



**GENERAL**  **ELECTRIC**  
**RADIO LOG**

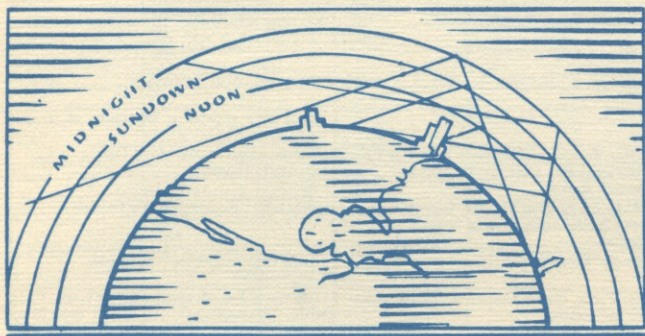
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# SHORT WAVES

## WHAT THEY ARE AND HOW THEY ACT

All radio waves travel at the same speed as light . . . 186,000 miles a second. Each complete radio wave is known as a cycle. The number of waves or cycles sent out each second by a station is called its frequency. "Kilo" means a thousand. Therefore, a kilocycle means a thousand waves, or cycles, a second.



### KILOCYCLES AND MEGACYCLES

In exploring the mysteries of short waves, you will sometimes find stations listed by frequency (kilocycles) and other times by wavelengths (meters). To convert kilocycles into meters, simply divide 300,000 by the figure you have. Thus, Station RV59, which sends out 6000 kilocycles per second, uses a wavelength of 50 meters ( $300,000 \div 6000 = 50$ ).

To reduce the size of the numbers used to indicate frequency, sometimes a station in the higher frequencies is listed in megacycles. A megacycle is simply a thousand kilocycles. The Moscow station with a frequency of 6000 kilocycles may be listed as 6 megacycles ( $6000 \div 1000 = 6$ ).

Tuning dials on all General Electric receivers are marked in kilocycles for the lower frequencies and in megacycles for the higher frequencies. To simplify tuning, the important short-wave channels and services are also indicated on the dials in meters.

### FREQUENCY RANGES

There are no definite frequency limits for what is commonly known as "short-wave" but it is generally understood that short waves, as such, are those represented by the frequencies extending from approximately 4000 kilocycles through 30,000 kilocycles. Between the end of the standard broadcast band, approximately 1500 kilocycles and the beginning of the short-wave band, are the police and some amateur transmissions, but these, strictly speaking are not "short-wave." All frequencies higher than 30,000 kilocycles are commonly known as ultra short waves and are reached by the 5-band all-wave General Electric receivers.

### BEHAVIOR OF SHORT WAVES

When short waves leave the station antenna they are in two divisions. One, called the ground wave,

travels close to the earth and is soon absorbed by buildings, metal deposits and natural screens. The other sets off into the air at an angle determined by the design of the antenna and the frequency of the transmitted wave and travels in a straight line until, at a point probably 75 to 125 miles up in the air, it encounters that region known as the Heaviside layer, which is thought to be an area of highly charged particles which cannot be penetrated by the short waves. This layer acts as a reflector and turns the wave back toward the earth. As a result, the waves which started away from the ground finally come back to the earth's surface many hundreds of miles from their starting point. The distance between the station and the point of return to the earth is called the "skip distance" and in this area it is not possible to hear the station with any degree of reliability. This explains why a short-wave station of relatively low power is often heard with good volume several thousands of miles away, whereas its signal may be completely missing only fifty miles or so from the transmitter.

### THE HEAVISIDE LAYER

The height of the Heaviside layer varies with the time of day and the season. Because of this, the signals change in strength as the hours pass from daylight to darkness. To overcome this objection, radio engineers have worked out charts which give the best wavelength to use at every hour of the day, and these charts are followed closely in selecting the frequency best suited for any particular broadcasting schedule.

For instance, the waves from 15 to 25 meters give best service during daylight hours but are practically useless after sundown. When the sun sets, the stations transfer their activities to the 30- to 50-meter waves and continue there until the sun is about to rise again.

### DR. E. F. W. ALEXANDERSON

Long before the general public took any interest in short waves, the leading scientists of the world were studying their action. Dr. E. F. W. Alexanderson of the General Electric Company erected a short-wave laboratory to study short waves. He devised a "directional antenna," which displayed remarkable ability in reaching remote points, and made possible the establishment of continuous contact with the first Byrd expedition to the Antarctic in 1929.

### DIRECTIONAL ANTENNA

These antennas are now in world-wide use, and by means of them, Germany and England and many other countries are able to send you fine programs with a volume and fidelity that sometimes equal those of programs from your local stations . . . provided you have a modern receiver, like the General Electric.

# S-W STATION IDENTIFICATION CHART

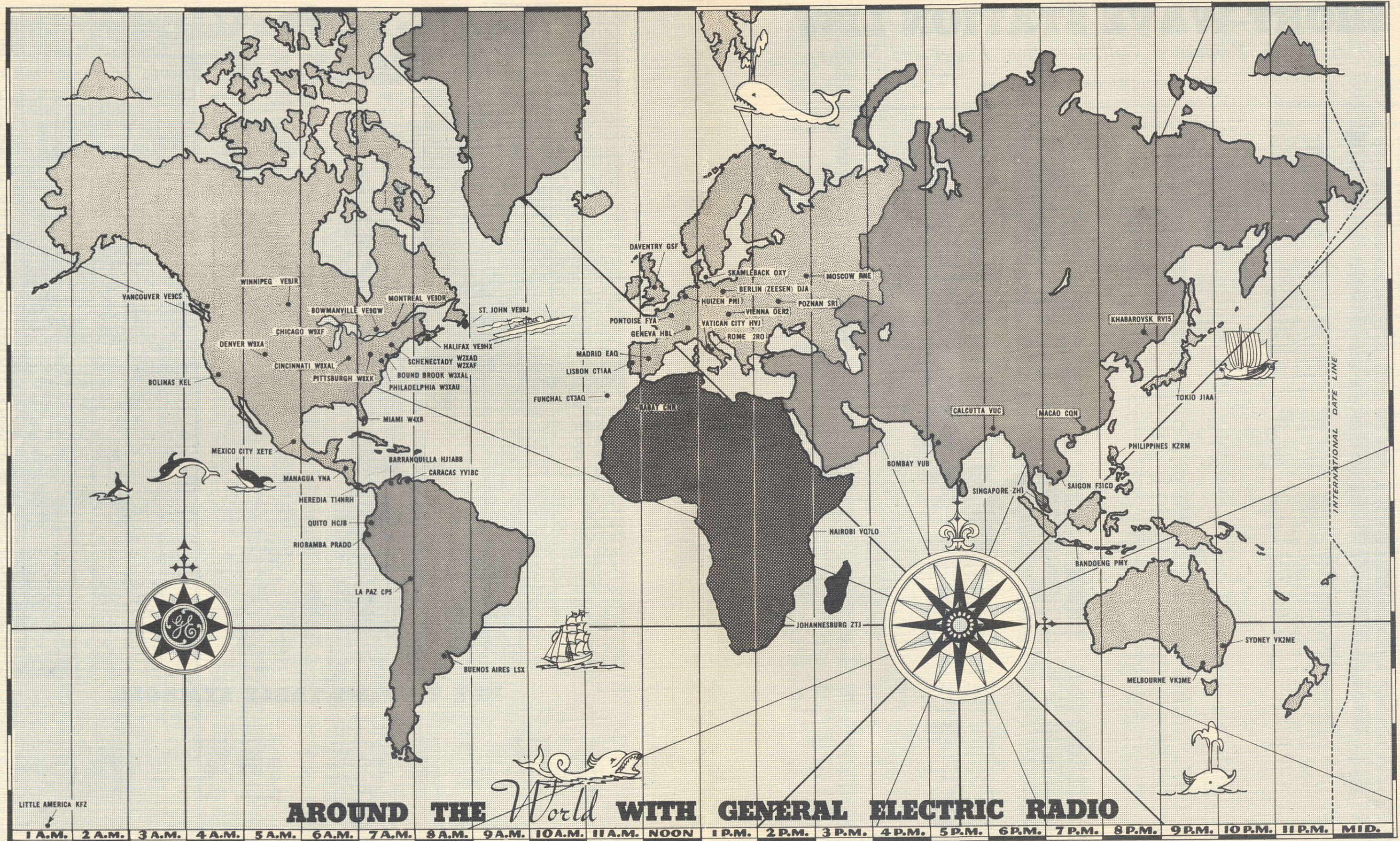
Call Letters	Address	Name	Announcement	Identifying Signals
CJRO, CJRX	James Richardson & Sons., Ltd., 155 Royal Alexandra Hotel, Winnipeg, Manitoba			Begins with "O Canada". Strikes 4 gongs
CNR	L'Inspecteur General, Directeur de L'Office des Postes, Rabat, Morocco	Radio-Maroc	"Ici Radio-Rabat dans Maroc"	Metronome between selections, finishes with "La Marseillaise"
COC	Short Wave Radio Station, COC, P.O. Box 98, Havana, Cuba		"Seh-O-Seh, Habana, Cooba." Sometimes in English	
COH	Calle B, No. 2, Vedado, Havana, Cuba		"Estacion de onda Corta Seh-O-acha," Spanish and English	
CP5, CP6, CP7	Compania Radio Boliviana, Calle Socabaya 231, La Paz, Bolivia	Radio Illimani	"Radio Illimani"	
CQN	Postmaster General, Macao, Asia			
CR6AA	Caixa Postal 118, Lobito, Angola, Port. W. Africa			
CR7AA	Gremio dos Radiofilos da Colonia de Mozambique, Portuguese, E. Africa		"Radio Lorenz Marques"	
CT1AA	Av. Duque de Avila, 86 r/c, Lisbon, Portugal	Radio Colonial	"CT1AA, Radio Colonial"	3 cuckoo calls
CT1CT	Oscar G. Lomelino, Rua Gomes Freire 79, Lisbon, Portugal			
CT1GO	Portuguese Radio Club, Parede, Portugal			
DFB	Reichspostzentramt, Berlin, Germany			Three tone whistle at beginning of transmission: D, C, G.
DJA, DJB, DJC, DJD, DJN, DJQ	Reichsrundfunkgesellschaft, Haus des Rundfunks, Berlin-Charlottenburg, 9, Germany		"Dear Friends and listeners in North America," etc., German, English and Spanish spoken	Chimes—Eight notes of old German song, frequently repeated
EAQ	Station EAQ, Apartado Correos 951, Madrid, Spain		"Akee Ay-Ah-Coo Madrid, Espana," Big Ben Chimes Announces in Spanish and English	Ends with "Rachmaninoff's Prelude"
FIQA	Dept. of Mail, Telegraph & Telephone, Tananarive, Madagascar		"Radio Tananarive."	Opens with "Ramona," ends with "Marseillaise"
FYA	Station Radio-Coloniale, 98 Bis. Boulevard Haussmann, Paris, (8c), France	Radio-Coloniale	"Ici Parea, Radio Coloniale," Does not use call letters	Chimes of French clock, quarter hours. Ends with "Marseillaise" and "Bon soir Mesdames, Bon soir Mesdemoiselles. Bon soir Messieurs"
GSA, GSB, GSC, GSD, GSE, GSF, GSG, GSH	British Broadcasting Corp., Broadcasting House, London, W1, England		"This is London calling you"	Starts and Finishes with Big Ben's gong. Sometimes "God Save the King"
G6RX	Mr. G. A. Struthers Rugby Radio Station, Hillmorton, England			
HAS, HAT	A. Magyar Kir Posta, Kiserleti Allomasa, Gyali-ut 22, Budapest, IX, Hungary			
HBL-HBP	M. G. Gallarati, Information Section, League of Nations, Geneva, Switzerland	Radio Nations	"Radio Nations," Does not use call letters; speaks English, Spanish and French	
HCJB	Radio Station HCJB, Casilla 691, Quito, Ecuador	La Voz de los Andes	"La Voz de los Andes"	Two tone chime, announces in Spanish and English
HC2ET	Radiodifusora HC2EP, Box 249, Guayaquil, Ecuador	El Telegrafo		
HC2RL	Dr. Roberto Levi, Box 759, Guayaquil, Ecuador	Quinta Piedad	"Hello, America," Announce in English and Spanish	Ecuadorian Anthem
HIH	San Pedro de Macoris D.R. La Voz de Iguano	La voz de Iquano	Spanish and English every half hour: "HIH Santo Domingo, operating on a frequency of 6818 kc"	
HIZ	Secretaria de Estado, De Trabajo y Comunicaciones, Santo Domingo, Dominican Republic			
HI1A	Rafael Western, Box 423, Santiago de los Caballeros, Dominican Republic	La Voz del Yaque	"La Vox del Yaque"	Plays "Anchors Aweigh" at start and finish of program
HI4D	La Voz de Quisueya, Santo Domingo D.R.			
AJ1ABB	Elias J. Pellet, Box 715, Barranquilla, Colombia	La Voz de Barranquilla	"La Voz de Barranquilla, Acha-hota-uno-ah-beh-beh," announces in Spanish and English	Chimes like NBC
HJ2ABA	Pompilio Sanchez C., Tunja Boyaca, Colombia	La Voz del Pais	"La Voz del Pais"	
HJ3ABD	Colombia Broadcasting, Calle 16, No. 5-40, Bogota, Colombia	Ecos de Calle	"Atea-Kah-Effeh"	Gong
HJ4ABE	Cia. Radiodifusora de Medellin, Medellin, Colombia			
HJ4ABN	Manizales, Colombia	Ecos del Occidente	"Ecos del Occidente"	
HJ5ABC	R. Angulo Radiodifusora HJ5ABC, Cali, Colombia	La voz de Colombia		
HJ5ABD	Cali, Colombia		"Achay-jay-sinko-ah-bay-day"	
HP5B	Estacion Miramar, Box 910, Panama City.	The Voice of Panama	"Estacion Miramar", the voice of Panama	
HVJ	Station HVJ, Vatican City, Italy	Laudetur Jesus Christus		Clock's ticks in studio. Announcer begins with "Pronto, pronto, Radio Vaticano," ends with "Laudetur Jesus Christus"
I2RO (2RO)	Ente Italiano Audizioni Radiofoniche, Via Montello No. 5, Rome, Italy	Prato Smeraldo	"Radio Roma Napoli." Lady announcer, sometimes a whole string of Italian cities; does not use complete call letters. During American hour from Rome a man announcer says "2 R O, Rome"	
JES			"Osaki". Announcer speaks English and Japanese, announcer seems to be American	
JVR	Kemikawa Sending Station, Kemikawa-Cho, Chiba-Ken, Japan			3 gongs—2 gongs, 1 pause, 1 gong, 1 pause then 1 chime
LKJ1	Ministere du Commerce du Royaume de Norvege, Oslo, Norway		"Broadcasting Oslo"	
LSY	Transradio Internacional, San Martin 329, Buenos Aires, Argentina			Begins with zylphone notes E, E, G sharp, A
OAX4B	Messrs Grellaut & Co., Apartado 1242, Lima, Peru			
OAX4D	D. U. S. A., All-American Cables, Inc., 835, Lima, Peru	La Voz de Peru	"Radio D. U. S. A., La Voz de Peru". In Spanish and English	
OER2	Oesterr. Radioverkehrs, A.G., Johannesgasse 4b, Vienna, Austria		"Hallo, Hier Radio Wien"	Metronome can be heard
ORP, ORK, ORG	Regie des Telegraphes et des Telephones. Direction des Radiocommunications, Brussels, Belgium	Belradio	"Ici Bruxelles I. N. R. emission speciales pour" la Congo par la station de Ruys-selede	Finishes with "La Brabanconne"

# S-W STATION IDENTIFICATION CHART

Call Letters	Address	Name	Announcement	Identifying Signals
OXY	Stateradiofonien, Heibergsgade 7, Copenhagen, Denmark			Chimes from the Town Hall clock at 6 p. m. EST
PCJ	Philips Radio, Emmasingel 29, Eindhoven, Holland			
PHI	PHOHI Studios, Hilversum, Holland		Announces in Dutch, Malay, German, French, English, Spanish and Portuguese. "Hallo, Hallo PHI, Holland," also "This is Huizen"	Signs off with Dutch National Hymn
PLV, PMY, etc. Bandoeng Stations	Mr. H. van der Veen, Engineer in Charge, Java Wireless Stations, Bandoeng, Java, D. E. I.			PLV plays 3 records, starts calling on 4th record; PLF, PMC begin transmissions with 3 auto horn notes: F, D, C.
PRADO	Estacion Radiodifusora del Prado, Apartado de Correos 98, Riobamba, Ecuador	El Prado	"Estacion del PRADO, Riobamba, Ecuador." In Spanish and English	
PRF5	International Radio Co. of Brazil, Rio de Janeiro, Brazil	La Presse Nacional	"Short-wave Station PRF5, F for Friday, Rriio-de-Janeiro, Brazil"	3 chimes—announces in Portuguese, French, English, and Spanish
RW15	Far East Radio Station, Khabarovsk, Siberia			
RW59	Radio Centre, Solianka 12, Moscow, USSR	Workers of the World	"Moscow Calling." Announces in German, French, Spanish, Hungarian, Swedish and English on different days of the week	Plays the "International" at beginning and end of transmissions
TGX	M. A. Mejicano Novales, El Liberal Progresista, Guatemala City, Guatemala			Two tone high frequency signals
TI2EP	E. Pinto Hernandez, Apartado de Correos 257, San Jose, Costa Rica	La Voz del Tropico	"La Voz del Tropico"	
TI4NRH	Amando Cespedes Marin, Heredia, Costa Rica	Sol Lucet Omnibus	English and Spanish spoken	Bugle calls and bird calls, finishes with March of Costa Rican Republic
VE9CA	Calgary, Alberta	Voice of the Prairie	"Voice of the Prairie"	
VE9CS	Radio Service Engineers, Ltd., 734 Davie Street, Vancouver, B. C., Canada			Sounds two bells between selections
VE9DR	Canadian Marconi Co., P. O. Box 1690, Montreal, Quebec, Canada			
VE9GW	R.R. No. 4, Bowmanville, Ont., Canada		"Canadian Radio Commission Station VE9GW at Bowmanville, Ontario, Canada"	Has that "empty hall" effect during announcements
VE9HX	The Maritime Broadcasting Co., Ltd., Box 998, Halifax, Nova Scotia, Canada	The Key Station of the Maritimes		4 strokes on gong at beginning of transmission
VK2ME	Amalgamated Wireless (Australasia) Ltd., Box 2516 BB G.P.O., Sydney, Australia	The Voice of Australia	"Vee-Ki-2ME, Sydney Amalgamated Wireless of Australia"	Call of laughing notes of kookaburra bird finishes with "God Save the King"
VK3ME	Melbourne, Australia		"Vee-Ki-3-ME, Melbourne Amalgamated Wireless of Australia"	Begins with clock chimes
VK3LR	Postmaster-General's Dept., Treasury Gardens, Melbourne C2, Victoria Australia			
VPD	Amalgamated Wireless (Australasia) Ltd., Suva, Fiji	Radio Suva		
VQ7LO	Cable and Wireless Ltd., P.O. Box 777, Nairobi, Kenya Colony, British East Africa			
VUB	Indian State Broadcasting Service, Irwin House, Sprott Road, Ballard Estate, Bombay, India			
W1XAL	World Wide Broadcasting Corp., 70 Brookline Ave., Boston, Massachusetts		"This is international S.W. Station W1XAL at Boston"	
W1XAZ	Radio Station W1XAZ, Bradford Hotel, Boston, Massachusetts		"Westinghouse Stations WBZ, WBZA and Short-Wave station W1XAZ"	
W2XAF-W2XAD	General Electric Co., Schenectady N. Y.	The voice of electricity	"This is WGY and W2XAF," or "This is WGY and W2XAD"	Begins each program with a discharge of 10 million volts
W2XE	Columbia Broadcasting System, 485 Madison Avenue, New York City		"This is the Columbia Broadcasting System SW Experimental station W2XE"—in various languages	
W3XAU	WCAU Broadcasting Co., 1622 Chestnut Street, Philadelphia, Pa.		"This is the Columbia Broadcasting System S.W. Station W3XAU at Philadelphia"	
W3XAL, W3XL	National Broadcasting Co., Rockefeller Plaza, New York City		"W3XAL, Bound Brook, New Jersey"	
W8XAL	Crosley Radio Corp., Cincinnati, Ohio	The Nation's Station	"The Nation's Station WLW and S.W. Station W8XAL"	
W8XK	Westinghouse Elec. Mfg. Co., Hotel William Penn, Pittsburgh, Pa.		"This is Westinghouse Station KDKA and its S.W. complement, W8XK"	NBC chimes
W9XAA	The Voice of Labor, 666 Lake Shore Drive, Chicago, Illinois	The Voice of Labor	"WCFL and W9XAA, The Voice of Labor"	
W9XF	National Broadcasting Co., Inc., Merchandise Mart, Chicago, Illinois		"W9XF, Chicago, 6100kc"	NBC chimes
XEBT	B. Sancristobal, Apartado 79-44, Mexico D.F., Mexico	El Buen Tono	Announce in Spanish and English	Blowing of automobile horn—like very fast "cuckoo" calls, repeated twice; sometimes a siren. Sign off with Ave Maria
XQAJ	80 Love Lane, Shanghai, China			
YNLF	Sr. M. Le Franc, 206 Calle 15 de Septiembre, Managua, Nicaragua	La Voz de Nicaragua	"La Voz de Nicaragua"	
YV2RC	Broadcasting Caracas, Apartado de Correos 290, Caracas, Venezuela	Broadcasting Caracas	"Ee-vay-dos-erray-seh broadcasting Caracas"	Chimes each quarter hour. Sign off with Venezuela Anthem
YV3RC	Caracas, Venezuela	Radiodifusora, Venezuela	Ee-vay-trays-erray-say	Plays bells on the hour. Two chimes, repeated, before announcement
YV5RMO	Sr. S. M. Vegas, Apartado de Correos 214 Maracaibo, Venezuela	Ecos del Caribe	"Ecos del Caribe"	Strikes gong before announcing
YV6RV	Valencia, Venezuela	La Voz de Carabobo	"La Voz de Carabobo, Ee-vay sez-erray-vay"	Strikes gong before announcement
ZGE	Secretary for Postal Affairs for S.S. and F.M.S., Kuala Lumpur, Federated Malay States			
ZHI	Radio Service Co. of Malaya, 2 Orchard Road, Singapore, Malaya			
ZTE	Malayan Amateur Society, Singapore, Malaya			
ZTJ	African Broadcasting Co., Ltd., Box 4559, Johannesburg, Union of South Africa			







**SIMPLIFIED BROADCASTING TIME-TABLE**

This map is divided into time belts by vertical black lines. Each belt removed from the one in which you are located indicates a time difference of one hour. To determine the time to tune in for a specified broadcast: when station is east of you, subtract from the scheduled broadcast time as many hours as you are belts removed from the station; when station is west of you, add.









Meters Kc	Call	Location	Kw	Service, etc.	Meters Kc	Call	Location	Kw	Service, etc.
49.97	6,000 FIQA	Tananarive, Madagascar	0.4	Broadcast	62.53	4,795 VE9BY	London, Ont.	...	Broadcast
49.97	6,000 ...	St. Denis, Reunion	0.09	Broadcast	62.60	4,785 CZA	Drummondville, Que	10.0	Phone to ships
49.97	6,000 EAJ25	Barcelona, Spain	...	Broadcast	62.86	4,770 ZL2XX	Wellington, New Zealand	...	Phone
49.97	6,000 ZL3ZC	Christchurch, New Zealand	0.25	Broadcast	63.10	4,752 WOO	Ocean Gate, N. J.	20.0	Phone
49.97	6,000 RW59	Moscow, U.S.S.R.	20.0	Broadcast	63.10	4,752 WOY	Lawrenceville, N. J.	20.0	Phone to England
49.97	6,000 YV4BSG	Caracas, Venezuela	...	Broadcast	64.48	4,650 HC2EP	Guayaquil, Ecuador	...	Broadcast
50.00	5,996 PRA8	Pernambuco, Brazil	0.5	Broadcast	66.45	4,512 ZFS	Nassau, Bahama Is.	...	Phone
50.11	5,984 TGX	Guatemala City, Guatemala	...	Broadcast	67.07	4,470 YID	Bagdad, Iraq	...	Broadcast
50.10	5,984 YV4RC	Caracas, Venezuela	0.1	Broadcast	67.68	4,430 DOA	Doberitz, Germany	...	Phone
50.14	5,980 CT1AA	Lisbon, Portugal	...	Broadcast	68.61	4,370 ...	Semarang, Java	0.2	Broadcast
50.14	5,980 KECW	Xantocam, Mexico	0.01	Broadcast	69.24	4,330 ...	Batavia, Java	0.15	Broadcast
50.14	5,680 HIX	San Domingo, D. R.	...	Broadcast	69.44	4,320 GDB	Rugby, England	15.0	Exp.
50.14	5,980 HJ3ABH	Bogota, Colombia	0.25	Broadcast	69.46	4,316 YNLF	Managua, Nicaragua	...	Broadcast
50.22	5,970 YNLF	Managua, Nicaragua	0.1	Broadcast	69.81	4,295 WTDX	St. John, Virgin Islands	0.25	Exp.
50.23	5,969 HVJ	Vatican City	10.0	Broadcast	69.81	4,295 WTDV	St. Thomas, Virgin Islands	0.25	Exp.
50.47	5,940 HJ1ABJ	Santa Marta, Colombia	0.25	Broadcast	69.81	4,295 WTDW	St. Croix, Virgin Islands	0.25	Exp.
50.56	5,930 HJ4ABE	Medellin, Colombia	0.1	Broadcast; evenings	70.00	4,283 IBEJ	S.S. Conte Rosso	...	Phone
50.90	5,890 JIC	Taihoku, Formosa	...	Phone	...	ICEJ	S.S. Rex	...	Phone
51.08	5,870 HJ2ABC	Cucuta, Colombia	...	Broadcast	...	IDLI	S.S. Conte di Savoia	...	Phone
51.16	5,860 XDA	Mexico, D. F.	...	Phone	70.17	4,273 RW15	Khabarovsk, U.S.S.R.	20.0	Broadcast
51.23	5,852 WNB	Lawrenceville, N. J.	...	Phone	70.55	4,250 HJA3	Barranquilla, Colombia	...	Phone
51.25	5,850 YV5RMO	Maracaibo, Venezuela	0.3	Broadcast	71.78	4,177 GFVW	S.S. Majestic	...	Phone
51.29	5,845 KRO	Kahuku, Hawaii	40.0	Phone	...	GLSQ	S.S. Olympic	...	Phone
51.64	5,805 CSN	Rossland, B. C.	...	Phone	...	GDLJ	S.S. Homeric	...	Phone
51.69	5,800 VK3LR	Lyndhurst, Vic, Australia	...	Exp.	...	GTSD	S.S. Monarch of Bermuda	...	Phone
51.69	5,800 TI4NRH	Heredia, Costa Rica	...	Broadcast	...	GKFY	S.S. Minnetonka	...	Phone
51.87	5,780 OAX4D	Lima, Peru	20.0	Broadcast	...	GMBJ	S.S. Empress of Britain	...	Phone
51.90	5,777 TIXGP3	San Jose, Costa Rica	...	Broadcast	...	DDAC	S.S. Europa	...	Phone
51.97	5,769 XAM	Merida, Yucatan	...	Phone	...	DDAS	S.S. Bremen	...	Phone
52.47	5,714 CFU	Rossland, B. C.	...	Phone	...	DDBR	S.S. Berlin	...	Phone
52.47	5,714 HCJB	Quito, Ecuador	...	Broadcast	...	DDCB	S.S. Columbus	...	Phone
52.67	5,692 FIQA	Tananarive, Madagascar	0.5	Broadcast	...	DDCG	S.S. Resolute	...	Phone
52.67	5,660 XQAJ	Shanghai, China	...	Broadcast	...	DDCP	S.S. Cap Polonio	...	Phone
55.52	5,400 HJA7	Cucuta, Colombia	0.4	Phone	...	DDDT	S.S. Deutschland	...	Phone
55.52	5,400 HAT	Budapest, Hungary	20.0	Broadcast	...	DDDX	S.S. Hamburg	...	Phone
57.00	5,260 WQN	Rocky Point, N. Y.	40.0	Exp.	...	DDDE	S.S. Cap Arcona	...	Phone
58.17	5,154 PMY	Bandoeng, Java	2.0	Phone; occasional bc.	...	DDDE	S.S. New York	...	Phone
58.27	5,145 OK1MPT	Prague, Czechoslovakia	0.5	Broadcast	...	DDFF	S.S. Reliance	...	Phone
58.67	5,110 KIKB	Bolinas, Calif.	40.0	Phone	...	DDFT	S.S. Oceana	...	Phone
58.71	5,105 KEC	Bolinas, Calif.	40.0	Phone	...	DDNY	S.S. Albert Ballin	...	Phone
58.79	5,100 KIKA	Bolinas, Calif.	1.0	Phone	72.95	4,110 HCJB	Quito, Ecuador	0.15	Broadcast
59.05	5,077 WCN	Lawrenceville, N. J.	20.0	Phone to England	73.13	4,100 LCL	Jeloy, Norway	...	Exp.
59.67	5,025 ZFA	Bermuda, Bermuda	1.5	Phone	73.13	4,100 WND	Hialeah, Florida	0.4	Phone
59.96	5,000 WWV	Beltsville, Md.	...	Standard frequency trans.; Tue., Fri., 2.30-3.30	74.92	4,002 CT2AJ	San Miguel, Azores	...	Broadcast
60.26	4,975 GBC	Rugby, England	5.0	Phone to ships	79.53	3,770 HB9B	Basle, Switzerland	...	Broadcast
60.33	4,970 G6RX	Rugby, England	...	Exp.	79.95	3,750 CT1CT	Lisbon, Portugal	0.5	Broadcast
60.94	4,920 LCL	Jeloy, Norway	...	Exp.	79.95	3,750 I2RO	Rome, Italy	12.0	Broadcast
61.63	4,865 HJA3	Barranquilla, Colombia	...	Phone	82.82	3,620 DOA	Doberitz, Germany	...	Phone
62.20	4,820 GDW	Rugby, England	...	Phone to US	84.63	3,543 CR7AA	Lourenzo Marques, Mozambique, Port. E. Africa	...	Broadcast
					85.06	3,525 HB9AQ	Switzerland	...	Broadcast
					88.81	3,376 HJA3	Barranquilla, Colombia	...	Phone

NOTE: Due to climatic and seasonal changes, and the experimental nature of much short-wave broadcasting, the above information is subject to change without notice.

## FACTS ABOUT SHORT-WAVE RECEPTION



A fair appreciation of short-wave reception, with a knowledge of its limitations, only adds to the attractiveness of this newest branch of radio.

A fading signal is one that varies in strength from minute to minute. Sometimes fading is scarcely noticeable . . . at other times it makes intelligent reception impossible. Weather conditions have a great deal to do with the character of the waves as they reach your ears through the loudspeaker of your short-wave receiver. Infrequently, fading becomes so pronounced that the signals disappear for seconds and even minutes, only to reappear and build up again to their original strength. As one season passes into another, the period of fading may lengthen until the station is silent as far as your locality is concerned, although listeners in other parts of the world may be tuning to the same station.

The difference in time between various parts of the world complicates short-wave reception. For instance, when it is evening in the eastern part of the United States, it is midnight in Europe.



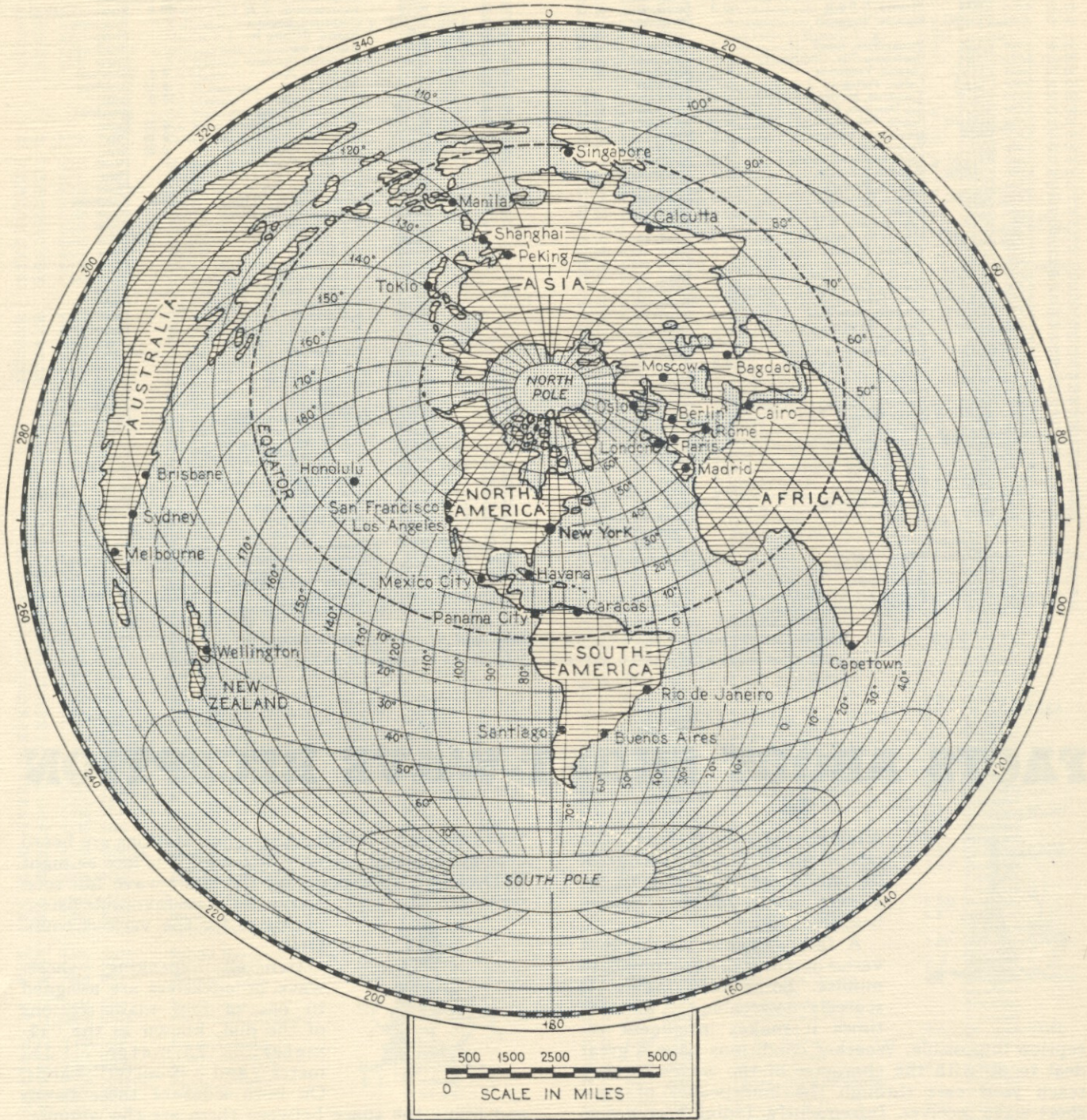
For the same reason, Australian stations are heard here in the early morning although it is late at night in Oceania. By experience, the short-wave fan soon learns the most favorable listening times for the various countries.



Generally speaking, short-wave broadcasters are assigned to one of four main sections of the dial, known as the "19-meter," "25-meter," "31-meter" and "49-meter" bands. On both sides of these bands and filling the space between them are the commercial radio-phone and radio-telegraph stations, amateurs who talk by both code and voice, and the airplanes which get their orders and weather reports from headquarters.



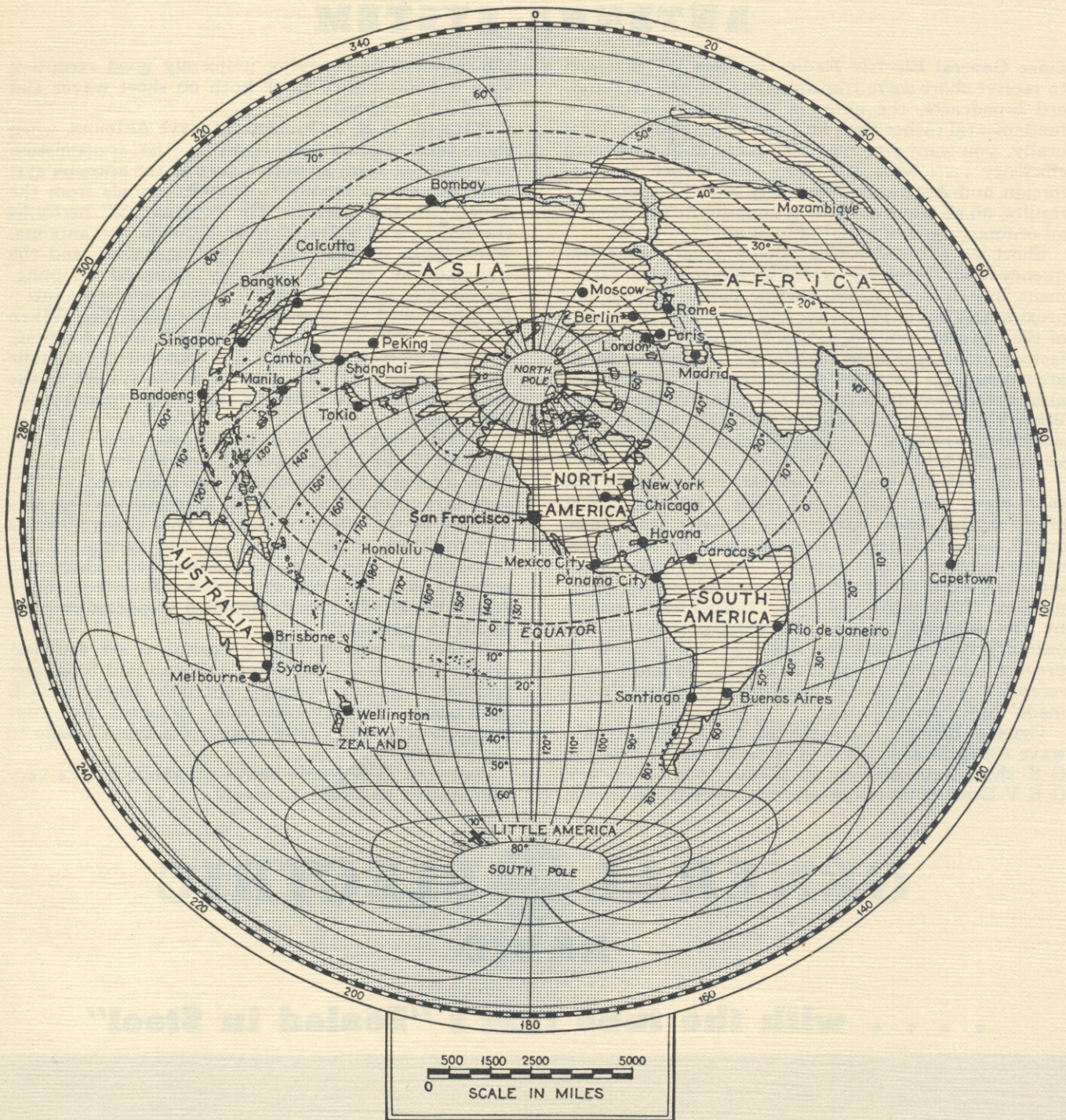
Short-wave stations necessarily are close together. Exceedingly fine tuning is therefore required. With General Electric receivers, short-wave tuning is made easier through the use of a fast- and slow-speed vernier tuning control, making it possible to tune sharply with ease . . . a most important requirement in a short-wave receiver.



## WORLD DISTANCE CHARTS

### New York

Measurements can be made accurately from any spot within the dotted circle to any point on earth. Simply lay a ruler connecting the point within the circle to any other location and refer this distance to the scale in miles.



## WORLD DISTANCE CHARTS

### San Francisco

This will give the actual great-circle distance. Use the map centered around the city nearest you, adding or deducting the distance you are from that city.

# SHORT-WAVE AND STANDARD BROADCAST RECEIVERS REQUIRE AN ALL-WAVE ANTENNA SYSTEM

Since General Electric Radio receivers are designed to receive short-wave transmissions, as well as standard broadcasts, the antenna installation is now a fundamental rather than an incidental problem. Naturally, you want your radio to perform at maximum efficiency . . . with minimum interference . . . on foreign and American broadcasts alike. To get these results, an all-wave antenna is an absolute necessity—an ordinary type of aerial fails to qualify.

Short-wave broadcasting covers a very wide frequency range, being segregated by international agreement into five principal narrow bands located approximately at 16, 19, 25, 31, and 49 meters. Antennas of the conventional single-wire type while very satisfactory for reception on the standard broadcast band, are not suitable for short-wave reception. Short waves also travel great distances on low transmitting power. When they reach the receiver, they are weaker than standard broadcast frequencies and need a special antenna for best results.

While natural static is almost negligible in the short-wave spectrum, "man-made" interference is often severe. Such interference usually is of local origin, being radiated by flashing signs, by the house-wiring system or by external electrical apparatus including even the ignition systems of passing automobiles. This interference is "picked up" mainly by the antenna lead-in, and consequently, in the ordinary type of antenna, nothing can be done to prevent annoyance from this source. In short-wave reception, it is of prime importance that this "man-made" static be excluded.

General Electric has perfected the V-Doublet All-wave Antenna after years of research and trial at the G-E short-wave station at Schenectady. This new G-E V-Doublet Antenna system solves to perfection

the problem of receiving uniformly good reception with a minimum of noise both on short waves and standard broadcasts.

With the G-E V-Doublet All-wave Antenna, when short-wave signals are received, the transmission line does not form an active part of the antenna system, but serves merely to transfer signals from the doublet to the receiver. The tapered "V" performs the function of a transformer between the antenna, which picks up the short-wave frequencies, and the transmission line. A specially designed coupling-transformer in the receiver rejects completely interference picked up along the transmission line. When installing the G-E V-Doublet All-wave Antenna, it should be erected as high as is conveniently possible so as to place the "V" portion of the system at the maximum distance from the sources of "man-made" interference.

In receiving standard broadcasts, this G-E V-Doublet Antenna is converted from its "V-Doublet" form into one approximating the conventional "T" type arrangement, so that the transmission line acts as part of the effective length. This change-over is accomplished automatically by the special circuit employed in the coupling-transformer. Thus, the antenna is a "V-Doublet" below 55 meters and a conventional "T" type or standard broadcast antenna above 55 meters.

Whatever you do—don't expect to get the best results from your short-wave and standard broadcast receiver with any ordinary antenna. Install a G-E V-Doublet All-wave Antenna, designed for your purpose, and enjoy your "round-the-world" radio to the utmost.

Ask your G-E Radio dealer all about it. It's very inexpensive and easy to erect.

**GENERAL  ELECTRIC**  
**RADIO**

**. . . . with the tube that's "Sealed in Steel"**