PART A

IONOSPHERIC DATA

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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

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PART A

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CONTENTS

SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, and continuing through December 1956, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1957, the symbols used are given in NBS Report 5033, "Summary of Changes in Ionospheric Vertical Soundings, Observing and Scaling Procedures - Effective 1 January 1957," which draws upon the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, Sept. 2, 1956. A list of these symbols is available upon request.

In the Second Report of the Special Committee on World-Wide Ionospheric Soundings of the URSI/AGI Committee, May 1957, a new descriptive letter was introduced:

M Measurement questionable because the ordinary and extraordinary components are not distinguishable.

There was an expansion in meaning of the following:

Z (1) (qualifying letter) Measurement deduced from the third magnetoionic component.
(2) (descriptive letter) Third magnetoionic component present.

Beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given above.

a. For all ionospheric characteristics:

Values missing because of A, C, F, H, L, N, R or S are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F (and h'E near sunrise and sunset) missing for this reason are counted usually as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count.

Values missing because of G are counted:

1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

The symbol W is included in the median count only when it replaces a height characteristic; the descriptive symbol D, only when it replaces a frequency characteristic.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of E or G are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

B for fEs is counted on the low side when there is a numerical value of a higher layer critical frequency; otherwise it is omitted from the median count.

S for fEs is counted on the low side at night; during the day it is omitted from the median count (beginning with data for November 1957).

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D.C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If the count is four or less, the data are considered insufficient and no median value is computed.

2. For the F2 layer, h'F or foEs, if the count is from five to nine, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as the count is at least five, the median is not considered doubtful. A count of at least 5 is considered sufficient for an h'Es median.

3. For all layers, if more than half of the data used to compute the medians are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

Ordinarily, a blank space in the fEs or foEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of foE. Blank spaces at the beginning and end of columns of h'F2 or h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

d. The tables may contain median values of either foEs or fEs. The graph of median Es corresponds to the table. Percentage curves of fEs are estimated from values of foEs when necessary.

PREDICTED AND OBSERVED SUNSPOT NUMBERS

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot Number										
	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948
December		150*	150	42	11	15	33	53	86	108	114
November		150*	147	35	10	16	38	52	87	112	115
October		150*	135	31	10	17	43	52	90	114	116
September		150*	119	30	8	18	46	54	91	115	117
August		150*	105	27	8	18	49	57	96	111	123
July		150*	95	22	8	20	51	60	101	108	125
June	150*	150*	89	18	9	21	52	63	103	108	129
May	150*	150*	77	16	10	22	52	68	102	108	130
April	150*	150*	68	13	10	24	52	74	101	109	133
March	150*	150*	60	14	11	27	52	78	103	111	133
February	150*	150*	53	14	12	29	51	82	103	113	133
January	150*	150*	48	12	14	30	53	85	105	112	130

*This number is believed representative of solar activity at a maximum portion of the current sunspot cycle.

The latest available information follows concerning the corresponding observed Zürich numbers beginning with the minimum of April 1954. Final numbers are listed through June 1956.

Observed Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	73	81
1956	89	98	109	119	127	137	145	148	149	154	157	162
1957	169	171	174	181	186	188						

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 60 and figures 1 to 119 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Commonwealth of Australia, Ionospheric Prediction Service of the Commonwealth Observatory:
Canberra, Australia

Australian Department of Supply and Shipping, Bureau of Mineral Resources, Geology and Geophysics:
Watheroo, Western Australia

University of Graz:
Graz, Austria

Meteorological Service of the Belgian Congo and Ruanda-Urundi:
Elisabethville, Belgian Congo
Leopoldville, Belgian Congo

Escola Politecnica, University of Sao Paulo:
Sao Paulo, Brazil

British Department of Scientific and Industrial Research, Radio Research Board:
Ibadan, Nigeria (University College of Ibadan)
Inverness, Scotland
Singapore, British Malaya
Slough, England

Defence Research Board, Canada:
Churchill, Canada
Resolute Bay, Canada

Instituto Geofisico de Los Andes Colombianos:
Bogota, Colombia

Danish National Committee of URSI:
Godhavn, Greenland

General Direction of Posts and Telegraphs, Helsinki, Finland:
Nurmijarvi, Finland

Central Institute of Meteorology, Budapest, Hungary:
Budapest, Hungary

Ministry of Postal Services, Radio Research Laboratories, Tokyo, Japan:
- Akita, Japan
- Tokyo (Kokubunji), Japan
- Wakkanai, Japan
- Yamagawa, Japan

Christchurch Geophysical Observatory, New Zealand Department of Scientific and Industrial Research:
- Campbell I.
- Cape Hallett (Adare)
- Christchurch, New Zealand
- Rarotonga, Cook Is.
- Scott Base

Norwegian Defence Research Establishment, Kjeller per Lillestrom, Norway:
- Oslo, Norway
- Tromso, Norway

Manila Observatory:
- Baguio, P. I.

Institute of Terrestrial Magnetism, Ionosphere and Radio Propagation, Moscow, U.S.S.R.:
- Alma-Ata
- Moscow
- Providenie Bay
- Simferopol
- Sverdlovsk
- Tomsk

Pakistan Meteorological Service:
- Quetta, Pakistan

South African Council for Scientific and Industrial Research:
- Capetown, Union of South Africa

Research Institute of National Defence, Stockholm, Sweden:
- Upsala, Sweden

United States Army Signal Corps:
- Fletchers Ice I.
- Ft. Monmouth, New Jersey
- Grand Bahama I.
- St. John's, Newfoundland
- Thule, Greenland

National Bureau of Standards (Central Radio Propagation Laboratory):
- Maui, Hawaii
- Panama Canal Zone
- Point Barrow, Alaska
- San Francisco, California (Stanford University)
- Washington, D. C.

EXAMPLE OF IONOSPHERIC VERTICAL SOUNDINGS
Baguio, July 23, 1957
(Geomagnetic Latitude 5°N)

The following ionograms were obtained at the Baguio, Philippines vertical sounding station (operated by Manila Observatory). They are typical of day and night conditions for July at this geomagnetic latitude. Ionospheric data are scaled directly from these records onto the daily f-plot, a graph of frequency characteristics vs. time. The f-plot for the day represented by these soundings is found on the following page. Medians as found in the Tables of Ionospheric Data are calculated using hourly values taken from the f-plot or directly from the ionogram.

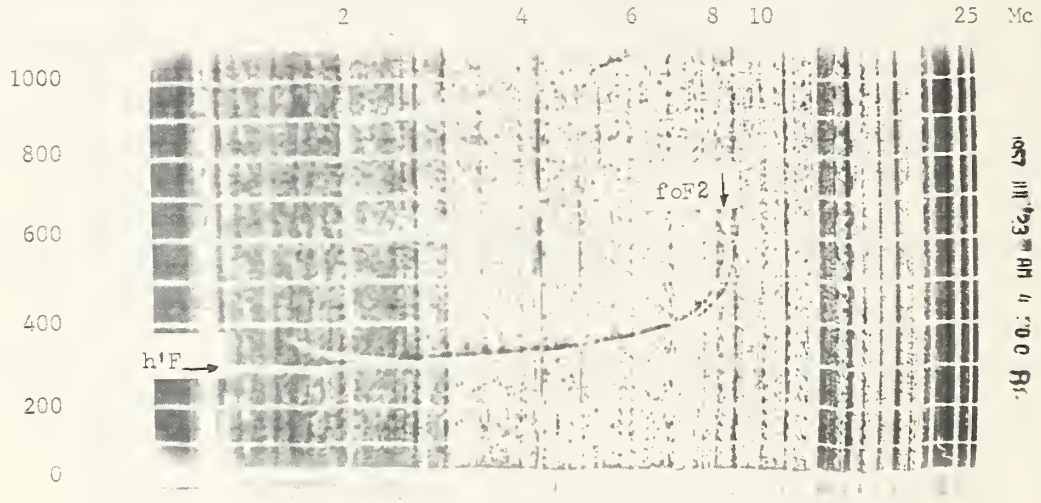

Fig. A. Baguio, P. I. July 23, 1957, 0400 hours, 120°E time.

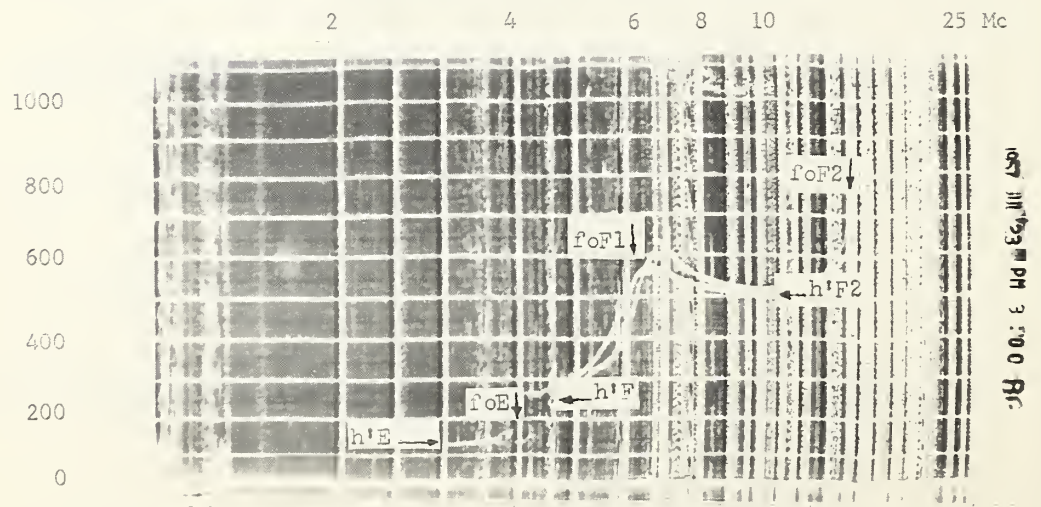

Fig. B. Baguio, P. I. July 23, 1957, 1500 hours, 120° time.

Baguio, P.I.

STATION ION BG f - PLOT OF IONOSPHERIC DATA DATE 23 JULY 1957

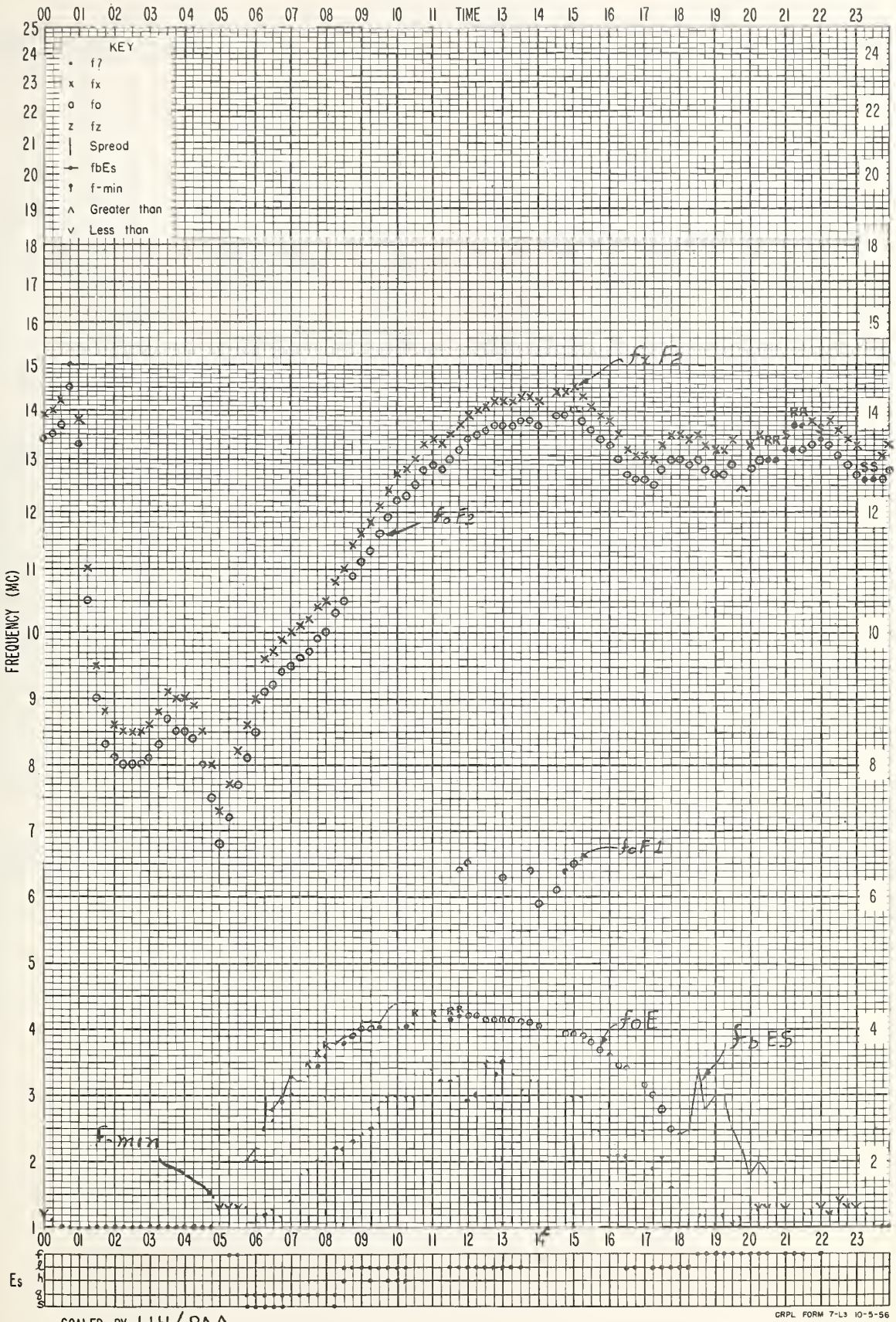

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Table 1

Upsala, Sweden (59.8°N, 17.6°E) October 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.2	340				3.0	2.4
01		4.9	335				3.0	2.4
02		4.5	320				3.1	2.4
03		4.2	315				3.0	2.4
04		4.2	300				3.1	2.4
05		4.2	290		---	----	3.2	2.4
06		5.2	275		---	E	3.4	2.6
07	---	7.5	245	---	130	1.80	4.2	2.8
08	---	10.3	240	---	115	2.50	3.8	2.8
09	---	12.7	240	---	110	2.85	4.8	2.8
10	(270)	13.5	235	5.3	110	3.10	5.0	2.8
11	(265)	13.5	230	(5.5)	110	3.20	5.1	2.7
12	270	14.2	230	5.6	110	3.20	4.3	2.7
13	(280)	14.1	235	(5.5)	110	3.15	4.0	2.7
14	---	13.7	235	---	110	3.00	3.3	2.7
15		13.2	240		115	2.65	3.4	2.7
16		12.9	240		130	2.00	3.2	2.8
17		12.0	240		---	E	3.2	2.8
18		10.6	230		---	E	3.1	2.8
19		9.0	240				3.1	2.8
20		7.6	245				3.0	2.7
21		7.0	280				2.6	2.55
22		6.1	305				3.0	2.4
23		5.5	340				2.7	2.45

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 2

Graz, Austria (47.1°N, 15.5°E) October 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		>7.0	365					
01		6.9	350					
02		6.6	370					
03		(6.4)	375					
04		6.3	350					
05		(6.0)	310					
06		6.8	300					
07		>9.0	250					
08		>9.8	250					
09		>10.5	240				3.9	
10		>10.4	250			(3.6)	3.9	
11		>10.4	250			3.7	4.0	
12		>10.5	250			3.7	4.0	
13		>10.2	250			3.7	3.8	
14		>10.4	250			3.6	3.7	
15		>10.4	250					
16		>10.0	250					
17		>9.4	260					
18		>9.4	275					
19		>9.2	270					
20		(8.6)	280					
21		(8.4)	300					
22		(7.8)	340					
23		(7.3)	340					

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes.

Table 3

Fletchers Ice I. (82.0°N, 104.4°W)* 5september 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.8	(275)					2.70
01		6.4	<270					2.65
02	---	6.4	<280	---	---	---		2.60
03	---	7.0	<270	---	---	---		2.70
04	---	6.4	265	---	---	---		2.65
05	---	6.7	<270	---	---	---		2.75
06	---	6.8	<275	---	---	---		2.70
07	---	6.3	(265)	---	---	---		2.80
08	---	6.7	<275	---	---	---		2.75
09	---	6.6	(260)	---	---	---		2.75
10	---	7.0	<300	---	---	---		2.75
11	---	6.9	<275	---	---	---		2.70
12	---	7.0	<290	---	---	---		2.75
13	---	7.4	<300	---	---	---		2.70
14	(370)	7.2	<275	---	---	---		2.70
15	(410)	7.1	<280	4.1	---	---		2.60
16	(390)	7.0	<295	---	---	---		2.65
17	---	6.8	<300	---	---	---		2.70
18	---	6.6	<300	---	---	---		2.70
19	---	6.4	<300	---	---	---		2.65
20	---	6.8	<300		---	---		2.65
21		6.7	(270)		---	---		2.70
22		6.6	(270)					2.75
23		5.8	<270					2.70

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.
*Preliminary estimated average position.

Table 4

Tromso, Norway (69.7°N, 19.0°E) 5september 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.3)	(350)		---	----	3.7	(2.40)
01		(5.1)	390		---	----	3.3	(2.35)
02		4.9	(355)		---	----	4.0	2.20
03		(4.9)	345		---	----	3.5	(2.35)
04		5.5	310		---	----	3.5	(2.55)
05		5.9	290		---	1.90	2.4	2.70
06	---	6.2	265	---	110	2.30		2.70
07	---	6.5	255	---	130	2.70		2.70
00	---	7.2	250	---	110	2.80		2.65
09	---	8.2	250	---	120	3.00		2.70
10	---	8.5	250	---	115	3.10		2.70
11	---	8.6	245	---	110	3.15		2.65
12	(360)	8.7	250	---	110	3.20		2.70
13	---	8.7	250	---	115	3.15		2.70
14	---	8.0	250	---	115	3.05		2.70
15	---	7.0	250	---	120	3.00		2.80
16	---	7.0	250	---	115	2.70		2.75
17	(255)	7.0	260	---	130	2.50		2.75
18	---	6.4	275		130	2.10		2.70
19		6.0	295		---	----	3.8	2.70
20		5.8	(305)		---	----	3.9	2.50
21		5.6	(330)				4.2	2.50
22		(5.7)	(345)				4.0	(2.50)
23		(5.5)	(320)				4.0	----

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 5

Oslo, Norway (60.0°N, 11.1°E) 5september 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.3	300					2.50
01		5.8	300					2.40
02		5.5	300					2.40
03		4.9	300				1.3	2.40
04		4.3	300					2.40
05		4.2	290		---	----		2.55
06	---	5.2	275		---	(1.95)		2.80
07	---	6.2	250	----	115	2.50		2.80
00	---	7.2	250	----	110	2.85		2.80
09	---	7.6	245	----	110	3.25		2.70
10	---	8.0	240	4.50	110	3.40		2.70
11	---	8.8	240	4.40	105	3.60		2.70
12	(660)	9.6	240	4.60	110	3.60		2.70
13	---	9.4	240	----	110	3.60		2.70
14	---	9.6	240	4.95	110	3.50		2.70
15	---	9.2	250	----	110	3.30		2.70
16	---	9.5	250	----	115	3.05		2.75
17		9.6	250	----	---	2.65		2.80
18		9.7	250		---	2.30		2.80
19		9.4	250		---	----	1.7	2.70
20		8.4	250				1.6	2.70
21		8.1	250				2.0	2.70
22		6.9	260				1.6	2.55
23		6.8	290					2.45

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 6

St. John's, Newfoundland (47.6°N, 52.7°W) 5september 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.4	305					2.60
01		6.0	300					2.60
02		5.8	290					2.60
03		5.3	270					2.70
04		4.4	275					2.70
05		5.0	280		---	----		2.80
06	---	6.8	245	---	120	2.60		3.05
07	---	8.6	240	---	118	(3.05)		3.10
08	---	9.3	230	---	115	(3.40)		3.00
09	---	10.0	220	5.1	111	(3.70)		2.90
10	---	9.8	225	---	111	(3.90)		2.85
11	(540)	10.0	230	5.5	111	(3.85)		2.80
12	(460)	9.8	225	5.4	109	(3.90)		2.75
13	(455)	9.7	230	---	109	3.80		2.70
14	(430)	9.7	230	5.7	111	(3.60)		2.75
15	---	9.9	230	---	115	3.30		2.70
16	---	10.0	240	---	118	(3.00)		2.75
17	---	10.2	255	---	128	(2.50)		2.80
18		10.2	250		---	----		2.90
19		9.2	250					2.80
20		8.6	250					2.70
21		7.6	270					2.65
22		7.0	285					2.60
23		6.7	300					2.55

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 7

Washington, D. C. (38.7°N, 77.1°W) 5eptember 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.7	300					2.55
01		6.5	295				(1.7)	2.55
02		5.7	<290					2.60
03		5.6	290					2.60
04		5.2	270					2.65
05		5.0	270					2.70
06		6.0	265		117	1.90		2.90
07	---	8.0	240	4.0	111	2.70		3.10
08	G	9.4	235	4.7	109	3.30		3.05
09	(490)	10.1	230	5.0	109	3.70		2.90
10	(610)	10.4	220	5.3	109	(3.90)		2.80
11	370	10.4	220	5.3	109	(4.00)		2.70
12	485	10.2	230	5.0	109	(4.00)		2.70
13	395	10.2	230	5.1	109	4.00		2.65
14	360	10.4	230	5.2	109	(3.90)		2.60
15	410	10.2	235	(5.0)	109	3.65		2.65
16	(435)	10.0	240	4.8	109	3.30		2.70
17	(440)	10.0	250	---	118	2.80		2.70
18		9.8	250		---	----		2.80
19		9.2	240					2.75
20		8.2	250					2.70
21		7.6	260					2.70
22		7.1	270					2.65
23		6.8	280					2.60

Time: 75.0°W.
5weep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 8

Maui, Hawaii (20.8°N, 156.5°W) 5eptember 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.0	255				2.1	2.85
01		8.6	260					2.85
02		8.2	260					2.80
03		6.6	265					2.80
04		5.9	270					2.75
05		5.2	270				1.4	2.70
06		5.4	310		131	----	1.6	2.70
07	---	8.3	250	---	119	2.50	2.8	3.05
08	(260)	10.0	240	---	111	3.20	3.8	2.90
09	---	11.0	230	---	111	3.70	4.1	2.70
10	(580)	12.3	230	5.8	111	4.00	4.4	2.60
11	370	13.2	235	5.8	<114	4.20	4.7	2.65
12	390	14.0	230	6.1	111	4.35	4.7	2.60
13	380	14.5	235	5.9	115	4.40	4.4	2.60
14	380	14.6	240	6.7	<115	4.30	4.4	2.60
15	370	14.4	235	(6.0)	115	4.00	4.4	2.60
16	350	14.0	240	5.2	114	3.70	4.1	2.65
17	310	13.5	255	---	117	3.10	3.6	2.70
18		13.1	260		121	2.30	3.9	2.75
19		12.8	260				3.8	2.80
20		12.2	270				3.2	2.75
21		12.0	280				3.8	2.70
22		11.8	275				3.4	2.80
23		11.0	260				3.2	2.90

Time: 150.0°W.
5weep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

Panama Canal Zone (9.4°N, 79.9°W) 5eptember 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		11.0	245				(2.2)	2.90
01		9.6	240				(1.8)	2.90
02		7.8	225					2.75
03		7.0	235					2.85
04		6.0	240		---	----	1.9	2.80
05		5.2	250		---	----	2.2	2.60
06		5.6	300		---	----		2.70
07		9.0	250		111	(2.55)		2.95
08		10.7	240		110	(3.35)		2.90
09		12.0	225		109	3.80		2.75
10	---	13.0	230		109	4.15	4.2	2.70
11	(410)	13.5	230	---	109	4.30		2.65
12	395	13.6	225	---	108	4.35		2.60
13	395	13.9	220	---	109	4.35		2.60
14	390	14.0	230	---	109	4.25		2.60
15	380	13.8	230	---	109	4.00	4.4	2.60
16	370	13.2	235	---	109	3.65	4.0	2.60
17		13.0	245		109	(3.00)	3.4	2.65
18		12.2	250		---	----	2.2	2.70
19		12.0	260				3.6	2.70
20		12.2	270					2.70
21		12.0	260				2.8	2.70
22		11.8	255					2.80
23		10.9	255					2.85

Time: 75.0°W.
5weep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 10

Leopoldville, Belgian Congo (4.4°S, 15.2°E) September 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	10.6						2.61
01	230	9.5						2.54
02	235	9.0					1.7	2.63
03	230	7.9					1.8	2.83
04	230	5.1					1.9	2.85
05	255	7.0			---	1.9	3.0	2.80
06	245	10.0	240	---	120	3.0	3.8	2.89
07	260	11.3	235	---	110	3.7	4.0	2.68
08	280	12.1	230	---	110	4.0	4.9	2.48
09	335	12.6	220	---	110	4.1		2.38
10	390	13.1	215	---	110	4.2		2.25
11	420	13.4	240	---	110	---		2.17
12	435	13.8	230	---	110	4.2		2.17
13	450	14.0	240	---	110	4.1		2.11
14	445	14.3	240	---	110	3.9		2.10
15	435	14.7	245	---	115	3.6		2.08
16	410	15.0	260	---	115	2.8	3.3	2.12
17	350	15.2	295	---			3.0	2.22
18	340	16.0					2.2	2.14
19	290	16.2						2.32
20	235	16.1						2.48
21	220	15.0						2.52
22	215	15.0						2.62
23	220	14.0						2.64

Time: 0.0°.
5weep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 11

Elisabetbville, Belgian Congo (11.6°S, 27.5°E) 5eptember 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	7.0						2.47
01	250	6.1						2.56
02	250	5.4					1.6	2.62
03	240	4.8					1.7	2.74
04	265	6.2			---	---	2.2	2.70
05	240	9.7	---	---	120	2.8	3.1	2.90
06	250	10.9	240	---	110	3.5	3.6	2.76
07	260	11.8	235	---	110	3.9		2.63
08	290	12.5	230	---	110	4.0		2.52
09	315	12.4	230	---	105	4.1	4.6	2.41
10	380	12.1	250	---	105	4.1		2.30
11	395	12.3	250	6.6	105	4.1	4.6	2.23
12	400	12.5	245	---	110	4.0	4.7	2.20
13	390	12.4	240	---	110	3.9	4.0	2.19
14	370	12.6	245	---	115	3.5	4.0	2.21
15	350	12.7	250	---	120	3.0	3.6	2.28
16	280	12.8			---	---	3.0	2.37
17	280	13.3					2.8	2.45
18	265	14.5						2.52
19	235	14.5						2.60
20	230	13.0						2.59
21	230	11.7						2.61
22	230	10.9						2.66
23	220	8.0						2.64

Time: 0.0°.
5weep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 12

Thule, Greenland (76.6°N, 68.7°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.8	260		115	(1.85)		2.80
01	---	5.6	250	---	115	2.00		2.90
02	---	5.2	250	---	109	(2.05)		2.80
03	---	5.2	245	---	111	(2.20)		2.85
04	---	5.3	240	---	109	2.30		2.85
05	(450)	5.1	235	3.7	107	(2.55)		2.90
06	(490)	5.5	235	(4.0)	106	2.70		2.80
07	410	5.6	230	(4.2)	104	2.85		2.70
08	455	5.7	230	(4.5)	102	2.95		2.65
09	465	5.6	220	4.4	101	3.05		2.70
10	480	5.6	215	4.5	101	3.10		2.55
11	490	5.4	220	4.5	101	3.15		2.45
12	470	5.6	<220	4.5	101	3.20		2.45
13	440	5.6	215	4.5	101	3.20		2.60
14	425	(5.4)	220	4.5	101	3.10		2.50
15	455	5.8	220	4.3	101	3.00		2.60
16	430	5.9	230	4.3	101	2.85		2.55
17	370	6.0	230	(4.0)	103	2.70		2.70
18	400	6.0	240	3.8	103	2.55		2.65
19	---	5.5	240	---	109	(2.40)		2.75
20	---	5.8	250	---	113	(2.30)		2.80
21	---	5.6	250		116	(2.20)		2.75
22		5.6	260		119	2.00		2.70
23		5.6	255		121	----		2.80

Time: 75.0°W.
5weep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 13

Resolute Bay, Canada (74.7°N, 94.9°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.8	260		120	1.8		----
01	---	5.5	260	---	120	1.8		----
02	---	5.5	260	---	120	1.8		----
03	---	5.3	260	---	120	2.0		(2.85)
04	---	5.4	250	---	120	2.1		2.9
05	(360)	5.8	240	3.5	110	2.4		(2.85)
06	360	5.6	240	3.9	105	2.6		2.9
07	390	5.8	230	4.1	105	2.9	3.3	2.8
08	400	5.8	220	4.4	105	3.0		(2.85)
09	400	6.0	220	4.5	100	3.0		(2.8)
10	410	5.8	220	4.5	100	3.1	<3.9	(2.7)
11	460	5.3	220	4.6	100	3.2		(2.3)
12	480	5.3	220	4.5	100	3.3		G
13	460	5.7	220	4.4	100	3.2		(2.4)
14	500	5.7	220	4.5	100	3.3		G
15	440	5.6	220	4.5	100	3.0		(2.7)
16	420	5.5	220	4.4	100	3.0		(2.4)
17	420	5.5	230	4.3	100	2.9		(2.4)
18	430	5.6	230	4.1	105	2.8		(2.6)
19	380	5.8	240	4.0	110	2.6		(2.7)
20	350	5.8	250	3.9	120	2.3		(2.7)
21	---	6.0	260	---	120	2.1		(2.7)
22	---	5.6	260	---	130	2.0		----
23	---	5.8	260	---	125	1.8		----

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 14

Point Barrow, Alaska (71.3°N, 156.8°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(4.8)	280		---	----	3.2	2.95
01		4.9	280		---	----	3.4	2.90
02		(4.8)	280		---	----	2.3	2.90
03	---	5.1	285	---	---	----	2.6	2.85
04	---	5.2	280	---	121	2.30		2.85
05	(400)	5.1	270	3.6	123	2.30		2.85
06	410	5.6	250	4.0	113	2.75		2.75
07	420	5.5	240	4.0	108	2.85		2.60
00	485	6.1	240	4.4	107	3.25		2.65
09	430	6.0	230	4.5	103	3.05		2.70
10	415	6.1	220	4.6	101	(3.00)		2.65
11	395	6.2	220	4.7	101	3.30		2.80
12	400	6.0	210	4.8	101	3.20		2.70
13	415	6.2	220	4.7	101	3.10		2.70
14	415	6.2	220	4.6	101	3.10		2.70
15	425	6.4	220	4.8	103	2.95		2.70
16	(420)	6.6	220	4.6	107	2.90		2.80
17	(420)	6.8	225	4.3	108	2.85		2.90
18	(470)	6.4	230	4.0	111	2.60		2.90
19	---	6.4	240	---	117	2.40		2.95
20	---	5.7	250		121	2.40		2.95
21		5.4	285		122	2.50		3.00
22		5.0	275		134	2.40		3.00
23		4.5	300		131	2.35	2.4	2.80

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 15

Godhavn, Greenland (69.2°N, 53.5°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(4.9)			---	----		(2.60)
01		(5.0)			---	----		(2.70)
02		(4.8)			---	----		(2.75)
03		(4.7)			---	----		(2.90)
04		(5.0)			113	----		(2.75)
05		(5.1)			117	(2.20)		(2.95)
06		(5.0)		---	111	(2.30)		(2.95)
07		(5.6)		3.9	111	(2.70)		2.90
08		(6.0)		4.2	109	(2.95)		(2.95)
09		(6.2)		(4.4)	107	(3.15)		(2.85)
10		(6.7)		4.7	103	(3.30)		(2.85)
11		7.1		(4.7)	101	(3.40)		2.80
12		(6.6)		(4.8)	101	(3.40)		2.80
13		(6.2)		(4.8)	101	3.35		(2.60)
14		(6.2)		4.6	101	(3.30)		(2.60)
15		(5.8)		4.7	103	3.20		(2.45)
16		(5.8)		4.6	107	3.05		2.60
17		(5.7)		(4.4)	109	(2.95)	4.4	2.65
18		(5.8)		(4.2)	110	(2.70)	2.9	2.65
19		(5.9)		---	114	(2.40)	3.7	2.70
20		(5.0)		---	117	(2.20)		(2.70)
21		(5.6)			121	(2.00)		(2.70)
22		5.4			<133	(1.65)		2.70
23		(5.2)			121	(1.40)		2.75

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 16

Nurmijarvi, Finland (60.5°N, 24.6°E) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(6.0)					<2.5	----
01		---					<2.0	----
02		5.2					<2.1	2.50
03		(5.0)					<2.1	(2.60)
04		(5.0)					<2.2	(2.65)
05		5.5					<2.4	2.70
06		5.9		---		----		2.80
07		6.8		---		2.60		2.80
00		7.0		---		3.00	3.1	2.80
09		7.4		5.0		3.10	4.1	2.70
10		7.6		5.2		3.30	3.8	2.70
11		7.6		5.0		----		2.70
12		7.6		5.3		----		2.70
13		7.6		5.4		----		2.75
14		7.7		5.2		----		2.75
15		7.3		5.0		----		2.80
16		7.5		---		----		2.80
17		7.3				----		2.80
18		7.4				----		2.80
19		7.9						2.85
20		7.8					<3.2	2.85
21		7.0					<2.8	2.75
22		(7.3)					<2.8	(2.70)
23		---					<2.4	----

Time: 30.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 1 minute.

Table 17

Churchill, Canada (58.8°N, 94.2°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.2	300		---	---	6.0	
01		5.2	300		150	1.2	5.0	
02		5.0	300		---	(1.7)	5.0	----
03		4.5	330		140	(1.8)	5.0	
04		4.3	310		130	(2.0)	4.1	
05		5.0	300		125	2.4	4.2	---
06	440	5.2	290	4.0	110	3.0	3.1	(2.8)
07	480	5.8	270	4.2	105	3.2	<4.5	(2.75)
08	420	6.0	250	4.8	105	3.2		2.6
09	440	6.3	230	5.0	100	3.3		2.6
10	450	6.3	220	5.0	100	3.5		2.5
11	470	6.5	220	5.1	100	3.6	4.2	2.5
12	450	6.8	220	5.1	100	3.6	4.0	2.5
13	460	6.9	220	5.2	100	3.6	4.4	2.4
14	450	6.9	220	5.2	100	3.6		2.5
15	420	7.0	220	5.0	105	3.5		2.5
16	400	7.0	230	4.9	105	3.3		2.5
17	400	6.8	230	4.5	110	3.0		2.6
18	350	6.3	250	(4.3)	110	3.0		2.6
19	(330)	6.4	290	---	120	2.8		2.6
20		6.1	300		125	2.4	<3.8	(2.7)
21		5.6	300		130	2.2	5.5	---
22		5.2	300		120	(2.0)	7.6	
23		5.0	300		---	---	8.0	

Time: 90.0°W.
Sweep: 1.0 Mc to 17.0 Mc in 16 seconds.

Table 18

Graz, Austria (47.1°N, 15.5°E) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		6.7	350					
01		6.7	360					
02		6.3	350					
03		5.8	350					
04		5.5	350					
05		5.9	305					
06		>6.7	265	---				
07		>7.7	260	4.5			4.0	
08	350	>8.2	245	5.0		---	4.1	
09	330	8.7	240	(5.3)		3.8	4.1	
10	330	9.2	250	5.3		3.9	4.3	
11	350	>9.0	230	(5.7)		---	4.2	
12	360	9.2	---	(6.1)		3.9	4.1	
13	365	9.4	240	(6.1)		---	4.0	
14	370	9.1	240	(6.2)		3.8	3.8	
15	380	8.6	245	(5.4)		3.7	3.8	
16	360	8.4	250	(5.3)		---		
17		8.4	260	---		---	3.5	
18		8.4	280					
19		8.4	280					
20		7.9	280					
21		(7.6)	300					
22		7.0	300					
23		>6.8	340					

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes.

Table 19

Ft. Monmouth, New Jersey (40.3°N, 74.1°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.0	265				(4.0)	2.70
01		5.7	<265				4.0	2.70
02		5.5	<265				(2.7)	2.70
03		5.0	<265				(3.3)	2.70
04		4.6	<265				4.6	2.80
05		4.6	270		---	----	(1.8)	2.95
06		5.9	240		109	(2.40)		3.10
07	---	6.8	225	---	105	3.00	3.2	3.00
08	330	7.0	215	4.8	103	(3.35)	3.6	3.00
09	370	7.7	210	5.2	103	(3.60)	4.0	2.90
10	415	7.4	200	5.3	101	3.85	4.2	2.90
11	390	7.5	200	5.6	103	3.95	4.0	2.75
12	410	7.5	200	5.6	103	4.00	4.2	2.75
13	380	7.6	200	5.5	103	3.95		2.75
14	380	7.7	210	5.5	103	3.90		2.75
15	380	7.6	210	5.3	103	3.70		2.75
16	370	7.6	220	5.1	103	3.40	3.4	2.80
17	---	7.8	230	---	105	3.00	3.2	2.80
18		7.8	<250		108	(2.35)	2.7	2.85
19		7.8	255		---	----	3.0	2.85
20		7.6	<245				4.3	2.75
21		7.3	260				3.4	2.75
22		6.8	<270				4.0	2.70
23		6.5	<275				(3.5)	2.70

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 20

San Francisco, California (37.4°N, 122.2°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.4	(310)				3.4	2.50
01		5.4	310				3.0	2.55
02		5.4	300				2.6	2.55
03		5.3	290				3.0	2.60
04		5.0	<300				2.8	2.60
05		4.8	290		---	----	(2.3)	2.70
06	---	5.9	260	---	119	2.10	2.5	2.90
07	(425)	6.9	230	4.4	109	(2.90)	3.2	2.80
08	430	8.0	<225	5.0	109	(3.30)	3.5	2.65
09	380	8.7	210	5.2	109	(3.50)	4.0	2.65
10	390	9.2	210	5.3	109	(3.70)	4.3	2.55
11	385	9.2	205	5.6	109	(4.00)	4.1	2.55
12	380	9.4	215	5.8	109	4.00		2.55
13	370	9.7	220	5.7	109	4.00		2.60
14	365	9.6	220	5.7	109	4.00		2.60
15	360	9.0	230	5.6	109	(3.70)		2.65
16	350	8.8	240	5.3	109	3.50		2.70
17	---	8.3	240	---	109	3.10	3.5	2.75
18	---	8.4	250		119	2.50	3.0	2.85
19		8.0	260				3.2	2.90
20		7.5	250				3.7	2.80
21		6.8	260				3.7	2.75
22		5.8	260				3.5	2.65
23		5.6	<300				3.3	2.55

Time: 120.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 21

Grand Bahama I. (26.6°N, 78.2°W). August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.2	290				3.2	2.70
01		6.9	280				3.8	2.80
02		6.5	265				(2.6)	2.75
03		6.2	<275				(3.1)	2.75
04		5.9	275				(2.8)	2.70
05		5.8	265				(2.3)	2.80
06		6.3	250		121	1.90	2.0	3.00
07		7.6	235		109	2.80	3.0	3.00
08	(335)	8.3	215	---	105	(3.30)	3.8	2.95
09	360	8.8	210	5.6	105	3.70	4.2	2.85
10	360	9.5	200	5.8	107	3.95	4.4	2.65
11	350	10.0	200	5.8	109	4.10	4.5	2.70
12	365	10.2	210	5.9	109	4.15	4.5	2.65
13	370	10.0	220	5.9	105	4.10	4.5	2.60
14	365	9.9	<230	5.8	109	4.10	4.4	2.65
15	360	9.8	220	5.7	109	3.90	4.1	2.70
16	350	9.4	230	5.4	109	3.60	4.0	2.70
17	<330	9.0	235	---	109	3.20	3.8	2.80
18	---	8.9	250		111	----	2.8	2.80
19		8.3	250				3.1	2.80
20		8.0	260				2.8	2.70
21		7.5	270				4.0	2.70
22		7.3	290				3.3	2.70
23		7.3	300				2.9	2.65

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 22

Panama Canal Zone (9.4°N, 79.9°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.3	260					2.85
01		8.6	250					2.90
02		8.0	245					2.90
03		7.4	240					2.95
04		6.8	230					2.95
05		5.5	230				2.0	2.90
06		5.4	270		---	----		2.85
07	---	7.0	240		111	2.50		3.10
08	---	8.4	225		107	3.25		2.90
09	---	9.4	215	---	107	3.70		2.65
10	---	10.5	215	---	109	4.00		2.50
11	400	11.2	220	6.0	109	4.15	4.6	2.50
12	385	12.0	215	6.0	109	4.25	4.6	2.55
13	400	12.5	215	6.0	109	4.25	4.2	2.55
14	390	12.7	215	6.0	109	4.15	4.5	2.60
15	375	13.0	220	5.7	109	(3.95)	4.5	2.65
16	350	13.0	230	---	109	(3.60)	4.4	2.65
17	<320	12.4	235	---	109	3.10	3.9	2.70
18	(265)	11.6	250		114	2.30	2.6	2.75
19		10.8	260				3.2	2.75
20		10.0	265					2.70
21		10.0	270					2.70
22		9.7	270					2.75
23		9.6	270					2.75

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 23

Bogota, Colombia (4.5°N, 74.2°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.0	250					3.00
01		8.3	250					2.90
02		>7.9	250					3.05
03		7.0	240					3.00
04		5.9	230				(2.7)	3.10
05		4.9	250				(2.5)	2.85
06		5.7	270		---	----	2.5	3.00
07	---	7.9	240		112	2.80	3.0	3.10
08	---	8.8	230		109	3.50		2.90
09	---	10.0	225	---	109	3.85		2.55
10	---	11.1	220	---	108	(4.10)	4.2	2.50
11	415	12.0	220	6.0	109	(4.15)	4.5	2.50
12	405	12.4	215	6.0	109	4.25	4.4	2.50
13	415	13.0	220	6.0	109	(4.20)	4.7	2.50
14	410	13.7	215	5.8	109	(4.05)	4.8	2.55
15	380	13.6	220	---	109	(3.80)	4.5	2.60
16	380	13.5	230	---	109	3.40	3.9	2.60
17	---	13.3	250		114	2.75	3.7	2.60
18		13.4	270				2.8	2.65
19		13.2	290				3.1	2.60
20		13.5	280				(2.6)	2.65
21		13.2	270					2.75
22		13.2	250					2.85
23		11.9	<260					2.90

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 24

Canberra, Australia (35.3°S, 149.0°E) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.5	270					2.75
01		5.5	270					2.80
02		5.4	260					2.80
03		5.2	260					2.85
04		4.9	250					2.90
05		4.7	250					2.90
06		4.3	<250					3.00
07		6.9	240		130	2.00		3.25
08	(245)	9.2	230	---	110	2.75		(3.30)
09	250	10.4	230	(5.0)	110	3.20		3.15
10	240	11.0	225	(4.9)	105	3.50		3.15
11	250	>11.0	220	(4.8)	105	3.65		3.15
12	260	10.9	220	(5.0)	105	3.75		3.05
13	260	10.9	210	(4.8)	105	3.70	3.9	3.00
14	250	10.8	220	(4.7)	110	3.50	3.8	2.95
15	---	10.6	220	---	110	3.30		2.95
16	---	10.2	240	---	110	2.90		2.95
17	---	9.8	235	---	125	2.25		3.00
18		8.8	230					3.10
19		>8.0	230					3.00
20		7.4	240					2.90
21		6.8	240					2.90
22		6.0	<250					2.85
23		(5.7)	<260					2.80

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 25

Fletchers Ice I. (82.0°N, 102.0°W)* July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00	380	5.9	245	4.1	---	---		2.70
01	400	5.9	255	4.0	109	---		2.60
02	360	6.1	<240	3.8	---	---		2.65
03	355	6.0	(240)	4.0	111	---		2.65
04	400	6.0	<250	4.2	109	---		2.60
05	420	5.4	<240	4.2	108	---		2.75
06	400	6.0	<240	4.2	---	---		2.65
07	365	5.8	230	4.3	105	---		2.70
08	405	5.8	<230	4.4	---	---		2.55
09	420	5.6	230	4.5	---	---		2.70
10	480	5.7	230	4.4	---	---		2.55
11	445	6.0	<220	4.5	---	---		2.50
12	490	5.8	215	4.5	---	---		2.50
13	460	5.6	<215	4.6	---	---		2.50
14	450	5.8	<215	4.6	---	---		2.50
15	455	6.0	215	4.5	105	---		2.50
16	470	5.5	<220	4.4	---	---		2.45
17	510	5.5	<240	4.4	---	---		2.45
18	520	5.6	230	4.4	---	---		2.45
19	480	6.0	<230	4.3	---	---		2.50
20	415	5.7	<235	4.2	---	---		2.70
21	475	5.6	<245	4.2	109	---		2.50
22	440	5.8	235	4.2	---	---		2.55
23	420	5.9	<240	4.0	---	---		2.70

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.
*Preliminary estimated average position.

Table 26

Resolute Bay, Canada (74.7°N, 94.9°W) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00	(400)	5.6	270	3.4	120	2.3		(2.7)
01	(370)	5.9	260	3.4	120	2.3		(2.8)
02	(360)	6.0	260	3.6	110	2.3		(2.7)
03	380	6.0	250	3.9	110	2.4		---
04	360	5.8	240	4.0	110	2.6		---
05	380	5.5	230	4.1	110	2.8		(2.8)
06	390	5.9	230	4.3	105	3.0		(2.7)
07	410	6.0	220	4.5	100	3.0		(2.7)
08	440	5.6	220	4.6	100	3.2		(2.55)
09	450	5.9	220	4.6	100	3.3		----
10	470	5.6	220	4.8	100	3.4		----
11	500	5.6	210	4.6	100	3.4		----
12	490	5.0	220	4.8	100	3.5		----
13	520	5.6	220	4.7	100	3.6		G
14	540	5.7	200	4.8	100	3.5		----
15	500	5.7	210	4.6	100	3.3		(2.4)
16	500	5.5	220	4.6	100	3.3		----
17	490	5.9	220	4.6	100	3.1		(2.3)
18	450	6.0	220	4.5	100	3.0		----
19	410	6.1	230	4.2	105	2.9		----
20	380	6.0	240	4.0	105	2.7		----
21	360	6.0	250	4.0	105	2.6		(2.6)
22	320	6.0	250	3.8	115	2.4		
23	(360)	5.7	250	3.5	115	2.3		----

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 27

Godhavn, Greenland (69.2°N, 53.5°W) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.5)		---	121	(1.80)		(2.70)
01		(5.3)		---	137	(1.80)		(2.75)
02		(5.5)		---	117	1.90		(2.70)
03		(5.1)		---	115	(2.05)		----
04		(4.8)		---	113	(2.20)		(2.55)
05		(5.2)		(3.6)	111	(2.50)		2.75
06		(5.0)		(4.1)	109	(2.80)		(2.60)
07		(5.6)		(4.3)	107	(3.00)		----
00		(5.4)		(4.6)	104	3.20		G
09		(6.0)		(4.8)	101	3.35		(2.60)
10		(6.4)		4.9	101	3.40		2.60
11		(6.4)		(4.8)	101	3.50		(2.60)
12		(6.5)		5.0	101	3.50		2.60
13		(6.2)		5.0	101	(3.50)		(2.45)
14		(6.3)		(5.0)	101	(3.50)		(2.50)
15		(6.2)		4.9	101	3.40		2.50
16		(5.8)		(4.9)	103	3.30	3.6	2.45
17		(5.8)		4.7	103	3.20	3.5	2.50
18		(5.8)		4.5	105	3.05	3.6	2.50
19		(5.7)		(4.4)	107	2.85		2.65
20		(5.9)		4.0	111	2.55		2.70
21		(5.7)		---	113	(2.40)		2.70
22		(5.7)		---	119	(2.15)		2.65
23		(5.7)			131	(1.95)		2.70

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 28

Inverness, Scotland (57.4°N, 4.2°W) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.0	300					2.70
01		6.7	310				1.9	2.70
02		6.4	310				2.4	2.75
03		6.1	310			----	2.2	2.80
04		6.2	290	---	155	1.80		2.80
05		6.1	265	---	120	2.35		2.90
06	415	6.6	230	4.3	110	2.75	3.0	2.90
07	425	6.5	240	4.8	105	3.10	3.3	2.90
08	400	7.0	240	5.2	105	3.30	3.8	2.80
09	410	7.3	235	5.2	105	3.50	3.9	2.90
10	410	7.6	225	5.4	105	3.60	4.0	2.90
11	410	7.4	220	5.5	100	3.80	4.2	2.85
12	470	7.4	220	5.7	100	3.90		2.80
13	450	7.3	220	5.6	100	3.90		2.85
14	450	7.4	220	5.5	100	3.80		2.80
15	415	7.4	225	5.5	105	3.70		2.85
16	410	7.4	225	5.3	105	3.60		2.90
17	400	7.6	245	5.2	105	3.40		2.90
18	365	7.6	255	4.8	110	3.05		3.05
19		7.2	255	---	110	2.60	2.8	3.10
20		7.0	270	---	135	2.30		3.05
21		6.9	275		160	1.80		2.90
22		7.2	290					2.85
23		>7.2	300					2.70

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

Table 29

Slough, England (51.5°N, 0.6°W) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.4	315			----	2.2	2.45
01		7.0	305			----	2.9	2.40
02		6.6	310			----	3.0	2.45
03		6.4	310		170	<1.10	3.2	2.50
04		6.2	305	---	140	<1.70	3.2	2.55
05	450	6.4	270	3.6	130	2.30	3.5	2.60
06	410	6.8	250	4.2	120	2.80	3.5	2.65
07	500	7.0	250	4.8	110	3.20	3.8	2.60
00	415	7.5	240	5.2	110	3.45	4.1	2.60
09	415	7.8	230	5.5	110	3.65	4.9	2.50
10	395	8.1	230	5.5	110	3.80	5.0	2.60
11	410	7.8	220	5.7	110	3.90	4.9	2.55
12	420	8.2	220	5.8	110	3.90	4.7	2.55
13	430	7.9	230	5.7	110	3.90	4.7	2.55
14	415	7.9	230	5.7	110	3.80	4.6	2.55
15	400	8.0	240	5.6	110	3.80	4.4	2.60
16	390	7.6	240	5.4	110	3.60	4.2	2.60
17	360	7.9	245	5.3	110	3.30	4.2	2.60
18	360	8.2	250		115	2.90	3.7	2.65
19	310	8.0	270		125	2.40	4.4	2.70
20		7.9	280		150	1.80	3.8	2.65
21		8.1	290			<1.60	2.3	2.50
22		7.8	300			----	2.6	2.45
23		7.7	310				2.3	2.45

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.

Table 30

Budapest, Hungary (47.4°N, 19.2°E) July 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	325	7.3						2.86
01	320	7.2						2.84
02	320	6.8					3.0	2.86
03	310	6.3					3.1	2.90
04	315	6.1					2.8	2.86
05	300	6.6	275	3.6	135	2.0	3.0	2.97
06	310	7.2	250	4.3	120	2.6	3.4	2.90
07	345	7.4	250	5.0	120	3.1	4.6	2.69
08	390	8.0	250	5.4	115	3.4	5.0	2.52
09	370	8.4	240	5.7	115	3.6	5.1	2.60
10	390	8.7	250	5.8	115	3.7	5.2	2.52
11	400	8.8	245	5.7	115	3.8	5.2	2.50
12	410	8.7	250	5.9	115	3.8	5.4	2.45
13	420	8.5	265	6.0	115	3.8	5.3	2.42
14	400	8.4	260	5.8	115	3.8	4.6	2.49
15	400	8.4	250	5.6	115	3.6	4.5	2.52
16	385	8.2	250	5.5	115	3.5	4.3	2.56
17	355	8.1	255	5.2	120	3.1	4.4	2.65
18	310	8.3	260	4.6	125	2.7	4.4	2.90
19	300	8.2	---	---	130	2.2	3.4	2.95
20	295	8.0					4.2	2.95
21	300	7.8					3.7	2.95
22	300	7.6					3.0	2.95
23	310	7.5					2.8	2.90

Time: Local.
Sweep: 1.0 Mc to 20.0 Mc in 35 seconds.

Table 31

Graz, Austria (47.1°N, 15.5°E) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		7.3	320					
01		>7.1	330					
02		6.8	335					
03		6.7	330					
04		6.3	300					
05		6.8	280					
06		>7.1	250	4.4			4.0	
07	(340)	>7.0	235	5.0		3.3	4.2	
08	350	7.5	240	5.1		3.7	4.2	
09	345	>7.6	230	5.4		3.8	4.6	
10	380	(8.7)		5.5		3.8	4.6	
11	365	>7.2	<260	5.8		(3.9)	4.2	
12	400	>7.2		---		---	4.2	
13	400	(8.3)		5.4		---	4.2	
14	380	(7.3)	<250	5.5		---	4.1	
15	350	8.6	220	5.3		---	4.2	
16	360	8.4	230	5.2		(3.7)	4.0	
17	340	7.9	240	5.0		---	4.1	
18		>8.0	250				3.9	
19		8.3	280				3.8	
20		(8.2)	280				3.9	
21		>8.0	280				4.0	
22		(7.5)	310					
23		7.2	300					

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes.

Table 32

Baguio, P.I. (16.4°N, 120.6°E) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		>11.0	335				1.7	2.50
01		11.0	300					2.70
02		9.6	270					2.70
03		8.6	270					2.65
04		7.6	270					2.75
05		6.3	265				2.6	2.70
06		8.0	300		151	(2.15)	3.2	2.70
07		8.8	285		<131	(3.00)	6.0	2.65
00		9.4	270		129	(3.45)	6.2	2.40
09		10.2	250		129	(3.85)	6.2	2.10
10		10.8	250		129	(4.00)	7.0	2.05
11	---	11.5	245	---	129	(4.10)	5.0	2.05
12	---	12.4	240	6.3	129	(4.20)	4.5	2.10
13	---	12.6	245	6.3	129	(4.15)	4.8	2.10
14	---	12.8	250	6.0	129	4.05	4.2	2.10
15	---	13.2	255	---	129	3.85	4.9	2.10
16	---	12.9	270		127	3.55	4.0	2.15
17	---	12.6	285		129	(3.00)	5.1	2.15
18		12.6	315		141	2.20	4.7	2.15
19		11.7	380				3.7	2.10
20		11.0	460				3.0	2.00
21		>10.5	440				2.8	(2.10)
22		10.5	420				3.0	2.20
23		10.7	380				2.4	2.30

Time: 120.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 33

Leopoldville, Belgian Congo (4.4°S, 15.2°E) July 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	215	10.6					3.0	2.84
01	220	8.9					3.0	2.67
02	230	7.2					3.0	2.66
03	235	6.0					2.9	2.68
04	245	5.4					3.0	2.68
05	270	6.1					2.6	2.66
06	255	10.4	245	---	115	2.6	3.4	2.82
07	265	12.1	235	---	110	3.3	4.0	2.85
08	275	12.3	230	---	105	3.8	4.6	2.73
09	295	12.4	220	---	105	4.0	4.6	2.60
10	335	12.3	215	---	105	4.0		2.48
11	355	12.8	210	---	105	4.1		2.36
12	385	13.0	210	---	105	4.0		2.27
13	415	13.8	240	---	105	4.0	4.5	2.19
14	395	14.0	245	---	110	3.7	4.0	2.20
15	385	14.2	240	---	110	3.3	4.0	2.21
16	340	14.0	250	---	115	2.6	3.4	2.27
17	280	15.0	275	---	---	---	3.0	2.38
18	260	16.0					2.8	2.50
19	265	16.0					2.3	2.54
20	220	15.7					3.0	2.55
21	220	16.0					2.4	2.64
22	220	15.0					3.0	2.75
23	210	14.0					2.6	2.72

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 34

Elisabethville, Belgian Congo (11.6°S, 27.5°E) July 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	4.9					1.9	2.45
01	250	4.2					2.6	2.40
02	255	3.7					2.0	2.45
03	265	3.0					2.3	2.50
04	255	3.6	---	---			2.1	2.30
05	245	8.0	---	---	125	2.3	3.0	2.88
06	250	10.4	240	---	110	3.0	3.4	2.82
07	255	11.6	230	---	105	3.5		2.81
08	270	11.4	230	---	105	3.8	3.8	2.68
09	280	11.5	230	---	105	3.9		2.54
10	300	11.4	235	---	105	4.0	4.4	2.45
11	340	11.1	240	---	105	4.0	4.1	2.36
12	345	11.3	240	---	105	3.8	4.7	2.33
13	355	11.5	240	---	105	3.6	4.6	2.30
14	330	11.5	240	---	110	3.2	4.8	2.30
15	290	11.4	250	---	115	2.6	4.1	2.40
16	255	12.0			---	---	3.7	2.54
17	235	11.3					3.0	2.67
18	230	10.2					2.8	2.70
19	240	11.0					3.0	2.60
20	230	10.8					2.9	2.67
21	225	9.5					2.7	2.64
22	225	7.6					2.0	2.56
23	230	6.0					2.5	2.50

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 35

Rarotonga I. (21.2°S, 159.8°W) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.8	<240					3.30
01		6.1	250					3.20
02		5.4	250					3.30
03		5.4	<250					3.35
04		4.2	240					3.35
05		3.7	250					3.20
06		3.8	(270)					3.10
07		5.2	290		---	---	2.2	3.25
08	---	9.8	250		100	2.3	3.4	3.55
09	---	12.5	250		100	3.1		3.40
10	260	13.8	240		100	3.5		3.50
11	260	13.0	230		100	3.8		3.40
12	(260)	12.1	230	---	100	3.9		3.30
13	300	11.8	210	---	100	3.9		3.20
14	(340)	12.1	210	---	100	3.8		3.15
15	340	12.4	230	---	100	3.6		3.10
16	(330)	12.5	250		100	3.3	3.8	3.10
17	---	12.3	250		100	2.8	4.3	3.15
18		13.0	250		100	1.9	4.0	3.25
19		12.8	240				3.2	3.35
20		11.2	240				2.8	3.25
21		10.5	250				2.6	3.20
22		9.0	240				1.4	3.20
23		8.0	240					3.30

Time: 165.0°W.
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 36

Sao Paulo, Brazil (23.5°S, 46.5°W) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		8.7	230				<2.0	3.05
01		8.2	240				<2.0	3.10
02		7.3	235				<2.0	3.10
03		7.0	230				<2.0	3.15
04		4.9	240				<2.0	3.00
05		4.4	260					2.90
06		4.0	260				<2.0	2.90
07		7.2	270			<2.10		3.10
08		9.9	250			2.70		3.25
09		11.4	240			3.30		3.20
10		12.5	230			3.60		3.10
11		12.9	220			3.80		3.00
12		13.0	220			3.90		2.85
13		12.9	215			3.90		2.70
14		13.6	220			3.80		2.70
15		14.0	240			3.50	3.6	2.70
16		14.2	250			3.05		2.85
17		14.5	260			2.60		3.00
18		>14.0	240			E	2.5	3.10
19		11.8	230				<2.1	3.05
20		11.4	250				<2.1	2.90
21		11.3	260				<2.1	3.00
22		11.2	240				<2.1	3.10
23		10.5	230				<2.1	3.15

Time: 45.0°W.
Sweep: 1.75 Mc to 20.0 Mc in 2 minutes 30 seconds.

Table 37

Watheroo, W. Australia (30.3°S, 115.9°E) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		>4.3	<245					3.20
01		>4.0	<250					<3.10
02		(3.9)	<250					(3.05)
03		>3.8	250					<3.00
04		4.0	<250					<3.20
05		(4.0)	<230					3.20
06		3.8	<230				<1.1	<3.30
07		>5.0	240		<175	1.55		(3.40)
08		8.0	220		110	2.50		(3.60)
09		10.4	225		115	3.00	3.1	3.50
10	---	11.5	220	---	110	3.40	3.4	3.55
11	---	11.4	(210)	---	110	3.50	3.5	3.40
12	---	11.7	215	---	110	(3.65)		3.30
13	280	11.0	(210)	---	110	(3.60)	3.6	3.30
14	---	11.6	<220	---	110	3.60	3.6	3.15
15	---	11.0	<225	---	110	3.35		3.20
16		11.0	230		115	3.00	3.2	<3.30
17		>10.8	230		115	(2.30)		(3.35)
18		>9.0	<220		---	<1.60	1.8	<3.40
19		7.2	<210				1.7	<3.30
20		(6.4)	<220				<1.4	(3.35)
21		5.8	<215				<1.3	3.35
22		(4.9)	<225				<1.4	(3.35)
23		>4.0	240				<1.2	(3.25)

Time: 120.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 45 seconds.

Table 38

Capetown, Union of S. Africa (34.1°S, 18.3°E) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		2.6	<310				2.0	2.70
01		2.7	<320				<1.6	2.75
02		2.8	<305				<1.6	2.70
03		2.8	<300				1.7	2.75
04		2.9	<280				<1.6	2.85
05		2.6	<260				2.0	2.95
06		2.5	<300				1.8	2.80
07		2.7	<270				<1.6	2.80
08		6.4	240			2.0	2.6	3.10
09	---	8.9	230			2.7	2.8	3.25
10	(240)	10.5	240	---		3.1		3.20
11	250	11.1	230	---		3.4		3.10
12	255	11.5	230	---		3.6	3.6	2.95
13	260	11.7	230	---		3.6	3.9	2.85
14	255	11.7	230	---		3.6	3.8	2.85
15	250	11.8	235	---		3.4	3.7	2.80
16	255	11.5	240			3.1	3.2	2.85
17	---	11.2	240			2.6	2.6	2.95
18		10.4	220			1.7	1.7	3.00
19		8.1	220				2.0	3.10
20		5.8	220				2.3	3.25
21		4.0	230				2.0	3.20
22		3.0	<235				2.6	3.20
23		2.5	<285				3.0	2.80

Time: 30.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 39

Christchurch, New Zealand (43.6°S, 172.8°E) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.0	300				<1.7	2.70
01		4.8	300				<1.8	2.60
02		4.6	300				3.2	2.60
03		4.6	290				<2.5	2.65
04		4.5	260		---	---	<1.7	2.75
05		4.2	250		---	---	<1.7	2.80
06		3.8	250		---	---	<1.7	2.80
07		3.7	260		---	---	<1.5	2.80
00		6.3	240		---	1.9		3.05
09	---	9.0	240	---	---	2.6		3.15
10	---	11.0	240	---	---	3.0	3.1	3.20
11	---	11.5	240	---	---	3.3		3.10
12	---	11.8	240	---	---	3.4	4.0	3.05
13	---	11.4	240	---	---	3.4	<4.0	3.00
14	---	11.9	250	---	---	3.3	4.0	3.00
15	---	11.1	240	---	---	3.1	<3.4	3.00
16		10.8	240	---	---	(2.9)		3.00
17		10.0	240		---	---	2.7	3.00
18		8.6	240				<2.3	2.90
19		7.8	250				<2.2	2.90
20		6.9	250				<2.2	2.90
21		6.2	250				<2.1	2.80
22		5.3	280				<1.8	2.70
23		4.9	280				<1.9	2.65

Time: 180.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 40

Campbell I. (52.5°S, 169.2°E) July 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		4.7	<300				3.6	2.6
01		4.4	290				3.3	2.7
02		4.4	<290				3.5	2.7
03		4.2	270				2.8	2.7
04		4.2	270				2.2	2.8
05		4.2	<260				2.5	2.8
06		3.8	<260				2.0	2.8
07		4.1	250		---	<1.5	<1.5	2.8
00		6.6	240		135	2.0	2.4	3.0
09		8.8	230		120	2.5	2.6	3.1
10	(250)	10.2	230	---	120	2.8	3.0	3.1
11	(250)	11.2	230	4.2	120	3.0	3.2	3.0
12	(260)	11.6	230	---	120	3.0	3.1	3.1
13	---	11.3	230	---	120	2.8	3.6	3.0
14	---	10.8	230		120	2.7	2.9	2.95
15		11.0	230		120	2.3	3.0	3.0
16		10.3	230		125	1.9	2.4	3.0
17		8.8	<230		---	---	<1.5	2.9
18		7.6	230				2.0	2.9
19		6.5	250				<1.5	2.9
20		5.9	250				<1.5	2.8
21		5.2	250				2.4	2.7
22		4.9	<280				3.5	2.7
23		4.8	300				3.2	2.7

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

Table 41

Godhavn, Greenland (69.2°N, 53.5°W) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.2)			131	(2.00)		2.70
01		(5.5)			<131	(2.00)		(2.70)
02		(5.2)		---	131	(2.10)		(2.80)
03		5.0		(3.5)	115	(2.20)		2.60
04		(5.2)		(3.6)	111	(2.40)		(2.65)
05		(5.2)		(3.9)	109	(2.60)		2.75
06		(5.0)		(4.2)	107	(2.95)		----
07		(5.4)		(4.4)	101	(3.10)		----
00		5.0		(4.6)	101	(3.30)		G
09		(6.2)		(4.7)	101	(3.40)		----
10		(6.4)		(4.9)	101	3.60		(2.20)
11		(6.3)		5.0	101	(3.60)		(2.50)
12		(6.3)		5.0	101	(3.65)		(2.40)
13		(6.3)		5.0	101	(3.60)		(2.35)
14		(6.0)		4.9	101	(3.55)		G
15		(5.8)		4.9	101	(3.45)		G
16		(5.8)		4.9	101	3.35	3.8	(2.30)
17		(5.6)		4.7	103	(3.25)	3.5	2.40
18		5.6		(4.5)	101	3.10		2.50
19		(5.9)		4.2	108	2.95		2.60
20		(5.7)		(4.0)	110	(2.70)		2.65
21		(5.6)		(3.8)	115	(2.50)		2.70
22		(5.6)		(3.5)	119	2.30		(2.70)
23		(5.3)		---	<137	(2.15)		2.70

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 42

Wakkanai, Japan (45.4°N, 141.7°E) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		8.3	310				2.3	2.50
01		8.1	305				2.3	2.55
02		7.8	300				2.3	2.55
03		7.5	310				2.3	2.50
04		7.6	300				2.3	2.50
05	---	8.0	260				2.9	2.55
06	385	8.0	260				3.5	2.60
07	380	8.0	270				5.0	2.65
08	380	8.0	260				6.0	2.60
09	410	8.0	(250)				5.8	2.60
10	410	8.0	250				5.5	2.55
11	440	8.1	240				5.6	2.50
12	430	8.2	250				5.4	2.60
13	420	8.3	250				5.0	2.55
14	430	8.2	250				5.0	2.55
15	430	8.0	270				4.5	2.60
16	420	7.9	260				5.0	2.60
17	400	7.9	250				4.1	2.65
18	380	8.0	280				5.5	2.70
19	---	8.0	300				4.8	2.60
20		8.0	300				4.0	2.60
21		8.3	320				4.2	2.50
22		8.3	320				3.8	2.50
23		8.5	310				2.8	2.50

Time: 135.0°E.
Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 43

Akita, Japan (39.7°N, 140.1°E) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		8.4	310				3.9	2.55
01		8.4	305				3.7	2.60
02		8.1	300				3.5	2.65
03		7.8	300				3.2	2.50
04		7.7	305				3.1	2.50
05	---	8.1	255				3.5	2.65
06	330	8.7	250				4.0	2.65
07	350	8.6	250				5.7	2.70
08	370	8.2	260				6.4	2.60
09	400	8.5	(240)				6.6	2.55
10	410	9.0	(250)				6.6	2.55
11	430	9.2	(240)				7.2	2.55
12	405	9.4	225				7.1	2.55
13	410	9.5	240				5.8	2.55
14	405	9.4	250				6.4	2.55
15	395	9.1	250				5.6	2.60
16	380	8.8	250				6.2	2.60
17	355	8.7	260				6.2	2.70
18	(310)	8.4	290				5.6	2.70
19		8.3	300				6.5	2.65
20		8.2	330				6.9	2.55
21		8.3	350				6.0	2.45
22		8.4	350				5.0	2.45
23		8.7	340				4.1	2.50

Time: 135.0°E.
Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Table 44

Tokyo, Japan (35.7°N, 139.5°E) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.5	350				3.9	2.45
01		9.0	325				4.2	2.55
02		8.4	305				4.0	2.55
03		8.1	330				3.7	2.45
04		8.0	340				3.2	2.50
05	---	8.6	275			2.30	3.0	2.60
06	350	9.2	260	---		2.90	3.9	2.60
07	350	9.3	270	---		3.40	6.0	2.60
08	350	9.2	255	---		3.75	6.6	2.50
09	440	9.2	(280)	5.9		3.90	6.8	2.40
10	430	9.6	(265)	5.8		(4.10)	6.5	2.40
11	450	10.1	(260)	6.1		----	6.6	2.45
12	440	10.3	(255)	6.0		----	6.9	2.45
13	420	10.6	260	6.0		4.05	5.6	2.50
14	410	10.4	255	5.9		----	5.8	2.45
15	405	10.0	260	5.8		3.90	5.8	2.50
16	395	9.8	265	5.6		3.65	4.5	2.55
17	360	9.6	280	---		3.15	6.0	2.55
18	325	9.3	300			2.40	5.9	2.60
19		8.8	320				4.8	2.55
20		8.6	350				5.4	2.35
21		9.0	390				5.9	2.35
22		9.0	395				6.1	2.35
23		9.2	375				6.0	2.40

Time: 135.0°E.
Sweep: 1.0 Mc to 20.0 Mc in 18 seconds.

Table 45

Yamagawa, Japan (31.2°N, 130.6°E) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		10.0	340				5.8	2.55
01		10.0	300				5.0	2.65
02		9.3	290				5.5	2.70
03		8.9	300				4.0	2.55
04		8.4	300				3.7	2.55
05		8.2	300				3.6	2.60
06	---	9.0	255				3.6	2.90
07	---	9.4	250				4.0	2.85
08	(285)	9.0	250				5.6	2.70
09	385	9.4	250				7.4	2.50
10	400	9.8	250				8.3	2.45
11	410	10.3	230				7.1	2.50
12	410	10.8	230				5.9	2.50
13	405	11.2	240				5.6	2.50
14	400	11.4	240				5.7	2.55
15	390	11.3	245				5.6	2.55
16	370	11.1	250				5.1	2.60
17	355	11.0	250				5.8	2.65
18	320	10.8	250				5.8	2.65
19		10.0	<295				4.8	2.65
20		9.5	300				4.2	2.55
21		9.2	350				4.9	2.45
22		9.4	350				5.6	2.45
23		9.7	350				5.8	2.50

Time: 135.0°E.
Sweep: 1.0 Mc to 20.0 Mc in 1 minute.

Table 46

Leopoldville, Belgian Congo (4.4°S, 15.2°E) June 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	12.2					2.8	2.77
01	210	9.1					3.0	2.66
02	240	7.8					3.0	2.58
03	240	6.7					3.0	2.59
04	245	5.0					3.0	2.65
05	270	7.0	---	---	---	---	2.6	2.60
06	260	10.8	250	---	120	2.7	3.8	2.81
07	260	12.8	240	---	110	3.4	4.0	2.81
08	280	12.9	230	---	110	3.8	4.2	2.67
09	305	12.8	220	---	105	4.0		2.55
10	345	12.8	220	---	105	4.1		2.39
11	370	13.1	245	---	105	4.1		2.33
12	390	13.6	240	---	105	4.0		2.22
13	405	14.0	240	---	105	4.0	4.6	2.20
14	385	14.4	240	---	105	3.7	4.1	2.23
15	365	14.1	245	---	115	3.2	4.1	2.26
16	335	14.0	260	---	115	2.6	4.3	2.34
17	290	14.8	265	---			3.8	2.42
18	260	15.7					3.1	2.52
19	265	15.7					2.7	2.50
20	230	16.0					2.2	<2.54
21	230	16.1					2.6	2.58
22	225	15.6					2.7	2.70
23	220	14.6					2.4	2.73

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 47

Elisabethville, Belgian Congo (11.6°S, 27.5°E) June 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	235	6.1					1.6	2.42
01	235	5.0					1.6	2.42
02	245	3.7					2.2	2.48
03	260	3.0					2.2	2.54
04	260	4.1					1.6	2.28
05	245	9.0	---	---	120	2.2	3.2	2.86
06	245	11.6	240	---	110	3.0	3.6	2.81
07	250	12.1	230	---	100	3.6	4.1	2.70
08	270	12.1	230	---	105	3.9	4.2	2.59
09	290	12.0	235	---	100	4.0	4.7	2.51
10	325	11.7	235	---	100	4.0	5.0	2.39
11	350	11.9	230	---	105	4.0	4.8	2.32
12	365	11.7	245	---	105	3.9	4.8	2.24
13	350	11.6	240	---	105	3.7	4.6	2.24
14	330	11.8	240	---	110	3.4	4.7	2.26
15	280	11.8	255	---	115	2.6	4.1	2.35
16	250	12.0					3.9	2.52
17	230	11.6					3.8	2.62
18	230	10.0					3.8	2.62
19	230	10.1					3.0	2.50
20	230	9.9					2.7	2.59
21	225	9.4					2.5	2.58
22	230	8.4					1.9	2.44
23	230	7.0					1.8	2.39

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 48

Rarotonga I. (21.2°S, 159.8°W) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.2	270					2.80
01		7.0	260					2.85
02		5.6	260					2.95
03		5.6	280					2.90
04		4.8	250					3.00
05		3.6	290					2.80
06		4.2	300					2.75
07		6.9	290		200	1.6		2.80
08		(10.9)	250		100	2.4		(3.15)
09	---	(14.0)	250		100	3.2	3.6	(3.25)
10	---	14.0	240		100	3.5	4.0	3.20
11	---	13.5	240		100	3.8	3.8	2.95
12	---	12.5	240		100	3.9		2.90
13	---	12.8	240		100	3.9	4.2	2.85
14	---	12.8	240	---	100	3.8	4.2	2.75
15	---	12.9	250		100	3.8	4.0	2.80
16	---	12.2	250		100	3.4	3.9	2.80
17		12.8	250		100	2.9	3.6	2.80
18		13.2	250		100	2.0	3.0	2.95
19		13.1	250				3.1	3.05
20		9.8	240				2.9	(2.90)
21		9.2	250				2.3	2.80
22		8.8	250					2.85
23		8.0	250					2.85

Time: 165.0°W.
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 49

Cape Hallett (72.3°S, 170.3°E) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(4.6)	275		---	---	<1.4	(2.45)
01		(4.7)	295		---	---	<1.7	----
02		(4.1)	285		---	(1.5)		(2.40)
03		(4.7)	270		---	---	<1.5	----
04		(5.0)	(240)		---	---	<2.2	----
05		(3.9)	245		---	---	<2.0	----
06		(4.6)	285		---	---	<1.5	----
07		(3.9)	265		---	---	<1.8	----
08		(5.3)	260		---	---	<1.8	----
09		---	250		---	---	<1.5	----
10		(5.6)	230		---	---	<2.9	----
11		(7.8)	240		---	---	<1.5	----
12		(7.0)	230		---	---	<2.1	----
13		(7.0)	250		---	---	<3.0	(2.70)
14		(7.0)	245		---	---	4.7	(2.70)
15		(7.7)	245		---	---	5.4	----
16		(7.0)	250		---	---	<2.3	(2.60)
17		(7.5)	245		---	---	<2.1	(2.65)
18		(8.0)	240		---	---	<1.4	2.65
19		(7.4)	240		---	---	<1.4	----
20		(7.0)	250		---	---	<1.4	(2.65)
21		(6.4)	260		---	---	<1.2	----
22		(6.2)	260		---	---	<1.3	----
23		(4.2)	260		---	---	<1.2	(2.30)

Time: 165.0°E.

Table 50

Scott Base (77.8°S, 166.8°E) June 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(4.9)	290					(3.10)
01		(4.6)	300					----
02		(4.3)	300					(3.20)
03		(5.2)	290					----
04		(4.0)	260					----
05		(3.7)	250					(3.15)
06		(3.9)	250					(3.20)
07		(3.6)	240					----
08		(3.8)	250					(3.20)
09		(4.2)	240				1.5	(3.20)
10		(4.0)	250				2.5	----
11		(5.0)	250				3.6	(3.25)
12		(5.0)	260				2.8	(3.05)
13		6.4	250				4.0	(3.10)
14		6.4	250				2.6	(3.30)
15		7.3	250				2.1	(3.10)
16		8.1	250					(3.20)
17		8.8	250					3.10
18		8.7	250					(3.20)
19		7.9	250					(3.10)
20		(4.8)	280					(2.80)
21		5.4	280					----
22		(5.8)	270					(3.10)
23		4.6	300					(2.85)

Time: 165.0°E.

Table 51

Providenie Bay, U.S.S.R. (64.4°N, 173.4°W) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	350	5.8						2.4
01	380	5.9						2.3
02	380	6.0						2.2
03	370	5.9						2.3
04	370	6.2						2.3
05	370	6.2	260	3.2	120	2.4		2.3
06	340	6.0	260	4.0	130	2.6		2.4
07	380	6.5	250	4.5	120	3.0		2.3
08	490	6.3	250	4.8	120	3.2		2.4
09	420	6.6	240	5.0	120	3.4		2.5
10	450	7.0	240	5.4	120	3.5		2.4
11	370	7.3	240	5.6	120	3.6		2.5
12	380	7.2	240	5.6	120	3.6		2.5
13	370	7.3	250	5.2	120	3.6		2.5
14	270	7.9	240	5.3	120	3.5		2.6
15	250	8.0	250	5.2	120	3.4		2.6
16	250	8.3			120	3.0		2.7
17	270	8.4			120	2.6		2.6
18	270	8.2			130	2.3		2.7
19	280	7.8						2.6
20	280	7.2						2.5
21	290	6.4						2.5
22	300	6.2						2.4
23	350	6.0						2.4

Time: 165.0°W.

Table 52

Sverdlovsk, U.S.S.R. (56.7°N, 61.1°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	6.4						2.3
01	350	5.7						2.3
02	360	5.3						2.3
03	360	5.2						2.4
04	350	5.0						2.4
05	300	5.6			150	1.9		2.5
06	280	6.4			140	2.4		2.6
07	270	7.4	270		120	2.8		2.7
08	300	7.9	250	5.1	120	3.1		2.6
09	310	8.5	250	5.4	120	3.4		2.6
10	320	9.5	240	5.4	120	3.6		2.6
11	320	10.0	240	5.5	120	3.6		2.5
12	320	10.6	240	5.6	120	3.7		2.5
13	300	10.8	240	5.5	120	3.6		2.5
14	300	10.8	250	5.5	120	3.6		2.5
15	260	10.6	250	5.4	120	3.4		2.5
16	260	10.4	260		120	3.2		2.6
17	270	10.0			120	2.8		2.6
18	280	9.8			130	2.4		2.7
19	280	9.5			150	1.9		2.6
20	280	8.8						2.6
21	280	7.8						2.6
22	300	7.2						2.5
23	320	6.8						2.4

Time: 60.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 10 minutes, manual operation.

Table 53

Tomsk, U.S.S.R. (56.5°N, 84.9°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.7						2.4
01	320	6.4						2.4
02	320	5.8						2.4
03	330	5.8						2.4
04	320	5.4						2.4
05	320	5.6			120	1.5		2.5
06	280	6.3			130	2.0		2.6
07	260	7.2	280	---	120	2.6		2.6
08	280	8.2	260	4.7	120	2.9		2.6
09	260	9.1	230	4.9	120	3.3		2.6
10	260	9.7	220	5.1	120	3.5		2.7
11	280	10.9	220	5.4	120	3.6		2.6
12	270	11.5	220	5.7	120	3.7		2.6
13	280	11.6	220	5.8	120	3.7		2.7
14	280	11.7	220	5.6	110	3.6		2.6
15	260	11.2	220	5.4	120	3.5		2.7
16	240	11.0	220	5.0	120	3.3		2.7
17	260	10.6			120	3.0		2.6
18	260	10.4			120	2.6		2.7
19	260	10.0			130	2.0		2.7
20	260	9.7				1.5		2.6
21	280	9.0						2.6
22	280	8.3						2.5
23	290	7.2						2.5

Time: 90.0°E.
Sweep: 1.1 Mc to 16.0 Mc in 10 minutes, manual operation.

Table 54

Moscow, U.S.S.R. (55.5°N, 37.3°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.8						2.38
01	320	5.7						2.38
02	320	5.3			---	---		2.37
03	310	5.1			---	E		2.40
04	310	5.4	---	---	120	1.4		2.57
05	280	6.0	280	(3.6)	110	2.0		2.77
06	280	6.5	250	3.9	110	2.6		2.83
07	280	7.2	240	4.9	110	2.9		2.66
08	360	8.2	240	5.4	110	3.3		2.59
09	360	9.0	230	5.5	110	3.4		2.60
10	370	9.7	230	5.8	110	3.6		2.54
11	360	10.2	220	6.2	110	3.6		2.52
12	340	10.3	230	6.0	110	3.6		2.55
13	330	10.6	230	6.2	110	3.6		2.56
14	340	10.2	240	6.2	110	3.5		2.58
15	320	10.2	240	5.7	110	3.3		2.60
16	280	9.8	240	5.1	110	3.1		2.65
17	260	9.8	250	4.8	110	2.6		2.71
18	260	9.4	---	---	110	2.0		2.73
19	260	8.8			120	1.3		2.71
20	260	8.2			---	E		2.63
21	260	7.4			---	---		2.53
22	280	6.9			---	---		2.46
23	320	6.4			---	---		2.40

Time: 30.0°E.
Sweep: 0.5 Mc to 20.0 Mc in 10 to 30 seconds.

Table 55

Simferopol, U.S.S.R. (44.4°N, 34.0°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		8.1						
01		8.1						
02		7.2						
03		7.0						
04		6.3						
05		6.7						
06		7.0						
07		8.6				2.6		
08		9.5				3.1		
09		10.4				3.5		
10		11.9		6.1		3.6		
11		12.1		6.4		3.9		
12		12.7		7.0		3.9		
13		12.5		7.0		3.9		
14		12.8		6.9		3.9		
15		12.3		6.9		3.9		
16		11.8		(6.3)		3.8		
17		11.5				3.2		
18		11.3				2.9		
19		11.1				2.9		
20		10.0						
21		8.8						
22		8.8						
23		8.5						

Time: 30.0°E.
Sweep: 0.5 Mc to 16.0 Mc in 15 seconds.

Table 56

Alma-Ata, U.S.S.R. (43.2°N, 76.9°E) April 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.4						2.6
01	300	7.2						2.6
02	300	7.1						2.5
03	300	6.9						2.6
04	300	6.6						2.6
05	280	7.0			(100)	E		2.7
06	250	8.3			100	2.2		2.9
07	240	10.0			100	3.0		2.9
08	240	11.5	220	4.6	100	3.4		2.9
09	250	12.2	220	4.9	100	3.8		2.9
10	250	12.6	220	5.1	100	4.0		2.8
11	250	13.0	210	5.2	100	4.1		2.7
12	250	13.0	220	5.2	100	4.2		2.7
13	250	13.0	220	5.0	100	4.1		2.7
14	250	12.7	210	4.9	100	3.9		2.7
15	240	12.5	220	4.7	100	3.7		2.7
16	240	11.8	230	4.7	100	3.4		2.7
17	250	11.7			100	3.0		2.8
18	250	11.2			100	2.4		2.8
19	240	10.6			100	1.5		2.9
20	240	9.3						2.8
21	250	8.8						2.7
22	270	8.4						2.7
23	280	7.8						2.6

Time: 75.0°E.
Sweep: 1.6 Mc to 17.0 Mc in 10 to 15 minutes, manual operation.

Table 57*

Singapore, British Malaya (1.3°N, 103.8°E) February 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		10.4	245					2.70
01		9.7	255					2.65
02		8.8	260				0.9	2.70
03		9.0	265					2.75
04		8.2	255					2.90
05		7.0	240					3.10
06		5.8	250					2.85
07		8.9	255		125	2.5		2.90
08		10.3	235		120	3.3	3.3	2.70
09		11.0	225		115	3.7	4.0	2.15
10		11.4	215		115	4.0		2.05
11		11.8	210		115	4.2		2.05
12		11.9	215		115	4.3		2.05
13		12.5	210		115	4.2		2.05
14		12.9	210		115	4.1		2.10
15		>13.3	225		110	3.9	4.0	2.15
16		13.6	240		115	3.4	3.5	2.20
17		13.4	250		115	2.9	3.2	2.20
18		13.4	280			2.0	2.4	2.10
19		13.1	370				(1.6)	2.00
20		12.6	375					(2.10)
21		(12.9)	300					----
22		12.7	250				1.1	(2.55)
23		11.6	240					2.65

Time: 105.0°E.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes, automatic operation.
*Average values except foF2 and fEs, which are median values.

Table 58*

Ibadan, Nigeria (7.4°N, 3.9°E) January 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		8.7	270				4.1	---
01		8.5	270				3.8	2.7
02		8.7	265				4.1	2.9
03		>8.6	250				3.4	3.0
04		>8.5	225					3.2
05		(7.4)	220				>4.3	---
06		>6.7	260		(135)	1.60	5.2	---
07		>9.8	250		(115)	2.70	6.7	3.1
08		11.5	235		---	3.40	9.4	2.6
09		12.2	225		(115)	3.85	10.5	2.4
10		12.6	215		---	4.05	13.7	2.2
11		12.3	215		---	4.20	14.0	2.0
12		12.3	210		---	4.20	13.9	2.0
13		12.3	210		---	4.15	14.0	2.0
14		12.2	215		---	4.00	14.0	2.0
15		12.0	230		---	3.80	10.6	1.9
16		>11.6	245		---	3.35	10.3	1.9
17		>11.2	270		---	2.60	9.6	1.9
18		10.6	330		---	1.50	(6.5)	1.9
19		8.9	445					---
20		(8.8)	445					---
21		>8.5	380					---
22		>8.4	320					---
23		>8.4	290				3.8	---

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes, automatic operation.
*Average values except foF2 and fEs, which are median values.

Table 59

Sao Paulo, Brazil (23.5°S, 46.5°W) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	16.2					<2.3	2.8
01	280	14.8					<2.2	3.05
02	240	13.2					<2.0	3.0
03	260	10.8					<2.1	2.8
04	260	9.6					<2.2	2.7
05	270	8.4			---	---	3.1	2.6
06	250	9.2			---	<2.6	<2.9	2.7
07	240	10.7			115	3.0		2.7
08	240	11.6			110	3.5		2.6
09	---	12.3	220	---	110	3.8		2.4
10	---	13.0	220	---	110	4.1		2.4
11	(260)	13.6	220	5.4	---	---		2.4
12	(240)	14.0	220	5.5	---	---		2.4
13	---	14.2	220	5.4	110	---		2.5
14	(260)	14.6	220	5.0	110	---	4.4	2.45
15	---	14.6	230	---	115	3.8		2.5
16	---	14.8	240	---	120	3.4	4.2	2.55
17	260	14.8			125	2.9	3.6	2.5
18	280	14.4			---	<2.5	2.6	2.5
19	350	14.0					<2.5	2.3
20	410	14.0					<2.2	(2.2)
21	360	(14.5)					<2.2	(2.3)
22	340	(14.9)					<2.3	(2.6)
23	320	(15.2)					<2.3	(2.7)

Time: 45.0°W.
Sweep: 1.75 Mc to 20.0 Mc in 2 minutes 30 seconds.

Table 60

Quetta, Pakistan (30.2°N, 67.0°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	---	----	---	---	---	---		----
08	(300)	8.4	240	4.7	110	3.1	4.5	2.89
09	320	8.4	235	5.0	110	3.2	4.8	2.68
10	340	9.2	220	5.2	110	---	4.3	2.65
11	380	9.5	220	5.8	110	---	4.4	2.44
12	380	10.6	240	5.8	110	---	4.6	2.50
13	350	11.0	---	5.8	110	---	4.7	2.62
14	350	11.1	240	5.5	---	---		2.58
15	340	11.0	240	5.4	110	---	4.3	2.67
16	(340)	(11.4)	---	5.1	110	---	(3.5)	(2.66)
17	---	----			---	---		----
18	---	(10.6)			110	---	(3.9)	(3.04)
19								
20								
21								
22								
23								

Time: 75.0°E.

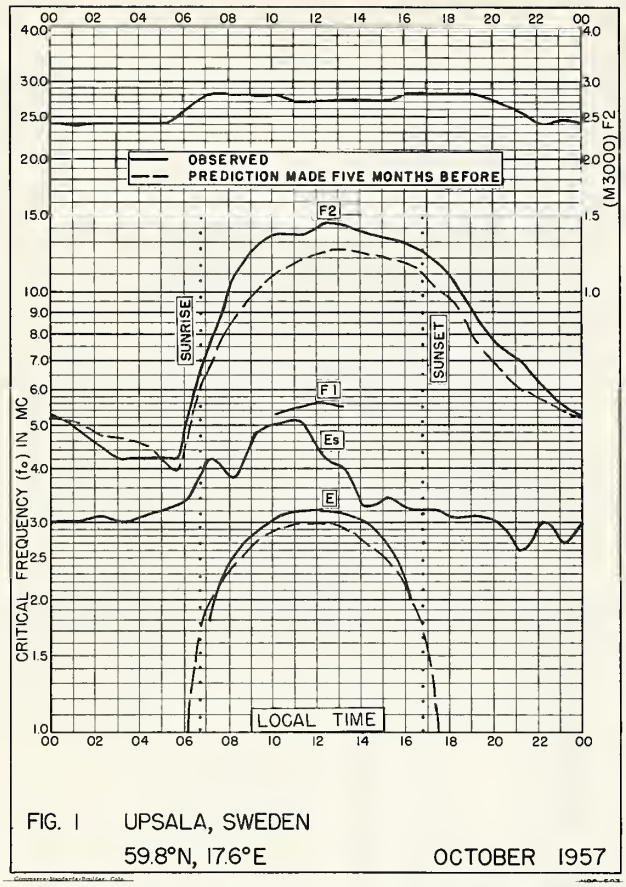


FIG. 1 UPSALA, SWEDEN
59.8°N, 17.6°E OCTOBER 1957

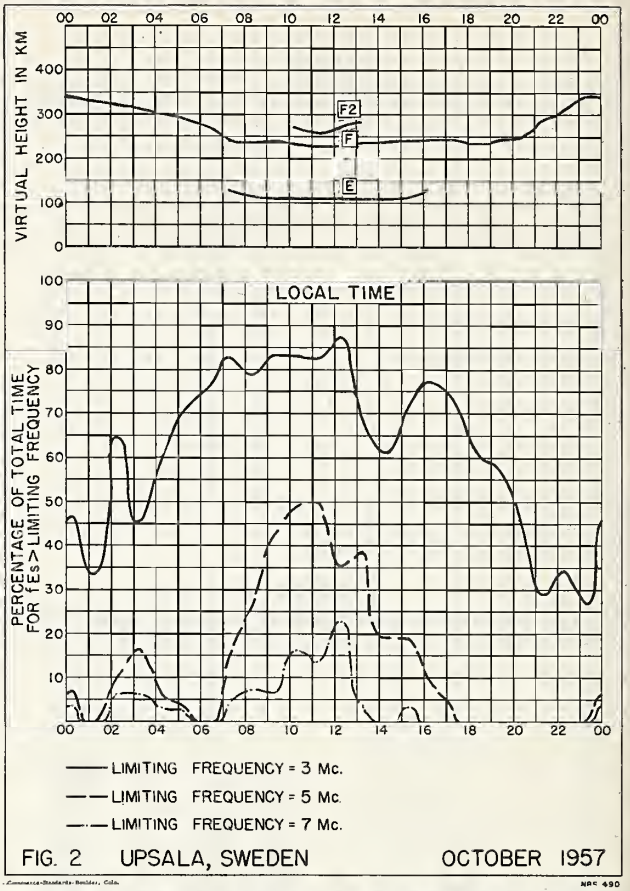


FIG. 2 UPSALA, SWEDEN OCTOBER 1957

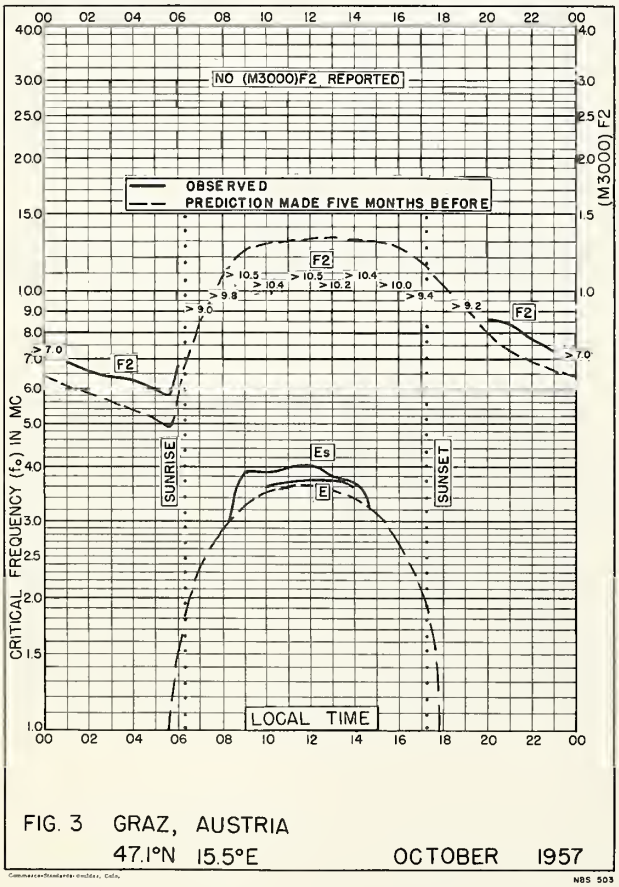


FIG. 3 GRAZ, AUSTRIA
47.1°N 15.5°E OCTOBER 1957

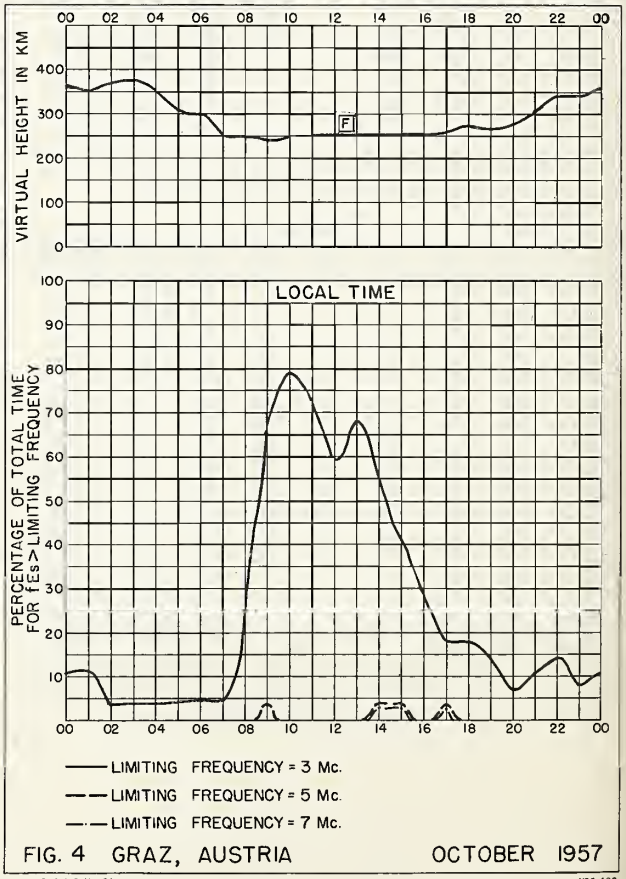


FIG. 4 GRAZ, AUSTRIA OCTOBER 1957

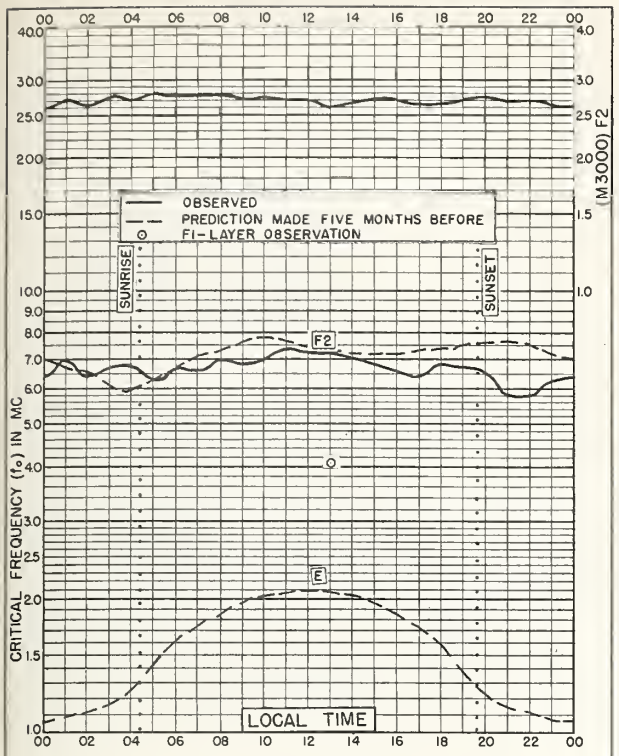


FIG. 5 FLETCHERS ICE I.
82.0° N, 104.4°W SEPTEMBER 1957

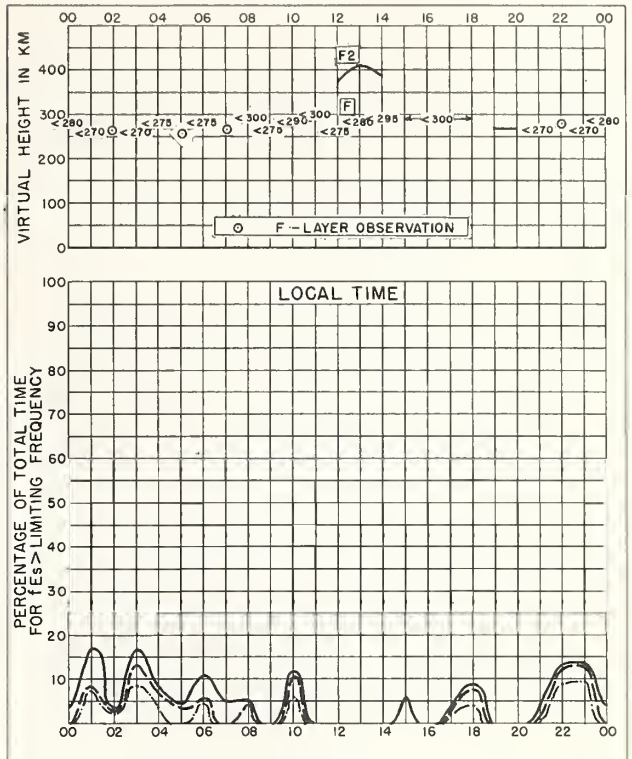


Fig. 6 FLETCHERS ICE I. SEPTEMBER 1957

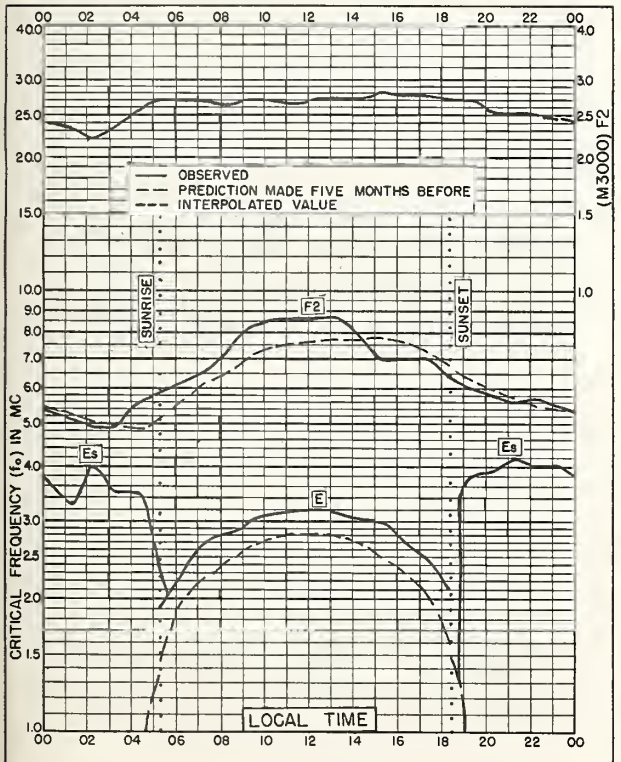


FIG. 7 TROMSO, NORWAY
69.7°N, 19.0°E SEPTEMBER 1957

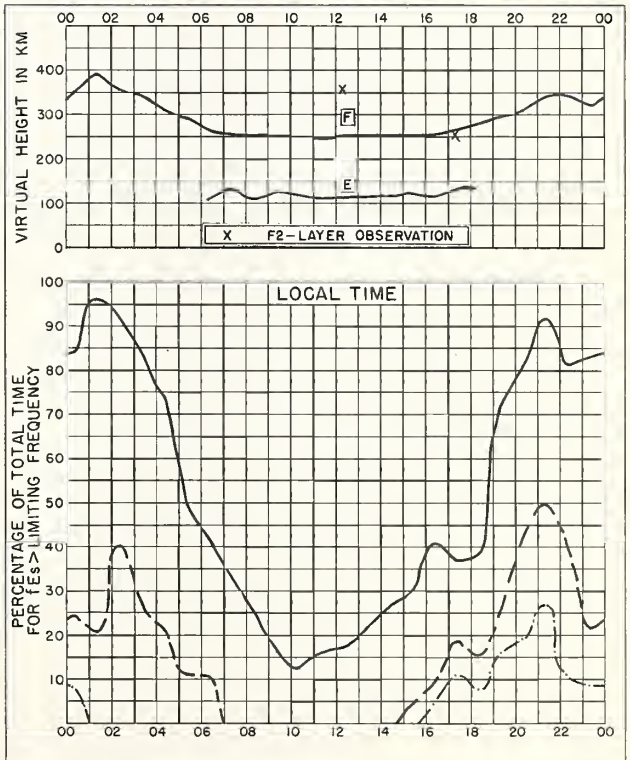


FIG. 8 TROMSO, NORWAY SEPTEMBER 1957

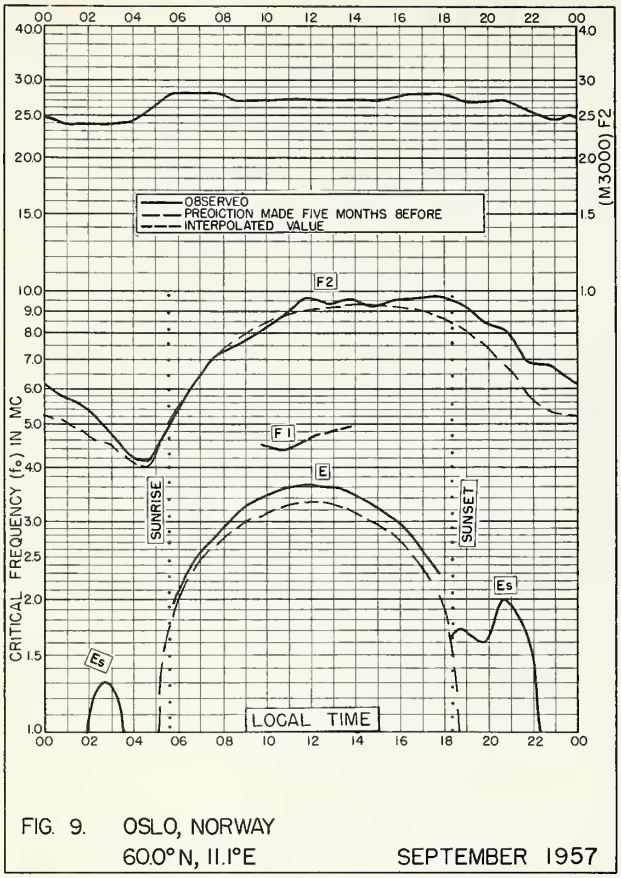


FIG. 9. OSLO, NORWAY
60.0°N, 11.1°E SEPTEMBER 1957

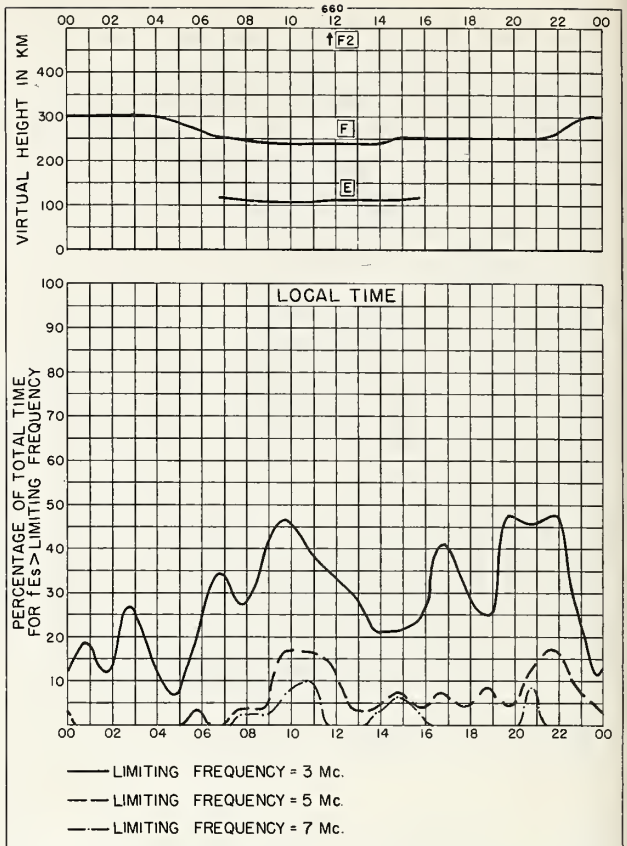


FIG. 10. OSLO, NORWAY SEPTEMBER 1957

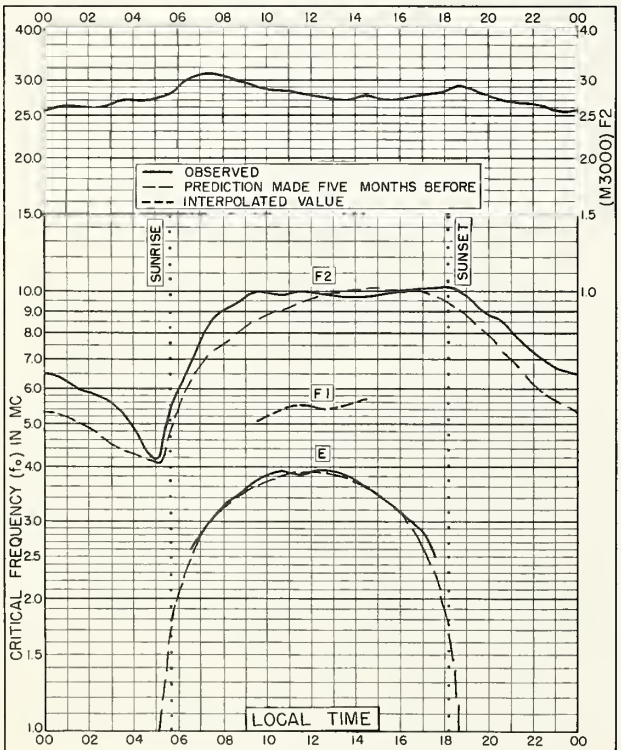


FIG. 11. ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W SEPTEMBER 1957

NBS 503

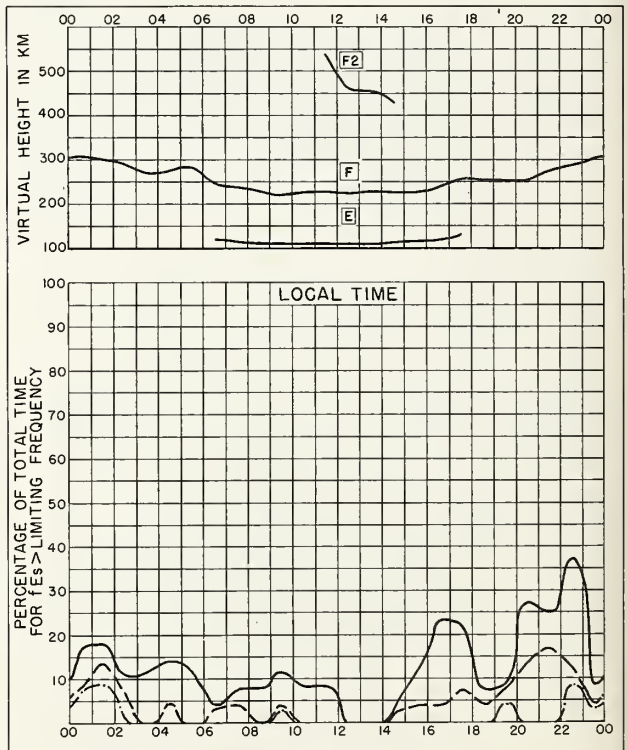


FIG. 12. ST. JOHN'S, NEWFOUNDLAND SEPTEMBER 1957

Commerce-Standards-Boulder, Colo.
NBS 490

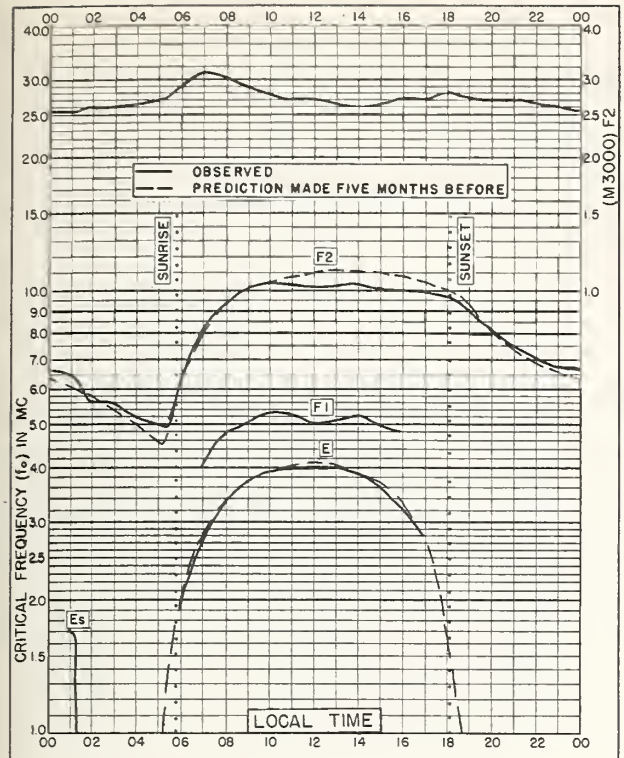


FIG. 13. WASHINGTON, D.C.
38.7° N 77.1° W SEPTEMBER 1957

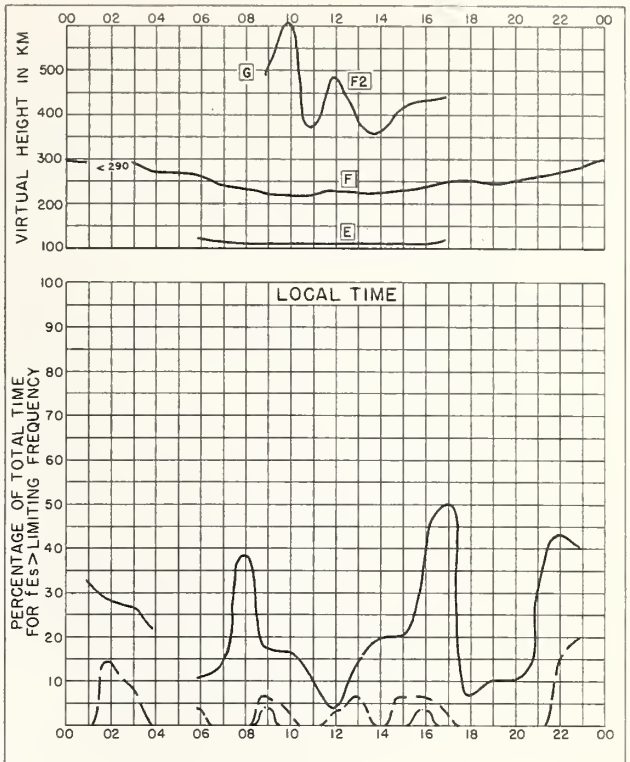


FIG. 14. WASHINGTON, D.C. SEPTEMBER 1957

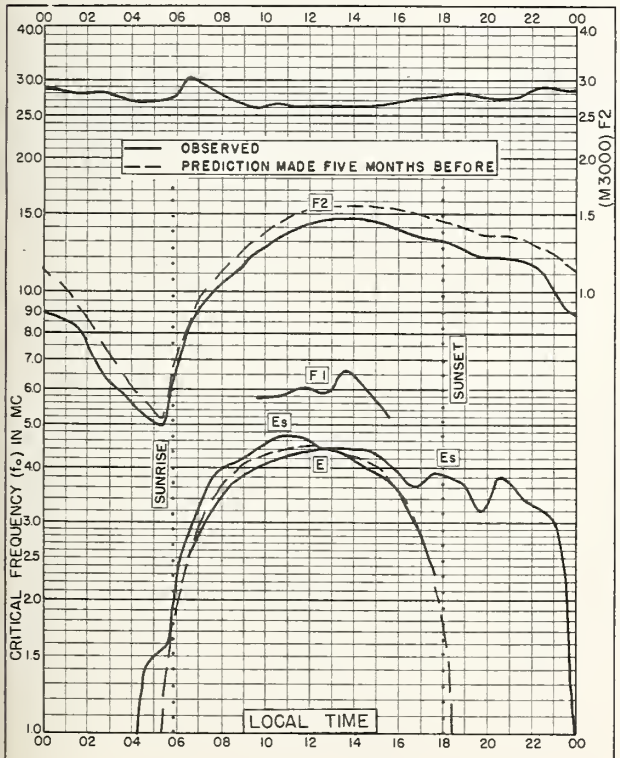


FIG. 15. MAUI, HAWAII
20.8° N 156.5° W SEPTEMBER 1957

NBS 503

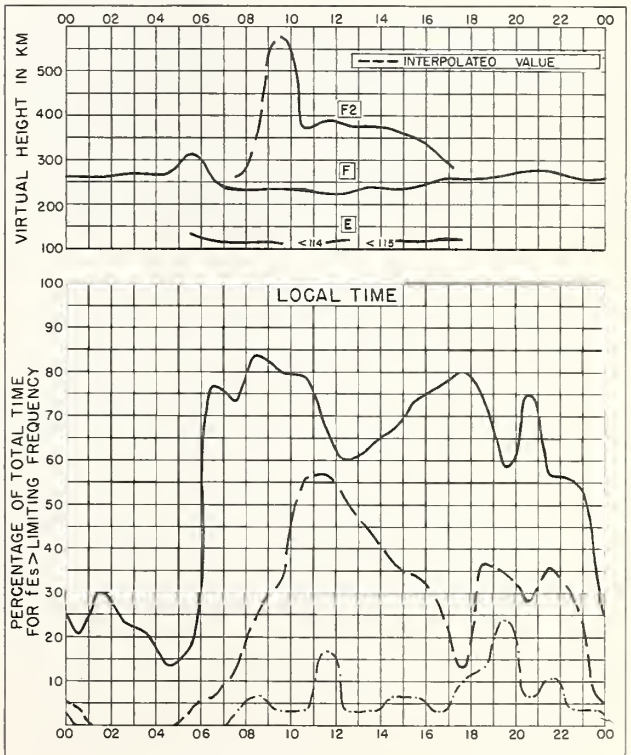


FIG. 16. MAUI, HAWAII SEPTEMBER 1957

Commerce-Boulder, Colo.

NBS 490

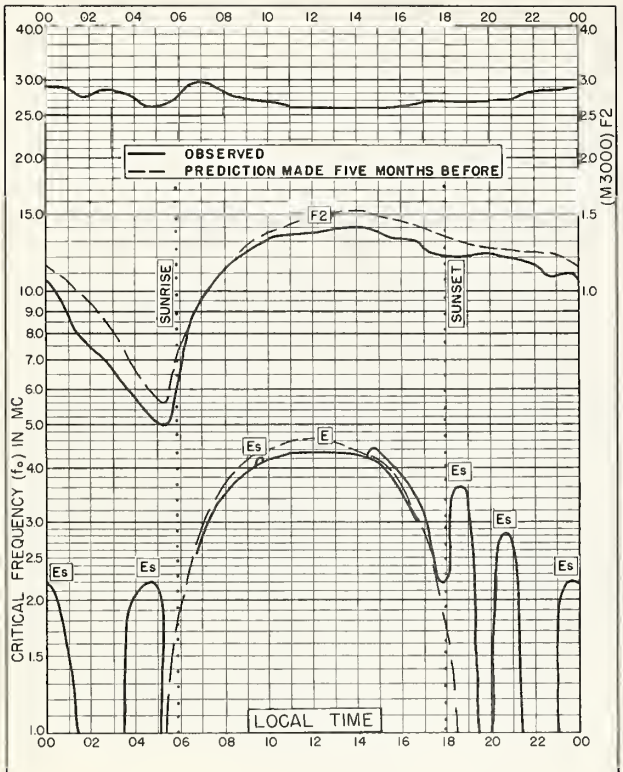
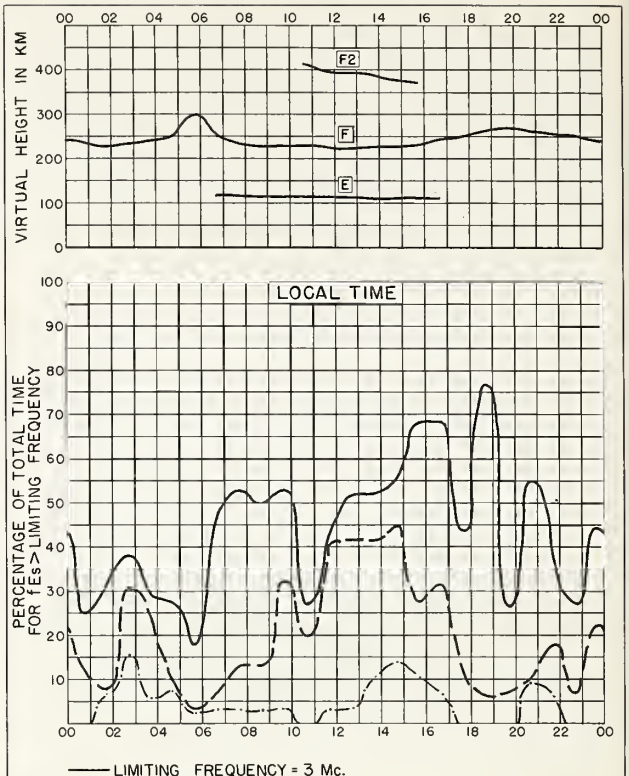


FIG. 17. PANAMA CANAL ZONE
9.4°N, 79.9°W SEPTEMBER 1957



SEPTEMBER 1957
FIG. 18. PANAMA CANAL ZONE

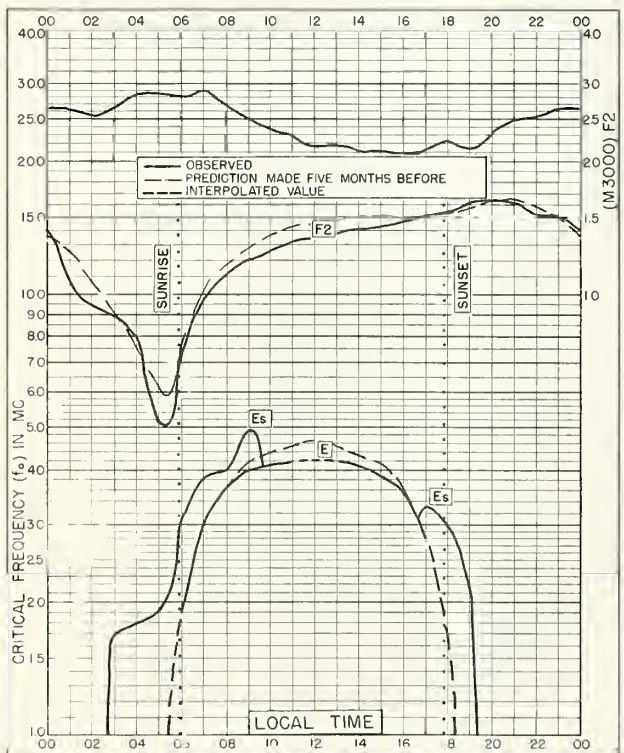
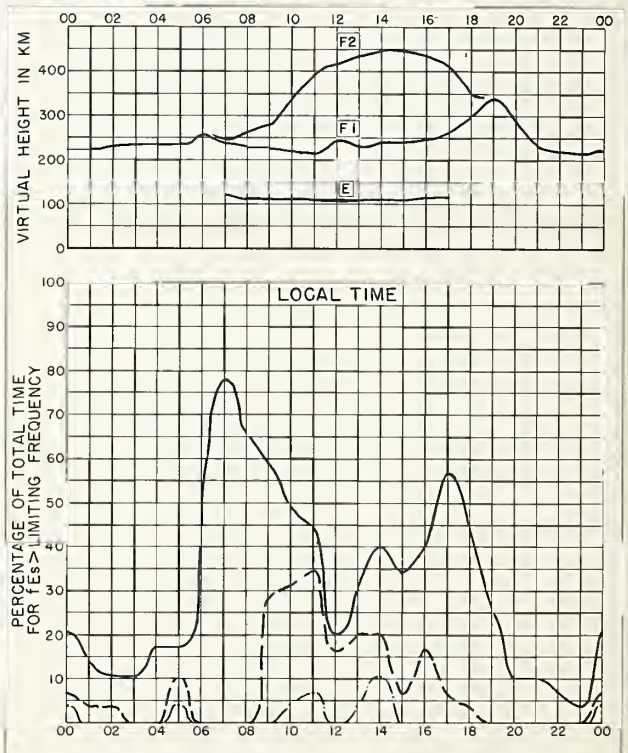


FIG. 19. LEOPOLDVILLE, BELGIAN CONGO
4.4°S, 15.2°E SEPTEMBER 1957

NBS 503



SEPTEMBER 1957
FIG. 20. LEOPOLDVILLE, BELGIAN CONGO

Commerce-Standards-Boulder, Colo.

NBS 490

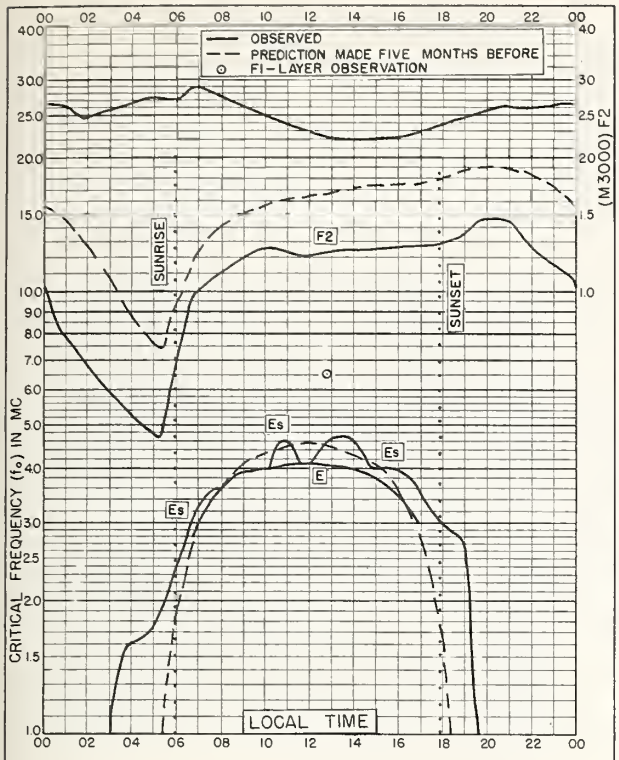
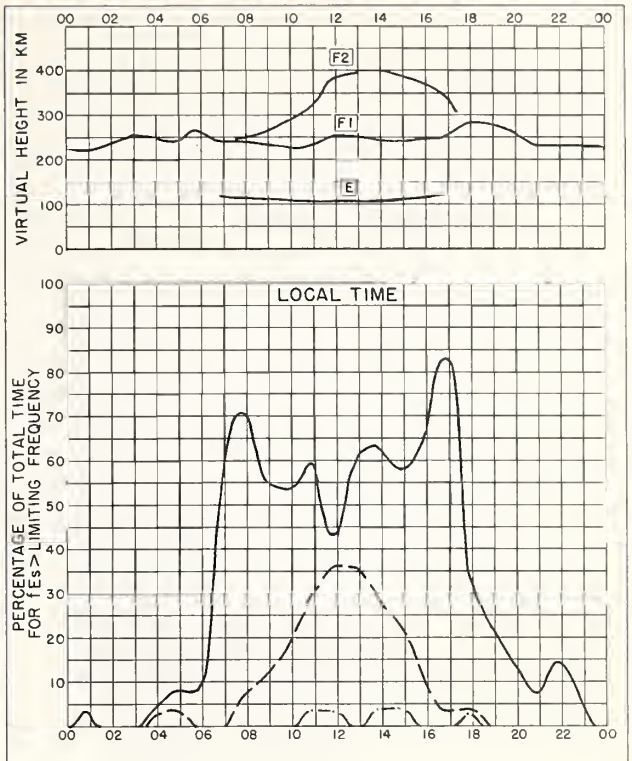


FIG. 21. ELISABETHVILLE, BELGIAN CONGO
11.6° S 27.5° E SEPTEMBER 1957



SEPTEMBER 1957

FIG. 22. ELISABETHVILLE, BELGIAN CONGO

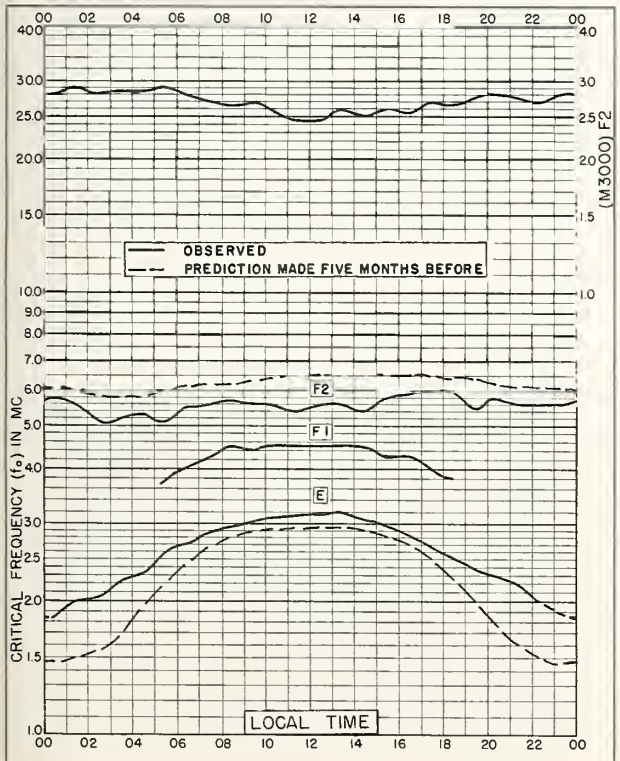


FIG. 23. THULE, GREENLAND
76.6°N, 68.7°W AUGUST 1957

NBS 503

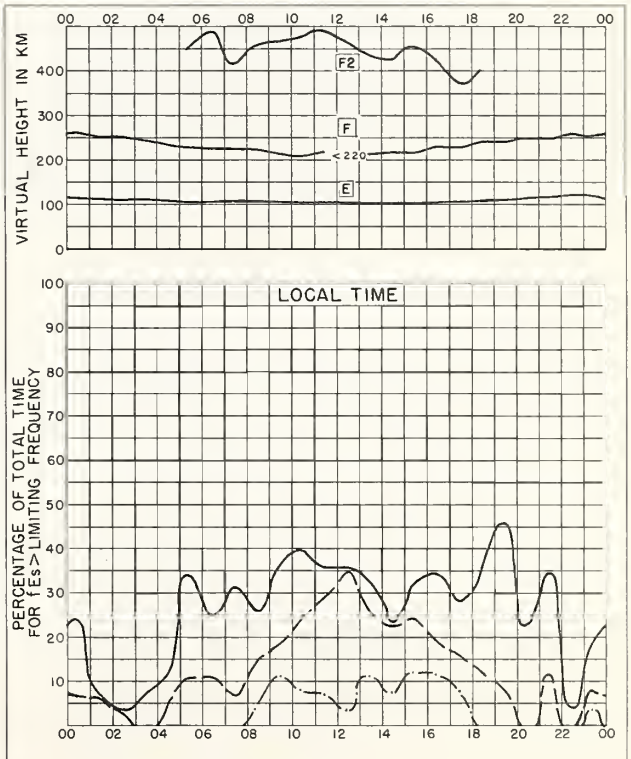


FIG. 24. THULE, GREENLAND AUGUST 1957

NBS 490

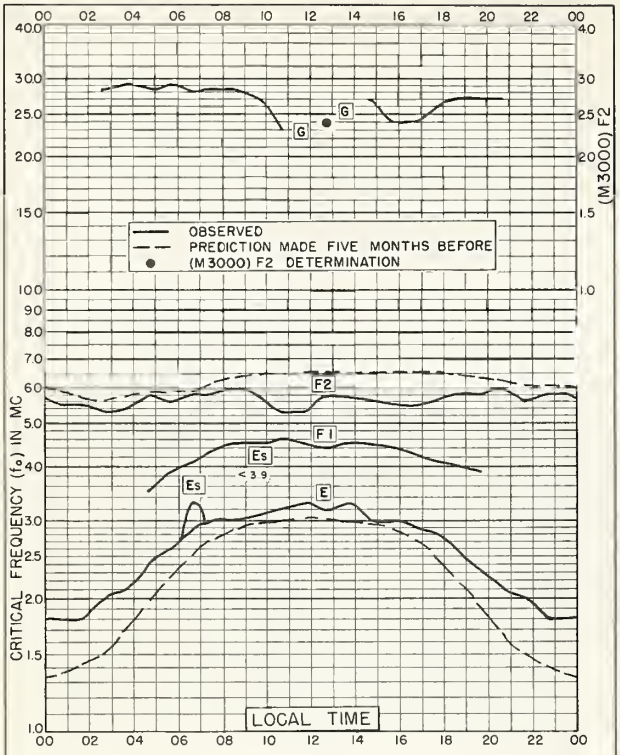


FIG. 25. RESOLUTE BAY, CANADA
74.7°N, 94.9°W AUGUST 1957

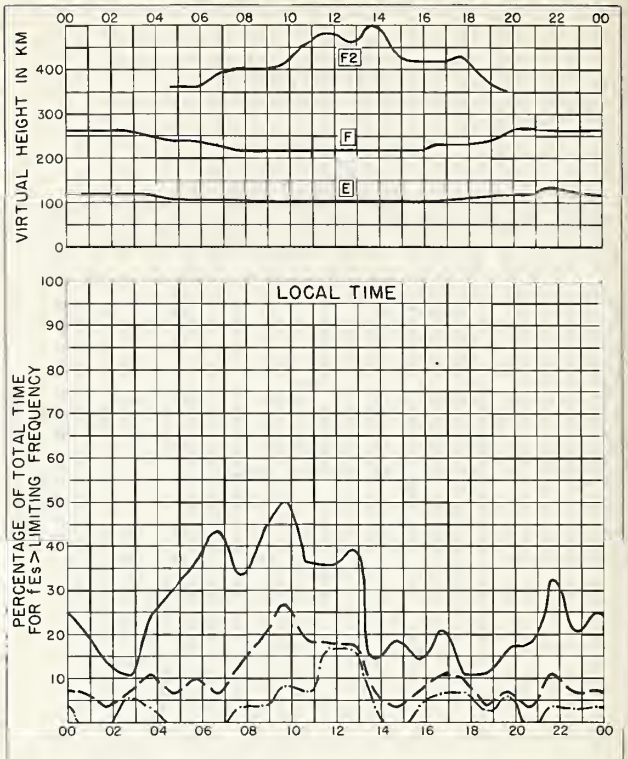


FIG. 26. RESOLUTE BAY, CANADA AUGUST 1957

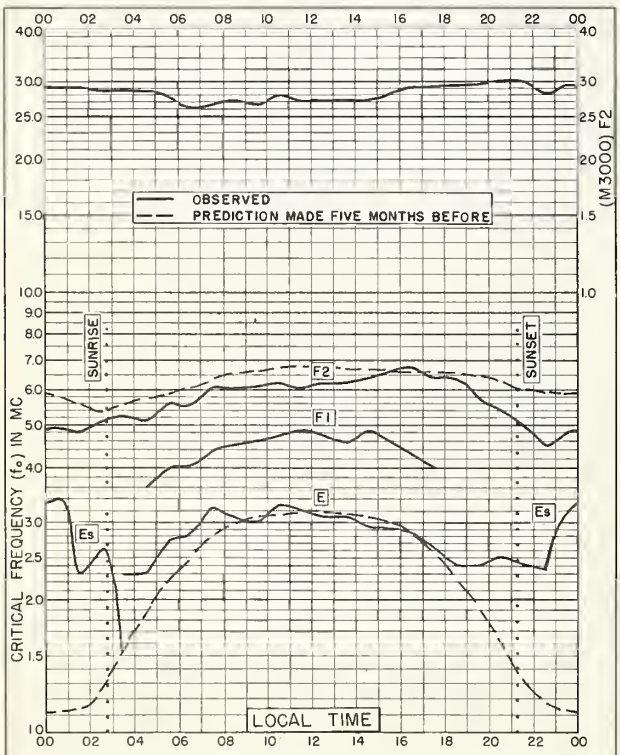


FIG. 27. POINT BARROW, ALASKA
71.3°N 156.8° W AUGUST 1957

NBS 503

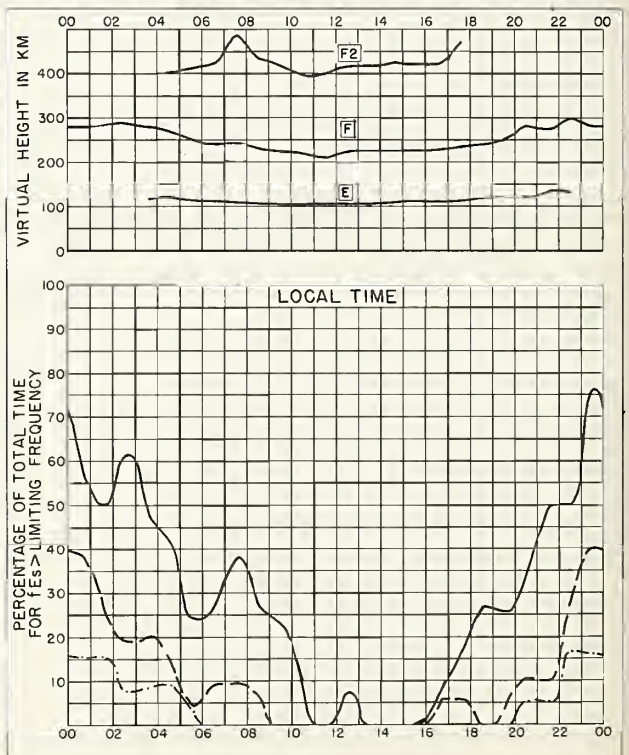


FIG. 28. POINT BARROW, ALASKA AUGUST 1957

NBS 490

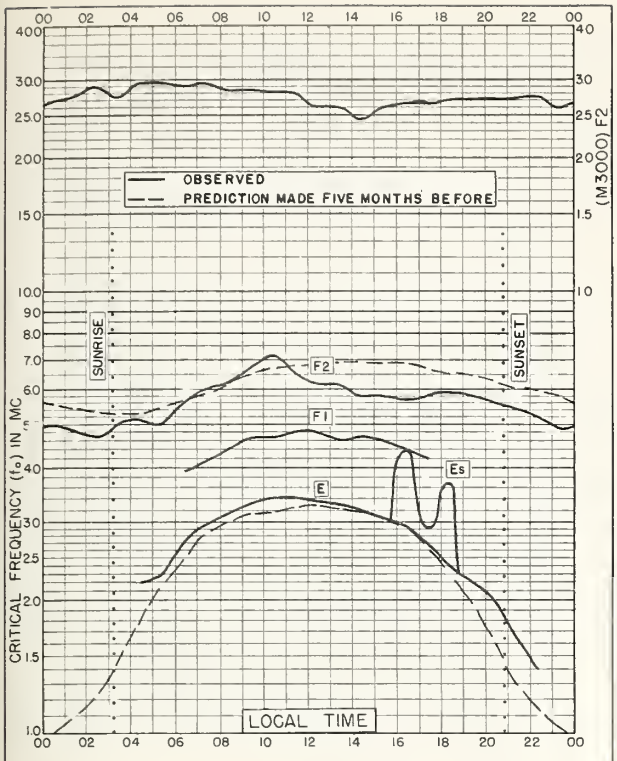


FIG. 29. GODHAVN, GREENLAND
69.2°N, 53.5°W AUGUST 1957

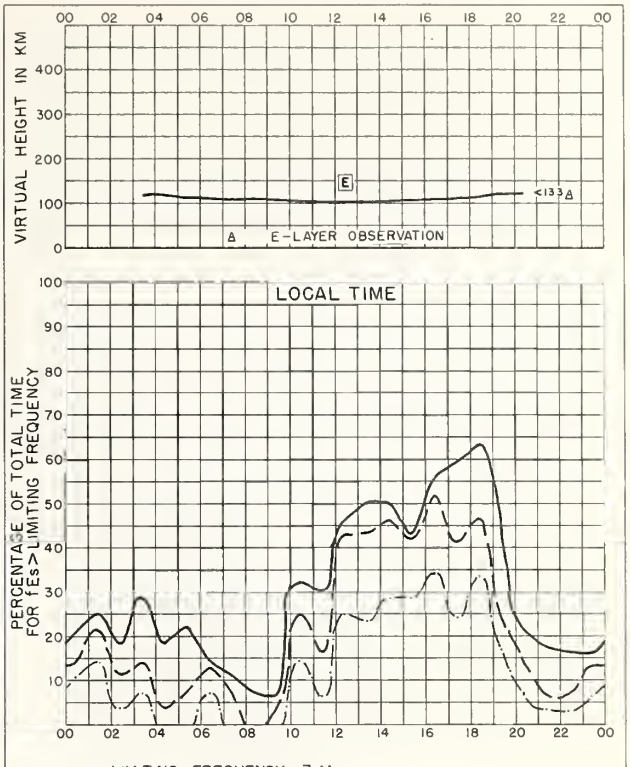


FIG. 30. GODHAVN, GREENLAND AUGUST 1957

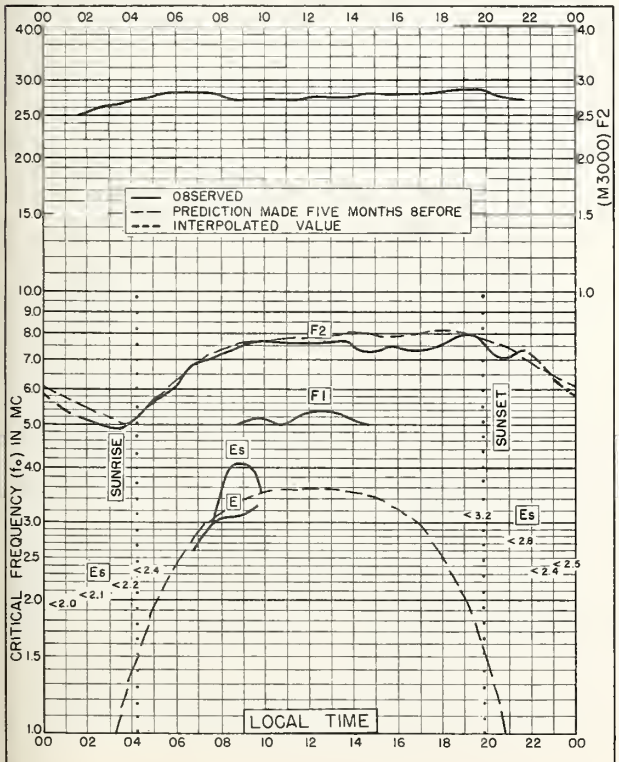


FIG. 31. NURMIJARVI, FINLAND
60.5° N 24.6° E AUGUST 1957

NBS 503

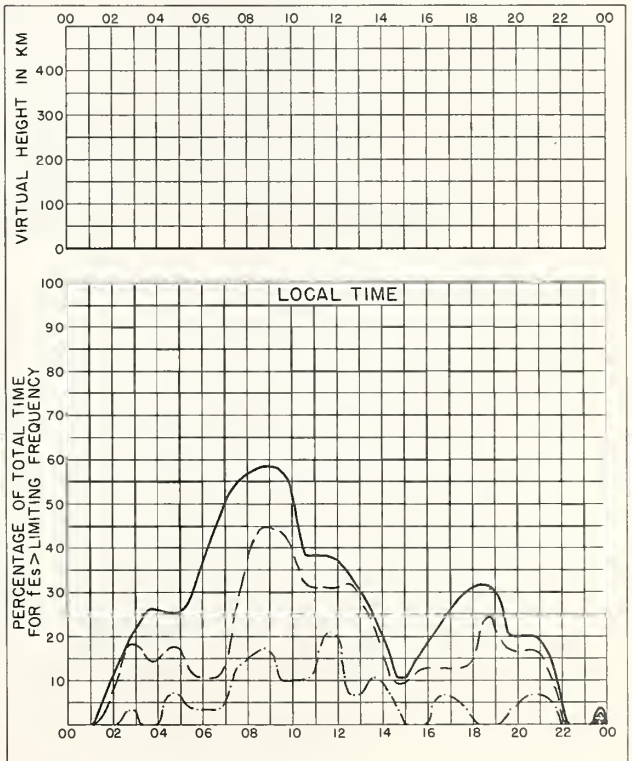


FIG. 32. NURMIJARVI, FINLAND AUGUST 1957

NBS 490

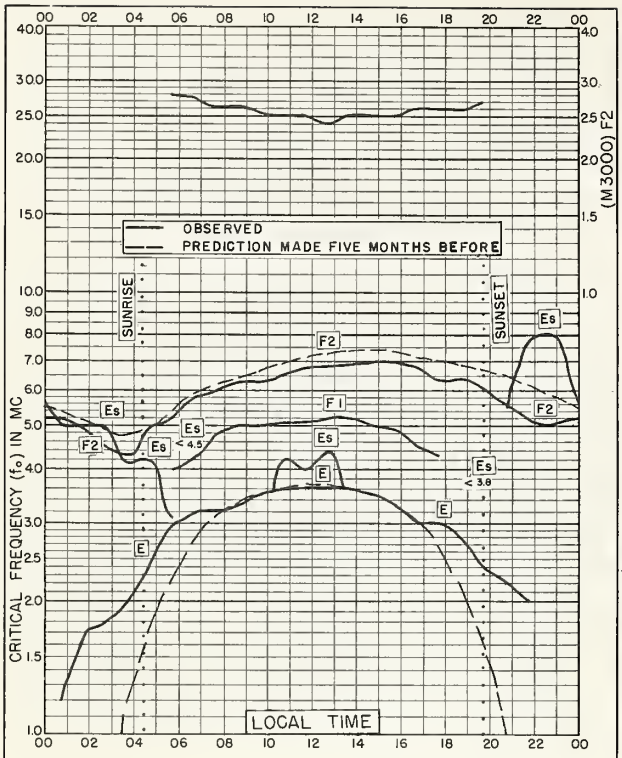


FIG. 33. CHURCHILL, CANADA
58.8°N, 94.2°W AUGUST 1957

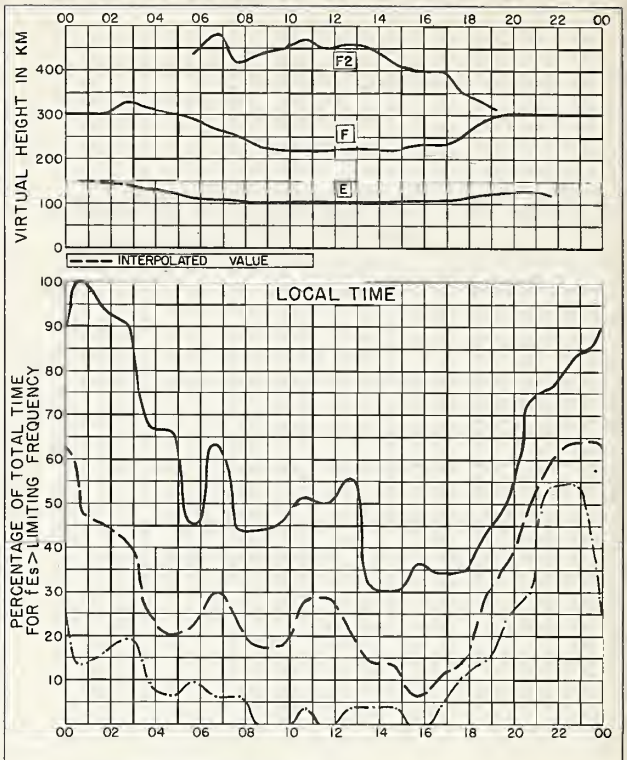


FIG. 34. CHURCHILL, CANADA AUGUST 1957

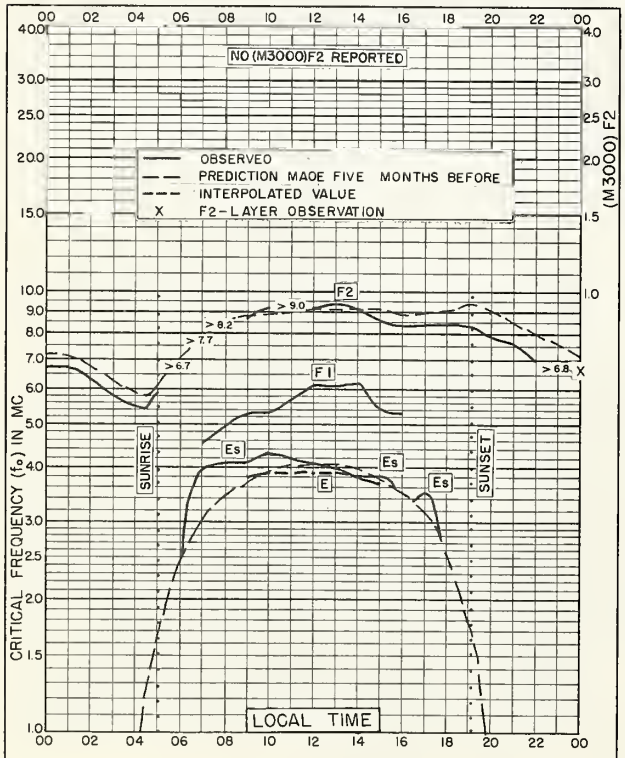


FIG. 35. GRAZ, AUSTRIA
47.1° N 15.5° E AUGUST 1957

NBS 503

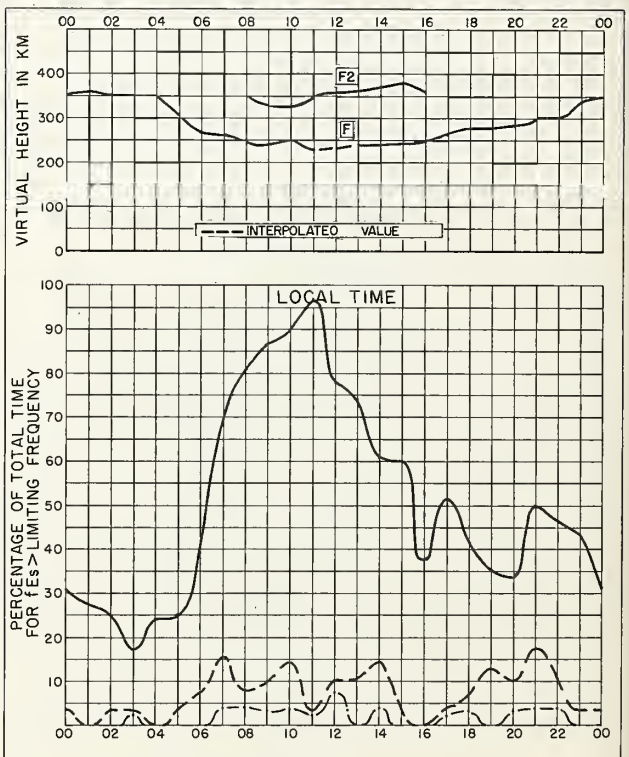


FIG. 36. GRAZ, AUSTRIA AUGUST 1957

Commerce-Standards-Boulder, Colo.
NBS 490

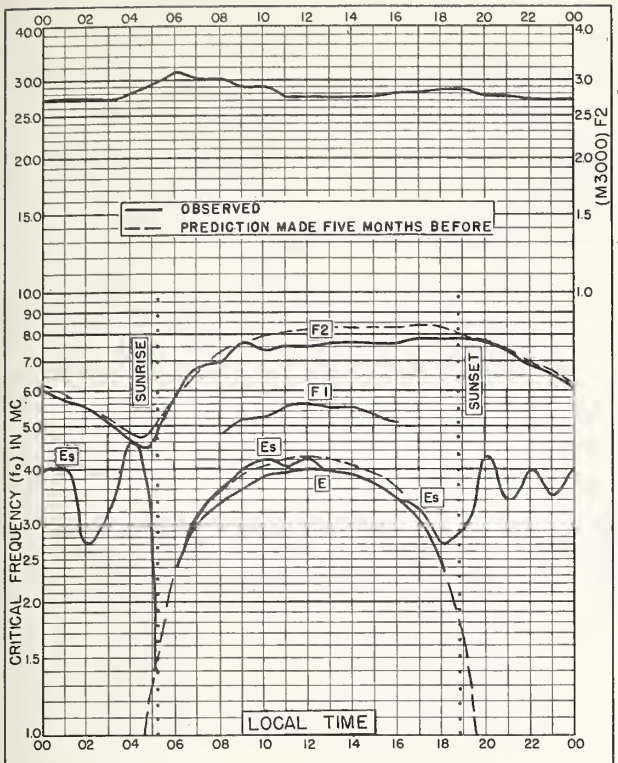
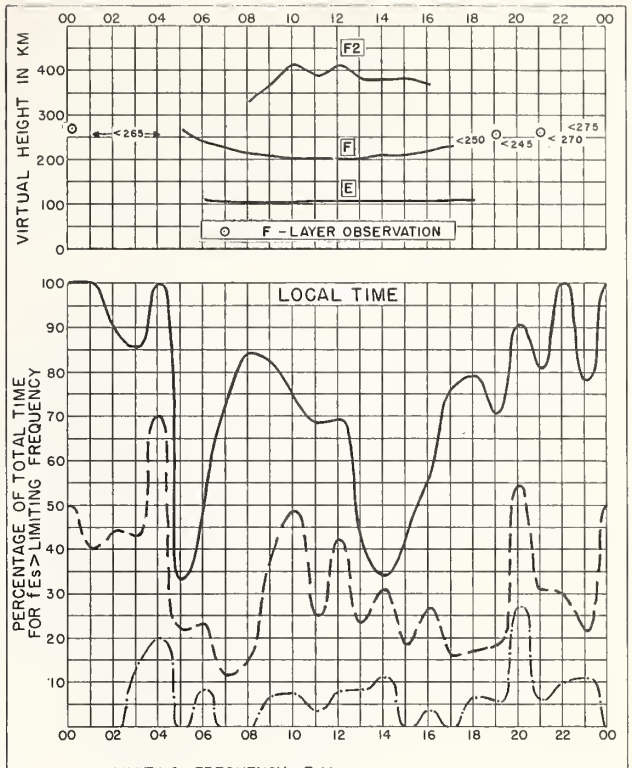


FIG. 37. FT. MONMOUTH, NEW JERSEY
40.3°N, 74.1°W AUGUST 1957



AUGUST 1957
FIG. 38. FT. MONMOUTH, NEW JERSEY

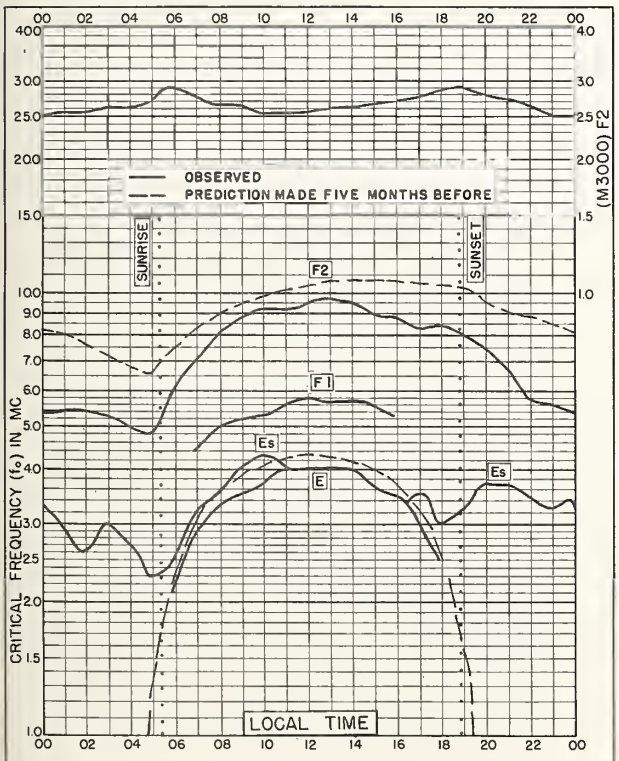
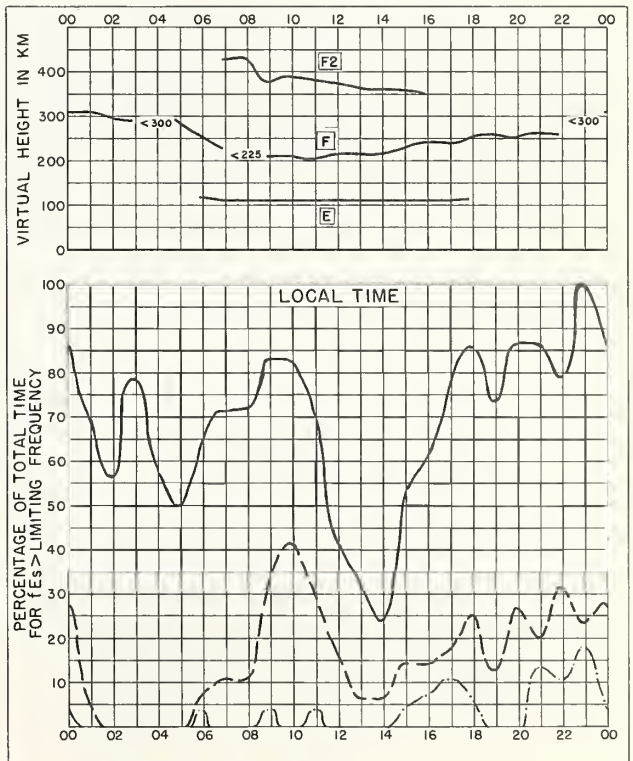


FIG. 39. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W AUGUST 1957

NBS 503



AUGUST 1957
FIG. 40. SAN FRANCISCO, CALIFORNIA

Commerce-Boulder-Colo.

NBS 490

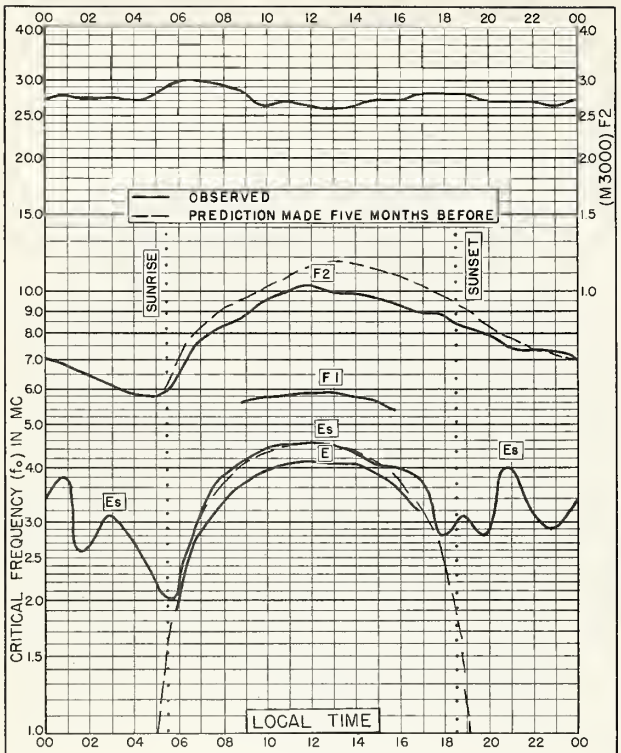


FIG. 41 GRAND BAHAMA I.
26.6°N, 78.2°W AUGUST 1957

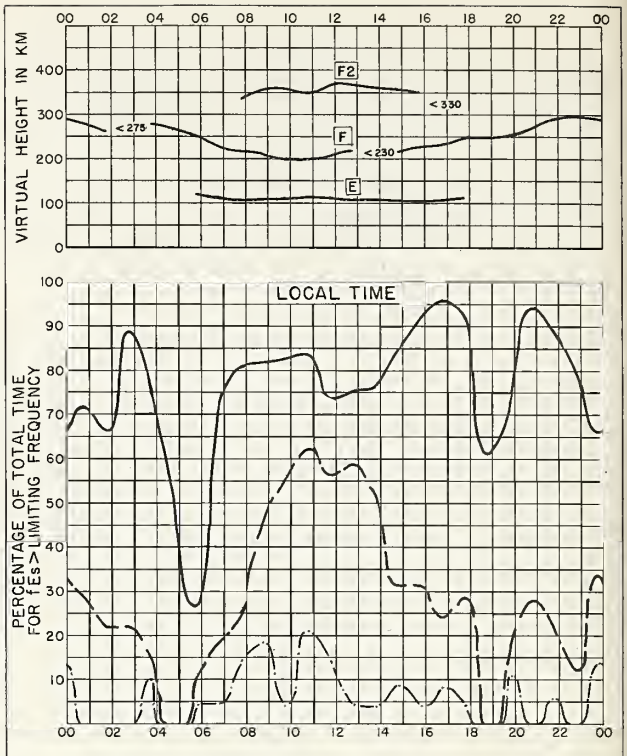


FIG. 42 GRAND BAHAMA I. AUGUST 1957

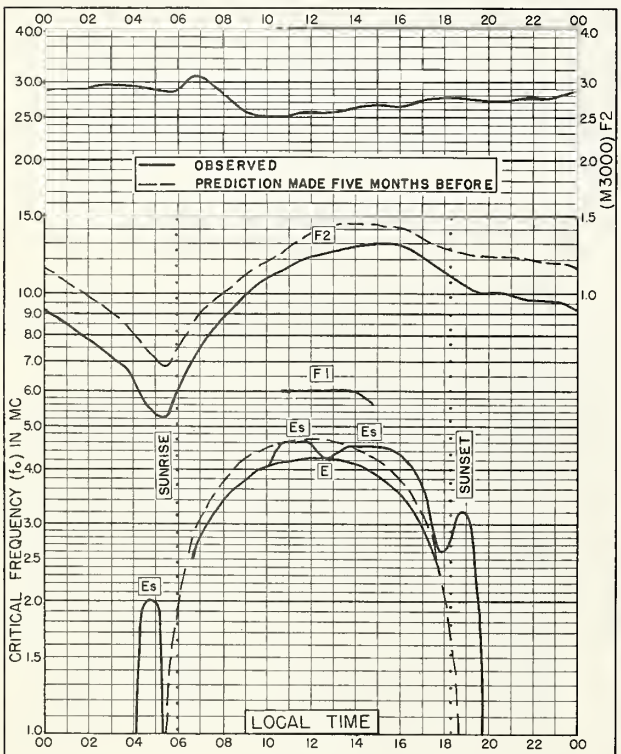


FIG. 43. PANAMA CANAL ZONE
9.4° N 79.9° W AUGUST 1957

NBS 503

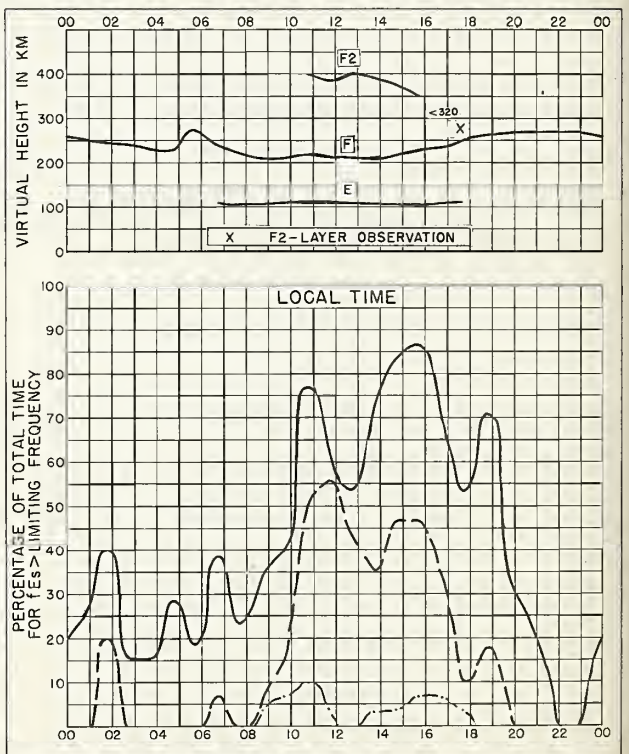


FIG. 44. PANAMA CANAL ZONE AUGUST 1957

Commerce-Boulder-Boulder, Colo.

NBS 490

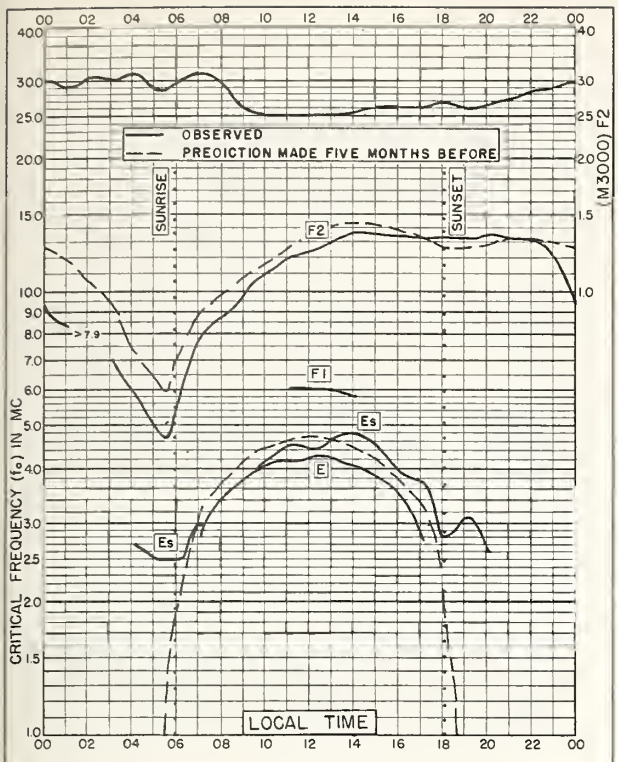


FIG. 45. BOGOTA, COLOMBIA
4.5° N, 74.2° W AUGUST 1957

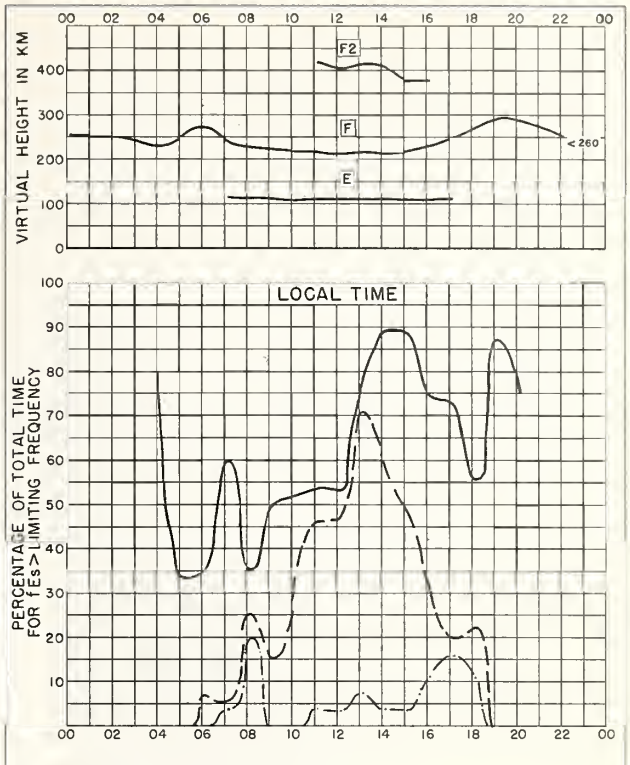


FIG. 46. BOGOTA, COLOMBIA AUGUST 1957

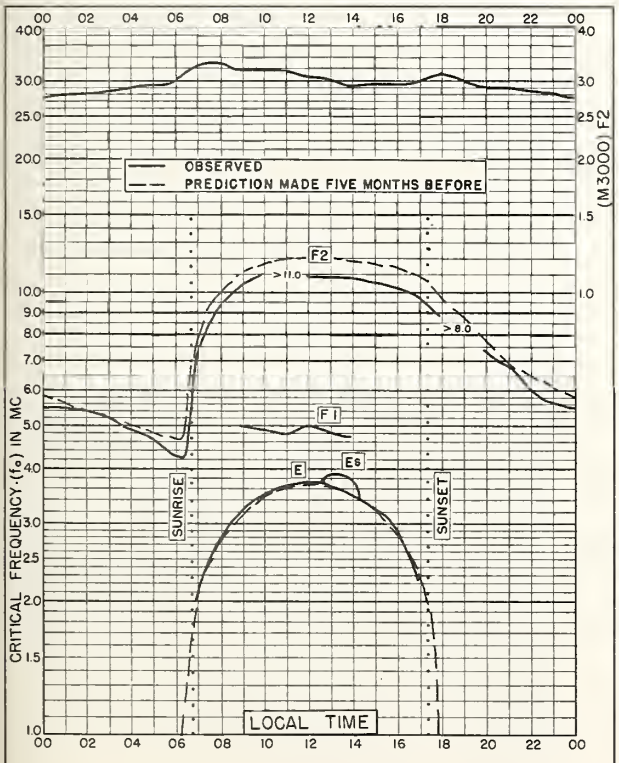


FIG. 47. CANBERRA, AUSTRALIA
35.3° S 149.0 E AUGUST 1957

NBS 503

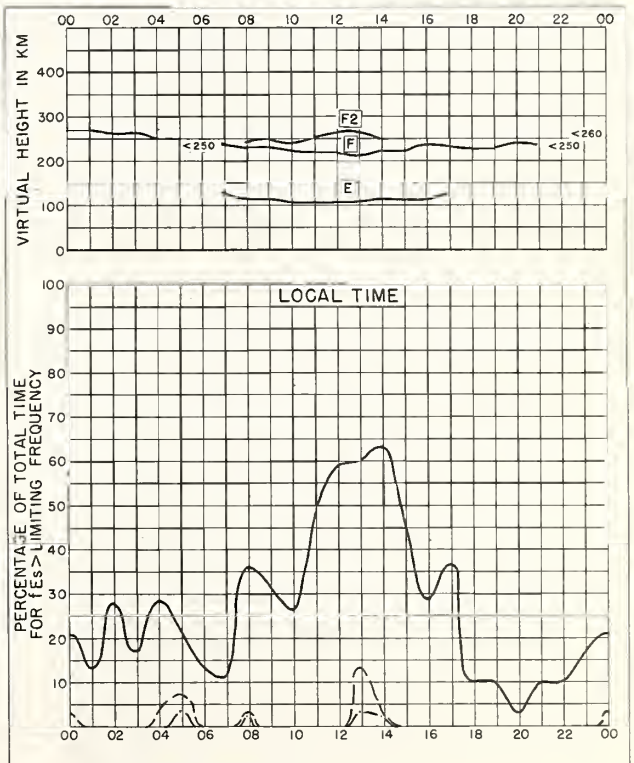


FIG. 48. CANBERRA, AUSTRALIA AUGUST 1957

Commerce-Boulder, Colo.

NBS 490

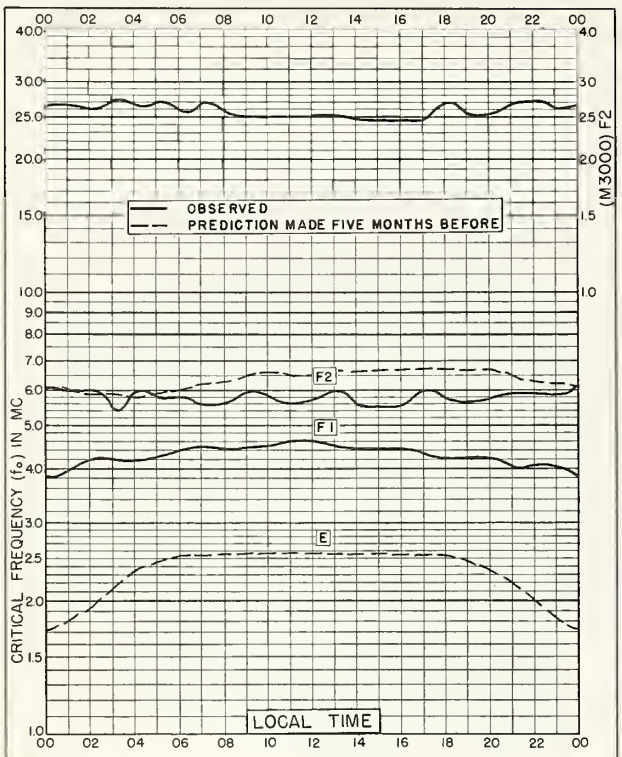


FIG. 49. FLETCHERS ICE I.
82.0° N, 102.0° W
JULY 1957

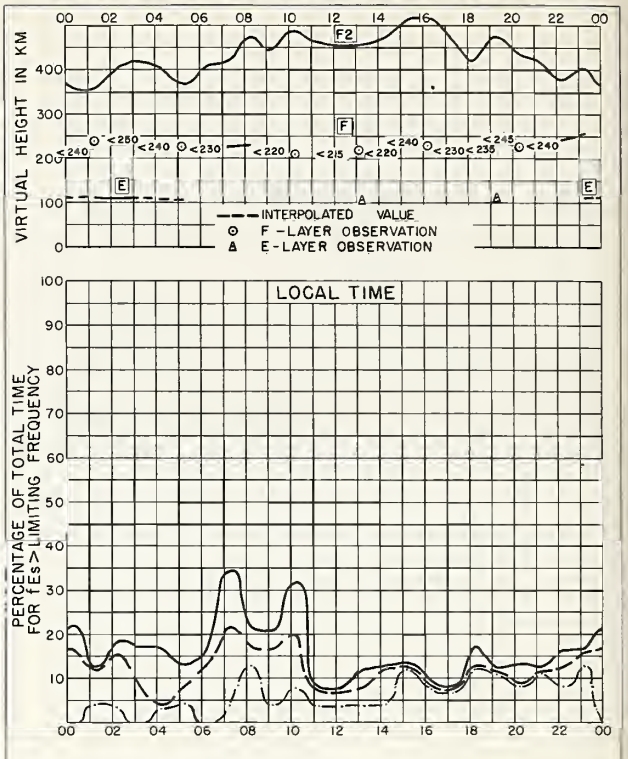


FIG. 50. FLETCHERS ICE I. JULY 1957

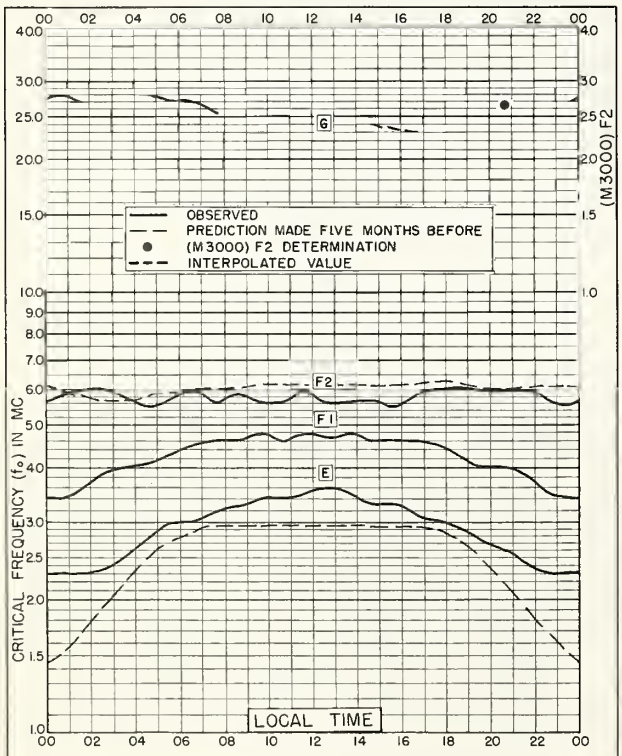


FIG. 51. RESOLUTE BAY, CANADA
74.7°N, 94.9°W
JULY 1957

NBS 503

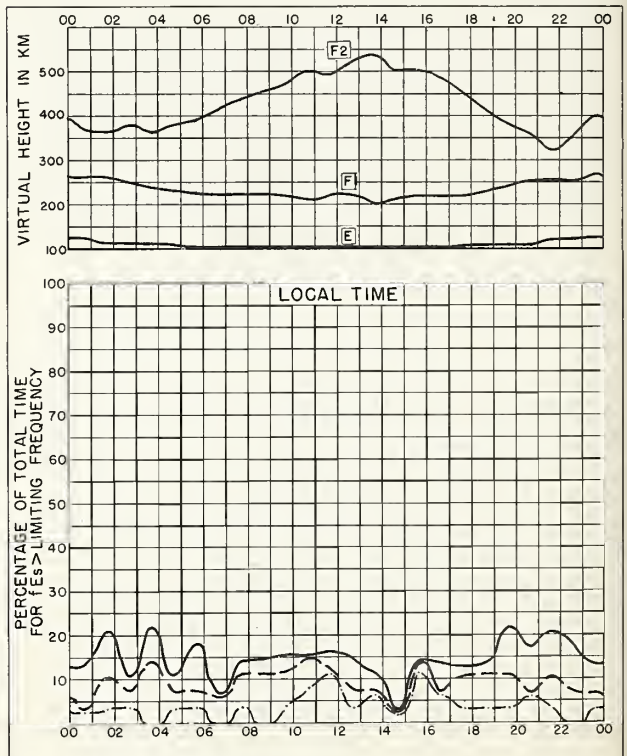


FIG. 52. RESOLUTE BAY, CANADA JULY 1957

Commerce-Standards-Boulder, Colo.

NBS 490

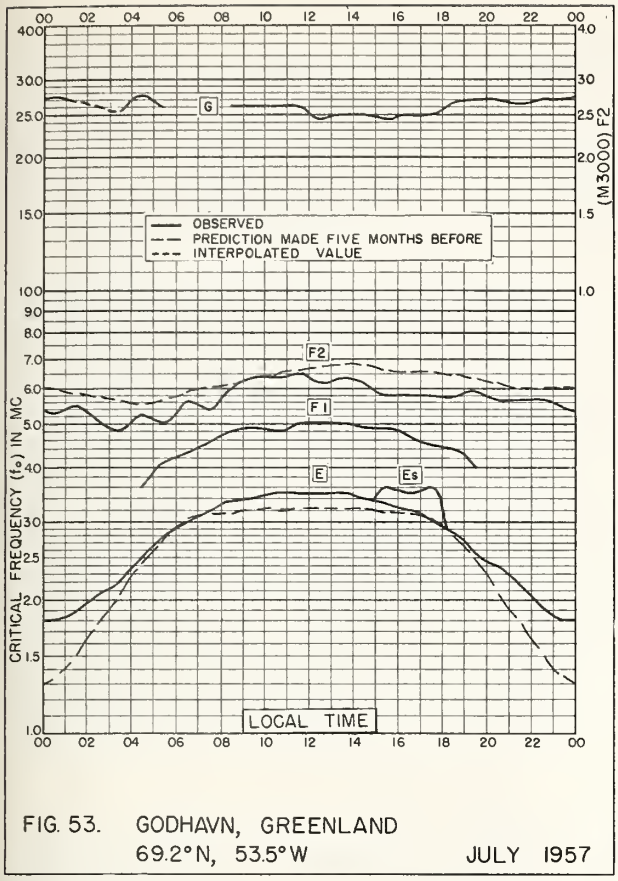


FIG. 53. GODHAVN, GREENLAND
69.2°N, 53.5°W JULY 1957

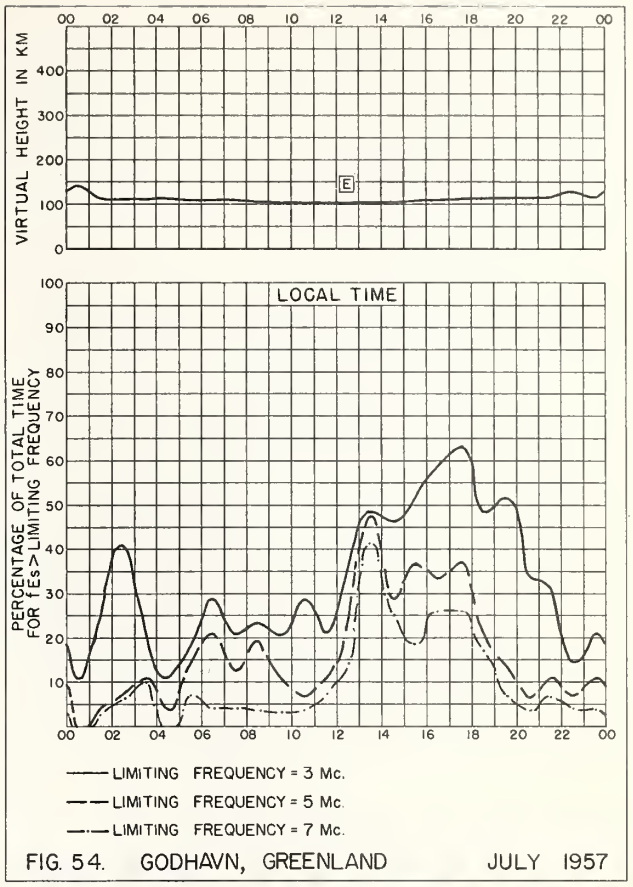


FIG. 54. GODHAVN, GREENLAND JULY 1957

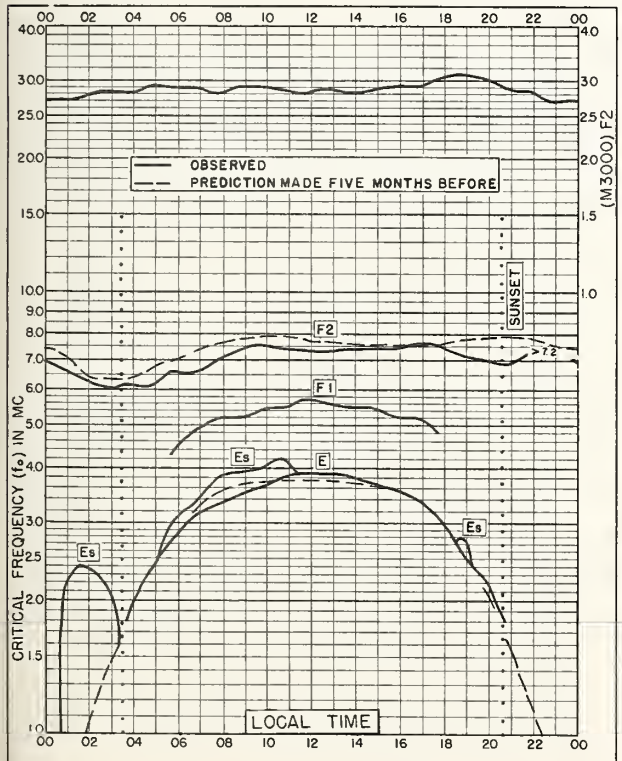


FIG. 55. INVERNESS, SCOTLAND
57.4°N, 4.2°W JULY 1957

NBS 503

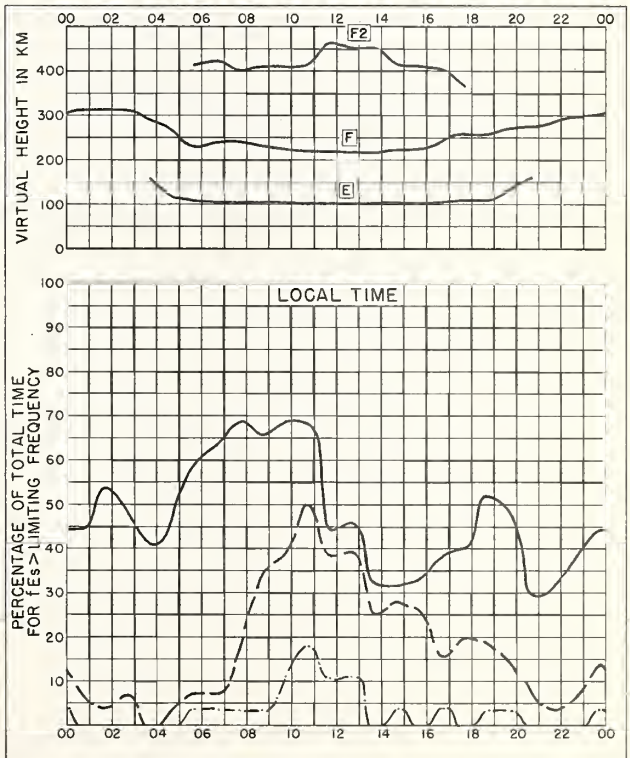


FIG. 56. INVERNESS, SCOTLAND JULY 1957

Commerce-Boulder-Colo.
NBS 490

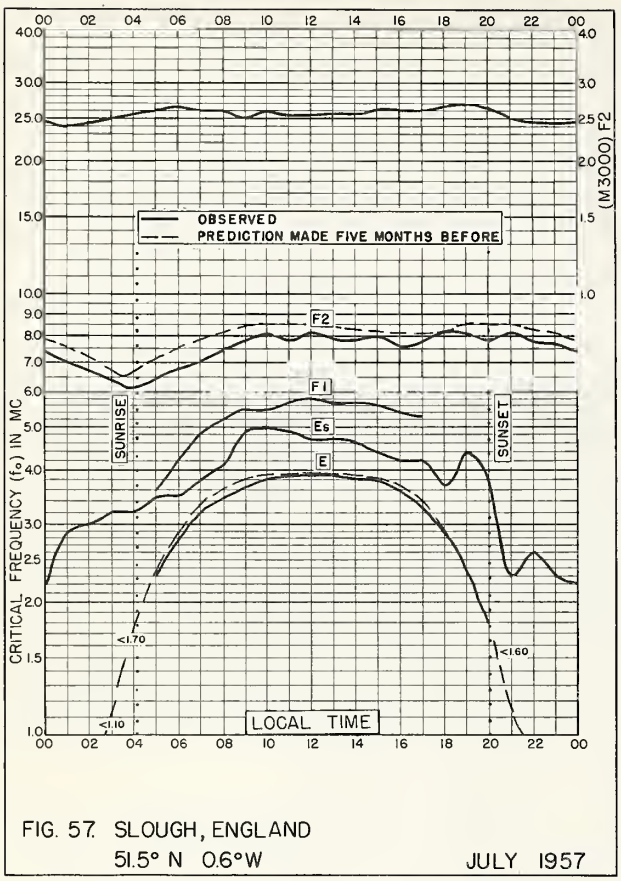


FIG. 57. SLOUGH, ENGLAND
51.5° N 0.6°W JULY 1957

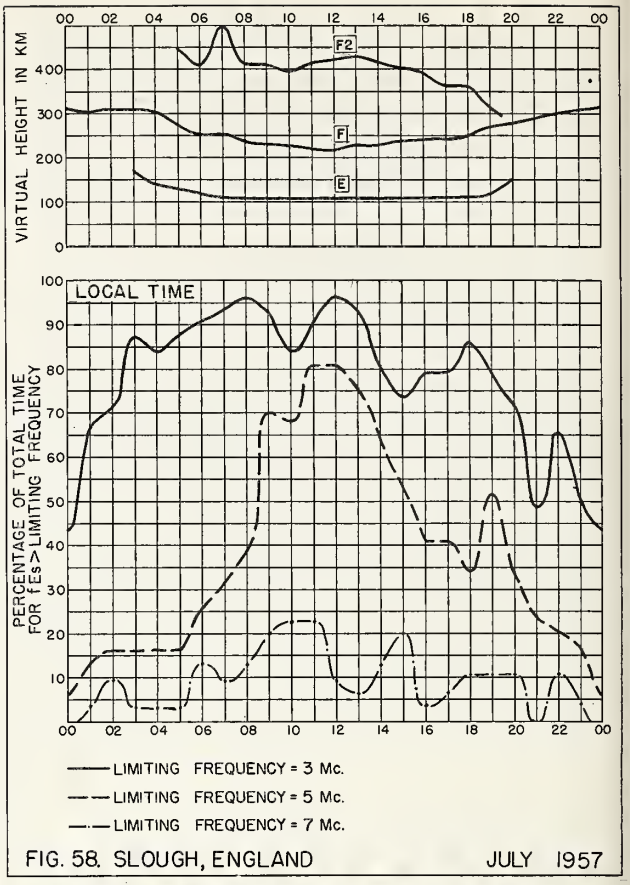


FIG. 58. SLOUGH, ENGLAND JULY 1957

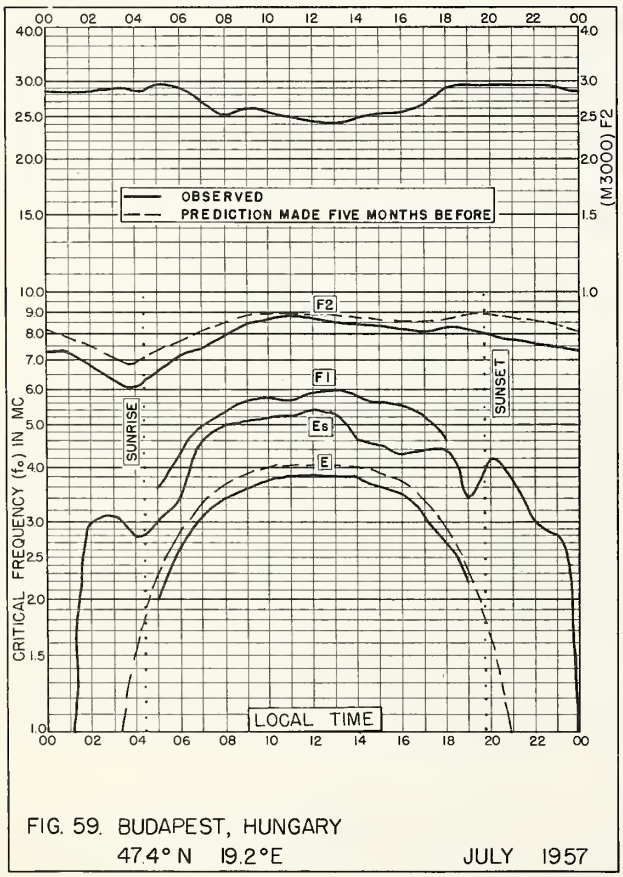


FIG. 59. BUDAPEST, HUNGARY
47.4° N 19.2°E JULY 1957

NBS 503

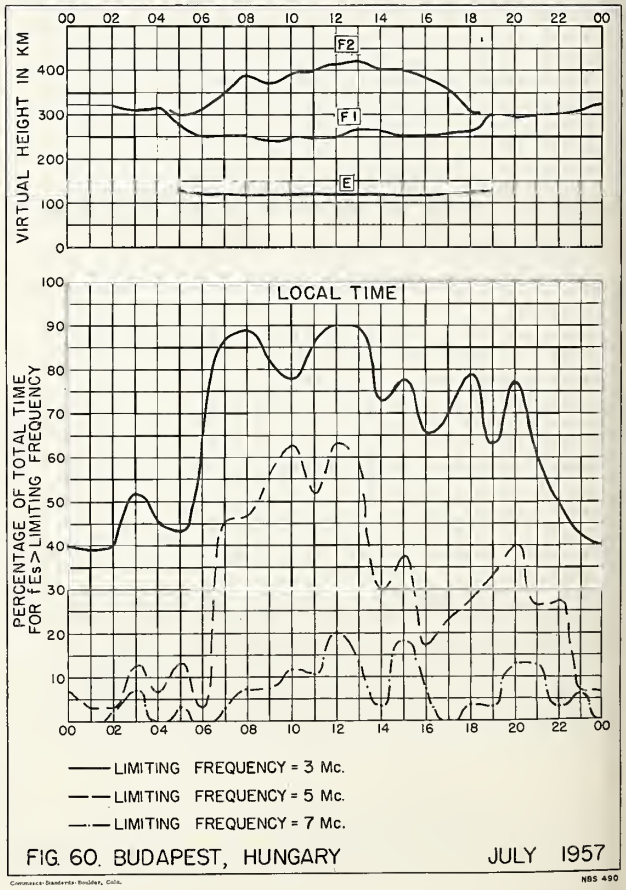


FIG. 60. BUDAPEST, HUNGARY JULY 1957

NBS 490

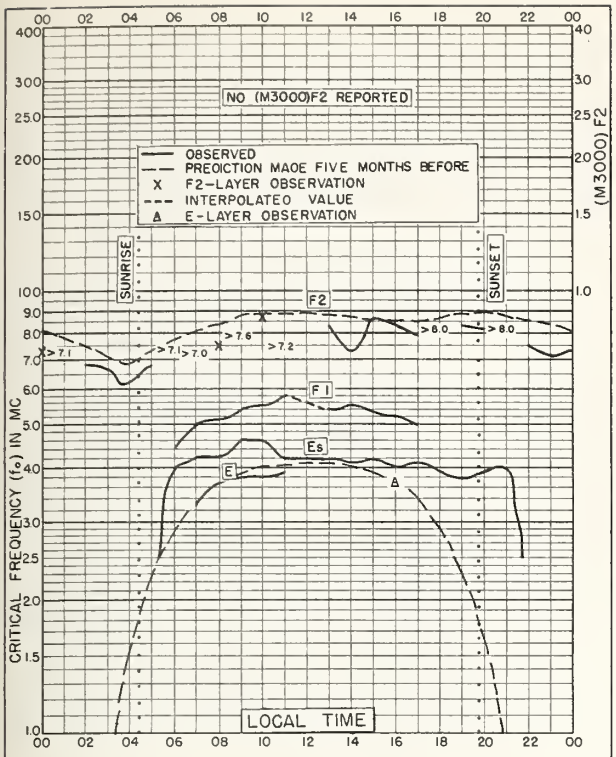


FIG. 61 GRAZ, AUSTRIA
47.1°N, 15.5°E JULY 1957

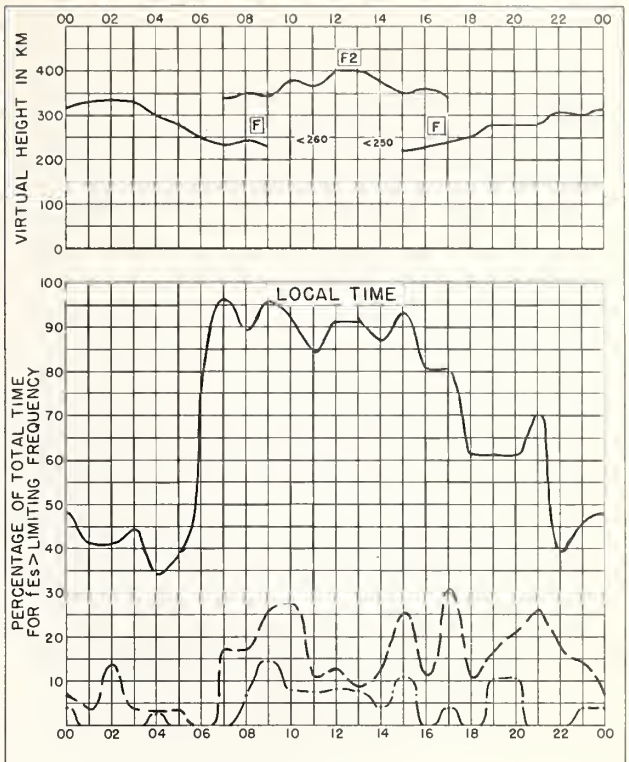


FIG. 62 GRAZ, AUSTRIA JULY 1957

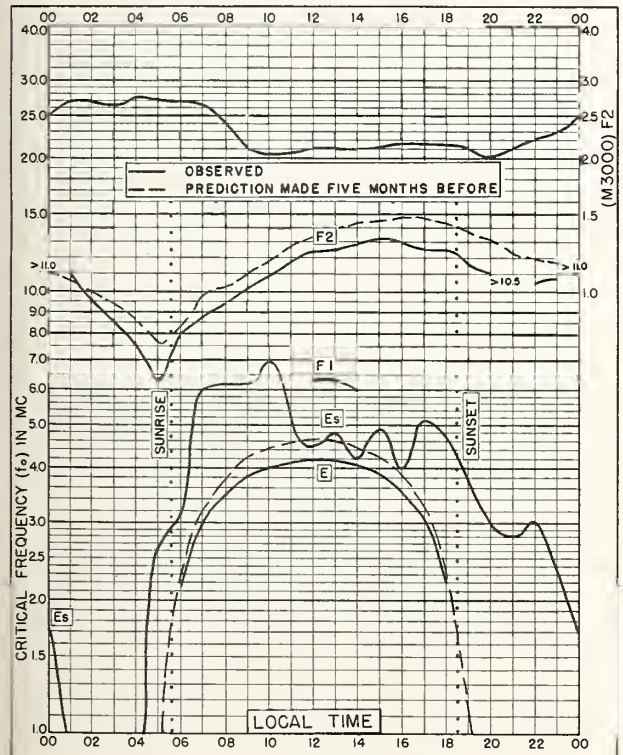


FIG. 63. BAGUIO, P.I.
16.4° N, 120.6° E JULY 1957

NBS 503

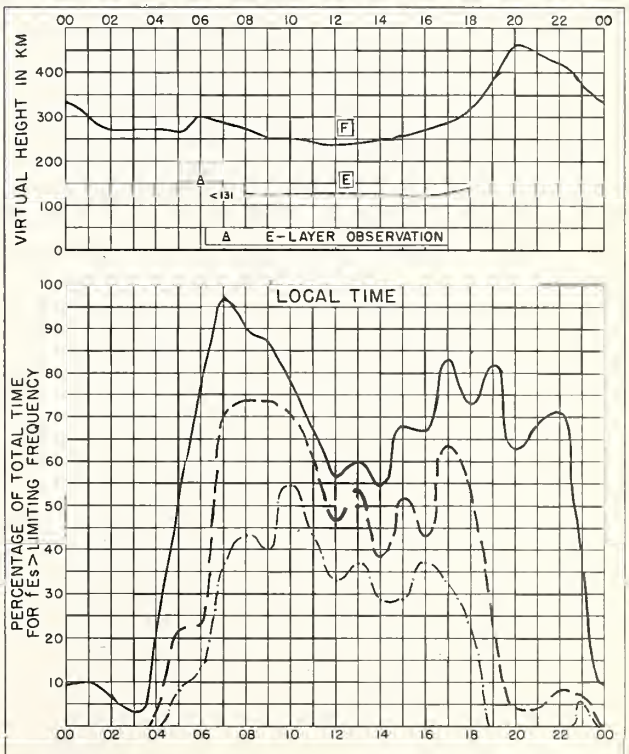


FIG. 64. BAGUIO, P.I. JULY 1957

Commerce-Standard-Boulder, Colo.

NBS 490

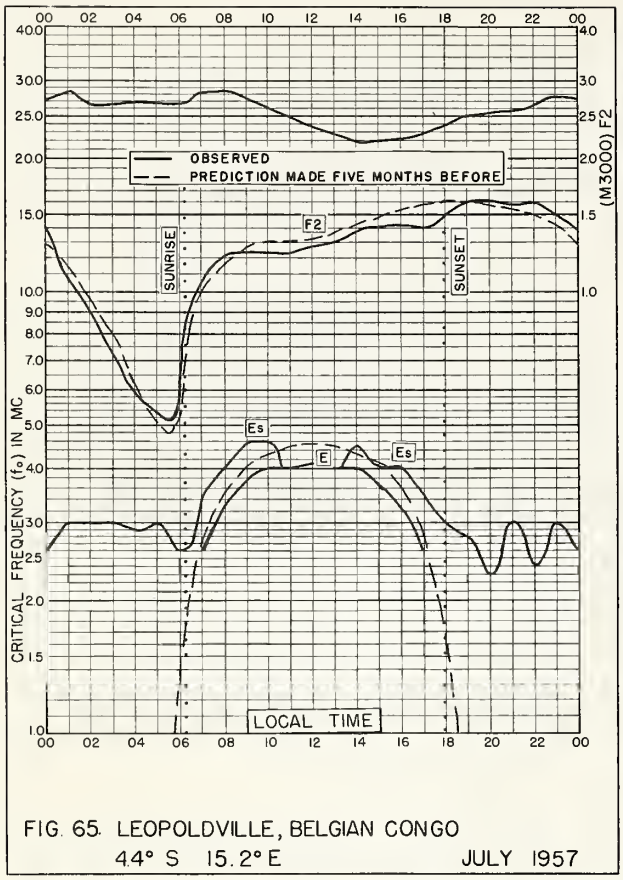
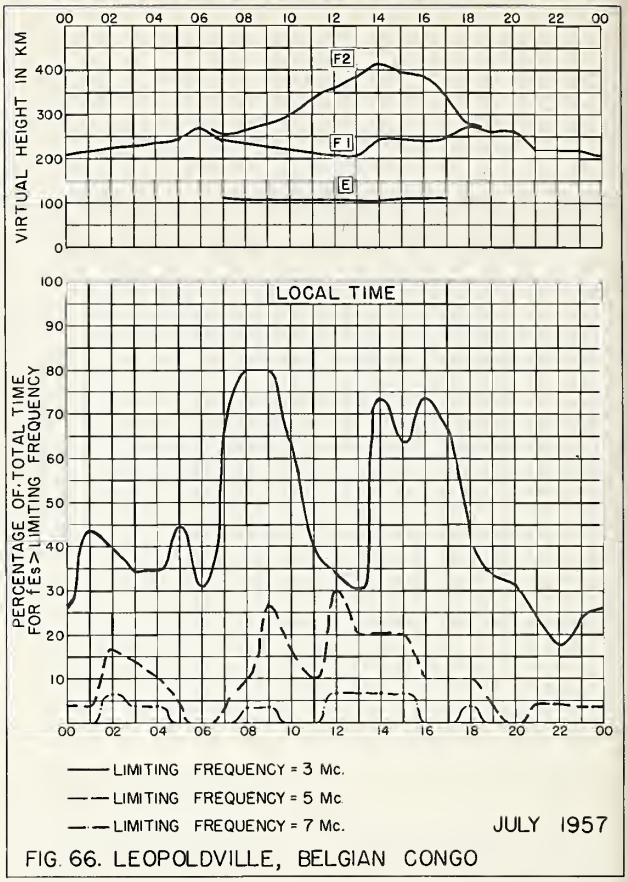


FIG. 65. LEOPOLDVILLE, BELGIAN CONGO
4.4° S 15.2° E JULY 1957



JULY 1957

FIG. 66. LEOPOLDVILLE, BELGIAN CONGO

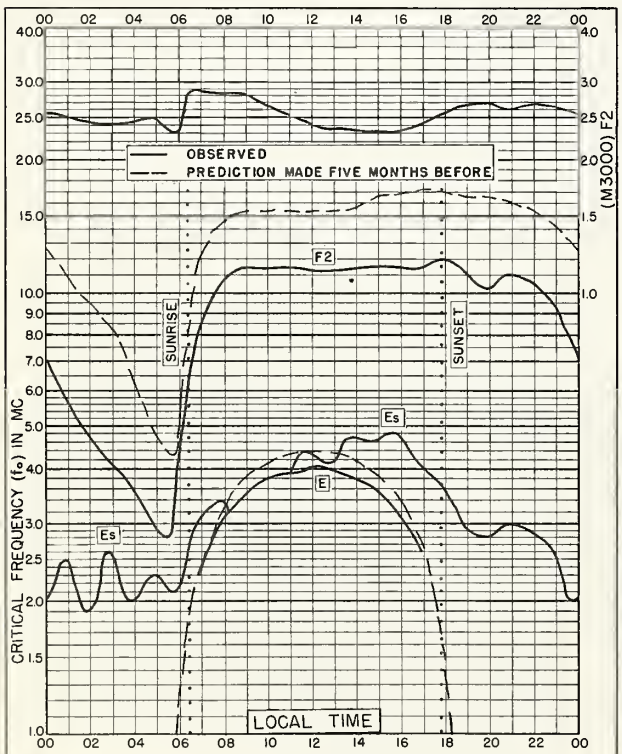
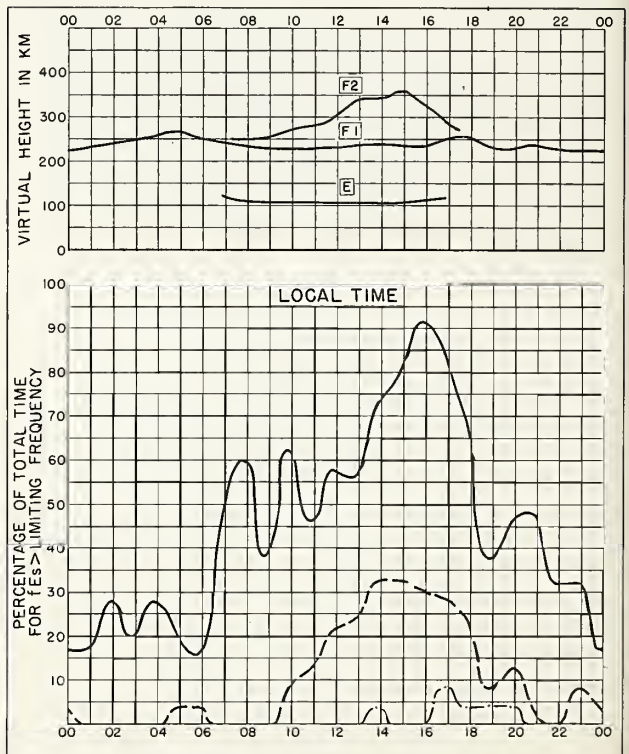


FIG. 67. ELISABETHVILLE, BELGIAN CONGO
11.6° S, 27.5° E JULY 1957

NBS 503



JULY 1957

FIG. 68. ELISABETHVILLE, BELGIAN CONGO

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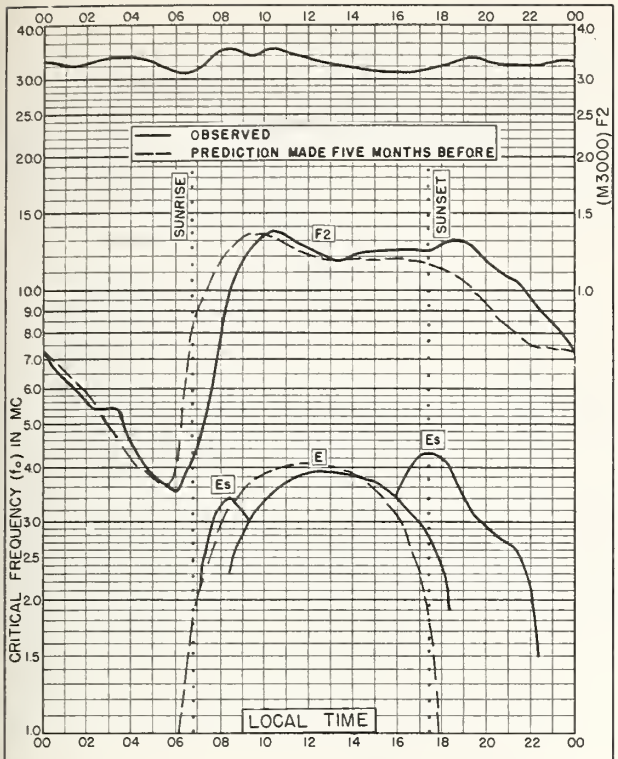


FIG. 69. RAROTONGA I.
21.2°S, 159.8°W JULY 1957

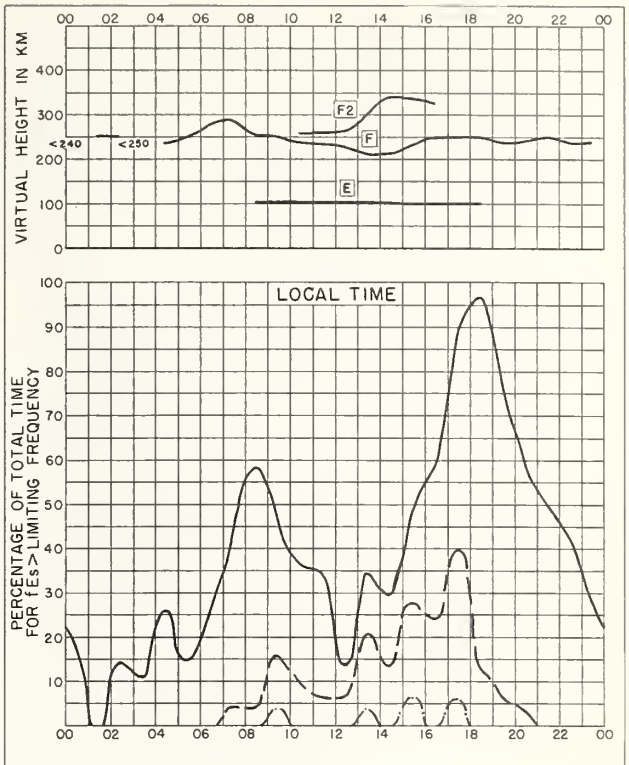


FIG. 70. RAROTONGA I. JULY 1957

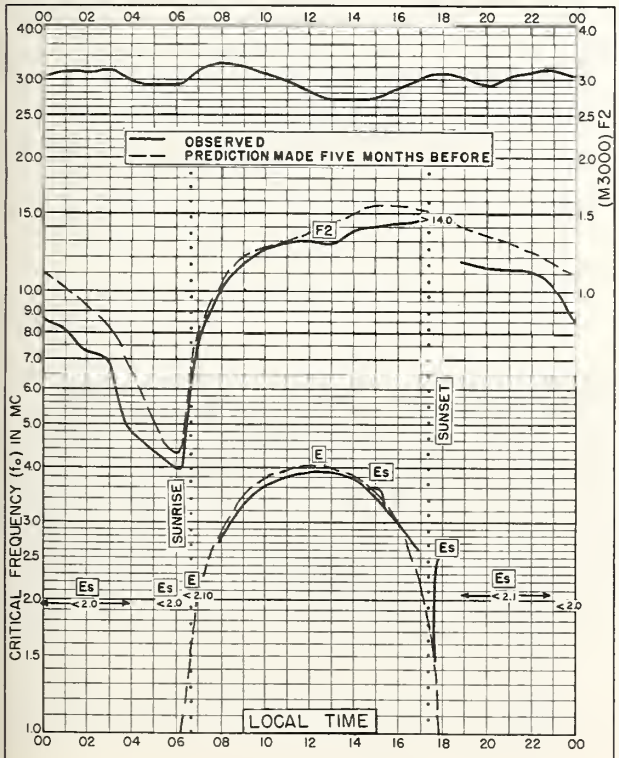


FIG. 71. SAO PAULO, BRAZIL
23.5° S 46.5° W JULY 1957

NBS 503

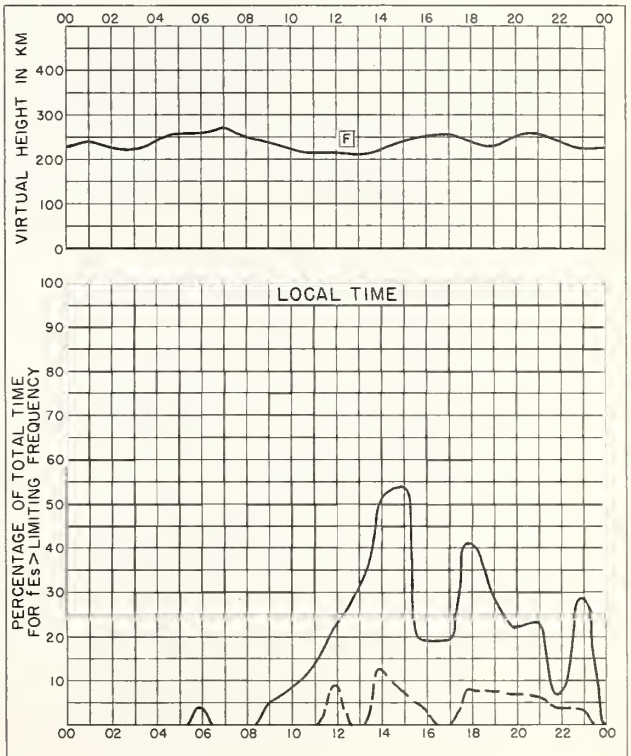


FIG. 72. SAO PAULO, BRAZIL JULY 1957

NBS 490

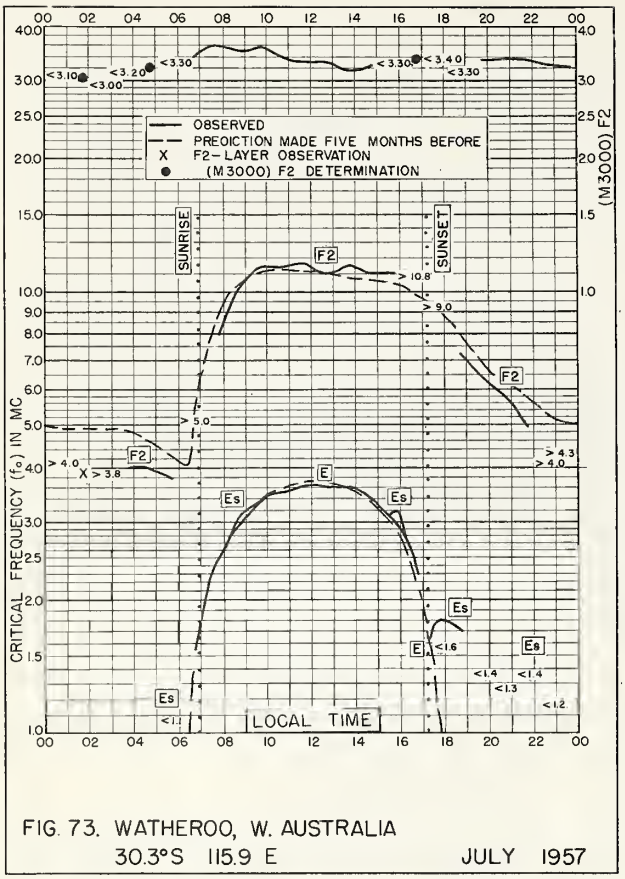


FIG. 73. WATHEROO, W. AUSTRALIA
30.3°S 115.9 E JULY 1957

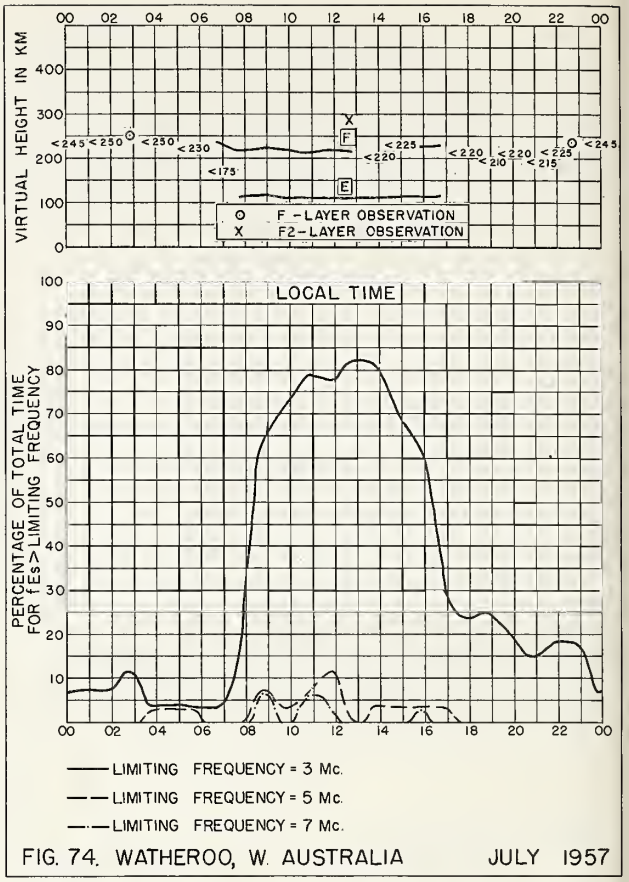


FIG. 74. WATHEROO, W. AUSTRALIA JULY 1957

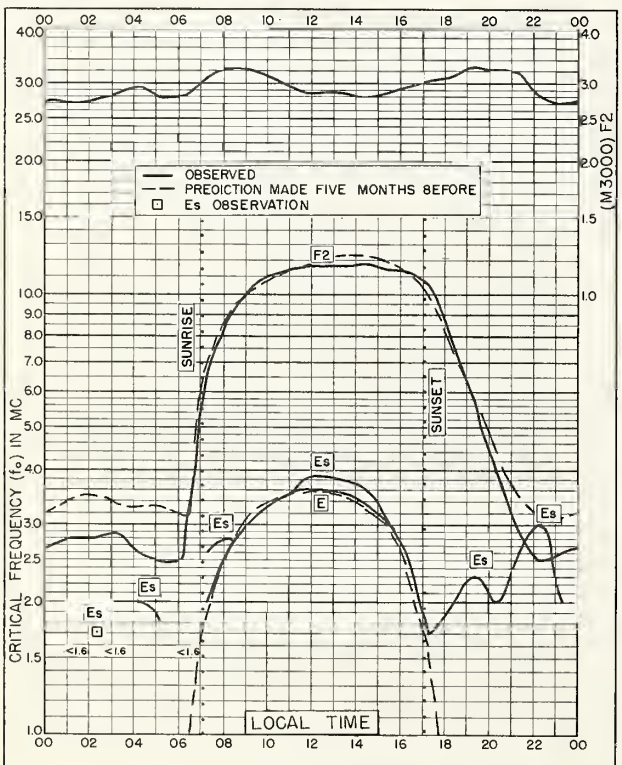


FIG. 75. CAPETOWN, UNION OF SOUTH AFRICA
34.1° S 18.3° E JULY 1957

NBS 503

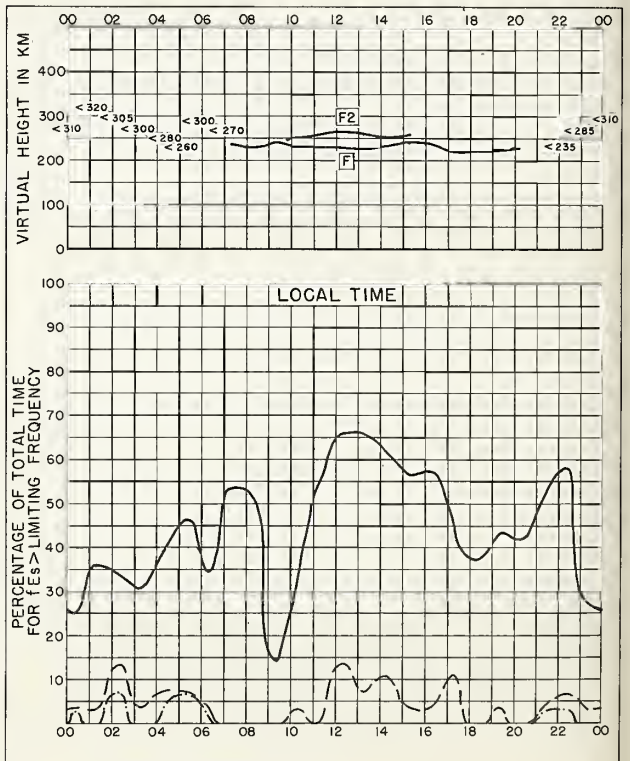


FIG. 76. CAPETOWN, UNION OF SOUTH AFRICA JULY 1957

Commerce-Standards-Boulder, Colo.

NBS 490

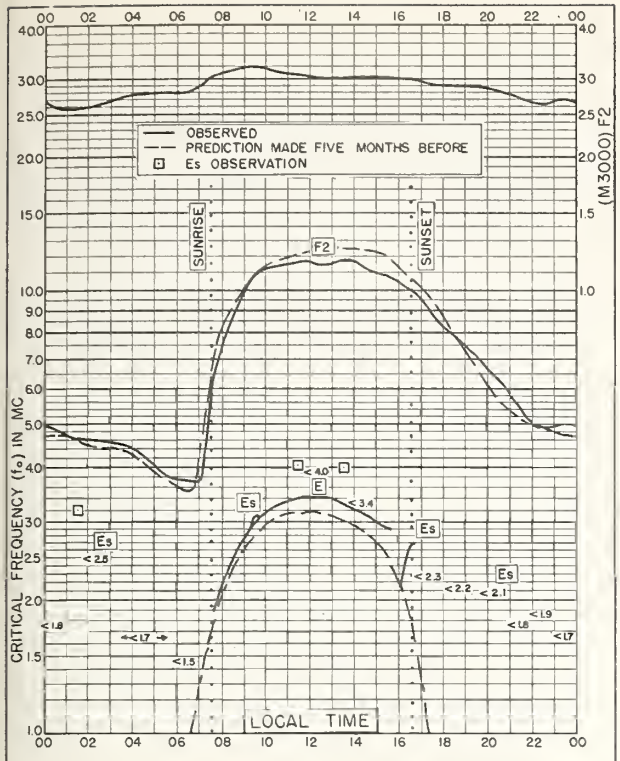
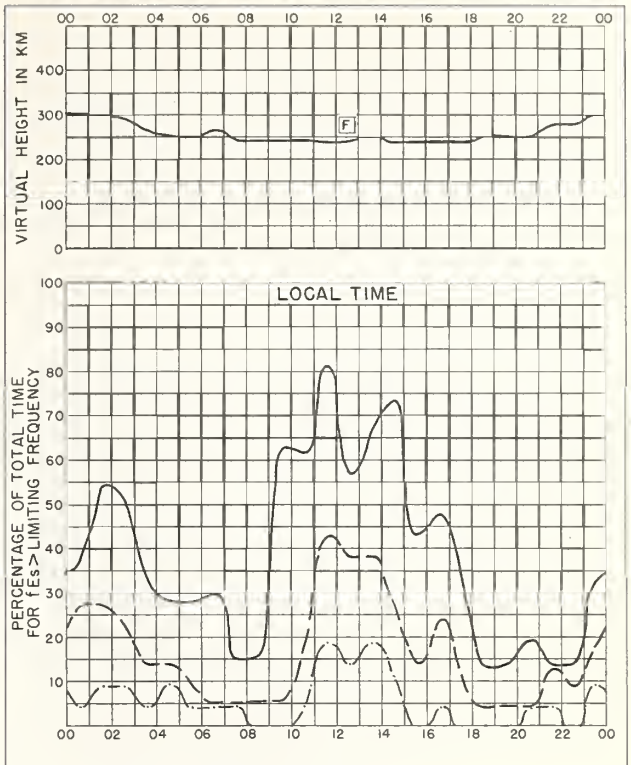


FIG. 77. CHRISTCHURCH, NEW ZEALAND
43.6° S, 172.8° E JULY 1957



JULY 1957
FIG. 78. CHRISTCHURCH, NEW ZEALAND

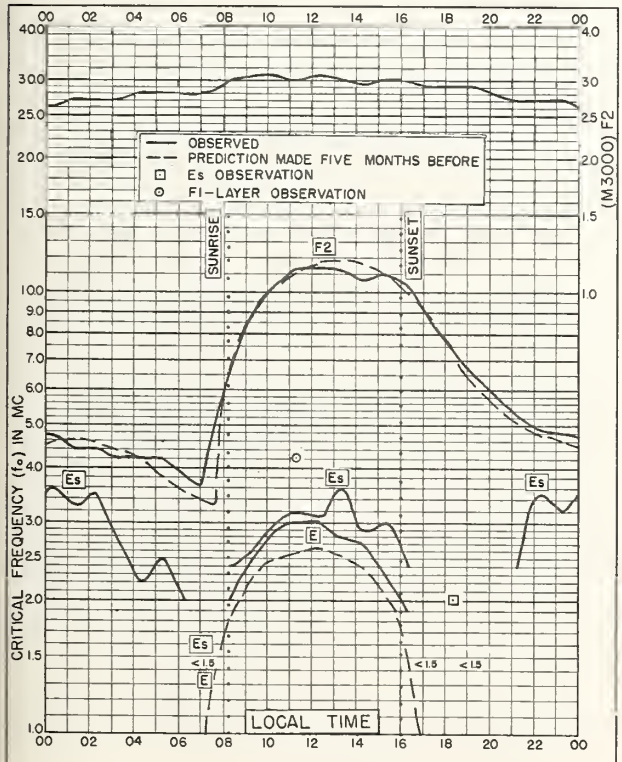


FIG. 79. CAMPBELL I.
52.5° S, 169.2° E JULY 1957

NBS 503

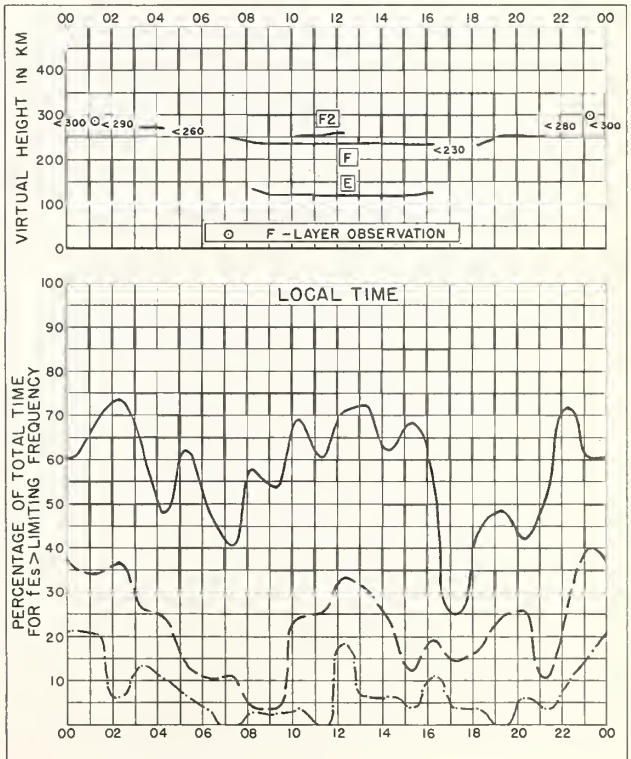


FIG. 80. CAMPBELL I. JULY 1957

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NBS 490

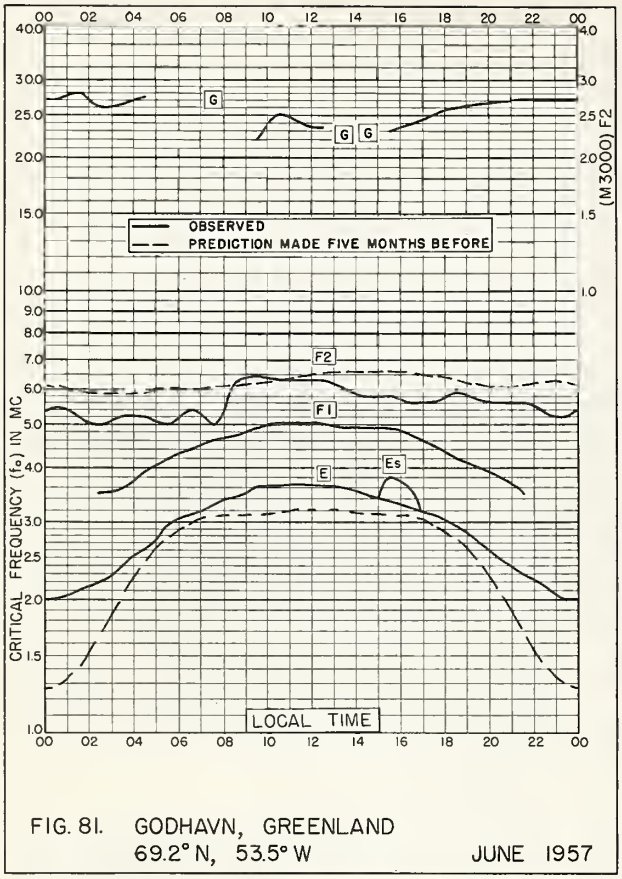


FIG. 81. GODHAVN, GREENLAND
69.2° N, 53.5° W JUNE 1957

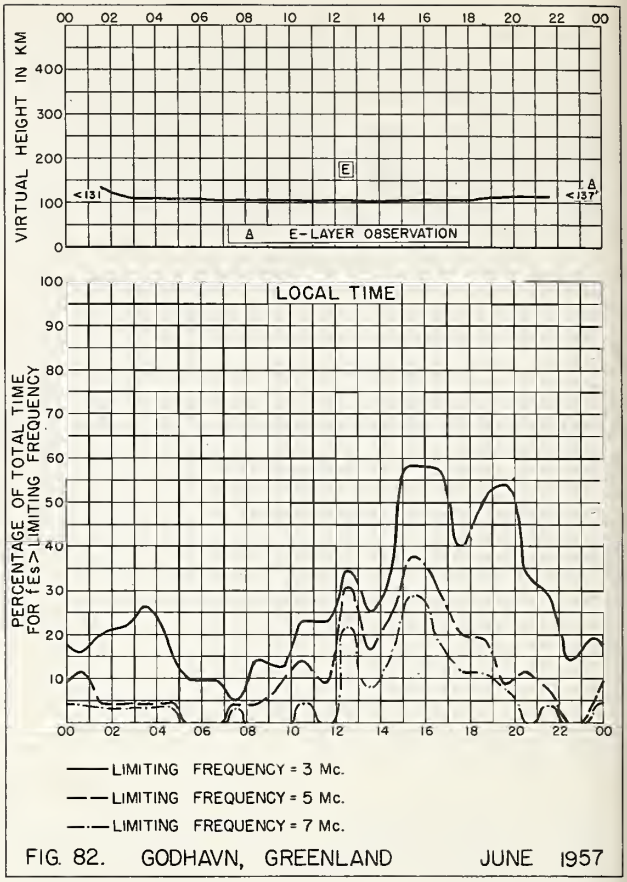


FIG. 82. GODHAVN, GREENLAND JUNE 1957

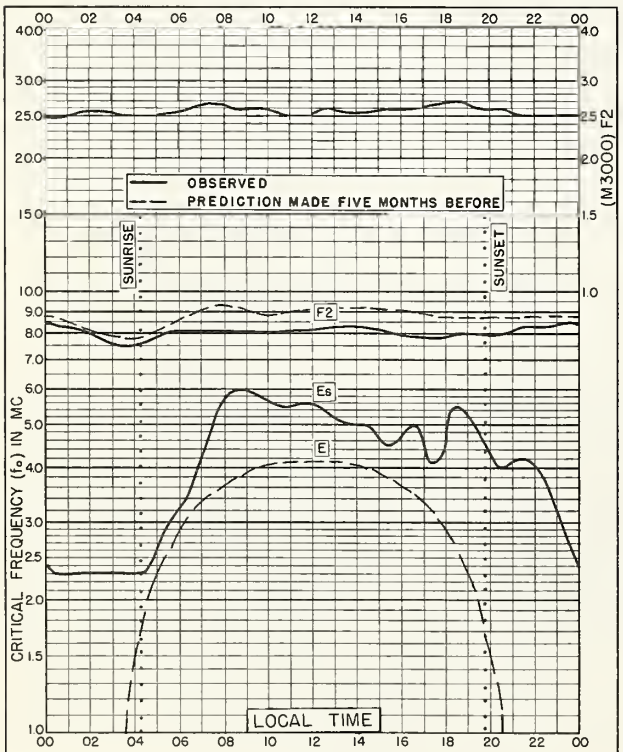


FIG. 83. WAKKANAI, JAPAN
45.4° N, 141.7° E JUNE 1957

NBS 503

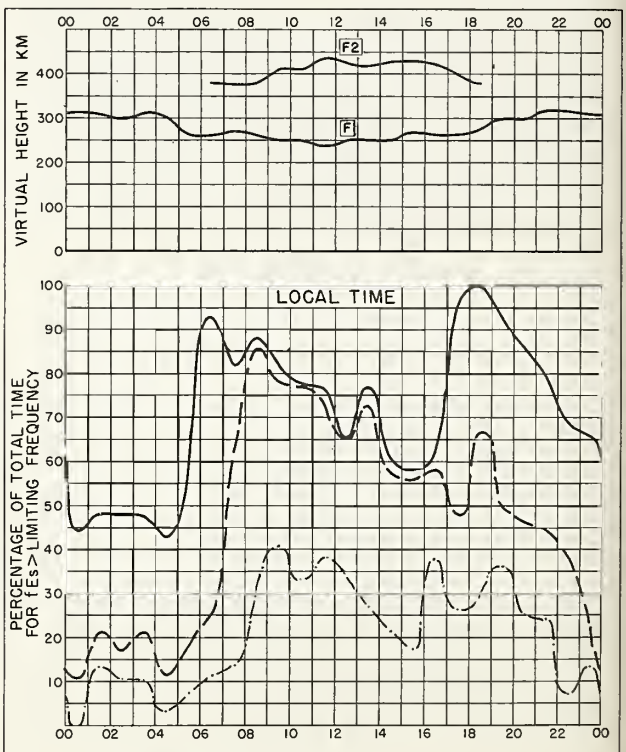


FIG. 84. WAKKANAI, JAPAN JUNE 1957

Commerce-Stanford-Boulder, Colo.

NBS 490

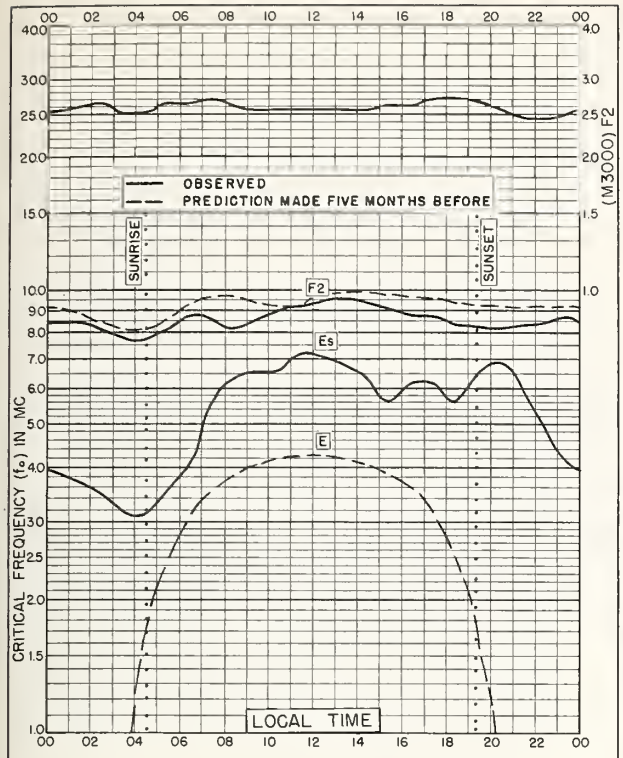


FIG. 85. AKITA, JAPAN
39.7°N, 140.1°E JUNE 1957

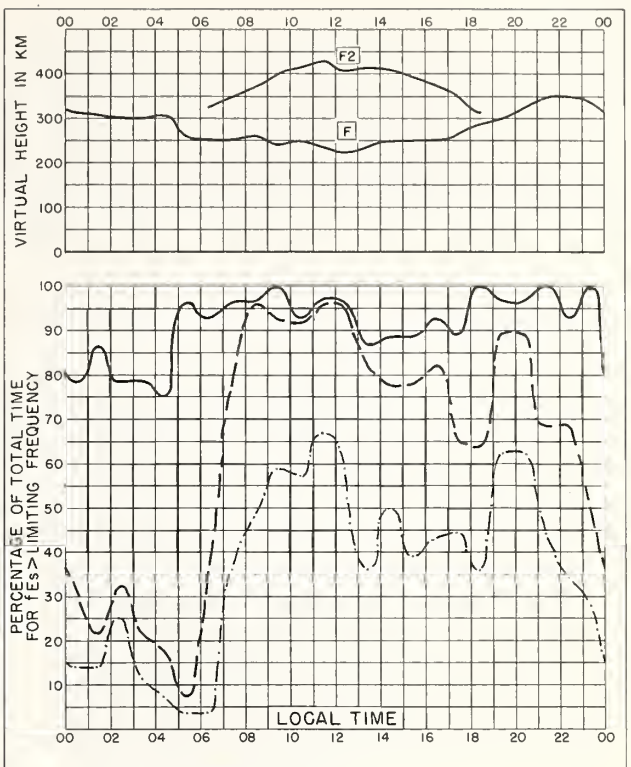


FIG. 86. AKITA, JAPAN JUNE 1957

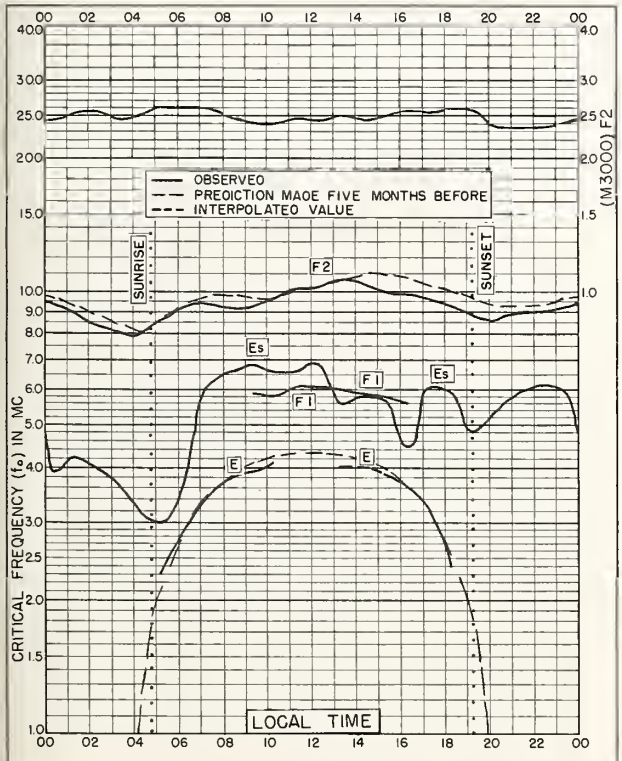


FIG. 87. TOKYO, JAPAN
35.7°N, 139.5°E JUNE 1957

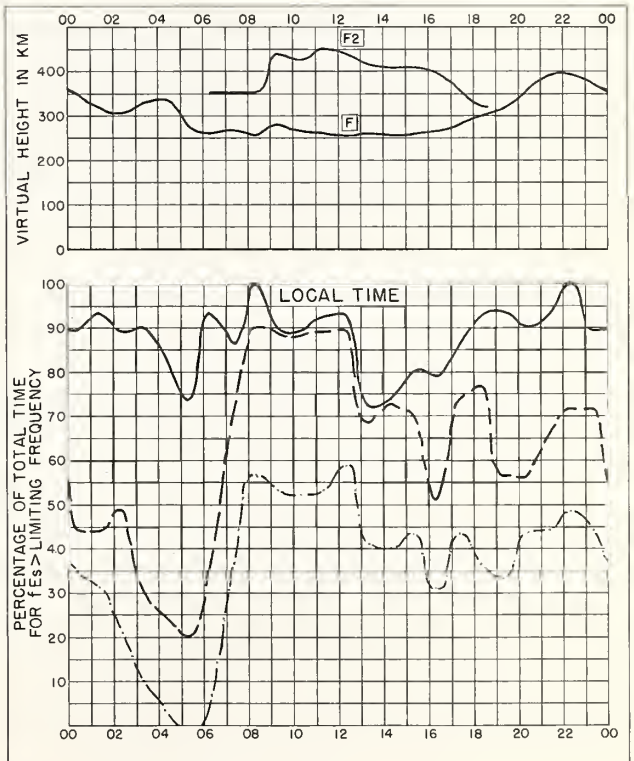


FIG. 88. TOKYO, JAPAN JUNE 1957

NBS 503
Commerce-Standards-Boulder, Colo.
NBS 490

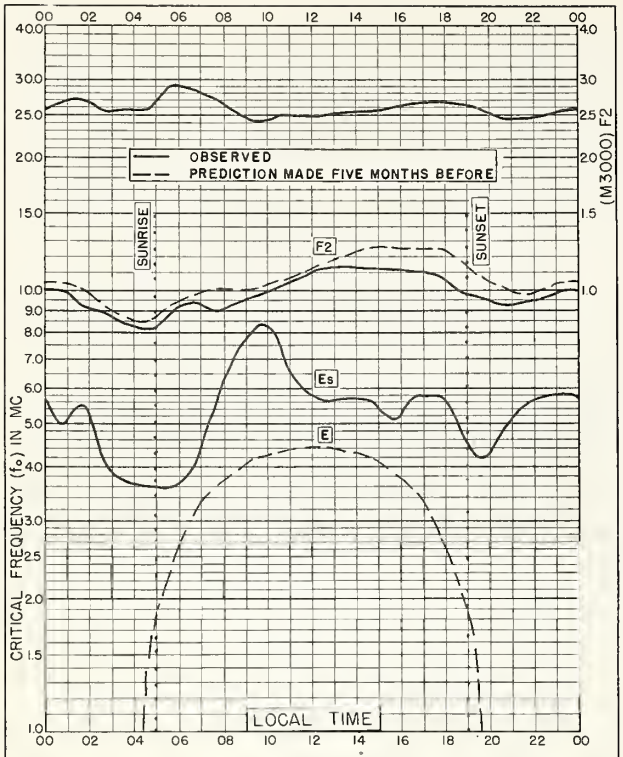


FIG. 89. YAMAGAWA, JAPAN
31.2°N, 130.6°E JUNE 1957

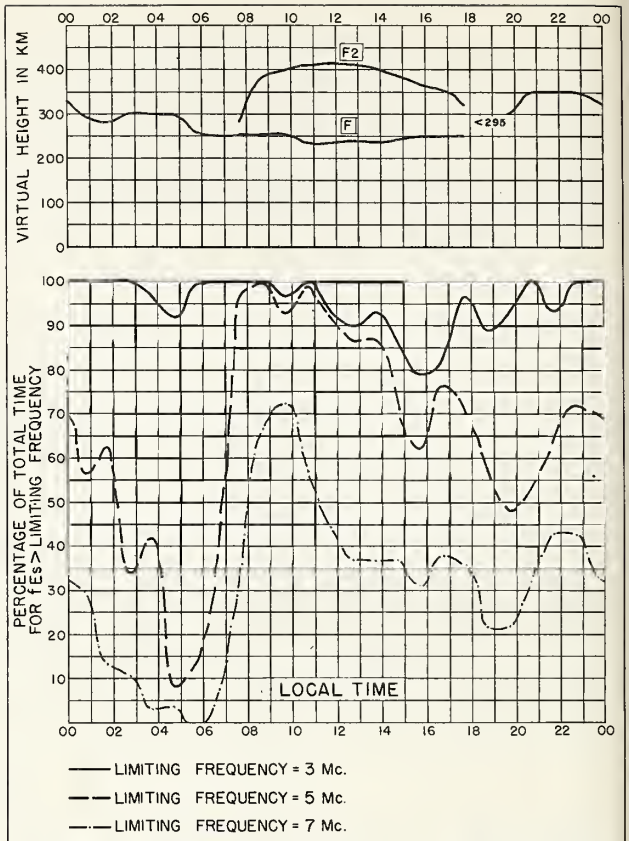


FIG. 90. YAMAGAWA, JAPAN JUNE 1957

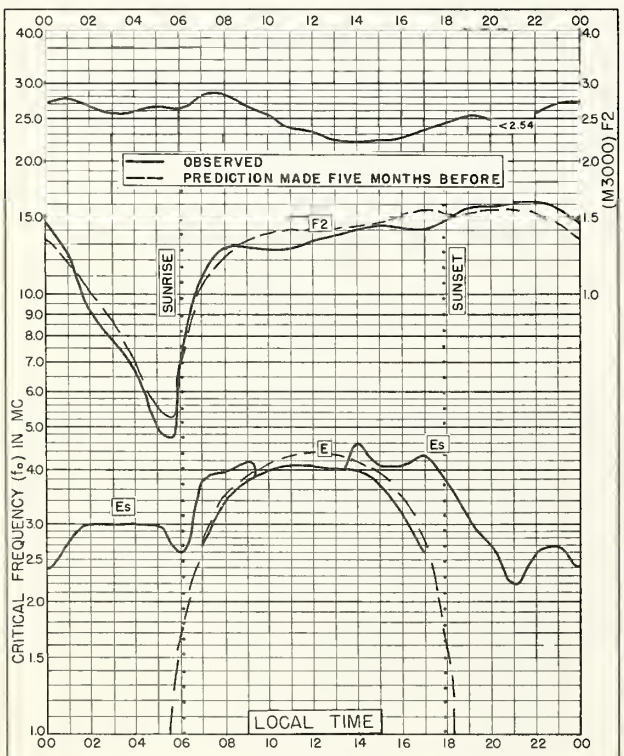


FIG. 91. LEOPOLDVILLE, BELGIAN CONGO
4.4° S, 15.2° E JUNE 1957

NBS 503

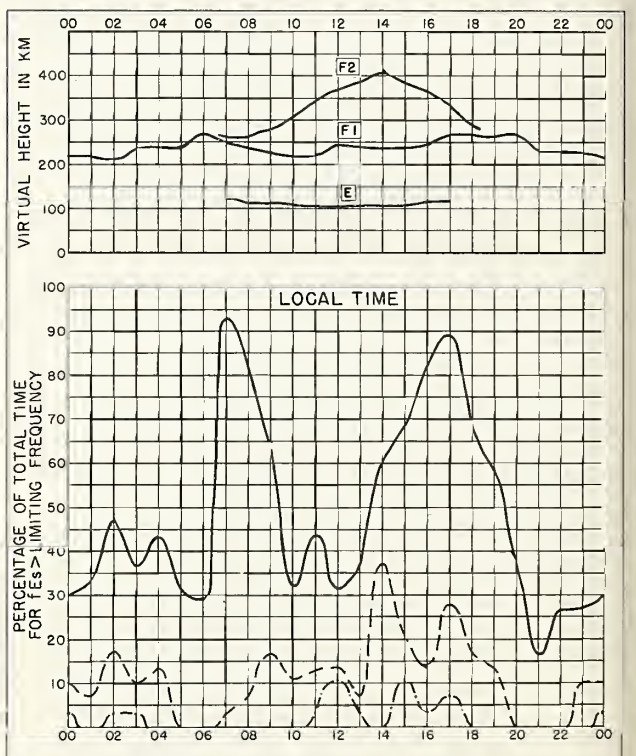


FIG. 92. LEOPOLDVILLE, BELGIAN CONGO JUNE 1957

Commerce-Standards-Boulder, Colo.

NBS 490

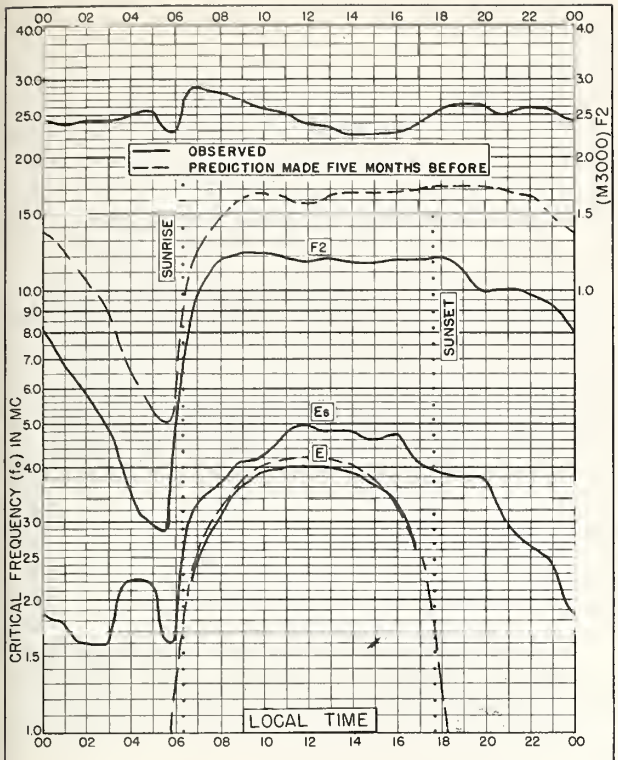
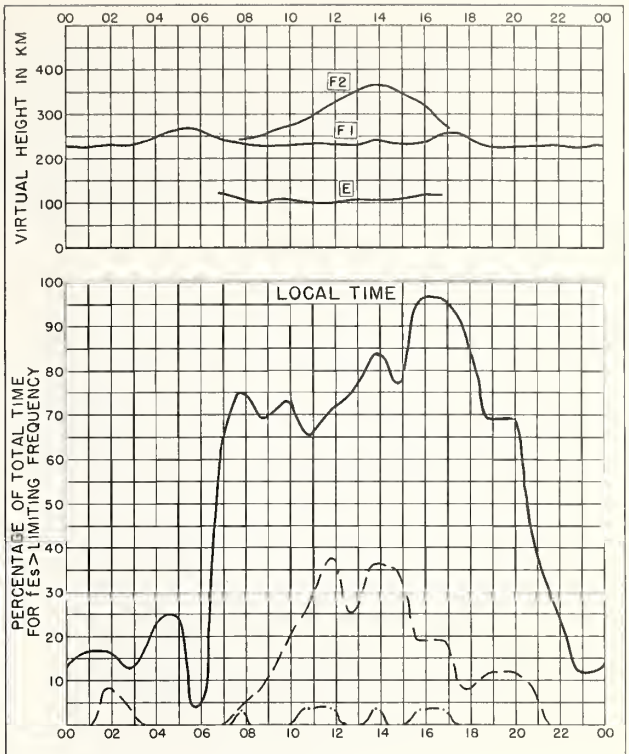


FIG. 93. ELISABETHVILLE, BELGIAN CONGO
11.6° S 27.5°E JUNE 1957



JUNE 1957

FIG. 94. ELISABETHVILLE, BELGIAN CONGO

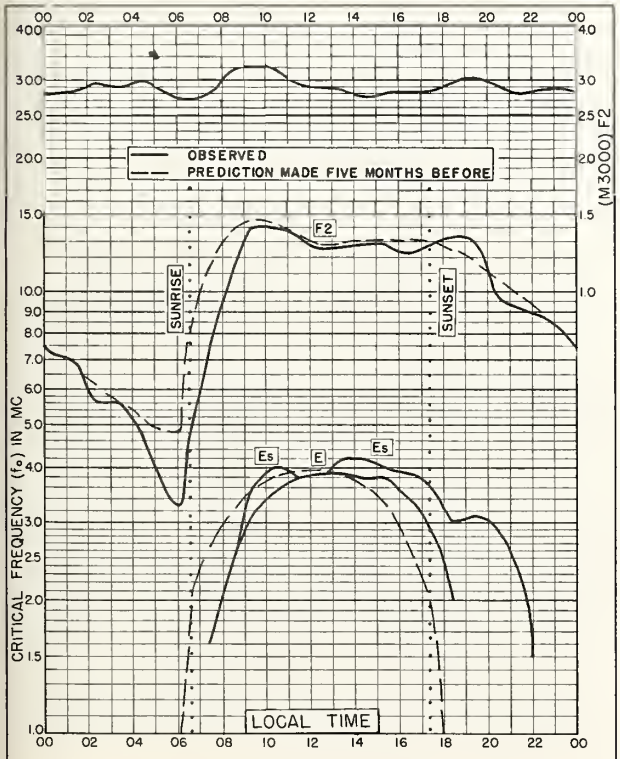
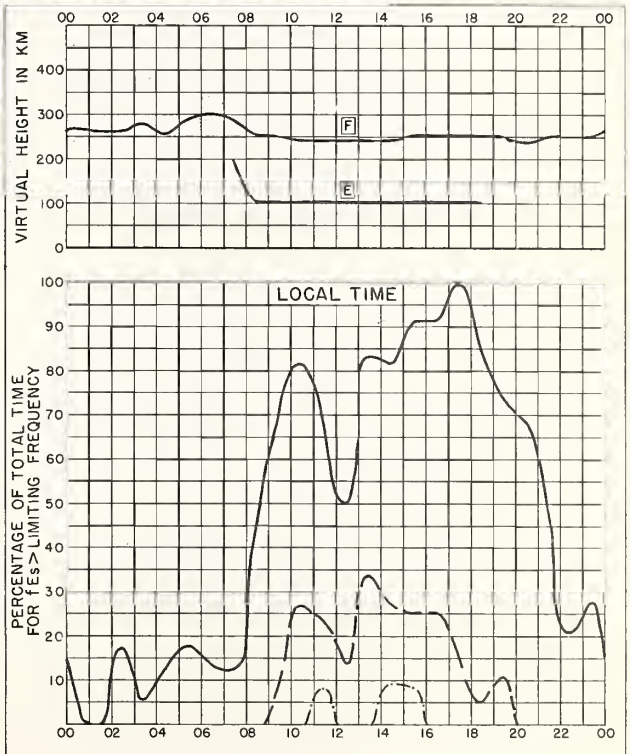


FIG. 95. RAROTONGA I.
21.2°S, 159.8°W JUNE 1957



JUNE 1957

FIG. 96. RAROTONGA I.

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Commercial Standard Boulder, Colo.
NBS 490

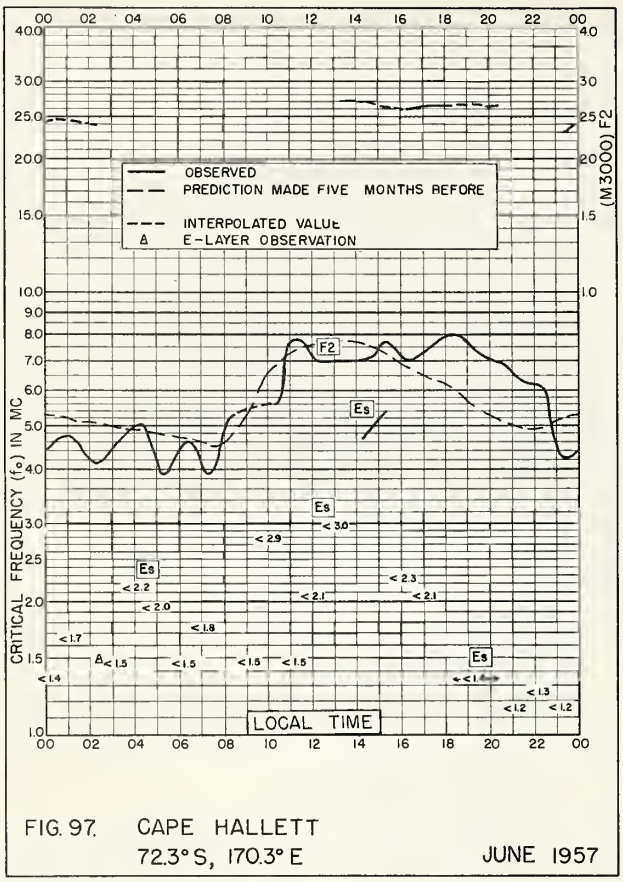

FIG. 97. CAPE HALLETT
72.3° S, 170.3° E
JUNE 1957

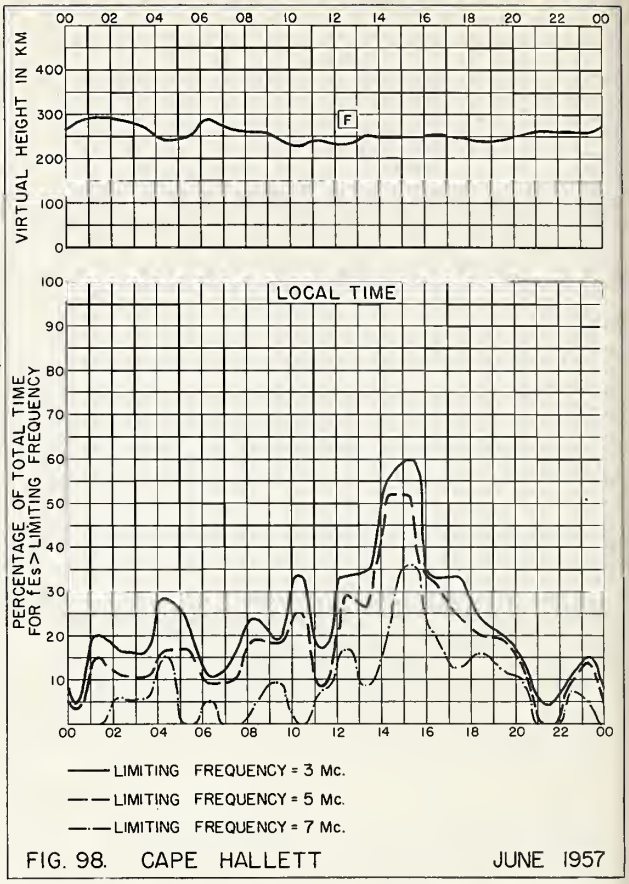

FIG. 98. CAPE HALLETT
JUNE 1957

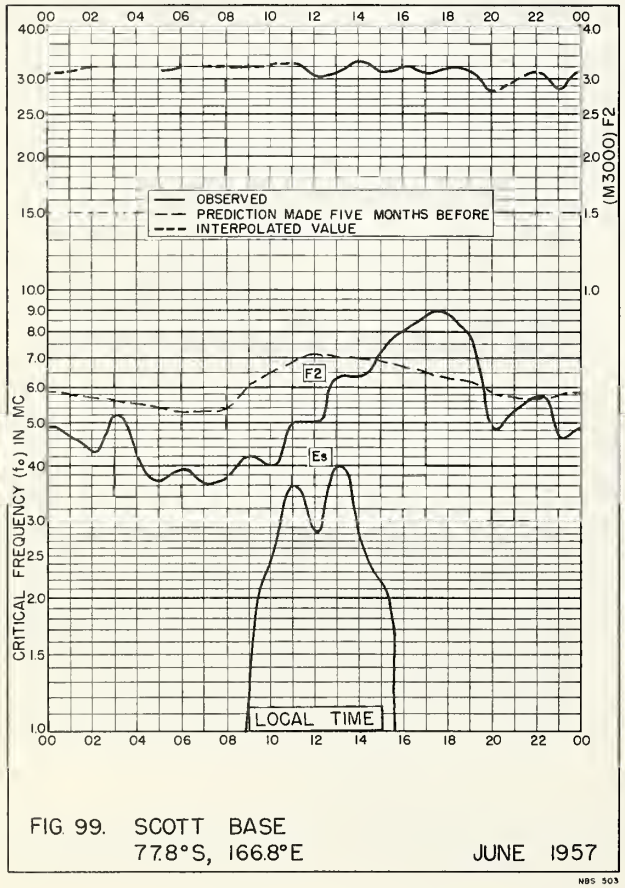

FIG. 99. SCOTT BASE
77.8° S, 166.8° E
JUNE 1957

NBS 503

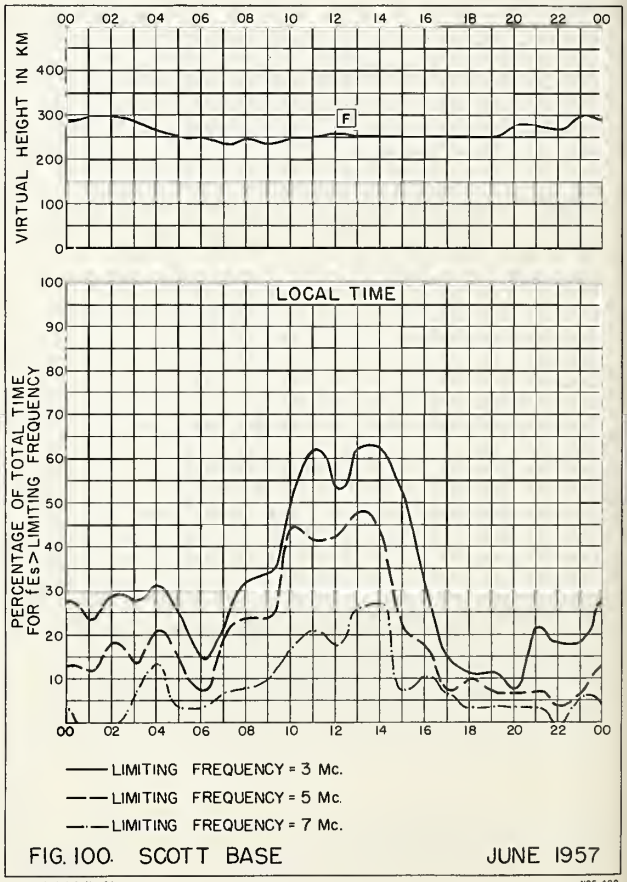

FIG. 100. SCOTT BASE
JUNE 1957

NBS 490

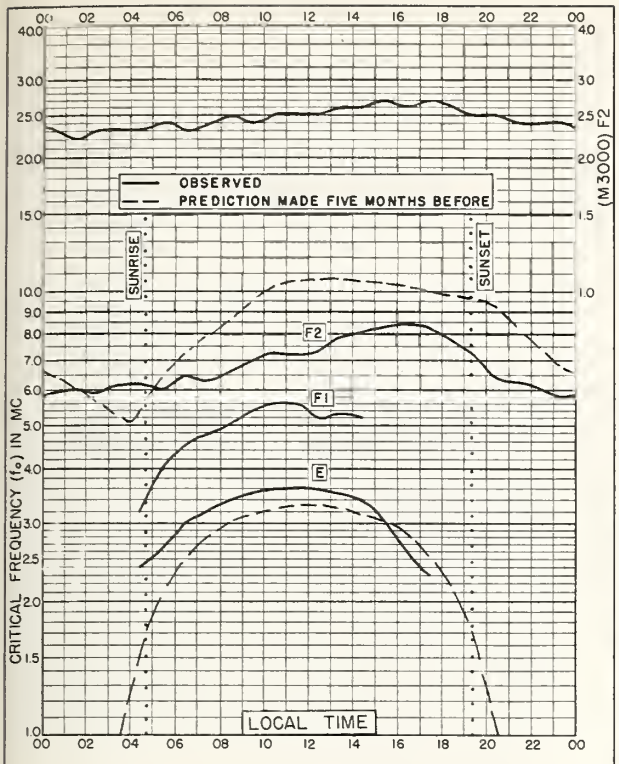

FIG. 101. PROVIDENIE BAY, U.S.S.R.
64.4°N, 173.4°W APRIL 1957

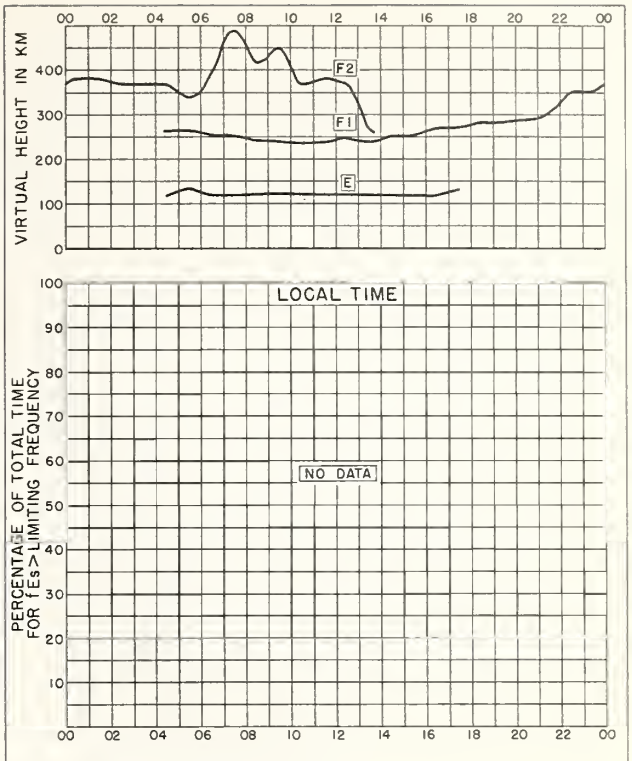

FIG. 102. PROVIDENIE BAY, U.S.S.R. APRIL 1957

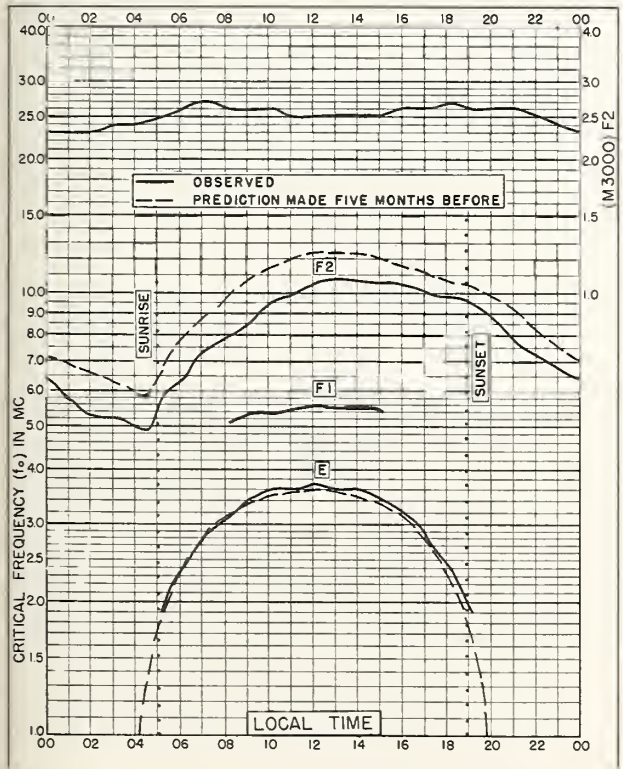

FIG. 103. SVERDLOVSK, U.S.S.R.
56.7°N, 61.1°E APRIL 1957

NBS 503

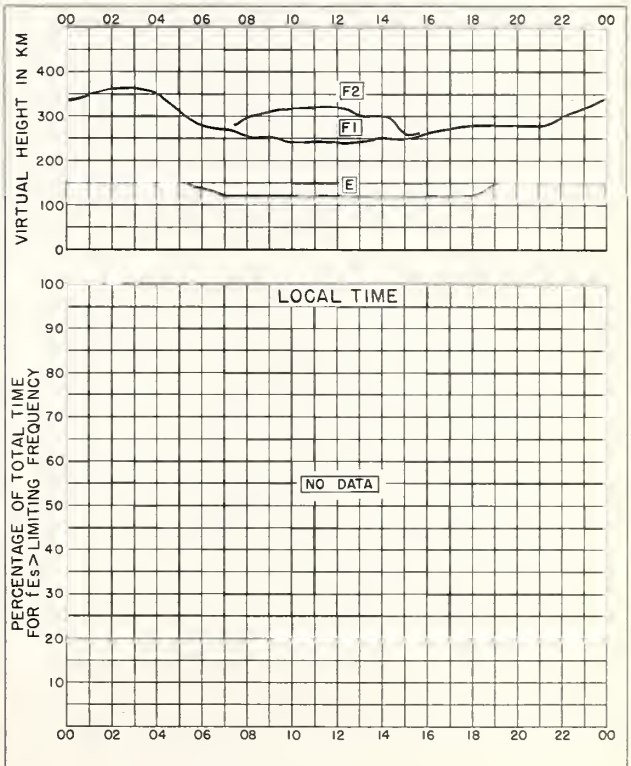

FIG. 104. SVERDLOVSK, U.S.S.R. APRIL 1957

Commerce-Standard Boulder, Colo.

NBS 490

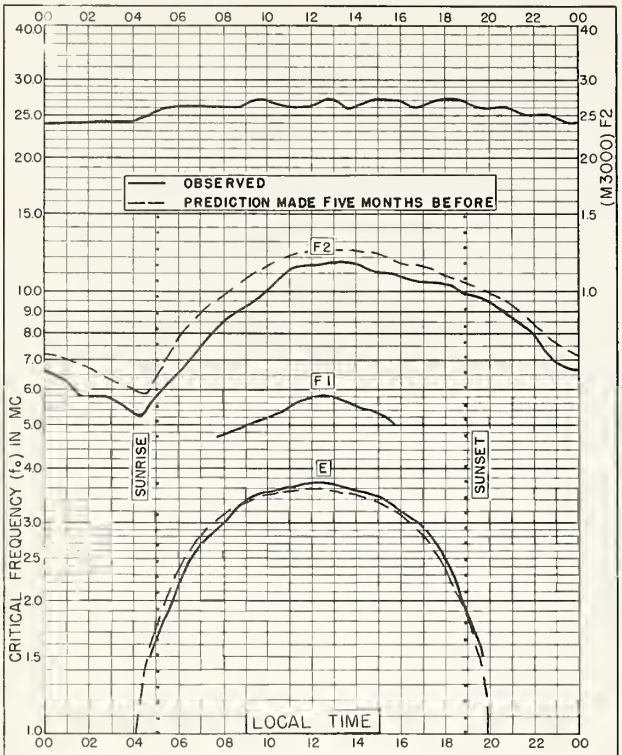

FIG. 105. TOMSK, U.S.S.R.
56.5°N, 84.9° E. APRIL 1957

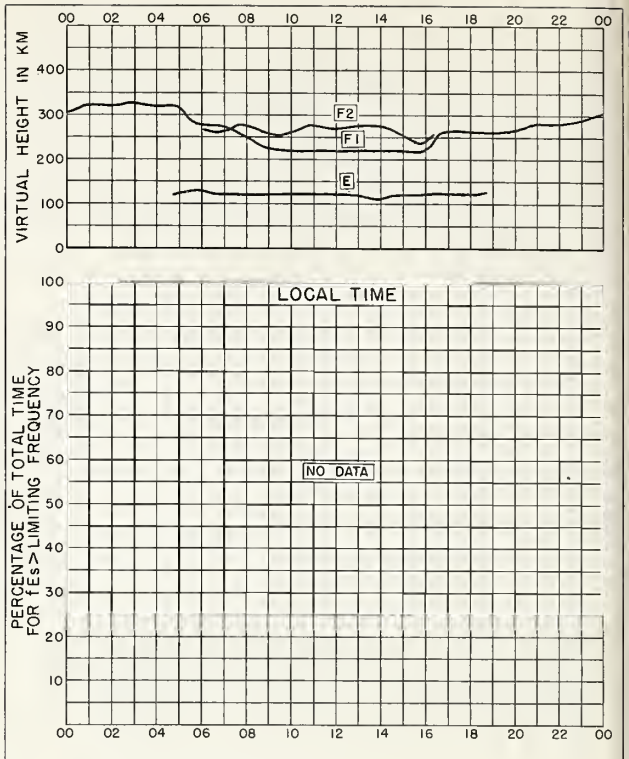

FIG. 106. TOMSK, U.S.S.R. APRIL 1957

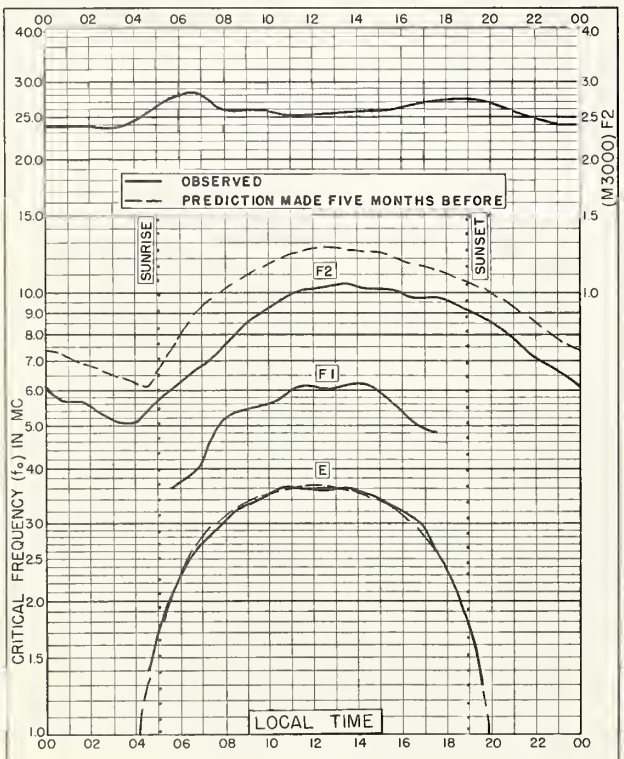

FIG. 107. MOSCOW, U.S.S.R.
55.5°N, 37.3°E APRIL 1957

NBS 503

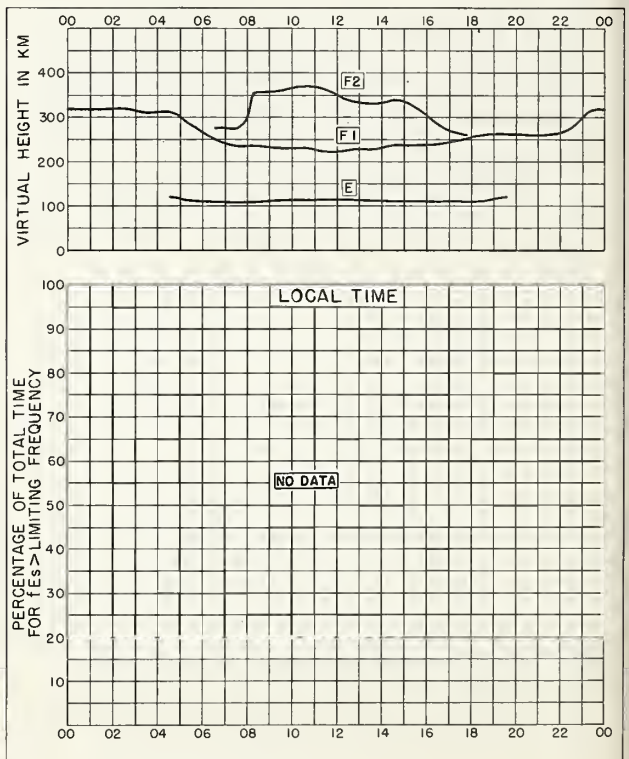

FIG. 108. MOSCOW, U.S.S.R. APRIL 1957

NBS 490

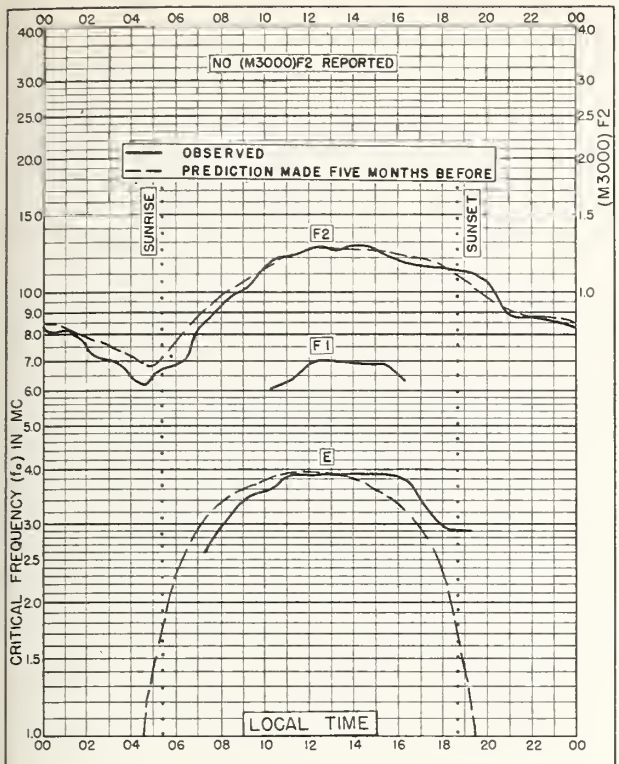

FIG. 109 SIMFEROPOL, U.S.S.R.
44.4°N, 34.0°E APRIL 1957

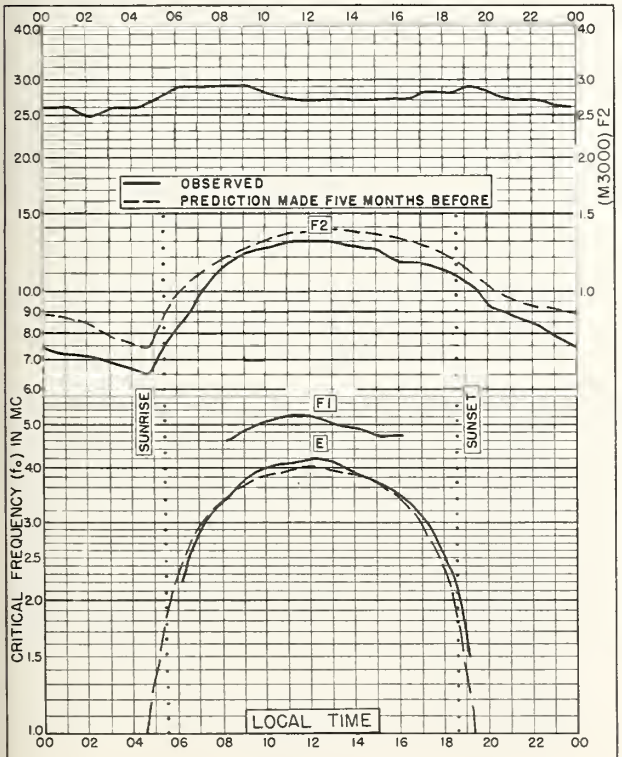

FIG. 110. ALMA-ATA, U.S.S.R.
43.2°N, 76.9° E APRIL 1957

NBS 503

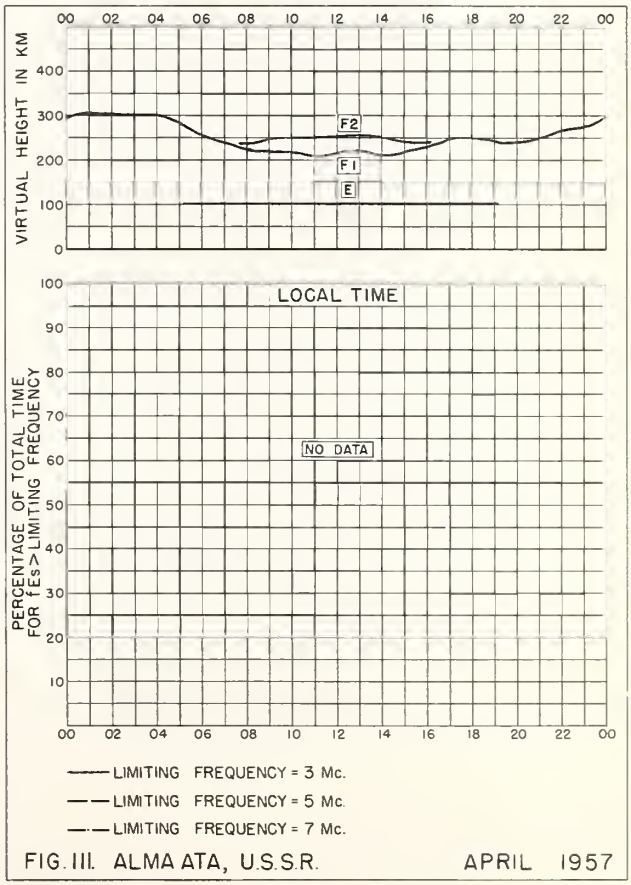

FIG. 111. ALMA ATA, U.S.S.R. APRIL 1957

NBS 490

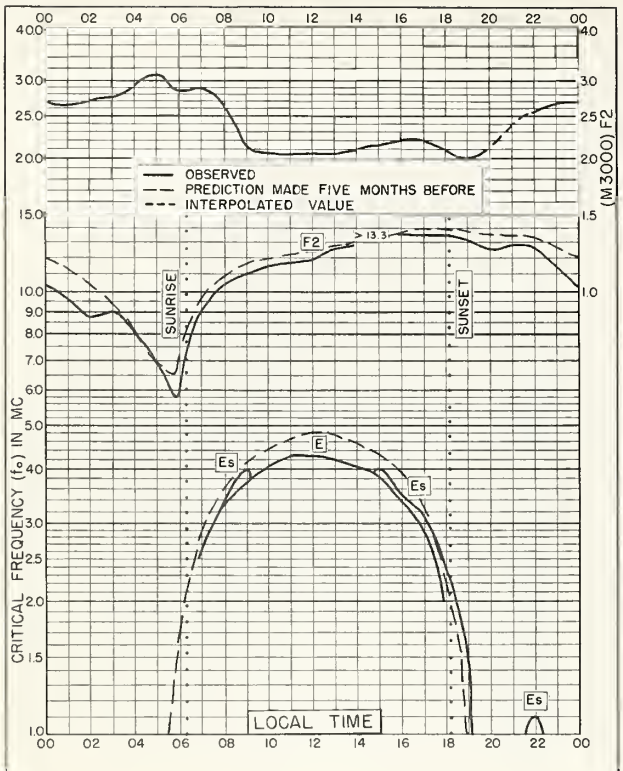

FIG. 112. SINGAPORE, BRITISH MALAYA
1.3° N, 103.8° E FEBRUARY 1957

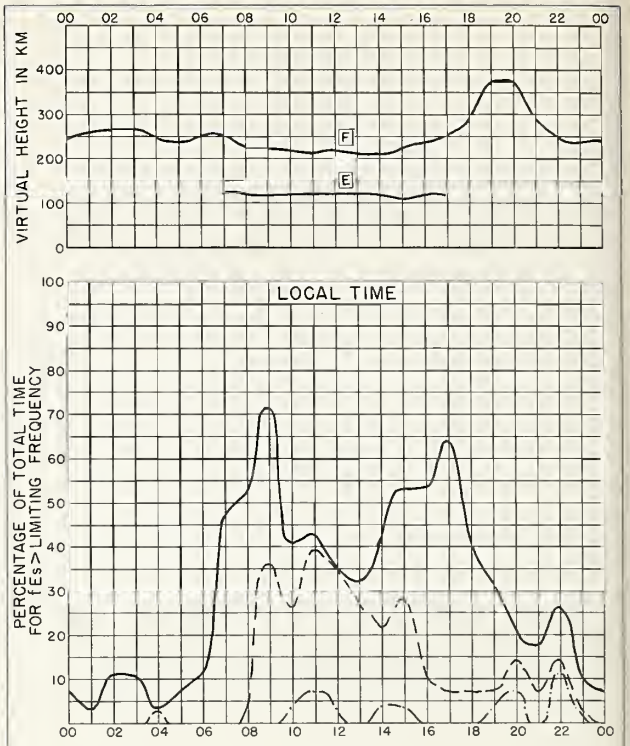

FIG. 113. SINGAPORE, BRITISH MALAYA FEBRUARY 1957

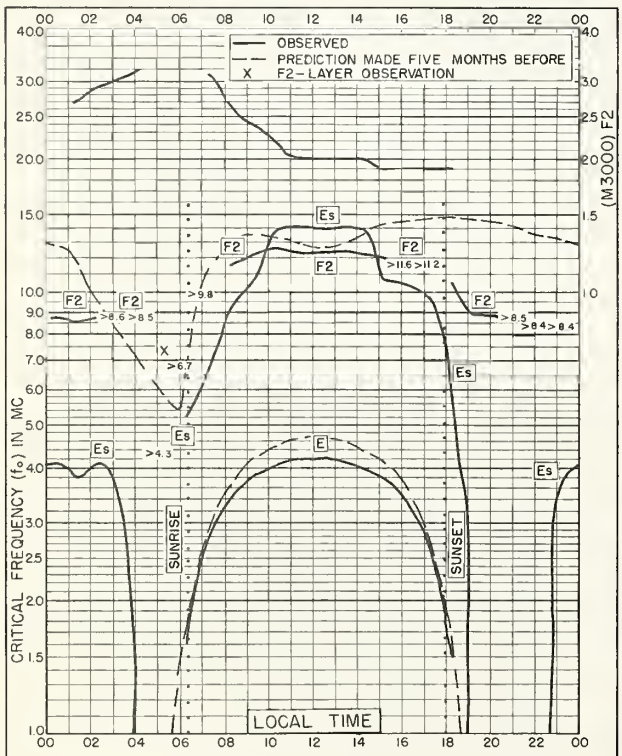

FIG. 114. IBADAN, NIGERIA
7.4°N, 3.9°E JANUARY 1957

NBS 503

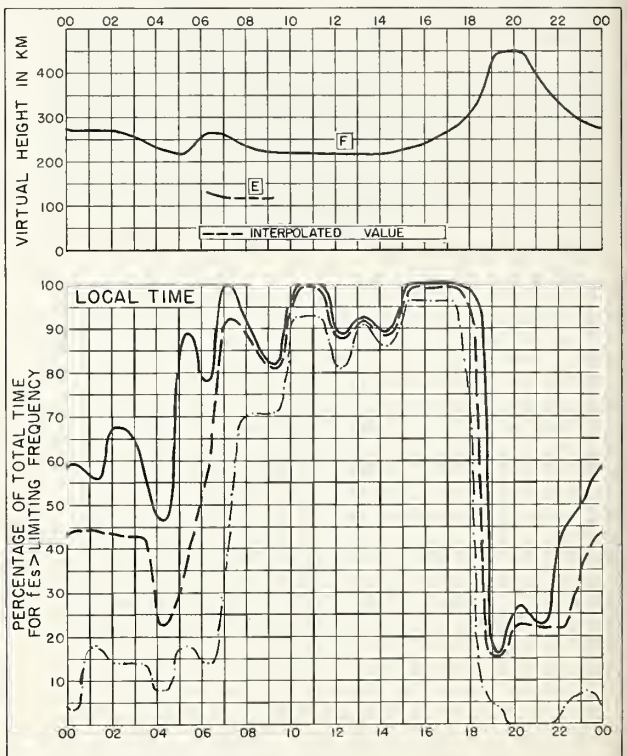

FIG. 115. IBADAN, NIGERIA JANUARY 1957

Commerce-Standards-Boulder, Colo.

NBS 490

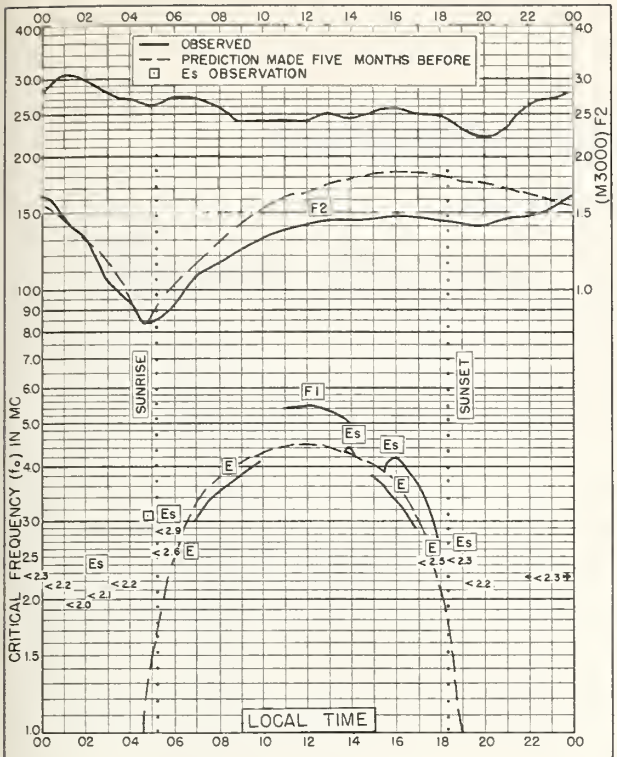

FIG. 116. SAO PAULO, BRAZIL
23.5°S, 46.5°W NOVEMBER 1956

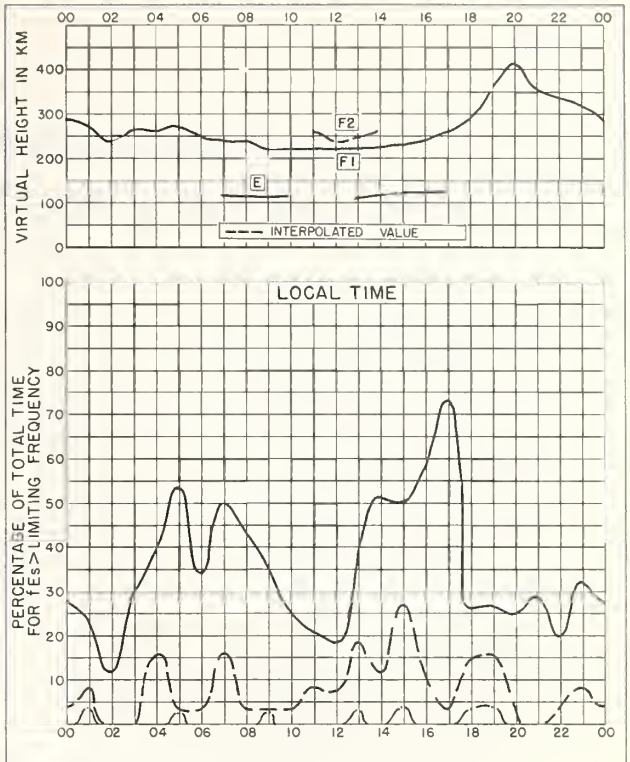

FIG. 117. SAO PAULO, BRAZIL NOVEMBER 1956

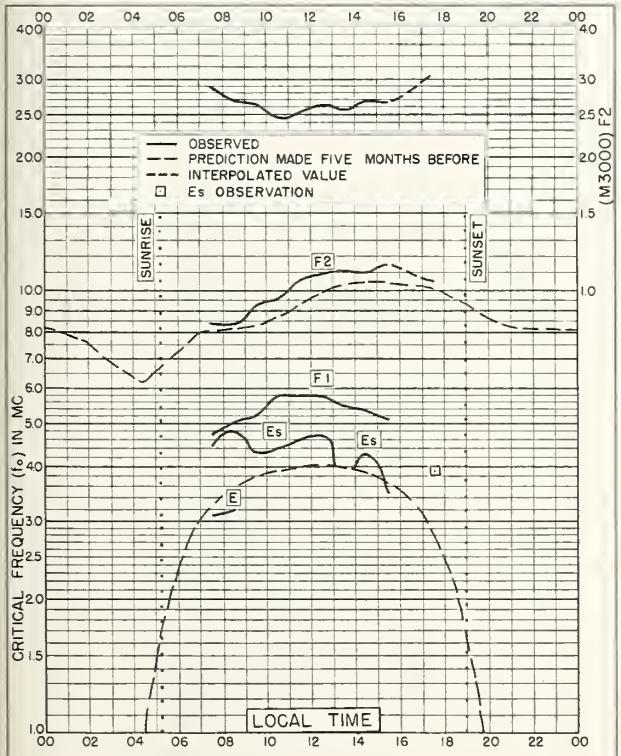

FIG. 118. QUETTA, PAKISTAN
30.2°N, 67.0°E JULY 1956

NBS 503

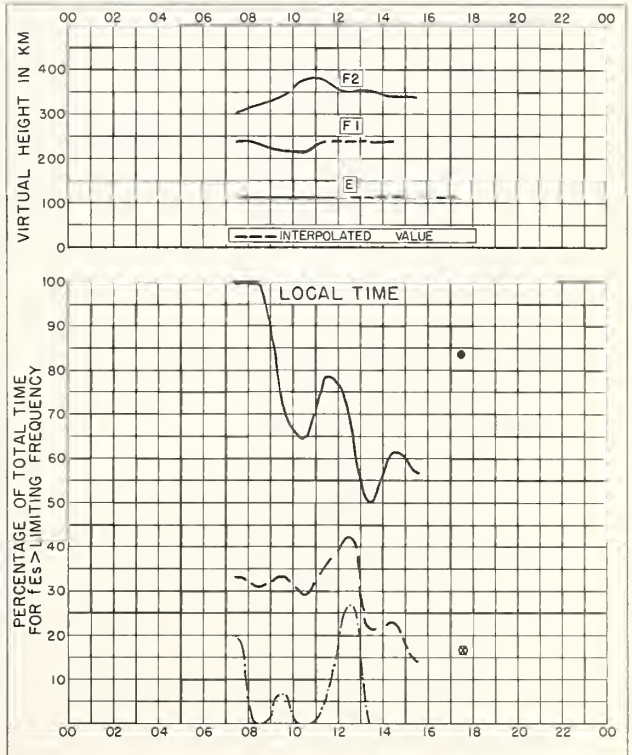

FIG. 119. QUETTA, PAKISTAN JULY 1956

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Index (CRPL-F161 (Part A), continued)

Index (CRPL-F161 (Part A), concluded)

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