RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, March, 1916—No. 15

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Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

29522—16

NEW STATIONS.

LAND STATIONS, APLHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and *latitude* (approximate).	Call signal.	Range.	*System.*	Wave lengths.
Metha Nelson (schooner) [1]	O 158 28 00 N 58 45 00	KMP	20	Composite, 100	300, 500, *600*
Navassa Island [2]	O 74 52 00 N 18 30 00	WQN			

[1] Service, limited commercial; hours, X. Radio station operated and controlled by Alaska Packers' Association. The vessel is moored in Bristol Bay, Alaska, and communicates with stations as Nushagak (KMG) and Clark's Point, Alaska.
[2] Radio station operated and controlled by Snare & Triest Co.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Owner of vessel.
Arborean	WLS	Marconi	300, *600*	American-Hawaiian Steamship Co.
Artisan	WKW	do	300, *600*	Do.
H. H. Rogers	*KSI*	*do*	*300, 600*	Standard Oil Co. *of New Jersey.*
Joseph Pulitzer [1]	WPZ	Kilbourne & Clark, 240.	300, 450, 525, *600*	Port of Portland.
Pearl Shell	WIC	Marconi	300, *600*	Pearl Shell Steamship Co.
Ravalli [2]	WGI	do	300, *600*	Pacific Coast Steamship Co.
Yaguez [3]	KDY	Marconi, 1,000	300, 450, 600	Vacuum Oil Co.

[1] Range, 75; service, PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Port of Portland, owner of vessel.
[2] Range, 100; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
[3] Range, 200; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

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

Call signal.	Name.		Call signal.	Name.	
KDY	Yaguez	b	WKW	Artisan	b
KMP	Metha Nelson (schooner)	c	WLS	Arborean	b
KSI	*H. H. Rogers*	b	*WPZ*	*Joseph Pulitzer*	b
WGI	Ravalli	b	WQN	Navassa Island	c
WIC	Pearl Shell	b			

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Dallas, Tex	5ZC	200, 300, *425*	P	X	Frank M. Corlett.
Kansas City, Mo. (9YU)	9YU	200, *500*	P	X	Field Company A, Signal Corps, National Guard of *Missouri*.
La Grande, Oreg	7ZH	*200*, 300, 425	P	X	Orland M. Heacock.
Leonia, N. J	2ZE	*200*, 325	P	X	Paul F. Godley.
Minneapolis, Minn. (9ZM)	9ZM	200, 425	P	X	Marc Frazer.
Montclair, N. J	2ZI	*200*, 325	P	X	Adams-Morgan Co.
New Bedford, Mass	1ZN	200,300,425,*600*	P	(1)	Milton A. Baylies.
Pullman, Wash	7YI	500, *1,750*	P	X	State College of Washington.
State College, Pa	8XE	Variable	P	(2)	Pennsylvania State College.
Waco, Tex	5YG	200, *300*, 600, 1,625.	P	X	E. T. Genheimer.

[1] Hours, continuous during day and from 6s to 9s. [2] Hours, 7s to 10.30s.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1ZN	First district: New Bedford, Mass.		Seventh district:
	Second district:	7YI	Pullman, Wash.
2ZI	Montclair, N. J.	7ZH	La Grande, Oreg.
2ZE	Leonia, N. J.	8XE	Eighth district: Pennsylvania State College.
	Fifth district:		Ninth district:
5YG	Waco, Tex.	9YU	Kansas City, Mo. (9YU).
5ZC	Dallas, Tex.	9ZM	Minneapolis, Minn. (9ZM).

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.
G. loc.=*Geographical location:* O=*west longitude*, N=north 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.
P=Private.
O=Government business exclusively.
Hours =Hours of operation:
N=Continuous service.
X=No regular hours.
m=a. m. (12m=midday).
s =p. m. (12s=midnight).
Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)
Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

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 July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

AKUTAN, ALASKA.—G. loc., 0 165° 48′ 00″, N 54° 08′ 00″; range, 25; W. L., 300, 500, *600;* hours, X.

GALVESTON, TEX.—Service, PG and special; rates, PG, 6 c. per word, 60 c. minimum per radiogram; special, 6 c. per word, 60 c. minimum per radiogram (for correspondence with Heald Bank Lightship); for vessels reported by the lightship $1 for each report. Note, Press dispatches and special service with Heald Bank Lightship conducted on the 500-meter wave length.

HOBOKEN, N. J.—W. L., 2,240; service, limited commercial.

JUALIN, ALASKA.—G. loc. (approximate), 0 135° 00′ 00″, N 58° 56′ 00″; range, 100; system, Marconi, 120; W. L., 300, *450,* 600, 1,600; service, limited commercial; hours, X. Note, Radio station operated and controlled by Jualin Mines Co.

JUNEAU, ALASKA.—G. loc. (approximate), 0 134° 25′ 00″, N 58° 19′ 00″.

PREMIER (moored schooner).—Strike out all particulars.

SOUTH WELLFLEET, MASS.—System, Marconi, 233 and 240; hours, X.

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 July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ADVANCE.—W. L., 300, 450, *600.*

APACHE (KVA).—System, Marconi, 1,000; W. L., 300, 450, *600;* rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

ARGYLL (WTB).—Range, 150; system, Federal Poulsen Arc, 250; W. L., 300, *600,* 1,800; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co.

BRABANT.—System, Marconi, 1,000; W. L., 300, 450, *600;* rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service 8 c. per word 80 c. minimum per radiogram.

CATANIA.—Range, 150; system, Marconi, 1,000; W. L., 300, 450, *600;* service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

CHINA.—Range, 150; system, Marconi, 1,000; W. L., 300, 450, *600.* Note, China Mail Steamship Co., owner of vessel.

CITY OF EVERETT.—Note, Radio station operated and controlled by Atlantic Communication Co.

DELAWARE SUN.—System, Marconi, 400; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

EDNA.—Strike out all particulars.

EL ALBA.—System, Marconi, 1,000; W. L., 300, 450, *600;* rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

EL NORTE.—System, Marconi, 1,000; W. L., 300, 450, *600;* rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

EURANA.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, *600;* service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

FLORIDIAN.—Range, 300; system, Marconi, 1,000; W. L., strike out 525; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

GARGOYLE.—W. L., 300, 450, *600.*

GEORGIA (KUR).—System, Marconi, 1,000; W. L., 300, 450, *600;* rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

GLENPOOL.—W. L., 300, 450, *600;* hours, X.
GOLD SHELL.—Range, 250; system, Marconi, 1,000; W. L., 300, 450, *600;* service, PG; hours, X.
HARVARD.—System, Federal Poulsen Arc, 360; W. L., 300, *600*, 1,800; rates, 4 c. per word 40 c. minimum per radiogram.
KLAMATH.—System, Marconi, 400.
LYMAN STEWART.—Range, 150; system, Federal Poulsen Arc, 250; W. L., 300, *600*, 1,800.
MONTEREY (KWY).—System, Marconi, 1,000; W. L., 300, 450, *600;* rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
NEWPORT (WWH).—Range, 150; system, Marconi, 480.
NUECES.—Hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram.
OLEUM.—Range, 150; system, Federal Poulsen Arc; W. L., 300, *600*, 1,800; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co.
PONCE.—Hours, X.
SAN PABLO.—Strike out all particulars.
SAN PEDRO.—Strike out all particulars.
SANTA BARBARA.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, *600;* hours, X.
SANTA CRUZ.—Strike out all particulars.
SANTA MARIA (WTF).—Range, 150; system, Federal Poulsen Arc, 250; W. L., 300, *600*, 1,800; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co
SATSUMA.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
SIERRA.—Range, 150; system, Federal Poulsen Arc, 360; W. L., 300, *600*, 1,800; rates, 8 c. per word, 80 c. minimum per radiogram.
SONOMA (WHM).—System, Federal Poulsen Arc, 360; W. L., 300, *600*, 1,800. Note, Radio station operated and controlled by Federal Telegraph Co.
STANLEY DOLLAR.—Strike out all particulars.
SULTANA.—Strike out all particulars.
TEXAS (KUM).—Range, 300; system, Marconi, 1,000; W. L., 300, 450, *600;* service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
TOLEDO.—System, Marconi, 400; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
VENTURA.—Range, 150; system, Federal Poulsen Arc, 360; W. L., 300, *600*, 1,800; rates, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co.
WILHELMINA.—System, Marconi, 1,000; W. L., 300, 450, *600*.
YALE.—System, Federal Poulsen Arc, 360; W. L., 300, *600*, 1,800; rates, 4 c. per word, 40 c. minimum per radiogram.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all particulars following the call signals KLW, KLX, KMP, KZH, WPA, WSD, and WSP.

SPECIAL 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 July 1, 1915, only.]

AGRICULTURAL COLLEGE, N. D.—W. L., 300, *500*, variable.
CANAL DOVER, O.—W. L., *200*, 450.
CINCINNATI, O (8ZF).—W. L., 200, *425*.
GRAND FORKS, N. D.—W. L., *1,500*, variable.
HAMILTON, O.—W. L., 200, 300, *425*.
LOS ANGELES, CAL. (6XL).—W. L., *600*, variable.

NORTHAMPTON, MASS.—W. L., 200, 300, *425*, 600. Note, Radio station operated and controlled by Dean A. Lewis and G. C. Sabin.
ST. LOUIS, MO. (9XC).—W. L., 700, *825*; service, P; hours, X.
SAN FRANCISCO, CAL. (6XD).—Strike out all particulars.
SLINGERLANDS, N. Y.—W. L., 300, 400, *550*, 600, 1,000.
SPRINGFIELD, O.—W. L., 200, 300, *450*.
WHEELING, W. VA.—W. L., *200*, 450.

SPECIAL LAND STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out 6XD (San Francisco, Cal.).

MISCELLANEOUS.

CHANGES IN PERSONNEL.

R. B. Woolverton, radio inspector at San Francisco, Cal., has resigned, effective March 1, 1916, and V. Ford Greaves, radio engineer, will take charge of the San Francisco district temporarily.

CUTTYHUNK ISLAND RADIO STATION ALLOWED TO OPERATE.

The United States Coast Guard has entered into an agreement with Chester Veeder granting him permission to operate his radio station at Cuttyhunk Island under the supervision of the Coast Guard. Mr. Veeder will be allowed the privilege of communicating with amateur stations for practice, or for other purposes, using his amateur call letters, provided the same is not commercial business, and provided the wave length used is 200 meters or lower and does not interfere with commercial or Government radio stations. The superintendent of the Naval Radio Service has assigned the call letters "NSA" to this station when it is operating as a Government station.

RADIO COMMUNICATION CHARTS TO BE ISSUED GRATIS.

The superintendent of the Naval Radio Service announces that, commencing with March, a complete communication chart will be issued to the public gratis upon request. This chart includes the various merchant vessels in North and South American trade, the time and date they may be reached by radio, the coastal stations through which the traffic should be routed, and rates for radio land-line service.

KEY WEST NAVAL RADIO STATION OPEN TO COMMERCIAL TRAFFIC.

The Naval Radio Service has requested the Bureau to issue instructions to operators on all ships to the effect that the Key West station is open to commercial traffic and handles ships' position reports, which are forwarded to the New York Herald not later than 8 p. m. daily.

SPANISH INVENTION OF IMPROVED RADIOGRAM RECEIVER.

El Imparcial, one of the leading dailies of Madrid, states, under date of January 24, 1916, that the Minister of Public Works, after examination and report by the Centro Tecnico de Aeronauticos (a bureau

of the ministry), has approved a radiogram receiver of a type that does away with earpieces. It is said that the radius of the new apparatus is in excess of 5,000 kilometers (the kilometer being the equivalent of about ⅝ mile), and that it is contemplated to institute radiographic service between Spain and the United States.

ACCESSIONS TO LONDON RADIOTELEGRAPHIC CONVENTION.

The following countries have, since June 28, 1915, acceded to the International Radiotelegraphic Convention signed at London on July 5, 1912: Bolivia, October 13, 1915; Peru, July 12, 1915.

AMENDMENTS.

The Radio Laws and Regulations of the United States, edition of July 27, 1914, are hereby amended as follows:

Page 56, parenthetical clause, lines two and three, paragraph 63, should read:

SEC. 4, fifteenth regulation, act of August 13, 1912.

WIRELESS AS A SAFEGUARD TO LIFE AT SEA.

[The marine disasters described below are in addition to those listed in a publication of the Bureau of Navigation, Radio Service, entitled "Important Events in Radiotelegraphy," dated Feb. 1, 1916.]

1909.

June 10.—Steamship *Slavonia* stranded off Azores. Marconi operator, Stanley Coles, summoned aid by wireless and 410 lives were saved.

1910.

September 9.—Pere Marquette Car Ferry *No. 18* sank in middle of Lake Michigan. The SOS call was heard by Ludington wireless station and steamer *Pere Marquette No. 17*. Latter rescued four passengers and two of crew. All others lost their lives, including wireless operator, S. S. Sczpanck.

1911.

November 22.—Steamship *Prinz Joachim* struck rocks at Atwood Bay, Samana Islands. Wireless communication, established direct with New York City, resulted in the saving of all on board.

1912.

February 22.—Steamship *Madison* rammed by steamship *Hipplayit Dumois*. Wireless was the means of saving the entire crew and all the passengers.

April.—Steamship *Denver* in collision with steamship *El Sud* off Galveston Bar. *El Sud* not equipped with wireless, but assistance was sent to *El Sud* in response to *Denver's* calls, and the wrecked vessel was towed into Galveston.

August 16.—Steamship *Pleiades* ran ashore in Magdalena Bay. Operator G. Bennett summoned aid by wireless and all were saved.

December 5.—Steamship *Easton*, of the United States & Dominion Transportation Co., struck on Iroquois Reef, Lake Superior. Wire-

less calls were answered by stations at Port Arthur, Ontario, and Duluth, Minn. Tugs were sent to assistance of stranded steamer in answer to wireless calls and the *Easton* was released with slight damage.

1913.

April.—The *Robert Dollar* while crossing the Columbia River bar struck heavily but could not locate any damage and proceeded on her voyage to Japan. When 100 miles offshore her stern post and rudder broke off close up to her counter and dropped into the ocean, leaving her helpless in a rough sea and a high wind. Communication with shore was established by radio and a tug was sent to assistance of the helpless steamer.

June 13.—Steamship *Yukon* struck reef off Alaskan coast and sank. The radio operators summoned aid by wireless and all were saved.

June 19.—Steamship *Riverside* wrecked and sank off California coast. Wireless was instrumental in saving the lives of all on board.

1914.

August 17.—Steamship *Prince Albert* ran ashore on Butterworth Rocks during dense fog. Assistance was summoned by wireless and all passengers and crew were saved.

August 25.—Steamship *Admiral Sampson* sank after collision with the steamship *Princess Victoria* off Point No Point, near Seattle, Wash. Eight lives were lost. SOS sent out by *Princess Victoria* was picked up by a radio station in Seattle and also by the steamship *Admiral Watson.* A tug was sent from Seattle to the assistance of the *Admiral Sampson.*

September 1.—Steamship *City of Chicago* was reported on fire 12 miles out from Chicago. Wireless was utilized and the ship returned safely to port.

September 18.—Steamship *Francis H. Leggett* sank 60 miles south of Columbia River. The radio station at Astoria, Oreg., intercepted a message to that effect which had evidently been sent from a foreign cruiser to a Canadian station. The Astoria station notified all ships in the vicinity to look for survivors. Two persons were rescued.

October 11.—The steamship *Almirante,* of the United Fruit Co., stranded at Cartagena Harbor; 66 passengers and 90 persons in crew. No lives lost.

October 15.—Steamship *Metapan* rammed and sunk by *Iowan* at the entrance of Ambrose Channel, New York. SOS was answered by vessels in various parts of the harbor.

November 10.—Steamship *Lakeland* ran ashore 8 miles from Alpena. Radio operator sent out distress signals which were answered by shore stations at Cleveland, Buffalo, and Tobermory. The tug *Favorite* was informed and went to *Lakeland's* assistance. Constant communication was maintained between the tug and the distressed vessel.

November 23.—Steamship *Hanalei* struck on reef near Bolinas, Cal. SOS answered by radio station at San Francisco, revenue cutter *McCulloch,* oil tankers *El Segundo* and *Richmond.* Heavy seas and reefs prevented their going to assistance of the distressed vessel which was slowly being pounded to pieces. The wireless cabin was washed away, but Operator Lovejoy established communication with

shore by means of pocket flashlight and directed work of rescue. Forty-three persons were saved.

December 30.—Steamship *Colorado* became disabled off Little Egg Harbor, N. J.; crew of 35; no loss of life. In answer to wireless calls, tugs brought vessel into New York.

1915.

January 10.—Steamship *Mexicano*, Pierce Navigation Co., ran ashore on Tampico, Mexico, Breakwater. The radio operator sent out wireless distress calls, which were answered by Mexican Government station at Tampico. The vessel was floated by tugs.

January 26.—Steamship *Washingtonian* sank after collision with schooner *Elizabeth Palmer* off Delaware Breakwater. All the crew arrived in the ship's boats on the Fenwick Island lightship, from which vessel wireless messages were sent to the steamship *Hamilton*, which stopped and took the wreck victims to New York.

February 4.—Steamship *Colon* stranded off bar at Topolobampa. SOS call answered by U. S. S. *Maryland*, *Korrigan III*, and the U. S. S. *Annapolis*. Passengers and crew were transferred to the *Maryland* and the *Annapolis*.

February 4.—The oil tanker *Chester*, though not equipped with wireless, attracted the attention of the American liner *Philadelphia* by sending the SOS on Morse lights. The radio operator of the *Philadelphia* established communication by this means and 33 men were rescued from the sinking ship.

March 25.—The steamship *Parisian* grounded in Mississippi River. While in this position she was struck, on March 27, by the steamship *Heredia*, of the United Fruit Co. Wireless brought prompt aid to the two distressed vessels.

March 27.—The steamship *Heredia* struck the steamship *Parisian*. (See above.) The *Heredia* had 164 passengers aboard.

April 1.—Steamship *Mexico*, Pacific Steam Navigation Co., ran aground near Southwest Pass, La. Wireless was instrumental in bringing tugs to float vessel.

April 14.—The steamship *Seminole* wrecked off Yuma Bay. Wireless was utilized, but passengers reached shore safely before rescuing vessels arrived.

April 21.—Steamship *San Zeferno* grounded in Galveston Harbor; crew of 40 aboard. Wireless was used to report, but vessel was found to be in no danger.

May 7.—The steamship *Asuncion* ran ashore off Fraser River. Wireless was utilized in summoning tugs to her assistance.

June 16.—Steamship *Alabama* was struck by steamship *Delaware* 53 miles south of Scotland lightship in dense fog. Neither vessel, however, was badly damaged. Wireless was used to notify owners.

July 2.—Steamship *Panuco* grounded at entrance to South Pass, La.; crew of 35 aboard. Wireless used to bring prompt aid to float vessel.

August 23.—Steamship *Metapan* grounded in Cartagena Harbor. There were 45 passengers and 19 in crew. The cargo was promptly discharged into lighters and steamer subsequently floated.

September 13.—Steamship *Sant Anna*, of the Fabre Line, was on fire in midocean, latitude 40° 23′ north, longitude 47° 30′ west. The SOS call brought the *Ancona*, which took off 600 persons and

convoyed the distressed vessel to port. The *Sant Anna* carried 1,700 persons in addition to the crew.

November 9.—Steamship *Lievatta* (Italian), loaded with cased kerosene and gasoline, caught fire 65 miles east of Sabine Bar, Tex. Reported by wireless by steamship *Gulfstream*, which vessel stood by the burning steamer until other assistance, summoned by wireless, arrived from Port Arthur and Galveston. Without the assistance thus secured the vessel and cargo would have been a total loss.

December 1.—Steamship *Flamenco* ran aground at South Pass, La. The accident was reported by wireless and rescue soon followed.

December 13.—Steamship *Antilla* collided with a barge beached off Sea Gate. Wireless was instrumental in saving the cargo.

1916.

January 17.—Car ferry *Pere Marquette No. 19* ran aground 4 miles north of Ludington, Mich., at 7.30 p. m. Wireless communication was established with Ludington and Pere Marquette car ferries *No. 17* and *No. 18*, which were advised not to come in close on account of shoal water. Wireless communication was maintained throughout salvage operations.

January 22.—Steamship *Centralia*, when off Columbia River, broke her rudder and the heavy seas washed away deck load and flooded the engine and wireless rooms. The aerial was carried away, but repaired by the operator, Earl Diamond, who then called SOS. The call was immediately answered by steamships *Governor*, *Adeline Smith*, *Yosemite*, *Admiral Schley*, *Eurana*, and land stations at Marshfield and Eureka. Weather and sea finally moderated and the ship made San Francisco without assistance.

February 1.—Steamship *Tapata Maru* was in collision with the steamship *Silver Shell*. SOS was answered by radio stations at Boston and Cape Race and various steamers. The crew was rescued by the *Silver Shell*.

February 7.—Steamship *Caloria*, of the Standard Oil Transportation Co., ran aground at the head of South Pass, La. A number of tugs and lighters responded to the SOS call and the 31 persons on board the wrecked vessel were rescued.

February 25.—The steamship *Cretan*, of the Merchant & Miners' Line, collided with an unknown vessel off Diamond Shoals, and was thereby rendered a helpless wreck. The 27 passengers aboard were safely transferred to the tramp steamer *Dorothy* which was towed into port by the Coast Guard cutter *Onondaga*, the vessel responding to the *Cretan's* wireless call for help.

February 26.—The French auxiliary cruiser *Provence II* (so designated to distinguish her from French battleship *Provence*) was torpedoed and sunk in the Mediterranean Sea. French and British patrol boats, which were summoned by wireless, rescued 870 persons.

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