMW
Do	WWAO
Lansing	WREO
Menominee	KFLB
Mount Clemens (near)	WABX
Owosso	WSMH
Petoskey	WBBP
Port Huron	WAFD
Minnesota:	
Breckenridge	KFUJ
Collegeville	WFBJ
Minnesota—Contd.	
Minneapolis	KFDZ
Do	KFMT
Do	WAMD
Do	WHDI
Do	WLB
Northfield	KFMX
Do	WCAL
St. Cloud	WFAM
St. Paul	KFOY
St. Paul-Minneapolis	WCCO
Virginia	KFUZ
Welcome	KFVN
Mississippi:	
Coldwater	KFNG
Oxford (near)	WCBH
Pascagoula	WCBG
Missouri:	
Butler	WNAR
Cape Girardeau	KFVS
Do	WSAB
Carterville	KFPW
Independence	KLDS
Jefferson City	WOS
Kansas City	KWKO
Do	WDAF
Do	WHB
Do	WOQ
Kirksville	KFKZ
Moberly	KFFP
Do	KFOJ
St. Louis	KFQA
Do	KFUO
Do	KFVE
Do	KFWF
Do	KSD
Do	WCK
Do	WEW
Do	WIL
Do	WMAY
Springfield	KFUV
Warrensburg	KFNJ
Montana:	
Butte	KFUY
Havre	KFBB
Helena	KFCC
Do	KFNY
Do	KFSY
Missoula	KUOM
Nebraska:	
Belden	KFQY
David City	KFOR
Hartington	KFRZ
Hastings	KFKX
Lincoln	KFAB
Do	WFAV
Norfolk	WJAG
Oak	KFEQ
Omaha	KFCZ
Do	KFOX
Do	KOCH
Do	WAAW
Do	WIAK
Do	WOAW
Tecumseh	WTAU
University Place	WCAJ
New Hampshire:	
Chesham	WSAU
Hanover	WFBK
New Jersey:	
Atlantic City	WHAR
Do	WPG
Camden	WABU
Do	WFBI
Gloucester City	WBAX
Highland Park	WEBA
Lambertville	WTAZ

Broadcasting stations alphabetically by States and cities—Continued

[Complete to May 31, 1925]

State and city	Call signal
New Jersey—Contd.	
Newark	WAAM
Do	WGCP
Do	WNJ
Do	WOR
North Plainfield	WEAM
Paterson	WODA
Salem	WDBQ
Trenton	WOAX
New Mexico:	
Albuquerque	KFLR
State College	KFRY
Do	KOB
New York:	
Brooklyn	WHAP
Buffalo	WEBR
Do	WGR
Canton	WCAD
Casenovia	WMAC
Flushing	WIBI
Freeport	WGBB
Ithaca	WEAI
Jamestown	WOCL
Kingston	WDBZ
Lockport	WMAK
New York	WDBX
Do	WEAF
Do	WEBJ
Do	WFBH
Do	WGBS
Do	WHN
Do	WJY
Do	WJZ
Do	WMCA
Do	WNYC
Do	WQAO
Do	WSDA
Richmond Hill	WAGH
Do	WBOQ
Rochester	WABO
Do	WHAM
Do	WHEC
Rosville	WBBR
Schenectady	WGY
Syracuse	WFBL
Tarrytown	WRW
Troy	WHAZ
North Carolina:	
Charlotte	WBT
Raleigh	WFBQ
North Dakota:	
Agricultural College	WPAK
Devails Lake	KDLR
Fargo	WDAY
Grafton	KFRH
Grand Forks	KFJM
Do	KFRL
Ohio:	
Akron	WADC
Bellefontaine	WHBD
Cambridge	WEBE
Canton	WHBC
Cincinnati	WAAD
Do	WHAG
Do	WHBR
Do	WKRC
Cleveland	KDPM
Do	WDBK
Do	WEAR
Do	WHK
Do	WTAM
Columbus	WBAV
Do	WCAH
Do	WEAO
Do	WMAN
Dayton	WEBT
Do	WSMK
Elyria	WGBL
Granville	WJD
Ohio—Continued.	
Hamilton	WRK
Do	WSRO
Harrison	WLW
Lima	WOAC
Mason	WSAI
Mechanicsburg	WHBS
New Lebanon	WGHY
Pomeroy	WSAZ
Springfield	WCSO
Toledo	WABR
Do	WIBK
Do	WTAL
Wooster	WABW
Yellow Springs	WRAV
Oklahoma:	
Bristow	KFRU
Chickasha	KFGD
Fort Sill	KFRM
Norman	WNAD
Oklahoma	KFJF
Do	KFQR
Do	WKY
Tulsa	WLAL
Oregon:	
Astoria	KFJI
Corvallis	KFDJ
Portland	KFRC
Do	KFIF
Do	KFJR
Do	KFRQ
Do	KGW
Pennsylvania:	
Allentown	WCBA
Do	WSAN
Altoona	WFBG
Arnold	WCBU
East Pittsburgh	KDKA
Elkins Park	WIBG
Grove City	WSAJ
Harrisburg	WABB
Do	WBAK
Do	WHBG
Haverford	WABQ
Johnstown	WBBV
Do	WGBK
Do	WHBP
Do	WTAC
Lancaster	WDBC
Do	WGAL
Oil City	WHAA
Philadelphia	WABY
Do	WCAU
Do	WFBD
Do	WFI
Do	WHBW
Do	WIAD
Do	WIP
Do	WLIT
Do	WNAT
Do	WOO
Do	WWAD
Pittsburgh	KQV
Do	WCAE
Do	WJAS
Parkesburg	WQAA
Punxsutawny	WHBX
Reading	WRAW
Scranton	WGBI
Do	WQAN
State College	WPSC
Wilkes-Barre	WBAX
Do	WBRE
Philippines:	
Manila	KZKZ
Do	KZRQ
Porto Rico: San Juan	WKAQ
Rhode Island:	
Cranston	WDWF
Do	WKAP
East Providence	WKAD
Pawtucket	WHBO
Providence	WEAN
Do	WGBM
Do	WJAR
Do	WSAD
South Carolina:	
Charleston	WBBY
Clemson College	WSAC
Greenville	WGBT
South Dakota:	
Brookings	KFDY
Rapid City	WCAT
Vermillion	WEAJ
Yankton	WNAX
Tennessee:	
Bemis	WCBI
Chattanooga	WDOD
Columbia	WDBW
Knoxville	WFBC
Do	WNAV
Lawrenceburg	WOAN
Memphis	WGBC
Do	WHBQ
Do	WMC
Nashville	WCBQ
Texas:	
Amarillo	WDAG
Do	WQAC
Austin	WCM
Beaumont	KFDM
Beeville	KFRB
College Station	WTAW
Dallas	WFAA
Do	WRR
Denison	KFQT
Dublin	KFFL
El Paso	WDAH
Fort Worth	KFJZ
Do	KFQB
Do	WBAP
Galveston	KFLX
Do	KFUL
Greenville	KFPM
Houston	KFVI
Do	KPRC
Do	WEAY
Do	WRAA
San Antonio	WCAR
Do	WCAI
San Benito	KFLU
Waco	WJAD
Utah:	
Ogden	KFUR
Do	KFWA
Salt Lake City	KDYL
Do	KFOO
Do	KFUT
Do	KSL
Vermont:	
Burlington	WCAX
Springfield	WQAR
Virginia:	
Norfolk	WBBW
Do	WTAR
Richmond	WBBL
Roanoke	WDBJ
Thrilton	WGBG
Washington:	
Everett	KFBL
Lacey	KGY
North Bend	KFQW
Olympia	KFRW
Pullman	KFAE
Do	KFRX
Seattle	KFOA

Broadcasting stations alphabetically by States and cities—Continued

[Complete to May 31, 1925]

State and city	Call signal	State and city	Call signal	State and city	Call signal
Washington—Con.		Wisconsin:		Wisconsin—Con.	
Seattle	KHQ	Ashland	WJBD	Superior	WEBC
Do	KJR	Beloit	WEBW	West De Pere	WHBY
Do	KTCL	Fondulac	KFIZ	Wheatland	WIBF
Do	KTW	La Crosse	WABN	Wyoming: Laramie	KFBU
Spokane	KFIO	Madison	WHA	Portable stations:	
Do	KFPY	Do	WIBA	Boston, Mass	WTAT
Tacoma	KFBG	Marshfield	WGBR	Chicago, Ill	WHBM
Do	KGB	Menomonie	WGBQ	Do	WIBJ
Do	KMO	Milwaukee	WCAY	Do	WIBL
Vancouver	KFVL	Do	WHAD	Fall River, Mass	WGBH
Walla Walla	KFCF	Do	WSOE	Laconia, N. H	WKAV
Yakima	KFIQ	Osseo	WTAQ	Providence, R. I	WCBR
West Virginia:		Stevens Point	WHBB	United States	WEBL
Charles Town	WPAZ	Do	WLBL	Do	WEBM
Martinsburg	WIBE	Superior	WDBP		

Changes in Tennessee amateur stations

[Effective June 1, 1925]

Fifth district calls canceled	New calls assigned	Name and address
5FV	4FU	John H. De Witt, jr., 1812 Fifteenth Avenue, Nashville, Tenn.
	4EP	Edward Lee Crump, 2707 Worth Street, Cleveland, Tenn.
5AGO	4EF	Fred Dulaney, 1208 Windsor Avenue, Bristol, Tenn.
5AVJ	4FA	Herbert R. Grimshaw, Cleveland, Tenn.
4AFF	4FE	Martin T. Walters, 802 Carey Place, Chattanooga, Tenn.
5AUX	4FI	Polk Perdue, Public Square, Gallatin, Tenn.
5CP	4CK	James Malone McKnight, 535 Kenilworth Street, Memphis, Tenn.
	4EE	Henry Howard Spitzer, 1422 Pine Street, Chattanooga, Tenn.
	4DS	James Kenneth Brown, 309 College Street, Greeneville, Tenn.
5DA	4DA	William C. Hutcheson, Wind Rock, Tenn.
5KA	4KB	Irvine and Wilson Raney, 290 Strathmore Circle, Memphis, Tenn.
5DQ	4DR	T. J. M. Daly, 197 Parkview, Memphis, Tenn.
5FC	4FC	Frank Reeves Clegg, 1580 Union Avenue, Memphis, Tenn.
5AGX	4FP	William Oscar McCord, jr., 32 East Fourth Street, Chattanooga, Tenn.
5AQY	4GY	Herbert Keller, jr., 1931 Nelson Avenue, Memphis, Tenn.
5DN	4DI	Landon Covington, 1059 Indiana Street, Memphis, Tenn.
5ACK	4GF	Ray Hamilton Sullinger, 165 Chilhowee, Maryville, Tenn.
5WO	4GL	Stuart Emmerson Adcock, 2008 Washington Avenue, Knoxville, Tenn.
5ER	4EO	Folger H. Bigelow, 371 Willett Street, Memphis, Tenn.
4EK	4FL	David G. Botto, 873 North Manassas Street, Memphis, Tenn.
5IK	4IL	Thos. J. Adams, 308 Stonewall Street, Memphis, Tenn.
4CN	4KM	Lloyd K. Rush, 4 Second Street, Bemis, Tenn.
5AGH	4BC	William Adkinson Orman, 704 Woodlawn Street, Columbia, Tenn.
5ARG	4DK	Isaac M. Hull, 432 North Montgomery Street, Memphis, Tenn.
5AUR	4CU	Crockett Ellis, 976 Oakview Street, Memphis, Tenn.
5AKW	4FY	John C. Buchanan, 2110 Coker Avenue, Knoxville, Tenn.
5NX	4NP	Thomas B. Robinson, 220 Forbes Street, Clarksville, Tenn.
5AUO	4AJ	Walter Baxter Williams, 401 Twelfth Street, Columbia, Tenn.
5ANV	4FR	Nathan James Dearing, 880 Pierce Street, Memphis, Tenn.
5AGZ	4FW	James A. Gassaway, 607 Willett Street, Memphis, Tenn.
5HL	4IB	William D. Van Dyke, 542 McCallie Street, Chattanooga, Tenn.
5AEQ	4IV	William C. Montgomery, jr., 2190 Harbert Street, Memphis, Tenn.
5AVN	4HM	George O. Sutton, 719 Thirteenth Street, Knoxville, Tenn.
5ADF	4JP	Luke H. Montgomery, jr., 1707 Ashwood Avenue, Nashville, Tenn.
5AWD	4EV	C. R. Martin, 964 Roland Street, Memphis, Tenn.
5ABN	4HE	George A. Reynolds, 522 South Margin Street, Franklin, Tenn.
5AOT	4FX	Powell May, 134 Overton Place, Knoxville, Tenn.
5BW	4BU	Robt. S. de Graffenried, 1310 McMillian Street, Memphis, Tenn.
5ASH	4HH	O. K. & H. B. Houck, 1234 Sledge Street, Memphis, Tenn.
5AMF	4AM	Joe Slaughter and G. R. Hulan, 1207 West Twenty-sixth Street, Cleveland, Tenn.
5AQF	4GJ	Richard H. Turpin, 1919 Felix Street, Memphis, Tenn.
5PV	4PZ	Rolvin W. Pratt, 535 Edith Street, Memphis, Tenn.
5DL	4HG	Thos. G. Harton, 326 Twentieth Avenue, Nashville, Tenn.
5LU	4LU	William Beall Taylor, Box 28, Tennessee Avenue, Signal Mountain, Tenn.
5AIK	4JB	Ferris Wood Sullinger, 939 Main Street, Maryville, Tenn.
5UV	4UV	John Edward Ross, 1620 East Fifth Avenue, Knoxville, Tenn.

COMPARISON OF METHODS OF MEASURING RADIO FIELD INTENSITIES

During recent months there has been an increasing interest in the measurement of radio field intensities. As the number of radio stations increased the determination of the actual intensity of the waves they produce becomes important. The wave from any station must be sufficiently intense to overcome the atmospheric and other disturbances which can not be eliminated, and yet must not be so intense as to interfere unduly with other transmissions. A study of apparatus suitable for the measurement of these intensities has been begun by the Bureau of Standards. Such measurements are complicated and difficult. Starting with the apparatus used for low frequencies (long waves), it is expected to compare the various types of apparatus used for the measurements of field intensities throughout the range of frequencies used in radio. Such intercomparisons will make it possible to analyze and compare data obtained by different observers using different methods.

A comparison of the three methods in use for very low frequencies (15 to 100 kilocycles) was arranged and carried on at the Bureau of Standards in April and May. Independent types of apparatus have been developed and used for a number of years in work at the Bureau of Standards and in the field measurement work of the Bell telephone laboratories and the Radio Corporation of America. Representatives of these three organizations cooperated in simultaneous measurements made on several transmitting stations both in the United States and in Europe. The results of this comparison show satisfactory agreement between the three different methods. Under conditions of weak signals and bad interference from atmospheric disturbances there may be considerable differences in the results due to the method of introducing the comparison signal. However, corrections can be made for the differences and reasonable agreement obtained even under adverse conditions. The work thus established shows that the three different methods give results which are comparable.

AN IMPROVED TYPE OF WAVE-METER RESONANCE INDICATOR

In order to reduce interference between various radio transmitting stations it is important that each station be kept close to its assigned wave length or frequency. The proper adjustment is usually obtained by measuring the frequency of the transmitting circuit with a wave meter. If the station is found to be operating at a frequency other than its assigned value it is adjusted until the wave meter indicates that the required frequency is obtained. The wave meter must be calibrated from a reliable frequency standard, and it must also be provided with a resonance indicator to show when it is tuned to the frequency of the transmitting station. This indicator has a needle or pointer which gives a maximum deflection when a proper adjustment of the wave meter has been obtained. The instrument commonly used for this purpose does not always give satisfactory results, because it is sometimes difficult to tell when the needle indicates a maximum deflection. A paper just issued by the Bureau of Standards describes a resonance indicator, utilizing a crystal detector in combination with a milliammeter, which gives more pronounced and uniform deflections of the needle on the indicating instrument. This permits a more accurate frequency adjustment of a transmitting station. This device may be attached to most wave meters and costs no more than the device generally employed.

The resonance indicator is described in Bureau of Standards Scientific Papers No. 502, An Improved Type of Wave Meter Resonance Indicator, a copy of which may be obtained for 5 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.

SUNSET FADING TESTS

In special tests from March 24 to April 2 the Bureau of Standards, with the cooperation of about 20 laboratories in various cities, made records of the variation in intensity of signal received from station WGY, General Electric Co., Schenectady, N. Y., during the sunset period. In order to study further the effects of sunset, a second series of observations were started May 19 on station KDKA, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Records were made by an augmented group of laboratories on six days distributed during the period of May 19 to May 29. The observing periods were approximately three hours long, centering at the time of sunset at the receiving station. The records of these observations as well as those of the tests on WGY are being studied, and a report on the characteristic effects which these observations established will be issued at a later date.

Future cooperative observations will be conducted on fading, field intensity, frequency, direction, and atmospheric disturbances. The details of successive

tests will be determined to a considerable extent by the cumulative results of the completed tests. Laboratories interested in measurements of radio wave phenomena are invited to communicate with the Bureau of Standards, Washington, D. C., relative to participation in the investigation. The apparatus required for recording signal intensity variations can be constructed from the equipment of the average college or commercial radio laboratory. Measurements of field intensity and direction require the construction or assembly of somewhat specialized apparatus.

A STUDY OF THE SEASONAL VARIATION OF RADIO-FREQUENCY PHASE DIFFERENCE OF LAMINATED PHENOLIC INSULATING MATERIALS

In measurements of radio-frequency properties of laminated phenolic insulating materials (bakelite, etc.), the results of which are published in a former Bureau of Standards Technologic Paper No. 216, Properties of Electrical Insulating Materials of the Laminated, Phenol-Methylene Type, some samples were found to exhibit changes in these properties with time. This led to the work described in a paper just issued, Bureau of Standards Technologic Paper No. 284, A Study of the Seasonal Variation of Radio-Frequency Phase Difference of Laminated Phenolic Insulating Materials, by J. L. Preston and E. L. Hall, obtainable for 5 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C., and is a study made in 1920–21 on some representative samples to learn whether the variations of phase difference follow any definite trend with season. It was found that the phase difference or power factor varied with the season of year, reaching a maximum in late summer. In most cases the phase difference or power factor returned to its original value after undergoing a year's cyclic changes. The variations with season were, in general, no greater than variations with frequency or variations from sample to sample.

STANDARD FREQUENCY STATIONS

As a result of measurements by the Bureau of Standards upon the transmitted waves of a limited number of radio transmitting stations, data are given in each month's Radio Service Bulletin on such of these stations as have been found to maintain a sufficiently constant frequency to be useful as frequency standards. There may be many other stations maintaining their frequency just as constant as these, but these are the only ones among those observed. There is, of course, no actual guaranty that the stations named below will maintain the constancy shown, but this indicates the high degree of confidence that can be placed in them. The transmitted frequencies from these stations can be utilized for standardizing frequency meters (wave meters) and other apparatus by the procedure given in Bureau of Standards Letter Circular No. 92, Radio Signals of Standard Frequency and their Utilization. A copy of that letter circular can be obtained by a person having actual use for it upon application to the Bureau of Standards, Department of Commerce, Washington, D. C.

Station	Owner	Location	Assigned frequency (kilocycles)	Period covered by measurements (months)	Number of times measured	Deviations from assigned frequencies noted in measurements	
						Average	Greatest since Apr. 20, 1925
						Per cent	*Per cent*
WQL	Radio Corporation of America.	Coram Hill, Long Island, N. Y.	17.13	5	36	0.1	0.3
NSS	United States Navy	Annapolis, Md.	17.50	21	165	.2	.1
WCI	Radio Corporation of America.	Barnegat, N. J.	17.95	3	17	.2	.2
WGG	do	Tuckerton No. 1, N. J.	18.86	21	168	.1	.2
WII	do	New Brunswick, N. J	21.80	[1] 1	7	.1	.1
WRT	do	do	22.60	[2] 1	6	.1	.3
WVA	United States Army	Annapolis, Md.	100	2	34	.2	.4
WEAF	American Telegraph & Telephone Co.	New York, N. Y.	610	5	52	.0	.0
WCAP	Chesapeake & Potomac Telephone Co.	Washington, D. C.	640	20	94	.1	.2
WRC	Radio Corporation of America.	do	640	17	74	.1	.2
WSB	Atlanta Journal	Atlanta, Ga.	700	20	84	.1	.3
WGY	General Electric Co.	Schenectady, N. Y.	790	23	126	.1	.1
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.	900	13	39	.1	.2
KDKA	do	East Pittsburgh, Pa.	970	20	163	.1	.1

[1] Measured since May 3, following the new frequency assignment of 21.80 kilocycles.
[2] Measured since May 3, new frequency assignment, 22.60 kilocycles.

REFERENCES TO CURRENT RADIO PERIODICAL LITERATURE

This is a monthly list of references prepared by the Radio Laboratory of the Bureau of Standards, and is intended to cover the more important papers of interest to the professional radio engineer which have recently appeared in technical periodicals. The number at the left of each reference classifies the reference by subject, in accordance with the scheme presented in "A Decimal Classification of Radio Subjects—An Extension of the Dewey System," Circular No. 138, a copy of which may be obtained for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C. Further information about these lists, availabilities of previous lists, and of the several periodicals is contained in the extended statement preceding the early lists and published in the Radio Service Bulletin prior to April, 1923, and also in May and September, 1923.

R000.—*Radio communication*

R007.9 The Paris Conference (International Conference of Radio Amateurs). Wireless World and Radio Review, 16, pp. 365-366 and pp. 379-380, April 29, 1925.

R020 Günther, H. Technical vocabulary in five languages (radio terms), published by Franckh'sche Verlagshandlung, Stuttgart, Germany. Noted in Wireless World and Radio Review, 16, p. 419, May 6, 1925.

R100.—*Radio principles*

R110 Adelman, L. L. Theories of radio wave propagation. Radio News, 6, pp. 2238-2240, June, 1925.

R110 Nichols, H. W., and Schelleng, J. C. Propagation of electric waves over the earth. Bell System Technical Journal, 4, pp. 215-234, April, 1925.

R111 Howe, G. W. O. World wide telegraphy. Journal Institution of Electrical Engineers (London), 63, pp. 517-518, May, 1925.

R114 Tressler, M. E. Atmospheric electric phenomena. Radio (San Francisco), 7, p. 20, May, 1925.

R116 Hasford, W. S. Standing electric waves on parallel wires. Physical Review, 25, pp. 685-695, May, 1925.

R120 Murphy, W. H. Top loading antennas and loops. QST, 9, pp. 49-53, May, 1925.

R125.6 Jones, F. C. Pioneer short-wave work (reflector for 5 meters). QST, 9, pp. 8-14, May, 1925.

R130 Fleming, J. A. Thermionic valves. Scientific Monthly, 20, pp. 530-534, May, 1925.

R134.8 Lytton, W. Radio receiving device. United States Patent No. 1537124, issued May 12, 1925.

R143 Turner, L. B., and Best, F. P. The optimum damping in the auditive reception of wireless telegraph signals. Jour. Inst. of Elec. Engrs. (London), 63, pp. 493-501, May, 1925.

R149 Colebrook, F. M. The rectifying detector. Experimental Wireless (London), 2, pp. 459-468, May, 1925.

R200.—*Radio measurements and standardization*

R200 Turner, P. K. More about errors in measurement. Experimental Wireless (London), 2, pp. 512-514, May, 1925.

R200 Testing and measurement of wireless components. Experimental Wireless (London), 2, pp. 486-493, May, 1925.

R213 Dye, D. W. Improved cathode-ray tube method for the harmonic comparison of frequencies. Physical Society of London, 37, pp. 158-168, April 15, 1925.

R270 Round, H. J.; Eckersley, T. L.; Tremellen, K.; Lunnon, F. C. Signal strength measurement, a report on some experiments made over great distances during 1922 and 1923 by an expedition sent to Australia. Electrician (London), 94, pp. 538-539, May 8, 1925.

R281 Preston, J. L., and Hall, E. L. A study of the seasonal variation of radio-frequency phase difference of laminated phenolic insulating materials. Technologic Papers of the Bureau of Standards No. 284. Government Printing Office, 1925. Price, 5 cents.

R300.—*Radio apparatus and equipment*

R324 Wyatt, A. E. Loop antenna frame construction. United States Patent No. 1536067, issued May 5, 1925.

R330 Schottky, W. Thermionic vacuum tube. United States Patent No. 1537708, issued May 12, 1925.

R330 Wilkerson, D. C. New developments in vacuum tubes. Popular Radio, 7, pp. 508-510, June, 1925.

R331 Housekeeper, W. G. Electron discharge device. United States Patent No. 1536855, issued May 5, 1925.

R342 Ferrie, G. Quelques applications scientifiques des lampes a 3 et 4 electrodes associees a des cellules photoelectriques. L'Onde Electrique, 4, pp. 97-110, March, 1925.

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