

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY RADIO DIVISION

Washington, August 31, 1928—No. 137

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ABBREVIATIONS AND SYMBOLS

The necessary corrections to the list of Commercial and Government 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. W=west longitude. N=north latitude. S=south latitude. E=east longitude.
 Call = Call signal (letters) assigned.
 System = Radio system used and sparks per second.
 Range = Normal range in nautical miles.
 W. l. = Wave lengths in meters; normal wave lengths in italics.
 Fy. = Frequency in kilocycles; normal frequency in italics.
 Service = Nature of service maintained:
 FX=Point-to-point (fixed service).
 PG=General public (ship to shore).
 PR=Limited public.
 RC=Radio compass.
 FA=Aeronautical station.
 AB=Aviation beacon.
 RB=Radio beacon.
 P=Private.
 O=Government business exclusively.
- Hours = Hours of operation:
 N=Continuous service.
 X=No regular hours.
- F. T. Co. = Federal Telegraph Co.
 I. R. T. Co. = Intercity Radio Telegraph Co.
 I. W. T. Co. = Independent Wireless Telegraph Co.
 K. & C. = Kilbourne & Clark Manufacturing Co.
 M. R. T. Co. = Mackay Radio & Telegraph Co.
 R. C. A. = Radio Corporation of America.
 R. M. C. A. = Radiomarine Corporation of America.
 T. R. T. Co. = Tropical Radio Telegraph Co.
 U. R. Corp. = Universal Radio Corp.
 W. S. A. Co. = Wireless Specialty Apparatus Co.
 C. w. = Continuous wave.
 I. c. w. = Interrupted continuous wave.
 A. c. = Alternating current.
 V. t. = Vacuum tube.
 U. S. L. = Applies only to the list of Commercial and Government Radio Stations of the United States.
 Δ = Equipped with a radio compass (direction finder).

NEW STATIONS

Commercial land stations, alphabetically, by names of stations

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations published by the Berne Bureau]

Station	Call signal	Wave lengths	Service	Hours	Station controlled by—
Fifth zone (portable) ¹ .	KGIA	180.2	FX		Geophysical Research Corporation.
Do. ¹ -----	KGIB	180.2	FX		Do.
Do. ¹ -----	KGIC	180.2	FX		Do.
Do. ¹ -----	KGID	180.2	FX		Do.
Main base ¹ -----	KFK	13.758, 17.857, 17.945, 22.75, 26.55, 26.78, 34.05, 45.59, 53.1, 53.57, 68.1, 91.2, 600, 750, 800.	P	X	Byrd Antarctic expedition.
Do. ² -----	WFA	13.758, 17.857, 17.945, 22.75, 26.55, 26.78, 34.05, 45.59, 53.1, 53.57, 68.1, 91.2, 600, 750, 800.	P	X	Do.
Subbase ² -----	WFD	13.758, 17.857, 17.945, 22.75, 26.55, 26.78, 34.05, 45.59, 53.1, 53.57, 68.1, 91.2, 600, 750, 800.	P	X	Do.
Do. ³ -----	WFE	13.758, 17.857, 17.945, 22.75, 26.55, 26.78, 34.05, 45.59, 53.1, 53.57, 68.1, 91.2, 600, 750, 800.	P	X	Do.

¹ System, composite v. t. telegraph, i. c. w.; hours, 8 a. m. to 5 p. m. daily except Sundays.

² Systems, composite v. t. telegraph, i. c. w.

³ System, composite v. t. telegraph, c. w.

Commercial ship stations, alphabetically, by names of vessels

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Name of vessel	Call signal	Rate	Service	Hours	Owner of vessel	Station controlled by—
Boston College.....	WTBG	8	PG	X	Atlantic & Pacific Fish Co.	
Coot.....	KUJM	8	PG	X	Portland Trawling Co.	
Cormorant.....	WGDV					
Cyprus.....	WTBE					
Emma R. S.....	WGDR				Guy H. Silva	
Georgetown.....	WTBH	8	PG	X	Atlantic & Pacific Fish Co.	
Gulfbawk.....	WJCO	8	PG	X	Gulf Refining Co.	
Gulfwing.....	WJCP	8	PG	X	do.	
Holy Cross.....	WTBI	8	PG	X	Atlantic & Pacific Fish Co.	
John F. Cushing.....	WGDV				Great Lakes Dredge & Dock Co.	
Kingfisher.....	KOQR	8	PG	X	Portland Trawling Co.	
Loon.....	KUGJ	8	PG	X	do.	
Martha Foss.....	WGDQ				Foss Co.	
Munwood.....	WGDO	8	PG	X	Munson S. S. Co.	
Plover.....	KUFT	8	PG	X	Portland Trawling Co.	
Roland ¹	WGDX				Harbor Tug & Barge Co.	
Shenango.....	WGDP					
Vanda.....	WGDS					
Wild Goose.....	KOTS	8	PG	X	Portland Trawling Co.	

¹ Wave length, 493.4.

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
KFK	Main base.....c	WGDP	Shenango.....b
KGIA	Fifth zone (portable).....c	WGDQ	Martha Foss.....b
KGIB	do.....c	WGDR	Emma R. S.....b
KGIC	do.....c	WGDS	Vanda.....b
KGID	do.....c	WGDU	Cormorant.....b
KOQR	Kingfisher.....b	WGDV	John S. Cushing.....b
KOTS	Wild Goose.....b	WGDX	Roland.....b
KUFT	Plover.....b	WJCO	Gulfhawk.....b
KUGJ	Loon.....b	WJCP	Gulfwing.....b
KUJM	Coot.....b	WTBE	Cyprus.....b
WFA	Main base.....c	WTBG	Boston College.....b
WFD	Subbase.....c	WTBH	Georgetown.....b
WFE	do.....c	WTBI	Holy Cross.....b
WGDO	Munwood.....b		

Commercial aircraft stations, alphabetically, by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by
Fairchild plane 1.....	WFC	13.758, 17.857, 17.945, 22.75, 26.55, 26.78, 34.05, 45.59, 53.1, 53.57, 68.1, 91.2, 600, 750, 800.	P	N	Byrd Antarctic expedition.
Fokker plane 1.....	WFF	13.758, 17.857, 17.945, 22.75, 26.55, 26.78, 34.05, 45.59, 53.1, 53.57, 68.1, 91.2, 600, 750, 800.	P	N	Do.

1 System, composite v. t. telegraph, i. c. w.

Commercial aircraft stations, alphabetically, by call signals

Call signal	Name of station	Call signal	Name of station
WFC	Fairchild plane.	WFF	Fokker plane.

Broadcasting stations, alphabetically, by names of States and cities

[Additions to the List of Radio Stations of the United States, edition of June 30, 1928]

State and city	Call signal	Wave length (meters)	Frequency (kilocycles)	Power (watts)
Portable: Nebraska.....	KGIF	217.4	1,380	7½

Broadcasting stations, alphabetically, by call signals

Call signal	Location of station (address)	Owner of station	Power (watts)	Wave length (meters)	Frequency (kilocycles)
KGIF	Nebraska (portable) ..	Robert B. Howell, 811 Omaha National Bank Building, Omaha, Nebr.	7½	217.4	1,380

Government land stations, alphabetically, by names of stations

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
Atlanta, Ga.....	WHZ	-----	FA	-----	Department of Commerce, Bureau of Lighthouses.
Greensboro, N. C.....	WRW	-----	FA	-----	Do.
Moline, Ill.....	WTI	-----	FA	-----	Do.
Richmond, Va.....	WNR	-----	FA	-----	Do.
Spartanburg, S. C.....	WFT	-----	FA	-----	Do.
Toledo, Ohio.....	KRL	-----	FA	-----	Do.
Wichita, Kans.....	WEK	-----	FA	-----	Do.

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
KRL	Toledo, Ohio.....c	WFT	Spartanburg, S. C.....c
WEK	Wichita, Kans.....c	WRW	Greensboro, N. C.....c
WTI	Moline, Ill.....c	WNR	Richmond, Va.....c
WHZ	Atlanta, Ga.....c		

Special land stations, alphabetically, by names of stations

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1928]

Station	Call signal	Wave length (meters)	Frequency (kilocycles)	Power (watts)	Station controlled by—
California: San Francisco.	W6XT	8.76, 17.34, 34.68, 70.09, 140.2.	34,240, 17,300, 8,650, 4,280, 2,140.	500	Charles L. Watson and Ralph C. Gray.
Illinois: Chicago.....	W9XAA	61.22 to 63.83.....	4,900 to 4,700.....	500	Chicago Federation of Labor.
Do.....	W9XC	34.68, 70.09, 140.2.....	8,650, 4,280, 2,140.....	10,000	Universal Wireless Communication Co.
Maryland: Baltimore.	W3XE	8.76, 17.34, 34.68, 70.09, 140.2.	34,240, 17,300, 8,650, 4,280, 2,140.	500	Baltimore Radio Show.
New Jersey: Jersey City.	W2SBY	8.76, 17.34, 34.68, 70.09, 140.2.	34,240, 17,300, 8,650, 4,280, 2,140.	450	Walter C. Von Brandt.
New York: Jackson Heights.	W2XAU	10.979, 16.402, 17.857, 22.06, 26.79, 33.17, 45.63, 53.57, 65.60.	27,325, 18,290, 16,800, 13,600, 11,200, 9,045, 6,574, 5,600, 4,572.	-----	John R. McKenna.
New York.....	W2XQ	34.68, 70.09, 140.2.....	8,650, 4,280, 2,140.....	10,000	Universal Wireless Communication Co.
Portable.....	W6XQ	315 to 353, 1,500 to 6,000.	950 to 850, 200 to 50.	500	Bell Telephone Laboratories.
	W6XR	857, 938.....	350, 320.....	500	Nightingale Radios (Inc.), 150 Motor Ave., Salt Lake City, Utah.

Special land stations, grouped by districts

Call signal	District and station	Call signal	District and station
W2XAU W2XBY W2XQ W3XE	Second district: Jackson Heights, N. Y. Jersey City, N. J. New York, N. Y.	W9XAA W9XC	Ninth district: Chicago, Ill. Do.
W6XQ W6XR W6XT	Third district: Baltimore, Md. Sixth district: Portable. Do. San Francisco, Calif.		

ALTERATIONS AND CORRECTIONS

COMMERCIAL LAND STATIONS

[Alterations and corrections to be made to the list of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations published by the Berne bureau]

- BOLINAS, CALIF. (KES).—W. 1., 28.819.
 BOLINAS, CALIF. (KLL).—W. 1., 21.866.
 BOLINAS, CALIF. (KSS).—W. 1., 14.409.
 BOSTON, MASS. (WBF).—System, composite v. t. telegraph and telephone; w. 1., 17.1, 23.15, 28.7, 44.2, 600, 690, 1,700, 2,025, 2,350.
 CLEVELAND, OHIO (WTK).—Rates, minimum charge \$1 per radiogram.
 HIALEAH, FLA.—W. 1., add 23.2, 28.73, 44.3.
 MOBILE, ALA. (WNN).—W. 1., add 23.2, 28.73, 44.3.
 NEW YORK, N. Y. (WKW).—Read, Rocky Point, N. Y.
 NEW ORLEANS, LA. (WNU).—W. 1., add 23.15, 28.7, 44.2.
 OCEAN TOWNSHIP, N. J. (WNC).—System, Western Electric v. t. telegraph and telephone.
 OCEAN TOWNSHIP, N. J. (WND).—System, Western Electric v. t. telegraph and telephone; w. 1., 14.24, 16.36, 22.4, 32.71, 44.41.
 ROCKY POINT, N. Y. (WEQX).—Call changed to WEX, effective October 1, 1928. List of changes in Bulletin No. 135 for June, 1928, incorrectly cited the old call as WEQK.
 ROCKY POINT, N. Y. (WQA).—W. 1., 14.138.
 ROCKY POINT, N. Y. (WQQ).—W. 1., 14.808.
 ROCKY POINT, N. Y. (WQV).—W. 1., 20.27.
 ROCKY POINT, N. Y. (WQX).—W. 1., 14.866.
 ROCKY POINT, N. Y. (WQY).—W. 1., 14.925.

COMMERCIAL SHIP STATIONS, ALPHABETICALLY, BY NAMES OF VESSELS

[Alterations and corrections to be made to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

- AFOUNDRIA.—Station controlled by R. M. C. A. (U. S. L.).
 AMIDA.—W. 1., add 2,128, 2,190, 2,400.
 CALIFORNIA STANDARD.—W. 1., add 2,128, 2,190, 2,400.
 CHELSEA.—Call changed to WFAT.
 CROSS KEYS.—Name changed to Golden Peak; owner of vessel, Oceanic & Oriental Navigation Co.
 ELDRIDGE.—Name changed to Tacoma; owner of vessel, Tacoma-Oriental S. S. Co.
 ELKRIDGE.—Name changed to Golden Star; owner of vessel, Oceanic & Oriental Navigation Co.
 FAVORITE (KIFG).—W. 1., add 35.78, 47.81, 54.3.
 FRANKLIN.—Owner of vessel, Texas Co.
 HEREDIA.—W. 1., 600, 640, 660, 705, 750, 800, 1,875, 1,961, 1,987, 2,098, 2,128, 2,190.
 ILLYRIA.—W. 1., add 2,128, 2,190, 2,400.
 MONTAGUE.—Name changed to Golden Tide; owner of vessel, Oceanic & Oriental Navigation Co.
 NAKEN.—W. 1., 53.57, 109.7; service, P; hours, X.
 POINT FERMIN.—Owner of vessel, Gulf Pacific Line.
 QUEST.—W. 1., 53.57, 122.4.
 SAMSON.—Name changed to City of New York; call changed to WFBT; system, General Electric v. t. telegraph, i. c. w.; w. 1., 13.758, 17.857, 17.945, 22.75, 26.55, 26.78, 34.05, 45.59, 53.1, 68.1, 91.2, 600, 705, 750, 800; service, PG; hours, N.
 SUJERSEYCO.—Name changed to Makawao.
 SUNDANCE.—Station controlled by R. M. C. A. (U. S. L.).
 THE LAMBS.—Name changed to Exporter.
 WEST CADRON.—Name changed to Iowa; owner of vessel, States S. S. Co.
 WEST CALERA.—Name changed to Golden Harvest; owner of vessel, Oceanic & Oriental Navigation Co.
 WEST CARMONA.—Name changed to Golden State.
 WEST CONOB.—Name changed to Golden Eagle.

- WEST ELCAJON.—Name changed to Golden Kauri; owner of vessel, Oceanic & Oriental Navigation Co.
 WEST HUMHAW.—Owner of vessel, American-West African Line.
 WEST ISON.—Name changed to Everett.
 WEST IVAN.—Name changed to Golden West; owner of vessel, Oceanic & Oriental Navigation Co.
 WEST KEBAR.—Owner of vessel, American-West African Line.
 WEST MADAKET.—Station controlled by R. M. C. A. (U. S. L.).
 WEST NIGER.—Name changed to Nevada; owner of vessel, States S. S. Co.
 WEST NOMENTUM.—Name changed to Pennsylvania; owner of vessel, States S. S. Co.
 WEST O'ROWA.—Name changed to Kentucky; owner of vessel, States S. S. Co.
 WHEATLAND MONTANA.—Name changed to Seattle; owner of vessel, Tacoma-Oriental S. S. Co.
 ZAREMBO.—Owner of vessel, American-West African Line.
 Strike out all particulars of the following-named vessels, Bathalum, Gold Shell, Pearl Shell. Wm. A. Lydon.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY, BY CALL SIGNALS

- KDFW, read Golden State; KDNH, read Makawao; KDQI, read Kentucky; KEBZ, read Exporter; KELK, read Golden Kauri; KGBC, call changed to WFAT; KICN, read Tacoma; KIFP, read Golden Eagle; KINN, read Everett; KISF, read Seattle; KISG, read Golden Star; KOMV, read Golden Tide; KOTD, read Golden Peak; KOZJ, read Nevada; KOZS, read Golden West; KUDK, read Iowa; KUMM, read Golden Harvest; KUSG, read Pennsylvania; WKW, read Rocky Point, N. Y.; WRBO, call changed to WFBT, read City of New York; strike out all particulars following the call signals, KGCC, KIQT, WBCY, WBCZ.

BROADCASTING STATIONS, BY CALL SIGNALS

[Alterations and corrections to be made to the list of Commercial and Government Radio Stations of the United States, edition of June 30, 1923]

- KFWC (Ontario, Calif.).—Owner of station, James R. Fouch, Valley Boulevard.
 KGB (San Diego, Calif.).—Owner of station, Southwestern Broadcasting Corporation.
 KWTC (Santa Ana, Calif.).—Owner of station, Pacific Broadcasting Federation.
 WGL (Secaucus, N. J.).—Call changed to WOV.
 WIVA (Norfolk, Va.).—Call changed to WNEW.
 Strike out all particulars of the following-named stations: WCOT (Providence, R. I.); WNBA (Forest Park, Ill.); WTRL (Midland Park, N. J.).

COMMERCIAL AIRCRAFT 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, 1923, and to the International List of Radiotelegraph Stations, published by the Berne Bureau]

- FLOYD BENNETT.—Call changed to WFB, effective October 1, 1923; system, composite v. t. telegraph, i. c. w.; w. l., 13.758, 17.857, 17.945, 22.75, 26.55, 26.78, 34.05, 45.59, 53.1, 53.57, 68.1, 91.2, 600, 750, 800.

GOVERNMENT LAND STATIONS, ALPHABETICALLY, BY NAMES OF STATIONS

[Alterations and corrections to be made to the list of Commercial and Government Radio Stations of the United States, edition of June 30, 1923, and to the International List of Radiotelegraph Stations, published by the Berne Bureau]

- ANACOSTIA, D. C.—Service, FA.
 BELLEFONTE, PA.—System, composite v. t. telegraph and telephone, and arc; w. l., 901, 1,287, 1,429.
 BETHANY BEACH, DEL.—Call changed to NBN.
 DRYDEN, TEX.—Loc. (approximately) 102° 10' 00" W., 30° 12' 30" N.; system, United States Army v. t. telegraph; hours, 7.30 a. m. to 4.30 p. m. daily, 7.30 to 10 a. m. Sundays and holidays.

- LORDSBURG, N. MEX.—Loc. (approximately) 108° 42' 00'' W., 32° 21' 00'' N.; system, United States Army v. t. telegraph; hours, 7 a. m. to 3 p. m. daily, 8 to 10 a. m. Sundays and holidays.
- NEW BRUNSWICK, N. J.—System, composite v. t. telegraph and telephone, and arc; w. l., add 901, 1,287, 1,429.
- TUCSON, ARIZ.—Loc. (approximately) 110° 58' 00'' W., 32° 30' 00'' N.; system, United States Army v. t. telegraph; hours, 7 a. m. to 4.30 p. m. daily, 8 to 10 a. m., Sundays and holidays.
- YUMA, ARIZ.—Loc. (approximately) 114° 30' 00'' W., 32° 40' 00'' N., system, United States Army v. t. telegraph; hours, N.
- Strike out all particulars of the following-named stations, Bryan, Ohio, San Francisco, Calif. (KEP—old call KFZP).

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY, BY CALL SIGNALS

NSD, call changed to NBN; strike out all particulars following the call signals, KEP, KRL.

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, 1928]

- KINGSTON, R. I. (W1YF).—Strike out all particulars.
- PORTABLE: AIRPLANE NC 3314 (W4XM).—W. l., add 111.2 (2,698 kc.).
- PORTABLE: ZENITH (W9XN).—Name changed to Naroca.

MISCELLANEOUS

CHANGES IN RADIOBEACON STATIONS OF THE UNITED STATES

Additions to the list of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Frying Pan Shoals Lightship, N. C.—Radiobeacon established. Transmits on 1,000 meters (300 kc.) every 180 seconds groups of 2 dashes for 60 seconds, silent 120 seconds, thus:

— — — — — etc.
 60 seconds

 Silent
 120 seconds

Radio operator stands watch for the first 15 minutes of each hour from 8 a. m. to 9.15 p. m. Beacon operates only on request.

Vessels equipped with a radio compass

[Additions to the list of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Name	Call signal	Owner
Camargo.....	WRBY	Julius Fleischmann.
City of New York.....	WFBT	Byrd Antarctic expedition.
Memory III.....	WGDN	A. E. Fitkin.

NEW LISTS OF RADIO STATIONS OF THE UNITED STATES.

The annual lists of Commercial and Government Radio Stations of the United States and Amateur Radio Stations of the United States, editions June 30, 1928, are now in the hands of the printer. These publications probably will be ready for distribution by the Superintendent of Documents, Government Printing Office, Washington, D. C., about October 1. While the price has not been determined at this time, it is believed that no change will be made in the price as charged for the previous editions; that is, 15 cents a copy for the list of commercial and Government stations, which also includes broadcasting stations, and 25 cents per copy for the amateur list, payable in advance. All remittances should be forwarded direct to the Superintendent of Documents, Government Printing Office.

OBITUARY

The division deeply regrets to announce the death of Otto R. Redfern, supervisor of radio, in charge of the seventh radio district. Mr. Redfern had been with this service continuously since October, 1916, with the exception of the period of the World War during which time he served as lieutenant in the United States Navy. Before his appointment to supervisor of radio at Seattle he was attached to the second radio district with headquarters at New York City.

GENERAL ORDERS OF THE FEDERAL RADIO COMMISSION

Regulations governing hearings on application for construction permits, renewals of licenses, etc. (General Order No. 37, August 22, 1928).—It is ordered that in every case where the commission, upon examination of any application for a construction permit, for a station license, for a renewal of a station license, or for modification of a station license, does not reach a decision that public interest, convenience, or necessity would be served by the granting of such application.

1. The secretary of the commission shall forthwith notify the applicant to that effect and shall at the same time notify the applicant of the time and place for a hearing on such application, the time and place to be fixed as hereinafter directed.

2. Unless the commission shall specifically provide otherwise, the place for such hearing shall be at the office of the commission at Washington, D. C.

3. Unless the commission shall specifically provide otherwise, the time for such hearing shall be at the hour of 10 o'clock a. m., on the first Tuesday falling after the lapse of a period of 20 days from the date on which the secretary shall mail such notification to such applicant.

4. No applicant will be heard unless 10 days or more prior to the date set for such hearing he shall have communicated to the secretary a written notice of his desire to be heard by the commission, together with a statement of the approximate time which, in his opinion, the presentation of his case will require. Said notice and said statement may be communicated to the secretary by telegraph.

5. Hearings shall commence at the hour of 10 o'clock a. m., on Tuesday of each week and shall continue throughout the week until the cases set for each Tuesday have all been heard, continued, or otherwise disposed of.

6. Every applicant desiring a continuance of the hearing on his application shall, not later than the day prior to that on which such hearing is set, deliver to the secretary a written motion to that effect (which motion may be made by telegraph), accompanied by a brief statement of his reasons in support of such motion. Such motion may be granted or denied by any member of the commission, or if none of them is present at the office of the commission, then by the secretary; each action with respect to such a motion shall be reported to the commission at its first meeting following such action.

7. The commission may, of its own motion, continue any hearing to a later date.

8. Every person desiring that witnesses be summoned or that the production of books, documents, or papers be compelled shall make written application therefor to the secretary on forms to be provided by the secretary on request.

9. Evidence may be heard by any one or more of the members of the commission. Where a hearing takes place before less than a quorum (that is, three) of the commission, the applicant shall, upon request duly made in the record, be entitled to present argument in support of his application before a quorum of the commission.

10. Each case will be given a docket number and, so far as possible, such docket number shall be noted on all correspondence, papers, or motions having to do with such case.

Extension of broadcast station licenses (General Order No. 38, August 22, 1928).—It is ordered that with the exception hereinafter set forth all existing licenses to broadcast, subject to such modifications and extensions as may be appended thereto, be, and the same are hereby, further extended for a period of 30 days to terminate at 3 o'clock a. m., eastern standard time, October 1, 1928.

This order shall not apply, and no extension of any existing license to broadcast shall be deemed to be granted, with respect to any broadcasting station listed in, or later made subject to, General Order No. 32 of this commission, issued on May 25, 1928, the continued use or operation of such station to be subject to such order or orders as the commission may hereafter enter.

Extension of coastal, point-to-point, technical and training school, experimental, ship, and amateur station licenses (General Order No. 39, August 22, 1928).—It is ordered that all existing licenses covering coastal, point-to-point, technical and training, experimental, ship, and amateur radio transmitting stations, heretofore extended by the commission's General Orders 1, 3, and 26 be, and the same are hereby, further extended for a period of 61 days to terminate at 3 o'clock a. m., eastern standard time, November 1, 1928. This order, however, is subject to the conditions that it shall not be deemed or construed as a finding or decision by the commission, or as any evidence whatsoever, that the continued use or operation of any of said stations serves, or will serve, public interest, convenience, or necessity, or that public interest, convenience, or necessity would be served by the granting of any pending application for a renewal or any of said licenses; and any licensee subject to this order who continues to use or operate his station during the period covered by this order shall be deemed to have consented to said conditions.

This order shall not apply to any licenses heretofore issued by this commission for periods of time which have not expired, all licensees in such cases to be governed by the terms and conditions of their respective licenses.

Allocation of channels in the broadcast band to the different zones a separation of 10 kilocycles to be maintained, etc. (General Order No. 40, August 30, 1928).—The commission has determined that the definite assignment of a band of frequencies for broadcasting, the maintenance of a separation of 10 kilocycles between frequencies used in broadcasting, the reservation of certain frequencies for exclusive use by stations in the Dominion of Canada, and the setting aside of a certain number of other frequencies for shared use by the United States and the Dominion of Canada, all as hereinafter specified in this order, will serve public interest, convenience, or necessity.

The commission has further determined after careful consideration that the allocation of frequencies, of time for operation and of station power, for use by broadcasting stations to the respective zones, as hereinbelow specified in this order, (a) is necessary in order to comply in part with the requirements of section 9 of the radio act of 1927 as amended by section 5 of the act of Congress, March 28, 1928, in so far as it requires that the licensing authority shall as nearly as possible make and maintain an equal allocation of bands of frequency or wave lengths, of periods of time for operation, and of station power, to each of the zones when and in so far as there are applications therefor, and (b) will promote public interest and convenience and will serve public necessity, in so far as this can be done in a manner consistent with the requirements of said section 9 of the radio act of 1927 as amended by section 5 of the act of Congress, March 28, 1928, and will greatly improve reception conditions in the broadcast band by the elimination of a large portion of the interference which now exists: It is therefore ordered:

PARAGRAPH 1. That a band of frequencies extending from 550 to 1,500 kilocycles, both inclusive, be, and the same is hereby, assigned to and for the use of broadcasting stations, said band of frequencies being hereinafter referred to as the broadcast band. This order is not to be construed as prohibiting the licensing of maritime mobile services on the frequency of 1,365 kilocycles, as provided by the International Radiotelegraph Convention of 1927.

PAR. 2. That within said broadcast band a separation of 10 kilocycles be maintained between the frequencies assigned for use by broadcasting stations.

PAR. 3. That, of the frequencies within said broadcast band (a) the frequencies of 690, 730, 840, 910, 960, and 1,030 kilocycles be, and the same are hereby, reserved for use by broadcasting stations located in the Dominion of Canada and shall not be assigned to any broadcasting station licensed by this commission; (b) the frequencies of 580, 600, 630, 780, 880, 890, 930, 1,010, 1,120, 1,200, and 1,210 kilocycles be, and the same are hereby, set aside for simultaneous use by broadcasting stations located both in the Dominion of Canada and in the United States, its territories and possessions, and no station will be authorized by this commission on any of these frequencies with an authorized power which will cause interference at the boundary line between the Dominion of Canada and the United States of America, or in excess of 500 watts at any place within the United States of America or the Territories of Alaska and Porto Rico.

PAR. 4. That the frequencies within said broadcast band (subject to the foregoing) and periods of time for operation and station power to be used by

broadcasting stations on said frequencies be, and the same are hereby, allocated equally to the zones, as follows:

A. The following frequencies are allocated to the first, second, third, fourth, and fifth zones, respectively, as below indicated for use by broadcasting stations, the amount of power to be used by such stations to be determined by further order of the commission: First zone, 660, 710, 760, 860, 990, 1,060, 1,100, and 1,150 kilocycles; second zones, 700, 750, 820, 980, 1,020, 1,070, 1,110, and 1,170 kilocycles; third zone, 650, 740, 800, 850, 1,040, 1,080, 1,140 and 1,190 kilocycles; fourth zone, 670, 720, 770, 810, 870, 1,000, 1,090, and 1,160 kilocycles; fifth zone, 640, 680, 790, 830, 970, 1,050, 1,130, and 1,180 kilocycles.

B. The following frequencies are allocated each for use by not less than two zones, with broadcasting stations in those zones being permitted to operate simultaneously, each station to have an authorized power not to exceed 5 kilowatts, the particular zone entitled to share in the allocation of any particular frequency to be determined by further order of the commission: 1,460, 1,470, 1,480, and 1,490 kilocycles.

C. The following frequencies are allocated for use by not less than two nor more than three zones, the broadcasting stations in those zones being permitted to operate simultaneously and to have an authorized power not to exceed 1,000 watts, the particular zones entitled to share in the allocation of any particular frequency to be determined by further order of the commission: 580, 590, 600, 610, 620, 630, 780, 880, 890, 900, 920, 930, 940, 950, 1,010, 1,120, 1,220, 1,230, 1,240, 1,250, 1,260, 1,270, 1,280, 1,290, 1,300, 1,320, 1,330, 1,340, 1,350, 1,360, 1,380, 1,390, 1,400, 1,410, and 1,430 kilocycles. (Except that in those cases where the station locations and powers are such that interference will not be caused, four or five zones instead of three zones may share one or more of the foregoing frequencies where practicable.)

D. The following frequencies are allocated for use in all five zones with broadcasting stations permitted to operate simultaneously, each station to have an authorized power not to exceed 1,000 watts: 550, 560, 570, 1,440, and 1,450 kilocycles.

E. The following frequencies are allocated for use in all five zones by broadcasting stations in simultaneous operation with an authorized power not to exceed 100 watts, the number of such stations to be permitted to operate simultaneously in each zone on each of said frequencies to be determined by further order of the commission: 1,200, 1,210, 1,310, 1,370, 1,420, and 1,500 kilocycles.

F. Whenever the word "frequency" is used in the preceding subparagraphs A, B, C, D, and E of this paragraph, it is to be understood as connoting periods of full-time operation; that is to say, 24 hours daily, and every allocation herein of a frequency to a particular zone is to be considered as carrying with it an assignment of full-time operation on that frequency to that zone.

PAR. 5. That the allocation hereinbefore ordered in paragraph 4 of this order be, and the same is hereby declared to be, effective on October 1, 1928, at the hour of 3 o'clock a. m., eastern standard time; and that the provisions of paragraphs 1, 2, and 3 be, and the same are hereby declared to be, effective as of the date of the issuance of this order.

CAPE TOWN (SOUTH AFRICA) TIME SIGNALS

After September 15, 1928, this station, located at Slang Kop Point, Cape of Good Hope, in approximately longitude 18° 19' E., latitude 34° 09' S., call signal VNC, will transmit a series of time signals on 600 meters, spark daily between 20^h 56^m 00^s and 21^h 00^m 00^s, G. M. T. corresponding to 22^h 56^m 00^s and 23^h 00^m 00^s, standard time, respectively. The signals will be actuated automatically from the Royal Observatory at the cape by direct line and will be as follows:

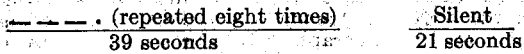
G. M. T.

h.	m.	s.	h.	m.	s.	
20	56	05	20	56	50	— — — repeated 5 times at 10 second intervals.
	57	00	"	57	50	— . . . repeated 10 times at 5 second intervals.
	57	55	"	58	00	{ 55 56 57 58 59 60
	58	08	"	58	10 Time signal.
	58	18	"	58	20	— .
	58	28	"	58	30	— .
	58	38	"	58	40	— .
	58	48	"	58	50	— .
	58	55	"	59	00	{ 55 56 57 58 59 60
	59	06	"	59	10 Time signal.
	59	16	"	59	20	— .
	59	26	"	59	30	— .
	59	36	"	59	40	— .
	59	46	"	59	50	— .
20	59	55	"	21	00	{ 55 56 57 58 59 60
					 Time signal.

EXPERIMENTAL RADIOBEACON AND SUBMARINE OSCILLATOR ESTABLISHED ON CONINGBEG (IRELAND) LIGHT VESSEL

This light vessel, located in approximately longitude 6° 40' W., latitude 52° 02' N., has been equipped with a radiobeacon and a submarine oscillator. These signals can be used by vessels fitted with submarine signal receivers and direction finders, and also by vessels fitted with ordinary radio receiving apparatus and submarine receivers. The range of the submarine oscillator is about 10 to 15 miles. The wave length of the radiobeacon is 1,000 meters and the range about 45 miles.

The characteristic of both signals, transmitted simultaneously, is a series of eight groups, each group consisting of three dashes and one dot sent every minute, thus—



Duration of dash=1 second; duration of dot=1/4 second. Intervals between dashes and between third dash and dot in each group=1/4 second; interval between groups=1 second. The two signals being synchronous can be used to determine the distance from the light vessel.

The light vessel emits the wireless and submarine signals simultaneously. The speed of the latter depends on the velocity of sound through water, which is approximately 1 mile in 1 1/4 seconds, and the submarine signal would therefore be received at 1 mile distant in 1 1/4 seconds, at 2 miles in 2 1/2 seconds, etc., counting the first wireless signal as zero, then 1, 2, 3, 4, etc. The number so counted gives the distance in miles, and the distance to half a mile can be estimated.

Having ascertained the approximate distance as described above, the accuracy of the timing of the signal should be tested with the second hand of a watch or with a stop watch. If the total period from the commencement of one series of signals to the commencement of the next series is not 60 seconds, the distance obtained should be divided by 60 and the result multiplied by the actual number of seconds occupied by the period of the signal. The result will be the correct distance.

Combined headphones, having one earpiece for connection with the wireless receiver and the other for the submarine receiver facilitate the reception of the synchronous signals for ascertaining distance.

Vessels which are fitted with submarine signal receivers but not with wireless direction-finding apparatus can obtain the bearing of the light vessel by means of the submarine signal receivers in the usual way and receive the wireless signals on the ordinary receiving apparatus. The distance can then be ascertained as detailed above.

Mariners are requested to report to the Secretary, Irish Lights Office, Dublin, giving full particulars of the results obtained, the approximate distance at which each signal was received, the longest range at which accurate determinations of

SWAN ISLAND METEOROLOGICAL INFORMATION

The United States Weather Bureau has made arrangements for the reopening of the meteorological station at Swan Island in the western Caribbean Sea (approximately 84° W. and 17° 30' N.) in cooperation with the Tropical Radio Telegraph Co., for the months of August, September, and October, 1928. Meteorological observations from Swan Island are of great value during the hurricane season, not only to shipping in the Gulf of Mexico and the Caribbean, but to the United States Weather Bureau in the issuing of its warnings and advices of storms and hurricanes. The observations are taken at 7 a. m. and 7 p. m. daily, seventy-fifth meridian time. They are immediately transmitted by radio to the Weather Bureau at Washington on wave lengths of 600 and 630 meters at 7.15 a. m. and 7.15 p. m., seventy-fifth meridian time. There is no objection to ships copying these reports for their individual use and information.

LIST OF HIGH-FREQUENCY CHANNELS ALLOCATED TO COMMERCIAL STATIONS

In reference to the list of high-frequency channels published in the May 31, 1928, No. 134, edition of the RADIO SERVICE BULLETIN, there is now published hereunder a list of the stations to which the channels have been assigned.

Frequency (kilo-cycles)	Call signal	Location	Owner
6, 710	WEHR-WER	Rocky Point, N. Y.	Radio Corporation of America.
6, 720	WBO	Dearborn, Mich.	Ford Motor Co.
6, 725	WQO	Rocky Point, N. Y.	Radio Corporation of America.
6, 740	WEAJ-WEJ	do.	Do.
6, 755	WND	Deal Beach, N. J.	American Telephone & Telegraph Co.
6, 770	WNN	Boston, Mass., and Mobile, Ala.	Tropical Radio Telegraph Co.
6, 785	WBF	do.	Do.
6, 815	KNW	Palo Alto, Calif.	Mackay Radio & Telegraph Co.
6, 845	KEUN-KEN	Bolinas, Calif.	Radio Corporation of America.
6, 860	KEL	do.	Do.
6, 875	-----	Guam	Mackay Radio & Telegraph Co.
6, 890	WGXX-WGX	San Juan, P. R.	Radio Corporation of America.
6, 900	WLG	Bypro, Ky.	By Products Coal Co.
6, 920	WEPE-WEE	Rocky Point, N. Y.	Radio Corporation of America.
6, 935	WEQB-WEB	do.	Do.
6, 950	WEOP-WKP	do.	Do.
6, 965	WIZ	New Brunswick, N. J.	Do.
7, 340	-----	New York, N. Y.	American Publishers Committee.
7, 355	-----	New York, N. Y., and Philadelphia, Pa.	Do.
7, 370	-----	New York, N. Y.	Do.
7, 400	WEM	Rocky Point, N. Y.	Radio Corporation of America.
7, 415	KSIO-KKH	Kahuka, Hawaii.	Do.
7, 430	-----	San Francisco, Calif.	Robert Dollar S. S. Co.
7, 445	-----	Seattle, Wash.	Do.
7, 520	WEGG-WEG	Rocky Point, N. Y.	Radio Corporation of America.
7, 600	KTZ	Naknek, Alaska.	Alaska Packers Association.
7, 625	KFU	Alameda, Calif.	Do.
7, 640	-----	Los Angeles, Calif.	American Publishers Committee.
7, 655	-----	Milwaukee, Wis.	Do.
7, 670	-----	New York, N. Y., and Washington, D. C.	Do.
7, 715	KEWE-KEE	Guam	Mackay Radio & Telegraph Co.
7, 730	-----	Sayville, N. Y.	Do.
7, 745	KNW	Bolinas, Calif.	Radio Corporation of America.
7, 760	KNN	Sayville, N. Y.	Mackay Radio & Telegraph Co.
7, 775	WTF	Palo Alto, Calif.	Do.
7, 820	-----	Honolulu, Hawaii.	Do.
7, 835	-----	Akron, Ohio.	Firestone Plantation Co.-Standard Oil Co. of New Jersey.
7, 850	WLU	Baytown, N. J.	Do.
7, 925	-----	New York, N. Y., and Chicago, Ill.	American Publishers Committee.
7, 955	-----	do.	Do.
8, 010	-----	Floral Park, N. Y.	Do.
8, 075	-----	San Francisco, Calif.	Do.
8, 650	-----	San Francisco, Calif. and Chicago, Ill.	Do.
	WLC	Rogers City, Mich.	Michigan Limestone & Chemical Co.
	KNN	Honolulu, Hawaii.	Mackay Radio & Telegraph Co.

1 Especially assigned for experimental work.

Frequency (kilo- cycles)	Call signal	Location	Owner
8, 720	KNN	Honolulu, Hawaii	Mackay Radio & Telegraph Co.
8, 850	KNW	Palo Alto, Calif.	Do.
8, 930		Sayville, N. Y.	Do.
8, 950	WELL-WEL	Rocky Point, N. Y.	Radio Corporation of America.
8, 970	KNW	Palo Alto, Calif.	Mackay Radio & Telegraph Co.
8, 990	WEQC-WEC	Rocky Point, N. Y.	Radio Corporation of America.
9, 010	KEJJ-KEJ	Bolinas, Calif.	Do.
9, 070	KNN	Honolulu, Hawaii	Mackay Radio & Telegraph Co.
9, 170	WND	Deal Beach, N. J.	American Telephone & Telegraph Co.
9, 280		Guam	Mackay Radio & Telegraph Co.
9, 410		San Francisco, Calif.	Robert Dollar S. S. Co.
9, 450	WEDS-WES	Rocky Point, N. Y.	Radio Corporation of America.
9, 470	WETT-WET	do.	Do.
9, 490	WEX-WEM	do.	Do.
9, 750	WNC	Deal Beach, N. J.	American Telephone & Telegraph Co.
9, 870	WMI	do.	Do.
10, 390	KERR-KER	San Francisco, Calif.	Radio Corporation of America.
10, 410	KESS-KES	Bolinas, Calif.	Do.
10, 450	WAX	Miami, Fla.	Tropical Radio Telegraph Co.
	WNN	Mobile, Ala.	Do.
10, 470	WBF	Boston, Mass.	Do.
	WNU	New Orleans, La.	Do.
10, 490	KNN	Honolulu, Hawaii	Mackay Radio & Telegraph Co.
10, 550	WLO	Deal Beach, N. J.	American Telephone & Telegraph Co.
10, 610	WEQA-WEA	Rocky Point, N. Y.	Radio Corporation of America.
10, 630	WEDD-WED	do.	Do.
10, 750	WKI	Newark, N. J.	Federal Telegraph Co.
10, 810	KNN	Honolulu, Hawaii	Mackay Radio & Telegraph Co.
10, 830		Guam	Do.
10, 900		Palo Alto, Calif.	Do.
10, 930		San Francisco, Calif.	Robert Dollar S. S. Co.
11, 080	KIO	Kahuku, Hawaii	Radio Corporation of America.
11, 950	KKQQ-KKQ	San Francisco, Calif.	Do.
12, 850			
12, 940	WAX	Miami, Fla.	Tropical Radio Telegraph Co.
	WNN	Mobile, Ala.	Do.
	WNU	New Orleans, La.	Do.
12, 970	KNW	Palo Alto, Calif.	Mackay Radio & Telegraph Co.
13, 030	KNN	Honolulu, Hawaii	Do.
13, 090	WND	Deal, N. J.	American Telephone & Telegraph Co.
13, 420	WHR	Rocky Point, N. Y.	Radio Corporation of America.
13, 450	WEQX-WEX	do.	Do.
13, 480	WAJ	do.	Do.
13, 693	KKZZ-KKZ	Bolinas, Calif.	Do.
13, 720	KLL	do.	Do.
13, 750		Guam	Mackay Radio & Telegraph Co.
13, 780	WGT	San Juan, P. R.	Radio Corporation of America.
13, 840	WPE	Rocky Point, N. Y.	Do.
13, 870	WEQY-WIY	do.	Do.
13, 900	WOP	do.	Do.
13, 930	WIK	do.	Do.
13, 960		Guam	Mackay Radio & Telegraph Co.
14, 470	WNC	Deal Beach, N. J.	American Telephone & Telegraph Co.
14, 590	WMI	do.	Do.
14, 680		Palo Alto, Calif.	Mackay Radio & Telegraph Co.
14, 710		do.	Do.
14, 740		Sayville, N. Y.	Do.
14, 770		do.	Do.
14, 800	WEEM-WKM	Rocky Point, N. Y.	Radio Corporation of America.
14, 830	WKUU-WKU	do.	Do.
14, 860		Seattle, Wash.	Robert Dollar S. S. Co.
14, 890		do.	Do.
14, 920	WAZZ-WAZ	New Brunswick, N. J.	Radio Corporation of America.
15, 040	WQGG-WQG	Rocky Point, N. Y.	Do.
15, 430	KWE	Bolinas, Calif.	Do.
15, 460	KKRR-KKR	do.	Do.
15, 490	KEMM-KEM	do.	Do.
15, 580		Garden City, N. Y.	American Publishers Committee.
15, 610		New York, N. Y.	Do.
15, 640		Chicago, Ill.	Do.
15, 670		New York, N. Y.	Do.
15, 700		Floral Park, N. Y.	Do.
15, 730		San Francisco, Calif.	Do.
15, 760		Boston, Mass.	Do.
15, 850		San Francisco, Calif.	American Publishers Committee (New York, N. Y.).
15, 880		do.	American Publishers Committee (Los Angeles, Calif.).
		do.	American Publishers Committee (Chicago, Ill.).
15, 910			
15, 970	WQO-WKO	Rocky Point, N. Y.	Radio Corporation of America.
16, 000	WKQQ-WKQ	do.	Do.
16, 030	WKWW-WKW	do.	Do.

¹ Especially assigned for experimental work.

Frequency (kilocycles)	Call signal	Location	Owner
16, 270	WLO	Deal Beach, N. J.	American Telephone & Telegraph Co.
17, 300			
17, 420	KNN	Honolulu, Hawaii	Mackay Radio & Telegraph Co.
17, 580	WBF	Boston, Mass.	Tropical Radio Telegraph Co.
17, 660	KNW	Palo Alto, Calif.	Mackay Radio & Telegraph Co.
17, 700		Guam	Do.
17, 860	WQC	Rocky Point, N. Y.	Radio Corporation of America.
17, 900	WLL	do	Do.
17, 940	WQB	do	Do.
17, 980	KQZZ-KQZ	Bolinas, Calif.	Do.
18, 020	KQJJ-KQJ	do	Do.
18, 060	KUN	do	Do.
18, 260	KNW	Palo Alto, Calif.	Mackay Radio & Telegraph Co.
18, 340	WND	Deal Beach, N. J.	American Telephone & Telegraph Co.
18, 380		Palo Alto, Calif.	Mackay Radio & Telegraph Co.
18, 820		San Francisco, Calif.	Robert Dollar S. S. Co.
18, 860	WQV	Rocky Point, N. Y.	Radio Corporation of America.
18, 900	WDS	do	Do.
18, 940	WTT	do	Do.
18, 980	WFX	do	Do.
19, 020	KQHH-KQH	Kahuku, Hawaii	Do.
19, 220	WNC	Deal Beach, N. J.	American Telephone & Telegraph Co.
19, 540		Palo Alto, Calif.	Mackay Radio & Telegraph Co.
19, 580		Sayville, N. Y.	Do.
19, 620		do	Do.
19, 740		Guam	Do.
19, 780	WTF	Akron, Ohio	Akron Firestone Plantations-Standard Oil Co. of N. J.
19, 820	WMU	Baytown, N. J.	Do.
20, 100	WMI	Deal Beach, N. J.	American Telephone & Telegraph Co.
20, 180	WQY	Rocky Point, N. Y.	Radio Corporation of America.
20, 260	WQX	do	Do.
20, 300	WQQ	do	Do.
20, 380		Sayville, N. Y.	Mackay Radio & Telegraph Co.
20, 780	KMM	Bolinas, Calif.	Radio Corporation of America.
20, 820	KSS	do	Do.
20, 980		Sayville, N. Y.	Mackay Radio & Telegraph Co.
21, 060	WND	Deal Beach, N. J.	American Telephone & Telegraph Co.
21, 220	WQA	Rocky Point, N. Y.	Radio Corporation of America.
21, 260	WBU	do	Do.
21, 300	WQWW-WQW	San Francisco, Calif.	Do.
21, 380		Sayville, N. Y.	Mackay Radio & Telegraph Co.
21, 420	WLO	Deal Beach, N. J.	American Telephone & Telegraph Co.
22, 670		Seattle, Wash.	Robert Dollar S. S. Co.

¹ Especially assigned for experimental work.

Reserved for special assignment: 10,050, 10,090, 10,160, 10,230, 17,140, 18,180, and 18,720.

CROSS INDEX OF ARTICLE NUMBERS OF THE INTERNATIONAL RADIOTELEGRAPH CONVENTION

As some difficulty has been experienced in locating articles of the convention, as published in the English translation promulgated by this country and the French text promulgated by the Berne Bureau due to the renumbering of the articles in the French text, the following cross index is published for the benefit of those concerned.

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List of broadcasting stations of Canada

[This list supersedes and cancels all previous lists]

Call signal	Owner of station	Location of station	Wave length (meters)	Frequency (kilo-cycles)	Power input to antenna (watts)
CFAC	The Calgary Herald.....	Herald Building, Calgary, Alberta.	434.5	690	500
CFBO	C. A. Munro (Ltd.).....	Imperial Theater, St. John, New Brunswick.	336.9	890	50
CFCA	Star Publishing & Printing Co.	Southwest Corner Yonge Street and St. Clair Avenue, Toronto, Ontario.	356.9	840	500
CFCF	Canadian Marconi Co.....	Mount Royal Hotel, Montreal, Quebec.	410.7	730	1,650
CFCH	Abitibi Power & Paper Co. (Ltd.)	Iroquois Falls, Ontario.....	499.7	600	250
CFCN	W. W. Grant (Ltd.).....	708 Crescent Road NW., Calgary, Alberta.	434.5	690	1,800
CFCO	Western Ontario Better Radio Club.	49 Park Avenue E., Chatham, Ontario.	247.8	1,210	25
CFCT	Victoria Broadcasting Association.	1405 Douglas Street, Victoria, British Columbia.	475.9	630	500
CFCY	The Island Radio Co.....	143 St. George Street, Charlottetown, Prince Edward Island.	312.3	960	100

List of broadcasting stations of Canada—Continued

Call signal	Owner of station	Location of station	Wave length (meters)	Frequency (kilo-cycles)	Power input to antenna (watts)
CFJC	N. S. Dalglish & Sons and Weller & Weller.	186 Victoria Street, Kamloops, British Columbia.	267.7	1,120	15
CFLC	Radio Association of Prescott.	Victoria Hall, Prescott, Ontario.	296.9	1,010	50
CFMC	Monarch Battery Co.	Montreal Street, Kingston, Ontario.	267.7	1,120	20
CFNB	James S. Neill & Sons (Ltd.)	212 Waterloo Row, Fredericton, New Brunswick.	247.9	1,210	50
CFQC	The Electric Shop (Ltd.)	1322 Osler Street, Saskatoon, Saskatchewan.	329.5	910	500
CFRB	Standard Radio Manufacturing Corporation (Ltd.)	Lot 70, Township of King, York County, Ontario.	312.3	960	1,000
CFRC	Queen's University (Department of Electrical Engineering)	Fleming Hall, Queen's University, Kingston, Ontario.	267.7	1,120	500
CHCA	The Albertan Publishing Co. (Ltd.) (uses station CJCJ, the Radio Service and Repair Shop, Calgary, Alberta).	Calgary, Alberta.	434.5	690	250
CHCK	W. E. Burke	36 Upper Hillsboro Street, Charlottetown, Prince Edward Island.	312.3	960	30
CHCS	The Hamilton Spectator	Spectator Building, Hamilton, Ontario.	340.7	880	10
CHCT	Messrs. G. F. Tull & Arden (Ltd.) (uses station CKLC, the Alberta Pacific Grain Co., Red Deer, Alberta).	Red Deer, Alberta.	356.9	840	1,000
CHGS	R. T. Holman (Ltd.)	Holman Building, Summerside, Prince Edward Island.	267.7	1,120	25
CHLS	W. G. Hassell (uses station CKOD, the Vancouver Daily Province, Vancouver, British Columbia).	Vancouver, British Columbia.	410.7	730	50
CHMA	Christian and Missionary Alliance.	9618 106A Avenue, Edmonton, Alberta.	516.9	580	250
CHML	Maple Leaf Radio Co. (Ltd.)	Yale Avenue, Mount Hamilton, Ontario.	340.7	880	50
CHNC	Toronto Radio Research Society (uses station CKNC, Canadian National Carbon Co., Toronto, Ontario).	Hillcrest Park, Toronto, Ontario.	516.9	580	500
CHNS	Northern Electric Co. (Ltd.) (to be replaced by CHNS, Halifax Herald (Ltd.), when completed).	Carlton Hotel, Halifax, Nova Scotia.	322.4	930	100
CHNS ¹	Halifax Herald (Ltd.)	Lord Nelson Hotel, Halifax, Nova Scotia.	322.4	930	500
CHRC	E. Fontaine	Victoria Hotel, Quebec, Quebec.	340.7	880	5
CHWC	R. H. Williams & Sons (Ltd.)	Corner Hamilton Street and Eleventh Avenue, Regina, Saskatchewan.	312.3	960	15
CHWK	Chilliwack Broadcasting Co. (Ltd.)	Wellington Avenue, Chilliwack, British Columbia.	247.9	1,210	5
CHYC	Northern Electric Co. (Ltd.)	121 Shearer Street, Montreal, Quebec.	410.7	730	750
CJBO	Jarvis Street Baptist Church (uses one of the stations in Toronto city or district).	Toronto, Ontario.	(516.9) (336.9)	(580) (840)	500 500
CJBR	Saskatchewan Co-Operative Wheat Producers (Ltd.)	Regina, Saskatchewan	312.3	960	1,000-5,000
CJCA	The Edmonton Journal (Ltd.)	Journal Building, Edmonton, Alberta.	516.9	580	500
CJCJ	Radio Service and Repair Shop.	Eighteenth Avenue and Seventh Street East, Calgary, Alberta.	434.5	690	250
CJGC	London Free Press Printing Co. (Ltd.)	Hotel London, London, Ontario.	329.5	910	500
CJGX	The Winnipeg Grain Exchange.	Yorkton, Saskatchewan.	475.9	630	500
CJHS	Radio Service (Ltd.)	238 First Avenue, S., Saskatoon, Saskatchewan.	329.5	930	250
CJOC	J. E. Palmer	1235 Fifth Avenue A, S., Lethbridge, Alberta.	267.7	1,120	50

¹ Station under construction.

List of broadcasting stations of Canada—Continued

Call signal	Owner of station	Location of station	Wave length (meters)	Frequency (kilo-cycles)	Power input to antenna (watts)
CJOR	G. C. Chandler.....	Block 20, Sea Island, British Columbia.	291.1	1,030	50
CJRM	Jas. Richardson & Sons (Ltd.)..	337 Coteau Street, W., Moose Jaw, Saskatchewan.	296.9	1,010	500
CJRW	do.....	Fleming, Saskatchewan.....	296.9	1,010	500
CJSC	The Evening Telegram (uses station CKCL, the Dominion Battery Co. (Ltd.), Toronto, Ontario).	Toronto, Ontario.....	516.9	580	500
CKAC	LaPresse Publishing Co. (Ltd.)..	Corner St. James Street and St. Lawrence Boulevard, Montreal, Quebec.	410.7	730	1,200
CKCD	Vancouver Daily Province.....	142 Hastings Street, W., Vancouver, British Columbia.	410.7	730	50
CKCI	Le "Soleil" (Ltd.).....	Victoria Hotel, Quebec, Quebec.	340.7	880	22½
CKCK	Leader Publishing Co. (Ltd.)..	Regina, Saskatchewan.....	312.3	960	500
CKCL	The Dominion Battery Co. (Ltd.) ¹	20 Trinity Street, Toronto, Ontario.	516.9	580	500
CKCO	Dr. G. M. Geldert (for Ottawa Radio Association).	282 Somerset Street, W., Ottawa, Ontario.	434.5	690	100
CKCR	John Patterson.....	Arcade Building, Brantford, Ontario.	296.9	1,010	50
CKCV	G. A. Vandry.....	66 St. Joseph Street, Quebec, Quebec.	340.7	880	50
CKFC	United Church of Canada.....	Corner Thurlow and Pendrell Streets, Vancouver, British Columbia.	410.7	730	50
CKGW	Gooderham & Worts.....	Bowmanville, Ontario.....	312.3	960	5,000
CKLC	Alberta Pacific Grain Co. (Ltd.)..	Red Deer, Alberta.....	356.9	840	1,000
CKMC	R. L. MacAdam.....	Cobalt (East Side), Ontario..	247.8	1,210	15
CKMO	Sprott-Shaw Radio.....	Room 1604 Bekins Building, Vancouver, British Columbia.	410.7	730	50
CKNC	Canadian National Carbon Co. (Ltd.)..	Hillcrest Park, Toronto, Ontario.	516.9	580	500
CKOC	Wentworth Radio & Auto Supply Co. (Ltd.)..	Royal Connaught Hotel, Hamilton, Ontario.	340.7	880	100
CKOW	Nestle's Food Co. of Canada (uses station CFCA, Star Publishing & Printing Co., Toronto, Ontario).	Toronto, Ontario.....	356.9	840	500
CKPC	Wallace Russ.....	40 Russ Avenue, Eagle Street, Preston, Ontario.	247.8	1,210	25
CKPR	E. O. Swan.....	Midland, Ontario.....	267.7	1,120	50
CKSH	City of St. Hyacinthe, Quebec.	Mondor and Cascades Streets, St. Hyacinthe, Quebec.	296.9	1,010	50
CKUA	University of Alberta.....	Campus, University of Alberta, Edmonton, Alberta.	516.9	580	500
CKWX	A. Holstead and Wm. Hanlon.	1220 Seymour Street, Vancouver, British Columbia.	410.7	730	100
CKY	Manitoba Telephone System..	Sherbrooke Street, Winnipeg, Manitoba.	384.4	780	500
CNRA	Canadian National Railways..	Moncton, New Brunswick....	475.9	630	500
CNRC	Canadian National Railways (uses station CFAC, Calgary Herald, Calgary, Alberta).	Calgary, Alberta.....	434.5	690	500
CNRE	Canadian National Railways (uses station CJCA, Edmonton Journal (Ltd.), Edmonton, Alberta).	Edmonton, Alberta.....	516.9	580	500
CNRM	Canadian National Railways (uses station CHYC, Northern Electric Co. (Ltd.), or station CKAC, La Presse Publishing Co., (Ltd.), or station CFCF, Canadian Marconi Co., Montreal, Quebec).	Montreal, Quebec.....	410.7	730	1,000-1,650
CNRO	Canadian National Railways..	Jackson Building, Ottawa, Ontario.	434.5	690	500
CNRQ	Canadian National Railways (uses station CKCV, G. A. Vandry, Quebec, Quebec).	Quebec, Quebec.....	340.7	880	50
CNRR	Canadian National Railways (uses station CKCK, Leader Publishing Co., (Ltd.), Regina, Saskatchewan).	Regina, Saskatchewan.....	312.3	960	500

¹ The call signal CFCI is used by this station during Sunday broadcasts only.

List of broadcasting stations of Canada—Continued

Call signal	Owner of station	Location of station	Wave length (meters)	Frequency (kilocycles)	Power input to antenna (watts)
CNRS	Canadian National Railways (uses station CFQC, Electric Shop (Ltd.), Saskatoon, Saskatchewan).	Saskatoon, Saskatchewan.....	329.5	910	500
CNRT	Canadian National Railways (uses station CFCA, Star Printing & Publishing Co., Toronto, Ontario).	Toronto, Ontario.....	356.9	840	500
CNRV	Canadian National Railways..	Vancouver, British Columbia (Lulu Island).	291.1	1,030	500
CNRW	Canadian National Railways (uses station CKY, Manitoba Telephone System, Winnipeg, Manitoba).	Winnipeg, Manitoba.....	384.4	780	500

LIST OF THE PRINCIPAL BROADCASTING STATIONS OF THE WORLD ARRANGED IN ORDER OF WAVE LENGTH

Wave length (meters)	Location	Call signal	Remarks
<i>Europe</i>			
4,000	Königswusterhausen.....	AFP	Germany.
2,900	Do.....	AFP	Do.
2,650	Eiffel Tower.....		(F. L.) Paris: Time signals in code 0926 and 2226 G. M. T. and B. S. T.; opening signal, seconds counted in French.
2,525	Berlin (Wolf's Bureau), News.....		
2,000	Kovno (Kannas).....		Lithuania: Interval signal, strokes on gong.
1,950	Scheveningen.....		Holland.
1,950	Hulzen.....		Do.
1,870	Kozice (Kassa).....		Czechoslovakia.
1,829	Norddeich.....		Germany: Weather report, 11 p. m.
1,806	Angora.....		Turkey.
1,765	Paris.....	CFR	Radio Paris: Opening signal, electric gong at 12.30 and 8.30; clock chimes at the hour.
1,604.8	Daventry.....	5XX	England: Time signals, 10.30 a. m. and 6.30 p. m.
1,522	Lahti.....		Finland.
1,304	Motala.....		Sweden.
1,250	Zeesen (Königswusterhausen).		Germany: Opening and interval signals, Metro-nome.
1,200	Stamboul.....		Turkey.
1,190	Boden.....	SASE	Sweden.
1,153	Kalundborg.....		Denmark: Opening signal, 3 strokes of a gong.
1,150	Ryvang.....		Denmark.
1,111	Warsaw.....	AXO	Poland: Opening and interval signals, W in Morse
1,100	De Bilt.....	PCFF	Holland: Weather report, 9.15 p. m.
1,071	Hilversum.....	ANRO	Holland.
1,010	Basle.....		Switzerland.
760	Geneva.....	HB1	Switzerland: Opening signal, 3 long whistles.
720	Ostersund.....		Sweden: Relays-Sundsvall.
680	Lausanne.....	HB2	Switzerland: Opening signal; chimes and carillon.
588.2	Zurich.....	HBZ	Switzerland: Interval signal, gong.
577	Vienna (Stubenring).....		Austria.
577	Freiburg.....		Germany.
566	Cracow.....		Poland.
566	Augsburg.....		Germany: Relays Munich.
566	Bloemendaal.....		Holland: Sundays only.
566	Mikeli (St. Michel).....		Finland.
555.8	Hamar.....		Norway.
555.5	Budapest.....		Hungary: Opening signal, 4 notes repeated.
548	Milan.....	FMI	Italy: Opening signal, tuning note.
545.6	Sundsvall.....	SASD	Sweden.
535.7	Munich.....		Germany: Opening and interval signals, MUNG, in Morse, followed by 3 notes.
526.3	Riga.....		Latvia.
517.2	Vienna (Rosenhugel).....		Austria.
511	Aalesund.....		Norway.
506.5	Brussels.....	SBR	Belgium: Opening signal; whistle.
500	Tromsø.....		Norway.

LIST OF THE PRINCIPAL BROADCASTING STATIONS OF THE WORLD ARRANGED IN ORDER OF WAVE LENGTH—continued

Wave length (meters)	Location	Call signal	Remarks
<i>Europe—Continued</i>			
500	Aberdeen	2BD	Scotland.
500	Uppsala		Sweden: Relay station.
500	Linköping	8MUW	Do.
500	Porsgrund		Norway: Relay station.
491.8	Daventry	5GB	England: Experimental.
484	Berlin (Witzleben)		Germany: Interval signal, clock chimes.
476	Lyons		P. T. T. La Doua, France: Relays Ecole Supérieure, Paris.
468.8	Langenburg		Germany: Opening signal, chimes 4 bells: interval, U, in Morse.
462	Barcelona	EAJ13	Spain: (Radio Catalana).
461.5	Oslo		Norway.
458	Paris		P. T. T. Ecole Supérieure.
454.5	Stockholm	SASA	Sweden: Opening signal, folk song on a spinet; interval; rapid ringing of a bell.
447.8	Rome	1RO	Italy: Opening signal, oscillating valve, followed by "Pronto"; interval, trumpet call and "Radio Roma."
447.8	Rjukan		Norway: Relay station.
446	Malmberget		Sweden: Relay station.
441.2	Brunn (Brno)	OKB	Czechoslovakia.
435	Wilna		Poland.
434.8	Seville	EAJ5	Union Radio, Spain.
428.6	Frankfurt-on-Main		Germany: Opening signal, 3 strokes of gong; interval, metronome.
422	Kattowitz		Poland.
416.5	Goteborg	SASB	Sweden.
416	Grenoble		France.
412	Notodden		Norway: Relay station.
411	Berne	HBA	Switzerland: Opening signal, post horn or tuning note; interval, 2 strokes of gong.
408	Tallinn (Reval)		Estonia.
405.4	Glasgow	5SC	Scotland.
405	Salamanca	EAJ22	Spain.
400	Mont de Marzan		Radio Club Landrais, France.
400	Aix-la-Chapelle		Germany.
400	Cadiz	EAJ3	Spain: Opening signal, metronome.
400	Madrid	EAJ2	Radio España, Spain.
400	Cork	6CK	Irish Free State.
400	Plymouth	5PY	England: Relay station.
400	Tammertors		Finland: Relay station.
394.7	Hamburg		(H. A. in Morse), Germany.
389.6	Toulouse		France. (Radio du Midi): Interval signal, metronome.
384.6	Manchester	2ZY	England.
379.7	Stuttgart		Germany: Interval signal, 3 notes.
375	Helsingfors (Helsinki)		Finland.
375	Madrid	EAJ7	Spain (Union Radio): Opening signal, bugle call.
370.4	Bergen		Norway.
370	Paris		Radio E. L.
365.8	Leipzig		Germany: Interval signal, metronome or RR in Morse.
361.4	London	2LO	England.
357.1	Graz		Austria (V in Morse).
353	Cardiff	5WA	Wales.
348.9	Prague		Czechoslovakia.
344.8	Barcelona	EAJ1	Spain (Radio Barcelona).
342.9	Posen		Poland.
340.9	Hulzen		Holland.
340.9	Paris		Petit Parisien.
337.4	Copenhagen		Denmark: Opening signal, 3 strokes of gong.
335	Cartagena	EAJ16	Spain.
335	San Sebastian	EAJ8	Do.
333.3	Reykjavik		Iceland.
333.3	Naples	1NA	Italy: Opening signal, oscillating valve; interval, metronome.
329.7	Gleiwitz		Germany: Relay station.
326.1	Bournemouth	6BM	England.
326	Almeria	EAJ18	Spain.
322.6	Breslau		Germany: Interval signal, metronome.
319.1	Dublin	2RN	Ireland: Opening signal, tuning note.
315.8	Falun	SMZK	Sweden.
312.5	Newcastle	5NO	England.
310	Agen		France.
310	Oviedo		Spain.
309	Zagreb		Yugoslavia. Opening signal: Metronome. Interval: 2 strokes on bell.

LIST OF THE PRINCIPAL BROADCASTING STATIONS OF THE WORLD ARRANGED IN ORDER OF WAVE LENGTH—continued

Wave length (meters)	Location	Call signal	Remarks
<i>Europe—Continued</i>			
306.1	Belfast	2BE	Ireland.
304	Bjorneborg		Finland. Relay station.
303	Konigsberg		Germany. Interval signal: 2 notes A. and D. repeated.
302	Paris		Radio Vitus.
300	Marselles		P. T. T. France.
300	Bratislava (Pressburg)		Czechoslovakia: Interval signal, 4 bells, F. A. C. C.
297	Liverpool	6LV	England: Relay station.
297	Hanover		Germany: Relay station; interval signal, strokes on gong, followed by HE in Morse.
297	Varborg		Sweden: Relay station.
297	Jyvaskyla		Finland: Relay station.
294.1	Dundee	2DE	Scotland: Relay station.
294.1	Hull	6KH	England: Relay station.
294.1	Stoke	68T	Do.
294.1	Swansea	58X	Do.
294.1	Innsbruck		Austria: Relay station; interval signal, metronome.
294.1	Udevalla		Sweden: Relay station.
291.3	Lyon		France: Radio Lyon.
288.8	Bordeaux Lafayette P. T. T.		France.
288.5	Edinburgh	2EH	Scotland: Relay station.
285	Limoges		France.
283	Cologne		Germany.
279	Trollhattan		Sweden: Relay station.
277.8	Leeds	2LS	England: Relay station.
277.8	Kaiserslauten		Bavaria.
277	Barcelona	EAJ13	Spain (Radio Catalana).
275.2	Dresden		Germany: Relay station.
275.2	Jacobstad		Finland.
275.2	Norrkoping	SMVV	Sweden: Relay station.
275.2	Nottingham	5NG	England: Relay station.
275	Ghent		Belgium.
272.7	Sheffield	6FL	England: Relay station.
272.7	Bremen		Germany: Relay station.
272.7	Danzig		Do.
272.7	Hudiksvall		Sweden: Relay station.
272.7	Klagenfurt		Austria: Relay station; interval signal, metronome.
267.3	Lille, P. T. T.		France.
260.9	Malmö	SASC	Sweden.
253	Kiel		Germany: Relay station; interval signal, KL in Morse.
254.2	Kalmer	SMSN	Sweden.
254.2	Linz		Austria: Relay station.
252.1	Bradford	2LS	England: Relay station.
252.1	Cassel		Germany: Relay station.
252.1	Montpeller		France.
252.1	Saffee	SMTS	Sweden: Relay station.
250	Uleaborg		Finland: Relay station.
249.7	Eskilstuna	SMUC	Sweden: Relay station.
249.7	Munster		Germany (MS in Morse).
246	Juan les Pins		Nice, France.
246	Toulouse, P. T. T.		France.
243.9	Trondhjem		Norway.
241.9	Nurnberg		Germany: Relay station.
240	Viborg		Finland.
240	Nimes		France.
238.1	Kiruna		Sweden: Relay station.
238.1	Bordeaux		France.
236.2	Orebro		Sweden: Relay station.
236.2	Stettin		Germany: Relay station.
230.2	Boras	SMBY	Sweden: Relay station.
230	Schaerbeck		Germany.
229.4	Halsingborg	SMYE	Sweden: Relay station.
229	Umea	SMSN	Do.
222.2	Strasbourg		France.
220.6	Karlstadt	SMXZ	Sweden: Relay station.
217.4	Luxembourg	LOAA	Belgium.
216.3	Halmstad	SMSB	Sweden: Relay station.
204.1	Gavle	SMXF	Do.
202.7	Kristinehamn	SMTY	Do.
201.3	Jonkoping	SMZD	Do.
200	Fecamp		France.
198	Biarritz		Do.
196	Karlskrona	SMSM	Sweden: Relay station.
187.5	Ornskoldsvik		Do.
180	Beziere		France.

LIST OF THE PRINCIPAL BROADCASTING STATIONS OF THE WORLD ARRANGED IN ORDER OF WAVE LENGTH—continued.

Wave length (meters)	Location	Call signal	Remarks
<i>Europe—Continued</i>			
85	Zurich Radio Club.....	H9XD	Switzerland.
84.25	Copenhagen "Radiolyt- teren."	D7RL	Denmark.
80	Nogent-sur-Seine.....	F8AV	France.
70	Vienna.....	OHK2	Austria.
67.65	Doberitz.....	AFK	P. & T. Experimental, Germany.
61	Paris.....	F8GC	Radio L. L.
58.7	Nauen.....	AGJ	Germany.
52.5	Karlsborg.....	SAS	Sweden.
45.0	Rome.....	ILAX	Via Savoia 80, Italy.
40.2	Lyons.....	YR	Radio Lyon, France.
37.65	Doberitz.....	AFK	P. & T. Experimental, Germany.
37	Paris.....		Radio Vitus.
37	Vienna.....	EATH	Austria.
32.5	Caterham.....		England (G. Marcuse 2NM).
32.05	Copenhagen.....	D7MK	Denmark: "Radioposten."
32	Eiffel Tower.....		Paris (F. L.): Time signals.
32	Zurich Radio Club.....	H9XD	Switzerland.
32	Berne.....	H9OC	Switzerland: Telegraph and radio service.
31.5	Helsingfors.....		Finland (Helsinki).
31.25	Bergen.....		Norway.
31.4	Eindhoven.....	PCJJ	Philips Lamp Works, Holland.
30.75	Agen.....		France.
30.7	Madrid.....	EAM	Spain.
30	Bergen.....	LGN	Norway.
24	Chelmsford.....	5SW	England.
22.2	Vienna.....		Austria.
18.4	Kootwijk.....	POLL	Holland (State telegraph).
17.2	Nauen.....	AGC	Germany.
15.5	Nancy.....		France.
<i>Australia</i>			
1,250	Perth.....	6WF	
516	Hobart.....	7ZL	Tasmania.
481	Melbourne.....	3AR	
442	Sydney.....	2FC	
395	Adelaide.....	5CL	
385	Brisbane.....	4QG	
371	Melbourne.....	3LO	
353	Sydney.....	2BL	
32.9	Perth.....	6AG	
32.5	Sydney.....	2BL	
32	Melbourne.....	3LO	
28.5	Sydney.....	2FC	
28.5	do.....	2ME	
<i>New Zealand</i>			
420	Wellington.....	2YA	
<i>North and East Africa</i>			
1,850	Carthage.....	TNV	
416	Rabat.....		Morocco.
353	Algiers, P. T. T.....		
305	Casablanca.....	CNO	Do.
90	Nairobi.....		Kenya.
51	Casablanca.....	AIN	Morocco.
42.8	Constantine.....	8KR	Tunis.
<i>South Africa</i>			
443.5	Johannesburg.....	JB	
406.5	Durban.....		
375	Capetown.....		1,500 watts.
32	Johannesburg.....	JB	
<i>India and Ceylon</i>			
800	Colombo.....	VPB	Ceylon.
370.4	Calcutta.....	7CA	
357	Bombay.....	7BY	

LIST OF THE PRINCIPAL BROADCASTING STATIONS OF THE WORLD ARRANGED IN ORDER OF WAVE LENGTH—continued

Wave length (meters)	Location	Call signal	Remarks
	<i>Japan</i>		
400	Osaka.....	JOBK	Experimental station; monthly schedule; date, 15, 16, 17, 18, 19, 20, 21, 22; wave, 30, 60, 85, 70, 80, 60, 35, 70; power, 0.5 kilowatt.
380	Kumamoto.....	JOGK	
353	Hiroshima.....	JOFK	
Variable.	Tokyo.....	JOAK	
345	Tokyo.....	JOAK	
39.5	Taipeh.....	JFAB	
37.5	Hirasio.....	JHBB	
	<i>Java</i>		
31.86	Bandoeng.....	ANE	
17	Malabar.....	ANH	
15.93	Bandoeng.....	ANE	
	<i>South America</i>		
380	Lima.....	OAX	Peru.
291.2	Buenos Aires.....	LOS	Argentina.
210	do.....	LON	Do.

REFERENCES TO CURRENT RADIO LITERATURE

This is a monthly list of references prepared by the Bureau of Standards and is intended to cover the more important papers of interest to professional radio engineers which have recently appeared in periodicals, books, etc. 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, Bureau of Standards Circular No. 138, a copy of which may be obtained for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C. The various articles listed below are not obtainable from the Government. The various periodicals can be secured from their publishers and can be consulted at large public libraries.

R100.—Radio principles

- R113 Eckersley, T. L. The polarization and fading of short wave wireless. *Nature* (London), **121**, p. 707, May 5, 1928. Experimental Wireless (London), **5**, p. 397, July, 1928.
The received rays are shown to be circularly or elliptically polarized and effect which has not been heretofore observed on long distance stations just outside the skip distance. Effect of earth's magnetic field in changing the plane of polarization is followed up for very short waves (14-50 m.). A unidirectional receiving antenna was used. These phenomena attributed to a double refraction phenomenon producing two circular polarized waves.
- R113 Hollingworth, J. The polarization of radio waves. *Proc. Royal Soc. of London*, **119A**, pp. 444-464; June, 1928.
General discussion on polarization of radio waves due to Heaviside layer. A modified method is given for studying the effect of frequencies less than 30 kilocycles.
- R120 O'Neill, H. M. Characteristics of certain broadcasting antennæ at the South Schenectady development. *Proc. Inst. Radio Engrs.*, **16**, pp. 872-889, July, 1928.
Characteristics of various antennæ used for broadcasting. Measurements at the station discussed. Effect of signal strength as measured locally for different antenna heights and effect of high steel towers on antennæ operated at 330 meters are treated.
- R126 Parker, H. Radio grounds for broadcast receivers. *Radio* (San Francisco), **10**, pp. 20-30; August, 1928.
Data on resistivity of soil for best grounds for broadcast reception.
- R130 Prince, D. C. Four-element tube characteristics as affecting efficiency. *Proc. Inst. Radio Engrs.*, **16**, pp. 805-821; June, 1928.
Study of ratio of grid and plate currents of symmetrical tubes (cylindrical grids and plates) shows that it is quite different from that with ordinary commercial tubes. The difference appears to be due to combination of secondary emission from the plate and unsymmetrical arrangement of the grid wires.
- R132 Williams, N. H. The screen-grid tube. *Proc. Inst. Radio, Engrs.*, **16**, pp. 840-843; June, 1928.
Emphasis of paper on the very high amplification (up to eighty times per stage) which can be obtained by use of screen-grid tube. Shows that the current through the tube is approximately independent of the plate voltage, and therefore the voltage amplification is given by the product of the mutual conductance and the load impedance.

R200.—Radio measurements and standardization

- R134.45 David, M. Superreaction. (Superregeneration), *L'Onde Electrique*, **7**, pp. 217-260; June, 1928. Discussion of work done to date on superregeneration.
- R201 Marrison, W. A. Thermostat design for frequency standards. *Proc. Inst. Radio Engrs.*, **16**, pp. 976-980; July, 1928.
Special design of thermostatic control for frequency standardization. Thermal system arranged so that the variations reaching the object to be controlled are materially reduced below those existing at responding element. This is accomplished by using a layer of material which attenuates temperature variations between the object to be controlled and the region about the responding element.
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