Seismological Bulletin 1957

Uppsala: 59° 51.5′ N, 17° 37.6′ E
Kiruna: 67° 50.4′ N, 20° 25.0′ E
Skalstugan: 63° 34.8′ N, 12° 16.8′ E
Lund: 55° 41.9′ N, 13° 11.2′ E

By

Markus Båth

Seismological Bulletin 1957

u_p = Uppsala: 59° 51.5′ N, 17° 37.6′ E
Ki = Kiruna: 67° 50.4′ N, 20° 25.0′ E
Sk = Skalstugan: 63° 34.8′ N, 12° 16.8′ E
Lu = Lund: 55° 41.9′ N, 13° 11.2′ E

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Uppsala (abbreviated Up in the bulletin)

Location and ground: 59°51.5′N, 17°37.6′E; 14 m above mean sea level; granite.

Instruments: Wiechert 1000 kg pendulum E,N; Grenet-Coulomb Z′ (short-period); Benioff variable reluctance E,N,Z (long-period) and E′,N′,Z′ (short-period); Press-Ewing E,N and Sprengnether Z (ultralong-period).

Instrumental constants for 1957:

a) Wiechert

T_0 = seismograph free period,
V = static magnification,
ε = damping ratio,
r = max. deviation due to friction.

Instrument	Date	T_0 sec	V	ε	r mm
Wiechert E	July 2, 1956	10.4	189	4.2	1.2
	July 2, 1957	11.1	181	5.0	1.2
Wiechert N	July 2, 1956	9.2	197	3.8	1.0
	July 2, 1957	9.5	193	4.2	1.0

Concerning the method of determination, see Wiechert (1903).

b) Grenet-Coulomb

T_0 = seismometer free period,
T_g = galvanometer free period,
k_g = transference factor,
L = reduced pendulum length,
l_0 = recording distance (from galvanometer lense to record),
V_{max} = max. dynamic magnification.

LUND
HÅKAN OHLSSONS BOKTRYCKERI
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Instrument	Date	T_0 sec	T_g sec	k_g sec^{-1}	L cm	l_0 cm	V_{max}
Grenet-Coulomb Z′	Jan 19, 1952	1.4	0.5	16900	11.8	100	10530

Both seismometer and galvanometer damping is critical (aperiodic).

Reference is made to Grenet (1946), Galitzin (1914), and Byerly (1942).

The operation of Grenet-Coulomb Z′ at Uppsala was interrupted on May 31, 1957, after which this instrument was placed in Lund (see below).

c) Benioff

In addition to T_0, T_g, l_0, and V_{max}, already defined, we introduce the following notation:

$2\sigma_g l_0$=transference factor, where σ_g=a quantity depending on the electrodynamic properties of the transducer and the galvanometer (Benioff, 1932; Chakrabarty, 1949; Båth, 1959).

Instrument	Date 1956	T_0 sec	T_g sec	$2\sigma_g l_0$ sec^{-1}	V_{max}
Benioff E	Feb 7	1.0	87	2.509×10^4	2000
» N	Feb 7	1.0	85	3.705×10^4	2940
» Z	Feb 7	1.0	89	1.892×10^4	1520
» E′	July 10	1.0	0.7	2.090×10^6	88310
» N′	July 10	1.0	0.7	2.363×10^6	99840
» Z′	July 17	1.0	0.7	1.316×10^6	55580

Damping is critical both for seismometers and galvanometers. The test-weight method for determination of magnification curves for short-period instruments is not very reliable, and a comparison of parallel records of Benioff Z′ and Grenet-Coulomb Z′ suggests that the last value given above for V_{max} should be reduced to about 40000 (Båth, 1959). Similar reductions apply to E′ and N′.

d) Press-Ewing E,N and Sprengnether Z (ultralong-period) instruments were installed in December, 1957, and are in continuous operation since Dec. 17, 1957. The seismometer periods are 15.0 sec

and galvanometer periods between 80 and 90 sec. Peak magnification is 2200. This installation is on loan from the Lamont Geological Observatory, Columbia University, New York, under IGY arrangements.

In the bulletin only the readings from Benioff E, N, Z, Z′ and Grenet Z′ are reported as a rule. Readings from other records are included occasionally as complements to those mentioned, when this seems necessary.

Kiruna (abbreviated Ki)

Location and ground: 67° 50.4′N, 20° 25.0′E; 390 m above mean sea level; porphyry.

Instruments: Grenet-Coulomb Z′, Galitzin E, N, Z.

Instrumental constants for 1957:

a) Grenet-Coulomb
Notation, see Uppsala b).

Instrument	Date	T_0 sec	T_g sec	k_g sec^{-1}	L cm	l_0 cm	V_{max}
Grenet-Coulomb Z′	June 5, 1955	1.4	0.8	15494	12.2	101.5	12820
	Sep 28, 1957	1.4	0.7	13936	12.2	100.6	11150

Damping is critical for seismometer and galvanometer.

b) Galitzin
In addition to the notation above we introduce
μ^2=seismometer damping (Galitzin, 1914).

Instrument	Date	T_0 sec	T_g sec	μ^2	k_g sec^{-1}	L cm	l_0 cm	V_{max}
Galitzin E	June 4, 1955	12.1	11.8	+0.06	69.2	16.0	135.6	740
	Sep 27, 1957	11.8	11.8	+0.11	72.6	16.0	135.6	780
Galitzin N	June 4, 1955	13.0	11.8	+0.20	74.1	15.2	136.0	920
	Sep 28, 1957	12.8	11.9	+0.38	67.2	15.2	136.1	910
Galitzin Z	June 4, 1955	8.2	11.9	+0.07	205.1	41.0	135.6	690
	Sep 27, 1957	9.6	11.6	—0.37	234.2	41.0	135.3	740

Galvanometer damping is critical.

Readings from all Kiruna records are reported in the bulletin.

Skalstugan (abbreviated Sk)

Location and ground: 63° 34.8′N, 12° 16.8′E; 580 m above mean sea level; gneiss.

Instrument: Grenet-Coulomb Z′.

Instrumental constants for 1957:

Instrument	Date	T_0 sec	T_g sec	k_g sec^{-1}	L cm	l_0 cm	V_{max}
Grenet-Coulomb Z′	Nov 21, 1955	1.4	0.8	~16000	~12	~100	~12000

Seismometer and galvanometer damping critical.

The constants were checked on October 1, 1957.

Lund (abbreviated Lu)

Location and ground: 55° 41.9′N, 13° 11.2′E; 32 m above mean sea level; clay and sand.

Instrument: Grenet-Coulomb Z′.

This instrument, earlier in operation at Uppsala, was installed at the former seismograph station at the Astronomical Observatory in Lund for a test operation, lasting from June 12 to October 17, 1957. The constants for the instrument were the same as at Uppsala (see above). However, near-by disturbances, mainly from traffic, were of too much trouble due to the loose ground, and it was necessary to decrease the magnification several times during the test period. As the location was too unsuitable for a high-magnification instrument of short period, the operation was interrupted on October 17, 1957.

General remarks

In the presentation of the material we have followed the same principles as introduced in our bulletin for 1956.

All correspondence concerning our stations or records etc should be addressed to the central station: Seismological Institute, Uppsala, Sweden.

For notation of phases, see "Observations séismographiques" for Uppsala or Kiruna 1955. Concerning channel waves, see a review by Båth (1958). The time used is Greenwich Mean Time (GMT).

C=compression,
D=dilatation.
μ=amplitude in microns, $1\mu = 10^{-3}$ mm,
s=period in seconds,
$\triangle$=epicentral distance,
h=depth of hypocenter,
Magn.=magnitude, determined in the old Gutenberg-Richter scale (M) by applying our station corrections (Båth, 1956).
Amplitudes are given only for Uppsala and Kiruna.

In the analysis of the records, use has been made of all available bulletins, especially those from Bureau Central International de Séismologie (BCIS), Strasbourg, and from United States Coast and Geodetic Survey (USCGS), Washington, D.C. The tables and methods of Jeffreys and Bullen (1940), Gutenberg and Richter (1937), Båth (1943 and 1947), Gutenberg (1951) have been used.

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Tables

1957					
Jan 1	Sk	iP	00	19	39
» 1	Up	iP	01	06	54
		i(PcP)	01	07	24
				μ	s
		P z'		0.4	1.3
	Ki	iP	01	06	01
		ipP	01	06	31
	Sk	iP	01	06	38
		Kamchatka (h~150 km).			
» 1	Up	iP	03	35	56
	Ki	iP	03	35	01
		iPcP	03	35	53
	Sk	iP	03	35	32
		Aleutian Islands.			
» 1	Sk	i(P)	03	55	41
» 1	Up	i(PP)	06	31	56
		(Mexico).			
» 1	Up	iPKP	11	05	19
		South Pacific.			
» 1	Up	eP	12	56	39
	Sk	iP	12	56	30
» 2	Up	iP	00	50	23C
		iS	00	59	21
		iPS	00	59	33
		iSKS	01	00	25
				μ	s
		P z'		0.4	1.0
		SKS E		1.1	4
		SKS N		1.3	5
		M E		5.9	22
		M N		8.3	20
		M z		10	20
		△=7550 km=68°.			
	Ki			—	
				μ	s
		M E		7.1	16
		M N		1.9	15
		M z		5.8	15
	Sk	iP	00	50	00C
		iPcP	00	50	39
		Aleutian Islands.			
		Magn.=6.1 (Up, Ki).			
» 2	Up	iP	02	26	33

1957					
Jan 2 (cont.)	Ki	iP	02	25	40
				μ	s
		P z'		0.1	1.0
		Aleutian Islands.			
» 2	Ki	iP	02	27	22C
» 2	Up	iP	02	28	38C
		iPcP	02	29	03
		iPP	02	31	11
		i	02	31	55
		iS	02	37	36
		iPS	02	37	56
		iSKS	02	38	33
		iP'P'	02	57	06
				μ	s
		P z'		0.7	1.2
		PP z		1.0	4
		SKS N		5.3	6
		SKS z		2.4	7
		P'P' z'		0.2	1.5
		M E		32	20
		M N		24	17
		M z		21	17
		△=7550 km=68°.			
	Ki	iP	02	27	45C
		iS	02	36	06
		iPS	02	36	17
		iScS	02	37	29
		iP'P'	02	57	29
				μ	s
		P N		3.6	7
		P z		6.8	7
		P z'		0.7	1.0
		S E		5.7	9
		S N		9.5	9
		P'P' z'		0.1	1.5
		M E		27	18
		M N		17	18
		M z		28	17
		△=6650 km=60°.			
	Sk	iP	02	28	15C
		i(PP)	02	30	32
		iP'P'	02	57	08
		Aleutian Islands.			
		Magn.=6.9 (Up, Ki).			
» 2	Up	iP	03	23	53
		iPcP	03	24	17
		i(SKS)	03	34	05

1957
Jan 2
(cont.)

		μ	s
P	z′	0.4	1.1
(SKS)	N	0.9	4
M	E	12	22
M	N	19	18
M	z	15	21

√Ki	iP	03	22	54
	iPcP	03	23	38
	i	03	24	53
	iPP	03	25	20
	ePcS	03	27	59
	eS	03	31	23
	iScS	03	32	55

		μ	s
P	z′	0.4	1.0
S	E	2.1	8
S	N	2.7	11
M	E	18	17
M	N	11	19
M	z	27	19

△=6700 km=60½°.

√Sk	iP	03	23	29
	iPcP	03	24	05

Aleutian Islands.
Magn.=6.5 (Up, Ki).

» 2 √Up	iP	03	41	34
	iPP	03	44	21
	iPcS	03	46	08

		μ	s
P	z′	0.2	1.0
M	E	10	17
M	N	22	18
M	z	16	18

√Ki	iP	03	40	41C
	ePcP	03	41	22
	iPP	03	43	08
	iPcS	03	45	29
	i(P′P′)	04	10	46

		μ	s
P	z′	0.3	1.0
M	E	18	18
M	N	16	20
M	z	21	17

√Sk	iP	03	41	11C

Aleutian Islands.
Magn.=6.3 (Up, Ki).

» 2 √Ki	iP	03	51	03

» 2 √Up	iP	03	52	09
	iPcP	03	52	31

		μ	s
P	z′	0.2	1.0

√Ki	iP	03	51	16
	ePP	03	53	31

		μ	s
P	z′	0.1	1.0

√Sk	iP	03	51	45

Aleutian Islands.

1957
Jan 2 √Up

Up	iP	03	59	45
	iPcP	04	00	10
	iS	04	08	46
	iSKS	04	09	47
	iP′P′	04	28	10

		μ	s
P	N	0.5	1.0
P	z	1.2	2.0
P	z′	1.0	1.9
P′P′	z′	0.5	1.8
M	E	29	22
M	N	32	20
M	z	35	20

△=7550 km=68°.

√Ki	iP	03	58	52
	i	03	59	57
	iS	04	06	52
	iPS	04	07	25
	iScS	04	08	52
	eP′P′	04	28	21

		μ	s
P	z′	1.0	1.0
P′P′	z′	0.2	1.8
M	E	29	17
M	N	14	17
M	z	36	18

△=6650 km=60°.

√Sk	iP	03	59	22C
	iPP	04	02	02
	iP′P′	04	28	13

Aleutian Islands.
Magn.=6.7 (Up, Ki).

» 2 √Up	iP	04	11	39D
√Ki	iP	04	10	46

Aleutian Islands.

» 2 √Up	iP	04	14	30C
	i	04	14	44
	iPP	04	17	09
	iSKS	04	24	28

		μ	s
P	N	0.4	2
P	z	0.7	2
P	z′	0.9	1.2
M	E	15	17
M	N	30	18
M	z	23	17

△=7600 km=68½°.

√Ki	iP	04	13	37C
	iPcP	04	14	22
	iScS	04	23	29

		μ	s
P	z	1.6	3.0
P	z′	0.9	1.0
M	E	23	16
M	N	17	17
M	z	29	16

△=6700 km=60½°.

√Sk	iP	04	14	07C

1957
Jan 2 Aleutian Islands.
(cont.) Magn.=6.7 (Up, Ki).

» 2 √Up	iP	11	00	32C
	iPcP	11	01	01

		μ	s
P	z′	0.2	1.0
M	N	1.4	16

√Ki	iP	10	59	39C
	iPcP	11	00	29
	iS	11	07	58
	iPS	11	08	18

		μ	s
P	z	0.7	3
P	z′	0.3	1.0
S	E	0.4	5
S	N	0.7	5
M	E	4.9	20
M	N	1.3	17
M	z	7.3	20

△=6650 km=60°.

√Sk	iP	11	00	10C

Aleutian Islands.
Magn.=6.3 (Up, Ki).

» 2 √Up	iP	12	58	07C

		μ	s
P	z′	0.2	1.0

√Ki	iP	12	57	14C
	i	12	57	47

		μ	s
P	z′	0.3	1.0
M	E	0.8	16

√Sk	iP	12	57	44C

Aleutian Islands.

» √2 Ki	iP	14	26	40D

Aleutian Islands.

» 2 √Up	iP	18	02	57C

		μ	s
P	z′	0.1	1.1

√Ki	iP	18	02	03C

		μ	s
P	z′	0.1	1.0

√Sk	iP	18	02	33

Aleutian Islands.

» · 2 √Up	iP	20	49	10D
√Sk	iP	20	49	03

» 3 √Up	iP	00	52	01

		μ	s
P	N	0.2	1
P	z	0.3	1
P	z′	0.3	1.1
M	E	1.0	18
M	N	1.0	19
M	z	1.3	18

√Ki	iP	00	51	08C
	iPcP	00	51	55

1957
Jan 3
(cont.)

		μ	s
P	z′	0.3	1.1
M	E	1.4	19
M	N	0.9	20
M	z	3.9	21

√Sk	iP	00	51	38C

Aleutian Islands.
Magn.=6.4 (Up, Ki).

» 3 √Up	iP	07	41	23C

		μ	s
P	z′	0.2	0.7

√Ki	iP	07	42	37

		μ	s
P	z′	0.1	1.1

√Sk	iP	07	41	59C

Near west coast of Greece.

» 3 √Up	iP	09	05	10

Near east coast of
Honshu, Japan.

» 3 √Sk	i	10	28	42

Local?

» 3 √Up	iP	12	57	59D
	iPcP	12	58	32
	ipP	12	59	52
	i(PP)	13	00	26
	iS	13	05	43
	iSKS	13	06	47
	isS	13	09	07

		μ	s
P	E	1.3	1.0
P	N	2.8	1.2
P	z	4.0	1.0
P	z′	4.0	1.0
(PP)	E	1.3	1.2
(PP)	N	1.4	1.2
(PP)	z	2.8	1.2
(PP)	z′	1.8	1.2
S	E	11	3
S	N	3.0	2
M	E	5.6	11
M	N	7.0	14
M	z	7.0	12

△=7100 km=64°.

√Ki	iP	12	57	20D
	ipP	12	59	11
	iS	13	04	29
	iScS	13	06	05
	isS	13	07	52
	isSS	13	11	36

		μ	s
P	E	4.8	4
P	N	3.5	3
P	z	13	4
P	z′	2.8	1.0
S	E	19	6
S	N	19	5
M	E	9.2	11

1957 Jan 3 (cont.)

	M	N	12	16
	M	z	18	14

△=6350 km=57°.

Sk	iP	12	57	55 D
	iScP	13	02	33
	iS	13	05	34

△=7000 km=63°.
Southern Manchuria.
h=590 km (Up, Ki).
Magn.=7.0 (Up, Ki).

» 3					
Up	iP	13	53	02 D
	iPcP	13	53	33
	iPP	13	55	30

P z' μ 0.4 s 1.0

Ki	iP	13	52	23 D
	i(PcP)	13	53	00
	i(pP)	13	54	35

P z' μ 0.5 s 1.0

Sk	iP	13	52	58 D
	ipP	13	54	52
	iPP	13	55	25
	iS	14	00	39

△=6950 km=62½°.
Southern Manchuria.
h=610 km (Sk).

» 3	Up	iP	16	03	19
	Ki	iP	16	02	25

Aleutian Islands.

» 3	Ki	e(Sg)	17	39	33

Local?

» 4	Ki	iP	02	50	24

» 4	Ki	i	07	14	19
		i	07	14	43

Seismic?

» 4	Up	iP	10	48	37

» 4	Ki	i(P)	12	49	11 D

(P) z' μ 0.1 s 1.0

	Sk	iP	12	48	56

Near coast of Colombia.

» 4	Sk	i(Sg)	15	03	56

Local?

» 4	Sk	i(Sg)	15	13	57

Local?

» 4	Sk	e(P)	16	00	24
		i	16	00	44

» 4	Up	iP	18	26	02

1957 Jan 4 (cont.)

P z' μ 0.1 s 0.5

Ki	iP	18	26	52

P z' μ 0.1 s 0.6

Sk	iP	18	26	15

French Guinea.

» 5	Ki	iP	10	55	30

» 5	Up	iP	17	26	09
	Ki	iP	17	25	15

Aleutian Islands.

» 5	Up	iP	18	52	47 D
	Ki	iP	18	54	00 D
	Sk	iP	18	53	23

(Tyrrhenian Sea).

» 6	Up	iP	00	29	15
	Sk	iP	00	29	24

Mid-Atlantic Ocean.

» 6	Up	e(P)	00	54	06

» 6	Up	iP	01	48	46

P z' μ 0.1 s 1.0

Ki	iP	01	48	20 C
Sk	eP	01	48	50

Ryukyu Islands.

» 6	Up	i(P)	02	49	17

» 6	Up	iP	05	26	03

P z' μ 0.1 s 1.0

Ki	iP	05	25	20

Near south coast of Hokkaido,
Japan (h~100 km).

» 6	Ki	iP	20	36	26

Near north coast of
Mindanao, Philippine
Islands.

» 6	Up	i(P)	22	38	02

» 7	Up	iP	02	35	30
	Ki	iP	02	34	42

Kurile Islands.

» 7	Ki	i(P)	08	38	35

» 7	Ki	eP	16	57	28

Near east coast of
Mindanao, Philippine
Islands.
(h~250 km).

» 8	Up	iP	01	33	11

1957 Jan 8 (cont.)

P z' μ 0.2 s 1.1

Ki	iP	01	33	06
i		01	33	12

P z' μ 0.2 s 1.2

Off west coast of Sumatra.

» 8	Up	iP	03	47	50
	Ki	iP	03	47	32

(Philippine Islands).

» 8	Up	iP	05	35	14

P z' μ 0.3 s 1.4

Ki	iP	05	35	15
i		05	35	22

P z' μ 0.2 s 1.3

Off west coast of Sumatra.

» 8	Up	iPKP	10	30	33 C

PKP z' μ 0.2 s 0.8

Tonga Islands region.
(h~150 km).

» 8	Up	iP	17	40	38

P z' μ 0.1 s 1.1

Ki	iP	17	39	44

P z' μ 0.1 s 1.0

Aleutian Islands.

» 8	Ki	iP	20	24	52

P z' μ 0.1 s 1.0

Aleutian Islands.

» 9	Up	iP	01	49	25
	Ki	iP	01	48	27

Komandorskie Islands.

» 9	Up	iP	08	03	56 D
		iP'P'	08	32	04

	P	z'	μ 0.2	s 1.0
	M	E	6.1	18
	M	N	4.0	17
	M	z	6.2	18

Ki	iP	08	03	02
	iPKKS	08	27	27

	P	z'	μ 0.3	s 1.0
	M	E	7.6	16
	M	N	8.1	18
	M	z	13	18

Sk	iP	08	03	33

Aleutian Islands.
Magn.=6.1 (Up, Ki).

1957 Jan 9

	Ki	iP	08	46	55

» 9	Up	iP	10	39	25 C
	Ki	iP	10	38	46 C
	Sk	iP	10	39	19 C

Off east coast of
Honshu, Japan.

» 9	Up	iP	12	54	47

» 10	Up	iP	04	26	48

P z' μ 0.1 s 0.9

Ki	iP	04	26	49 C
Sk	iP	04	27	02

Northern Sumatra.

» 11	Up	e(P)	06	30	47

» 11	Up	e(P)	14	33	23
	Sk	i(P)	14	33	20

» 11	Up	iP	23	43	41 C

P z' μ 0.1 s 1.0

Ki	iP	23	43	24
Sk	eP	23	43	42

Ryukyu Islands.

» 12	Up	i	02	32	39
		e	02	33	50

Local?

» 12	Ki	i(Pg)	11	31	54
		i(Sg)	11	32	14

Local?

» 12	Up	iP	12	02	35

» 12	Up	iP	12	21	05 C

South of Honshu, Japan.

» 12	Up	iP	15	09	18

» 12	Up	iPKP	16	21	54
		i	16	22	07

Sandwich Islands region.

» 12	Up	e	20	59	03

Local?

» 13	Up	iP	11	45	49
		i	11	46	20

	P	z'	μ 0.3	s 1.0
	M	E	1.5	12
	M	N	1.7	8

Ki	iP	11	45	55

P z' μ 0.1 s 1.0

Sk	iP	11	46	14
	iPP	11	47	49

Column 1

1957
Jan 13   iPPP   11   48   35
(cont.)   Tadzhik, U.S.S.R.

» 13 Up   iP   12   31   55 C
        iPcP   12   32   09
    Ki   iP   12   31   19 C
              μ s
        P   z'   0.1   1.0
    Sk   iP   12   31   52
    Off east coast of Honshu, Japan.

» 14 Up   iP   00   19   44
    Greece.

» -14 Ki   e(Pg)   02   35   52
         i(Sg)   02   36   15
    Local?

» 14 Up   iPKP   14   38   36 D
        iSKP   14   41   24
        i(PP)   14   41   46
              μ s
        (PP)   z'   0.3   1.5
    Ki   ePKP   14   38   27
        iSKP   14   41   00
        i   14   41   10
    Sk   ePKP   14   38   29
        iSKP   14   41   17
    Fiji Islands region.
    (h ~ 600 km).

» 14 Up   i(PKP)   23   13   17
        i   23   16   50
    South Pacific.

» 15 Up   i(P)   20   06   04
    Ki   e(P)   20   06   20

» 15 Ki   i   20   28   17
    Local?

» 15 Up   iP   20   35   02
    Ki   eP   20   34   39
    Off east coast of Mindanao,
    Philippine Islands.
    (h ~ 100 km).

» 16 Up   i   01   51   19
    Seismic?

» 16 Ki   e   05   19   24
    Local?

» 16 Up   iP   11   55   38 D
              μ s
        P   z'   0.1   1.0
    Ki   iP   11   56   01 D
              μ s
        P   z'   0.1   1.2
    Sk   eP   11   55   59
    Chagos Islands region.

Column 2

1957
Jan 16 Up   i   15   17   32
    Seismic?

» 16 Up   iPKP   20   55   35
    Tonga Islands.

» 17 Up   iP   05   47   47
    Sk   eP   05   47   48

» 17 Up   iP   16   33   13
        i   16   33   26
    Ki   iP   16   32   52
        i   16   33   05
    Sk   i   16   33   32
    Basco Island region.

» 17 Up   iP   22   37   54 D
        iPP   22   40   46
              μ s
        P   z'   0.6   1.1
        PP   z'   0.1   1.0
    Ki   iP   22   37   19 D
        iPP   22   39   53
              μ s
        P   z'   0.4   1.0
        PP   z'   0.6   2.0
    Sk   iP   22   37   50
        i   22   40   29
        iPP   22   40   40
    South of Honshu, Japan.
    (h ~ 350 km).

» 18 Up   i   08   09   30
        iSg   08   09   32
        $\triangle$=630 km=5.7°.
    Ki   e   08   08   45
        iSg   08   08   48
        $\triangle$=480 km=4.3°.
    Sk   iPg   08   06   56
        iSg   08   07   18
        $\triangle$=180 km=1.6°.
    Coast region of central
    Norway, 65¼° N, 13½° E.
    Origin time=08   06   25.

» 18 Sk   i   12   55   53

» 18 Up   i   13   20   13
        iSg   13   20   16
        $\triangle$=630 km=5.7°.
    Ki   e   13   19   28
        iSg   13   19   34
        $\triangle$=480 km=4.3°.
    Sk   iPg   13   17   41
        iSg   13   18   05
        $\triangle$=180 km=1.6°.
    Coast region of central
    Norway, aftershock.
    Origin time=13   17   10.

» 18 Up   e(Sg)   20   22   10

Column 3

1957
Jan 18 Ki   e(Sg)   20   21   31
(cont.) Sk   ePg   20   19   19
        iSg   20   19   44
    Coast region of central
    Norway, aftershock.
    Origin time=20   18   50.

» 19 Up   iPKP   05   34   49
    Ki   iPKP   05   34   36
    Sk   iPKP   05   34   43
    Fiji Islands region.
    (h ~ 650 km).

» 20 Up   e(P)   00   36   46

» 20 Up   i(P)   03   29   10

» 20 Up   iP   14   04   25
    Ki   iP   14   03   55
    Northern Ryukyu Islands.

» 20 Up   iP   18   20   22
        i   18   20   45
        ipP   18   21   00
        i   18   22   27
    Ki   iP   18   20   30
        ipP   18   21   08
        i   18   22   46
    Sk   iP   18   20   51
    Hindu Kush. h=190 km (Up, Ki).

» 22 Up   iP   01   33   08

» 22 Up   iP   01   37   29C

» 22 Up   iP   11   29   08
        i   11   29   19
              μ s
        P   z'   0.4   1.5
    Ki   eP   11   29   54
    Sk   iP   11   29   35
    Congo.

» 22 Up   iP   14   50   20

» 22 Up   e(P)   22   41   03

» 23 Up   eP   02   33   07

» 23 Up   iP   09   22   33 D
    Sk   eP   09   23   02

» 23 Up   iP   17   32   00
        iS   17   36   05
              μ s
        P   z'   0.2   1.2
        S   z'   0.2   1.5
        M   N   5.1   19
        M   z   4.4   18
        $\triangle$=2550 km=23°.
    Ki   iP   17   33   12

Column 4

1957
Jan 23   i   17   33   30
(cont.)   iPcP   17   36   00
              μ s
        P   z'   0.2   1.3
    Sk   iP   17   32   38 D
        iPP   17   33   30
        $\triangle$=3050 km=27½°.
    Near west coast of Greece.

» 23 Up   eP   22   09   50
    Ki   eP   22   10   36
    Georgia, U.S.S.R.

» 24 Up   e(PP)   01   30   03
    Ki   ePP   01   29   52
              μ s
        PP   z'   0.1   1.2
    Near east coast of
    New Guinea (h ~ 100 km).

» 24 Up   iP   02   17   42
        i!   02   18   11
    Ki   iP   02   17   16
        i   02   17   39
    Mariana Islands.

» 24 Ki   iP   06   21   36

» 24 Up   eP   12   57   14
              μ s
        P   z'   0.1   0.9
    Ki   iP   12   57   05
    Sk   eP   12   57   30

» 24 Up   iP   16   01   50C
    Ki   iP   16   01   51C
              μ s
        P   z'   0.1   0.9
    Sk   eP   16   02   13
    Off west coast of Sumatra.

» 24 Up   iP   17   12   32
    Gulf of California.

» 25 Up   iP   03   47   50 D
        iP'P'   04   15   59
              μ s
        P   z'   0.3   1.2
        P'P'   z'   1.2   2.0
        M   E   3.3   16
        M   N   6.0   22
        M   z   8.4   20
    Ki   iP   03   46   57
        iPcP   03   47   46
        iPcS   03   51   36
        iS   03   55   19
        iP'P'   04   16   17
              μ s
        P   z'   0.1   1.1
        P'P'   z'   0.1   1.2
        M   E   4.8   17

1957
Jan 25 (cont.)

	M	N	3.8	19	
	M	z	11	22	
△=6700 km=60½°.					
√Sk	eP		03	47	34
	i		03	48	27
	eP'P'		04	16	11

Aleutian Islands.
Magn.=6.0 (Up, Ki).

» 25	√Up	iP	17	10	34
	√Ki	iP	17	09	44
	√Sk	eP	17	10	24

Kurile Islands.

» 25	√Up	iPKP	19	01	09C

Tonga Islands region.

» 25	√Up	iP	23	31	10
	√Ki	iP	23	29	34C
	√Sk	eP	23	30	22

Off northeast coast of Greenland.

» 26	√Up	iP	01	26	59

State of Washington, U.S.A.

» 26	√Up	iP	09	10	58
	√Ki	iP	09	10	27
	√Sk	eP	09	11	15

Near east coast of Samar,
Philippine Islands.

» 26	√Up	i(Pg)	12	29	30
		iSg	12	30	38
△=540 km=4.9°.					
	√Ki	iPg	12	28	59
		iSg	12	29	47
△=370 km=3.3°.					
	√Sk	e(Pg)	12	29	11
		iSg	12	30	09
△=440 km=4.0°.					

Coast region of eastern
Sweden, 64½° N, 21° E.
Origin time=12 27 56.

» 26	√Up	iP	16	27	31
	√Ki	iP	16	26	37

» 26	√Up	iP	16	35	57
		iPP	16	36	28
		iS	16	40	08

			μ	s
P	z'		0.2	1.3
M	E		2.1	5
M	N		2.4	7
M	z		2.3	5

△=2550 km=23°.

	√Ki	iP	16	36	39

			μ	s
P	z'		0.3	1.5
M	N		1.7	11
M	z		2.6	9

1957
Jan 26 (cont.)

	√Sk	iP	16	36	53

Georgia, U.S.S.R.

» 26	√Up	i(P)	18	21	58

» 27	√Up	iP	14	16	41D

			μ	s
P	z'		0.1	1.0
M	E		3.7	20
M	N		3.2	22
M	z		4.9	20

	√Ki	eP	14	16	07
		i	14	16	20
	√Sk	iP	14	16	26

Mindanao, Philippine Islands.
Magn.=5.8 (Up).

» 28	√Up	iP	05	35	23

			μ	s
P	z'		0.2	1.2

	√Ki	iP	05	34	53

			μ	s
P	z'		0.1	1.0

	√Sk	iP	05	35	23

Ryukyu Islands.

» 28	√Up	i(P)	08	33	51

» 28	√Up	iP	21	09	06D
		i	21	09	31

Tadzhik, U.S.S.R.

» 28	√Up	i(P)	21	13	08

» 28	√Up	iP	23	29	42C

			μ	s
P	z'		0.1	0.7

	√Ki	iP	23	28	49
	√Sk	eP	23	29	22

Kurile Islands.

» 29	√Up	i(P)	00	54	42

» 29	√Ki	i(P)	09	56	00

» 29	√Up	iP	15	22	42
		iScS	15	33	53
	√Ki	iP	15	23	21
		iScS	15	34	02

Georgia, U.S.S.R.

» 29	√Up	iP	15	26	38

			μ	s
P	z'		0.2	1.0
M	E		4.5	16
M	z		6.0	16

	√Ki	iP	15	27	18
	√Sk	i(P)	15	27	28

Georgia, U.S.S.R.

» 29	√Up	i(P)	20	55	42

1957
Jan 29 (cont.)

		i(Sg)	20	56	22

Local?

» 29	√Up	iP	21	32	00

Near coast of southern California.

» 30	√Up	e(P)	00	54	39

» 30	√Ki	iP	12	16	50

			μ	s
P	z'		0.1	0.8

Yukon, Canada.

» 30	√Ki	e	13	20	23
		i	13	20	30

Seismic?

» 30	√Up	e	20	55	35
		e	20	56	13
		e(Sg)	20	56	46

Local?

» 31	√Up	i(P)	20	37	34
	√Ki	e(P)	20	38	26

» 31	√Up	iP	21	39	25
	√Ki	ePP	21	40	11

Northern Iran.

Feb 1	√Ki	i(P)	15	18	17

» 1	√Up	iP	22	43	50
		eS	22	52	49
△=7450 km=67°.					
	√Ki	eP	22	42	56

Kurile Islands.

» 2	√Up	e(Sg)	09	38	54

Local?

» 2	√Ki	iPKP	12	04	47

Loyalty Islands region.

» 2	√Ki	ePg	16	15	30
		iPn	16	15	35
		iSg	16	15	39

			μ	s
Sg	z'		0.2	1.3

△=80 km=0.7°.
Malmberget, Swedish Lapland.
Origin time=16 15 16.
Explosion of 11.5 ton dynamite.

» 2	√Up	i(P)	18	15	33

» 3	√Up	e(Sg)	02	45	22

Local?

» 3	√Ki	iP	05	40	06

» 3	√Sk	e(P)	16	04	56

1957
Feb 3 (cont.)

	√Up	eP	17	12	14

Kamchatka.

» 3	√Up	iP	17	35	16
		i	17	35	28
		e(SKKS)	18	02	58

			μ	s
P	z'		0.2	1.2
M	E		24	21
M	N		16	21
M	z		17	17

	√Ki	iP	17	34	21

			μ	s
P	z'		0.2	1.5
M	E		18	17
M	N		12	16
M	z		17	16

	√Sk	iP	17	35	03C

Kamchatka. Magn.=6.2 (Up, Ki).

» 3	√Up	eP	21	22	20

			μ	s
M	E		2.8	21
M	N		2.8	22

	√Ki	eP	21	21	30

Kamchatka.

» 3	√Up	iP	21	28	03
	√Ki	iP	21	27	08

Kamchatka.

» 3	√Up	iP	23	08	51D

			μ	s
P	z'		0.2	1.0
M	E		4.4	22
M	N		2.5	20
M	z		3.9	22

	√Ki	iP	23	07	57

			μ	s
P	z'		0.1	1.0

Kamchatka.

» 4	√Up	e(P)	04	37	21

» 4	√Up	iP	09	14	49

			μ	s
P	z'		0.1	1.0

	√Ki	iP	09	14	44
	√Sk	eP	09	14	11

Costa Rica.

» 4	√Up	iP	10	39	12C

			μ	s
P	z'		0.2	1.1
M	E		3.9	21
M	N		3.2	22

	√Ki	iP	10	38	19C

			μ	s
P	z'		0.1	1.1

	√Sk	eP	10	39	01

Off south coast of Kamchatka.

1957

Feb 4 Up i(P) 18 11 30
» 4 Up e(P) 18 51 29
» 5 Up iPKP 04 20 45
Fiji Islands region (h ~ 300 km).

» 5 Up iP 05 00 52
   i 05 01 04
       μ s
√ Ki iP P z' 0.1 1.4 05 01 14
       μ s
√ Sk iP P z' 0.3 1.5 05 00 39 D
Mid-Atlantic Ridge.

» 5 Sk e 09 21 34

» 5 Up i 12 48 57
  Ki e(Sg) 12 46 33
  Sk e 12 45 28
     e(Sg) 12 45 46
Local.

» 5 Ki e 12 51 23
    e(Sg) 12 51 50
Local.

» 5 Up iPKP 16 16 29
       μ s
  PKP z' 0.1 0.9
Ki iPKP 16 16 16 D
       μ s
  PKP z' 0.1 0.9
Sk iPKP 16 16 27 D
Santa Cruz Islands.

» 5 Ki i(P) 16 48 28

» 5 Up iP 17 25 47 C
       μ s
  P z' 0.1 0.7
Ki iP 17 26 51
  i 17 26 59
       μ s
  P z' 0.1 0.7
Sk iP 17 26 29
Near south coast of Turkey.

» 5 Ki i(P) 17 40 49
» 5 Ki e 19 16 11
» 6 Ki iP 04 49 22
» 6 Up iP 20 43 35 C
  iPcP 20 45 02
  iPP 20 45 26
       μ s
  P E 0.3 1.2

1957

Feb 6 (cont.)
  P z 0.6 1.0
  P z' 0.9 1.1
  PP z' 0.2 1.2
  M E 7.2 14
  M N 14 18
  M z 13 14
△ = 5350 km = 48°.
Ki iP 20 43 00 C
  iPP 20 44 47
  iS 20 49 29
  iSS 20 52 54
  iScS 20 53 00
       μ s
  P z' 0.6 1.0
  PP z' 0.2 1.1
  M E 12 14
  M N 4.9 10
  M z 14 14
△ = 4900 km = 44°.
Sk iP 20 43 37 C
Lake Baikal region, U.S.S.R.
Magn. = 6.4 (Up, Ki).

» 7 Up eP 01 46 56
  Ki iP 01 46 55 D
       μ s
  P z' 0.1 0.7
Near southwest coast of Sumatra.

» 7 Ki iPg 12 42 35
  iSg 12 42 56
△ = 180 km = 1.6°.

» 7 Ki iPg 12 44 29
  iSg 12 44 51
△ = 180 km = 1.6°.
Local. Same origin as for the preceding shock.

» 7 Up —
       μ s
  M E 1.9 18
Ki e(P) 13 06 02
Off south coast of Turkey.

» 7 Up iP 16 28 04 C
       μ s
  P z' 0.1 1.0
Ki iP 16 27 10
       μ s
  P z' 0.1 1.0
Sk iP 16 27 42 C
Aleutian Islands.

» 7 Up i(P) 20 55 25

» 7 Up iP 21 53 15 C
       μ s
  P z' 0.2 0.7
Ki iP 21 52 43

1957

Feb 7 (cont.)
       μ s
  P z' 0.1 0.9
Sk iP 21 53 12 C
Sea of Japan.

» 7 Up iP 21 58 25
  Ki iP 21 59 09
       μ s
  P z' 0.1 0.8
Sk eP 21 59 03
Northwestern Iran.

» 7 Up e(Sg) 23 26 09
Local?

» 7 Up iP 23 52 24
  Ki iP 23 53 07
  Sk iP 23 53 01
Iran.

» 8 Up i(P) 02 33 31

» 8 Up iP 02 52 43 C
  Ki iP 02 51 50

» 8 Ki i(P) 06 17 35

» 8 Sk e(Sg) 10 17 06
Local?

» 8 Up e(P) 10 30 48
  Sk iP 10 30 39

» 8 Up eP 20 37 49

» 9 Up iP 01 44 50
       μ s
  M N 4.0 24
Ki iP 01 45 53 C
Sk eP 01 45 28
Aegean Sea.

» 9 Up iP 05 08 52

» 9 Up iP 06 12 02
  Ki iP 06 11 42
  Sk eP 06 12 02
Near east coast of Samar, Philippine Islands.

» 9 Sk iP 07 36 02 C
Off south coast of Panama.

» 9 Ki iP 08 20 15
Western Caroline Islands.

» 9 Up iPKP 13 48 58
  ipPKP 13 49 35
  i 13 49 48
       μ s
  PKP z' 0.2 0.8

1957

Feb 9 (cont.) Ki iPKP 13 48 40
  i 13 49 28
       μ s
  PKP z' 0.2 1.0
Sk iPKP 13 48 53
  i! 13 49 11
Off coast of North Island, New Zealand (h ~ 150 km).

» 9 Up iP 16 49 50
       μ s
  P z' 0.2 1.2
  M N 3.9 16
  M z 2.3 17
Ki iP 16 49 11
       μ s
  M E 1.3 14
  M N 1.7 18
  M z 3.4 18
Sk eP 16 49 25
Near coast of northern California.
Magn. = 5.9 (Up, Ki).

» 9 Ki eP 17 49 30
Near coast of northern California.

» 9 Up i(P) 22 40 05

» 10 Up iP 05 55 46
       μ s
  P z' 0.9 1.6
  M E 2.4 18
  M N 1.2 16
  M z 5.8 18
Ki iP 05 56 12 D
  i 05 56 19
       μ s
  P z' 0.6 2.0
  M E 0.9 15
  M N 0.5 12
Sk iP 05 55 35
Azores Islands region.

» 10 Up i(P) 11 13 06

» 10 Up iP 22 45 19 C
  ePP 22 48 56
  i(SKS) 22 56 04
  iS 22 56 10
  eScS 22 56 25
       μ s
  P E 0.2 2
  P z 0.9 2
  P z' 1.4 2.0
  M E 17 16
  M N 21 23
  M z 22 16
△ = 10000 km = 90°.
Ki iP 22 45 01 C
  iPP 22 48 29
  iSKS 22 55 32

```
1957
Feb 10
(cont.)        P      z     3.6    7
               P      z'    0.5    1.5
               PP     z     1.7    9
               PP     z'    0.3    1.5
               SKS    E     2.1    6
               SKS    N     6.4    10
               M      E     21     19
               M      N     12     18
               M      z     22     15
          △=9650 km=87°.
    √Sk   iP               22  45  23 C
          i                22  45  37
          iPP              22  49  02
    Mindanao. Magn.=6.7 (Up, Ki).

»  10 √Sk  iP              23  01  48

»  10 √Up  iP              23  03  55 C
           i               23  04  08
           iPP             23  07  27
           iSKS            23  14  22
           iS              23  14  43
           ePS             23  16  09
                                      μ    s
           P      z     1.3    3
           P      z'    0.9    2.0
           S      E     3.1    6
           S      N     2.0    5
           M      E     20     17
           M      N     23     21
           M      z     29     17
          △=10000 km=90°.
    √Ki   eP               23  03  37
          iPP              23  07  09
          iSKS             23  14  11
                                      μ    s
           P      E     1.9    8
           P      z     4.7    5
           P      z'    0.2    1.0
           SKS    N     6.2    6
           M      E     17     15
           M      N     17     19
           M      z     34     17
          △~9650 km~87°.
    √Sk   iP               23  04  00
          i                23  04  12
    Mindanao.
    Magn.=6.8 (Up, Ki).

»  10 √Up  eP              23  17  41
           i               23  17  59
     √Sk   iP              23  17  48

»  10 √Up  iP              23  42  26
     √Ki   iP              23  41  57
     √Sk   iP              23  42  30

»  11 √Up  iP              00  31  36 D
                                      μ    s
           M      E     1.7    16
```

```
1957
Feb 11
(cont.)        M      N     1.7    19
               M      z     2.8    16
    √Ki   iP               00  31  13
                                      μ    s
               M      E     0.6    18
               M      z     2.4    20

»  11 √Ki  iP              00  50  36

»  11 √Up  iP              01  27  47
           ePP             01  31  14
           iSKS            01  38  19
           iS              01  38  42
                                      μ    s
           P      z'    0.2    1.0
           S      E     2.0    5
           M      E     16     17
           M      N     22     23
           M      z     21     18
          △=10000 km=90°.
    √Ki   iP               01  27  29
          iPP              01  31  05
          iSKS             01  38  00
          iS               01  38  09
          iScS             01  38  26
                                      μ    s
           P      z'    0.2    1.0
           SKS    E     5.0    9
           SKS    N     3.9    9
           M      E     16     18
           M      N     15     19
           M      z     24     18
          △=9700 km=87½°.
    √Sk   iP               01  27  50
          iPP              01  31  26
          △=10050 km=90½°.
    Mindanao.
    Magn.=6.6 (Up, Ki).

»  11 √Up  iP              03  49  18
     √Ki   iP              03  48  56
     √Sk   iP              03  49  18
    Mindanao.

»  11 √Up  iP              03  57  37
                                      μ    s
           M      E     2.2    16
           M      N     1.4    16
           M      z     2.2    16
    √Ki   iP               03  57  17
                                      μ    s
           P      z'    0.1    1.0
           M      E     2.8    17
           M      N     1.0    18
           M      z     3.0    17
     √Sk   iP              03  57  40
    Mindanao.

»  11 √Up  eP              04  08  06
     √Ki   iP              04  07  49
```

```
1957
Feb 11 √Up   iP            04  17  13 D
                                      μ    s
             P      z'    0.1    1.1
    √Ki   iP               04  16  54 D
                                      μ    s
             P      z'    0.1    1.0
    √Sk   iP               04  17  16 D
    Mindanao.

»  11 √Sk  eP              05  01  01
    Mindanao.

»  11 √Up  iP              07  00  44
     √Ki   iP              07  00  23
                                      μ    s
             P      z'    0.1    1.0
    √Sk   iP               07  00  45
    Mindanao.

»  11 √Up  iP              07  41  32
     √Ki   iP              07  41  13
                                      μ    s
             P      z'    0.1    1.0
    √Sk   iP               07  41  36
    Mindanao.

»  11 √Ki  iP              10  32  18

»  11 √Up  iP              12  10  22
     √Ki   iP              12  10  02
     √Sk   iP              12  10  25
    Mindanao.

»  11 √Up  iP              12  33  45
     √Ki   iP              12  33  26
                                      μ    s
             P      z'    0.1    1.0
    √Sk   iP               12  33  47
    Mindanao.

»  11 √Up  iP              14  38  36
           iSKS            14  49  10
                                      μ    s
             P      z'    0.1    1.0
             M      E     4.2    16
             M      N     6.0    22
             M      z     5.5    16
    √Ki   iP               14  38  23
           iSKS            14  48  56
                                      μ    s
             P      z'    0.1    1.0
             SKS    E     2.4    9
             SKS    N     2.8    9
             M      E     5.9    17
             M      N     2.3    18
             M      z     9.6    18
    √Sk   iP               14  38  46
    Mindanao.
    Magn.=6.2 (Up, Ki).

»  11 √Up  iP              15  45  57
```

```
1957
Feb 11 √     iS            15  48  10
(cont.)      iSS           15  48  24
          △=1350 km=12°.
    √Ki   eP               15  47  09
          eSS              15  51  08
          i                15  51  56
          △=2000 km=18°.
    √Sk   eP               15  46  05
          iS               15  48  23
          i(SS)            15  48  53
          △=1450 km=13°.
    England.

»  11 √Ki  iP              16  10  59

»  11 √Up  iP              16  36  55
     √Ki   iP              16  36  02
                                      μ    s
             P      z'    0.1    1.0
    √Sk   iP               16  36  32
    Aleutian Islands.

»  11 √Up  eP              18  07  04
     √Ki   iP              18  06  45

»  11 √Up  iP              19  09  55
     √Ki   iP              19  09  33
     √Sk   iP              19  09  58
    Mindanao.

»  11 √Up  iP              19  36  29
                                      μ    s
             P      z'    0.1    1.0
    √Ki   iP               19  36  10 C
                                      μ    s
             P      z'    0.1    1.0
    √Sk   iP               19  36  33 D
          i                19  36  45
    Mindanao.

»  11 √Up  eP              20  35  38
     √Ki   iP              20  35  21 C
     √Sk   iP              20  35  43
    (Mindanao).

»  12 √Ki  iP              00  13  57

»  12 √Up  iP              09  03  42 D
                                      μ    s
             P      z'    0.3    1.5
             M      E     3.8    18
             M      N     5.1    18
             M      z     9.3    16
    √Ki   iP               09  02  51
                                      μ    s
             M      E     5.3    20
             M      N     2.7    15
             M      z     9.4    18
    √Sk   iP               09  03  29
    Kurile Islands.
    Magn.=5.9 (Up, Ki).
```

1957

	Feb	Sta	Phase	h	m	s
	12	Ki	iP	09	46	48
»	12	Up	i(P)	15	08	48
»	12	Up	eP	17	27	19
		Ki	eP	17	27	03

Mindanao.

	Feb	Sta	Phase	h	m	s
»	12	Up	iP	18	23	51
		Ki	e(P)	18	23	32
»	12	Up	iP	21	20	02C
		Ki	iP	21	19	43C

Mindanao.

	Feb	Sta	Phase	h	m	s
»	13	Up	eS	00	04	53

England.

	Feb	Sta	Phase	h	m	s
»	13	Up	iP	00	42	54D
			i	00	43	04

		μ	s
P	z'	0.7	2.0
M	E	5.6	18
M	N	4.5	17
M	z	6.6	16

	Sta	Phase	h	m	s
	Ki	iP	00	42	35
		iSKS	00	53	09
		i(ScS)	00	53	38
		iPS	00	54	27

		μ	s
P	z'	0.1	0.8
SKS	E	2.1	6
SKS	N	3.8	8
M	E	5.6	17
M	N	3.2	17
M	z	7.3	16

$\triangle = 9700$ km $= 87\tfrac{1}{2}°$.

	Sta	Phase	h	m	s
	Sk	iP	00	42	57

Mindanao.
Magn. = 6.3 (Up, Ki).

	Feb	Sta	Phase	h	m	s
»	13	Up	iP	03	58	39D
		Ki	iP	03	58	21

(Mindanao).

	Feb	Sta	Phase	h	m	s
»	13	Ki	iP	04	56	16
			i	04	56	24
»	13	Up	e(Sg)	07	52	19

Local?

	Feb	Sta	Phase	h	m	s
»	13	Ki	iP	08	43	14

		μ	s
P	z'	0.1	0.9

	Sta	Phase	h	m	s
	Sk	iP	08	44	16

	Feb	Sta	Phase	h	m	s
»	13	Ki	eL	08	44	

		μ	s
M	E	1.3	14
M	N	0.8	14
M	z	2.0	15

1957

	Feb	Sta	Phase	h	m	s
	13	Ki	iPKP	12	55	52
			i	12	57	13

		μ	s
PKP	z'	0.1	1.0

	Sta	Phase	h	m	s
	Sk	iPKP	12	56	02
		i	12	57	34

New Hebrides Islands (h ~ 200 km).

	Feb	Sta	Phase	h	m	s
»	13	Sk	i(Pg)	13	07	40
			i(Sg)	13	08	09

Local.

	Feb	Sta	Phase	h	m	s
»	13	Up	iP	14	52	31
		Ki	iP	14	51	40D

		μ	s
P	z'	0.1	1.0

Kurile Islands.

	Feb	Sta	Phase	h	m	s
»	14	Up	e(Sg)	05	56	48

Local?

	Feb	Sta	Phase	h	m	s
»	14	Up	iP	23	13	18C

		μ	s
P	z'	0.1	1.2
M	E	0.4	15
M	N	0.3	16
M	z	1.0	15

	Sta	Phase	h	m	s
	Ki	iP	23	12	56C

		μ	s
P	z'	0.1	1.0
M	E	1.2	15
M	N	1.0	15
M	z	1.7	15

Off south coast of Formosa.

	Feb	Sta	Phase	h	m	s
»	15	Ki	iP	07	22	10
			i	07	22	24
			iSKS	07	32	44

		μ	s
M	E	1.7	16
M	N	0.4	16
M	z	0.8	16

	Sta	Phase	h	m	s
	Sk	eP	07	22	34

(Mindanao).

	Feb	Sta	Phase	h	m	s
»	15	Ki	iP	13	09	17
»	15	Up	iP	18	02	51
		Ki	iP	18	02	32

		μ	s
M	E	0.8	16
M	z	0.4	16

Mindanao.

	Feb	Sta	Phase	h	m	s
»	15	Up	iP	19	52	02
		Ki	eP	19	51	42

(Mindanao).

	Feb	Sta	Phase	h	m	s
»	16	Up	e(P)	02	47	22
»	16	Ki	i(P)	07	25	15

1957

	Feb	Sta	Phase	h	m	s
	16	Up	iP	14	25	01D

		μ	s
P	z'	0.1	0.8

	Sta	Phase	h	m	s
	Ki	iP	14	24	56
	Sk	iP	14	25	12D

Java Sea (h ~ 550 km).

	Feb	Sta	Phase	h	m	s
»	16	Up	iP	17	08	24
»	16	Up	iP	23	00	53
		Ki	iP	23	00	00

Aleutian Islands (h ~ 100 km).

	Feb	Sta	Phase	h	m	s
»	16	Up	i(Sg)	23	43	58

Local?

	Feb	Sta	Phase	h	m	s
»	17	Up	iP	03	59	19

		μ	s
P	z'	0.1	1.1

	Sta	Phase	h	m	s
	Ki	iP	03	58	57
		i	03	59	12
	Sk	iP	03	59	22

Near east coast of Luzon,
Philippine Islands.

	Feb	Sta	Phase	h	m	s
»	17	Up	iP	04	46	29D

		μ	s
P	z'	0.1	1.0

	Sta	Phase	h	m	s
	Ki	iP	04	45	33

Near east coast of Kamchatka.

	Feb	Sta	Phase	h	m	s
»	17	Ki	i(P)	07	45	22
»	17	Up	i(P)	08	48	08

Seismic?

	Feb	Sta	Phase	h	m	s
»	17	Up	iPn	09	55	24
			iPg	09	55	32
			iSg	09	56	02

$\triangle = 280$ km $= 2.5°$.

	Sta	Phase	h	m	s
	Ki	e(Sg)	09	58	58

($\triangle = 870$ km $= 7.8°$).

	Sta	Phase	h	m	s
	Sk	iSg	09	58	04

$\triangle = 690$ km $= 6.2°$.
Near southwest coast of
Finland, 60° N, 23° E.
Origin time = 09 54 40.

	Feb	Sta	Phase	h	m	s
»	17	Up	iP	10	04	03
		Ki	iP	10	03	44
		Sk	iP	10	04	07

Near east coast of Samar,
Philippine Islands.

	Feb	Sta	Phase	h	m	s
»	17	Up	iP	12	04	58C
		Sk	iP	12	05	41

Greece.

	Feb	Sta	Phase	h	m	s
»	17	Up	iP	15	59	33C
			ipP	15	59	55

1957

Feb 17 (cont.)

		μ	s
P	z'	0.1	1.2
M	E	1.3	20
M	N	0.9	20
M	z	2.1	20

	Sta	Phase	h	m	s
	Ki	iP	15	59	19C
		ipP	15	59	41
		eS	16	09	52
		ePS	16	10	53

		μ	s
P	z'	0.3	1.7
S	N	0.7	6
M	E	2.2	18
M	N	0.5	18
M	z	2.4	18

$\triangle = 9350$ km $= 84°$.

	Sta	Phase	h	m	s
	Sk	iP	15	59	15C

Oaxaca, Mexico.
h = 80 km (Up, Ki).
Magn. = 6.0 (Up, Ki).

	Feb	Sta	Phase	h	m	s
»	18	Up	iP	00	29	35

		μ	s
P	z'	0.1	1.0

	Sta	Phase	h	m	s
	Ki	iP	00	28	48D

		μ	s
P	z'	0.1	0.9

	Sta	Phase	h	m	s
	Sk	iP	00	29	24

Kurile Islands.

	Feb	Sta	Phase	h	m	s
»	18	Up	i	03	28	15
			i	03	28	51
			i(Sg)	03	29	23

Local?

	Feb	Sta	Phase	h	m	s
»	18	Up	iP	07	32	20D

		μ	s
P	z'	0.1	1.1

	Sta	Phase	h	m	s
	Ki	iP	07	31	56
	Sk	iP	07	32	26

	Feb	Sta	Phase	h	m	s
»	18	Sk	iP	07	47	23
»	18	Up	iP	14	59	01
			e(S)	15	07	01

		μ	s
P	z	0.4	2
P	z'	0.5	2.0
M	E	1.5	23
M	N	1.1	21
M	z	2.2	25

	Sta	Phase	h	m	s
	Ki	iP	14	59	22C

		μ	s
P	z'	0.2	1.4

	Sta	Phase	h	m	s
	Sk	iP	14	58	50

Mid-Atlantic Ridge.
Magn. = 6.0 (Up, Ki).

	Feb	Sta	Phase	h	m	s
»	18	Up	iPKP	16	21	41
		Ki	iPKP	16	21	55
			i	16	25	16

1957
Feb 18 Sk iPKP   16 21 46
(cont.) Sandwich Islands.

» 19 Up eP   05 17 04
       Ki e(P)   05 17 22
       Sk eP   05 17 45

» 19 Up iP   07 49 07
           iS   07 53 19
           iSS   07 54 05

		μ	s
P	N	1.0	1.2
P	z	1.1	1.0
P	z'	0.5	1.0
S	E	3.2	4
S	N	5.3	5
M	E	29	14
M	N	11	11
M	z	19	11

       △=2600 km=23½°.
       Ki iP   07 50 20
           i   07 50 36
           iPP   07 51 22
           iS   07 55 26
           iPcS   07 56 54
           iSS   07 57 14
           iScS   08 00 57

		μ	s
P	z'	0.4	1.4
PP	z'	0.2	1.0
S	N	1.7	8
M	E	28	12
M	N	13	11
M	z	21	11

       △=3500 km=31½°.
       Sk iP   07 49 47
           iPcP   07 52 57
       △=3100 km=28°.
       Near south coast of Greece.
       Magn.=6.2 (Up, Ki).

» 19 Up eP   09 20 21
       Ki eP   09 21 41
       Sk iP   09 21 03
       Greece.

» 19 Ki iP   17 31 34

» 19 Up iPg   19 59 04
           i   19 59 11
           iSg   20 00 07
       △=530 km=4.8°.
       Ki eSg   20 03 41
           i   20 04 06
       Sk e   19 59 28
           i(Sn)   20 00 30
           iSg   20 00 58
       Probably Skagerack, near
       northern Denmark.

» 19 Up eP   20 09 14

1957
Feb 19
(cont.)

		μ	s
M	E	3.1	23
M	N	1.9	21
M	z	3.9	22

       Ki iP   20 08 20

		μ	s
P	z'	0.1	1.2
M	E	1.7	19
M	N	1.2	16
M	z	1.9	16

       Sk eP   20 09 02
       Near east coast of Kamchatka.

» 19 Up i(P)   22 47 25

» 20 Up iP   04 46 17C
           iS   04 50 33

		μ	s
P	N	0.3	1.4
P	z	0.4	1.4
P	z'	0.8	1.8
S	E	0.2	2
S	N	0.4	3
M	E	6.0	22
M	N	4.8	18
M	z	5.0	18

       △=2650 km=24°.
       Ki iP   04 47 30C
           i   04 53 01
           iSS   04 54 27

		μ	s
P	z'	0.2	1.2
M	E	4.6	21
M	N	1.4	16
M	z	3.1	17

       △~3550 km~32°.
       Sk iP   04 46 47C
       Tunisia.
       Magn.=5.6 (Up, Ki).

» 20 Up iP   13 10 08

		μ	s
P	z'	0.2	1.0

       Ki iP   13 09 15
           iPcP   13 10 14
       Sk iP   13 09 52
       Near east coast of Kamchatka.

» 20 Up iP   20 24 31
       Ki iP   20 24 01
       Near south coast of
       Mindanao, Philippine
       Islands.

» 20 Up iP   22 08 42
       Sk iP   22 08 36

» 20 Up iP   22 10 50D
           i   22 10 56
           iS   22 21 02

		μ	s
P	z	0.4	1.2

1957
Feb 20
(cont.)

		μ	s
M	E	1.5	22
M	N	3.4	26
M	z	2.8	30

       △=9200 km=83°.
       Ki iP   22 10 51
           iS   22 21 03
           iSKS   22 21 20
           iPS   22 22 19

		μ	s
P	z'	0.3	1.0
S	E	1.0	5
S	N	1.2	3
M	E	2.5	21
M	N	1.1	20
M	z	3.0	20

       △=9200 km=83°.
       Sk iP   22 11 05D
           iPP   22 14 29
       △=9550 km=86°.
       Near coast of Sumatra.
       Magn.=6.3 (Up, Ki).

» 21 Up eP   01 20 06

		μ	s
M	E	1.3	24
M	N	1.2	22
M	z	1.6	18

       Ki iP   01 20 54
           iS   01 30 29

		μ	s
P	z'	0.1	1.5
M	E	1.9	20
M	N	1.7	18
M	z	1.8	19

       △=8150 km=73½°.
       Sk iP   01 20 22
       Mid-Atlantic Ridge.

» 21 Up iP   14 40 53D
           ipP   14 41 20
           iS   14 49 37
           isS   14 50 23
           iP'P'   15 09 21

		μ	s
P	N	0.2	2
P	z	0.5	2
P	z'	0.9	1.6
M	E	0.8	27
M	N	1.2	22
M	z	2.7	25

       △=7600 km=68½°.
       Ki iP   14 40 00
           ipP   14 40 27
           iPP   14 42 08
           iS   14 48 01
           isS   14 48 49

		μ	s
P	z	1.1	3
P	z'	0.3	1.0
PP	z	1.0	4

1957
Feb 21
(cont.)

		μ	s
M	E	1.2	18
M	N	0.6	20
M	z	1.7	15

       △=6700 km=60½°.
       Sk iP   14 40 31D
           ipP   14 41 00
       Aleutian Islands.
       h=115 km (Up, Ki, Sk).
       Magn.=6.5 (Up, Ki).

» 21 Up iPKP   19 55 54C

		μ	s
PKP	z'	0.1	0.9

       Ki iPKP   19 55 32
           i   19 55 44
       Sk iPKP   19 55 48C
       Kermadec Islands.

» 22 Up iP   02 26 33

» 22 Sk e(P)   04 03 02
           i(Sg)   04 04 43
       Local?

» 22 Up iP   05 05 21D

		μ	s
P	z'	0.1	1.0

       Ki iP   05 05 17

		μ	s
P	z'	0.1	0.6
M	E	1.9	13
M	z	1.9	13

       Sk iP   05 05 42
       Southeastern Kazakh, U.S.S.R.

» 22 Up iP   08 02 56
       Ki iP   08 03 47

		μ	s
P	z'	0.1	1.1

       Sk i   08 04 10
       Turkey.

» 22 Up iPKP   08 32 31C
       Kermadec Islands.

» 22 Up iP   12 27 15
       Aleutian Islands.

» 22 Up iP   17 23 38C

		μ	s
P	z'	0.1	1.0
M	E	1.6	20
M	N	3.7	19
M	z	4.1	18

       Ki eP   17 22 46

		μ	s
M	E	1.7	15
M	N	1.3	16
M	z	2.7	16

       Sk eP   17 23 26
       Kurile Islands.

1957

Date	Sta	Phase			
Feb 23	Up	iP	03	45	38
				μ	s
		P z'	0.1	1.0	
	Ki	eP	03	44	47
	Sk	iP	03	45	22

Kurile Islands.

Date	Sta	Phase			
» 23	Up	iP	05	08	34
				μ	s
		M E	1.9	18	
		M N	1.9	19	
		M z	3.1	18	
	Ki	eP	05	07	40
				μ	s
		M E	0.9	14	
		M N	0.8	16	
		M z	1.7	15	

Kurile Islands.

Date	Sta	Phase			
» 23	Up	iP	05	12	15
				μ	s
		P z'	0.1	1.0	
	Ki	iP	05	11	24

Kurile Islands.

Date	Sta	Phase			
» 23	Up	iP	13	27	56
	Ki	iP	13	27	22
	Sk	iP	13	27	26

Off coast of Vancouver Island.

Date	Sta	Phase			
» 23	Ki	iP	19	07	44

Caroline Islands region.

Date	Sta	Phase			
» 23	Up	iP	20	37	59 C
		i	20	38	16
		iPP	20	40	56
		i!	20	43	04
		iS	20	47	40
		iSKS	20	48	08
		iScS	20	48	17
		iPS	20	48	23
		iPPS	20	48	37
				μ	s
		P E	0.8	2	
		P N	0.4	1	
		P z	1.6	1	
		P z'	0.6	1.0	
		PP z	1.1	3	
		PP z'	0.8	1.4	
		S E	8.1	7	
		S N	8.0	7	
		M E	130	27	
		M N	180	26	
		M z	130	17	
		△=8450 km=76°.			
	Ki	iP	20	37	35 C
		i	20	37	51
		i(PP)	20	40	32
		iS	20	46	52
		iPS	20	47	23
		iSKS	20	47	43

1957

Date	Sta	Phase			
Feb 23 (cont.)		P E	2.4	4	
		P z'	1.5	1.0	
		S E	18	10	
		S N	16	12	
		M E	50	13	
		M N	26	15	
		M z	75	14	
		△=7950 km=71½°.			
	Sk	iP	20	38	02

Formosa.
Magn.=7.1 (Up, Ki).

Date	Sta	Phase			
» 23	Up	iP	22	17	59
				μ	s
		P z'	0.1	0.7	
	Ki	iP	22	19	16
	Sk	iP	22	18	42

Albania.

Date	Sta	Phase			
» 23	Up	iP	22	56	56 C
				μ	s
		P z'	0.1	0.8	
	Ki	iP	22	56	37 C
	Sk	iP	22	56	59 C

Date	Sta	Phase			
» 24	Up	eP	04	22	10
	Ki	iP	04	21	53

Date	Sta	Phase			
» 24	Up	iP	04	53	03
	Sk	iP	04	52	54

Date	Sta	Phase			
» 24	Up	eP	07	36	30
	Sk	eP	07	36	59

Date	Sta	Phase			
» 24	Up	iP	17	19	12
	Ki	iP	17	18	52
	Sk	eP	17	19	13

Mindanao.

Date	Sta	Phase			
» 24	Up	iP	21	59	12
	Ki	iP	21	58	49
	Sk	eP	21	59	15

Formosa.

Date	Sta	Phase			
» 24	Up	eP	23	25	11

Date	Sta	Phase			
» 25	Up	iP	02	35	31

Date	Sta	Phase			
» 25	Up	i	11	10	22

Seismic?

Date	Sta	Phase			
» 25	Sk	e(P)	13	58	24
		e(Sg)	13	58	54

Local?

Date	Sta	Phase			
» 25	Up	e(P)	18	33	09

Date	Sta	Phase			
» 26	Up	iP	03	07	41
				μ	s
		P z'	0.1	1.0	

1957

Date	Sta	Phase			
Feb 26 (cont.)	Ki	iP	03	07	24 D
				μ	s
		P z'	0.1	1.0	
	Sk	iP	03	07	45

Near north coast of
Mindanao, Philippine
Islands (h ~ 100 km).

Date	Sta	Phase			
» 26	Up	iP	06	20	59 C
				μ	s
		P z'	0.2	1.2	
	Ki	eP	06	20	07
	Sk	eP	06	20	50

Near east coast of Kamchatka.

Date	Sta	Phase			
» 26	Up	eP	14	16	31

Date	Sta	Phase			
» 26	Up	iP	17	00	18

Date	Sta	Phase			
» 27	Up	i(P)	01	43	56

Seismic?

Date	Sta	Phase			
» 27	Up	e(P)	08	25	43
	Sk	iP	08	26	26

Date	Sta	Phase			
» 27	Up	i(P)	13	57	02

Date	Sta	Phase			
» 27	Ki	i(P)	14	52	07

Date	Sta	Phase			
» 27	Up	iP	15	13	13
				μ	s
		M E	1.9	20	
		M N	2.0	24	
		M z	3.7	23	
	Ki	iP	15	12	48 D
	Sk	eP	15	13	21

Formosa.

Date	Sta	Phase			
» 27	Ki	i(P)	17	08	30

Date	Sta	Phase			
» 28	Up	iP	11	12	49 D
				μ	s
		P z'	0.1	0.9	
	Ki	iP	11	11	56
	Sk	eP	11	12	28

Aleutian Islands.

Date	Sta	Phase			
» 28	Up	i(P)	11	36	39

Date	Sta	Phase			
» 28	Up	i(pP)	16	00	08

Near coast of Guatemala.
(h ~ 150 km).

Date	Sta	Phase			
Mar 1	Up	iP	02	28	04
		i	02	28	13

Near south coast of Mexico.

Date	Sta	Phase			
» 1	Up	iP	15	49	06
	Ki	iP	15	49	11 C
	Sk	eP	15	49	35

India.

1957

Date	Sta	Phase			
Mar 1	Ki	e(P)	20	13	16
	Sk	iP	20	13	12

Date	Sta	Phase			
» 2	Up	iP	00	39	29
		i(PcP)	00	39	42
		iS	00	49	17
		i(SKS)	00	49	51
				μ	s
		P z'	0.2	1.0	
		S E	1.1	4	
		S N	6.1	7	
		M E	6.0	22	
		M N	4.5	20	
		M z	7.0	19	
		△=8550 km=77°.			
	Ki	iP	00	39	24
		i	00	40	01
		iS	00	49	06
		iSKS	00	49	31
		iPS	00	49	48
				μ	s
		P z'	0.4	1.7	
		S E	1.9	5	
		S N	4.0	6	
		M E	8.4	17	
		M N	3.1	19	
		M z	9.5	16	
		△=8450 km=76°.			
	Sk	iP	00	39	17
		i	00	39	26

Jamaica.
Magn.=6.5 (Up, Ki).

Date	Sta	Phase			
» 2	Up	i	03	32	54
		i(Sg)	03	33	26
		i	03	33	58
	Ki	i(P)	03	32	15
	Sk	e	03	30	16
		i(Sg)	03	31	13

Local?

Date	Sta	Phase			
» 2	Up	iP	06	51	48 C
	Ki	iP	06	51	48 C

Date	Sta	Phase			
» 2	Up	eP	06	53	15
	Ki	i	06	54	51

Southern Iran.

Date	Sta	Phase			
» 2	Up	iP	07	19	54 C
				μ	s
		P z'	0.1	1.0	
	Ki	iP	07	20	31 C
		iPP	07	22	16
				μ	s
		P z'	0.1	1.0	
		PP z'	0.1	1.2	
		△=5050 km=45½°.			
	Sk	iP	07	20	29 C
		iPP	07	22	15
		△=5050 km=45½°.			

Southern Iran.

1957

Mar 2 Up iPKP 08 29 10

		μ	s
M	E	1.9	18
M	N	1.7	19
M	Z	1.8	17

Ki ePKP 08 28 59
    i 08 29 07

		μ	s
M	E	3.9	24
M	N	0.9	17
M	Z	4.1	21

Sk iPKP 08 29 15
Near coast of New Britain.

» 2 Ki e(Sg) 19 53 48
Local?

» 3 Up i 03 57 24

		μ	s
M	E	4.1	22
M	N	2.5	23
M	Z	4.4	21

Ki   —

		μ	s
M	E	1.9	18
M	Z	3.6	20

Off coast of Mexico.

» 3 Up eP 23 48 45
Sk iP 23 49 30
Aegean Sea.

» 4 Up iP 03 36 23
Ki eP 03 36 23
Sk eP 03 36 48
Kirghiz.

» 4 Up e(Sg) 18 33 44
Local?

» 5 Up e(Sg) 00 48 38
    i 00 52 32
Sk e 00 53 48
Seismic?

» 5 Up iP 12 33 01
    i 12 35 18
    iS 12 39 44
    iScS 12 42 48
    iSS 12 43 07

		μ	s
P	z'	0.2	1.2
M	E	5.3	20
M	N	2.8	16
M	Z	6.2	18

△=5100 km=46°.
Ki iP 12 33 21
    iPcP 12 34 44
    iPP 12 35 12
    eS 12 40 22
    iScS 12 43 16

1957

Mar 5 (cont.)

		μ	s
P	z	1.8	3
P	z'	0.5	1.6
S	E	1.5	5
S	N	0.9	5
M	E	2.5	14
M	N	1.3	13
M	Z	2.1	14

△=5400 km=48½°.
Sk iP 12 32 49
North Atlantic Ocean.
Magn.=6.4 (Up, Ki).

» 5 Up iP 17 54 23

» 5 Up iP 19 12 06
    i 19 12 16
Ki iP 19 13 22
Sk eP 19 12 56
Rhodes Island region.

» 5 Up iPKP 19 22 38
    i 19 25 51
Ki iPKP 19 22 24
Sk ePKP 19 22 35
New Hebrides Islands.

» 6 Up iP 11 37 33
Ki iP 11 36 42
Sk iP 11 37 19
Kurile Islands.

» 6 Up eP 17 39 33
Ki eP 17 40 40
Sk eP 17 40 12
East of Crete.

» 6 Ki iP 21 05 49 D

» 7 Up ePKP2 05 49 26
Near east coast of North
Island, New Zealand.

» 7 Up iPKP 11 05 42
Ki iPKP 11 05 35
Fiji Islands (h~550 km).

» 7 Sk e(P) 16 04 40

» 7 Up i(P) 16 17 47
Seismic?

» 7 Up iP 17 28 47
Ki iP 17 27 11

» 7 Sk e(P) 18 46 42

» 7 Up eP 22 01 31
Ki iP 21 59 48
Arctic Ocean, north of
Spitsbergen.

1957

Mar 8 Up i(P) 06 31 39
Ki   —

		μ	s
M	E	1.6	15

Sk eP 06 32 16

» 8 Up eP 07 19 06
    i 07 19 20
Ki iP 07 20 13
Sk iP 07 19 45
Eastern Mediterranean.

» 8 Up iP 12 18 55
    iPP 12 19 15
    iS 12 22 43
    iSS 12 23 15

		μ	s
P	E	0.6	2
P	N	9.1	3
P	Z	6.2	2
P	z'	1.2	1.0
S	E	35	9
S	N	20	7
M	E	95	12
M	N	42	8
M	Z	70	10

△=2300 km=20½°.
Ki iP 12 20 10 C
    i(PP) 12 21 14
    iPcP 12 23 16
    iS 12 25 03
    iPcS 12 27 05

		μ	s
P	N	2.5	5
P	Z	2.3	5
P	z'	0.6	1.1
S	E	10	9
S	N	14	10
M	E	90	14
M	N	60	14
M	Z	75	12

△=3100 km=28°.
Sk iP 12 19 38 C
Greece.
Magn.=6.8 (Up, Ki).

» 8 Up iP 12 25 53

		μ	s
P	N	19	2
P	Z	18	2
P	z'	1.7	0.5
M	E	260	13
M	N	90	9
M	Z	120	10

Ki iP 12 27 11 D
    iPP 12 28 02

		μ	s
P	z'	1.9	1.4
M	E	220	15
M	N	65	13
M	Z	95	11

1957

Mar 8 (cont.) △=3100 km=28°.
Sk iP 12 26 36 D
Greece.
Magn.=7.0 (Up, Ki).

» 8 Up iP 12 58 44

		μ	s
P	z'	0.2	1.0

Ki iP 12 59 58
Sk iP 12 59 28
Greece.

» 8 Up iP 13 30 43
Sk iP 13 31 24
Greece.

» 8 Up iP 16 22 20
Sk iP 16 23 06
Greece.

» 8 Up iPKP 16 53 36
Ki iPKP 16 53 24
Sk iPKP 16 53 30
South of Fiji Islands (h~600 km).

» 8 Up iP 20 35 17

		μ	s
P	z'	0.1	1.0

Ki eP 20 36 31
Sk iP 20 36 00 C
Greece.

» 8 Up iP 20 42 38 C
    eS 20 46 28

		μ	s
P	N	1.0	1.0
P	Z	0.7	1.0
P	z'	0.7	1.2
M	E	5.1	15
M	N	2.6	10
M	Z	3.1	9

△=2300 km=20½°.
Ki iP 20 43 54 C
    eS 20 48 36

		μ	s
P	z'	0.3	1.6
M	E	0.8	12
M	N	1.9	12
M	Z	2.1	11

△=3100 km=28°.
Sk iP 20 43 22
Greece.
Magn.=6.0 (Up, Ki).

» 8 Up iP 20 49 20
Sk iP 20 50 04
Greece.

» 8 Up iP 21 52 22
Sk iP 21 53 08
Greece.

Column 1

1957
Mar 8 Up iP   22 46 12
        Sk eP   22 46 55
        Greece.

»   8 Up iP   23 39 52 D
            iPP   23 40 08
            iS   23 43 41
            iSS   23 44 10

		μ	s
P	E	0.5	2
P	N	1.2	2
P	z	1.7	2
P	z′	1.0	1.5
S	E	7.2	7
S	N	4.2	6
M	E	50	16
M	N	19	10
M	z	25	9

△ = 2300 km = 20½°.
        Ki iP   23 41 07 D
            iS   23 46 00
            iPcS   23 47 59

		μ	s
P	z′	0.4	1.5
S	E	2.0	5
S	N	3.5	9
M	E	25	14
M	N	13	11
M	z	17	11

△ = 3100 km = 28°.
        Sk iP   23 40 35 D
        Greece.
        Magn. = 6.2 (Up, Ki).

»   9 Up iP   01 09 40
        Sk eP   01 10 25
        Greece.

»   9 Up iP   01 10 17

»   9 Up iP   02 24 16
        Sk iP   02 25 01
        Greece.

»   9 Up iP   02 30 49 C
        Sk iP   02 31 28
        Greece.

»   9 Up iP   04 06 23 D

		μ	s
P	z′	0.1	1.0

        Ki iP   04 07 38
        Sk iP   04 07 07
        Greece.

»   9 Up iP   04 31 26
        Sk iP   04 32 10
        Greece.

»   9 Up iP   09 26 00
        Sk iP   09 26 44
        Greece.

Column 2

1957
Mar 9 Ki eP   10 18 03
            iS   10 19 22
            i   10 19 37
            eT   10 23 09
△ = 760 km = 6.8°.
        Sk iP   10 18 45
            i(S)   10 20 32
        Norwegian Sea, northeast
        of Jan Mayen.

»   9 Up eP   10 34 27
        Greece.

»   9 Up iP   10 47 38
        Sk iP   10 48 20
        Greece.

»   9 Up iP   14 16 27 D
        Ki iP   14 15 30

		μ	s
P	z′	0.1	1.0

        Sk iP   14 15 58 D
        Central Alaska.

»   9 Up iP   14 33 30
            iPP   14 36 18
            iPcS   14 37 59
            iPS   14 43 07
            iPPS   14 43 23
            iSKS   14 43 34

		μ	s
M	E	1350	25
M	N	930	23
M	z	1100	22

△ = 7600 km = 68½°.
        Ki iP   14 32 36
            i(PP)   14 34 41
            i(S)   14 40 36
            iPPS   14 41 25

		μ	s
P	z′	3.0	1.0
M	E	600	19
M	N	620	21
M	z	630	17

△ = 6700 km = 60½°.
        Sk iP   14 33 12
        Aleutian Islands.
        Magn. = 8.2 (Up, Ki).

»   9 Up iP   15 02 00

		μ	s
P	z′	0.5	1.5

»   9 Up iP   15 13 25

		μ	s
P	z′	1.1	1.6

»   9 Up iP   15 16 33 C

»   9 Up iP   15 17 29 D

Column 3

1957
Mar 9
(cont.)

		μ	s
P	z′	0.3	1.0

        Ki iP   15 16 35 C

		μ	s
P	z′	0.3	1.0

»   9 Up iP   15 30 19 D

»   9 Up iP   15 31 00 D

		μ	s
P	z′	0.5	1.2

        Ki iP   15 30 06 D
            i   15 30 20

		μ	s
P	z′	0.4	1.5

»   9 Ki iP   15 31 06 C

»   9 Up iP   15 36 46

»   9 Up iP   15 48 09

		μ	s
P	z′	0.1	1.0

        Ki iP   15 47 15

»   9 Up eP   15 49 21

		μ	s
P	z′	0.3	1.0

        Ki iP   15 48 33 C

		μ	s
P	z′	0.1	1.3

»   9 Ki iP   15 51 12

»   9 Up iP   15 52 32

		μ	s
P	z′	0.1	1.0

»   9 Up iP   15 52 59
            iS   16 02 05

		μ	s
P	z′	1.1	1.0

        Ki iP   15 52 06
            eP′P′   16 21 13

		μ	s
P	z′	1.8	1.3

        Sk iP   15 52 38
            eP′P′   16 21 00
        Aleutian Islands.

»   9 Up iP   15 56 50 C
            i   15 57 01

		μ	s
P	z′	0.2	1.0

»   9 Ki iP   15 57 34 C

»   9 Up iP   15 58 59

		μ	s
P	z′	0.2	1.0

        Ki iP   15 58 07

Column 4

1957
Mar 9
(cont.)

		μ	s
P	z′	0.2	1.2

        Sk iP   15 58 33
        Aleutian Islands.

»   9 Up i(P)   15 59 12

		μ	s
(P)	z′	0.5	1.2

»   9 Up i(P)   15 59 39

		μ	s
(P)	z′	0.5	1.3

»   9 Up iP   16 04 23

»   9 Up iP   16 06 40

		μ	s
P	z′	0.1	1.0

»   9 Up iP   16 10 13

»   9 Up iP   16 16 12

»   9 Up iP   16 17 14

		μ	s
P	z′	0.3	1.2

        Ki iP   16 16 20 C

		μ	s
P	z′	0.5	1.0

        Sk iP   16 16 51
        Aleutian Islands.

»   9 Up iP   16 21 03 C
            i   16 21 07

		μ	s
P	z′	1.1	1.3

»   9 Up i(P)   16 23 16

»   9 Up iP   16 25 29

»   9 Up iP   16 27 29
            i   16 27 43
            i   16 28 09

		μ	s
P	z′	0.3	1.0

        Ki iP   16 26 35 C
            iPcP   16 27 22

		μ	s
P	z′	0.2	1.0

        Sk iP   16 27 08
        Aleutian Islands.

»   9 Up iP   16 30 03

		μ	s
P	z′	0.2	1.0

        Ki iP   16 29 10
        Sk iP   16 29 41
        Aleutian Islands.

»   9 Up iP   16 31 33

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1957
Mar  9 Ki  iP        16  30  37
(cont.)
            P    z'    μ    s
                      0.1  1.3
 »   9 Up  iP        16  32  47
       i             16  32  53
            P    z'    μ    s
                      0.6  1.0
     Ki   iP         16  31  52 D
            P    z'    μ    s
                      0.1  1.0
     Sk   iP         16  32  34
     Aleutian Islands.
 »   9 Up  iP        16  33  43 D
            P    z'    μ    s
                      0.4  1.0
 »   9 Ki  i(P)      16  35  58 D
 »   9 Up  iP        16  40  15
 »   9 Up  iP        16  41  06
 »   9 Up  iP        16  43  39
       i             16  43  51
            P    z'    μ    s
                      0.4  1.0
     Ki   iP         16  42  46
            P    z'    μ    s
                      0.3  1.5
     Sk   iP         16  43  19
     Aleutian Islands.
 »   9 Up  iP        16  46  14
            P    z'    μ    s
                      0.1  1.0
     Sk   iP         16  46  58
 »   9 Ki  iP        16  48  39
            P    z'    μ    s
                      0.1  1.0
 »   9 Up  iP        16  50  19 C
            P    z'    μ    s
                      0.2  1.0
     Ki   iP         16  49  25 C
            P    z'    μ    s
                      0.1  1.0
     Sk   iP         16  49  56
     Aleutian Islands.
 »   9 Up  iP        16  52  50 D
            P    z'    μ    s
                      0.1  0.9
     Ki   iP         16  51  58
            P    z'    μ    s
                      0.2  1.0
     Sk   iP         16  52  30
     Aleutian Islands.
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1957
Mar  9 Up  i(P)      16  53  11
            (P)  z'    μ    s
                      0.2  1.0
 »   9 Up  iP        16  54  00
       i             16  54  12
            P    z'    μ    s
                      0.1  1.0
 »   9 Up  iP        16  55  40
            P    z'    μ    s
                      0.1  1.2
 »   9 Up  iP        16  56  33 C
       i             16  56  49
            P    z'    μ    s
                      0.3  1.0
     Ki   iP         16  55  40 C
       i             16  55  56
       i             16  56  10
     Sk   iP         16  56  13
     Aleutian Islands.
     Possibly more than one shock.
 »   9 Up  iP        17  01  42
 »   9 Up  iP        17  03  16 D
            P    z'    μ    s
                      0.1  1.0
 »   9 Ki  iP        17  04  53
 »   9 Up  eP        17  09  39
       i             17  09  43
       i             17  09  52
     Ki   iP         17  08  48
     Aleutian Islands.
 »   9 Ki  iP        17  09  16 D
 »   9 Up  eP        17  14  42
       i             17  15  02
     Sk   iP         17  13  51
     Aleutian Islands.
 »   9 Up  iP        17  15  35 C
 »   9 Up  iP        17  17  24
 »   9 Up  iP        17  19  38
     Ki   iP         17  18  45 C
 »   9 Up  iP        17  21  17
            P    z'    μ    s
                      0.2  1.2
     Ki   iP         17  20  23
            P    z'    μ    s
                      0.1  1.0
     Sk   iP         17  20  56
     Aleutian Islands.
```

```
1957
Mar  9 Up  iP        17  24  36
     Ki   eP         17  23  43
 »   9 Up  iP        17  25  46
     Ki   eP         17  24  54
 »   9 Sk  iP        17  29  08
 »   9 Up  iP        17  30  37
          iPcP       17  31  04
     Ki   iP         17  29  45
 »   9 Up  iP        17  31  41
 »   9 Up  iP        17  32  27
            P    z'    μ    s
                      0.1  1.0
     Ki   iP         17  31  31
     Aleutian Islands.
 »   9 Up  iP        17  36  51
 »   9 Up  iP        17  41  03
     Ki   iP         17  40  10
 »   9 Up  iP        17  42  11 C
     Ki   eP         17  41  21
 »   9 Up  iP        17  48  21
     Ki   iP         17  47  35
 »   9 Up  iP        17  50  01
            P    z'    μ    s
                      0.1  1.0
     Ki   i(PcP)     17  49  53
 »   9 Up  iP        17  53  15
     Ki   iP         17  52  22
 »   9 Up  iP        17  54  24
            P    z'    μ    s
                      0.3  1.3
     Ki   eP         17  53  34
     Sk   iP         17  54  03
     Aleutian Islands.
 »   9 Up  iP        17  57  16
 »   9 Up  iP        18  03  03
            P    z'    μ    s
                      0.1  1.0
     Ki   iP         18  02  08
            P    z'    μ    s
                      0.1  1.0
     Aleutian Islands.
 »   9 Up  iP        18  05  19
            P    z'    μ    s
                      0.3  1.0
     Ki   iP         18  04  25
          i(PcP)     18  05  04
```

```
1957
Mar  9
(cont.)
            P    z'    μ    s
                      0.1  1.2
     Sk   iPcP       18  05  35
     Aleutian Islands.
 »   9 Up  iP        18  08  19 C
            P    z'    μ    s
                      0.1  0.7
     Ki   iP         18  07  26 C
          iPcP       18  08  16
            P    z'    μ    s
                      0.2  0.8
     Sk   iP         18  07  56 C
     Aleutian Islands.
 »   9 Up  iP        18  11  49
 »   9 Up  iP        18  15  33 D
     Ki   iP         18  14  41
     Aleutian Islands.
 »   9 Up  iP        18  16  54
 »   9 Up  i(P)      18  23  43
 »   9 Ki  i(P)      18  25  01
 »   9 Up  iP        18  28  31
     Ki   iP         18  27  38
            P    z'    μ    s
                      0.1  1.1
 »   9 Up  iP        18  32  43
     Ki   iP         18  31  49
          iPcP       18  32  34
     Sk   iP         18  32  21
     Aleutian Islands.
 »   9 Ki  iP        18  33  51
 »   9 Up  i(P)      18  35  33
 »   9 Up  iP        18  37  07
 »   9 Up  iP        18  39  49
 »   9 Up  iP        18  42  03
     Ki   i(P)       18  41  04
 »   9 Up  iP        18  43  43
            P    z'    μ    s
                      0.1  1.0
     Ki   iP         18  42  50 D
            P    z'    μ    s
                      0.1  0.8
     Sk   iP         18  43  20
     Aleutian Islands.
 »   9 Up  iP        18  44  46 D
          i(P)       18  45  18
```

Column 1

```
1957
Mar  9
(cont.)          P        z'      μ     s
                                 0.1   1.5
»   9 √Ki   iP          18  49  47
»   9 √Up   iP          18  52  39
      √Ki   iP          18  51  45 D
      √Sk   iP          18  52  16
      Aleutian Islands.
»   9 √Up   iP          18  57  17
                 P    z'     μ     s
                           0.1   1.0
      √Ki   iP          18  56  23 D
      Aleutian Islands.
»   9 √Up   iP          19  04  02
      √Ki   iP          19  03  08 C
      √Sk   eP          19  03  46
      Aleutian Islands.
»   9 √Up   iP          19  09  38
                 P    z'     μ     s
                           0.1   1.2
      √Ki   i(P)        19  08  35
      Aleutian Islands.
»   9 √Up   iP          19  16  58
      √Ki   iP          19  16  06
»   9 √Up   iP          19  21  05
                 P    z'     μ     s
                           0.1   1.2
      √Ki   iP          19  20  13
                 P    z'     μ     s
                           0.1   1.0
      √Sk   iP          19  20  42
      Aleutian Islands.
»   9 √Up   iP          19  24  33
             i          19  25  10
                 P    z'     μ     s
                           0.3   1.1
      √Ki   iP          19  23  40
             iPcP       19  24  27
                 P    z'     μ     s
                           0.3   0.8
      √Sk   iP          19  24  10
      Aleutian Islands.
»   9 √Up   iP          19  27  20
»   9 √Up   iP          19  30  16
                 P    z'     μ     s
                           0.1   1.2
      √Ki   iP          19  29  22
                 P    z'     μ     s
                           0.1   1.2
      Aleutian Islands.
»   9 √Up   iP          19  31  30
```

Column 2

```
1957
Mar  9 √Up   iP      19  37  42
       √Ki   iP      19  36  48 C
       √Sk   iP      19  37  19
       Aleutian Islands.
»   9 √Up   iP       19  39  34
»   9 √Up   iP       19  40  36
»   9 √Up   iP       19  41  16
       √Ki   iP      19  40  22 C
»   9 √Up   iP       19  45  50
                 P   z'     μ    s
                          0.2  1.1
       √Ki   iP      19  44  57
                 P   z'     μ    s
                          0.2  1.0
       √Sk   iP      19  45  27
       Aleutian Islands.
»   9 √Up   iP       19  48  34 C
                 P   z'     μ    s
                          0.3  1.2
       √Ki   eP      19  47  40
              iPcP   19  48  26
       √Sk   iP      19  48  13
       Aleutian Islands.
»   9 √Up   iP       19  53  22
                 P   z'     μ    s
                          0.2  1.2
       √Ki   iP      19  52  29 D
                 P   z'     μ    s
                          0.2  1.1
       √Sk   iP      19  52  59
       Aleutian Islands.
»   9 √Up   iP       19  55  53
                 P   z'     μ    s
                          0.1  1.0
       √Ki   iP      19  54  59
       √Sk   eP      19  55  32
       Aleutian Islands.
»   9 √Up   iP       20  03  23
                 P   z'     μ    s
                          0.1  1.0
       √Ki   iP      20  02  29
                 P   z'     μ    s
                          0.1  0.9
       Aleutian Islands.
»   9 √Up   iP       20  07  36 D
                 P   z'     μ    s
                          0.1  1.0
       √Ki   iP      20  06  43
»   9 √Ki   iP       20  07  37 C
»   9 √Up   iP       20  08  55
```

Column 3

```
1957
Mar  9
(cont.)        P    z'     μ     s
                         0.1   1.0
»   9 √Ki   iP         20  09  16
»   9 √Up   iP         20  11  39
»   9 √Up   iP         20  12  05
                 P   z'     μ    s
                          0.5  1.5
       √Ki   iP      20  11  12 D
              i      20  11  25
                 P   z'     μ    s
                          0.1  1.0
       √Sk   iP      20  11  43
       Aleutian Islands.
»   9 √Up   i(P)     20  14  00 C
»   9 √Up   iP       20  16  58
                 P   z'     μ    s
                          0.2  1.5
»   9 √Up   iP       20  18  07 D
                 P   z'     μ    s
                          0.1  1.0
       √Ki   iP      20  17  15 D
                 P   z'     μ    s
                          0.1  1.0
       √Sk   iP      20  17  45
       Aleutian Islands.
»   9 √Up   iP       20  23  23
»   9 √Ki   iP       20  27  59 D
                 P   z'     μ    s
                          0.1  1.2
»   9 √Up   iP       20  31  09
                 P   z'     μ    s
                          0.2  1.3
       √Ki   iP      20  30  16
                 P   z'     μ    s
                          0.1  1.0
»   9 √Up   iP       20  33  06 C
                 P   z'     μ    s
                          0.4  1.1
       √Ki   iP      20  32  12
                 P   z'     μ    s
                          0.6  1.2
       √Sk   iP      20  32  43 C
       Aleutian Islands.
»   9 √Up   iP       20  37  46
                 P   z'     μ    s
                          0.1  1.0
       √Ki   iP      20  36  53
»   9 √Up   iP       20  39  09
```

Column 4

```
1957
Mar  9
(cont.)        P    z'     μ     s
                         0.1   1.0
       √Ki   iP         20  38  15
                 P   z'     μ    s
                          0.1  1.0
       √Sk   iP      20  38  46
       Aleutian Islands.
»   9 √Up   iP       20  43  03 D
                 P   z'     μ    s
                          0.1  1.0
       √Ki   iP      20  42  10
                 P   z'     μ    s
                          0.1  1.0
       √Sk   iP      20  42  40
       Aleutian Islands.
»   9 √Up   iP       20  44  15
                 P   z'     μ    s
                          0.2  1.0
       √Ki   iP      20  43  22
              iPcP   20  44  07
                 P   z'     μ    s
                          0.1  1.0
       √Sk   iP      20  43  48
              iPcP   20  44  27
       Aleutian Islands.
»   9 √Up   iP       20  49  46
       √Ki   iP      20  48  53
       √Sk   iP      20  49  25
       Aleutian Islands.
»   9 √Up   iP       20  50  16
              iPcS   20  54  43
              iS     20  59  11
              iPS    20  59  37
              eP'P'  21  18  31
                 P       z'   0.9  1.0
                 P'P'    z'   0.1  1.1
                 M       E    95   23
                 M       N    120  21
                 M       z    140  20
              △=7500 km=67½°.
       √Ki   iP       20  49  25
              ePP     20  51  37
              iS      20  57  31
              iP'P'   21  19  01
                 P       E    2.1  6
                 P       N    5.6  9
                 P       z    10   10
                 P       z'   0.7  1.0
                 S       N    8.2  10
                 P'P'    z'   0.2  2.0
                 M       E    80   18
                 M       N    75   17
                 M       z    160  19
              △=6600 km=59½°.
       √Sk   iP       20  49  55
```

1957
Mar 9 Aleutian Islands.
(cont.) Magn. = 7.0 (Up, Ki).

```
»   9 √Sk   iP              20  54  36
»   9 √Up   iP              21  03  23
»   9 √Up   i(P)            21  04  09
»   9 √Ki   iP              21  07  37
»   9 √Ki   iP              21  13  18
»   9 √Ki   iP              21  23  24
          iPcP             21  24  13
»   9 √Up   iP              21  31  25
    √Ki   iP              21  30  31 D
          iPcP             21  31  17
    √Sk   iP              21  31  01
          iPcP             21  31  36
    Aleutian Islands.

»   9 √Up   eP              21  33  51
                    P z'    μ    s
                          0.1  1.3
    √Ki   iP              21  33  00 C
          i               21  33  10
                    P z'    μ    s
                          0.1  1.1
    √Sk   iP              21  33  30
    Aleutian Islands.

»   9 √Up   i(P)            21  39  04
    √Ki   iP              21  38  02
»   9 √Up   iP              21  45  38 C
    √Ki   iP              21  44  44 C
    Aleutian Islands.

»   9 √Up   iP              21  47  27
»   9 √Up   iP              21  48  18
                    P z'    μ    s
                          0.1  1.0
    √Ki   iP              21  47  24
    Aleutian Islands.

»   9 √Up   iP              21  52  50
                    P z'    μ    s
                          0.1  1.0
    √Ki   iP              21  51  57
    √Sk   iP              21  52  27
    Aleutian Islands.

»   9 √Ki   iP              21  53  27
»   9 √Ki   iP              22  02  03
»   9 √Ki   eP              22  04  28
```

1957
```
Mar 9 √Up   iP              22  06  05 C
»   9 √Up   iP              22  07  23 C
                    P z'    μ    s
                          0.3  1.0
    √Ki   iP              22  06  30 C
          iPcP             22  07  17
                    P z'    μ    s
                          0.2  1.0
    √Sk   iP              22  07  00 C
    Aleutian Islands.

»   9 √Up   iP              22  15  04
          iPcP             22  15  28
                    P z'    μ    s
                          0.1  1.0
    √Ki   eP              22  14  12
          iPcP             22  14  55
»   9 √Up   iP              22  19  28 C
    √Ki   iP              22  18  35
»   9 √Up   iP              22  21  44
    √Ki   iP              22  20  49
»   9 √Ki   iP              22  33  14
          i               22  33  26
    Southern Bolivia.

»   9 √Up   iP              22  39  28
»   9 √Up   iP              22  42  15
    √Ki   iP              22  41  21
    √Sk   eP              22  41  56
    Aleutian Islands.

»   9 √Ki   iP              22  44  18 C
»   9 √Up   iP              22  47  57
                    P z'    μ    s
                          0.1  1.0
    √Ki   iP              22  47  04 D
                    P z'    μ    s
                          0.1  1.1
    √Sk   iP              22  47  36
    Aleutian Islands.

»   9 √Up   iP              22  53  40
    √Ki   iP              22  52  47 D
    √Sk   eP              22  53  17
    Aleutian Islands.

»   9 √Up   iP              22  58  48
»   9 √Up   iP              23  05  57
»   9 √Ki   iP              23  06  34 D
»   9 √Up   iP              23  10  35
          i               23  10  45
```

1957
Mar 9
(cont.)
```
                    P z'    μ    s
                          0.3  1.4
    √Ki   iP              23  09  40
                    P z'    μ    s
                          0.1  1.0
    √Sk   iP              23  10  12
    Aleutian Islands.

»   9 √Up   iP              23  12  35 C
    √Ki   iP              23  11  42
»   9 √Up   iP              23  18  12
                    P z'    μ    s
                          0.1  1.2
    √Ki   iP              23  17  19
»   9 √Up   iP              23  20  26 C
                    P z'    μ    s
                          0.2  1.1
    √Ki   iP              23  19  33 C
                    P z'    μ    s
                          0.2  1.0
    √Sk   iP              23  20  03 C
    Aleutian Islands.

»   9 √Up   iP              23  24  02
                    P z'    μ    s
                          0.1  0.7
    √Ki   iP              23  23  09
»   9 √Up   iP              23  30  20
                    P z'    μ    s
                          0.1  1.0
    √Ki   iP              23  29  27 C
    √Sk   iP              23  29  59
    Aleutian Islands.

»   9 √Up   iP              23  31  55
    √Ki   iP              23  31  03 D
    √Sk   iP              23  31  35
    Aleutian Islands.

»   9 √Up   iP              23  32  53
    √Sk   iP              23  32  31
»   9 √Up   iP              23  34  45 C
                    P z'    μ    s
                          0.1  1.0
    √Ki   iP              23  33  52 C
          iPcP             23  34  37
    (Aleutian Islands).

»   9 √Up   iP              23  36  24
»   9 √Ki   iP              23  40  32
»   9 √Up   iP              23  43  01
                    P z'    μ    s
                          0.1  1.0
»   9 √Up   iP              23  48  54 D
```

1957
Mar 9
(cont.)
```
                    P z'    μ    s
                          0.1  1.0
    √Ki   iP              23  48  01
    √Sk   iP              23  48  27
    Aleutian Islands.

»   9 √Up   iP              23  57  52
    √Ki   iP              23  56  59 C
»  10 √Up   iP              00  08  29
    √Ki   iP              00  07  34
»  10 √Up   iP              00  17  35
                    P z'    μ    s
                          0.1  1.0
    √Ki   iP              00  16  41
                    P z'    μ    s
                          0.2  1.0
    √Sk   iP              00  17  11 D
    Aleutian Islands.

»  10 √Up   iP              00  22  29
          i               00  22  44
                    P z'    μ    s
                          0.1  1.0
    √Ki   iP              00  21  36 C
          iPcP             00  22  21
    Aleutian Islands.

»  10 √Up   iP              00  37  11
    √Ki   iP              00  36  17 D
    √Sk   eP              00  36  55
    Aleutian Islands.

»  10 √Up   iP              00  38  13
    √Ki   iP              00  37  20
»  10 √Up   iP              00  43  49
                    P z'    μ    s
                          0.1  1.2
    √Ki   iP              00  42  57
                    P z'    μ    s
                          0.1  1.1
    √Sk   eP              00  43  27
    Aleutian Islands.

»  10 √Up   iP              00  51  27
    √Ki   eP              00  50  35
          e               00  51  37
    √Sk   eP              00  51  06
    Aleutian Islands.

»  10 √Up   iP              01  00  26
»  10 √Up   i(P)            01  01  21
    √Ki   iP              01  00  21
          i               01  00  27
          i               01  00  39
    √Sk   iP              01  00  57
    Aleutian Islands.

»  10 √Up   iP              01  08  23 C
```

Column 1 (page 38)

1957
Mar 10 Ki   iP   01   07   30
(cont.)
                              μ   s
                 P   z'   0.1 1.0
        Aleutian Islands.

» 10   Up   iP   01   11   30
        Ki   iP   01   10   38
                              μ   s
                 P   z'   0.1 1.0
        Sk   iP   01   11   09
        Aleutian Islands.

» 10   Ki   i(P)   01   14   41

» 10   Ki   iP   01   16   49

» 10   Up   iP   01   18   17
        Ki   i(PcP)   01   18   08

» 10   Up   iP   01   21   26
        Ki   i(PcP)   01   21   18

» 10   Up   iP   01   27   56 C
                              μ   s
                 P   z'   0.1 1.0
        Ki   iP   01   27   02
                              μ   s
                 P   z'   0.1 1.1
        Sk   eP   01   27   38
        Aleutian Islands.

» 10   Up   iP   01   33   05
        iPcP   01   33   31
                              μ   s
                 P   z'   0.2 1.3
        Ki   iP   01   32   13
        iPcP   01   33   00
                              μ   s
                 P   z'   0.1 1.0
        Sk   iP   01   32   44
        Aleutian Islands.

» 10   Up   iP   01   39   12
                              μ   s
                 P   z'   0.1 1.0
        Ki   iP   01   38   19
        Sk   eP   01   38   55
        Aleutian Islands.

» 10   Up   iP   01   48   24
        Ki   iP   01   47   30
        Aleutian Islands.

» 10   Up   iP   01   51   14
        Ki   iP   01   50   21
        i   01   50   33
        Sk   eP   01   50   50
        Aleutian Islands.

» 10   Up   iP   01   53   27

Column 2 (page 38)

1957
Mar 10
(cont.)   μ   s
                 P   z'   0.1 1.0
        Ki   iP   01   52   33
                                       μ   s
                 P   z'   0.1 1.0
        Aleutian Islands.

» 10   Up   iP   01   54   32
                                       μ   s
                 P   z'   0.1 1.0
        Ki   iP   01   53   40
        Aleutian Islands.

» 10   Up   iP   01   56   55
                                       μ   s
                 P   z'   0.1 1.0
        Ki   iP   01   56   02

» 10   Ki   iP   02   12   57

» 10   Ki   iP   02   16   16

» 10   Up   iP   02   20   09

» 10   Up   iP   02   21   49

» 10   Up   iP   02   33   30 D
                                       μ   s
                 P   z'   0.1 1.0
        Ki   iP   02   32   36 D
                                       μ   s
                 P   z'   0.1 1.0
        Sk   eP   02   33   16
        Aleutian Islands.

» 10   Up   iP   02   41   58
                                       μ   s
                 P   z'   0.1 1.0
        Ki   iP   02   41   04

» 10   Up   eP   02   44   36
        Ki   eP   02   43   43

» 10   Up   iP   02   47   22

» 10   Up   iP   02   49   49
        Ki   eP   02   48   56

» 10   Up   iP   02   51   36 C
        i   02   51   46
                                       μ   s
                 P   z'   0.2 1.0
        Ki   iP   02   50   43

» 10   Up   iP   03   06   13 C
        i   03   06   23
                                       μ   s
                 P   z'   0.2 1.0
        Ki   iP   03   05   30
        i   03   05   40

Column 3 (page 39)

1957
Mar 10   μ   s
(cont.)   P   z'   0.1 1.0
        Sk   iP   03   06   05 C
        Near south coast of
        Hokkaido, Japan.

» 10   Up   iP   03   17   14 C
        i(PcP)   03   17   44
        iS   03   26   27
                              μ   s
                 P   N   0.7 1.0
                 P   z   1.4 1.0
                 P   z'   1.3 1.2
                 M   E   24   18
                 M   N   44   24
                 M   z   53   23
        △ ~ 7650 km ~ 69°.
        Ki   iP   03   16   21
        iPcP   03   17   07
        iPP   03   18   41
        iPcS   03   21   07
        iS   03   24   35
        iSKS   03   26   14
                              μ   s
                 P   z'   0.7 1.3
                 PP   z   1.3 5
                 S   N   3.4 9
                 M   E   28   17
                 M   N   23   17
                 M   z   45   17
        △ = 6800 km = 61°.
        Sk   iP   03   16   53
        Aleutian Islands.
        Magn. = 6.8 (Up, Ki).

» 10   Up   iP   03   20   03
                              μ   s
                 P   z'   1.3 1.3
                 M   E   21   18
                 M   N   17   17
                 M   z   29   17
        Ki   iP   03   19   10 C
        i(S)   03   27   12
                              μ   s
                 P   z'   1.5 2.0
                 M   E   30   18
                 M   N   21   18
                 M   z   50   18
        Sk   iP   03   19   42 C
        Aleutian Islands.
        Magn. = 6.6 (Up, Ki).

» 10   Ki   i(P)   03   23   48 D

» 10   Up   iP   03   27   14
                              μ   s
                 P   z'   0.1 1.0
        Sk   i(P)   03   27   02

» 10   Up   iP   03   37   21 D

Column 4 (page 39)

1957
Mar 10   μ   s
(cont.)   P   z'   0.1 1.0
» 10   Up   iP   03   37   50
        i   03   38   04
        ipP   03   38   29
        i   03   38   53
        iPP   03   39   28
                              μ   s
                 P   z'   0.2 0.8
                 pP   z'   0.3 1.0
        Ki   iP   03   37   59
        ipP   03   38   37
                              μ   s
                 P   z'   0.1 0.5
        Sk   iP   03   38   15
        ipP   03   38   55
        Hindu Kush region.
        h = 200 km (Up, Ki, Sk).

» 10   Sk   iP   03   40   00

» 10   Up   i(P)   03   42   30 D
                              μ   s
                 (P)   z'   0.1 1.3
» 10   Up   iP   03   48   23
                              μ   s
                 P   z'   0.3 1.5
» 10   Up   iP   04   02   12
        Ki   iP   04   01   20 D
        Aleutian Islands.

» 10   Up   iP   04   05   23 D
                              μ   s
                 P   z'   0.1 1.0
        Ki   iP   04   04   29
        iPcP   04   05   14
                              μ   s
                 P   z'   0.1 1.2
        Sk   eP   04   05   07
        Aleutian Islands.

» 10   Up   eP   04   21   24

» 10   Up   iP   04   27   47 D

» 10   Ki   iP   04   35   24

» 10   Up   iP   04   41   43
        Ki   iP   04   40   51 C
        Aleutian Islands.

» 10   Up   iP   04   44   51
        Ki   iP   04   43   58 D
        Aleutian Islands.

» 10   Up   iP   04   46   16
        i   04   46   29

Column 1

```
1957
Mar 10 ✓Up   iP              04  47  36 D
             P      z'        μ    s
                             0.1  1.0
»  10 ✓Up    iP              04  48  09
             P      z'        μ    s
                             0.2  0.8
      ✓Ki    iP              04  47  16
             P      z'        μ    s
                             0.1  1.0
      ✓Sk    iP              04  47  48
            Aleutian Islands.
»  10 ✓Up    iP              04  51  32
»  10 ✓Up    iP              04  52  06
             P      z'        μ    s
                             0.1  1.1
      ✓Ki    iP              04  51  13
             P      z'        μ    s
                             0.1  1.0
      ✓Sk    eP              04  51  45
             iPcP            04  52  18
            Aleutian Islands.
»  10 ✓Up    iP              04  54  56
»  10 ✓Ki    iP              05  09  19 C
»  10 ✓Ki    iP              05  34  32
»  10 ✓Up    iP              05  44  31
             P      z'        μ    s
                             0.1  1.0
      ✓Ki    iP              05  43  39
             iPcP            05  44  23
      ✓Sk    eP              05  44  11
            Aleutian Islands.
»  10 ✓Up    iP              05  53  21
      ✓Ki    iP              05  52  28 D
             P      z'        μ    s
                             0.1  1.0
      ✓Sk    iP              05  52  59
            Aleutian Islands.
»  10 ✓Up    iP              06  10  12
»  10 ✓Up    iP              06  14  11
      ✓Ki    iP              06  13  18
      ✓Sk    eP              06  13  49
            Aleutian Islands.
»  10 ✓Up    iP              06  17  40
»  10 ✓Ki    iP              06  25  18
»  10 ✓Up    iP              06  31  54 C
             i               06  32  07
             P      z'        μ    s
                             0.1  1.0
```

Column 2

```
1957
Mar 10 ✓Ki   iP              06  31  01
(cont.) ✓Sk  iP              06  31  31 C
            Aleutian Islands.
»  10 ✓Up    iP              06  34  49
      ✓Ki    iP              06  33  58
             i               06  34  07
      ✓Sk    iP              06  34  27
            Aleutian Islands.
»  10 ✓Ki    iP              06  55  24
»  10 ✓Up    eP              06  58  27
»  10 ✓Up    iP              07  05  10
      ✓Ki    iP              07  04  18
»  10 ✓Up    iP              07  08  14
      ✓Ki    iP              07  07  20
»  10 ✓Up    iP              07  17  09
             P      z'        μ    s
                             0.1  1.1
      ✓Ki    iP              07  16  16
      ✓Sk    iP              07  16  47
            Aleutian Islands.
»  10 ✓Up    iP              07  34  24
             P      z'        μ    s
                             0.1  0.9
      ✓Ki    iP              07  33  29
             iPcP            07  34  15
      ✓Sk    eP              07  34  03
            Aleutian Islands.
»  10 ✓Up    iP              07  42  30
             P      z'        μ    s
                             0.1  1.2
      ✓Ki    iP              07  41  38
             iPcP            07  42  25
      ✓Sk    iP              07  42  08
            Aleutian Islands.
»  10 ✓Up    eP              08  02  32
      ✓Ki    iP              08  02  55
»  10 ✓Ki    iP              08  12  00
»  10 ✓Ki    i(P)            08  14  04
»  10 ✓Up    i(P)            08  28  24
»  10 ✓Up    iP              08  43  19
»  10 ✓Up    iP              08  49  59
      ✓Ki    iP              08  50  02
»  10 ✓Up    iP              08  53  04
             i               08  53  17
      ✓Ki    iP              08  52  11 C
```

Column 3

```
1957
Mar 10 ✓Up   iP              08  58  40 C
»  10 ✓Ki    iP              09  28  17
»  10 ✓Up    iP              09  32  56
»  10 ✓Up    iP              09  34  44
             P      z'        μ    s
                             0.1  0.7
      ✓Ki    iP              09  33  52
             iPcP            09  34  37
      ✓Sk    iP              09  34  23
            Aleutian Islands.
»  10 ✓Up    iP              09  36  48
      ✓Ki    eP              09  35  54
»  10 ✓Ki    eP              09  37  05
»  10 ✓Up    iP              09  44  24
      ✓Ki    iP              09  43  28
»  10 ✓Up    iP              09  48  47 C
      ✓Ki    iP              09  47  54
             P      z'        μ    s
                             0.1  1.3
      ✓Sk    iP              09  48  23 C
            Aleutian Islands.
»  10 ✓Up    iP              10  01  46
             P      z'        μ    s
                             0.1  1.1
      ✓Ki    iP              10  00  53 C
             P      z'        μ    s
                             0.2  1.0
      ✓Sk    iP              10  01  21
            Aleutian Islands.
»  10 ✓Up    iP              10  06  58
»  10 ✓Ki    iP              10  08  59
             iPcP            10  09  45
»  10 ✓Up    iP              10  24  05
             P      z'        μ    s
                             0.1  1.0
      ✓Ki    eP              10  23  13
»  10 ✓Up    iP              10  48  00
             P      z'        μ    s
                             0.1  1.0
      ✓Ki    iP              10  47  07 C
            Aleutian Islands.
»  10 ✓Up    iP              11  28  17
             i               11  28  29
             i               11  29  18
             P      z'        μ    s
                             0.2  1.5
      ✓Ki    iP              11  27  24
             i               11  27  36
```

Column 4

```
1957
Mar 10 (Aleutian Islands).
(cont.)
»  10 ✓Up    iP              11  31  50
             e(SKS)          11  41  32
             P      z         μ    s
                             0.7   1
             P      z'       0.8  1.1
             M      E        5.2  18
             M      N        8.3  18
             M      z        9.4  18
      ✓Ki    iP              11  30  56 C
             P      z'        μ    s
                             0.9  1.0
             M      E        11   18
             M      N        6.7  16
             M      z        13   17
      ✓Sk    iP              11  31  27 C
            Aleutian Islands.
            Magn.=6.5 (Up, Ki).
»  10 ✓Up    iP              11  34  19
             P      z'        μ    s
                             0.1  1.0
      ✓Ki    iP              11  33  26
             P      z'        μ    s
                             0.1  1.0
            Aleutian Islands.
»  10 ✓Up    i(P)            11  37  14
             i               11  38  10
»  10 ✓Up    iP              11  46  25
             i               11  46  37
      ✓Ki    iP              11  45  32
      ✓Sk    iP              11  46  05
            Aleutian Islands.
»  10 ✓Up    iP              11  57  41
             P      z'        μ    s
                             0.1  1.0
      ✓Ki    iP              11  56  48 D
»  10 ✓Up    iP              11  58  54
»  10 ✓Up    iP              12  06  23
»  10 ✓Up    iP              12  23  37
             i               12  23  47
             P      z'        μ    s
                             0.2  1.0
      ✓Ki    iP              12  22  43
             i               12  22  55
             P      z'        μ    s
                             0.3  1.0
      ✓Sk    iP              12  23  18 D
            Aleutian Islands.
»  10 ✓Up    iP              12  44  27
»  10 ✓Up    iP              12  46  10
```

Column 1 (p. 42)

```
1957
Mar 10  Up  iP              12  47  14
                         μ      s
            P      z'     0.2    0.9
        Ki  iP              12  46  20
                         μ      s
            P      z'     0.2    1.0
        Sk  eP              12  46  51
        Aleutian Islands.

»  10   Up  iP              12  56  41
            i               12  56  53
                         μ      s
            P      z      0.5    1
            P      z'     0.8    1.2
            M      E      3.4    21
            M      N      5.5    25
            M      z      6.6    26
        Ki  iP              12  55  47
                         μ      s
            P      z'     0.5    0.8
            M      E      3.8    20
            M      N      3.0    18
            M      z      3.4    18
        Sk  iP              12  56  20
        Aleutian Islands.
        Magn.=6.4 (Up, Ki).

»  10   Up  iP              13  01  47 C
                         μ      s
            P      z'     0.1    1.3
        Ki  iP              13  00  55
            iPcP            13  01  40
        Sk  eP              13  01  28
        Aleutian Islands.

»  10   Ki  eP              13  12  24

»  10   Up  iP              13  21  15 C
            ipP             13  21  27
            iP'P'           13  49  30
                         μ      s
            P      z'     0.4    1.1
            P'P'   z'     0.2    1.5
            M      E      3.8    18
            M      N      5.4    20
            M      z      5.9    17
        Ki  iP              13  20  24
            ipP             13  20  35
            iPS             13  29  03
                         μ      s
            P      z'     0.1    1.0
            M      E      7.1    18
            M      N      6.5    18
            M      z      9.6    18
        Sk  iP              13  20  54 C
        Aleutian Islands.
        h=50 km (Up, Ki).
        Magn.=6.1 (Up, Ki).

»  10   Up  iP              13  30  38
```

Column 2 (p. 42)

```
1957
Mar 10  Ki  iP              13  29  45
(cont.) Sk  iP              13  30  16
        Aleutian Islands.

»  10   Up  iP              13  33  31 D
                         μ      s
            P      z'     0.2    1.0
        Ki  iP              13  32  38 D
                         μ      s
            P      z'     0.1    1.0
        Sk  iP              13  33  10
        Aleutian Islands.

»  10   Up  iP              13  39  34
                         μ      s
            P      z'     0.2    1.0
            M      E      7.5    19
            M      N      7.5    17
            M      z      7.2    15
        Ki  iP              13  38  40
                         μ      s
            P      z'     0.1    1.0
            M      E      6.5    17
            M      N      5.1    19
            M      z      7.6    16
        Sk  iP              13  39  13
        Aleutian Islands.
        Magn.=6.0 (Up, Ki).

»  10   Sk  iP              13  42  05 C

»  10   Ki  iP              13  43  26 D

»  10   Up  iP              13  56  58

»  10   Up  iP              14  12  35
        Ki  i(P)            14  12  44

»  10   Up  iP              14  20  34 C
                         μ      s
            P      z'     0.1    1.0
        Ki  iP              14  19  41
        Aleutian Islands.

»  10   Up  iP              14  40  52
        Ki  iP              14  39  40 D
                         μ      s
            P      z'     0.4    0.5

»  10   Up  i(P)            14  42  17

»  10   Up  iP              14  55  35 C
                         μ      s
            P      z'     0.1    1.0
        Ki  iP              14  54  42
        Aleutian Islands.

»  10   Up  iP              14  56  55 C
            i               14  57  07
                         μ      s
            P      z'     0.2    1.0
```

Column 3 (p. 43)

```
1957
Mar 10  Ki  iP              14  56  02
(cont.)
                         μ      s
            P      z'     0.1    1.0
        Sk  iP              14  56  32 C
        Aleutian Islands.

»  10   Up  iP              15  01  50

»  10   Up  eP              15  35  48
            i               15  36  32

»  10   Up  iP              15  37  26
            iS              15  46  29
            iPS             15  46  53
                         μ      s
            P      z'     0.5    1.5
            M      E      11     18
            M      N      20     18
            M      z      22     18
        △=7600 km=68½°.
        Ki  iP              15  36  34
                         μ      s
            P      z'     0.2    1.5
            M      E      12     18
            M      N      13     18
            M      z      15     18
        Sk  iP              15  37  04
        Aleutian Islands.
        Magn.=6.3 (Up, Ki).

»  10   Up  eP              15  56  46
        Ki  iP              15  55  52
        Sk  iP              15  56  23
        Aleutian Islands.

»  10   Up  eP              15  59  35
            ipP             15  59  48
        Ki  iP              15  58  43
                         μ      s
            P      z'     0.1    1.0
        Sk  iP              15  59  14
        Aleutian Islands.
        h=50 km (Up).

»  10   Up  e(P)            16  11  07
            i               16  11  19
        Ki  eP              16  10  08

»  10   Ki  iP              16  26  33

»  10   Up  iP              16  40  58
        Ki  iP              16  40  05
                         μ      s
            P      z'     0.1    1.0
        Aleutian Islands.

»  10   Up  iP              16  42  34

»  10   Up  iP              16  48  51
            i               16  49  08
```

Column 4 (p. 43)

```
1957
Mar 10
(cont.)
                         μ      s
            P      z'     0.2    1.3
        Ki  iP              16  47  57
        Sk  eP              16  48  28
        Aleutian Islands.

»  10   Up  iP              16  50  50
            i               16  51  03
                         μ      s
            P      z'     0.3    1.5
        Ki  iP              16  49  57
        Sk  iP              16  50  29
        Aleutian Islands.

»  10   Up  iP              16  58  08
        Ki  i(PcP)          16  57  57

»  10   Ki  i(P)            17  28  26

»  10   Up  iP              17  35  21

»  10   Ki  iP              17  50  26

»  10   Up  eP              17  56  46
            iPcP            17  57  14
        Ki  iP              17  55  55
        Sk  iP              17  56  29
        Aleutian Islands.

»  10   Ki  iP              17  58  05

»  10   Up  iP              18  02  20

»  10   Up  iP              18  08  20 C
            i               18  09  23
                         μ      s
            P      z'     0.1    0.9
        Ki  iP              18  07  28 C
        Aleutian Islands.

»  10   Ki  iP              18  13  15

»  10   Up  iP              18  30  19
        Ki  iP              18  29  25
                         μ      s
            P      z'     0.1    1.0
        Sk  eP              18  29  57
        Aleutian Islands.

»  10   Ki  iP              18  38  09

»  10   Up  i(P)            19  03  56
            i               19  04  31

»  10   Up  iP              19  12  47
        Ki  iP              19  11  54

»  10   Up  iP              19  22  39
        Ki  iP              19  21  46 C

»  10   Up  iP              19  29  38
```

Column 1 (p. 44)

```
1957
Mar 10          i              19   29   50
(cont.)
                     P    z'    0.5   2.0
    √Ki   iP           19   28   45 D
                     μ      s
                     P    z'    0.1   0.8
    √Sk   iP           19   29   17
    Aleutian Islands.
» 10 √Up  iP           19   47   20
    √Ki   iP           19   46   26
    √Sk   iP           19   46   57 C
    Aleutian Islands.
» 10 √Up  iP           19   51   58
                     μ      s
                     P    z'    0.1   1.0
    √Ki   iP           19   51   06
    √Sk   eP           19   51   39
    Aleutian Islands.
» 10 √Up  i(P)         20   22   29
» 10 √Ki  iP           20   24   30 D
» 10 √Up  iP           20   33   44
    √Ki   iP           20   32   51
» 10 √Up  iP           20   44   48 D
                     μ      s
                     P    z'    0.1   1.0
    √Ki   iP           20   43   54 D
                     μ      s
                     P    z'    0.1   1.0
    √Sk   iP           20   44   24
    Aleutian Islands.
» 10 √Up  iP           20   47   55
    √Ki   iP           20   46   59
» 10 √Ki  i(P)         20   48   26
» 10 √Ki  iP           20   57   39
» 10 √Up  iP           21   07   58 D
                     μ      s
                     P    z'    0.1   1.0
    √Ki   iP           21   07   05 D
                     μ      s
                     P    z'    0.1   1.1
    √Sk   iP           21   07   34
    Aleutian Islands.
» 10 √Ki  iP           21   14   48
» 10 √Up  iP           21   21   14
    √Ki   iP           21   20   20 D
    √Sk   eP           21   20   50
    Aleutian Islands.
» 10 √Up  iP           21   43   30 D
```

Column 2 (p. 44)

```
1957
Mar 10
(cont.)              P    z'    0.2   1.3
    √Ki   iP           21   42   37 D
                     μ      s
                     P    z'    0.2   1.1
    √Sk   eP           21   43   12
    Aleutian Islands.
» 10 √Up  iP           21   55   24
    √Ki   i(PcP)       21   55   16
» 10 √Up  iP           22   10   27
                     μ      s
                     P    z'    0.1   1.0
    √Ki   i(PcP)       22   10   18
» 10 √Ki  iP           22   13   50
» 10 √Up  eP           22   22   32
» 10 √Ki  iP           23   21   32
» 10 √Up  eP           23   26   30
    √Ki   iP           23   25   36
    √Sk   eP           23   26   07
    Aleutian Islands.
» 10 √Up  eP           23   28   30
    √Ki   iP           23   27   35
    Aleutian Islands.
» 10 √Up  iP           23   38   27 C
    √Sk   iP           23   39   11
» 10 √Up  iP           23   47   50 D
          ipP          23   48   03
                     μ      s
                     P    z'    0.1   1.0
                     pP   z'    0.2   0.9
    √Ki   iP           23   46   56
          ipP          23   47   10
                     μ      s
                     pP   z'    0.1   1.0
    √Sk   iP           23   47   29
    Aleutian Islands.
    h=50 km (Up, Ki).
» 10 √Up  i(P)         23   49   40 C
                     μ      s
          (P)    z'    0.1   1.0
» 11 √Up  iP           00   07   49 C
                     μ      s
                     P    z'    0.2   1.0
    √Ki   iP           00   06   56 C
                     μ      s
                     P    z'    0.2   1.0
    √Sk   iP           00   07   26 C
    Aleutian Islands.
» 11 √Ki  iP           00   15   37
```

Column 3 (p. 45)

```
1957
Mar 11 √Up  iP         00   19   13
                     μ      s
                     P    z'    0.2   1.5
    √Ki   iP           00   18   19 D
                     μ      s
                     P    z'    0.2   1.0
    √Sk   iP           00   18   48
    Aleutian Islands.
» 11 √Up  iP           00   43   12
    √Ki   iP           00   42   35 C
» 11 √Up  eP           00   47   23
» 11 √Up  i(P)         00   49   09
    √Ki   iP           00   48   00
» 11 √Up  iP           01   17   53 D
                     μ      s
                     P    z'    0.1   1.0
    √Ki   eP           01   16   59
    √Sk   iP           01   17   33
    Aleutian Islands.
» 11 √Up  eP           01   20   16
» 11 √Ki  eP           01   25   39
» 11 √Ki  iP           01   32   28 C
» 11 √Up  iP           01   39   24 C
                     μ      s
                     P    z'    0.1   0.8
    √Ki   iP           01   38   32 C
    Aleutian Islands.
» 11 √Up  i(P)         01   56   47
» 11 √Up  iP           02   01   30
» 11 √Up  iP           02   02   11
                     μ      s
                     P    z'    0.2   1.5
    √Ki   iP           02   01   17
          i            02   01   31
                     μ      s
                     P    z'    0.2   1.3
    √Sk   i(P)         02   02   01
    Aleutian Islands.
» 11 √Up  iP           02   41   15 D
    √Ki   iP           02   40   22 D
» 11 √Up  iP           02   44   21
                     μ      s
                     P    z'    0.1   1.0
» 11 √Up  eP           02   56   03
    √Ki   eP           02   55   10
    √Sk   eP           02   55   41
    Aleutian Islands.
```

Column 4 (p. 45)

```
1957
Mar 11 √Up  iP         03   23   47
            iPcP       03   24   11
            iPcS       03   28   17
            iS         03   32   50
            iP'P'      03   51   58
                     μ      s
                     P    z'    0.4   1.0
                     S    E     3.1   6
                     S    N     4.1   6
                     P'P' z'    0.8   1.8
                     M    E     50    19
                     M    N     32    18
                     M    z     35    19
            △=7600 km=68½°.
    √Ki   iP           03   22   58
            iPP        03   25   17
            iS         03   31   11
            iPS        03   31   48
            iScS       03   32   43
            iP'P'      03   52   18
                     μ      s
                     P    z     1.6   4
                     P    z'    0.1   1.0
                     PP   z     2.2   6
                     S    N     3.6   9
                     M    E     53    19
                     M    N     40    18
                     M    z     77    18
            △=6800 km=61°.
    √Sk   iP'P'        03   23   28 D
           iP'P'       03   52   07
    Aleutian Islands.
    Magn.=6.6 (Up, Ki).
» 11 √Ki  iP           03   29   47 D
» 11 √Up  iP           03   33   02
    √Ki   eP           03   32   06
    √Sk   eP           03   32   39
    Aleutian Islands.
» 11 √Up  iP           03   45   02
    √Ki   iP           03   44   09
    √Sk   iP           03   44   38
    Aleutian Islands.
» 11 √Up  iP           03   46   08 C
                     μ      s
                     P    z'    0.3   1.0
    √Ki   iP           03   45   16
                     μ      s
                     P    z'    0.1   1.0
    √Sk   eP           03 — 45   45
    Aleutian Islands.
    Magn.=6.4 (Up, Ki).
» 11 √Up  i(P)         03   58   33 C
» 11 √Up  iP           04   06   34
            i          04   06   44
```

1957 Mar 11 (cont.)

Sta	Phase			h	m	s
	P	z'		0.1	1.0	(μ/s)
Ki	iP			04	05	41
	i			04	05	51
	iPcP			04	06	23
Sk	iP			04	06	13

Aleutian Islands.

» 11 Up	iP			04	16	17
	P	z'		0.3	1.4	
Ki	iP			04	15	25

Aleutian Islands.

» 11 Up	iP			04	19	11
	P	z'		0.1	1.5	
» 11 Up	iP			04	44	21
	P	z'		0.1	1.4	
» 11 Up	iP			05	01	46
Ki	iP			05	00	53 D
	i			05	01	06
Sk	iP			05	01	24

Aleutian Islands.

» 11 Up	iP			05	03	51
	P	z'		0.1	1.5	
» 11 Up	iP			05	06	37
» 11 Up	iP			05	10	49
» 11 Up	iP			05	38	54 C
	P	z'		0.1	1.0	
Ki	iP			05	38	02
	P	z'		0.1	1.0	

Aleutian Islands.

» 11 Up	eP			05	59	09
	i			05	59	19
Ki	iP			05	58	14
» 11 Up	e(P)			06	41	14
» 11 Up	eP			06	45	03
Ki	i(P)			06	44	15
» 11 Up	iP			06	48	17
Ki	iP			06	47	24 C
	P	z'		0.1	1.0	
» 11 Up	iP			06	53	53
	i			06	54	04

1957 Mar 11 (cont.)

Sta	Phase			h	m	s
	P	z'		0.1	1.0	
Ki	iP			06	53	00
	P	z'		0.1	1.0	
Sk	iP			06	53	30

Aleutian Islands.

» 11 Up	iP			07	03	01 D
	P	z'		0.2	1.0	
Ki	iP			07	02	08 D
	i			07	02	20
	P	z'		0.1	0.9	
Sk	iP			07	02	43

Aleutian Islands.

» 11 Up	i(P)			07	06	35
» 11 Up	iP			07	19	05
	iPcP			07	19	30
	P	z'		0.7	1.5	
Ki	iP			07	18	12 D
	P	z'		0.1	1.0	
Sk	eP			07	18	44

Aleutian Islands.

» 11 Up	iP			07	23	57
Sk	iP			07	24	41

Greece.

» 11 Up	iP			07	32	09 C
Ki	iP			07	31	15

Aleutian Islands.

» 11 Up	iP			07	50	09
	P	z'		0.2	1.0	
Ki	iP			07	49	16
	iPcP			07	50	01
Sk	iP			07	49	48

Aleutian Islands.

» 11 Up	iP			07	57	45
Ki	iP			07	56	52 D
» 11 Up	iP			08	09	40
	iPcP			08	10	07
Ki	iP			08	08	48
Sk	iP			08	09	19

Aleutian Islands.

» 11 Up	eP			08	32	29
» 11 Up	eP			08	35	57
» 11 Up	iP			08	38	39

1957 Mar 11 (cont.)

Sta	Phase			h	m	s
	P	z'		0.1	1.0	
Ki	iP			08	37	46
	iPcP			08	38	30

Aleutian Islands.

» 11 Ki	iP			08	41	01 C
» 11 Ki	iP			08	44	11
» 11 Up	iP			08	48	16
Ki	iP			08	47	22
	iPcP			08	48	10
Sk	iP			08	47	56

Aleutian Islands.

» 11 Up	eP			08	54	00
	i			08	54	06
	P	z'		0.3	1.5	
Ki	iP			08	53	07
	i			08	53	14
	P	z'		0.1	1.0	

Aleutian Islands.

» 11 Up	iP			08	58	24
Ki	iP			08	57	31
Sk	eP			08	58	15

(Aleutian Islands).

» 11 Up	iP			09	28	04
» 11 Up	iP			09	35	58
	P	z'		0.3	1.5	
Ki	eP			09	37	12
Sk	iP			09	36	40

Greece.

» 11 Ki	i(P)			09	52	44
» 11 Up	iP			09	57	29
	P	z'		0.1	1.1	
Ki	iP			09	56	37
	P	z'		0.1	1.0	

Aleutian Islands.

» 11 Up	iP			10	00	54 C
» 11 Up	iP			10	06	19
» 11 Up	iP			10	08	14
Ki	iP			10	07	22
Sk	iP			10	07	51

Aleutian Islands.

» 11 Up	iP			10	09	44 D
	iPcP			10	10	13

1957 Mar 11 (cont.)

Sta	Phase			h	m	s
	iPcS			10	14	13
	iS			10	18	38
	iP'P'			10	38	07
	P	N		0.6	2	
	P	z		1.2	2	
	P	z'		0.9	1.0	
	S	N		2.7	5	
	P'P'	z'		0.7	1.8	
	M	E		90	25	
	M	N		150	22	
	M	z		150	20	

△ = 7550 km = 68°.

Ki	iP			10	08	50
	iPcP			10	09	40
	iPP			10	11	03
	iS			10	16	53
	eP'P'			10	38	22
	P	N		5.6	9	
	P	z		13	9	
	P	z'		0.6	1.0	
	PP	z		5.3	7	
	S	N		4.4	8	
	P'P'	z'		0.3	1.7	
	M	E		85	22	
	M	N		70	19	
	M	z		130	19	

△ = 6650 km = 60°.

Sk	iP			10	09	21

Aleutian Islands.
Magn. = 7.1 (Up, Ki).

» 11 Ki	iP			10	24	43
» 11 Up	iP			10	29	53 C
	P	z'		0.1	1.0	
Ki	iP			10	28	58
	P	z'		0.1	1.0	
» 11 Ki	i(P)			11	21	37
» 11 Up	iP			12	21	39 C
	P	z'		0.5	1.2	
	M	E		3.1	17	
	M	N		6.8	19	
	M	z		6.6	19	
Ki	iP			12	21	40 C
	i(S)			12	31	57
	P	z'		0.4	1.0	
	(S)	E		4.6	16	
	M	E		4.6	22	
	M	N		7.0	20	
	M	z		12	20	

△ = 9200 km = 83°.

Sk	iP			12	21	54 C

Off coast of Sumatra.
Magn. = 6.4 (Up, Ki).

Column 1

```
1957
Mar 11 /Up  iP       12  48  32
                          μ    s
            P    z'      0.1  1.0
       /Ki  iP       12  47  40
       /Sk  iP       12  48  11
       Aleutian Islands.

»  11 /Up  iP        13  13  49
           i         13  14  00
                          μ    s
            P    z'      0.1  0.8
       /Ki  eP       13  12  56
            iPcP     13  13  39
       /Sk  iP       13  13  28
       Aleutian Islands.

»  11 /Up  iP        13  31  34
                          μ    s
            P    z'      0.1  1.0
       /Sk  iP       13  32  17
       Greece.

»  11 /Up  iP        13  44  20
                          μ    s
            P    z'      0.3  1.5
       /Ki  iP       13  45  38
       /Sk  eP       13  45  02
       Greece.

»  11 /Up  iP        14  24  20
       Ki   iP       14  24  07

»  11 /Ki  iP        14  41  24

»  11 /Ki  iP        14  44  48 D

»  11 /Up  iP        14  49  39
                          μ    s
            P    z'      0.1  1.0

»  11 /Ki  iP        14  55  00

»  11 /Up  iP        15  06  22 C
            iPcP     15  06  48
            iPP      15  08  48
            iS       15  15  20
            iSS      15  19  56
            iP'P'    15  34  35
                          μ    s
            P    z'      0.8  1.0
            S    E       4.7  6
            S    N      16    12
            M    E      65    18
            M    N      52    20
            M    z      70    22
        △=7550 km=68°.
       /Ki  iP        15  05  29 C
            iPcP     15  06  15
            iPP      15  07  45
            iPcS     15  10  13
            iS       15  13  38
```

Column 2

```
1957
Mar 11
(cont.)         P    z      10    8
                P    z'     0.8  1.0
                PP   z'     0.2  1.1
                S    E       7.7  8
                S    N      12    13
                M    E      75    20
                M    N      35    16
                M    z      80    18
            △=6650 km=60°.
       /Sk  iP        15  06  00 C
            iPcP     15  06  32
            iP'P'    15  34  46
       Aleutian Islands.
       Magn.=6.9 (Up, Ki).

»  11 /Up  i(P)      15  13  54 C

»  11 /Up  i(P)      15  14  27

»  11 /Up  iP        15  43  11 C
       /Ki  iP       15  42  35

»  11 /Up  iP        15  46  58 C
                          μ    s
            P    z'      0.5  1.0
            M    E      14    18
            M    N      20    20
            M    z      19    17
       /Ki  iP        15  46  05 C
            i         15  50  50
                          μ    s
            P    z'      0.6  1.0
            M    E      17    18
            M    N      19    21
            M    z      30    18
       /Sk  iP        15  46  37 C
            iPcP     15  47  10
       Aleutian Islands.
       Magn.=6.6 (Up, Ki).

»  11 /Up  eP        16  15  05

»  11 /Ki  iP        16  26  49

»  11 /Up  iP        16  45  22
       /Ki  iP       16  44  44

»  11 /Ki  i(P)      17  13  48

»  11 /Up  iP        18  39  48
                          μ    s
            P    z'      0.1  1.2
       /Ki  eP       18  38  55

»  11 /Ki  iP        18  52  29

»  11 /Up  iP        19  09  15
       Ki   iP       19  08  23
       Aleutian Islands.
```

Column 3

```
1957
Mar 11 /Ki  i(P)     19  19  40

»  11 /Up  iP        19  32  43 C
                          μ    s
            P    z'      0.1  1.0
       /Ki  e(P)     19  32  26
       /Sk  iP       19  32  37 D

»  11 /Up  iP        20  07  00
       /Ki  iP       20  06  07
       /Sk  iP       20  06  37
       Aleutian Islands.

»  11 /Up  iP        20  13  42
           i         20  13  52
       /Ki  eP       20  12  49
       Aleutian Islands.

»  11 /Up  iP        20  49  35
            iPcP     20  50  06
       /Ki  i(P)     20  48  58
       Aleutian Islands.

»  11 /Up  iP        21  28  14 C
                          μ    s
            P    z'      0.1  1.0
       /Ki  eP       21  27  19
       Aleutian Islands.

»  11 /Up  iP        21  51  25
                          μ    s
            P    z'      0.1  1.2
       /Ki  iP       21  50  32
       Aleutian Islands.

»  11 /Up  iP        22  37  28 C

»  11 /Up  iP        23  29  27

»  11 /Up  iP        23  43  25
            iPcP     23  43  49
                          μ    s
            P    z'      0.1  0.8
       /Ki  iP       23  42  32 D
       /Sk  iP       23  43  04
       Aleutian Islands.

»  11 /Up  iP        23  53  23
                          μ    s
            P    z'      0.1  1.0
       /Ki  iP       23  52  30
                          μ    s
            P    z'      0.1  0.9
       /Sk  iP       23  53  01
       Aleutian Islands.

»  12 /Up  iP        00  02  48
                          μ    s
            P    z'      0.1  1.0
       /Ki  iP       00  01  55 D
```

Column 4

```
1957
Mar 12
(cont.)                   μ    s
            P    z'      0.1  1.0
       /Sk  eP       00  02  25
       Aleutian Islands.

»  12 /Up  eP        00  19  16
       /Ki  iP       00  18  20
       Aleutian Islands.

»  12 /Up  iP        00  25  54
       /Ki  iP       00  25  02

»  12 /Up  iP        00  29  03
                          μ    s
            P    z'      0.1  1.0
       /Ki  iP       00  28  10 D
                          μ    s
            P    z'      0.2  1.0
       /Sk  iP       00  28  40 D
       Aleutian Islands.

»  12 /Up  eP        00  46  52
       /Ki  iP       00  45  56
       /Sk  iP       00  46  30
       Aleutian Islands.

»  12 /Up  iP        01  13  37
                          μ    s
            P    z'      0.3  1.0
            M    N       3.1  24
            M    z       3.1  22
       /Ki  iP       01  12  43
                          μ    s
            P    z'      0.2  1.1
       /Sk  iP       01  13  15
       Aleutian Islands.

»  12 /Up  iP        01  15  34 C
                          μ    s
            P    z'      0.1  1.0
       /Ki  iP       01  14  42
       /Sk  iP       01  15  14
       Aleutian Islands.

»  12 /Up  iP        01  57  37
           i         01  58  44
       /Ki  iP       01  56  44
       /Sk  eP       01  57  15
       Aleutian Islands.

»  12 /Up  iP        02  33  57
           i         02  34  18
       /Ki  iP       02  33  03
                          μ    s
            P    z'      0.1  0.5
       /Sk  iP       02  33  35 D
       Aleutian Islands.

»  12 /Up  iP        02  50  08 C
       /Sk  iP       02  50  52
```

Column 1

1957

Mar 12	Up	iP	03	06	12C
	Ki	iP	03	05	19D
	Sk	iP	03	05	49

Aleutian Islands.

» 12	Ki	iP	03	37	19C
	Sk	iP	03	37	49

» 12	Up	iP	03	59	15
		i	03	59	26
	Ki	iP	03	58	22C

Aleutian Islands.

» 12	Up	eP	05	00	22
	Ki	iP	04	59	30
	Sk	eP	05	00	07

Aleutian Islands.

» 12	Up	iP	05	23	07C
				μ	s
		P	z'	0.2	1.0
	Ki	iP	05	22	14C
				μ	s
		P	z'	0.2	0.8
	Sk	iP	05	22	45D

Aleutian Islands.

» 12	Up	iP	05	31	58
	Ki	iP	05	31	05

» 12	Up	iP	06	11	51
	Ki	iP	06	10	59

Aleutian Islands.

» 12	Up	eP	06	13	43
				μ	s
		P	z'	0.1	1.3
	Ki	iP	06	12	48
		i	06	13	01
				μ	s
		P	z'	0.1	1.0
	Sk	iP	06	13	22

Aleutian Islands.

» 12	Up	eP	06	41	29
	Ki	iP	06	40	36

» 12	Up	iP	07	39	50D
		iS	07	48	59
		i	07	59	20
		iP'P'	08	07	58
				μ	s
		P	z	0.4	1
		P	z'	0.4	1.0
		P'P'	z'	0.5	1.8
		M	E	19	18
		M	N	33	24
		M	z	39	24

$\triangle = 7600$ km $= 68\frac{1}{2}°$.

	Ki	iP	07	38	58
		iPP	07	41	18

Column 2

1957

Mar 12		iS	07	47	15
(cont.)		iScS	07	48	50
				μ	s
		P	z	1.0	5
		P	z'	0.2	1.0
		M	E	30	16
		M	N	17	17
		M	z	40	18
		$\triangle = 6700$ km $= 60\frac{1}{2}°$.			
	Sk	iP	07	39	29

Aleutian Islands.
Magn. = 6.5 (Up, Ki).

» 12	Up	iP	07	50	21C
		iPcP	07	50	45
		eP'P'	08	18	28
				μ	s
		P	z'	0.7	1.0
		P'P'	z'	0.2	1.5
		M	E	16	17
		M	N	18	17
		M	z	24	18
	Ki	iP	07	49	27C
		iP'P'	08	18	51
				μ	s
		P	z'	0.3	1.0
		M	E	20	17
		M	N	12	16
		M	z	31	18
	Sk	iP	07	50	00

Aleutian Islands.
Magn. = 6.5 (Up, Ki).

» 12	Up	i(P)	07	55	43

» 12	Up	iP	08	14	16
				μ	s
		P	z'	0.9	1.5
	Ki	iP	08	13	24
				μ	s
		P	z'	0.1	1.2
	Sk	iP	08	13	57

Aleutian Islands.

» 12	Up	iP	08	40	30
				μ	s
		P	z'	0.1	1.0

» 12	Up	eP	08	51	59
	Ki	iP	08	51	06C
	Sk	iP	08	51	36

Aleutian Islands.

» 12	Up	eP	08	57	49
	Ki	iP	08	56	56

Aleutian Islands.

» 12	Up	iP	09	17	00
		i	09	17	11

» 12	Up	iP	09	32	30

Column 3

1957

Mar 12	Ki	iP	09	31	39
(cont.)					
» 12	Up	iP	10	15	52

» 12	Up	iP	10	49	35
				μ	s
		P	z'	0.2	1.0
	Ki	iP	10	48	42
				μ	s
		P	z'	0.1	1.0
	Sk	eP	10	49	12

Aleutian Islands.

» 12	Up	iP	11	11	51

» 12	Up	iP	11	55	53C
		i	11	56	04
		iS	12	04	57
		iP'P'	12	24	11
				μ	s
		P	z	2.6	1.5
		P	z'	2.2	1.1
		S	E	4.2	5
		S	N	3.0	4
		P'P'	z'	1.8	1.6
		M	E	120	19
		M	N	100	19
		M	z	120	22
		$\triangle = 7550$ km $= 68°$.			
	Ki	eP	11	55	00
		i	11	55	10
		iPcP	11	55	5
		i(PP)	11	57	30
		iPcS	11	59	54
		iS	12	03	14
		iScS	12	05	00
		iP'P'	12	24	30
				μ	s
		P	z'	1.3	1.4
		S	E	9.0	7
		S	N	4.9	8
		P'P'	z'	2.3	3.0
		M	E	95	20
		M	N	65	16
		$\triangle = 6650$ km $= 60°$.			
	Sk	eP	11	55	33
		i	11	55	43
		iP'P'	12	24	13

Aleutian Islands.
Magn. = 7.2 (Up, Ki).
The first P-waves are of small amplitudes, followed 9—10 sec later by waves of large amplitudes, given above.

» 12	Up	iP	12	14	05C
		i	12	14	24
				μ	s
		P	z'	0.2	1.2
	Ki	iP	12	13	13

Column 4

1957

Mar 12				μ	s
(cont.)		P	z'	0.1	1.1

Aleutian Islands.

» 12	Up	iP	12	21	07

» 12	Up	iP	12	27	19

» 12	Up	iP	12	38	09
				μ	s
		P	z'	0.1	1.0
	Ki	iP	12	37	15

» 12	Up	iP	12	57	10
				μ	s
		P	z'	0.2	1.3
	Ki	eP	12	56	15
				μ	s
		P	z'	0.1	1.0
	Sk	iP	12	56	46

Aleutian Islands.

» 12	Sk	i(P)	13	01	27C

» 12	Up	iP	13	36	42
	Ki	eP	13	35	59

» 12	Up	iP	14	43	16
	Ki	eP	14	42	26
		iPcP	14	43	16
	Sk	eP	14	43	01

Aleutian Islands.

» 12	Up	iP	14	47	03C
				μ	s
		P	z'	0.1	1.0
	Ki	iP	14	46	10
	Sk	eP	14	46	42

Aleutian Islands.

» 12	Up	iP	14	53	20

» 12	Up	iP	15	17	10

» 12	Up	eP	15	29	54
	Ki	eP	15	29	02
	Sk	eP	15	29	35

Aleutian Islands.

» 12	Up	iP	15	31	32C
				μ	s
		P	z'	0.1	1.0

» 12	Up	iP	15	41	25
		ipP	15	41	38
				μ	s
		P	z'	0.1	1.0
	Ki	eP	15	40	32
		i	15	40	45
	Sk	eP	15	41	04

Aleutian Islands.

Column 1

1957
Day	Station	Phase	h	m	s	note
Mar 12	Up	iP	15	46	08	C
	Ki	iP	15	45	14	
	Sk	eP	15	45	46	

Aleutian Islands.

| » 12 | Up | iP | 15 | 51 | 52 | |
| | Ki | iP | 15 | 50 | 58 | |

μ s
P z' 0.1 1.3

| | Sk | iP | 15 | 51 | 29 | |

Aleutian Islands.

| » 12 | Up | iP | 15 | 55 | 17 | |

μ s
P z' 0.1 1.0

Aleutian Islands.

» 12	Up	eP	16	13	58	
	Ki	iP	16	13	06	
	Sk	iP	16	13	37	

Aleutian Islands.

| » 12 | Sk | eP | 16 | 24 | 06 | |

Italy.

» 12	Up	eP	16	43	31	
	Ki	eP	16	44	45	
	Sk	eP	16	44	11	

| » 12 | Up | iPKP | 16 | 51 | 15 | D |
| | Ki | iPKP | 16 | 51 | 02 | |

μ s
PKP z' 0.1 1.0

| | Sk | iPKP | 16 | 51 | 12 | |

New Hebrides Islands.

| » 12 | Up | iP | 16 | 54 | 28 | |

| » 12 | Up | eP | 16 | 59 | 57 | |
| | Ki | eP | 16 | 59 | 10 | |

Aleutian Islands.

| » 12 | Up | iP | 17 | 11 | 26 | C |

μ s
P z' 0.2 1.0

| | Ki | iP | 17 | 10 | 33 | C |
| | | iP'P' | 17 | 39 | 49 | |

μ s
P z' 0.1 1.0

| | Sk | iP | 17 | 11 | 04 | |

Aleutian Islands.

» 12	Up	iPKP	17	39	54	
	Ki	iPKP	17	39	49	
		iSKP	17	42	18	

Fiji Islands (h ~ 700 km).

| » 12 | Up | iP | 18 | 31 | 58 | |

| » 12 | Up | iP | 18 | 36 | 24 | |
| | Ki | eP | 18 | 35 | 31 | |

Aleutian Islands.

Column 2

1957
Day	Station	Phase	h	m	s	note
Mar 12	Ki	eP	19	04	07	

| » 12 | Ki | iP | 19 | 26 | 03 | |

| » 12 | Up | ePKP | 19 | 29 | 42 | |
| | | iSKP | 19 | 32 | 51 | |

μ s
SKP z' 0.1 1.0

	Ki	iPKP	19	29	37	
	Sk	iPKP	19	29	48	
		iSKP	19	32	40	

Fiji Islands region (h ~ 400 km).

» 12	Up	iP	20	04	00	
	Ki	iP	20	03	05	C
	Sk	iP	20	03	35	

Aleutian Islands.

| » 12 | Up | iP | 20 | 11 | 25 | |

μ s
P z' 0.1 1.0

| | Ki | iP | 20 | 10 | 31 | |

μ s
P z' 0.1 0.9

| | Sk | iP | 20 | 11 | 01 | |

Near Unimak Island,
Aleutian Islands.

» 12	Up	iP	20	18	26	
	Ki	iP	20	17	33	
	Sk	iP	20	18	05	

Unimak Island.

» 12	Up	eP	20	50	40	
	Ki	iP	20	49	48	
	Sk	eP	20	50	16	

Aleutian Islands.

| » 12 | Up | iP | 21 | 18 | 20 | |
| | Ki | iP | 21 | 17 | 26 | |

| » 12 | Up | iP | 21 | 24 | 16 | |

| » 12 | Up | iP | 21 | 30 | 23 | |

μ s
P z' 0.1 1.0

| | Ki | iP | 21 | 29 | 30 | D |

μ s
P z' 0.1 0.9

| | Sk | iP | 21 | 30 | 00 | |

Aleutian Islands.

| » 12 | Ki | iP | 21 | 36 | 32 | |

Ecuador (h ~ 150 km).

| » 12 | Up | iP | 22 | 02 | 52 | |

» 12	Up	iP	22	38	23	
		i	22	39	29	
	Ki	eP	22	37	31	

Aleutian Islands.

Column 3

1957
Day	Station	Phase	h	m	s	note
Mar 12	Up	iP	23	21	13	
		i	23	21	22	

| » 12 | Up | iP | 23 | 22 | 40 | |
| | Ki | eP | 23 | 21 | 50 | |

| » 12 | Up | iP | 23 | 56 | 29 | |
| | | eP'P' | 00 | 24 | 49 | |

μ s
P z' 0.3 1.5
P'P' z' 0.1 1.3
M N 2.0 22

| | Ki | iP | 23 | 55 | 35 | C |

μ s
P z' 0.1 1.0
M E 2.0 17

| | Sk | iP | 23 | 56 | 07 | |

Aleutian Islands.

| » 13 | Up | e(P) | 01 | 08 | 18 | |

| » 13 | Up | eP | 02 | 02 | 42 | |
| | Ki | iP | 02 | 02 | 01 | |

» 13	Up	iP	02	59	25	
		eP'P'	03	27	30	
		i	03	27	39	

μ s
P z 0.4 1.5
P z' 0.3 1.2
P'P' z' 0.1 1.3
M E 3.7 20
M N 7.6 23
M z 9.0 23

| | Ki | iP | 02 | 58 | 31 | |
| | | iPcP | 02 | 59 | 17 | |

μ s
P z' 0.2 1.2
M E 3.1 17
M N 3.1 19
M z 7.2 20

| | Sk | iP | 02 | 59 | 03 | |

Aleutian Islands.
Magn. = 6.1 (Up, Ki).

| » 13 | Up | iP | 03 | 18 | 18 | |
| | Ki | iP | 03 | 17 | 25 | |

μ s
P z' 0.1 1.2

| | Sk | iP | 03 | 17 | 56 | |

Aleutian Islands.

| » 13 | Sk | iP | 03 | 18 | 43 | |

| » 13 | Up | iP | 03 | 44 | 01 | |
| | | eP'P' | 04 | 12 | 19 | |

μ s
P z' 0.4 1.0

| | Ki | iP | 03 | 43 | 08 | |

Column 4

1957
Mar 13 (cont.)

P z' 0.2 1.0

| | Sk | iP | 03 | 43 | 40 | |

Aleutian Islands.

| » 13 | Up | iP | 03 | 48 | 30 | |

| » 13 | Up | eP | 03 | 57 | 58 | |
| | Ki | iP | 03 | 57 | 17 | |

| » 13 | Up | iP | 04 | 26 | 23 | |
| | Ki | iP | 04 | 25 | 31 | |

| » 13 | Up | iP | 04 | 49 | 46 | |

| » 13 | Up | i(P) | 05 | 04 | 12 | |

| » 13 | Up | iP | 07 | 08 | 34 | C |
| | | i | 07 | 08 | 45 | |

μ s
P z' 0.1 1.0

| | Ki | iP | 07 | 07 | 41 | |

| » 13 | Ki | iP | 07 | 10 | 36 | |

| » 13 | Up | iP | 07 | 32 | 54 | |

μ s
P z' 0.1 1.0

| | Ki | iP | 07 | 32 | 01 | |
| | Sk | eP | 07 | 32 | 34 | |

Aleutian Islands.

| » 13 | Up | iP | 09 | 01 | 17 | |

| » 13 | Up | iP | 09 | 20 | 36 | |
| | | iPcP | 09 | 21 | 02 | |

μ s
P z' 0.2 1.2
M E 2.3 22
M N 2.4 22
M z 3.1 22

| | Ki | iP | 09 | 19 | 42 | C |
| | | iPcP | 09 | 20 | 29 | |

μ s
P z' 0.2 0.7
M E 1.7 20
M N 1.3 20

| | Sk | iP | 09 | 20 | 13 | |
| | | iPcP | 09 | 20 | 48 | |

Aleutian Islands.

» 13	Up	iPKP	09	30	53	
		i	09	31	10	
		i	09	32	20	
	Ki	iPKP	09	30	38	D

μ s
PKP z' 0.3 0.8

| | Sk | iPKP | 09 | 30 | 51 | C |

North Island, New Zealand.
(h ~ 270 km).

| » 13 | Ki | iP | 10 | 10 | 13 | |

```
1957
Mar 13 √Up   iP           10  35  05
  »  13 √Up   iP           10  39  50 C
                           μ    s
             P      z'    0.1  1.0
       √Ki   iP           10  38  56 D

  »  13 √Up   eP           11  25  28
       √Ki   iP           11  24  33
             iPcP         11  25  21
       √Sk   eP           11  25  04
       Aleutian Islands.

  »  13 √Up   eP           11  25  29
       (Northern Greece).

  »  13 √Up   iP           11  27  45 C
             i(PcP)       11  28  09

  »  13 √Up   iP           11  32  23 C
                           μ    s
             P      z'    0.1  1.0
       √Ki   eP           11  31  29
       Aleutian Islands.

  »  13 √Up   iP           11  48  55 C
             i            11  49  07
                           μ    s
             P      z'    0.2  1.3
       √Ki   iP           11  48  05
       Aleutian Islands.

  »  13 √Up   iP           12  09  02
       √Ki   iP           12  08  09
       √Sk   iP           12  08  40
       Aleutian Islands.

  »  13 √Up   i(P)         12  28  51

  »  13 √Up   iP           12  53  41
                           μ    s
             P      z'    0.1  1.0
       √Ki   iP           12  52  47
             iPcP         12  53  32
       Aleutian Islands.

  »  13 √Up   iP           13  06  09

  »  13  Up   iP           13  11  26
                           μ    s
             P      z'    0.1  1.0
       √Ki   iP           13  10  32 D
                           μ    s
             P      z'    0.1  1.0
       Aleutian Islands.

  »  13 √Up   iP           13  13  07

  »  13 √Up   eP           15  00  35
       Aleutian Islands.
```

```
1957
Mar 13 √Up   iP           15  14  04
                           μ    s
             P      z'    0.2  1.5
       √Ki   iP           15  13  11
       Aleutian Islands.

  »  13 √Up   iP           15  53  09 D
             i            15  53  47
             iPP          15  55  44
             iS           16  02  05
             iP'P'        16  21  18
                           μ    s
             P      z     0.7  1.0
             P      z'    0.8  1.0
             S      E     2.1  4
             S      N     2.4  6
             P'P'   z'    0.7  1.5
             M      E     24   20
             M      N     21   18
             M      z     25   18
       △=7550 km=68°.
       √Ki   iP           15  52  16 D
             iPcP         15  53  07
             iPP          15  54  38?
             iS           16  00  27
             iSS          16  04  37
             iP'P'        16  21  33
                           μ    s
             P      z'    0.6  1.0
             PP     z     2.4  5
             S      E     2.0  7
             S      N     4.0  11
             P'P'   z'    1.1  2.5
             M      E     24   18
             M      N     17   17
             M      z     26   17
       △=6700 km=60½°.
       Aleutian Islands.
       Magn.=6.9 (Up, Ki).

  »  13 √Ki   iP           17  01  13

  »  13 √Up   iP           17  54  50 C
                           μ    s
             P      z'    0.1  1.0
             M      N     2.0  22
             M      z     1.6  21
       √Ki   iP           17  53  57
       Aleutian Islands.

  »  13 √Up   iP           19  07  31
       √Ki   iP           19  06  38
       Aleutian Islands.

  »  13 √Up   eP           19  10  50
       √Ki   iP           19  09  57
                           μ    s
             P      z'    0.1  1.0

  »  13 √Up   iP           19  46  51
```

```
1957
Mar 13 √Ki   iP           19  45  59
(cont.)
  »  13 √Up   iP           20  10  16
                           μ    s
             M      E     2.2  17
             M      N     5.3  23
             M      z     7.8  22
       √Ki   iP           20  09  23 C
             i(PcS)       20  13  54
             iS           20  17  31
                           μ    s
             P      z'    0.5  0.8
             M      E     5.3  18
             M      N     2.3  16
             M      z     6.0  19
       △=6550 km=59°.
       Aleutian Islands.
       Magn.=6.2 (Up, Ki).

  »  13 √Up   iP           22  19  19
       √Ki   iP           22  18  26

  »  13 √Up   iP           22  56  31 C
                           μ    s
             P      z'    0.1  1.0

  »  14 √Up   iP           00  20  12
       West coast of the Red Sea.

  »  14 √Up   iP           00  26  00

  »  14 √Up   eP           00  38  39
                           μ    s
             P      z'    0.1  1.1
       √Ki   iP           00  37  45
                           μ    s
             P      z'    0.1  0.8
       Aleutian Islands.

  »  14 √Up   iP           00  41  36 C

  »  14  Up   iP           00  46  42 D
                           μ    s
             P      z'    0.1  1.0
       Aleutian Islands.

  »  14 √Up   eP           01  17  50
             iPcP         01  18  16
       √Ki   iP           01  16  57
       Aleutian Islands.

  »  14 √Up   iP           02  03  19
                           μ    s
             P      z'    0.4  1.5
             M      E     0.9  18
             M      N     1.6  18
             M      z     1.9  18
       √Ki   iP           02  02  25
                           μ    s
             P      z'    0.2  1.1
             M      E     1.5  18
```

```
1957
Mar 14       M      N     0.8  17
(cont.)      M      z     1.0  15
       Aleutian Islands.
       Magn.=5.7 (Up, Ki).

  »  14 √Up   iP           02  20  22

  »  14  Up   iP           02  57  52 D
             ipP          02  58  04
                           μ    s
             P      z'    0.2  1.0
       √Ki   iP           02  56  59
             ipP          02  57  11
                           μ    s
             P      z'    0.2  0.8
             pP     z'    0.3  1.0
             M      E     0.8  20
             M      N     0.6  16
             M      z     1.4  18
       Off south coast of
       Unimak Island.
       h=50 km (Up, Ki).

  »  14 √Up   iP           03  05  07

  »  14 √Up   iP           03  40  20 D
                           μ    s
             P      z'    0.1  1.0

  »  14 √Up   iP           04  11  02
                           μ    s
             P      z'    0.1  1.0

  »  14 √Ki   iP           06  13  31

  »  14 √Ki   iP           07  55  43

  »  14 √Ki   iP           08  05  24

  »  14 √Up   iP           10  13  05 D
                           μ    s
             P      z'    0.2  1.0
       √Ki   iP           10  13  11 D
       (Himalaya).

  »  14 √Ki   iP           10  44  37 C
                           μ    s
             P      z'    0.1  1.0
       Aleutian Islands.

  »  14 √Up   iP           12  40  30 C
                           μ    s
             P      z'    0.1  1.0
       √Ki   iP           12  39  37 C
       √Sk   iP           12  40  06
       Aleutian Islands.

  »  14 √Ki   iP           13  12  24

  »  14 √Ki   e(P)         14  14  51
```

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Column 1 (page 56)

1957				
Mar 14 Up	iP	14	58	49
	iPcP	14	59	15
	i	15	01	41
	iS	15	07	42
	i(SKS)	15	08	59
	iP'P'	15	27	01

		μ	s
P	z	1.6	1
P	z'	1.3	1.0
P'P'	z'	1.3	1.5
M	E	130	19
M	N	100	20
M	z	140	19

△ = 7550 km = 68°.

Ki	iP	14	57	55
	iPcP	14	58	45
	i	15	00	34
	iPcS	15	02	42
	iS	15	06	20
	iP'P'	15	27	23

		μ	s
P	z	4.5	7
P	z'	0.5	1.0
S	E	16	10
S	N	12	12
P'P'	z'	0.3	1.7
M	E	120	16
M	N	80	17
M	z	200	18

△ = 6700 km = 60½°.

Sk	iP	14	58	27
	iP'P'	15	27	09

Aleutian Islands.
Magn. = 7.1 (Up, Ki).

» 14 Up	iP	15	16	10

		μ	s
P	z'	0.3	1.0

Ki	iP	15	15	17
	iPcP	15	16	02
	i	15	16	11

		μ	s
P	z'	0.1	1.3

Sk	iP	15	15	50 D
	iPcP	15	16	22

Aleutian Islands.

» 14 Ki	iP	15	20	04

		μ	s
P	z'	0.1	1.2

» 14 Up	iP	15	33	22
	i	15	33	36

		μ	s
P	z'	0.1	1.0

» 14 Ki	iP	15	41	58

» 14 Up	iP	16	02	06

		μ	s
P	z'	0.3	0.9

Column 2 (page 56)

1957				
Mar 14 Ki	iP	16	01	13
(cont.)	i	16	01	24
	iPcP	16	01	58
Sk	iP	16	01	44

Aleutian Islands.

» 14 Ki	iP	16	07	34 D
» 14 Up	eP	16	12	45
Ki	iP	16	11	52

Aleutian Islands.

» 14 Ki	iP	17	01	51

» 14 Up	eP	17	17	25
Ki	eP	17	16	32

Aleutian Islands.

» 14 Up	iP	17	17	45
Ki	iP	17	16	46
	iPcP	17	17	32

Aleutian Islands.

» 14 Up	eP	18	00	43
Ki	iP	17	59	38
	i	17	59	48

		μ	s
P	z'	0.1	1.0

Unimak Island region.

» 14 Up	eP	18	38	32
Sk	e(P)	18	38	15

(Aleutian Islands.)

» 14 Ki	iP	20	17	13
» 14 Ki	iP	20	26	09
» 14 Ki	iP	21	01	41
» 14 Ki	i(P)	21	33	10

» 14 Ki	eP	22	28	31
	iPcP	22	29	15

Aleutian Islands.

» 14 Ki	iP	23	08	46

» 15 Up	iP	03	03	08 C
	eS	03	12	02

		μ	s
P	N	2.1	12
P	z	3.4	10
P	z'	0.7	1.3
S	E	3.8	18
M	E	13	18
M	N	19	19
M	z	20	19

△ = 7550 km = 68°.

Ki	iP	03	02	15 C
	iPa	03	06	07

Column 3 (page 57)

1957				
Mar 15	iS	03	10	28
(cont.)	iScS	03	12	08

		μ	s
P	N	1.4	10
P	z	3.4	10
P	z'	0.6	1.2
S	E	3.9	17
M	E	12	15
M	N	10	18
M	z	23	18

△ = 6650 km = 60°.

Sk	iP	03	02	45 C

Aleutian Islands.
Magn. = 6.5 (Up, Ki).

» 15 Up	iP	03	08	58

		μ	s
P	z'	0.4	1.7

Ki	iP	03	08	32

		μ	s
P	z'	0.2	2.0

» 15 Ki	iP	03	37	24
» 15 Ki	iP	03	46	07
» 15 Up	iP	04	24	02

		μ	s
P	z'	0.2	1.0

Ki	iP	04	23	08
	iPcP	04	23	52

		μ	s
P	z'	0.1	1.0

Sk	iP	04	23	40

Aleutian Islands.

» 15 Ki	iP	04	35	54
	i	04	36	07

Aleutian Islands.

» 15 Up	eP	05	19	02
Ki	iP	05	18	09
	iPcP	05	18	53

Aleutian Islands.

» 15 Up	iP	09	05	32
» 15 Ki	iP	09	26	53 C
» 15 Up	iP	09	39	43

		μ	s
P	z'	0.1	1.0

Ki	iP	09	38	49
Sk	eP	09	39	20

Aleutian Islands.

» 15 Ki	iP	09	45	21
» 15 Up	iP	12	08	38
	i(PcP)	12	08	57

Column 4 (page 57)

1957				
Mar 15			μ	s
(cont.)	P	z'	0.3	1.2
Ki	iP	12	07	45 D

			μ	s
P	z'		0.1	1.1

Aleutian Islands.

» 15 Ki	iP	12	46	55
» 15 Ki	iP	15	59	09
» 15 Ki	iP	16	40	13

Aleutian Islands.

» 15 Up	iP	16	48	59
Ki	iP	16	48	06
	i	16	48	15
Sk	iP	16	48	35
	iPcP	16	49	14

Aleutian Islands.

» 15 Up	iP	19	11	26

		μ	s
P	z'	0.1	1.3

Ki	eP	19	10	32

» 15 Up	iP	22	24	32

		μ	s
P	z'	0.1	1.2

Ki	eP	22	23	39

Aleutian Islands.

» 16 Up	iP	00	50	27 C
	i!	00	51	32
	iPcP	00	53	05
	i	00	57	23

		μ	s
P	z'	0.3	1.0
M	E	1.9	15
M	N	1.4	16
M	z	2.1	15

△ = 3800 km = 34°.

Ki	iP	00	51	01
	i!	00	52	21
	eS	00	57	02
	i	00	58	50
	eSS	00	59	33

		μ	s
P	z'	0.2	0.8
S	E	0.5	12
S	N	0.3	12
M	E	1.9	11
M	N	1.7	13
M	z	2.1	11

△ = 4250 km = 38½°.

Sk	iP	00	51	02

Iran.

» 16 Up	iP	02	22	00
Ki	iP	02	21	08

Aleutian Islands.

1957

Mar 16 Up iP   02 24 28

		μ	s
P	z'	0.1	1.0

Ki iP   02 23 36

		μ	s
P	z'	0.1	1.0

Sk eP   02 24 06
Aleutian Islands.

» 16 Up iP   02 45 14
i   02 45 18
iPP   02 47 55
iPcS   02 49 40
iS   02 54 13
iP'P'   03 13 27
i   03 13 45

		μ	s
P	N	16	18
P	z	43	22
P	z'	3.5	1.0
S	E	23	24
S	N	13	15
P'P'	z'	1.0	1.7
M	E	120	20
M	N	130	21
M	z	100	19

$\triangle$=7550 km=68°.
Ki iP   02 44 21 C
iPP   02 46 42
iS   02 52 34
eP'P'   03 13 45

		μ	s
P	E	3.9	18
P	N	9.5	16
P	z	25	16
P	z'	2.1	1.0
PP	N	8.0	16
S	E	13	16
S	N	11	15
S	z	19	14
P'P'	z'	0.8	2.5
M	E	120	16
M	N	92	19
M	z	130	16

$\triangle$=6650 km=60°.
Sk iP   02 44 52
eP'P'   03 13 36
Aleutian Islands.
Magn.=7.2 (Up, Ki).
The P and S wave groups
have remarkably long
periods.

» 16 Up iP   02 52 32
i   02 52 47

		μ	s
P	z'	0.4	1.0

Ki iP   02 51 39 C

		μ	s
P	z'	0.1	1.3

Sk iP   02 52 01
(Aleutian Islands).

1957

Mar 16 Up i(P)   02 53 24

		μ	s
(P)	z'	0.1	0.9

» 16 Up iP   02 58 03

		μ	s
P	z'	0.2	1.0

Ki iP   02 57 10
Aleutian Islands.

» 16 Up i(P)   02 59 48

		μ	s
(P)	z'	0.1	1.0

» 16 Ki iP   03 20 34

» 16 Up iP   03 36 05

» 16 Up iP   03 45 01
Ki iP   03 44 08
Sk eP   03 44 38
Aleutian Islands.

» 16 Up iP   03 45 31

		μ	s
P	z'	0.3	0.8

Ki iP   03 44 38
Sk iP   03 45 10
Aleutian Islands.

» 16 Up iP   03 47 39
Ki eP   03 46 43
Aleutian Islands.

» 16 Ki iP   05 31 49

		μ	s
P	z'	0.1	1.1

» 16 Up iP   07 23 22
Ki eP   07 22 28
Aleutian Islands.

» 16 Up iP   08 53 39
Ki iP   08 52 45
Sk eP   08 53 17
Aleutian Islands.

» 16 Up iP   09 41 39

		μ	s
P	z'	0.1	1.0

Ki iP   09 40 45
iPcP   09 41 30
Sk eP   09 41 17
Aleutian Islands.

» 16 Ki iP   11 11 39

		μ	s
P	z'	0.1	1.3

» 16 Up iP   12 30 01
i   12 30 09

1957

Mar 16 Ki iP   12 30 09
(cont.)

		μ	s
P	z'	0.1	1.0

Sk iP   12 30 25
Hindu Kush.

» 16 Ki iP   12 57 45
Near east coast of Cuba.

» 16 Up iP   14 21 56

		μ	s
P	z'	0.4	1.0

Ki iP   14 21 03 D

		μ	s
P	z'	0.1	1.2

Sk eP   14 21 34
Aleutian Islands.

» 16 Sk eP   15 01 37
Italy.

» 16 Ki eP   15 35 17
i   15 35 21

		μ	s
P	z'	0.1	1.2

» 16 Up iP   15 41 11 D
Ki eP   15 40 18
i(P)   15 41 03
Aleutian Islands.

» 16 Up iP   20 46 38 C

		μ	s
P	z'	0.2	1.0

Aleutian Islands.

» 16 Up iP   22 10 25
Ki eP   22 09 32
Aleutian Islands.

» 17 Up iP   00 07 02

		μ	s
M	N	1.8	20

Ki eP   00 06 34
Sk iP   00 07 03
Ryukyu Islands.

» 17 Up iP   01 58 04

		μ	s
P	z'	0.1	1.2

Ki eP   01 57 11
Aleutian Islands.

» 17 Up iP   02 59 45
ipP   02 59 57

		μ	s
P	z'	0.1	1.0
pP	z'	0.3	1.0

Ki iP   02 58 52
ipP   02 59 05

1957

Mar 17 (cont.)

		μ	s
pP	z'	0.1	1.0

Sk eP   02 59 35
Aleutian Islands.
h=50 km (Up, Ki).

» 17 Up iP   03 37 47
Honshu, Japan.

» 17 Up iP   07 15 41

		μ	s
P	z'	0.2	1.0

Ki iP   07 14 49

		μ	s
P	z'	0.3	0.8

Sk iP   07 15 18
Aleutian Islands.

» 17 Up iP   08 04 54
e(PS)   08 14 17

		μ	s
P	z	1.9	5
P	z'	0.9	1.0
M	E	3.5	19
M	N	4.2	16
M	z	3.5	17

Ki iP   08 04 02
eS   08 12 12
i   08 20 34

		μ	s
P	z	0.7	7
P	z'	0.2	1.5
S	E	1.0	8
S	N	0.7	9
M	E	3.1	18
M	N	3.6	19
M	z	6.0	18

$\triangle$=6650 km=60°.
Sk iP   08 04 34
Aleutian Islands.
Magn.=6.1 (Up, Ki).

» 17 Up eP   08 23 51

» 17 Up eP   08 52 29

» 17 Up iP   09 16 19

» 17 Up iP   10 01 29

		μ	s
P	z'	0.2	1.0

Ki eP   10 00 35
Sk eP   10 01 12
Aleutian Islands.

» 17 Up iP   11 41 28
Ki iP   11 40 35
Sk i   11 41 40
Aleutian Islands.

» 17 Up eP   12 01 07

1957

Mar 17	Up	iP	13	49	09
» 17	Up	iP	15	22	41
	Ki	iP	15	21	47

		μ	s
M	E	0.9	15
M	N	0.9	18
M	z	1.4	18

Sk	eP	15	22	20

Aleutian Islands.

» 17	Up	iP	16	28	17 D
		i	16	28	22
		ipP	16	28	29
		iS	16	37	16

		μ	s
P	z	0.6	3
P	z'	0.8	1.5
S	N	1.1	6

△=7600 km=68½°.

Ki	iP	16	27	24
	ipP	16	27	36
	iS	16	35	38

		μ	s
P	N	0.7	7
P	z	1.2	8
P	z'	0.5	1.5
S	E	1.2	5
S	N	1.1	8
M	E	1.2	15
M	N	0.9	16
M	z	1.4	15

△=6700 km=60½°.

Sk	iP	16	27	54
	ipP	16	28	06

Aleutian Islands.
h=50 km (Up, Ki, Sk).
Magn.=6.4 (Up, Ki).

» 17	Up	iP	16	39	56
	Ki	iP	16	38	58

» 17	Up	iP	16	56	29
	Ki	iP	16	55	37 C

		μ	s
P	z'	0.1	1.0

Sk	eP	16	56	09

Aleutian Islands.

17	Up	iP	17	10	12
	Ki	iP	17	09	19

Aleutian Islands.

» 17	Up	iP	17	46	34

» 17	Up	iP	18	40	16
	Ki	iP	18	39	23 C

		μ	s
P	z'	0.1	1.0

Sk	iP	18	39	53

Aleutian Islands.

1957

Mar 17	Up	iP	18	44	18
		i	18	44	58
	Ki	iP	18	43	26
	Sk	eP	18	43	54

Aleutian Islands.

» 17	Up	iP	22	55	38 C
		eS	23	04	25
		ePS	23	04	46
		i!	23	05	07

		μ	s
P	N	1.1	4
P	z	1.7	4
P	z'	1.1	1.0
M	E	12	21
M	N	23	23
M	z	23	22

△=7400 km=66½°.

Ki	iP	22	54	43 C
	iS	23	02	45
	e	23	03	16

		μ	s
P	N	1.1	7
P	z	2.6	9
P	z'	1.6	1.0
S	E	1.7	8
S	N	2.2	9
M	E	14	17
M	N	9.5	17
M	z	18	17

△=6500 km=58½°.

Sk	iP	22	55	13 C

Aleutian Islands.
Magn.=6.6 (Up, Ki).

» 17	Up	iP	23	45	55
	Ki	iP	23	45	01

Aleutian Islands.

» 18	Up	iP	00	23	15
		i	00	23	18
		i	00	24	16

		μ	s
P	z'	0.4	1.3

Ki	iP	00	22	23
Sk	eP	00	22	50

Aleutian Islands.

» 18	Up	iP	02	05	49

» 18	Up	iP	02	35	40
	Ki	eP	02	34	45

Aleutian Islands.

» 18	Up	iP	02	36	28

		μ	s
P	z'	0.6	1.6
M	E	2.9	22
M	N	6.3	23
M	z	6.4	24

Ki	iP	02	35	34

1957

Mar 18 (cont.)

	ipP	02	35	47
	iS	02	43	43
	iScS	02	45	16

		μ	s
P	z	0.6	6
P	z'	0.3	1.2
S	N	0.5	6
M	E	2.4	19
M	N	2.1	17
M	z	4.3	19

△=6650 km=60°.

Sk	iP	02	36	05
	iPcP	02	36	40

Aleutian Islands. h=50 km (Ki).
Magn.=6.2 (Up, Ki).

» 18	Up	iP	05	19	36
		ipP	05	19	45

		μ	s
pP	z'	0.4	0.9
M	E	1.5	19
M	N	2.4	18
M	z	1.9	18

Ki	eP	05	18	43
	ipP	05	18	53

		μ	s
pP	z'	0.1	1.0
M	E	2.1	19
M	N	1.6	18
M	z	3.9	17

Sk	eP	05	19	13
	epP	05	19	22

Aleutian Islands.
h=40 km (Up, Ki, Sk).

» 18	Ki	eP	08	00	52

Aleutian Islands.

» 18	Ki	iP	11	12	47

» 18	Ki	iP	14	35	43

» 18	Ki	eP	15	43	48

» 18	Up	iP	15	47	16
	Ki	eP	15	46	23
	Sk	eP	15	46	55

Aleutian Islands.

» 18	Ki	eP	16	51	02

» 18	Ki	iP	18	41	54

		μ	s
P	z'	0.1	1.0

» 18	Ki	iSKP	19	51	25

		μ	s
SKP	z'	0.2	1.4

Fiji Islands (h ~ 450 km).

» 18	Up	iP	20	14	50 D

1957

Mar 18 (cont.)

		μ	s
P	z'	0.2	1.0

Ki	iP	20	13	57

Aleutian Islands.

» 18	Up	ePP	21	34	08

		μ	s
PP	z	0.7	6
M	E	1.8	22
M	N	2.2	24
M	z	2.2	21

Ki	iP	21	28	50
	ePP	21	33	27
	eSKS	21	39	35
	e	21	42	51

		μ	s
PP	z	0.7	9
SKS	E	0.7	13
M	E	2.3	22
M	N	1.4	22
M	z	3.8	22

△ ~ 12200 km ~ 110°.

Sk	iPKP	21	33	01

New Britain.

» 18	Up	iP	23	21	35
		i	23	21	44
		iS	23	24	45
		i(Lgl)	23	26	57
		iRg	23	28	26

		μ	s
P	z	0.7	3
P	z'	0.5	1.0
S	E	1.0	1.0
S	N	1.3	2
S	z'	0.6	0.8
M	E	2.5	8
M	N	3.8	10
M	z	4.6	9

△ ~ 2000 km ~ 18°.

Ki	iP	23	22	46 C
	eS	23	27	12
	i	23	28	23
	i(Lgl)	23	29	52
	i	23	30	02

		μ	s
P	N	0.5	6
P	z	0.4	7
P	z'	0.3	1.0
S	E	0.7	8
S	N	1.0	13
M	E	3.8	9
M	N	3.7	11
M	z	5.9	11

△ ~ 2650 km ~ 24°.

Sk	iP	23	22	28
	iS	23	26	37
	e(Lgl)	23	29	18

△ ~ 2450 km ~ 22°.

Near coast of the Crimean Peninsula.

Column 1

1957
Mar 18 Magn.=5.7 (Up, Ki).
(cont.) The channel wave (Lgl) is
extremely clear.

» 19	Ki	eP	00	52	12
» 19	Up	iP	02	12	58
	Ki	iP	02	12	13
» 19	Up	iP	03	50	37

		μ	s
P	z'	0.2	1.0
M	N	1.3	23
M	z	1.9	22

Ki	iP	03	49	44
	ipP	03	49	57

		μ	s
P	z'	0.1	1.0

Sk	iP	03	50	15

Aleutian Islands.
h=50 km (Ki).

» 19	Up	iP	08	23	46

		μ	s
P	z'	0.1	1.0

Ki	iP	08	22	53

		μ	s
P	z'	0.1	1.0

Sk	iP	08	23	23

Aleutian Islands.

» 19	Up	iP	08	25	10

		μ	s
P	z'	0.3	1.5

Ki	iP	08	24	17

		μ	s
P	z'	0.2	1.5
M	E	0.7	15
M	N	0.8	19
M	z	1.9	18

Sk	iP	08	24	47

Aleutian Islands.

» 19	Up	iP	11	39	55

		μ	s
P	z'	0.3	1.0
M	E	2.4	18
M	N	2.9	20
M	z	2.5	18

Ki	eP	11	39	02
Sk	iP	11	39	36
	iPcP	11	40	07

Aleutian Islands.

» 19	Up	iP	13	01	55C
		eS	13	10	56
		eP'P'	13	30	08

		μ	s
P	N	1.2	5
P	z	2.1	5
P	z'	0.5	1.0

Column 2

1957
Mar 19
(cont.)

S	N	7.4	14
S	z	10	24
M	E	23	19
M	N	49	22
M	z	56	23

△=7650 km=69°.

Ki	iP	13	01	03
	ePcP	13	01	48
	ePa	13	05	08
	iS	13	09	19
	eP'P'	13	30	29

		μ	s
P	N	1.9	16
P	z'	0.2	1.2
S	E	5.3	16
S	N	4.1	10
P'P'	z	2.2	6
M	E	37	18
M	N	23	20
M	z	24	17

△=6800 km=61°.

Sk	iP	13	01	34
	i	13	01	40
	eP'P'	13	30	14

Aleutian Islands.
Magn.=6.6 (Up, Ki).

» 19	Up	iP	13	06	48

		μ	s
P	z'	0.1	1.0

Ki	eP	13	05	54

		μ	s
P	z'	0.2	1.5

Aleutian Islands.

» 19	Up	iP	15	26	35
	Ki	iP	15	25	43

Aleutian Islands.

» 19	Up	iP	15	58	30C

		μ	s
P	z'	0.2	1.2

Ki	iP	15	57	36C

		μ	s
P	z'	0.1	1.0

Sk	iP	15	58	07C

Aleutian Islands.

» 19	Up	iP	17	15	27

		μ	s
P	z'	0.2	1.3
M	N	1.2	17
M	z	1.6	18

Ki	iP	17	14	34

		μ	s
P	z'	0.2	1.1

Sk	iP	17	15	05

Aleutian Islands.

» 19	Up	eP	17	56	42
	Ki	iP	17	55	49

Column 3

1957
Mar 19
(cont.)

		μ	s
P	z'	0.1	1.0

Sk	eP	17	56	19

Aleutian Islands.

» 19	Up	iP	19	19	47
	Ki	iP	19	18	54

Aleutian Islands.

» 19	Up	iP	20	35	46
	Ki	eP	20	34	51
	Sk	eP	20	35	20

Aleutian Islands.

» 19	Up	iP	23	35	25

		μ	s
P	z'	0.2	0.9

Ki	iP	23	34	32
Sk	eP	23	35	04

Aleutian Islands.

» 20	Up	iP	00	11	55
	Ki	eP	00	11	01
	Sk	iP	00	11	33 D

Aleutian Islands.

» 20	Up	eP	00	28	53
» 20	Up	iP	00	30	06

		μ	s
P	z'	0.1	1.0

Ki	iP	00	29	14

Aleutian Islands.

» 20	Up	iP	00	33	24C

		μ	s
P	z'	0.4	1.1
M	N	1.7	16
M	z	1.8	17

Ki	iP	00	32	31C

		μ	s
P	z'	0.4	1.0
M	E	1.7	19
M	N	0.7	18
M	z	0.7	15

Sk	iP	00	33	01C
	i	00	33	09

Aleutian Islands.

» 20	Up	iP	00	37	26
	Ki	iP	00	37	17
» 20	Up	iP	00	49	46
	Ki	iP	00	48	54

Aleutian Islands.

» 20	Up	iP	00	53	51
	Ki	iP	00	52	58C

		μ	s
P	z'	0.1	0.9

Sk	iP	00	53	27

Aleutian Islands.

Column 4

1957

Mar 20	Up	iP	01	33	38
» 20	Up	iP	02	54	12
		i(pP)	02	54	20

		μ	s
P	z'	0.1	1.2

Ki	iP	02	53	19

		μ	s
P	z'	0.1	1.2

Aleutian Islands.

» 20	Up	iP	03	19	20
	Ki	iP	03	18	27

Aleutian Islands.

» 20	Up	iP	03	36	05

		μ	s
P	z'	0.1	1.0
M	N	1.1	18

Ki	iP	03	35	12
	iPcP	03	35	56

		μ	s
P	z'	0.1	1.2
M	E	0.8	16
M	N	0.5	15
M	z	1.0	16

Aleutian Islands.

» 20	Up	iP	04	57	27
	Ki	eP	04	56	35

Aleutian Islands.

» 20	Up	eP	05	35	57
	Ki	iP	05	35	07

Aleutian Islands.

» 20	Up	iP	06	03	29
	Ki	iP	06	02	37

Aleutian Islands.

» 20	Up	iP	06	23	33
	Ki	eP	06	23	13

Near north coast of Mindanao.

» 20	Up	iP	07	34	00
» 20	Up	iP	11	12	48

		μ	s
P	z'	0.2	1.0

Ki	iP	11	11	54
	eS	11	20	10

		μ	s
P	z'	0.1	1.0
S	E	0.5	10
M	E	0.7	15
M	N	0.5	16
M	z	0.8	15

△=6700 km=60½°.

Sk	iP	11	12	24

Aleutian Islands.

Column 1

```
1957
Mar 20  Up   iP                  19   02   22
                                      μ    s
             P      z'            0.2  1.3
        Ki   iP                  19   01   27
        Sk   eP                  19   02   00
        Aleutian Islands.

»  20   Up   iP                  20   39   12
        Ki   eP                  20   38   18
        Aleutian Islands.

»  21   Up   iP                  04   40   04 D
                                      μ    s
             P      z'            0.2  1.2
        Ki   iP                  04   39   12
        Aleutian Islands.

»  21   Up   iP                  06   39   24
        Ki   iP                  06   38   31
        Aleutian Islands.

»  21   Up   iP                  08   43   12 C
                                      μ    s
             P      z'            0.2  1.0
        Ki   iP                  08   42   20 C
                                      μ    s
             P      z'            0.1  1.0
        Sk   eP                  08   42   52
        Aleutian Islands.

»  21   Up   eS                  09   08   18
                                      μ    s
             S      E            1.5   10
             M      E            2.5   23
             M      N            1.8   20
             M      Z            2.3   22
        Ki   iP                  08   57   27
             iS                  09   08   02
                                      μ    s
             P      z'            0.3  1.8
             S      E            1.2   11
             M      E            2.9   21
             M      N            1.3   19
             M      Z            4.7   21
             △ = 9600 km = 86½°.
        Sk   iP                  08   57   18
             i                   08   57   33
        Near coast of Chiapas, Mexico.
        Magn. = 6.1 (Up, Ki).
        It is a remarkable fact that P is
        absent from the Uppsala records,
        whereas very clear and strong P
        phases were recorded at Kiruna
        and Skalstugan.

»  21   Up   eP                  12   19   58
»  21   Up   iP                  12   42   35
                                      μ    s
             P      z'            0.5  1.2
        Ki   iP                  12   41   42 C
```

Column 2

```
1957
Mar 21
(cont.)      P      z'           μ    s
                                 0.4  1.0
        Sk   iP                  12   42   13
        Aleutian Islands.

»  21   Up   eP                  14   23   12
             ipP                 14   23   24
        Ki   eP                  14   22   19
        (Aleutian Islands).

»  21   Up   eP                  15   57   22
        Aleutian Islands.

»  21   Up   iP                  16   40   49 C
»  21   Up   eL                  17   19
                                      μ    s
             M      E            3.2   20
             M      N            3.6   20
             M      Z            4.9   20
        Ki   eL                  17   19
                                      μ    s
             M      E            3.0   20
             M      N            2.5   20
             M      Z            4.8   20
        Near north coast of New Guinea.
        Magn. = 6.3 (Up, Ki).

»  21   Up   iP                  17   50   16
                                      μ    s
             P      z'            0.2  1.0
             M      E            2.0   19
             M      N            2.2   18
             M      Z            4.1   17
        Ki   eP                  17   49   26
                                      μ    s
             M      E            1.5   16
             M      N            1.9   16
             M      Z            3.0   17
        Aleutian Islands.

»  21   Up   eP                  19   32   34
        Ionian Islands region.

»  21   Ki   iP                  20   25   19

»  21   Up   iP                  21   33   39
        Ki   iP                  21   32   47
        Aleutian Islands.

»  21   Up   iP                  23   41   53
        Ki   iP                  23   41   01
        Aleutian Islands.

»  22   Ki   iP                  00   00   55

»  22   Up   iP                  00   45   45
                                      μ    s
             P      z'            0.1  1.0
        Ki   eP                  00   44   52
        Aleutian Islands.
```

Column 3

```
1957
Mar 22  Up   iP                  09   47   29
        Ki   eP                  09   46   35
        Aleutian Islands.

»  22   Ki   eP                  11   43   15
             i                   11   43   26

»  22   Ki   iP                  13   25   30

»  22   Up   iP                  14   31   57
             i                   14   32   01
             iPP                 14   34   24
             iPa                 14   36   12
             iPcS                14   36   31
             iS                  14   40   45
             i                   14   41   32
             iScS                14   41   51
                                      μ    s
             P      N            18    22
             P      Z            35    22
             P      z'           1.2   1.0
             PP     z            2.7   6
             S      E            18    20
             S      N            13    16
             S      Z            14    20
             M      E            77    20
             M      N            120   23
             M      Z            140   23
             △ = 7400 km = 66½°.
        Ki   iP                  14   31   04
             i                   14   31   06
             iPa                 14   34   44
             iS                  14   39   06
             eP'P'               15   00   46
                                      μ    s
             P      N            9.1   16
             P      Z            17    14
             P      z'           1.4   1.0
             S      E            15    14
             S      N            11    11
             S      Z            9.3   13
             P'P'   z'           0.3   1.7
             M      E            76    18
             M      N            49    18
             M      Z            110   17
             △ = 6500 km = 58½°.
        Sk   iP                  14   31   35
        Aleutian Islands.
        Magn. = 7.1 (Up, Ki).

»  22   Up   iP                  14   44   04
             iPcP                14   44   29
                                      μ    s
             P      z'           0.3   1.0
        Ki   iP                  14   43   11 D
                                      μ    s
             P      z'           0.3   1.0
        Sk   iP                  14   43   41
        Aleutian Islands.

»  22   Up   iP                  15   08   10
```

Column 4

```
1957
Mar 22
(cont.)      P      z'           μ    s
                                 0.1  1.0
»  22   Up   iP                  17   20   51
                                      μ    s
             P      z'           0.4   1.5
        Ki   iP                  17   19   58
                                      μ    s
             P      z'           0.3   1.5
        Sk   iP                  17   20   29 D
        Aleutian Islands.

»  22   Up   iP                  19   53   51
                                      μ    s
             P      z'           0.2   1.5
        Ki   iP                  19   52   59
        Sk   eP                  19   53   29
        Aleutian Islands.

»  22   Up   iP                  19   56   17
                                      μ    s
             P      z'           0.3   1.3
        Ki   iP                  19   55   41
                                      μ    s
             P      z'           0.2   1.3
             M      E            1.0   14
             M      N            0.7   18
             M      Z            1.4   15
        Sk   iP                  19   55   52 C
        Northern California.

»  23   Up   iP                  00   21   52
        Sk   iP                  00   22   02

»  23   Up   iP                  01   03   04
        Ki   eP                  01   02   13
        Sk   iP                  01   02   42
        Aleutian Islands.

»  23   Up   iP                  04   06   50
             i                   04   07   12
        Ki   i                   04   06   58
        Sk   iP                  04   06   31
             i                   04   06   53
        Near coast of Chiapas, Mexico.

»  23   Up   iP                  05   26   39 D
             iPP                 05   30   57
             i                   05   35   52
             iSKS                05   37   05
             iS                  05   38   21
             eSP                 05   40   05
             iPKKP               05   42   13
             iSS                 05   45   51
                                      μ    s
             P      z'           0.2   1.2
             SKS    E            1.1   7
             S      N            4.2   12
             M      E            8.0   23
             M      N            14    24
             M      Z            9.0   23
```

Column 1

1957
Mar 23
(cont.) Ki

△ ~ 11800 km ~ 106°.

iP		05	26	24
iPP		05	30	44
iSKS		05	36	49
iS		05	37	50
isS		05	38	45
i!		05	40	34
ePKKP		05	42	24
i		05	43	09
eSS		05	45	08

		μ	s
P	z'	0.3	1.2
SKS	E	2.2	7
S	N	4.3	13
M	E	7.1	21
M	N	6.2	21
M	z	9.7	20

△ ~ 11450 km ~ 103°.

Sk

iP		05	26	46
i(PP)		05	30	56
iPKKP		05	42	08
i		05	42	51

Banda Sea.
h = 120 km (Ki).
Magn. = 7.1 (Up, Ki).

» 23 Up eP   09 03 52
Ki eP   09 03 01
Sk eP   09 03 31
Aleutian Islands.

» 23 Up iP   10 40 04

		μ	s
P	z'	0.2	1.0

Ki iP   10 39 10

		μ	s
P	z'	0.3	1.0

Sk iP   10 39 40
Aleutian Islands.

» 23 Up iP   13 35 38
ipP   13 35 50

		μ	s
P	z'	0.2	0.9
pP	z'	0.4	1.0

Ki iP   13 34 45
ipP   13 34 57

		μ	s
P	z'	0.1	0.8
pP	z'	0.2	1.0

Sk iP   13 35 19
ipP   13 35 29
Aleutian Islands.
h = 50 km (Up, Ki, Sk).

» 23 Up iP   13 50 56 D

		μ	s
P	z'	0.4	1.0

Ki iP   13 50 04 C

		μ	s
P	z'	0.1	1.0

Column 2

1957
Mar 23
(cont.) Sk iP   13 50 36 C
Aleutian Islands.

» 23 Up eP   14 26 15

» 23 Up iP   19 27 13 C

		μ	s
P	z'	0.1	0.8

Sk iP   19 27 54
Ionian Islands.

» 23 Ki eP   22 18 31

» 24 Up eP   02 14 26
Ki iP   02 13 13

		μ	s
M	E	2.4	19
M	N	1.6	14
M	z	1.3	13

Sk iP   02 13 25
i   02 13 53
j   02 15 11
The region immediately to the north
of Jan Mayen; near 72° N, 8° W.

» 24 Up iP   04 47 24
Ki iP   04 46 29

		μ	s
P	z'	0.1	1.0

Sk iP   04 47 03
Aleutian Islands.

» 24 Up iP   05 20 54
Ki iP   05 20 01
Aleutian Islands.

» 24 Up eP   06 28 50
Sk iP   06 29 34
Greece.

» 24 Ki iPKP2   06 58 51
Antarctic Ocean, north of
Balleny Islands.

» 24 Up iP   07 40 23
ipP   07 40 33

		μ	s
M	N	1.4	20
M	z	2.3	22

Ki eP   07 39 29

		μ	s
M	E	1.7	19
M	N	1.4	21
M	z	1.9	22

Sk eP   07 40 03
Aleutian Islands.
h = 40 km (Up).

» 24 Up iP   08 33 15

		μ	s
P	z'	0.4	1.5

Column 3

1957
Mar 24
(cont.)

M	E	3.2	20	
M	N	6.3	23	
M	z	7.0	22	

Ki iP   08 32 28
e(S)   08 40 46

		μ	s
P	z'	0.4	2.0
(S)	E	1.1	8
M	E	5.0	18
M	N	6.0	23
M	z	11	23

Sk iP   08 32 47 D
Near north coast of Vancouver
Island.
Magn. = 6.2 (Up, Ki).

» 24 Up iP   11 17 12 C

		μ	s
P	z'	0.4	1.1
M	E	3.3	18
M	N	2.4	18
M	z	3.1	20

Ki iP   11 16 19
e(S)   11 24 47

		μ	s
P	z'	0.4	1.0
(S)	E	0.9	12
M	E	3.4	18
M	N	2.5	20
M	z	4.1	19

Sk iP   11 16 49 C
Aleutian Islands.
Magn. = 6.3 (Up, Ki).

» 24 Up iP   11 47 51
eScS   11 57 47
e   11 58 34

		μ	s
P	z'	0.4	1.5
M	E	3.5	19
M	N	8.4	22
M	z	6.6	21

Ki iP   11 46 58 C

		μ	s
P	z'	0.2	1.0
M	E	4.9	20
M	N	2.5	18
M	z	5.3	18

Sk iP   11 47 29 D
iPcP   11 48 03
Aleutian Islands.
Magn. = 6.2 (Up, Ki).

» 24 Up iP   12 12 41
ipP   12 13 24

		μ	s
P	z'	0.1	1.0
pP	z'	0.4	2.0

Ki iP   12 12 50

Column 4

1957
Mar 24
(cont.)

		μ	s
P	z'	0.1	1.0

Sk iP   12 13 07
ipP   12 13 51
Hindu Kush.
h = 215 km (Up, Sk).

» 24 Up eP   14 04 59
Aleutian Islands.

» 24 Up iP   16 43 31
ipP   16 43 42
Ki iP   16 42 38
ipP   16 42 49

		μ	s
P	z'	0.1	1.0

Sk iP   16 43 08
ipP   16 43 19
Aleutian Islands.
h = 40 km (Up, Ki, Sk).

» 24 Up iP   20 04 35
Ki iP   20 03 42 D

		μ	s
P	z'	0.1	1.0

Aleutian Islands.

» 24 Up i(P)   21 14 08
i   21 14 21
Ki i   21 19 52
Sk i(Sg)   21 17 37
Local?

» 25 Up iP   00 50 27

		μ	s
P	z'	0.3	1.1

Ki iP   00 49 33

		μ	s
P	z'	0.3	1.0
M	E	1.1	16
M	N	0.9	19
M	z	1.2	18

Sk iP   00 50 02
Aleutian Islands.

» 25 Up iP   01 14 59
Ki iP   01 14 06
Sk eP   01 14 36
Aleutian Islands.

» 25 Up eP   05 48 20
Ki eP   05 47 26
ipP   05 47 37
Sk iP   05 47 56
Unimak Island region, Alaska.
h = 40 km (Ki).

» 25 Up iP   07 14 50
Ki eP   07 13 58
iPcP   07 14 42
Aleutian Islands.

1957

Date	St.	Phase	Comp			
Mar 25	Up	iP		08	55	12
	Ki	iP		08	54	19
Aleutian Islands.						
» 25	Up	iP		09	24	44
» 25	Ki	iP		10	34	27
(Aleutian Islands).						
» 25	Up	iP		14	24	29 C
		ipP		14	24	38
		P	z′	0.2 (μ)	1.0 (s)	
		pP	z′	0.4	1.4	
	Ki	iP		14	23	35
		ipP		14	23	44
		P	z′	0.3 (μ)	1.0 (s)	
	Sk	iP		14	24	05
Aleutian Islands. h=40 km (Up, Ki).						
» 25	Up	iPKP		21	25	13
		M	E	1.6 (μ)	20 (s)	
		M	N	1.8	20	
		M	z	2.3	19	
	Ki	ePKP		21	25	27
	Sk	iPKP		21	25	18
Sandwich Islands region.						
» 26	Up	iP		02	21	09
		P	z′	0.2 (μ)	1.4 (s)	
	Ki	iP		02	20	15
		P	z′	0.1 (μ)	1.1 (s)	
	Sk	iP		02	20	45 C
Aleutian Islands.						
» 26	Up	iP		02	58	56
		P	z′	0.1 (μ)	1.0 (s)	
	Ki	eP		02	58	03
Aleutian Islands.						
» 26	Up	eP		03	16	03
		P	z′	0.1 (μ)	1.0 (s)	
		M	E	1.4	18	
		M	N	2.6	18	
		M	z	2.8	20	
	Ki	iP		03	15	09 C
		P	z′	0.1 (μ)	1.0 (s)	
	Sk	iP		03	15	39
Aleutian Islands.						
» 26	Up	iP		04	56	59
	Ki	iP		04	57	36
	Sk	iP		04	57	34
Near south coast of Iran.						

1957

Date	St.	Phase	Comp			
Mar 26	Up	iP		06	06	01
	Ki	iP		06	05	05
		P	z′	0.1 (μ)	1.0 (s)	
	Sk	eP		06	05	36
Aleutian Islands.						
» 26	Up	iP		09	46	45
		P	z′	0.1 (μ)	1.0 (s)	
» 26	Ki	iP		15	58	59
» 26	Up	iP		16	13	05
		ipP		16	13	14
		P	z′	0.3 (μ)	1.0 (s)	
	Ki	iP		16	12	11
		ipP		16	12	22
		P	z′	0.2 (μ)	1.3 (s)	
	Sk	eP		16	12	44
Aleutian Islands. h=40 km (Up, Ki).						
» 26	Up	iP		18	27	52
		P	z′	0.1 (μ)	1.0 (s)	
Aleutian Islands.						
» 26	Up	iP		23	28	14
		P	z′	0.2 (μ)	1.2 (s)	
	Sk	iP		23	28	57
Greece.						
» 27	Up	iP		02	46	59
	Ki	iP		02	46	06
Aleutian Islands.						
» 27	Up	iP		04	24	54
	Ki	iP		04	24	00
		iPcP		04	24	46
	Sk	iP		04	24	30
		iPcP		04	25	05
Aleutian Islands.						
» 27	Up	iP		05	01	34
» 27	Up	iPKP		07	51	07
	Ki	iPKP		07	50	57
Tonga Islands region (h~150 km).						
» 27	Up	iPKP		13	19	04
	Sk	iPKP		13	19	02
Off coast of New Britain. (h~100 km).						
» 27	Ki	eP		15	55	30
	Sk	e(P)		15	55	11

1957

Date	St.	Phase	Comp			
Mar 27	Ki	eP		16	16	19
» 27	Up	iP		16	57	36
		ipP		16	57	48
	Ki	iP		16	56	42 C
		P	z′	0.1 (μ)	1.0 (s)	
	Sk	iP		16	57	11 C
Aleutian Islands. h=50 km (Up).						
» 28	Up	iP		00	09	46
» 28	Up	iP		01	26	25
	Sk	eP		01	26	00
Aleutian Islands.						
» 28	Up	ePKP		10	08	41
		i		10	08	50
South of Kermadec Islands. (h~300 km).						
» 28	Up	iP		13	02	36
	Ki	iP		13	01	43 D
Aleutian Islands.						
» 28	Up	iP		14	32	37
Aleutian Islands.						
» 28	Up	iP		18	40	19
		ipP		18	40	32
	Ki	iP		18	39	26
	Sk	eP		18	39	57
Aleutian Islands. h=50 km (Up).						
» 28	Up	eP		20	06	38
Aleutian Islands.						
» 28	Up	iP		20	19	26
		P	z′	0.2 (μ)	1.5 (s)	
		M	E	1.4	21	
		M	N	2.3	17	
		M	z	3.3	16	
	Ki	iP		20	18	33
		M	E	2.2 (μ)	17 (s)	
		M	N	1.7	15	
		M	z	3.4	15	
	Sk	eP		20	19	04
Aleutian Islands. Magn.=5.7 (Up, Ki).						
» 28	Up	iP		22	30	44
		eS		22	34	35
		P	N	0.9 (μ)	5 (s)	
		P	z′	0.4	1.0	
		M	E	4.9	17	
		M	N	3.5	10	

1957

Date	St.	Phase	Comp			
Mar 28 (cont.)		M	z	4.2 (μ)	10 (s)	
△=2350 km=21°.						
	Ki	iP		22	32	02 D
		P	z′	0.2 (μ)	1.0 (s)	
		M	E	2.1	14	
		M	N	1.6	14	
		M	z	3.0	14	
	Sk	iP		22	31	27
Greece. Magn.=5.9 (Up, Ki).						
» 29	Up	iP		05	19	57
» 29	Up	iP		05	21	24 C
		iPcP		05	21	52
		eS		05	30	12
		i		05	30	55
		eP′P′		05	49	48
		P	N	8.8 (μ)	24 (s)	
		P	z	15	23	
		P	z′	0.6	1.5	
		S	E	8.5	28	
		S	N	5.4	20	
		M	E	35	22	
		M	N	51	21	
		M	z	56	20	
△=7450 km=67°.						
	Ki	iP		05	20	30
		iPcP		05	21	19
		iPa		05	24	18
		iS		05	28	29
		eP′P′		05	50	08
		P	N	3.4 (μ)	17 (s)	
		P	z	8.6	17	
		P	z′	0.2	1.0	
		S	N	7.1	20	
		P′P′	z′	0.1	1.5	
		M	E	45	21	
		M	N	26	16	
		M	z	60	19	
△=6550 km=59°.						
	Sk	iP		05	21	01 C
		eP′P′		05	50	16
Aleutian Islands. Magn.=6.7 (Up, Ki). Remarkably long periods in the P and S wave groups.						
» 29	Up	iP		05	51	42
		P	z′	0.2 (μ)	1.2 (s)	
	Ki	iP		05	51	27
		P	z′	0.2 (μ)	1.2 (s)	
	Sk	iP		05	51	48
Talaud Islands.						
» 29	Ki	eP		07	36	19

Column 1 (p. 70)

```
1957
Mar 29 Sk   iP              07  37  07
(cont.)   Aleutian Islands.

»  29 Ki    eP              08  26  17
          Aleutian Islands.

»  29 Up    iP              09  34  32

»  29 Ki    e(P)            14  44  27
      Sk    i(P)            14  45  46

»  29 Up    iP              15  25  31

»  29 Up    iPKP            18  50  31 C
      Ki    iPKP            18  50  47
                        μ     s
            PKP    z'    0.2   1.0
      Sk    iPKP            18  50  37 D
          Sandwich Islands.

»  29 Up    iP              23  00  51 C
                        μ     s
            P      z'    0.3   1.5
            M      E      1.5   16
            M      N      2.9   20
            M      z      3.5   17
      Ki    iP              22  59  58
                        μ     s
            P      z'    0.2   1.0
            M      E      3.1   18
            M      N      3.7   20
      Sk    iP              23  00  27 C
          Aleutian Islands.
          Magn.=6.0 (Up, Ki).

»  30 Up    iP              00  53  44 D
                        μ     s
            P      z'    0.7   1.0
      Ki    iP              00  52  50
                        μ     s
            P      z'    0.1   0.9
      Sk    iP              00  53  23
          Aleutian Islands.

»  30 Up    iP              01  34  53
      Ki    iP              01  34  52 D
      Sk    iP              01  35  05

»  30 Up    iP              02  01  41
      Ki    eP              02  00  48
          Aleutian Islands.

»  30 Up    iP              06  48  07
                        μ     s
            P      z'    0.3   1.5
      Ki    eP              06  47  14
      Sk    eP              06  47  46
          Aleutian Islands.

»  30 Up    iP              09  28  03
            ipP             09  28  17
```

Column 2 (p. 70)

```
1957
Mar 30
(cont.)                 μ     s
            P      z'    0.4   1.0
            M      E      2.4   18
            M      N      4.9   21
            M      z      5.8   22
      Ki    iP              09  27  10
            ipP             09  27  24
                        μ     s
            P      z'    0.2   1.0
      Sk    iP              09  27  41
          Aleutian Islands.
          h=60 km (Up, Ki).
          Magn.=6.2 (Up, Ki).

»  30 Up    iP              11  22  59
      Ki    eP              11  22  07
          Aleutian Islands.

»  30 Up    iP              16  37  34

»  30 Up    eP              18  02  22

»  31 Up    iP              00  36  31

»  31 Up    eP              02  34  37
          Off coast of Oregon.

»  31 Up    iP              03  01  37

»  31 Up    iP              04  27  02

»  31 Up    iP              04  49  53
      Ki    iP              04  48  59
      Sk    iP              04  49  36
          Aleutian Islands.

»  31 Up    iP              05  50  05

»  31 Up    eP              06  45  03

»  31 Up    iP              10  19  31
                        μ     s
            P      z'    0.2   0.8
            M      E      2.8   18
            M      N      1.9   18
            M      z      2.0   19
      Ki    iP              10  18  38
                        μ     s
            M      E      1.9   18
      Sk    eP              10  19  10
            i               10  19  32
          Aleutian Islands.
          Magn.=6.1 (Up).

»  31 Up    eP              13  17  09

»  31 Up    iP              17  33  17
                        μ     s
            P      z'    0.4   1.5
      Sk    iP              17  33  01
          Kamchatka.
```

Column 3 (p. 71)

```
1957
Mar 31 Up   iP              21  09  25
       Sk   iP              21  09  41

»  31 Up    iP              21  38  22
                        μ     s
            P      z'    0.2   1.5
      Ki    iP              21  39  20
                        μ     s
            P      z'    0.2   1.3

»  31 Up    iP              21  51  16
      Ki    eP              21  50  23
          South of Alaska Peninsula.

Apr 1 Up    iP              03  08  20
            ipP             03  08  31
          (Aleutian Islands).

»   1 Up    eP              06  22  35
            eS              06  25  48
            i               06  25  58
          △=1850 km=16½°.
          South of the Danube Estuary.

»   1 Up    iP              07  43  16
      Ki    iP              07  42  58
          Near coast of Samar, Philippine
          Islands.

»   1 Up    iP              08  07  42
      Ki    iP              08  07  25
                        μ     s
            P      z'    0.1   1.1
      Sk    iP              08  07  46
          Molucca Passage (h∼100 km).

»   1 Ki    eP              08  45  15

»   1 Up    eSn             09  35  20
            i               09  35  38
            iSg             09  36  12
                        μ     s
            Sg     z'    0.1   0.9
          △=860 km=7.7°.
      Ki    iPn             09  33  04
            i               09  33  36
            iSg             09  34  11
                        μ     s
            Sg     z'    0.3   0.6
          △=460 km=4.1°.
      Sk    iPg             09  32  59
            iSg             09  33  40
          △=360 km=3.2°.
          Off the Norwegian coast,
          66.9° N, 10.0° E.
          Origin time=09  31  57.

»   1 Ki    iP              11  19  38
          Aleutian Islands.

»   1 Up    iP              11  46  39
            ipP             11  46  54
```

Column 4 (p. 71)

```
1957
Apr 1       iS              11  55  43
(cont.)                 μ     s
            P      z'    0.2   1.0
            pP     z'    0.4   1.2
            S      N      0.9   10
            M      E      2.0   19
            M      N      1.7   19
            M      z      3.0   24
          △=7700 km=69½°.
      Ki    iP              11  45  47
            ipP             11  46  01
            iS              11  54  08
                        μ     s
            P      z'    0.3   1.5
            pP     z'    0.1   0.8
            S      N      1.1   10
            M      E      1.5   16
            M      N      2.0   20
            M      z      2.4   18
          △=6900 km=62°.
      Sk    iP              11  46  18
          Aleutian Islands.
          h=60 km (Up, Ki).
          Magn.=6.1 (Up, Ki).

»   1 Up    iP              12  24  26
      Sk    iP              12  25  09

»   1 Up    iP              14  06  37
      Ki    eP              14  07  52
      Sk    iP              14  07  19
          Greece.

»   1 Up    e(P)            15  10  00

»   1 Up    eP              19  15  45
          Aleutian Islands.

»   2 Up    iP              00  50  51 C
            ipP             00  51  04
            eP'P'           01  18  51
                        μ     s
            P      N      0.4   4
            P      z      0.6   3
            P      z'    0.7   1.5
            pP     z'    0.7   1.2
            M      E      1.1   17
            M      N      3.5   24
            M      z      4.0   25
      Ki    iP              00  49  57
            ipP             00  50  11
                        μ     s
            P      z'    0.2   1.0
            pP     z'    0.3   1.0
            M      E      1.6   18
            M      N      1.1   17
            M      z      3.4   21
      Sk    iP              00  50  28
            ipP             00  50  38
          Aleutian Islands.
          h=50 km (Up, Ki, Sk).
          Magn.=6.3 (Up, Ki).
```

Column 1

```
1957
Apr  2  Up  eP              04  46  01
                              μ    s
            M     E         0.8   10
        Ki  iP              04  45  53
        Sk  iP              04  46  17
 »   2  Up  eP              05  04  55
        Sk  eP              05  05  37
        Greece.
 »   2  Up  iP              08  44  14 C
            i               08  44  36
            iS              08  53  21
                              μ    s
            P     z'        0.2  1.0
            S     N         0.4   3
        Ki  iP              08  43  42
                              μ    s
            P     z'        0.1  0.8
        Sk  iP              08  44  12
        Off south coast of Honshu,
        Japan (h ~ 550 km).
 »   2  Up  iP              09  02  43 D
                              μ    s
            P     z'        0.2  0.8
        Ki  iP              09  02  11 D
                              μ    s
            P     z'        0.1  0.7
        Sk  iP              09  02  40
        Off south coast of Honshu,
        Japan (h ~ 550 km).
 »   2  Sk  iP              11  11  39
 »   2  Up  iP              12  02  52
            i               12  04  34
        Ki  eP              12  01  58
        Sk  eP              12  02  30
        Aleutian Islands.
 »   2  Up  iP              20  28  04
            ipP             20  28  17
            e               20  37  39
                              μ    s
            P     z'        0.5  1.0
            M     E         1.8  17
            M     N         2.9  20
            M     z         5.2  24
        Ki  iP              20  27  12
            ipP             20  27  24
            eS              20  35  36
                              μ    s
            P     z         0.6   8
            P     z'        0.3  1.0
            M     E         2.3  22
            M     N         2.2  21
            M     z         5.3  22
        △ = 6900 km = 62°.
        Sk  iP              20  27  43
        Aleutian Islands.
        h = 50 km (Up, Ki).
        Magn. = 6.3 (Up, Ki).
```

Column 2

```
1957
Apr  2  Up  iP              20  50  12
        Ki  iP              20  49  19
        Sk  iP              20  49  51
        Aleutian Islands.
 »   2  Up  iP              21  39  03
            ipP             21  39  15
            eS              21  48  01
                              μ    s
            P     N         0.8   5
            P     z         1.3   5
            P     z'        0.6  1.2
            S     N         0.7   8
            M     E         1.5  19
            M     N         2.5  20
            M     z         3.1  22
        △ = 7650 km = 69°.
        Ki  iP              21  38  10
            ipP             21  38  23
            iS              21  46  33
                              μ    s
            P     z'        0.2  1.0
            pP    z'        0.3  1.0
            S     N         0.8   9
            M     E         2.8  22
            M     N         2.3  23
            M     z         3.4  21
        △ = 6900 km = 62°.
        Sk  iP              21  38  42
            ipP             21  38  56
        Aleutian Islands.
        h = 50 km (Up, Ki, Sk).
        Magn. = 6.3 (Up, Ki).
 »   3  Up  iP              01  41  45
        Sk  iP              01  42  19
        Near south coast of Iran.
 »   3  Up  iP              04  57  16
 »   3  Ki  i(Pg)           09  56  41
            i(Sg)           09  56  59
        Sk  i(Sg)           09  58  59
        Local.
 »   3  Up  iP              17  00  38
            ipP             17  00  50
        Ki  eP              16  59  45
        Aleutian Islands.
        h = 50 km (Up).
 »   3  Up  iP              20  34  26
        Ki  iP              20  35  30
                              μ    s
            M     N         0.6  19
        Sk  iP              20  35  06
            i               20  35  18
        Near west coast of Cyprus.
 »   3  Up  iP              23  20  18
```

Column 3

```
1957
Apr  3  Ki  eP              23  19  27
(cont.)     Aleutian Islands.
 »   4  Up  iP              00  23  17 C
            ipP             00  23  57
            i(Pa)           00  27  51
            iS              00  31  35
            i               00  33  00
                              μ    s
            P     N         0.2   3
            P     z         0.5   4
            P     z'        0.6  2.0
            S     N         0.5   6
        △ = 7100 km = 64°.
        Ki  iP              00  22  21 C
            iPcP            00  23  26
            eS              00  29  52
            i(ScS)          00  32  05
                              μ    s
            P     z'        0.3  1.0
            S     E         0.7   9
            M     N         1.1  20
            M     z         2.0  21
        Sk  iP              00  22  49
            i               00  23  17
        Near coast of Alaska Peninsula.
        h = 170 km (Up).
        Magn. = 6.0 (Up, Ki).
 »   4  Up  iP              01  00  17
 »   4  Up  iP              01  01  47
                              μ    s
            P     z'        0.1  1.0
        Ki  iP              01  00  54
                              μ    s
            P     z'        0.1  1.0
        Sk  iP              01  01  25
        Aleutian Islands.
 »   4  Up  iP              01  40  45
        Ki  iP              01  39  52 C
                              μ    s
            P     z'        0.1  1.0
        Aleutian Islands.
 »   4  Up  iP              02  27  34
        Aleutian Islands.
 »   4  Up  iP              05  17  31
        Aleutian Islands.
 »   4  Ki  iP              07  02  22
                              μ    s
            M     E         1.6  15
            M     N         1.6  18
            M     z         3.6  18
        Sk  iP              07  02  58
        Northern Kurile Islands.
```

Column 4

```
1957
Apr  4  Up  iP              11  44  04
                              μ    s
            M     E         1.9  15
            M     N         3.7  15
            M     z         2.1  15
        Ki  eP              11  44  14
                              μ    s
            M     E         1.9  11
            M     N         2.5  11
            M     z         2.1  11
        Sk  iP              11  44  30
        Hindu Kush.
 »   4  Up  iP              12  36  41 C
                              μ    s
            P     z'        0.1  0.7
        Ki  iP              12  37  57
                              μ    s
            M     E         1.7  15
        Sk  iP              12  37  22
        Off west coast of Greece.
 »   4  Up  iP              14  54  46
                              μ    s
            P     z'        0.2  1.2
        Ki  iP              14  53  53 C
                              μ    s
            P     z'        0.2  1.0
        Sk  iP              14  54  24
            i               14  54  33
            iPcP            14  54  59
        Aleutian Islands.
 »   4  Up  eP              16  16  46
        Ki  eP              16  17  21
        Northern Iran.
 »   4  Up  iP              20  51  28 C
        Ki  iP              20  50  35
        (Aleutian Islands).
 »   5  Up  iP              03  00  42
                              μ    s
            P     z'        0.2  1.2
            M     E         8.5  19
            M     N         8.3  20
            M     z         5.9  21
        Ki  iP              02  59  49
                              μ    s
            M     E          10  19
            M     N         5.1  18
            M     z         6.5  16
        Sk  iP              03  00  21
        Aleutian Islands.
        Magn. = 6.2 (Up, Ki).
 »   5  Up  iP              03  28  57
        (Aleutian Islands).
 »   5  Up  iP              07  22  35
        Ki  iP              07  21  43
        Aleutian Islands.
```

1957

Apr 5 Up iPKP 07 49 54C
　 ipPKP 07 50 18
　 isPKP 07 50 33
　 eSKP 07 53 31

		μ	s
PKP	N	0.9	3
PKP	z	3.7	3
PKP	z'	3.2	1.5
M	N	3.3	24
M	z	3.9	22

　 Ki iPKP 07 49 40

		μ	s
PKP	z'	0.2	1.5

　 Sk ePKP 07 49 51
Kermadec Islands region.
(h ~ 100 km).
PKP has a much larger amplitude at Uppsala than at Kiruna and Skalstugan (shadow-zone effect).

» 5 Up iP 15 15 13C
　 Ki iP 15 14 25
Kurile Islands.

» 5 Ki iP 16 21 11

» 5 Up eP 16 25 17
　 Ki eP 16 25 06
Near coast of Nicaragua.

» 5 Up iP 16 47 23
　 Ki iP 16 46 30
　　 iPcP 16 47 15
Aleutian Islands.

» 5 Up iP 20 30 19

» 5 Up i(P) 22 13 59
Aleutian Islands.

» 5 Up iP 23 27 30

		μ	s
P	z'	0.1	1.0

　 Ki iP 23 27 05
　 Sk iP 23 27 33
Region of Formosa.

» 6 Up eP 18 14 52
　 Ki iP 18 13 57
Aleutian Islands.

» 6 Ki i(P) 18 15 01

» 6 Up iP 19 56 48

» 6 Up iP 21 53 44

» 6 Up iP 22 41 30
　 Ki eP 22 40 35
(Aleutian Islands).

1957

Apr 7 Up iP 07 44 53C
Aleutian Islands.

» 7 Up iP 08 14 44
　 Ki iP 08 13 50D

		μ	s
P	z'	0.1	1.0

　 Sk iP 08 14 21
Aleutian Islands.

» 7 Sk iP 10 04 42C
Yugoslavia-Albania border.

» 7 Up e(PS) 10 41 49

		μ	s
M	E	5.6	21
M	N	6.8	22
M	z	7.4	21

　 Ki eP 10 27 58
　　 iSKS 10 38 40
　　 eS 10 39 29
　　 ePS 10 41 10

		μ	s
SKS	E	1.1	10
S	N	1.0	11
M	E	5.7	20
M	N	4.6	18
M	z	8.7	19

△ ~ 11200 km ~ 101°.
Near north coast of New Guinea.
Magn. = 6.4 (Up, Ki).

» 7 Ki iP 11 51 19
Aleutian Islands.

» 7 Up eP 13 24 15
　 Sk eP 13 23 53
Aleutian Islands.

» 7 Up iSg 14 52 29
△ = 700 km = 6.3°.
　 Ki iPg 14 49 56
　　 iSg 14 50 29
△ = 300 km = 2.7°.
　 Sk iPn 14 49 49
　　 iSg 14 50 29
△ = 300 km = 2.7°.
Northern Sweden, near 66° N, 15½°E.
Origin time = 14 49 02.

» 7 Up iP 22 49 45
　 Ki iP 22 48 54

		μ	s
P	z'	0.1	1.0

Aleutian Islands.

» 8 Up iP 00 17 40

		μ	s
P	z'	0.1	1.0

　 Ki iP 00 16 47
Aleutian Islands.

1957

Apr 8 Up iP 00 59 34
Aleutian Islands.

» 8 Up iP 01 23 17

		μ	s
P	z'	0.1	1.2

　 Ki iP 01 22 24
Aleutian Islands.

» 8 Ki iP 11 11 06
Aleutian Islands.

» 8 Ki iP 12 59 35C
Aleutian Islands.

» 8 Up iP 16 45 15
　 Ki iP 16 44 22

		μ	s
P	z'	0.1	0.5

　 Sk iP 16 44 53
　　 iPcP 16 45 27
Aleutian Islands.

» 8 Up iP 20 31 01
　　 eSKS 20 41 23

		μ	s
SKS	E	1.0	8
M	E	3.3	21
M	N	1.7	19
M	z	3.5	20

　 Ki iP 20 30 57
　　 eSKS 20 41 23

		μ	s
P	z'	0.1	1.7
SKS	E	1.1	10
M	E	3.7	22
M	N	1.4	18
M	z	3.4	18

　 Sk eP 20 30 47
Panama-Costa Rica border.
Magn. = 6.0 (Up, Ki).

» 8 Up iP 20 54 24
　　 iPcP 20 54 51
Aleutian Islands.

» 8 Up iP 23 36 55
Aleutian Islands.

» 9 Up iP 00 35 50C
　　 ipP 00 37 35
　　 iPP 00 38 55
　　 iS 00 45 02
　　 iSKS 00 45 21
　　 eSS 00 50 12

		μ	s
P	E	0.5	3
P	N	0.6	2
P	z	3.3	2
P	z'	2.1	2.0
PP	N	0.5	3

1957

Apr 9 (cont.)

		μ	s
PP	z	1.2	3
PP	z'	1.9	2.0
S	E	3.6	3
S	N	5.4	4
S	z	1.4	4
SKS	E	1.6	4
SKS	N	2.0	6
M	E	1.9	18
M	N	2.1	16
M	z	3.7	18

△ = 8650 km = 78°.
　 Ki iP 00 35 17C
　　 iPP 00 38 05
　　 iS 00 44 02
　　 iScS 00 44 37
　　 e(SS) 00 48 42

		μ	s
P	z	3.8	5
P	z'	1.0	1.0
PP	z'	1.2	2.0
S	E	4.8	8
S	N	10	9
M	E	3.8	20
M	N	2.2	15
M	z	5.2	17

　 Sk iP 00 35 47C
　　 i 00 35 50
　　 iPP 00 38 48
　　 iS 00 45 07
Off south coast of Honshu, Japan.
h = 500 km (Up).
Magn. = 6.8 (Up, Ki).

» 9 Up iP 02 29 53
　　 i 02 30 01

		μ	s
P	z'	0.2	1.0
M	E	1.3	20
M	N	1.1	20
M	z	1.7	20

　 Ki iP 02 29 23D

		μ	s
P	z'	0.2	0.9

　 Sk iP 02 29 50
　　 i 02 29 58
　　 i 02 30 13
Mariana Islands region.

» 9 Ki iP 03 34 02
Aleutian Islands.

» 9 Ki iP 07 49 43
Aleutian Islands.

» 9 Up iP 10 10 30
　 Ki iP 10 09 37
Aleutian Islands.

» 9 Up iP 10 46 40C
　　 iS 10 55 51

Column 1

```
1957
Apr 9
(cont.)
                        μ     s
            P      z'   0.2   1.0
  Ki   iP         10   46   08
                        μ     s
            P      z'   0.1   0.9
  Sk   iP         10   46   38
       iPP        10   49   38
       South of Honshu, Japan (h ~ 500 km).

» 9  Up  iP       11   13   14
         eS       11   22   15
                        μ     s
            P      z'   0.2   1.0
            M      E    3.3   18
            M      N    2.2   20
            M      z    3.5   20
              △ = 7600 km = 68½°.
                        μ     s
            M      E    3.8   20
            M      N    2.3   19
            M      z    3.2   17
  Sk   eP         11   12   57
       Aleutian Islands.
       Magn. = 6.0 (Up, Ki).

» 9  Up  iP       13   44   48
  Ki   iP         13   43   55
       (Aleutian Islands).

» 9  Ki  iP       14   21   55
       Aleutian Islands.

» 9  Up  iP       16   18   45
                        μ     s
            P      z'   0.1   0.8

» 9  Up  eP       17   51   18
         iPcP     17   51   43
                        μ     s
           PcP    z'   0.1   1.3
  Ki   eP         17   50   22
  Sk   eP         17   50   59
       Aleutian Islands.

» 9  Up  iP       20   34   57C
                        μ     s
            P      z'   0.2   1.2
            M      E    1.3   17
            M      N    2.2   18
            M      z    1.9   18
  Ki   iP         20   34   04C
       ipP        20   34   15
                        μ     s
            P      z'   0.3   1.0
            M      E    2.0   17
            M      N    1.6   17
            M      z    1.5   14
  Sk   iP         20   34   33
       ipP        20   34   43
```

Column 2

```
1957
Apr 9  Aleutian Islands.
(cont.)   h = 40 km (Ki, Sk).

» 9  Up  iP       22   45   00
  Ki   iPcP       22   44   52
       Aleutian Islands.

» 9  Up  iP       23   00   42
  Ki   eP         22   59   52
       Aleutian Islands.

» 10  Up  iP      03   36   16C
                        μ     s
            P      z'   0.4   1.2
            M      E    1.1   17
            M      N    1.6   18
            M      z    1.6   18
  Ki   iP         03   35   24
                        μ     s
            P      z'   0.2   1.5
            M      E    1.4   17
            M      N    1.4   18
            M      z    2.7   19
  Sk   iP         03   35   54
       Aleutian Islands.

» 10  Up  iP      05   25   03
          iPP     05   28   32
          iSKS    05   35   31
          eS      05   35   51
          i!      05   36   22
                        μ     s
            P      z    0.7    4
           PP      E    1.2    9
           PP      E    1.6    8
           SKS     E    1.8   14
           SKS     N    1.3   15
            S      E    2.0   10
            M      E    2.6   20
            M      N    4.4   24
            M      z    4.9   23
              △ = 9900 km = 89°.
  Ki   iP         05   24   48
          iPP     05   28   07
          eS      05   35   15
          iScS    05   35   27
                        μ     s
            P      z    1.7    9
           PP      E    0.7    7
           PP      z    1.4    8
           PP      z'   0.7   2.5
            S      E    1.7    9
            S      N    1.3   10
           ScS     E    5.5    8
            M      E    7.8   22
            M      N    3.4   22
            M      z    11    22
              △ = 9500 km = 85½°.
  Sk   iP         05   24   44
       Near coast of Oaxaca, Mexico.
       Magn. = 6.6 (Up, Ki).
```

Column 3

```
1957
Apr 10  Ki  e    07   49   10
                        μ     s
            M      E    1.1   22
            M      N    0.4   15
            M      z    1.0   16
       Guatemala.

» 10  Up  iP      09   20   29
          ipP     09   20   41
          iP'P'   09   48   36
                        μ     s
            P      N    0.4    5
            P      z    0.9    5
            P      z'   0.5   1.3
           P'P'    z'   0.2   1.5
            M      E    1.2   18
            M      N    1.7   19
  Ki   iP         09   19   36
          ipP     09   19   48
          eS      09   27   55
                        μ     s
            P      z    0.6    6
            P      z'   0.2   1.0
            S      N    0.4    8
            M      E    1.4   17
            M      N    1.1   17
            M      z    2.4   18
              △ = 6850 km = 61½°.
  Sk   iP         09   20   07
       Aleutian Islands.
       h = 50 km (Up, Ki).
       Magn. = 6.2 (Up, Ki).

» 10  Up  iP      11   40   35C
           i      11   40   38
           i      11   48   59
          iS      11   49   15
          iP'P'   12   09   34
                        μ     s
            P      N    11    13
            P      z    22    13
            P      z'   2.4   2.0
            S      E    33    16
            S      N    36    20
            S      z    28    18
           P'P'    z'   0.5   1.7
            M      E    53    17
            M      N    41    16
            M      z    44    18
              △ = 7150 km = 64½°.
  Ki   iP         11   39   42C
          iS      11   47   34
           i      11   48   54
          iScS    11   49   33
                        μ     s
            P      E    1.1   12
            P      N    7.3   12
            P      z    17    12
            P      z'   2.7   1.7
            S      E    50    18
            S      N    39    18
```

Column 4

```
1957
Apr 10          S      z    27    13
(cont.)         M      E    62    22
                M      N    60    22
                M      z    120   22
              △ = 6300 km = 56½°.
  Sk   eP'P'      12   09   46
       Kodiak Island region.
       Magn. = 7.2 (Up, Ki).

» 10  Ki  iP      12   12   10
       (Aleutian Islands).

» 10  Ki  iP      13   04   49
                        μ     s
            P      z'   0.1   1.3
  Sk   eP         13   05   03
       Kodiak Island region.

» 10  Up  eP      13   31   18
          i(pP)   13   31   37
  Ki   iP         13   30   24
          i(pP)   13   30   45
       Aleutian Islands.

» 10  Ki  iP      13   53   09
  Sk   iP         13   53   35

» 10  Ki  eP      17   48   18
  Sk   iP         17   48   50
       (Aleutian Islands).

» 10  Up  eSg     20   06   05
              △ = 500 km = 4.5°.
  Ki   e(Pg)      20   04   58
          eSn     20   05   22
          iSg     20   05   42
                        μ     s
           Sg      z'   0.1   0.5
              △ = 415 km = 3.7°.
  Sk   eSn        20   05   26
          iSg     20   05   43
              △ = 420 km = 3.8°.
       East coast of Sweden, 64.1° N, 21.0° E.
       Origin time = 20  03  38.

» 10  Up  iP      21   30   21
                        μ     s
            P      z'   0.1   1.0

» 11  Ki  iP      01   56   04
                        μ     s
            P      z'   0.1   1.2
            M      E    1.0   19
            M      N    0.6   19
            M      z    1.0   16
       Aleutian Islands.

» 11  Ki  iP      07   09   26
                        μ     s
            P      z'   0.1   1.5
  Sk   eP         07   09   50
       Kodiak Island region.
```

```
1957
Apr 11  Up  iSg            08  07  47
            i              08  07  56
        △=500 km=4.5°.
        Ki  e              08  06  47
            eSg            08  07  24
        △=415 km=3.7°.
        Sk  eSn            08  07  08
            iSg            08  07  25
        △=420 km=3.8°.
        East coast of Sweden, 64.1°N, 21.0°E.
        Origin time=08  05  20.

»  11   Ki  eP             14  11  53
»  11   Ki  iP             16  22  19
        Aleutian Islands.
»  11   Sk  eP             16  23  53
        Italy.
»  11   Up  iP             17  51  40C
                     μ     s
            P    z'  0.3   1.4
        Ki  iP             17  50  45
            eS             17  59  04
                     μ     s
            P    z'  0.1   1.0
            M    E   0.8   17
            M    N   0.6   17
            M    z   0.8   15
        △=6800 km=61°.
        Sk  iP             17  51  15
        Aleutian Islands.

»  12   Up  iP             00  07  11
        Ki  iP             00  06  18C
        (Aleutian Islands).

»  12   Up  iP             04  28  48
                     μ     s
            P    z'  0.2   1.2
        Ki  iP             04  27  55
            eS             04  36  15
                     μ     s
            S    N   0.2   9
        △=6800 km=61°.
        Sk  eP             04  28  26
        Aleutian Islands.

»  12   Up  iP             05  50  48
        Alaska region.

»  12   Up  iSg            09  50  06
        △=600 km=5.4°.
        Ki  e              09  50  06
            eSg            09  50  30
        △=680 km=6.1°.
        Sk  iPn            09  47  36
            iSg            09  47  54
        △=140 km=1.3°.
        West coast of Norway,
        63.6° N, 9.6° E.
        Origin time=09  47  09.


1957
Apr 12  Ki  iP             11  02  16
        Sk  iP             11  02  46
        Aleutian Islands.

»  12   Up  iP             11  45  19
        Ki  iP             11  44  27
        Sk  iP             11  44  57
        Aleutian Islands.

»  12   Up  iP             13  14  37
        Ki  iP             13  13  43
            i              13  13  59
        Aleutian Islands.

»  12   Sk  eP             13  42  36
        (South Atlantic).

»  12   Ki  iP             14  36  39
        Aleutian Islands.

»  12   Ki  iP             14  58  22 D

»  12   Up  eS             16  15  23
                     μ     s
            M    E   0.9   14
            M    N   0.6   14
        Ki  eP             16  08  41
                     μ     s
            M    E   0.7   15
            M    N   0.5   13
            M    z   1.0   15
        Sk  iP             16  08  29
        Somali.

»  12   Ki  iP             16  15  56
        Sk  iP             16  15  43C
        Somali.

»  12   Up  iP             21  09  56
        Aleutian Islands.

»  13   Up  eP             03  55  05
            eS             04  04  12
                     μ     s
            P    z'  0.1   1.5
            S    N   0.7   8
            M    E   1.1   20
            M    N   1.4   17
            M    z   1.8   21
        △=7700 km=69½°.
        Ki  eP             03  54  21
            eS             04  02  47
                     μ     s
            S    E   0.3   10
            S    N   0.5   10
            M    E   1.1   17
            M    N   0.8   16
            M    z   2.4   20
        △=6950 km=62½°.
        Sk  iP             03  54  39
        Off coast of Vancouver Island.
        Magn.=5.7 (Up, Ki).


1957
Apr 13  Up  iP             05  24  34C
        Ki  iP             05  23  41C
                     μ     s
            P    z'  0.1   0.8
            M    E   0.6   16
            M    N   0.5   17
            M    z   1.2   18
        Sk  iP             05  24  11
        Aleutian Islands.

»  13   Up  iP             06  43  30
            iSKS           06  54  00
            iS             06  54  32
            e              06  54  57
                     μ     s
            P    z'  0.1   1.0
            S    E   0.3   4
            S    N   0.3   4
            M    z   1.5   21
        △~10450 km~94°.
        Ki  iP             06  43  10
            i              06  43  25
            eS             06  53  55
                     μ     s
            P    z'  0.2   1.0
            M    E   0.9   20
            M    N   0.7   20
            M    z   1.4   19
        △~10000 km~90°.
        Sk  iP             06  43  34
        Near coast of Mindanao.
        Magn.=6.0 (Up, Ki).

»  13   Up  iP             08  10  21
        Ki  iP             08  09  28
                     μ     s
            P    z'  0.1   1.0
        Sk  iP             08  09  58
        Aleutian Islands.

»  13   Up  eP             10  24  13
            i(pP)          10  24  38
            iSKS           10  34  38
            e(S)           10  35  36
                     μ     s
            SKS  E   0.3   4
            (S)  N   0.4   5
            M    E   1.7   25
            M    N   2.5   20
            M    z   1.6   22
        Ki  iP             10  23  53
            i(pP)          10  24  15
            eSKS           10  34  17
            eS             10  34  40
                     μ     s
            P    z'  0.1   1.0
            SKS  E   0.6   7
            S    N   0.4   8
            M    E   1.4   17
            M    N   1.5   23


1957
Apr 13      M    z         1.3   17
(cont.)  △~10000 km~90°.
        Sk  eP             10  24  15
            i              10  24  28
        Near south coast of Mindanao.
        h=95 km (Up, Ki).
        Magn.=6.0 (Up, Ki).

»  13   Ki  iP             12  52  02

»  13   Ki  iP             14  28  58

»  13   Up  iP             16  28  57
        Ki  iP             16  28  14
        Sk  iP             16  28  49
        Near south coast of Hokkaido, Japan.

»  13   Ki  iP             22  22  29
            i              22  23  48

»  14   Ki  iP             01  55  35

»  14   Ki  e(Sg)          06  16  19
        Sk  e(Sg)          06  19  12
        Local.

»  14   Up  iP             07  21  08C
            iS             07  28  31
                     μ     s
            P    E   1.1   4
            P    z   2.6   5
            P    z'  0.8   1.0
            S    E   4.1   8
            S    N   3.9   9
            S    z   2.5   10
            M    E   46    17
            M    N   50    16
            M    z   37    17
        △=5850 km=52½°.
        Ki  iP             07  21  06C
            iS             07  28  34
            iScS           07  31  00
            i              07  32  39
            iLg2           07  40  34
            i(Rg)          07  43  52
                     μ     s
            P    E   1.8   6
            P    N   0.4   7
            P    z   2.3   6
            P    z'  2.0   2.3
            S    E   5.6   12
            S    N   3.2   10
            S    z   2.6   9
            M    E   29    17
            M    N   37    16
            M    z   43    17
        △=5850 km=52½°.
        Sk  iP             07  21  27
            iPcP           07  22  31
        Southern Tibet.
        Magn.=6.7 (Up, Ki).
```

1957

Apr 14	Up	iP	08	13	55
	Sk	iP	08	14	40

(Greece).

» 14	Up	iP	08	36	26
	Ki	iP	08	36	25 C
	Sk	iP	08	36	08 D

Windward Passage.

» 14	Up	iP	08	53	10
	Ki	iP	08	53	07

» 14	Ki	iP	09	14	39

(Aleutian Islands).

» 14	Ki	iPKP	12	50	09
	Sk	iPKP	12	50	19
		iPP	12	51	21

New Britain region.

» 14	Sk	iP	15	18	22

» 14	Up	iP	15	55	05
	Ki	iP	15	54	42
	Sk	eP	15	55	10

» 14	Up	iP	16	46	07
		eS	16	53	32

		μ	s
P	z'	0.2	1.0
M	E	1.7	16
M	N	1.6	15
M	z	1.6	18

$\triangle = 5850$ km $= 52\frac{1}{2}°$.

	Ki	iP	16	46	06

		μ	s
P	z'	0.1	1.0
M	E	0.7	11
M	N	1.9	16
M	z	0.6	11

	Sk	iP	16	46	26

Southern Tibet.

» 14	Up	ePKP	19	37	11
		iPKP	19	37	20 C
		i	19	39	43
		iPP	19	39	58
		iPKS	19	40	50
		e	19	49	40

		μ	s
PKP	N	0.4	6
PKP	z	2.3	6
PKP	z'	1.0	2.0
PP	N	5.4	20
PP	z	9.4	18
PKS	E	8.8	22
PKS	N	28	21
PKS	z	42	26
M	E	33	22
M	N	61	23
M	z	66	21

1957

Apr 14 (cont.)	Ki	$\triangle \sim 14900$ km $\sim 134°$.			
		iPKP	19	37	04
		iPP	19	39	00
		e(PKS)	19	40	23
		iPPP	19	41	43
		iSKS	19	44	08
		iSKKS	19	45	54
		i	19	50	11
		i	19	53	46

		μ	s
PKP	z	1.4	6
PKP	z'	0.6	1.5
PP	E	0.5	7
PP	N	1.7	6
PP	z	3.3	6
PP	z'	1.4	2.5
(PKS)	E	4.7	18
(PKS)	N	7.1	20
SKS	E	2.6	12
SKS	N	3.3	12
M	E	39	20
M	N	34	21
M	z	100	24

$\triangle = 14050$ km $= 126\frac{1}{2}°$.

	Sk	ePKP	19	37	00
		iPKP	19	37	14 C
		i	19	37	28
		iPP	19	39	32
		iPKS	19	40	39
		i	19	43	18
		i	19	49	59
		e	19	53	25

Samoa Islands.
Magn. = 7.2 (Up, Ki).

» 14	Up	iP	20	13	13

» 14	Ki	iPKP	20	27	55
	Sk	iPKP	20	28	05

Samoa Islands.

» 14	Ki	iP	20	55	21
	Sk	eP	20	55	52

Aleutian Islands.

» 14	Up	iP	21	10	11 D
		ipP	21	10	21
		iS	21	19	17
		eP'P'	21	38	06
		i	21	38	13

		μ	s
P	N	1.1	2
P	z	2.2	2
P	z'	4.3	1.5
S	N	1.4	5
P'P'	z'	0.1	1.2

$\triangle = 7700$ km $= 69\frac{1}{2}°$.

	Ki	iP	21	09	19 D
		iS	21	17	39
		eP'P'	21	38	35

1957

Apr 14 (cont.)	P	z	2.0	5
	P	z'	1.0	1.0

$\triangle = 6850$ km $= 61\frac{1}{2}°$.

	Sk	iP	21	09	50 D
		eP'P'	21	38	16

Aleutian Islands.
Magn. = 7.0 (Up, Ki).

» 15	Up	iP	02	59	56

		μ	s
M	N	0.6	13

	Ki	eP	02	59	57

		μ	s
M	N	0.5	16

	Sk	eP	03	00	15

» 15	Sk	iP	04	56	02

» 15	Up	iP	10	49	39 C
		i	10	49	48
		eS	10	58	35

		μ	s
P	N	0.3	3
P	z	0.6	3
P	z'	0.6	1.7
S	N	1.1	13
M	E	2.4	18
M	N	2.3	17
M	z	2.0	19

$\triangle = 7550$ km $= 68°$.

	Ki	iP	10	48	47 C
		iPP	10	51	02
		eS	10	56	58

		μ	s
P	z	0.9	7
P	z'	0.1	1.1
PP	N	0.4	8
PP	z	0.6	7
S	E	0.5	10
S	N	0.6	10
M	E	2.1	19
M	N	2.1	20
M	z	3.2	17

$\triangle = 6650$ km $= 60°$.

	Sk	iP	10	49	20

Aleutian Islands.
Magn. = 6.2 (Up, Ki).

» 15	Up	iP	13	32	26

		μ	s
P	z'	0.1	1.0

	Ki	iP	13	31	33
	Sk	eP	13	32	05

Aleutian Islands.

» 15	Up	iP	18	23	35

		μ	s
P	z'	0.3	1.0

	Ki	iP	18	22	42

1957

Apr 15 (cont.)	M	E	0.9	20
	M	N	0.5	16
	M	z	1.2	18

	Sk	iP	18	23	14

Aleutian Islands.

» 15	Up	iP	21	44	09 D
		ipP	21	44	23
		iS	21	53	07
		eP'P'	22	12	16
		i	22	12	20

		μ	s
P	N	0.7	4
P	z	1.4	4
P	z'	1.5	1.5
S	E	0.6	8
S	N	1.0	10
P'P'	z'	0.1	1.5
M	E	1.2	19
M	N	1.4	18
M	z	2.0	19

$\triangle = 7600$ km $= 68\frac{1}{2}°$.

	Ki	iP	21	43	16 C
		iPcP	21	44	01
		eS	21	51	28
		eScS	21	53	05
		eP'P'	22	12	40

		μ	s
P	N	0.5	7
P	z	1.2	6
P	z'	0.6	1.5
S	E	1.2	10
S	N	1.8	9
S	z	1.1	11
M	E	1.7	17
M	N	1.9	19
M	z	4.1	19

$\triangle = 6700$ km $= 60\frac{1}{2}°$.

	Sk	iP	21	43	46
		ipP	21	43	59

Aleutian Islands.
h = 50 km (Up, Sk).
Magn. = 6.4 (Up, Ki).

» 16	Up	iP	04	16	22 D
		ipP	04	18	29
		isP	04	19	38
		iPP	04	20	18
		isPP	04	23	09
		iSKS	04	25	57
		iS	04	26	36
		isP	04	27	58
		i	04	29	19

		μ	s
P	E	2.1	4
P	N	0.7	5
P	z	18	9
P	z'	0.3	1.0
PP	E	7.6	7

Column 1

1957
Apr 16
(cont.)

PP	z	19	10
PP	z'	2.7	1.0
SKS	E	6.3	7
SKS	N	1.8	4
S	N	11	16
M	E	7.9	20
M	N	9.0	20
M	z	9.8	20

$\triangle = 10350$ km $= 93°$.

Ki iP	04	16	19 D
ipP	04	18	26
isP	04	19	22
iPP	04	20	08
ipPP	04	21	56
isPP	04	23	05
iS	04	26	28
e	04	27	53
i(PKKP)	04	33	26
i(SSS)	04	37	04
i(Sa)	04	40	57
e	04	41	21

		μ	s
P	E	2.7	8
P	N	0.4	5
P	z	8.6	9
P	z'	1.3	1.0
PP	z'	2.0	1.8
S	E	9.2	9
S	N	7.1	14
M	E	9.3	18
M	N	6.5	20
M	z	12	20

$\triangle = 10150$ km $= 91\frac{1}{2}°$.

Sk iP	04	16	34 D
ipP	04	18	42
i	04	20	29
iPP	04	20	38
iSP	04	28	25

$\triangle = 10650$ km $= 96°$.
Western Java Sea.
h = 595 km (Up, Ki, Sk).
Magn. = 7.3 (Up, Ki).

» 16	Up iP	04	58	24
» 16	Ki eP	08	50	26
» 16	Ki eP	18	02	51

Aleutian Islands.

» 16	Ki iP	22	58	19
» 17	Up iP	02	26	30

Italy.

» 17	Up iP	04	46	25
	Ki iP	04	45	31

		μ	s
P	z'	0.1	1.0

Sk iP	04	45	59 D

Kodiak Island region.

Column 2

1957
Apr 17

Up	ePKP	08	26	59
Ki	ePKP	08	26	46
Sk	ePKP	08	26	52

Tonga Islands (h ~ 200 km).

» 17	Up eP	08	44	31
	Ki —			

		μ	s
M	N	0.4	13
M	z	0.7	13

Italy.

» 17	Up iP	09	38	55 D

		μ	s
P	z'	0.3	1.2

Ki iP	09	38	02

		μ	s
P	z'	0.2	1.0
M	E	1.2	18
M	N	0.8	19
M	z	1.7	17

Sk iP	09	38	32
ipP	09	38	45

Aleutian Islands.

» 17	Ki iP	12	29	32

Aleutian Islands.

» 17	Ki iPg	13	00	39
	iSg	13	00	48

		μ	s
Sg	z'	0.6	1.2

$\triangle = 80$ km $= 0.7°$.

Sk eSn	13	02	41
eSg	13	03	02

$\triangle = 530$ km $= 4.8°$.
Malmberget, Swedish Lapland,
67.2° N, 20.7° E.
Origin time = 13 00 25.
Explosion of 30 ton dynamite.

» 17	Up iP	13	35	59

		μ	s
P	z'	0.3	1.6

Ki iP	13	35	06 D

		μ	s
P	z'	0.2	1.3
M	E	1.9	20
M	N	1.3	19
M	z	3.0	20

Sk eP	13	35	36

Aleutian Islands.

» 17	Up iP	15	18	18

		μ	s
P	z'	0.2	1.2

Ki iP	15	17	24
i	15	17	39

		μ	s
P	z'	0.1	1.0

Sk iP	15	17	54

South of Unimak Island.

Column 3

1957
Apr 17

Ki	eS	18	32	37

		μ	s
S	E	0.6	10
S	N	0.3	8
M	E	1.8	16
M	N	1.0	16
M	z	3.0	17

Mexico-Guatemala border.

» 17	Up iP	21	21	29
» 17	Up eP	23	53	43
» 18	Up iP	00	27	20
	Ki iP	00	26	26
	Sk iP	00	26	57

Aleutian Islands.

» 18	Ki iP	05	15	00

Aleutian Islands.

» 18	Up eP	05	30	31
	Ki iP	05	31	22

Turkey.

» 18	Up eP	05	42	29
	i	05	42	33
	Sk iP	05	42	22
» 18	Up iP	07	11	05
	Ki eP	07	10	15

Aleutian Islands.

» 18	Up iP	07	55	28

		μ	s
P	z'	0.1	1.2

» 18	Up iP	08	39	40

Off east coast of Hokkaido,
Japan (h ~ 100 km).

» 18	Up eP	11	02	32
	e	11	03	00
» 18	Up iP	16	39	44

Aleutian Islands.

» 18	Up iP	22	25	15
	Ki iP	22	24	37

South of Honshu, Japan.

» 19	Up iP	03	28	13
» 19	Ki iP	07	14	49

Unimak Island region.

» 19	Ki eP	07	36	47
» 19	Up iP	15	56	01 D
	eS	16	05	00

Column 4

1957
Apr 19
(cont.)

		μ	s
P	N	0.3	2
P	z	0.8	2
P	z'	1.2	1.2
M	z	4.3	24

$\triangle = 7650$ km $= 69°$.

Ki iP	15	55	09 D
iS	16	03	27

		μ	s
P	z	1.1	3
P	z'	1.3	1.4
S	N	2.2	8
M	E	1.6	18
M	N	1.2	14
M	z	1.7	15

$\triangle = 6800$ km $= 61\frac{1}{2}°$.

Sk iP	15	55	38

Aleutian Islands.
Magn. = 6.7 (Up, Ki).

» 19	Up eP	16	24	06
	Ki eP	16	24	25
» 19	Ki iP	17	49	17

Indian Ocean.

» 19	Up iP	22	30	31 D
	ipP	22	30	42
	e	22	39	17
	iS	22	39	25
	iScS	22	40	29
	eP'P'	22	58	39

		μ	s
P	N	6.6	6
P	z	12	6
P	z'	3.6	1.5
S	E	9.0	10
S	N	16	9
P'P'	z'	0.6	1.7
M	E	34	25
M	N	22	21
M	z	27	22

$\triangle = 7550$ km $= 68°$.

Ki iP	22	29	38 D
ipP	22	29	51
i	22	30	03
i	22	37	39
iS	22	37	49
iScS	22	39	24
iP'P'	22	59	06

		μ	s
P	N	5.5	7
P	z	11	8
P	z'	3.4	1.5
S	E	11	9
S	N	12	9
P'P'	z'	0.5	2.0
M	E	16	17
M	N	13	18
M	z	38	19

```
1957
Apr 19            △=6650 km=60°.
(cont.)    Sk  iP         22  30  08 D
               iS         22  38  46
               △=7200 km=65°.
           Aleutian Islands.
           h=50 km (Up, Ki).
           Magn.=7.3 (Up, Ki).

»  19  Up  iP        23  26  40
       Ki  iP        23  25  47
       (Aleutian Islands).

»  20  Ki  iPg       00  49  39
           iSg       00  50  03
           △=200 km=1.8°.

»  20  Up  iP        02  09  48
       Ki  iP        02  08  54
       (Aleutian Islands).

»  20  Up  eL        08  11
                        μ    s
           M   E     1.6  20
           M   N     2.2  24
           M   z     3.1  22
       Ki  eL        08  06
                        μ    s
           M   E     0.9  18
           M   N     1.7  22
           M   z     4.6  24
       South Pacific Ocean.

»  20  Up  iP        08  55  01
       Ki  iP        08  54  07
       Aleutian Islands.

»  20  Up  i(P)      10  40  01

»  20  Up  iPKP      12  49  21
           iPP       12  50  19
           e         13  00  17
           e         13  01  24
                        μ    s
           M   E     5.9  22
           M   N     6.0  21
           M   z     10   24
       Ki  i         12  59  14
           e         13  05  10
                        μ    s
           M   E     7.8  22
           M   N     4.8  22
           M   z     17   23
       Sk  ePKP      12  49  20
       Near coast of New Guinea.
       Magn.=6.6 (Up, Ki).

»  20  Up  iP        14  22  52
       Aleutian Islands.

»  20  Up  eP        15  07  06
       Rhodes Island region.
```

```
1957
Apr 20  Up  iP        18  05  25 C
        Ki  iP        18  04  32
                        μ    s
            P   z'    0.1  1.0
        Aleutian Islands.

»  20  Up  iP        18  18  22 C
           ipP       18  18  33
       Ki  iP        18  17  28
       Sk  eP        18  18  10
       Aleutian Islands.

»  20  Up  iP        20  05  32
       Ki  iP        20  04  38
       Aleutian Islands.

»  20  Up  iP        22  39  15
       (Aleutian Islands).

»  21  Up  iPKP      00  33  40
       Fiji Islands region.

»  21  Up  eP        13  46  28
       Aleutian Islands.

»  21  Up  i(P)      16  39  29

»  21  Up  iP        21  24  56
           iS        21  35  16
                        μ    s
           P   z     1.7  2
           P   z'    1.0  1.5
           S   E     21   18
           S   N     11   16
           S   z     4.4  18
           M   E     35   25
           M   N     23   23
           M   z     51   25
           △=9350 km=84°.
       Ki  iP        21  25  01
           i         21  25  04
           iSKS      21  35  20
           iS        21  35  25
           iScS      21  35  32
                        μ    s
           P   E     2.3  6
           P   z     4.0  6
           P   z'    3.4  2.0
           S   E     17   15
           S   N     9.5  15
           M   E     38   23
           M   N     19   23
           M   z     56   22
           △=9450 km=85°.
       Sk  iP        21  24  44
           eSKS      21  35  01
           i         21  35  09
       Colombia-Venezuela border.
       Magn.=7.1 (Up, Ki).

»  21  Up  eP        22  09  15
```

```
1957
Apr 21  Up  eP        23  28  55
        Ki  eP        23  28  03
        Aleutian Islands.

»  22  Up  iP        00  27  32
                        μ    s
           P   z'    0.2  1.5
       Ki  iP        00  27  31
       Sk  iP        00  27  52
       Tibet.

»  22  Up  iP        00  32  20

»  22  Up  iP        00  49  27
       East of the Island of Crete.

»  22  Up  iP        01  50  34

»  22  Up  iP        01  51  33
                        μ    s
           P   z'    0.3  1.1
           M   E     2.2  17
           M   N     1.8  17
       Ki  iP        01  51  32
                        μ    s
           P   z'    0.2  1.3
           M   E     1.5  16
           M   N     1.5  16
           M   z     1.7  15
       Sk  iP        01  51  52
       Tibet.

»  22  Up  iP        02  04  44

»  22  Up  eP        05  38  41
                        μ    s
           P   z'    0.1  1.0
       Ki  eP        05  38  31
                        μ    s
           M   N     0.6  17
       Sk  eP        05  38  57
       Tibet.

»  22  Up  iP        13  55  44
                        μ    s
           P   z'    0.1  0.9
       Ki  iP        13  55  48
                        μ    s
           P   z'    0.1  1.0
       Sk  iP        13  55  32
       Colombia-Venezuela border.

»  22  Up  iP        15  49  51
       Ki  iP        15  49  55
       Sk  iP        15  49  39
       Colombia-Venezuela border.

»  23  Up  iP        07  07  06
       Ki  iP        07  06  12
       Aleutian Islands.
```

```
1957
Apr 23  Up  iP        18  09  49
        Ki  iP        18  09  53
        Sk  iP        18  09  37
        Colombia-Venezuela border.

»  23  Ki  iP        19  36  06

»  23  Up  e         22  27  38
                        μ    s
           M   E     1.6  18
           M   N     1.8  20
           M   z     2.9  17
       Ki  e         22  28  20
                        μ    s
           M   E     1.7  19
           M   N     0.8  18
           M   z     2.2  19
       Northern Chile-Argentina border.

»  23  Up  iP        23  17  19
       Aleutian Islands.

»  24  Ki  iP        02  12  57 C
       Sk  eP        02  13  10
       Near southwest coast of Sumatra.

»  24  Up  iP        05  12  16
       Ki  iP        05  11  22
       Sk  iP        05  11  58
       (Aleutian Islands).

»  24  Sk  iPg       15  20  16
           iSg-      15  20  45
           △=240 km=2.2°.

»  24  Ki  iP        17  27  46
       Near south coast of
       Hokkaido, Japan.

»  24  Up  iP        19  15  28 C
           i         19  15  43
           i         19  19  43
           iS        19  19  48
                        μ    s
           P   E     6.9  9
           P   N     18   9
           P   z     26   9
           P   z'    3.6  1.5
           S   E     73   13
           S   N     47   12
           S   z     33   12
           M   E     320  20
           M   N     160  20
           M   z     210  20
           △=2700 km=24½°.
       Ki  iP        19  16  34 C
           i         19  17  17
           iS        19  21  40
           iPcS      19  23  09
                        μ    s
           P   E     1.1  9
           P   N     3.9  9
```

Column 1 (p. 86)

1957
Apr 24 (cont.)

P	z	7.0	10	
P	z'	3.5	1.0	
S	E	11	7	
S	N	14	12	
M	E	87	15	
M	N	61	18	
M	z	130	18	

△ = 3500 km = 31½°.

Sk	iP	19	16	08 C
	i	19	16	15
	iPP	19	17	04
	iPcP	19	19	18

△ = 3200 km = 29°.
East of Rhodes Island.
Magn. = 6.9 (Up, Ki).

» 25 Up iP

	iP	02	30	56 C
	i	02	31	08
	i	02	31	14
	iS	02	35	11
	iLg2	02	38	48

		μ	s
P	E	11	7
P	N	20	7
P	z	31	7
P	z'	5.1	1.2
S	E	410	17
S	N	370	16
S	z	60	14
M	E	650	23
M	N	210	17
M	z	250	18

△ = 2650 km = 24°.

Ki	iP	02	32	02 C
	i	02	32	18
	e	02	36	17
	i	02	36	45
	eS	02	37	04
	i	02	37	39
	i	02	38	30

		μ	s
P	E	1.2	8
P	N	5.2	8
P	z	11	9
P	z'	3.8	1.0
S	E	29	10
S	N	14	13
M	E	170	13
M	N	110	17
M	z	260	18

△ = 3450 km = 31°.

Sk	iP	02	31	36 C

East of Rhodes Island.
Magn. = 7.2 (Up, Ki).

» 25	Up	eP	04	42	22
	Ki	iP	04	43	26

East of Rhodes Island.

» 25	Up	iP	05	30	44

Column 2 (p. 86)

1957
Apr 25 East of Rhodes Island.
(cont.)

» 25	Up	iP	07	06	14

		μ	s
P	z'	0.1	0.9

	Ki	iP	07	06	07
	Sk	iP	07	06	29
» 25	Up	iP	07	18	07 C

		μ	s
P	z'	0.4	1.0

	Ki	iP	07	17	42 C

		μ	s
P	z'	0.4	0.9

	Sk	iP	07	18	15 C

Mongolia.

» 25	Up	iP	07	26	19 C
		ipP	07	26	32
		eS	07	35	16
		iP'P'	07	54	30

		μ	s
P	z'	0.2	1.2
M	E	2.2	17
M	N	1.9	21
M	z	3.3	21

△ = 7550 km = 68°.

	Ki	iP	07	25	26 C

		μ	s
P	z	0.6	8
P	z'	0.1	1.0
M	E	3.6	17
M	N	1.2	18
M	z	3.4	17

	Sk	iP	07	25	57
		iPcP	07	26	31

Aleutian Islands.
Magn. = 5.9 (Up, Ki).

» 25	Up	eP	07	57	29
	Ki	iP	07	58	31
	Sk	eP	07	58	18

Rhodes Island region.

» 25	Up	iP	08	26	05
	Ki	iP	08	25	12

Aleutian Islands.

» 25	Up	eL	11	06	

		μ	s
M	E	1.5	19
M	N	1.0	19
M	z	2.1	20

	Ki	eL	11	(13)

		μ	s
M	E	1.4	17
M	N	0.8	16
M	z	0.9	17

Off coast of New Guinea.

» 25	Up	iP	11	19	42

Column 3 (p. 87)

1957
Apr 25 (cont.)

		μ	s
M	E	2.9	22
M	N	2.0	22
M	z	3.9	22

	Ki	iP	11	19	27
		iSKS	11	29	56

		μ	s
P	z'	0.2	1.0
M	E	2.5	23
M	N	1.2	21
M	z	3.8	22

	Sk	iP	11	19	47

Molucca Passage.

» 25	Up	iP	14	18	01 D

		μ	s
P	z'	0.2	1.5

	Ki	iP	14	17	05

		μ	s
P	z'	0.2	1.5

	Sk	iP	14	17	32

Near south coast of Alaska.

» 25	Up	iP	14	23	00
	Ki	eP	14	22	05
	Sk	eP	14	22	27

» 25	Up	iP	17	56	16

		μ	s
P	z'	0.4	1.0
M	E	1.6	20
M	N	1.8	20
M	z	2.1	20

	Ki	iP	17	55	23 C

		μ	s
P	z'	0.1	1.0
M	E	1.4	17
M	N	1.2	18
M	z	1.7	18

	Sk	iP	17	55	55 C

Aleutian Islands.

» 25	Up	iP	22	09	48

		μ	s
M	E	1.1	17
M	N	1.0	19
M	z	1.7	19

Ki

		μ	s
M	E	1.3	16
M	N	0.6	14
M	z	1.1	13

Imperial Valley, California.

» 25	Up	iP	22	36	20

		μ	s
M	E	0.9	18
M	N	0.8	18
M	z	1.6	18

Ki —

Column 4 (p. 87)

1957
Apr 25 (cont.)

		μ	s
M	E	1.0	14
M	N	0.7	16
M	z	1.7	16

	Sk	eP	22	35	56

Imperial Valley, California.

» 26	Up	iP	02	19	19 D
		ipP	02	20	00
		iPP	02	20	52
		iS	02	25	16

		μ	s
P	z'	0.2	1.0

△ = 4550 km = 41°.

	Ki	iP	02	19	28

		μ	s
P	z'	0.1	0.8

	Sk	iP	02	19	44
		ipP	02	20	26
		iPP	02	21	25

△ = 4700 km = 42½°.
Hindu Kush.
h = 215 km (Up, Sk).

» 26	Up	iP	02	41	54
	Sk	iP	02	41	42

(Antilles).

» 26	Up	iP	04	43	36

Aleutian Islands.

» 26	Up	iP	06	38	54
		i(pP)	06	39	07
		iPP	06	39	22
		eS	06	43	16
		e	06	43	29
		iLg2	06	46	58

		μ	s
P	z'	0.2	1.0
(pP)	z'	0.8	1.3
PP	N	0.7	3
S	E	4.1	7
S	N	4.4	8
M	E	39	16
M	N	15	12
M	z	22	14

△ = 2700 km = 24½°.

	Ki	iP	06	40	00
		i(pP)	06	40	13
		eS	06	45	12
		iLg1	06	50	00

		μ	s
(pP)	z'	0.4	1.0
S	E	1.4	9
S	N	1.2	9
M	E	9.7	11
M	N	8.0	15
M	z	14	15

△ = 3550 km = 32°.

	Sk	eP	06	39	34
		i	06	39	51

Column 1

```
1957
Apr 26   East of Rhodes Island.
(cont.)  Magn.=5.8 (Up, Ki).

» 26  Up   eP              10  33  27
      Ki   iP              10  32  32
                        μ     s
           P    z'      0.1   1.1
      Sk   iP              10  32  58
      Near south coast of Alaska.

» 26  Up   iP              14  05  51

» 26  Up   iP              15  19  24
                        μ     s
           P    z'      0.2   1.0
      Ki   iP              15  18  38
                        μ     s
           P    z'      0.2   1.3
           M    E       1.7   19
           M    N       1.0   19
      Sk   iP              15  19  13
      Kurile Islands.

» 26  Up   eP              16  14  26
      Ki   eP              16  15  30
      Sk   eP              16  15  14
      Rhodes Island region.

» 27  Ki   eP              00  23  18
      Sk   eP              00  23  24
      Near coast of Celebes.

» 27  Up   iP              02  50  22
           ipP             02  50  34
                        μ     s
           pP   z'      0.2   1.5
      Ki   iP              02  49  30
           ipP             02  49  41
                        μ     s
           pP   z'      0.1   1.0
      Sk   eP              02  49  58
      Aleutian Islands.
      h=50 km (Up, Ki).

» 27  Ki   iPKP            11  49  33
      Sk   iPKP            11  49  44
      Loyalty Islands (h~100 km).

» 27  Up   eP              12  59  50
      Ki   eP              12  58  58
      Aleutian Islands.

» 27  Sk   iP              15  33  01

» 27  Up   iP              15  41  35

» 27  Up   iP              16  48  14

» 27  Up   iP              22  02  53
      Aleutian Islands.
```

Column 2

```
1957
Apr 28  Up   eP              00  13  26

» 28  Up   iP              01  36  58C
           eSKS            01  47  25
           eS              01  47  58
                        μ     s
           P    z        0.8   3
           P    z'       0.8   2.0
           S    E        0.9   5
           S    N        0.7   5
           M    E        6.3   20
           M    N        6.8   21
           M    z        7.8   18
           △=10400 km=93½°.
      Ki   iP              01  36  40
           eS              01  47  23
                        μ     s
           P    z        1.3   7
           P    z'       0.7   1.7
           S    E        1.5   10
           S    N        0.9   11
           M    E        9.4   21
           M    N        5.1   20
           M    z        13    21
           △=9950 km=89½°.
      Sk   iP              01  37  02C
      Off coast of Mindanao.
      Magn.=6.5 (Up, Ki).

» 28  Up   iP              14  59  55
                        μ     s
           P    z'       0.5   1.3
           M    E        1.8   17
           M    N        1.9   18
           M    z        1.7   20
      Ki   iP              14  59  01
                        μ     s
           P    z'       0.5   1.2
           M    E        1.6   18
           M    N        1.0   16
           M    z        1.9   16
      Sk   iP              14  59  31
      Aleutian Islands.

» 28  Up   iP              15  11  08

» 28  Up   iP              19  07  22
      Ki   iP              19  07  23
      Sk   iP              19  07  37
      Northern Sumatra.

» 28  Up   iP              20  14  50D
                        μ     s
           P    z'       0.2   1.0
      Ki   eP              20  13  58
      Aleutian Islands.

» 28  Up   iP              20  48  20

» 28  Up   iP              21  47  54

» 28  Up   iP              22  24  21
```

Column 3

```
1957
Apr 28  Up   iP              23  50  18
      Ki   iP              23  49  25
      Aleutian Islands.

» 29  Up   iP              04  41  05C
                        μ     s
           P    z'       0.3   1.3
           M    E        1.2   18
      Ki   iP              04  40  11C
                        μ     s
           P    z'       0.3   1.0
           M    N        0.6   16
           M    z        1.4   15
      Sk   iP              04  40  41
      Aleutian Islands.

» 29  Up   iP              04  48  14
                        μ     s
           P    z'       0.1   1.3
      Ki   iP              04  47  21
      Sk   iP              04  47  51
      Aleutian Islands.

» 29  Up   iP              04  55  35
      Ki   iP              04  54  41C
                        μ     s
           P    z'       0.1   1.2
      Sk   eP              04  55  12
      Aleutian Islands.

» 29  Up   iP              09  33  18
           iPcP            09  33  44
      Ki   iP              09  32  33
                        μ     s
           P    z'       0.1   1.0
      Sk   eP              09  33  08
      Kurile Islands.

» 29  Ki   eP              18  53  38

» 29  Up   eP              19  35  42
      Ki   iP              19  35  25
      Near south coast of
      Mindanao (h~400 km).

» 29  Up   iPP             21  13  33
           eSKS            21  20  14
                        μ     s
           SKS  E        1.0   15
           M    E        2.0   19
           M    N        3.8   21
           M    z        2.0   19
      Ki   iP              21  09  31
           eSKS            21  20  10
                        μ     s
           P    z'       0.2   1.5
           SKS  E        1.0   13
           M    E        2.2   19
           M    N        2.0   19
           M    z        3.4   15
```

Column 4

```
1957
Apr 29  Off south coast of Java.
(cont.)  Magn.=6.2 (Up, Ki).

» 30  Up   iP              03  45  53
      Ki   e(P)            03  45  44
      Off coast of Samar Island,
      Philippine Islands.

» 30  Up   iP              04  36  31
      Sk   eP              04  37  15
      Corfu Island region.

» 30  Up   iP              13  58  49
           ipP             13  58  59
                        μ     s
           P    z'       0.1   1.0
      Aleutian Islands.

» 30  Up   iP              14  24  27

» 30  Up   eP              15  30  36
      Ki   iP              15  29  45
           ipP             15  29  58
      Aleutian Islands.

May 1  Up   iP              00  52  48
           iLgI            01  06  58
                        μ     s
           P    z'       0.2   1.0
           M    E        0.9   8
           M    N        1.1   11
           M    z        1.4   8
      Ki   iP              00  52  42
           eLi             01  05  07
           i               01  05  22
                        μ     s
           P    z'       0.1   1.0
           M    E        1.7   13
           M    N        2.0   13
           M    z        2.1   12
      Sk   iP              00  53  08D
      Kirghiz-China border.

» 1   Up   iP              14  02  36
      Ki   iP              14  02  28
      Sk   eP              14  02  51

» 1   Up   iP              20  09  06C
      Ki   iP              20  09  13
      Sk   iP              20  09  31
      Sinkiang Province, China.

» 1   Up   iP              23  39  10
                        μ     s
           P    z'       0.4   1.5
      Ki   iP              23  38  17C
                        μ     s
           P    z'       0.1   1.0
      Sk   iP              23  38  48
           iPcP            23  39  22
      Aleutian Islands.
```

Column 1

```
1957
May  2  Up   iP              02  33  11
                       μ    s
             P      z'  0.1  0.8
        Ki   iP              02  32  17
                       μ    s
             P      z'  0.1  1.0
        Sk   iP              02  32  47 D
        Aleutian Islands.
 »   2  Up   iP              04  02  15
             eS              04  07  33
                       μ    s
             P      N   0.3  3
             P      z   0.6  3
             P      z'  0.4  1.3
             S      N   4.0  27
             M      E   7.5  19
             M      N   6.4  22
             M      z   10   21
             △=3650 km=33°.
        Ki   iP              04  01  26 D
             eS              04  06  10
                       μ    s
             P      z'  0.3  1.5
             S      E   3.8  20
             S      N   2.8  20
             M      E   6.2  18
             M      N   4.9  20
             M      z   13   19
             △=3100 km=28°.
        Sk   iP              04  01  36
             iPP             04  02  27
        Baffin Bay.
        Magn.=5.8 (Up, Ki).
 »   2  Up   iPKP2           10  55  03
        South Pacific Ocean.
 »   2  Up   iP              11  40  14 C
                       μ    s
             P      z   1.2  5
             P      z'  0.6  1.3
             M      E   9.5  19
             M      N   7.1  19
             M      z   12   19
        Ki   iP              11  39  21
                       μ    s
             P      z'  0.4  0.9
        Sk   iP              11  39  52
        Aleutian Islands.
        Magn.=6.3 (Up, Ki).
 »   2  Up   iP              11  49  54
                       μ    s
             P      z   1.1  4
             P      z'  0.5  1.2
             M      E   10   23
             M      N   5.8  19
             M      z   14   20
        Ki   iP              11  49  00
             i               11  52  08
```

Column 2

```
1957
May  2
(cont.)
                       μ    s
             P      z'  0.5  1.0
             M      E   7.8  18
             M      N   5.5  17
             M      z   11   17
        Sk   iP              11  49  31
        Aleutian Islands.
        Magn.=6.4 (Up, Ki).
 »   2  Ki   iP              12  45  30
        Unimak Island region.
 »   2  Up   iP              14  04  32
        Aleutian Islands.
 »   2  Up   iP              21  49  23
             iPP             21  53  40
                       μ    s
             P      z'  0.2  1.0
             PP     z'  0.1  1.0
        Ki   iP              21  49  13 D
             iSKS            21  58  59
                       μ    s
             P      z'  0.2  1.0
        Sk   iP              21  49  32
             e               21  53  37
        Flores Sea (h ~ 600 km).
 »   3  Up   eP              05  51  15
        Ki   eP              05  50  21
        Near east coast of Kamchatka.
 »   3  Up   iP              07  21  29
                       μ    s
             P      z'  0.2  0.9
        Ki   iP              07  20  36 D
        Sk   iP              07  21  08
        Aleutian Islands.
 »   3  Up   iP              14  55  53
                       μ    s
             M      E   1.3  17
             M      N   1.5  17
             M      z   1.5  17
        Ki   iP              14  55  34
                       μ    s
             M      E   1.7  17
             M      z   2.2  17
        Near east coast of Samar,
        Philippine Islands.
 »   3  Up   iP              16  26  07
                       μ    s
             P      z'  0.1  1.2
        Ki   iP              16  25  14
        Sk   eP              16  25  46
        Aleutian Islands.
 »   3  Up   iP              21  55  28
        Ki   eP              21  54  35
        Aleutian Islands.
```

Column 3

```
1957
May  4  Up   iP              02  11  34
        Ki   iP              02  11  15
        Sk   eP              02  11  33
        Off south coast of Kyushu, Japan.
 »   4  Up                   —
                       μ    s
             M      E   5.3  22
             M      N   5.7  21
             M      z   5.2  20
        Ki   eP              10  19  45
                       μ    s
             M      E   3.2  22
             M      N   1.4  20
             M      z   4.8  20
        Western New Guinea.
        Magn.=6.4 (Up, Ki).
 »   4  Up   iP              11  33  57
        Ki   iP              11  33  02
        Aleutian Islands.
 »   4  Ki   iP              11  47  27
             i               11  50  24
        Aleutian Islands.
 »   4  Up   iP              15  01  43
             i               15  01  47
                       μ    s
             P      z'  0.2  0.8
        Ki   iP              15  01  26
                       μ    s
             P      z'  0.1  1.0
             M      E   1.0  11
             M      N   0.8  14
             M      z   1.3  11
        Sk   iP              15  01  55
             i               15  01  59
        Chinghai Province, China.
 »   4  Up   iP              16  44  33
             i               16  44  37
        Ki   iP              16  44  20
        Sk   eP              16  44  47
        Chinghai Province, China.
 »   4  Ki   eP              20  29  25
             i               20  29  33
 »   4  Ki   iP              23  41  44
        Aleutian Islands.
 »   5  Up   eP              19  32  42
        Ki   iP              19  33  22
        Iran.
 »   6  Up   iP              01  08  35
        Ki   iP              01  08  34 C
```

Column 4

```
1957
May  6  Up   eP              11  30  49
                       μ    s
             P      z'  0.1  1.0
        Ki   iP              11  29  57
        Aleutian Islands.
 »   6  Ki   eP              14  27  44
                       μ    s
             M      E   0.7  12
             M      N   0.4  14
             M      z   0.6  12
 »   6  Up   iP              15  13  18
                       μ    s
             M      E   2.5  19
             M      N   1.8  20
             M      z   2.3  17
        Ki   iP              15  13  53
             eS              15  19  28
                       μ    s
             P      z'  0.1  1.2
             S      E   0.8  14
             M      E   3.0  12
             M      N   1.6  14
             M      z   3.0  12
             △=4000 km=36°.
        Sk   eP              15  13  59
             iPP             15  15  11
        Northern Iran.
        Magn.=5.5 (Ki).
 »   6  Up   iP              21  54  35 C
                       μ    s
             P      z'  0.1  0.9
        Ki   iP              21  54  16
        Sk   iP              21  54  38
        Off coast of Mindanao,
        Philippine Islands.
 »   6  Up   iP              22  55  22
                       μ    s
             P      z'  0.1  1.0
        Ki   iP              22  54  56
        Sk   iP              22  55  24
 »   7  Up   iP              05  47  35
                       μ    s
             P      z'  0.3  1.2
             M      E   1.0  16
             M      N   0.9  17
             M      z   1.5  17
        Ki   eP              05  46  42
                       μ    s
             P      z'  0.1  1.0
             M      E   1.6  18
             M      N   1.1  17
             M      z   2.2  17
        Sk   iP              05  47  15
             i               05  47  25
        Aleutian Islands.
```

```
1957
May  7  Up   eP              05  59  40
  »  7  Up   iP              09  21  01 C
               P     z'   0.2   1.0
        Ki   iP              09  20  08
        Sk   iP              09  20  38
        Aleutian Islands.

  »  7  Up   iP              22  31  13
               P     z'   0.1   1.0
        Ki   eP              22  30  36
        Sk   eP              22  31  08
        South of Honshu, Japan.

  »  7  Sk   iP              23  58  52
        Greece.

  »  8  Ki   eP              04  26  09
  »  8  Up   eP              10  12  26
  »  8  Up   iP              10  17  09
        Ki   iP              10  16  41
               P     z'   0.1   1.0

  »  8  Up   iP              14  32  03
             iSS             14  40  40
             iLg1            14  45  19
               M     E    1.3   14
               M     N    0.4   10
               M     z    1.5   11
        Ki   iP              14  32  01
             eLg1            14  45  10
               P     z'   0.1   0.8
        Sk   iP              14  32  25
             iPP             14  34  02
        Kirghiz, U.S.S.R.

  »  8  Up   eP              17  16  42
  »  8  Up   eL              21  12
               M     E    1.0   24
               M     N    0.9   20
               M     z    1.7   20
        Ki   eL              21  10
               M     E    0.8   20
               M     N    0.9   22
               M     z    1.2   20
        Fiji Islands (h ~ 400 km).

  »  8  Up   iP              22  09  54
        Ki   iP              22  09  53
        Sk   iP              22  10  07
```

```
1957
May  9  Up   eP              08  51  43
               M     E    0.8   13
               M     N    0.7   16
               M     z    0.9   13
        Ki   eP              08  51  49
        Sk   iP              08  52  10
        Turkestan, U.S.S.R.

  »  9  Up   eP              10  56  46
  »  9  Ki   iP              17  51  33
        Sk   i(P)            17  52  37
        Aleutian Islands.

  »  9  Ki   iP              21  48  13
        Algeria.

  » 10  Sk   eP              16  10  27
  » 10  Up   iPKP            16  43  28
        Sk   ePKP            16  43  23
        South of Kermadec Islands.

  » 11  Up   iP              00  42  45
        Sk   iP              00  43  27
        Greece.

  » 11  Up   iP              07  41  25
        Aleutian Islands.

  » 11  Up   iP              15  07  05
               P     z'   0.1   1.2
        Ki   iP              15  06  11
               P     z'   0.1   1.0
        Sk   eP              15  06  47
        Near east coast of Kamchatka.

  » 11  Up   iP              18  54  56
        Ki   iP              18  54  23
        Near north coast of
        Honshu, Japan.

  » 11  Up   iP              19  56  14 C
               P     z'   0.1   0.7
        Ki   iP              19  55  56
        Sk   iP              19  56  25
        Mongolia.

  » 12  Up   eP              02  04  11
             eS              02  08  11
               P     z'   0.1   1.0
               M     E    0.8   12
               M     N    0.6   14
               M     z    0.8   12
        △ = 2350 km = 21°.
        Ki   eP              02  05  27
```

```
1957
May 12  M     E    1.2   15
(cont.) M     N    0.3   14
        Sk   iP              02  04  53
        Near west coast of Greece.

  » 12  Up   iPKP            05  06  44 D
             ePP             05  08  27
             PKP   z    0.4   4
             PKP   z'   0.1   1.0
             PP    N    0.2   5
             PP    z    0.7   5
               M     E    0.9   18
               M     N    1.4   18
               M     z    2.0   19
        △ ~ 13700 km ~ 123½°.
        Ki   iPKP            05  06  59
             ePP             05  09  17
             iPKS            05  10  27
             PKP   z    0.8   5
             PKP   z'   0.2   1.5
             PP    z'   0.1   1.6
             PKS   E    1.5   5
             PKS   N    1.5   5
             PKS   z    1.2   9
               M     E    0.9   18
               M     N    1.1   17
               M     z    2.4   18
        △ ~ 14550 km ~ 131°.
        Sk   iPKP            05  06  49 D
        Sandwich Islands region.

  » 12  Up   iP              06  58  26
             i               06  58  31
             eS              07  06  40
             iScS            07  08  22
             P     N    0.1   2
             P     z    0.3   3
             P     z'   0.4   1.5
               M     E    2.5   21
               M     N    2.0   15
               M     z    1.5   15
        △ = 6550 km = 59°.
        Ki   iP              06  57  35
             i               06  57  41
             P     z'   0.4   1.7
               M     E    4.9   20
               M     N    2.8   20
               M     z    2.2   19
        Sk   iP              06  58  14
             i               06  58  20
        Northern Sakhalin.
        Magn. = 6.1 (Up, Ki).
        P is multiple, the second phase
        having the larger amplitudes.
```

```
1957
May 12  Up   iP              07  57  15
             i               07  57  19
             eS              08  01  08
             P     z'   0.1   1.0
               M     E    1.8   17
               M     N    0.7   13
               M     z    0.8   12
        △ = 2350 km = 21°.
        Sk   iP              07  57  57
        Greece.

  » 12  Up   eP              11  42  41
             e               11  46  16
             iPP             11  46  39
             iSKS            11  53  21
             PP    z    0.6   3
             PP    z'   1.4   3.0
             SKS   N    1.5   14
               M     E    5.3   20
               M     N    9.5   21
               M     z    4.0   19
        △ ~ 10800 km ~ 97°.
        Ki   iP              11  42  39 C
             eSKS            11  53  21
             e               11  55  28
             P     z'   0.2   1.5
             SKS   E    2.5   13
               M     E    8.0   22
               M     N    6.5   22
               M     z    16    24
        Sk   iP              11  42  53
             e               11  46  40
             iPP             11  47  02
        △ ~ 11100 km ~ 100°.
        Near south coast of Java.
        Magn. = 6.7 (Up, Ki).

  » 12  Up   e(PKP)          13  13  45
        Sk   i(PKP)          13  13  40
        Sandwich Islands region.

  » 12  Up   iP              22  04  26
  » 12  Up   i(PKP)          22  17  56
             (PKP) z'   0.1   1.0
        Ki   i(PKP)          22  17  43
        Sk   i(PKP)          22  17  48

  » 13  Up   iP              02  31  04 C
             i               02  31  34
             P     z'   0.2   1.2
        Ki   iP              02  30  23 C
             P     z'   0.1   0.6
        Sk   iP              02  30  58
             ipP             02  32  16
```

Column 1

```
1957
May 13        e(PP)        02   33   18
(cont.)   Sikhota Alin, Siberia (h ~ 300 km).

»  13  Up   eP        04   39   03
            i         04   39   20
       Ki   eP        04   40   06
       East of Rhodes Island.

»  13  Up   iP        06   39   17
            eS        06   43   10
                           μ     s
            P    z'    0.1   1.2
            S    N     0.3   7
            M    E     1.0   15
            △ = 2350 km = 21°.
       Ki   iP        06   40   32
                           μ     s
            M    E     0.4   12
            M    N     0.2   10
            M    z     0.3   10
       Greece.

»  13  Ki   iP        13   29   43
                           μ     s
            P    z'    0.1   1.0
       Near east coast of Mindanao,
       Philippine Islands.

»  13  Up   eP        15   30   39
            iS        15   39   46
       Ki   eP        15   30   06
            iS        15   38   43
                           μ     s
            S    E     0.4   6
            S    N     0.4   6
       South of Honshu, Japan (h ~ 400 km).

»  13  Up   iP        19   25   29
       Aleutian Islands.

»  14  Up   iP        03   10   27
       Ki   eP        03   09   49
       Near east coast of Honshu, Japan.

»  14  Up   iP        18   34   18
       Aleutian Islands.

»  14  Up   eP        18   54   34
       Ki   iP        18   53   41
       Aleutian Islands.

»  15  Up   iP        01   27   53
            iPP       01   29   34
                           μ     s
            P    z'    0.1   0.9
            PP   z'    0.1   1.3
       Ki   iP        01   28   03
                           μ     s
            M    E     0.5   10
            M    z     0.5   10
       Sk   iP        01   28   18
```

Column 2

```
1957
May 15        ePP          01   29   56
(cont.)   Northern Afghanistan.

»  15  Up   iP        01   54   10
       Ki   eP        01   53   16
            iPcP      01   54   00
       Sk   iP        01   53   48
       Aleutian Islands.

»  15  Up   iP        02   23   35
                           μ     s
            P    z'    0.2   1.5
       Ki   iP        02   23   22C
            eS        02   33   32
                           μ     s
            P    z'    0.6   1.3
            S    E     0.5   10
            S    N     0.3   10
       Sk   iP        02   23   17C
            ipP       02   23   43
       Chiapas, Mexico (h ~ 100 km).

»  15  Up   eP        22   20   07

»  16  Up   iP        03   26   19
       Ki   iP        03   25   24
       Aleutian Islands.

»  16  Up   iP        03   54   21
                           μ     s
            P    z'    0.1   1.0

»  16  Up   iP        08   25   08
       Aleutian Islands.

»  16  Up   iP        09   24   45
                           μ     s
            P    z'    0.1   1.0

»  16  Up   e(P)      09   26   31
            i         09   26   40

»  16  Sk   iPKP      11   42   47
       Kermadec Islands region.

»  17  Up   iPKP      03   01   06
       Ki   iPKP      03   01   02
       Sk   ePKP      03   01   11
       Fiji Islands region.

»  17  Ki   eP        03   20   41

»  17  Up   iP        06   06   35
       Ki   iP        06   05   42
       Sk   eP        06   06   10
       Aleutian Islands.

»  17  Up   iP        08   00   00
       Ki   eP        08   00   41
       Northern Iran.
```

Column 3

```
1957
May 17  Up   iP        09   54   23

»  17  Up   iP        12   16   21
            i         12   16   31
       Aleutian Islands.

»  17  Ki   iP        19   05   39
       Italy.

»  17  Up   —
                           μ     s
            M    E     1.3   20
            M    N     1.4   19
            M    z     1.7   20
       Ki   eS        21   06   08
                           μ     s
            M    E     2.6   19
            M    N     1.3   19
            M    z     3.2   19
       Revilla Gigedo Islands region.

»  17  Up   iP        23   13   55

»  18  Up   iP        02   50   26
       Ki   eP        02   49   33
       Aleutian Islands.

»  18  Up   iP        05   35   12
            iS        05   44   14
            eP'P'     06   03   16
                           μ     s
            P     N    0.7   7
            P     z    1.4   7
            P     z'   0.3   1.0
            S     E    1.3   13
            S     N    0.9   10
            P'P'  z'   0.2   1.5
            M     E    2.9   20
            M     N    5.7   24
            M     z    7.7   24
            △ = 7700 km = 69½°.
       Ki   iP        05   34   19
            eS        05   42   38
                           μ     s
            P     N    0.5   8
            S     E    1.1   10
            S     N    0.9   10
            △ = 6850 km = 61½°.
       Sk   iP        05   34   49
       Aleutian Islands.
       Magn. = 6.2 (Up, Ki).

»  18  Up   iP        16   29   55
       Ki   iP        16   29   27
       (Northeastern Siberia).

»  19  Up   iP        03   25   28C
                           μ     s
            P    z'    0.1   0.8
       Ki   iP        03   26   45
```

Column 4

```
1957
May 19                 M     E     μ     s
(cont.)                            0.7   13
       Sk   iP        03   26   11
       Greece.

»  19  Ki   eL        08   12
                           μ     s
            M    E     0.8   18
            M    N     0.5   18
            M    z     1.0   18
       Pacific Ocean, west of
       Galapagos Islands.

»  19  Up   iP        13   47   56
                           μ     s
            P    z'    0.1   0.8
       Sk   iP        13   48   37
       Greece.

»  19  Ki   iPKP      20   52   08C
       Near north coast of North
       Island, New Zealand (h ~ 210 km).

»  19  Up   iP        20   56   59
                           μ     s
            P    z'    0.3   1.5
       Ki   iP        20   56   33
                           μ     s
            P    z'    0.1   1.0
       Sk   iP        20   57   02 D
       Ryukyu Islands.

»  19  Up   eP        21   05   25
       Ki   iP        21   04   32
                           μ     s
            P    z'    0.1   1.0
       Sk   eP        21   05   00
       Aleutian Islands.

»  19  Ki   eP        21   13   07
            eS        21   23   34
                           μ     s
            S    E     0.9   16
            M    E     1.4   17
            M    N     1.0   19
            M    z     1.7   17
       Near coast of Nicaragua (h ~ 100 km).

»  19  Up   e(PP)     22   11   21
       Ki   iP        22   10   24
                           μ     s
            M    E     0.6   15
            M    N     0.7   15
       Iran.

»  20  Up   iP        02   01   58
            eS        02   10   58
                           μ     s
            P    z'    0.1   1.0
```

1957
May 20 (cont.)

```
                M       E       2.5    19
                M       N       2.0    19
                M       z       2.6    17
        △=7600 km=68½°.
   Ki   iP              02  01  05
        eS              02  09  18
                                μ      s
                S       N       0.7    15
                M       E       2.3    18
                M       N       1.8    18
                M       z       3.9    18
        △=6700 km=60½°.
   Sk   eP              02  01  38
   Aleutian Islands.
   Magn.=5.7 (Up, Ki).

»  20  Up   iP          03  37  30
   (Aleutian Islands).

»  20  Up   iP          03  53  21
       Ki   iP          03  52  28
       Sk   eP          03  52  58
   Aleutian Islands.

»  20  Up   iP          10  43  11
       Ki   iP          10  43  12

»  20  Ki   eP          18  28  01
   Off southeast coast of Samar,
   Philippine Islands.

»  20  Up   eP          20  02  26
            iS          20  06  22
                                μ      s
                P       N       0.7    4
                P       z'      0.2    1.2
                S       E       0.7    10
                S       N       2.8    8
                M       E       0.9    12
                M       N       4.2    16
                M       z       2.1    16
        △=2400 km=21½°.
       Ki   iP          20  03  40
            eS          20  08  37
                                μ      s
                P       z'      0.3    1.9
                M       E       1.4    17
                M       N       0.7    13
                M       z       1.5    14
        △=3300 km=29½°.
       Sk   iP          20  03  02
   Near north coast of Sicily.
   Magn.=5.8 (Up, Ki).

»  21  Up   iP          01  24  40 D
            ipP         01  25  07
            i(PP)       01  28  31
            iS          01  34  53
            isS         01  35  40
                                μ      s
                P       z'      0.2    1.0
```

1957
May 21 (cont.)

```
                (PP)    E       1.1    4
                (PP)    N       1.1    4
                (PP)    z       2.1    4
                S       E       2.6    4
                S       N       1.8    4
                M       E       8.4    21
                M       N       9.0    20
                M       z       11     26
   Ki   iP              01  24  10 D
        ipP             01  24  35
        iS              01  34  10
        isS             01  34  52
                                μ      s
                P       E       0.8    4
                P       z       0.9    5
                P       z'      0.3    1.0
                S       E       6.3    8
                S       N       13     8
                M       E       13     23
                M       N       11     20
                M       z       13     21
        △=9100 km=82°.
   Sk   iP              01  24  36
   Mariana Islands region.
   h=100 km (Up, Ki).
   Magn.=7.0 (Up, Ki).

»  21  Up   eP          01  42  29
       Ki   eP          01  42  43

»  21  Up   iP          09  26  17
       Ki   iP          09  25  24
   Aleutian Islands.

»  21  Up   iP          11  47  39 C
            i           11  47  50
                                μ      s
                P       z'      0.3    1.8
                M       E       1.1    20
                M       N       1.1    21
                M       z       1.3    18
       Ki   iP          11  47  00 C
                                μ      s
                P       z'      0.2    1.0
                M       E       2.2    18
                M       N       0.9    15
                M       z       3.6    18
       Sk   iP          11  47  33 C
   Near east coast of
   Honshu, Japan.
   Magn.=6.0 (Up, Ki).

»  21  Up   iP          11  48  59
            iS          11  52  49
                                μ      s
                P       N       0.5    2
                P       z       0.8    2
                P       z'      0.5    1.5
                M       E       1.3    10
                M       N       2.6    15
```

1957
May 21 (cont.)

```
                M       z       2.8    16
        △=2350 km=21°.
   Ki   iP              11  50  12
        iS              11  55  08
                                μ      s
                P       z'      0.3    1.3
                M       E       2.3    18
                M       N       0.9    10
                M       z       1.1    10
        △=3200 km=29°.
   Sk   iP              11  49  31 D
   Near north coast of Sicily.
   Magn.=6.1 (Up, Ki).

»  21  Up   iP          13  29  01
            eS          13  32  38
                                μ      s
                P       N       0.9    5
                P       z       1.2    5
                P       z'      0.3    1.0
                M       E       12     17
                M       N       4.2    10
                M       z       5.7    11
        △=2300 km=20½°.
       Ki   eP          13  30  14
            eS          13  34  58
            iLg2        13  39  44
            e           13  39  53
                                μ      s
                P       z'      0.1    1.2
                M       E       7.6    15
                M       N       3.4    11
                M       z       4.7    11
        △=3150 km=28½°.
       Sk   iP          13  29  41
            i           13  29  55
   Near east coast of Greece.
   Magn.=5.7 (Up, Ki).

»  21  Up   iP          15  12  44
       Ki   iP          15  11  50
   Aleutian Islands.

»  21  Up   iP          17  13  13 C
       Ki   iP          17  12  20

»  21  Ki   e(P)        17  51  45

»  21  Up   iP          19  21  13
       Ki   iP          19  20  18
   Aleutian Islands.

»  21  Up   iP          19  26  49
       Ki   iP          19  26  17

»  21  Ki   e(P)        20  27  15

»  22  Up   iP          13  40  56
            iS          13  50  01
            iP'P'       14  08  52
```

1957
May 22 (cont.)

```
                P       N       0.6    2
                P       z       1.2    2
                P       z'      2.2    1.3
                S       E       1.2    3
                S       N       1.5    3
                P'P'    z'      0.3    1.5
                M       E       3.7    27
                M       N       5.6    22
                M       z       6.0    24
        △=7800 km=70°.
   Ki   iP              13  40  04 D
        i               13  40  18
        iPP             13  42  31
        iS              13  48  30
        eP'P'           14  09  07
                                μ      s
                P       z'      0.8    1.3
                PP      z'      0.9    2.5
                S       E       3.6    13
                S       N       3.3    8
                P'P'    z'      0.2    2.0
                M       E       6.7    24
                M       N       3.4    17
                M       z       4.2    16
        △=6900 km=62°.
   Sk   iP              13  40  33 D.
        e(P'P')         14  09  11
   Aleutian Islands.
   Magn.=6.7 (Up, Ki).

»  22  Up   iP          13  52  57
       Ki   iP          13  52  05

»  22  Up   eP          18  36  43
                                μ      s
                M       E       1.7    25
                M       N       0.9    20
                M       z       1.4    20
       Ki   eP          18  34  55
            i           18  35  00
            iS          18  37  02
            eT          18  43  00
                                μ      s
                P       z'      0.1    1.0
                M       E       4.8    25
                M       N       1.8    19
                M       z       3.8    22
        △=1100 km=10°.
       Sk   iP          18  35  49
   Southwest of Spitsbergen.

»  22  Ki   iP          20  22  39

»  23  Up   eP          00  59  04
       Ki   e(P)        00  58  34

»  23  Up   iP          03  57  34
            i           03  57  56
       Sk   iP          03  58  15
   Near east coast of Greece.
```

1957

May 23	Ki	iP	15	58	10
» 23	Up	i(P)	18	59	38
» 23	Ki	e(P)	19	54	05
» 23	Up	iP	20	55	54
» 24	Up	iP	02	50	38C
		i	02	50	53
		iPP	02	54	15
		iS	03	01	13

		μ	s
P	z	1.1	3
P	z'	0.3	1.1
PP	z'	0.2	1.3
S	N	0.9	6
M	E	3.7	23
M	N	2.1	23
M	z	4.9	23

△ ~ 9900 km ~ 89°.

Ki	iP	02	50	40C
	i	02	51	01
	iPP	02	54	11
	eSKS	03	01	03
	iS	03	01	24

		μ	s
P	z'	0.4	1.5
PP	z'	0.3	2.0
S	E	2.4	8
S	N	0.8	6
M	E	3.0	22
M	N	3.0	26
M	z	3.7	22

△ = 9950 km = 89½°.

Sk iP 02 50 26C

Colombia.
Magn. = 6.5 (Up, Ki).

» 24	Ki	iP	03	09	28

		μ	s
P	z'	0.1	1.0

» 24	Up	iP	03	47	29

		μ	s
P	z'	0.1	1.2
M	E	2.5	23
M	N	2.9	20
M	z	3.5	20

Ki	iP	03	46	35
	i	03	47	11
	eS	03	54	38

		μ	s
S	E	1.2	12
M	E	3.7	18
M	N	1.6	18
M	z	5.3	22

△ = 6550 km = 59°.

Sk iP 03 47 06

Aleutian Islands.
Magn. = 5.7 (Up, Ki).

1957

May 24	Ki	eP	07	05	55
	Sk	iP	07	06	40

Off east coast of Honshu, Japan.

» 24	Ki	iP	09	32	34
» 24	Ki	iP	10	20	21

		μ	s
P	z'	0.1	1.0

Mariana Islands (h ~ 100 km).

» 24	Up	i(P)	15	25	28C
» 24	Ki	eP	17	00	47

Off Delta of Orinoco.

» 25	Up	iP	00	41	17
		i	00	41	27
	Ki	iP	00	40	23
	Sk	eP	00	40	51

Near east coast of Kamchatka.

» 25	Up	iP	05	46	45
	Ki	iP	05	45	02
		i	05	45	59
		i	05	46	37
		iS	05	47	02
		eT	05	53	07

		μ	s
P	z'	0.1	1.0
M	E	1.3	20
M	N	1.0	21
M	z	1.2	20

△ = 1100 km = 10°.

Sk	eP	05	45	49
	i	05	46	00

Southwest of Spitsbergen.

» 25	Up	iP	08	22	34

		μ	s
P	z'	0.1	1.0

Ki	iP	08	21	41
Sk	iP	08	22	13

Aleutian Islands.

» 25	Ki	iPKP	14	42	09

Argentina.

» 25	Up	iP	15	07	33
	Ki	eP	15	06	45
	Sk	e(P)	15	07	05
» 25	Up	eP	16	25	43

		μ	s
M	E	0.9	11
M	N	0.5	9
M	z	0.8	9

Ki	iP	16	27	08

		μ	s
M	E	2.7	13
M	N	1.7	10

1957

May 25	M	z	0.8	14
(cont.)	Sk	eP	16	26	24

The Adriatic Sea.

» 25	Ki	iPKP	19	10	08
		i	19	10	21
	Sk	ePKP	19	10	00
		i	19	10	08

Sandwich Islands region.

» 26	Ki	eP	01	56	25
	Sk	e(P)	01	55	35

Yugoslavia.

» 26	Sk	e(P)	02	27	20
		i	02	27	58

Local?

» 26	Up	iP	04	27	57

		μ	s
P	z'	0.1	1.0

Ki	iP	04	27	03

		μ	s
P	z'	0.1	1.0

Sk iP 04 27 34

Aleutian Islands.

» 26	Up	iP	06	38	16D
		iS	06	41	55

		μ	s
P	E	15	5
P	N	30	5
P	z	14	5
P	z'	8.9	1.5
S	E	11	4
S	N	17	6
M	E	580	15
M	N	420	15
M	z	270	15

△ = 2300 km = 20½°.

Ki	iP	06	39	24
	i	06	39	30
	i	06	39	46
	iS	06	44	07

		μ	s
P	E	1.1	7
P	N	4.2	4
P	z	4.5	4
P	z'	2.2	1.0
S	E	88	12
M	E	280	13
M	N	170	13
M	z	170	12

△ = 3100 km = 28°.

Sk iP 06 39 02

Turkey.
Magn. = 7.0 (Up, Ki).

» 26	Up	iP	08	59	29
		iS	09	03	07

1957

May 26	i	09	03	22
(cont.)				

		μ	s
P	E	1.1	4
P	N	0.9	4
P	z	1.6	4
P	z'	0.3	1.1
S	E	0.8	3
S	N	0.7	4
M	E	9.5	15
M	N	5.7	16
M	z	6.6	16

△ = 2300 km = 20½°.

Ki	eP	09	00	38
	i	09	01	08
	i	09	06	17
	i	09	06	36
	i	09	07	18
	iLg1	09	09	40

		μ	s
P	z'	0.1	1.2
M	E	7.9	17
M	N	3.2	16
M	z	3.6	15

Sk iP 09 00 16

Turkey.
Magn. = 5.9 (Up, Ki).

» 26	Up	iP	09	18	25
		iS	09	22	17

		μ	s
P	z'	0.3	1.5
M	E	3.7	20
M	N	3.3	24

△ = 2300 km = 20½°.

Ki	iP	09	19	35
	i	09	20	00
Sk	iP	09	19	11

Turkey.

» 26	Up	iP	09	21	15

		μ	s
P	z'	0.4	1.3

Ki	iP	09	22	26
	i	09	22	40
	i	09	23	02

		μ	s
P	z'	0.1	1.0

Sk iP 09 22 03D

Turkey.

» 26	Up	iP	09	41	18D
		iS	09	44	55
		i!	09	45	18
		i	09	47	45

		μ	s
P	E	1.4	3
P	N	1.8	3
P	z	2.8	2
P	z'	4.3	1.6
S	N	1.1	3
M	E	32	11

Column 1 (page 100, left)

1957
May 26   M   N   29   18
(cont.)   M   z   30   15
△=2300 km=20½°.

Ki	iP		09	42	25
	i		09	42	29
	i		09	42	43
	iS		09	47	16
	i		09	47	31

           μ   s
P   N   0.6   5
P   z   0.8   4
P   z'   0.9   1.6
M   E   31   17
M   N   20   18
M   z   15   12
△=3100 km=28°.
Sk   iP   09   42   04
Turkey.
Magn.=6.2 (Up, Ki).

» 26   Up   eP   15   54   38
     Sk   e(P)   15   55   23
(Turkey).

» 26   Ki   iP   16   07   21
Ceram Island region.

» 26   Ki   iP   17   03   40
        iPcP   17   04   24
Aleutian Islands.

» 26   Up   iP   19   01   31
     Ki   iP   19   00   38
        iPcP   19   01   22
     Sk   iP   19   01   09
Aleutian Islands.

» 26   Ki   iP   20   21   28
     Sk   iP   20   21   40

» 26   Up   eP   21   12   28
        i   21   12   40
     Ki   eP   21   13   51

» 26   Up   iP   22   08   36
     Ki   iP   22   08   19
     Sk   iP   22   08   48

» 27   Up   iP   06   25   09 D
            μ   s
        P   z'   0.2   1.2
     Ki   iP   06   26   17
            μ   s
        M   E   0.3   18
        M   N   0.1   12
     Sk   iP   06   25   54
Turkey.

» 27   Up   iP   06   40   51
     Ki   eP   06   42   15
     Sk   iP   06   41   38

Column 2 (page 100, right)

1957
May 27   Ki   iP   07   04   02
      Sk   iP   07   02   22
         i(P)   07   04   17

» 27   Up   eP   07   09   48
        iS   07   13   33
            μ   s
        P   z'   0.1   1.0
△=2300 km=20½°.
     Ki   iP   07   10   58
     Sk   iP   07   10   33
Turkey.

» 27   Up   iP   07   15   20
            μ   s
        M   E   0.7   11
        M   N   0.4   11
        M   z   0.5   14
     Ki   iP   07   16   32
            μ   s
        P   z'   0.1   1.2
     Sk   iP   07   15   26

» 27   Up   iP   08   28   57
            μ   s
        P   z'   0.1   1.2
     Ki   eP   08   30   03
        i   08   30   31
     Sk   iP   08   29   43
Turkey.

» 27   Up   iP   11   06   11 D
        iS   11   09   52
            μ   s
        P   E   1.1   3
        P   N   1.5   3
        P   z   1.9   3
        P   z'   1.7   1.5
        S   E   0.9   4
        S   N   1.4   5
        M   E   14   11
        M   N   15   14
        M   z   21   20
△=2300 km=20½°.
     Ki   iP   11   07   18
        i   11   07   39
        eS   11   12   01
        iLg1   11   16   03
        i   11   18   36
            μ   s
        P   z'   0.3   1.9
        S   E   1.4   14
        S   N   1.5   10
        M   E   20   14
        M   N   13   17
        M   z   17   18
△=3100 km=28°.
     Sk   iP   11   06   58
        iS   11   11   36
Turkey.
Magn.=6.1 (Up, Ki).

Column 3 (page 101, left)

1957
May 27   Up   iP   13   15   14
      Ki   iP   13   14   21

» 27   Up   iP   13   28   41
Aleutian Islands.

» 27   Sk   iP   20   08   59
     Ki   iP   20   08   06C
            μ   s
        P   z'   0.1   1.2
     Sk   iP   20   08   37
Aleutian Islands.

» 27   Sk   iP   21   07   54

» 27   Up   iP   22   46   49
Kurile Islands (h~150 km).

» 28   Up   iP   00   14   32 D
        iS   00   18   21
            μ   s
        P   z'   0.2   1.4
        M   E   1.0   8
        M   N   1.3   15
        M   z   2.0   15
△=2350 km=21°.
     Ki   eP   00   15   36
        i   00   15   56
            μ   s
        P   z'   0.1   1.0
        M   E   2.3   16
        M   N   0.7   13
        M   z   1.4   14
     Sk   iP   00   15   17
Turkey.
Magn.=5.3 (Up, Ki).

» 28   Up   iP   01   30   27
            μ   s
        P   z'   0.1   1.0
     Ki   iP   01   29   35
            μ   s
        P   z'   0.1   1.0
     Sk   iP   01   30   04
Aleutian Islands.

» 28   Up   iP   01   36   28
     Ki   iP   01   35   34 D
Aleutian Islands.

» 28   Up   iP   05   38   27 C
            μ   s
        P   z'   0.1   1.1
     Ki   eP   05   39   33
        i   05   39   55
     Sk   iP   05   39   14
Turkey.

» 28   Up   iP   06   01   53
        i   06   02   19
        i   06   02   44

Column 4 (page 101, right)

1957
May 28   iS   06   10   10
(cont.)   ePS   06   10   41
            μ   s
        P   z'   0.4   1.1
        S   E   0.9   7
        M   E   2.4   18
        M   N   1.8   20
        M   z   2.1   18
△=6900 km=62°.
     Ki   iP   06   01   45
        i   06   02   07
        iS   06   10   00
        e   06   10   33
            μ   s
        P   z'   0.2   1.0
        S   E   0.8   10
        M   N   1.8   18
        M   z   3.0   15
△=6700 km=60½°.
     Sk   iP   06   02   08C
        i   06   02   30
Pakistan-Burma border.
Magn.=6.0 (Up, Ki).

» 28   Up   iP   06   12   05
            μ   s
        P   z'   0.2   1.0

» 28   Up   iP   18   58   00

» 28   Up   iPKP   23   38   20
        iSKP   23   41   20
     Ki   iPKP   23   38   06 D
     Sk   iPKP   23   38   16
        iSKP   23   41   15
New Hebrides Islands.
(h~300 km).

» 28   Up   iP   23   58   08C
            μ   s
        P   z'   0.1   1.0
     Ki   iP   23   57   46
     Sk   iP   23   58   10
Near coast of Formosa.

» 29   Up   iP   08   52   32
            μ   s
        P   z'   0.1   1.0
     Ki   eP   08   53   41
        i   08   54   00
        i   08   54   08
     Sk   eP   08   53   15
        i   08   53   23
Turkey.

» 29   Up   iP   10   08   43C
     Ki   eP   10   09   26
Iran.

» 29   Up   iP   10   20   26
        i   10   21   34

1957

May 29 (cont.)

Ki	iP		10	19	50

South of Honshu, Japan.

» 29 Up	iP		10	22	26 D
	i		10	23	33
	iS		10	26	17
				μ	s
	P	z'		0.4	1.5
	M	E		2.1	16
	M	N		2.1	16
	M	z		2.6	15

△=2300 km=20½°.

Ki	iP		10	23	34
				μ	s
	P	z'		0.2	1.5
	M	E		3.6	17
	M	N		1.4	17
	M	z		2.0	15
Sk	iP		10	23	12

Turkey.
Magn.=5.3 (Up, Ki).

» 29 Up	iP		18	44	15 D
	i		18	44	25
	iS		18	48	14
	i		18	48	24
				μ	s
	P	z'		0.3	0.8
	S	E		0.2	3
	S	N		1.3	6

△=2500 km=22½°.

Ki	iP		18	45	27 D
	iPP		18	46	16
				μ	s
	P	z'		0.1	1.0
	M	E		0.5	12
	M	N		0.4	13
	M	z		0.5	12
Sk	iP		18	44	56 D

Greece.

» 29 Up	i(P)		18	51	31

» 29 Up	iP		21	37	56
Sk	iP		21	38	36

Greece.

» 29 Up	iP		21	43	13
Ki	eP		21	42	24
	i		21	42	44

» 29 Up	eP		22	29	24

Southwest of Hokkaido, Japan.

» 30 Up	iPKS		00	41	59
				μ	s
	M	E		1.1	20
	M	N		1.0	22
	M	z		1.4	20
Ki	iPKP		00	38	12
	iPKS		00	41	38
	e		00	58	12

1957

May 30 (cont.)

				μ	s
	M	E		1.5	20
	M	N		1.0	21
	M	z		3.4	21

Tonga Islands.

» 30 Up	eP		13	12	42
Ki	eP		13	13	50
	e		13	14	12
Sk	iP		13	13	27

Turkey.

» 30 Up	iP		14	34	35
	i		14	34	49
	iS		14	38	22
				μ	s
	P	z'		0.1	1.2
	M	E		0.6	21
	M	N		0.4	14

△=2300 km=20½°.

Ki	i(P)		14	36	00
Sk	iP		14	35	22

Turkey.

» 30 Up	iP		18	12	16
Ki	iP		18	11	22

Aleutian Islands.

» 30 Up	iP		20	00	36
Ki	iP		19	59	55
Sk	eP		20	00	28

South of Hokkaido, Japan.

» 30 Up	iPKP		21	16	37
Ki	iPKP		21	16	29 C
	iSKP		21	19	03

Fiji Islands region (h~600 km).

» 30 Up	iP		21	38	39
Ki	iP		21	37	45

Aleutian Islands.

» 30 Up	iP		21	42	28 D
Ki	iP		21	41	34 C
Sk	iP		21	42	05

Aleutian Islands.

» 31 Up	iP		01	13	46
Ki	iP		01	14	12

Mid-Atlantic Ridge.

» 31 Up	iPKP		02	33	54
	iPP		02	34	25
Ki	iPKP		02	34	02 C
	iPP		02	35	00
	iPKKP		02	45	00
	e(sS)		02	45	32
	e		02	47	27
				μ	s
	PKP	z'		0.1	1.0
	PP	z'		0.1	1.3

1957

May 31 (cont.)

△=12650 km=114°.

Sk	ePKP		02	33	56

Argentina (h~600 km).

» 31 Up	eP		03	21	13
Ki	iP		03	20	18
				μ	s
	M	E		1.0	18
	M	N		1.3	17
	M	z		1.2	18
Sk	eP		03	20	42

Unimak Island region.

» 31 Up	iP		16	30	38
Ki	iP		16	29	45
				μ	s
	P	z'		0.1	1.0
Sk	eP		16	30	15

Aleutian Islands.

» 31 Up	iP		22	10	36
	iS		22	21	18

△=9950 km=89½°.

Ki	iP		22	10	38
	iS		22	21	22
	ipS		22	21	49

△=10000 km=90°.

Sk	iP		22	10	24 C

Near coast of Colombia (h~100 km).

» 31 Up	iP		22	28	14
	iS		22	37	12
	iScS		22	38	10
				μ	s
	P	z'		0.7	1.0
	S	N		0.4	3
	M	E		1.4	18
	M	N		2.0	19
	M	z		2.2	19

△=7550 km=68°.

Ki	iP		22	27	21
	iS		22	35	35
				μ	s
	P	z'		0.3	1.3
	S	E		0.4	10
	S	N		0.5	8
	M	E		2.1	17
	M	N		1.7	18
	M	z		2.6	19

△=6650 km=60°.

Sk	iP		22	27	53 C

Aleutian Islands.
Magn.=6.3 (Up, Ki).

June 1 Up	iP		01	33	46 D
Sk	iP		01	33	16

Near south coast of Alaska.

» 1 Up	iP		05	31	34
	iS		05	35	26

1957

June 1 (cont.)

				μ	s
	P	z'		0.3	1.3
	M	E		2.5	16
	M	N		2.8	16
	M	z		2.3	16

△=2350 km=21°.

Ki	iP		05	32	43
	i		05	33	01
	iS		05	37	31
				μ	s
	P	z'		0.1	1.0
	M	E		3.6	17
	M	N		1.3	16
	M	z		1.8	16

△=3100 km=28°.

Sk	iP		05	32	21 D
	i		05	32	30

Turkey.

» 1 Up	iPg		15	43	26
	iSg		15	43	44
	i(Rg)		15	43	52

△=160 km=1.4°.
Explosion at Norrköping, Sweden.
Origin time=15 42 58.

» 1 Up	iP		16	14	03 D
Ki	iP		16	13	08 C
				μ	s
	P	z'		0.1	1.1
Sk	iP		16	13	36

Alaska.

» 1 Ki	iP		19	06	09

» 1 Up	iP		21	12	57
	i		21	13	03
	iS		21	16	52
	i		21	17	01
				μ	s
	P	z'		0.3	1.5
	M	E		1.5	12
	M	N		1.3	15
	M	z		1.3	15

△=2350 km=21°.

Ki	iP		21	14	05
				μ	s
	P	z'		0.1	1.5
	M	E		1.8	16
	M	N		0.8	16
	M	z		1.4	17
Sk	iP		21	13	44 C

Turkey.

» 1 Up	iP		22	39	24

Aleutian Islands.

» 1 Up	iP		22	41	44
				μ	s
	M	E		0.7	17

1957 June 1 (cont.)

	M	N	1.0	21		
Ki	eP			22	41	38
			μ	s		
	M	E	0.5	16		
	M	N	1.7	18		
	M	z	0.8	16		
Sk	e(P)			22	42	03

» 2 Up

Up	iP			01	16	41
	i			01	20	22
	iS			01	20	35
			μ	s		
	P	z'	0.5	1.5		
	M	E	1.5	12		
	M	N	1.3	15		
	M	z	1.7	16		

△=2350 km=21°.

Ki	iP			01	17	49 D
	iLg1			01	26	13
			μ	s		
	M	E	1.8	16		
	M	N	0.6	16		
	M	z	1.1	13		
Sk	iP			01	17	27

Turkey.

» 2 Up

Up	iPKP			09	58	02
Sk	iPKP			09	57	55

Kermadec Islands.

» 2 Up

Up	iP			21	32	22 C
		z'	μ	s		
	P	z'	0.1	1.0		
Ki	iP			21	31	29
	i			21	31	41
			μ	s		
	P	z'	0.1	1.0		
	M	E	0.5	15		
	M	N	0.4	20		
	M	z	0.5	15		
Sk	iP			21	32	05

Near east coast of Kamchatka.

» 2 Up iP 23 10 40

» 2 Up

Up	iP	23	14	25
Ki	iP	23	14	20

East of Java.

» 3 Ki

Ki	iP	00	49	40
	i	00	50	15
	iSg	00	50	21

Local.

» 3 Up

Up	iP	00	59	31
Ki	iP	00	58	38

» 3 Ki eP 15 03 41

South of Honshu, Japan.

» 3 Ki iP 17 21 11

1957 June 4 Up

Up	iP	00	51	35
	i	00	51	45
Ki	iP	00	50	41
Sk	iP	00	51	11

Unimak Island region.

» 4 Up

Up	iPKP	11	33	52
Ki	iPKP	11	33	39
Sk	iPKP	11	33	50

Santa Cruz Islands.

» 4 Up

Up	ePKP			17	23	17
	iSKP			17	26	07
			μ	s		
	SKP	z'	0.1	0.9		
Ki	iPKP			17	23	14
	iSKP			17	25	41
	i			17	31	22
	iSS			17	41	58
			μ	s		
	SKP	z	0.7	6		
	SKP	z'	0.6	2.0		
Sk	e(PKP)			17	23	12
	iPKP			17	23	23
	iSKP			17	25	59

Fiji Islands (h ~ 550 km).

» 4 Up

Up	iP			20	31	01 C
	iSKS			20	41	24
	iS			20	41	45
	i			20	42	13
			μ	s		
	P	z'	0.1	0.8		
	S	N	0.3	5		
	M	N	0.6	22		

△=9850 km=88½°.

Ki	iP			20	31	02
	eSKS			20	41	24
	eS			20	41	45
	i			20	42	13
			μ	s		
	P	z'	0.4	5		
	P	z'	0.5	1.0		
	S	N	0.3	7		
	M	E	0.7	22		
	M	N	0.5	19		
	M	z	0.8	22		

△=9850 km=88½°.

Sk	iP	20	31	15
	iPP	20	34	55

Sumatra.
Magn.=6.2 (Up, Ki).

» 5 Up

Up	eP	06	41	19
Ki	eP	06	41	48

Caucasus.

» 5 Up

Up	iP			07	22	22
	eS			07	27	10
			μ	s		
	P	E	0.3	5		

1957 June 5 (cont.)

	P	z	0.6	5		
	P	z'	0.1	1.0		
	S	E	1.0	10		
	S	N	0.5	7		
	S	z	0.8	10		
	M	E	2.9	20		
	M	N	3.2	18		
	M	z	4.2	20		

△=3200 km=29°.

Ki	iP			07	22	28
	eS			07	27	28
			μ	s		
	P	E	0.3	6		
	P	z	0.4	5		
	P	z'	0.1	1.5		
	S	E	1.3	12		
	S	N	0.3	8		
	M	E	5.8	19		
	M	N	2.8	20		
	M	z	5.4	20		

△=3350 km=30°.

Sk	iP	07	21	55

North Atlantic Ocean.
Magn.=5.6 (Up, Ki).

» 5 Up

Up	eP	08	36	43
Sk	eP	08	36	17

Southern Alaska.

» 5 Up

Up	iP	09	20	37
Ki	iP	09	19	43

Aleutian Islands.

» 5 Up

Up	iP			14	08	19 D
	i			14	08	38
	iS			14	16	56
			μ	s		
	P	z'	0.3	1.5		
	S	E	0.5	5		
	M	E	1.5	19		
	M	N	1.4	19		
	M	z	0.9	17		

△=7150 km=64½°.

Ki	iP			14	07	26 D
	iS			14	15	17
			μ	s		
	P	z	0.4	5		
	P	z'	0.2	1.3		
	S	E	0.5	9		
	S	N	0.3	9		
	M	E	1.0	14		
	M	N	0.5	15		
	M	z	1.4	14		

△=6250 km=56½°.

Sk	iP	14	08	02

Off east coast of Kamchatka.
Magn.=5.8 (Up, Ki).

» 5 Up

Up	i	21	16	34
	iSg	21	16	37
Ki	iPn	21	12	32

1957 June 5 (cont.)

	iPg			21	12	42
	iS*			21	13	05
	iSg			21	13	10
			μ	s		
	Pg	z'	0.2	0.5		
	Sg	z'	0.2	0.5		

△=270 km=2.4°.

Sk	e(Sn)	21	14	11
	iSg	21	14	46

West coast of Norway, near Lofoten.
Origin time=21 11 51.

» 5 Ki

Ki	eL			23	05
			μ	s	
	M	E	0.7	19	
	M	N	0.5	19	
	M	z	0.8	19	

Northwest of Tristan da Cunha Islands.

» 6 Up

Up	iP			03	41	24
			μ	s		
	P	z'	0.4	1.0		
Ki	iP			03	40	31
			μ	s		
	P	z'	0.1	1.2		
	M	E	0.5	19		
	M	N	0.4	17		
	M	z	0.7	18		
Sk	eP			03	41	03
	iPcP			03	41	35

Aleutian Islands.

» 6 Up iP 04 44 42

» 6 Up

Up	iP			05	49	30
			μ	s		
	P	z'	0.1	1.0		
	M	N	1.2	22		
Ki	iP			05	48	36
			μ	s		
	P	z'	0.1	1.2		
	M	E	0.4	16		
	M	N	0.6	20		
	M	z	0.9	17		
Sk	eP			05	49	06

Aleutian Islands.

» 6 Ki iP 06 24 55

Aleutian Islands.

» 6 Ki iP 13 51 40

Aleutian Islands.

» 6 Up

Up	iP			20	03	19
	eSKS			20	13	59
	eS			20	14	35
			μ	s		
	M	E	1.6	20		
	M	N	1.3	20		
	M	z	2.4	20		

△=10700 km=96½°.

Column 1 (p. 106)

1957

June 6 Ki (cont.)	iP	20	03	02
	ePP	20	06	43
	iSKS	20	13	31
	eS	20	13	59

		μ	s
P	z	0.3	4
P	z'	0.3	1.5
PP	E	0.3	6
PP	z	0.4	5
SKS	E	0.4	8
S	N	0.5	8
M	E	3.2	19
M	N	1.7	20
M	z	3.8	19

△=10200 km=92°.

Sk	iP	20	03	23

Molucca Passage.
Magn.=6.1 (Ki).

» 7 Up	iP	00	10	59
	i	00	11	06
	i	00	24	11
	e	00	24	36
	iLg(1)	00	24	50
	e	00	25	09

		μ	s
P	z'	0.1	1.0
M	E	1.2	12
M	z	1.8	12

Ki	eP	00	10	47
	i	00	10	55
	e	00	23	59
	eLg(1)	00	24	05
	e	00	24	20

		μ	s
P	z'	0.1	1.0
M	E	1.7	14
M	z	2.1	14

Sk	iP	00	11	23

Sinkiang Province, China.

» 7 Up	iP	01	38	56
Ki	iP	01	38	27
Sk	eP	01	38	53

Mariana Islands.

» 7 Up	iP	02	57	45
Ki	eP	02	56	51

Aleutian Islands.

» 7 Up	i(PKP)	21	11	24
Ki	iPKP	21	11	26
Sk	e(PKP)	21	11	25

Fiji Islands.

» 7 Up	iP	22	02	51

» 7 Ki	iP	22	14	52

		μ	s
P	z'	0.4	0.9

Column 2 (p. 106)

1957

June 8 Ki	eL		04	15

		μ	s
M	E	0.9	22
M	N	0.8	24

Bismarck Sea.

» 8 Up	eL		07	05

		μ	s
M	E	0.8	20
M	N	0.5	20
M	z	1.7	19

Ki	eL		06	59

		μ	s
M	E	0.8	20
M	N	0.7	25
M	z	1.8	24

New Ireland.

» 8 Ki	iP	16	51	46

Caspian Sea.

» 9 Sk	eP	02	45	09

» 9 Up	iP	03	32	00

» 9 Up	iP	04	17	51
Ki	iP	04	17	25

South of Honshu, Japan.

» 9 Ki	iP	07	49	09

South of Unimak Island.

» 9 Up	i(P)	12	02	04

» 9 Ki	iP	16	01	06

Aleutian Islands.

» 9 Up	i(P)	18	08	01

» 9 Ki	iP	18	41	02

» 9 Up	iP	21	02	23
Ki	iP	21	01	29

		μ	s
P	z'	0.1	1.0

Sk	iP	21	01	59

Aleutian Islands.

» 10 Up	iP	01	13	56
	ePP	01	18	15
	iSKS	01	24	23
	eS	01	25	24

		μ	s
P	z'	0.1	0.8
PP	z	0.9	4
SKS	E	1.4	3
SKS	N	0.3	3
M	E	2.6	20
M	N	4.6	23
M	z	3.1	22

△~11350 km~102°.

Column 3 (p. 107)

1957

June 10 Ki (cont.)	iP	01	13	48
	iPP	01	18	04
	iSKS	01	24	16
	eS	01	25	08

		μ	s
P	z	0.5	4
P	z'	0.7	1.3
PP	E	0.7	8
PP	z	1.1	8
PP	z'	0.1	1.3
SKS	E	2.9	8
SKS	N	0.7	5
S	E	1.6	9
S	N	1.1	10
M	E	3.3	24
M	N	3.7	20
M	z	4.3	19

△~11150 km~100½°.

Sk	iP	01	14	05
	iPP	01	18	24

Sumbawa Island.
Magn.=6.6 (Up, Ki).

» 10 Up	iP	01	43	04
Ki	eP	01	42	11

Aleutian Islands.

» 10 Up	iP	02	43	05
Ki	iP	02	41	56

Aleutian Islands.

» 10 Up	eP	03	26	27
	e(SKS)	03	36	43

		μ	s
(SKS)	E	0.5	8
(SKS)	N	0.4	8
M	N	0.8	19

Ki	iP	03	25	57
	eSKS	03	36	10

		μ	s
P	z	0.4	6
P	z'	0.1	1.0
SKS	E	0.6	11
SKS	N	0.4	10
M	E	1.3	20
M	N	1.6	20
M	z	1.2	20

Sk	iP	03	26	23
	iPP	03	30	05

Mariana Islands (h~150 km).
Magn.=5.7 (Ki).

» 10 Up	iP	04	54	32C
Ki	iP	04	54	47
Sk	iP	04	54	59

Balutchistan.

» 10 Up	iP	06	44	46

» 10 Up	iP	16	49	09

Column 4 (p. 107)

1957

June 10 Up	iPg	18	40	25
	iSg	18	40	40

△=130 km=1.2°.

Ki	eSg	18	44	43

△=960 km=8.6°.

Sk	e	18	42	11
	iSg	18	42	30

△=510 km=4.6°.
South-central Sweden, 59.4° N, 15.5° E.
Origin time=18 40 00.
Very weak.

» 10 Up	e(Sg)	19	42	40
Ki	e(Sg)	19	42	38
Sk	e(Sg)	19	43	02

(Finland).

» 10 Ki	eL		20	36

		μ	s
M	E	0.5	12
M	z	0.7	12

» 11 Up	iP	04	15	25C

		μ	s
P	z'	0.1	1.0
M	E	0.7	19
M	N	1.3	24
M	z	1.3	24

Ki	iP	04	14	32C
	i(pP)	04	14	46
	eS	04	22	36.

		μ	s
P	z'	0.1	1.0
M	E	0.8	18
M	N	0.5	18
M	z	1.0	18

△=6500 km=58½°.

Sk	iP	04	15	01.
	i(pP)	04	15	14.

Unimak Island region.

» 11 Up	iP	04	52	21
Ki	iPcP	04	52	12

Aleutian Islands.

» 11 Up	iP	05	04	48C
	iPP	05	06	24
	i	05	07	27
	iS	05	10	44
	i	05	13	49

		μ	s
P	z'	0.3	1.0
S	N	0.4	4

Ki	iP	05	04	58C
	e	05	07	37
	i	05	10	19
	iS	05	11	02

		μ	s
P	E	0.4	5
P	z	0.4	6

Column 1

1957 June 11 (cont.)

	P	z'	0.3	1.3
	S	N	0.3	6
Sk	iP		05 05 14	
	iPP		05 06 59	

Hindu Kush (h ~ 200 km).
Magn.=5.8 (Up, Ki).

» 11 Ki e(P) 05 45 31
Local?

» 11 Ki iP 06 52 09

» 11 Ki iP 15 08 33 ✳

» 11 Up iPKP 15 09 22C
    i 15 09 26
    eSKP 15 12 53

		μ	s
PKP	E	2.7	17
PKP	N	2.8	16
PKP	z	18	17
PKP	z'	2.2	1.0
M	E	11	25
M	N	16	24
M	z	21	24

△ ~ 16500 km ~ 148½°.

Ki iPKP 15 09 03
    i 15 09 13
    ePP 15 12 09
    iPKS 15 12 44

		μ	s
PKP	N	0.3	12
PKP	z	1.7	9
PKP	z'	0.8	2.0
PP	z	1.3	9
PKS	E	1.8	15
PKS	N	2.2	15
M	E	14	22
M	N	8.5	23
M	z	21	23

△ ~ 15650 km ~ 141°.

Sk iPKP 15 09 18
Kermadec Islands (h ~ 100 km).
PKP has a long period of
16—17 sec with much shorter
periods superimposed, as
recorded by the long-period
Benioff instruments at Uppsala.

11 Up iP 19 01 41C
    ePa 19 08 02
    iS 19 11 43

		μ	s
P	E	0.6	2
P	N	0.3	2
P	z	2.9	2
P	z'	1.3	1.0
S	E	9.0	14
S	N	11	20
M	E	45	20
M	N	60	23

Column 2

1957 June 11 (cont.)

M	z	45	23

△=8950 km=80½°.

Ki iP 19 01 21C
    i 19 06 23
    iS 19 11 05

		μ	s
P	E	0.8	10
P	z	1.9	10
P	z'	1.5	1.5
S	E	5.7	9
S	N	2.3	10
M	E	27	23
M	N	35	22
M	z	40	24

△=8550 km=77°.

Sk iP 19 01 46
Near coast of Luzon,
Philippine Islands.
Magn.=6.8 (Up, Ki).

» 12 Up iP 00 05 00
    eS 00 14 01

		μ	s
P	z'	0.4	0.8
M	E	2.4	18
M	N	4.0	18
M	z	5.3	18

△=7600 km=68½°.

Sk iP 00 04 40
    iPcP 00 05 12
Aleutian Islands.
Magn.=6.1 (Up).

» 12 Up iP 00 10 15
Aleutian Islands.

» 12 Up iP 00 14 49
Aleutian Islands.

» 12 Up iP 01 41 35
Aleutian Islands.

» 12 Sk e(P) 02 29 34
    i 02 30 02

» 12 Up iP 02 43 03

» 12 Up i(P) 02 45 18

» 12 Up iP 07 39 33
    i 07 39 52
Aleutian Islands.

» 12 Up iP 08 39 43C
    iS 08 48 47

		μ	s
P	z	0.7	4
P	z'	0.4	1.2
S	E	1.2	6
S	N	1.1	6
M	E	7.2	21

Column 3

1957 June 12 (cont.)

M	N	8.2	24
M	z	5.9	17

△=7700 km=69½°.

Ki iP 08 39 01C
    i 08 39 26
    eS 08 47 28

		μ	s
P	z	0.6	7
P	z'	0.4	1.5
S	E	1.5	10
S	N	1.1	10
M	E	9.2	17
M	N	7.6	17
M	z	14	17

△=7000 km=63°.

Sk iP 08 39 35C
Near south coast of
Hokkaido, Japan.
Magn.=6.2 (Up, Ki).

» 12 Ki iP 21 22 55

» 13 Up iP 10 51 43C
    ePP 10 54 11
    iPcS 10 56 13
    iS 11 00 42
    i 11 01 19
    iP'P' 11 19 53
    iP'P' 11 20 11

		μ	s
P	N	8.5	16
P	z	19	18
P	z'	1.0	1.0
PP	N	3.7	16
PP	z	4.5	12
S	E	13	24
S	N	12	28
P'P'	z'	1.5	2.5
M	E	32	18
M	N	67	23
M	z	80	22

△=7600 km=68½°.

Ki iP 10 50 49C
    ePP 10 53 09
    iPa 10 54 46
    iPcS 10 55 38
    iS 10 59 03
    eP'P' 11 20 32
    iP'P' 11 20 56

		μ	s
P	N	3.8	17
P	z	9.6	16
P	z'	0.5	1.1
PP	N	2.9	13
S	E	9.3	18
S	N	9.2	18
P'P'	z'	1.5	3
M	E	34	20
M	N	32	19
M	z	43	19

△=6700 km=60½°.

Sk iP 10 51 21

Column 4

1957 June 13 (cont.)

iPcS	10 55 59	
eP'P'	11 19 56	
iP'P'	11 20 14	

Aleutian Islands.
Magn.=6.9 (Up, Ki).
It is to be noted that
P'P' appears as a double
phase at all three stations.

» 13 Up iP 11 16 08
Aleutian Islands.

» 13 Up iP 20 34 22D
Ki iP 20 34 21
    ipP 20 35 01

		μ	s
P	z'	0.1	0.9

Sk iP 20 34 35
    ipP 20 35 14
Near southwest coast of
Sumatra (h ~ 150 km).

» 13 Ki iP 21 40 39
Sk iP 21 40 59
Northern Celebes.

» 14 Up iP 06 35 21
    eS 06 44 13

		μ	s
P	z'	0.2	0.9
M	E	3.3	18
M	N	7.0	22
M	z	8.6	22

△=7500 km=67½°.

Ki iP 06 34 28

		μ	s
M	E	4.2	20
M	N	2.6	19
M	z	5.1	21

Sk eP 06 35 00
    i 06 35 11
Aleutian Islands.
Magn.=5.9 (Up, Ki).

» 14 Up iP 11 44 53
    i 11 45 40

		μ	s
M	E	1.3	14
M	N	3.8	18
M	z	1.4	14

Ki iP 11 45 10

		μ	s
M	E	1.7	13
M	N	3.2	17
M	z	1.7	15

Sk iP 11 45 21
    i 11 45 27
Southern Afghanistan.

» 15 Up eP 00 57 56
    ePS 01 10 58

1957 — June 15 (cont.)

			μ	s
	M	E	4.7	21
	M	N	3.8	22
	M	Z	6.6	20
Ki	eSS		01 17	43
			μ	s
	M	E	5.0	22
	M	N	2.7	22
	M	Z	7.5	23
Sk	eP		00 58	28

Indian Ocean. Magn.=6.4 (Up, Ki).

» 15 Up iP 18 29 20C
eP'P' 18 57 32

			μ	s
	P	z'	0.1	1.0
	M	E	2.1	20
	M	N	4.4	24
	M	Z	4.1	23
Ki	iP		18 28	27
			μ	s
	P	z'	0.1	0.7
	M	E	2.3	18
	M	N	1.9	19
	M	Z	2.6	17
Sk	iP		18 28	59
	iPcP		18 29	33 ·

Aleutian Islands. Magn.=5.8 (Up, Ki).

» 15 Up eP 20 14 55
Ki eP 20 14 20
i 20 14 32
Sk eP 20 15 05
Near east coast of Honshu, Japan.

» 15 Up eP 21 16 16
i 21 16 21
Greece.

» 15 Ki iP 22 31 29
Off east coast of Honshu, Japan.

» 16 Up iP 00 18 59C
Ki iP 00 20 24
Sk iP 00 19 44

» 16 Up iP 02 28 23
Ki iP 02 27 29
Sk eP 02 28 00
Aleutian Islands.

» 16 Ki e(P) 06 24 26
Local?

» 16 Up iP 12 15 26
Ki iP 12 16 12
Sk iP 12 15 39
Mid-Atlantic Ridge.

1957 — June 16

Up iP 18 56 04
Aleutian Islands.

» 16 Up eP 22 34 21
Ki iP 22 34 23

» 16 Up iP 23 22 33
i 23 23 26
Two shocks?

» 17 Ki iPKP 06 35 50
Samoa Islands region.

» 17 Up iP 07 43 28
Ki iP 07 42 34
Sk iP 07 43 06
Aleutian Islands.

» 17 Up iP 15 28 46
Sk iP 15 29 27
Ionian Islands.

» 17 Up iP 16 14 14
Kurile Islands.

» 18 Up iP 02 23 38 D
i 02 23 44
iS 02 32 55

			μ	s
	P	Z	0.4	2
	P	z'	0.4	1.0
	S	E	1.5	10
	M	E	5.5	17
	M	N	11	22
	M	Z	4.1	17

△=8000 km=72°.
Ki iP 02 23 35 D
i 02 23 41
iPcP 02 23 56
eS 02 32 53

			μ	s
	P	z'	0.7	2.0
	S	E	1.8	11
	S	N	1.9	14
	M	E	7.6	16
	M	N	4.6	19
	M	Z	11	16

△=7950 km=71½°.
Sk iP 02 23 54
i 02 23 59
Gulf of Martaban, Burma. Magn.=6.4 (Up, Ki).

» 18 Ki iP 05 55 44
Off south coast of Hokkaido, Japan.

» 18 Ki iP 06 50 51
Sk iP 06 51 10

» 18 Up iP 11 31 05

1957 — June 18 (cont.)

			μ	s
	P	z'	0.2	0.7
	M	E	2.8	21
	M	N	2.5	23
	M	Z	1.7	20
Ki	iP		11 30	46
			μ	s
	P	z'	0.2	1.0
	M	E	0.8	14
	M	N	1.4	20
Sk	iP		11 31	11

Northern Luzon, Philippine Islands.

» 18 Up iP 11 33 39
Ki iP 11 33 19
Presumably aftershock of preceding earthquake.

» 18 Up iP 14 59 45 D
iS 15 09 04

			μ	s
	P	E	0.8	6
	P	Z	1.9	7
	P	z'	0.2	0.8
	S	E	3.1	10
	S	N	2.6	12
	M	E	10	16
	M	N	23	23
	M	Z	11	20

△=8050 km=72½°.
Ki iP 14 59 42 D
i 14 59 57
eS 15 08 59

			μ	s
	P	E	1.5	5
	P	Z	1.6	6
	P	z'	0.7	1.8
	S	E	3.0	10
	S	N	2.4	9
	M	E	17	16
	M	N	11	19
	M	Z	25	16

△=8000 km=72°.
Sk iP 15 00 01
i 15 00 16
Burma. Magn.=6.7 (Up, Ki).

» 18 Up iP 17 50 26 D
Ki iP 17 49 42
South of Honshu, Japan.

» 18 Up —

			μ	s
	M	E	7.8	21
	M	N	8.6	20
	M	Z	12	20
Ki	ePKP		18 15	23
	e		18 19	12
			μ	s
	M	E	7.3	21

1957 — June 18 (cont.)

			μ	s
	M	N	5.4	21
	M	Z	10	21
Sk	ePKP		18 15	36

Loyalty Islands region. Magn.=6.7 (Up, Ki).

» 18 Up iP 21 34 22 D

			μ	s
	P	z'	0.1	0.9
Ki	iP		21 33	28
			μ	s
	P	z'	0.1	1.0
Sk	iP		21 34	00

Aleutian Islands.

» 19 Up iPKP 01 49 20
i 01 49 36

			μ	s
	M	E	1.5	23
	M	N	2.0	22
	M	Z	1.7	20
Ki	e(PKP)		01 48	52
	i		01 49	26
	eSS		02 09	42
			μ	s
	M	E	1.9	20
	M	N	1.7	22
	M	Z	3.4	21
Sk	ePKP		01 49	13

Tonga Islands.

» 19 Ki iPn 04 31 02
iS* 04 31 31
iSg 04 31 36
△=240 km=2.2°.
Origin time=04 30 23.

» 19 Up iP 05 32 41

			μ	s
	P	z'	0.1	0.8
Ki	iP		05 31	47
			μ	s
	P	z'	0.1	1.5
Sk	iP		05 32	20

Aleutian Islands.

» 19 Up ePP 08 23 18
ePKS 08 24 30
e 08 35 15
eSSP 08 41 12

			μ	s
	PKS	N	0.4	4
	M	E	7.4	23
	M	N	13	24
	M	Z	16	23
Ki	ePKP		08 20	31
			μ	s
	M	E	10	23
	M	N	6.0	22
	M	Z	17	23

Fiji Islands. Magn.=6.8 (Up, Ki).

Column 1

1957
June 19

Sta	Phase		h	m	s	
Ki	iP		12	23	55	
	i		12	24	44	
» 19 Ki	eP		14	36	24	
» 19 Up	iSg		17	48	52	

△=720 km=6.5°.

Ki	ePn	17	45	56
	iSg	17	46	33

△=275 km=2.5°.

Sk	iPn	17	46	07
	iSg	17	46	51

△=315 km=2.8°.

Northern Sweden, close to the
Norwegian border, 66.2° N, 15.5° E.
Origin time=17 45 16.

» 19 Up	iP	18	20	44

Aleutian Islands.

» 19 Ki	iP	23	41	29

Alaska.

» 20 Ki	eP	00	44	27

Near east coast of Mindanao,
Philippine Islands.

» 20 Up	iP	01	19	28 D
	ipP	01	19	58
	iPP	01	23	04

		μ	s
P	z'	0.2	0.6
M	E	1.1	21
M	N	0.9	20
M	z	1.4	20

△=9800 km=88°.

Ki	iP	01	19	00 D
	ipP	01	19	30
	eS	01	29	10
	esS	01	30	04

		μ	s
P	z'	0.4	1.3
S	E	0.8	7
S	N	0.5	9
M	E	0.5	15
M	N	0.6	17

△=9450 km=85°.

Sk	iP	01	19	25 D
	iPP	01	23	00

Mariana Islands.
h=120 km (Up, Ki).
Magn.=6.0 (Up, Ki).

» 20 Ki	eP	10	30	03
» 20 Up	iP	22	03	35
» 21 Sk	eP	06	11	19
	i	06	11	26
» 21 Ki	iP	08	14	48

Column 2

1957
June 21

Up	iP		18	49	01

		μ	s
M	E	1.6	20
M	N	1.5	17
M	z	2.9	17

Ki	iP	18	48	10

		μ	s
P	z'	0.1	1.0
M	E	2.1	21
M	N	1.4	18
M	z	2.9	18

Sk	eP	18	48	34
	iPcP	18	49	10

Kurile Islands region.

» 21 Up		—

		μ	s
M	E	0.9	18
M	N	1.4	22
M	z	1.2	18

Ki	e	22	22	43

		μ	s
M	E	0.8	17
M	N	0.8	19
M	z	1.5	20

» 21 Up		—

		μ	s
M	N	1.5	21

Ki	iP	23	31	33

		μ	s
M	E	0.6	14
M	N	0.3	15
M	z	0.5	13

Pamir.

» 22 Sk	e(P)	01	19	17
» 22 Up	iP	02	30	19
Ki	iP	02	29	26

Aleutian Islands.

» 22 Up	iP	04	49	21
» 22 Ki	eP	05	08	40
» 22 Up	iP	05	39	45
» 22 Up	iP	06	31	51 C
	ipP	06	32	12
	i	06	32	33
	iSKS	06	42	10
	iS	06	42	26

		μ	s
P	E	0.6	3
P	N	0.5	3
P	z'	2.6	4
P	z'	0.6	0.7
SKS	E	2.6	6
SKS	N	1.6	6
S	E	6.9	5

Column 3

1957
June 22
(cont.)

S	z	1.7	5
M	E	11	26
M	N	4.2	23
M	z	15	27

△=9650 km=87°.

Ki	iP	06	31	39 C
	ipP	06	31	57
	iSKS	06	41	55
	iS	06	42	04

		μ	s
P	E	2.0	5
P	N	0.8	6
P	z	5.0	6
P	z'	2.6	1.5
SKS	E	3.2	6
S	E	17	10
S	N	2.6	9
S	z	2.9	9
M	E	15	25
M	N	7.2	24
M	z	27	25

△=9400 km=84½°.

Sk	iP	06	31	32
	ipP	06	31	53

Near coast of Chiapas, Mexico.
h=80 km (Up, Ki, Sk).
Magn.=7.1 (Up, Ki).

» 22 Up	iPn	09	02	04
	iSn	09	03	40
	iSg	09	04	38
	i	09	04	43

		μ	s
Sg	E	0.8	1
Sg	N	0.3	1
Sg	z	0.5	1
Sg	z'	0.5	0.7

△=940 km=8.5°.

Ki	iPn	09	00	34
	i!	09	00	45
	iSg	09	01	05
	i	09	01	11

		μ	s
Pn	z'	0.5	0.7
i!	z'	2.1	0.7
Sg	E	1.0	3
Sg	N	0.7	4
Sg	z	1.6	4

△=220 km=2.0°.

Sk	iPn	09	01	17
	iP*	09	01	28
	i(Sn)	09	02	11
	i(S*)	09	02	31
	iSg	09	02	49

△=580 km=5.2°.

Norwegian coast, 68.5° N, 16.0° E.
Origin time=08 59 57.

» 22 Up	iP	19	32	53
Ki	eP	19	33	12

Mid-Atlantic Ridge.

Column 4

1957
June 22

Up	iP	22	36	36
	i	22	36	40
Ki	iP	22	36	22

» 23 Up	eP	00	04	36
	i	00	04	49
	iPP	00	09	04
	eSKS	00	15	14
	iPKKP	00	20	19

		μ	s
P	E	0.3	6
P	z	0.8	5
PP	E	1.6	6
PP	N	1.1	6
PP	z	3.1	6
SKS	E	3.5	9
SKS	N	1.4	8
M	E	170	24
M	N	180	22
M	z	130	21

△=11800 km=106°.

Ki	iP	00	04	16
	i	00	04	21
	ePP	00	08	30
	iSKS	00	14	57
	iS	00	15	59

		μ	s
P	E	0.5	6
P	z	1.4	6
P	z'	0.2	1.7
PP	E	1.4	7
PP	N	0.7	6
PP	z	2.2	6
SKS	E	2.7	8
S	N	3.0	10
M	E	82	20
M	N	69	19
M	z	110	19

△=11350 km=102°.

Sk	eP	00	04	39

Near north coast of New Guinea.
Magn.=7.2 (Up, Ki).

» 23 Up	iP	02	56	10
Ki	iP	02	55	18

Aleutian Islands.

» 23 Up	iP	03	37	16 C

		μ	s
P	z	0.6	4
P	z'	0.3	1.0
M	E	1.5	19
M	N	1.4	20
M	z	1.7	20

Ki	iP	03	36	24 C
	i	03	36	29
	eS	03	44	04

		μ	s
P	N	0.3	7
P	z	0.6	6

```
1957
June 23            P      z'      0.4    1.7
(cont.)            S      N       0.4    9
                   M      E       1.1    22
                   M      N       0.9    23
                   M      z       1.9    16
                        △=5950 km=53½°.
          Sk       iP            03   36   46
          i                      03   36   53
          i                      03   40   23
          Near coast of southeastern Alaska.
          Magn.=6.0 (Up, Ki).

»  23  Up   eL                   04   43
                                      μ    s
                   M      N       1.1   24
                   M      z       2.0   23
          Ki   eL                04   39
                                      μ    s
                   M      E       1.1   20
                   M      N       0.7   20
                   M      z       1.8   20
          Samoa Islands.

»  23  Ki   iP              13   19   33 D
          Mariana Islands region.

»  23  Ki   iP              20   28   48
          Iran.

»  24  Up                   —
                                      μ    s
                   M      E       0.7   17
                   M      N       0.4   16
                   M      z       1.0   15
          Ki                —
                                      μ    s
                   M      E       0.9   12
                   M      N       0.3   11
                   M      z       0.5   11
          Sk   iP                04   36   31
          Aegean Sea.

»  24  Ki   eP              06   46   43
          Sk   iP          06   47   13
          i                06   48   57

»  24  Up   iP              10   02   32 C
          i                10   03   08
          iS               10   13   06
                                      μ    s
                   P      z'      0.3   1.5
                   S      E       0.5   4
                   △=9650 km=87°.
          Ki   iP          10   02   20
          ipP              10   02   40
          eSKS             10   12   37
          eS               10   12   43
                                      μ    s
                   P      z       0.6   5
                   P      z'      0.3   1.7
                   pP     z'      0.4   1.7
```

```
1957
June 24            S      E       1.1    10
(cont.)            S      N       0.3    8
                   M      E       1.5    25
                   M      N       0.9    25
                   M      z       2.8    26
                        △=9400 km=84½°.
          Sk   iP          10   02   13 C
          ipP              10   02   34
          Near coast of Chiapas, Mexico.
          h=80 km (Ki, Sk).
          Magn.=6.2 (Up, Ki).

»  24  Up                   —
                                      μ    s
                   M      E       1.2   19
                   M      N       0.7   20
                   M      z       1.4   20
          Ki   eSKS            11   45   45
                                      μ    s
                   M      E       0.8   18
                   M      N       0.5   18
                   M      z       1.4   19
          Southeast of Java.

»  25  Up   iP              10   22   56
          i                10   23   04
                                      μ    s
                   M      E       1.5   23
                   M      N       1.2   22
                   M      z       2.1   24
          Ki   iP          10   22   58 D
          i                10   23   05
          ePcP             10   23   13
          eS               10   32   29
                                      μ    s
                   P      z'      0.1   1.0
                   S      E       0.5   10
                   M      E       1.9   20
                   M      N       0.7   17
                   M      z       2.1   20
                   △=8300 km=74½°.
          Sk   iP          10   23   13
          i                10   23   21
          Andaman Islands region.

»  25  Ki   iP              16   16   31
          Near west coast of Sumatra.

»  26  Up   iP              03   00   16 C
          i                03   00   25
          iSKS             03   10   38
                                      μ    s
                   SKS    E       0.4   4
                   SKS    N       0.4   4
                   M      E       1.3   20
                   M      N       1.7   21
                   M      z       1.5   21
          Ki   iP          03   00   26
          i                03   00   34
          eSKS             03   10   51
          eS               03   11   04
```

```
1957
June 26   ePS              03   11   59
(cont.)                               μ    s
                   P      z'      0.1   1.2
                   SKS    E       0.4   9
                   S      N       0.4   11
                   M      E       1.9   20
                   M      N       0.9   19
                   M      z       2.4   20
                   △=9800 km=88°.
          Sk   iP          03   00   34
          India   Ocean.

»  27  Up   iP              00   18   07 D
          iPP              00   20   02
          iS               00   25   08
          iSS              00   28   34
                                      μ    s
                   P      E       18    8
                   P      N       16    7
                   P      z       42    7
                   P      z'      1.9   0.8
                   PP     E       44    9
                   PP     N       34    9
                   PP     z       70    9
                   S      E       180   16
                   S      N       73    14
                   S      z       80    10
                   M      E       530   13
                   M      N       360   13
                   M      z       590   13
                   △=5350 km=48°.
          Ki   iP          00   17   21
          iPP              00   18   57
          iS               00   23   39
          iSS              00   23   52
                                      μ    s
                   P      E       27    8
                   P      N       14    8
                   P      z       81    12
                   P      z'      3.0   1.2
                   PP     E       79    11
                   PP     N       53    10
                   S      E       82    11
                   M      E       350   15
                   M      N       270   15
                   M      z       600   15
                   △=4650 km=42°.
          Sk   iP          00   18   02
          Northeast of Lake Baikal, U.S.S.R.
          Magn.=7.9 (Up, Ki).

»  27  Up   iP              01   48   01
          Ki   iP          01   47   14
          Sk   iP          01   47   56
          Lake Baikal region.

»  27  Up   iP              02   01   38

»  27  Up   iP              02   10   06
```

```
1957
June 27  Ki   eP          02   09   18
(cont.)   (Lake Baikal region).

»  27  Up   iP              04   16   27
          Ki   iP          04   16   09
                                      μ    s
                   P      z'      0.1   1.2
          Off southeast coast of Mindanao,
          Philippine Islands.

»  27  Up   iP              07   15   39
          i                07   15   43
          eS               07   19   33
                                      μ    s
                   P      N       0.2   2
                   P      z       0.2   2
                   M      E       1.4   15
                   M      N       0.8   13
                   M      z       1.2   12
                   △=2350 km=21°.
          Ki   iP          07   16   54
          e                07   28   47
                                      μ    s
                   M      E       1.2   15
                   M      N       0.3   12
          Sk   iP          07   16   21
          i                07   16   37
          Greece.

»  27  Up   iP              07   19   19
          Ki   iPcP        07   19   09
          Aleutian Islands.

»  27  Up   iP              15   10   14
          Sk   e(P)        15   10   26

»  28  Up   iP              05   09   08
          Ki   iP          05   08   15
          Aleutian Islands.

»  28  Up   iP              08   44   53
          Ki   iP          08   44   00
          Sk   eP          08   44   32
          Aleutian Islands.

»  28  Up   iP              16   03   50
          Ki   iP          16   02   57
          Sk   iP          16   03   27
          Aleutian Islands.

»  28  Up   iP              18   00   42
          Ki   iP          18   00   24
          Sk   iP          18   00   46
          Off east coast of Samar,
          Philippine Islands.

»  28  Up   eP              21   28   59
                                      μ    s
                   M      E       1.3   20
                   M      N       1.0   22
```

Column 1

```
1957
June 28  Ki  iP          21  30  05
(cont.)
             M     E      1.4   17
             M     N      0.6   16
             M     z      0.8   12
         Sk  eP          21  29  22
Algeria.

»  28    Up  iP          21  44  24
         Ki  iP          21  44  04

»  29    Up  iP          07  59  22 D
             iS          08  08  28
             iP'P'       08  27  33
                          μ    s
             P     N     0.5    5
             P     z     0.9    4
             P     z'    0.7    1.2
             S     N     0.5    5
             M     N     1.6   28
             M     z     2.2   30
         △=7650 km=69°.
         Ki  iP          07  58  30 D
             eS          08  06  40
             iP'P'       08  27  54
                          μ    s
             P     N     0.7    5
             P     z     1.1    5
             P     z'    0.7    1.3
             S     E     0.3    8
             S     N     0.8    8
             S     z     0.5    8
             P'P'  z'    0.1    1.4
             M     E     0.9   20
             M     N     0.6   18
             M     z     1.7   23
         △=6700 km=60½°.
         Sk  iP          07  58  59 D
             iP'P'       08  27  43
Aleutian Islands.
Magn.=6.3 (Up, Ki).

»  29    Ki  iP          08  42  32

»  29    Up  iP          11  00  44
                          μ    s
             P     z'    0.1    0.5
         Ki  iP          10  59  51
             iPcP        11  00  36
         Sk  eP          11  00  23
             iPcP        11  00  56
Aleutian Islands.

»  29    Up  iP          22  42  32
             i           22  42  34
             eLg2        23  00  24
                          μ    s
             P     z'    0.1    1.0
             M     E     1.0   15
             M     N     1.1   16
```

Column 2

```
1957
June 29  Ki  iP     M  z  1.2   12
(cont.)      iP          22  41  45
             iPP         22  43  29
             e           22  51  16
             e           22  51  31
             e(Li)       22  53  25
             eLi         22  54  01
             eLg2        22  56  30
                          μ    s
             P     z'    0.1    1.0
             PP    E     0.4   10
             PP    z     0.3    8
             PP    z'    0.1    1.3
             M     E     1.2   15
             M     N     1.9   17
             M     z     3.0   20
         Sk  iP          22  42  27
             i           22  42  42
Northeast of Lake Baikal.
Magn.=5.7 (Ki).

»  29    Up  iP          22  55  23
         Sk  iP          22  55  21

»  29    Up  iP          23  41  15 C
         Ki  iP          23  41  09
         Sk  iP          23  41  32

»  29    Up  eP          23  52  20
                          μ    s
             M     E     0.3   12
             M     N     0.5   12
             M     z     0.4   12
         Ki  iP          23  53  23
                          μ    s
             M     E     0.9   13
             M     N     0.4   13
             M     z     0.8   14
Off southeast coast of Spain.
(h ~ 105 km).

»  30    Up  iP          03  06  04
         Ki  iP          03  06  47
Northern Iran.

»  30    Up  iP          08  59  08

July 1   Up  iPKP        02  41  46
         Ki  iPKP        02  41  38
         Sk  ePKP        02  41  45
         Lu  iPKP        02  42  03
Tonga Islands.

»  1     Up  iP          04  08  01
         Sk  iP          04  07  56

»  1     Up  eP          05  20  33
         Ki  iP          05  21  13
         Sk  iP          05  21  06
```

(handwritten note: pP 73 23 ← (inserted))

Column 3

```
1957
July 1   Ki  iP          06  36  54
             i           06  37  20
         Sk  iP          06  37  08
Near east coast of Sumatra.

»  1     Ki  eLg2        12  04  01
                          μ    s
             M     N     0.2   13
         Sk  eP          11  50  09
Afghanistan.

»  1     Up  eP          13  16  01
         Ki  eP          13  16  45
             e(S)        13  26  46
         Sk  eP          13  16  11
             i           13  16  19
Mid-Atlantic Ridge.

»  1     Up  iP          13  29  00
         Ki  iP          13  29  45
             eS          13  39  38
                          μ    s
             M     E     0.3   17
             M     z     1.1   19
         △=8650 km=78°.
         Sk  iP          13  29  13
             i           13  29  24
Mid-Atlantic Ridge.

»  1     Up  iP          16  27  40
             i           16  27  54
         Ki  iP          16  26  46
Near east coast of Kamchatka.

»  1     Up  iP          19  40  40 C
             ipP         19  40  59
             ePa         19  44  35
             iS          19  48  59
             isS         19  49  29
                          μ    s
             P     E     0.6    2
             P     z     1.8    2
             P     z'    1.2    0.8
             pP    z'    1.6    0.8
             S     E     2.7    7
             S     N     5.2   14
             sS    E     6.4   10
             sS    N     11    14
             M     E     6.6   20
             M     N     13    19
             M     z     12    14
         (△=7050 km=63°½).
         Ki  iP          19  40  34
             i           19  40  48
             ipP         19  40  53
             iPa         19  44  29
             iS          19  48  50
             isS         19  49  22
                          μ    s
             P     E     0.4    6
```

Column 4

```
1957
July 1   P     z        0.7    5
(cont.)  P     z'       0.7    1.2
         pP    z'       1.8    1.5
         S     N        6.8   11
         sS    E        8.0   10
         sS    N        12    12
         M     E        24    17
         M     N        35    21
         M     z        38    17
         (△=6950 km=62°½).
         Sk  iP          19  40  56
         Lu  iP          19  40  59
             i           19  41  22
Assam-Burma border.
h=80 km (Up, Ki, Sk).
Magn.=6.7 (Up, Ki).

»  1     Up  iP          23  53  39
             i           23  54  21
             i           23  54  31
         Ki  iP          23  52  46
             i           23  53  27
         Sk  i(PcP)      23  54  05
Near east coast of Kamchatka.

»  2     Up  iP          00  48  57 C
             iS          00  54  14
             i!          00  55  01
             i!          00  55  10
                          μ    s
             P     E     17    10
             P     N     8.7   10
             P     z     27    10
             P     z'    3.7    1.2
             S     E     69    14
             S     N     26    10
             M     E     180   22
             M     N     250   23
             M     z     200   22
         △=3650 km=33°.
         Ki  iP          00  49  30 C
             i           00  50  38
             iPP         00  50  49
             iS          00  55  15
             i!          00  56  07
             i!          00  56  46
             i!          00  57  16
             iLg2        01  02  30
             i           01  03  43
                          μ    s
             P     E     8.2    9
             P     N     7.1    9
             P     z     16     9
             P     z'    3.2    1.3
             PP    N     8.8   10
             PP    z     19    10
             S     E     58    16
             S     N     27    16
             S     z     10     8
```

1957

June 28	Ki	iP		21	30	05
(cont.)					μ	s
		M	E	1.4	17	
		M	N	0.6	16	
		M	z	0.8	12	
	Sk	eP		21	29	22

Algeria.

» 28	Up	iP		21	44	24
	Ki	iP		21	44	04

» 29	Up	iP		07	59	22 D
		iS		08	08	28
		iP'P'		08	27	33
					μ	s
		P	N	0.5	5	
		P	z	0.9	4	
		P	z'	0.7	1.2	
		S	N	0.5	5	
		M	N	1.6	28	
		M	z	2.2	30	

△=7650 km=69°.

	Ki	iP		07	58	30 D
		eS		08	06	40
		iP'P'		08	27	54
					μ	s
		P	N	0.7	5	
		P	z	1.1	5	
		P	z'	0.7	1.3	
		S	E	0.3	8	
		S	N	0.8	8	
		S	z	0.5	8	
		P'P'	z'	0.1	1.4	
		M	E	0.9	20	
		M	N	0.6	18	
		M	z	1.7	23	

△=6700 km=60½°.

	Sk	iP		07	58	59 D
		iP'P'		08	27	43

Aleutian Islands.
Magn.=6.3 (Up, Ki).

» 29	Ki	iP		08	42	32

» 29	Up	iP		11	00	44
					μ	s
		P	z'	0.1	0.5	
	Ki	iP		10	59	51
		iPcP		11	00	36
	Sk	eP		11	00	23
		iPcP		11	00	56

Aleutian Islands.

» 29	Up	iP		22	42	32
		i		22	42	34
		eLg2		23	00	24
					μ	s
		P	z'	0.1	1.0	
		M	E	1.0	15	
		M	N	1.1	16	

1957

June 29	Ki	M	z	1.2	12	
(cont.)		iP		22	41	45
		iPP		22	43	29
		e		22	51	16
		e		22	51	31
		e(Li)		22	53	25
		eLi		22	54	01
		eLg2		22	56	30
					μ	s
		P	z'	0.1	1.0	
		PP	E	0.4	10	
		PP	z	0.3	8	
		PP	z'	0.1	1.3	
		M	E	1.2	15	
		M	N	1.9	17	
		M	z	3.0	20	
	Sk	iP		22	42	27
		i		22	42	42

Northeast of Lake Baikal.
Magn.=5.7 (Ki).

» 29	Up	iP		22	55	23
	Sk	iP		22	55	21

» 29	Up	iP		23	41	15 C
	Ki	iP		23	41	09
	Sk	iP		23	41	32

» 29	Up	eP		23	52	20
					μ	s
		M	E	0.3	12	
		M	N	0.5	12	
		M	z	0.4	12	
	Ki	iP		23	53	23
					μ	s
		M	E	0.9	13	
		M	N	0.4	13	
		M	z	0.8	14	

PP 73 23 (inserted) — Off southeast coast of Spain.
(h ~ 105 km).

» 30	Up	iP		03	06	04
	Ki	iP		03	06	47

Northern Iran.

» 30	Up	iP		08	59	08

July 1	Up	iPKP		02	41	46
	Ki	iPKP		02	41	38
	Sk	ePKP		02	41	45
	Lu	iPKP		02	42	03

Tonga Islands.

» 1	Up	iP		04	08	01
	Sk	iP		04	07	56

» 1	Up	eP		05	20	33
	Ki	iP		05	21	13
	Sk	iP		05	21	06

1957

July 1	Ki	iP		06	36	54
		i		06	37	20
	Sk	iP		06	37	08

Near east coast of Sumatra.

» 1	Ki	eLg2		12	04	01
					μ	s
		M	N	0.2	13	
	Sk	eP		11	50	09

Afghanistan.

» 1	Up	eP		13	16	01
	Ki	eP		13	16	45
		e(S)		13	26	46
	Sk	eP		13	16	11
		i		13	16	19

Mid-Atlantic Ridge.

» 1	Up	iP		13	29	00
	Ki	iP		13	29	45
		eS		13	39	38
					μ	s
		M	E	0.3	17	
		M	z	1.1	19	

△=8650 km=78°.

	Sk	iP		13	29	13
		i		13	29	24

Mid-Atlantic Ridge.

» 1	Up	iP		16	27	40
		i		16	27	54
	Ki	iP		16	26	46

Near east coast of Kamchatka.

» 1	Up	iP		19	40	40 C
		ipP		19	40	59
		ePa		19	44	35
		iS		19	48	59
		isS		19	49	29
					μ	s
		P	E	0.6	2	
		P	z	1.8	2	
		P	z'	1.2	0.8	
		pP	z'	1.6	0.8	
		S	E	2.7	7	
		S	N	5.2	14	
		sS	E	6.4	10	
		sS	N	11	14	
		M	E	6.6	20	
		M	N	13	19	
		M	z	12	14	

(△=7050 km=63°½).

	Ki	iP		19	40	34
		i		19	40	48
		ipP		19	40	53
		iPa		19	44	29
		iS		19	48	50
		isS		19	49	22
					μ	s
		P	E	0.4	6	

1957

July 1		P	z	0.7	5	
(cont.)		P	z'	0.7	1.2	
		pP	z'	1.8	1.5	
		S	N	6.8	11	
		sS	E	8.0	10	
		sS	N	12	12	
		M	E	24	17	
		M	N	35	21	
		M	z	38	17	

(△=6950 km=62°½).

	Sk	iP		19	40	56
		ipP		19	41	15
	Lu	iP		19	40	59
		i		19	41	22

Assam-Burma border.
h=80 km (Up, Ki, Sk).
Magn.=6.7 (Up, Ki).

» 1	Up	iP		23	53	39
		i		23	54	21
		i		23	54	31
	Ki	iP		23	52	46
		i		23	53	27
	Sk	i(PcP)		23	54	05

Near east coast of Kamchatka.

» 2	Up	iP		00	48	57 C
		iS		00	54	14
		i!		00	55	01
		i!		00	55	10
					μ	s
		P	E	17	10	
		P	N	8.7	10	
		P	z	27	10	
		P	z'	3.7	1.2	
		S	E	69	14	
		S	N	26	10	
		M	E	180	23	
		M	N	250	23	
		M	z	200	22	

△=3650 km=33°.

	Ki	iP		00	49	30 C
		i		00	50	38
		iPP		00	50	49
		iS		00	55	15
		i!		00	56	07
		i!		00	56	46
		i!		00	57	16
		iLg2		01	02	30
		i		01	03	43
					μ	s
		P	E	8.2	9	
		P	N	7.1	9	
		P	z	16	9	
		P	z'	3.2	1.3	
		PP	N	8.8	10	
		PP	z	19	10	
		S	E	58	16	
		S	N	27	16	
		S	z	10	8	

1957 July 2 (cont.)

Sta.	Phase		h	m	s	
	M	E	230	21		
	M	N	170	21		
	M	z	160	14		

△=4100 km=37°.

Sk	iP		00	49	32	C
	iPP		00	50	51	
Lu	iP		00	49	01	

Northern Iran.
Magn.=7.2 (Up, Ki).
The very sharp, but unidentified phases following S on the Uppsala and Kiruna long-period records are noteworthy.

» 2 Up iP 01 23 29

		μ	s
P	z'	0.1	1.0

Ki	eP		01	23	58
	iPP		01	25	10

		μ	s
PP	z'	0.2	1.2

Sk iP 01 24 03
Iran.

» 2 Up iP 05 02 41
Ki iP 05 03 15
iPP 05 04 27

		μ	s
M	E	0.5	12
M	N	0.4	14
M	z	0.5	11

Sk eP 05 03 17
iPP 05 04 28
Iran.

» 2 Up iP 05 15 53
iPP 05 16 49
Ki iP 05 16 26
Sk eP 05 16 28
Iran.

» 2 Ki iP 07 43 36
Indian Ocean.

» 2 Up eSg 09 18 56
Sk eSg 09 19 20
Gulf of Bothnia.

» 2 Up iP 14 29 15
i 14 29 19
Ki iP 14 29 49
iPP 14 31 04

		μ	s
P	z'	0.1	1.0

Sk iP 14 29 50
Iran.

» 2 Ki e(P) 14 37 07

» 2 Ki iP 15 09 00

1957 July 2 (cont.)

		μ	s
P	z'	0.1	1.1

Sk iP 15 09 19

» 2 Ki eP 22 37 39
Aleutian Islands.

» 3 Up iP 01 58 18 C
i 01 58 31

		μ	s
P	z'	0.3	1.0
M	E	0.8	15
M	N	1.1	17
M	z	1.4	16

Ki iP 01 57 25 C
e 02 10 51

		μ	s
P	z'	0.1	1.0
M	E	1.6	18
M	N	0.7	17

Sk eP 01 58 04
Near south coast of Kamchatka.

» 3 Up iPKP 06 21 07 D
i 06 21 42

		μ	s
PKP	z'	0.4	0.8

Ki ePKP 06 20 48
i 06 20 56
iSKP 06 23 38
Sk ePKP 06 20 59
iSKP 06 23 53
Lu iPKP 06 21 23
Fiji Islands region.
(h ~ 550 km).

» 3 Up iP 12 35 47
iS 12 44 54
iP'P' 13 03 52

		μ	s
P	N	0.4	1
P	z	0.9	1
P	z'	1.1	1.0
S	N	1.3	5
M	E	2.2	21
M	N	2.5	23
M	z	3.0	24

△=7700 km=69½°.

Ki iP 12 34 55
eS 12 43 14

		μ	s
P	N	0.7	7
P	z	1.6	8
P	z'	0.9	1.4
S	E	0.6	10
S	N	1.3	8
S	z	0.9	11
M	E	1.6	18
M	N	1.6	20
M	z	3.6	20

△=6800 km=61°.

1957 July 3 (cont.)

Sk	iP		12	35	27
	i		12	35	30
Lu	iP		12	36	19

Aleutian Islands.
Magn.=6.7 (Up, Ki).
Probably slightly deeper than normal.

» 3 Up i(P) 15 01 52
i 15 02 29
iSg 15 02 43
Sk eP 15 01 56
iSg 15 03 14
Local.

» 3 Up iP 15 22 43 D
i 15 22 52

		μ	s
P	z'	0.1	0.8

Aleutian Islands.

» 3 Up iP 17 15 24
Sk eP 17 14 57
Aleutian Islands.

» 3 Up iP 20 06 04

» 3 Up eL 21 15

		μ	s
M	N	0.6	16

Ki eL 21 16

		μ	s
M	E	0.3	13
M	N	0.2	13
M	z	0.4	13

» 3 Up iP 21 48 06 C
(Iran).

» 3 Up iP 22 48 45

» 4 Up iP 02 02 13

» 4 Up iP 02 56 47

		μ	s
M	N	0.7	15

Ki —

		μ	s
M	E	0.4	9
M	N	0.2	10
M	z	0.4	9

Sk iP 02 57 03
Southeast of Lake Baikal, U.S.S.R.

» 4 Up iPn 08 04 57
iP* 08 05 06
iSg 08 06 08
△=470 km=4.2°.
Sk eSg 08 08 23
△=920 km=8.3°.
Possibly in the southern Baltic.
Origin time=08 03 50.

1957 July 4

Up	iP	08	41	56	C
	ipP	08	42	12	
	iPP	08	45	31	
	e(pS)	08	53	08	
	i(sS)	08	53	17	

		μ	s
P	z'	0.2	1.0

△=10000 km=90°.

Ki iP 08 41 56 C
ipP 08 42 08
iPP 08 45 33
eS 08 52 43

		μ	s
P	z'	0.6	1.0
PP	z'	0.1	1.0

△=10000 km=90°.

Sk iP 08 42 09 C
iPP 08 45 56
ipPP 08 46 15
Near south coast of Sumatra.
h=50 km (Up, Ki).

» 4 Up iP 08 53 59 C

		μ	s
P	z'	0.4	1.0
M	N	0.5	19
M	z	1.3	19

Ki iP 08 53 07 C

		μ	s
P	E	0.6	6
P	z'	0.3	0.9
M	E	0.8	17
M	N	0.5	16
M	z	1.2	18

Sk iP 08 53 43 C
Near southeast coast of Kamchatka.

» 4 Ki iP 09 14 31
i 09 14 39

		μ	s
P	z'	0.1	0.8

» 4 Up iPKP 10 05 17
i 10 05 21
Sk iPKP 10 05 10
Kermadec Islands.

» 4 Up iP 12 42 59

		μ	s
M	E	0.9	17
M	N	1.2	14
M	z	0.6	18

Ki iP 12 42 24
eS 12 51 29

		μ	s
S	E	0.3	10
S	N	0.3	12
M	E	1.1	18
M	N	0.7	18
M	z	1.1	16

△=7550 km=68°.

Column 1

1957					
July 4	Sk	iP	12	42	56

(cont.) Near south coast of Honshu, Japan.

» 4	Ki	iP	13	10	14
		iPP	13	11	35
	Sk	eP	13	10	16
		e(PP)	13	11	21

Iran.

» 4	Up	iP	19	32	33 D
		iPP	19	36	09
				μ	s
	P	z′		0.1	0.5
	Ki	iP	19	32	05 D
		ePP	19	35	20
				μ	s
	P	z′		0.1	1.0
	Sk	iP	19	32	30
		iPP	19	36	03

Mariana Islands (h ~ 150 km).

» 4	Ki	iP	22	36	51

Arizona-Mexico border.

» 4	Ki	iP	22	39	20

» 4	Up	eP	22	50	17
	Ki	iP	22	50	53
	Sk	e(P)	22	50	55

Iran.

» 4	Up	iP	22	55	48
	Ki	iP	22	54	56

» 4	Ki	iP	23	22	39

» 5	Up	iP	01	10	04
	Ki	iP	01	09	33
				μ	s
	M	E		0.5	15
	M	N		0.3	15
	M	z		0.5	14
	Sk	eP	01	09	40

Arizona-Mexico border.

» 5	Ki	iP	05	23	43
	Sk	iP	05	24	13

Central Asia.

» 5	Up	iP	12	26	49
	Ki	iP	12	25	56

Aleutian Islands.

» 5	Up	iPKP	12	53	37 C
				μ	s
	PKP	z′		0.3	0.8
	M	E		0.6	24
	M	N		1.1	24
	M	z		1.3	24
	Ki	ePKP	12	53	13
		iPKP	12	53	22

Column 2

1957					
July 5		e(PKS)	12	56	50
(cont.)		ePKS	12	56	58
				μ	s
	PKP	z		0.3	6
	M	E		0.7	22
	M	N		0.4	20
	M	z		1.5	22
	Sk	iPKP	12	53	31 C

Kermadec Islands.

» 5	Ki	ePg	14	56	39
		iSg	14	56	45

Local. Seismic?

» 5	Up	iP	15	42	27
		i(pP)	15	42	31
		iS	15	50	47
				μ	s
	M	E		0.4	16
	M	N		0.4	16
	M	z		0.6	16

△ = 6850 km = 61½°.

	Ki	iP	15	43	18
		e(pP)	15	43	22
		eS	15	52	23
				μ	s
	P	z′		0.3	1.7
	S	N		0.2	5
	M	E		0.8	18
	M	N		0.5	16
	M	z		0.7	18

△ = 7700 km = 69½°.

	Sk	iP	15	42	55
		i(pP)	15	43	00

Congo.

» 5	Ki	ePg	20	39	10
		iSg	20	39	15
				μ	s
	Sg	z′		0.1	1.0

Local. Seismic?

» 6	Up	iP	00	15	36
		i	00	15	44
	Ki	iP	00	14	44

» 6	Up	iP	06	15	29
	Ki	iP	06	14	36

Aleutian Islands.

» 6	Up	iP	15	24	35
	Ki	eP	15	24	19

» 6	Up	iPP	17	31	42
		i	17	31	53
	Ki	ePP	17	30	51
	Sk	ePKP	17	28	56

Kermadec Islands region.

» 7	Up	iP	03	31	17

West Indies.

Column 3

1957					
July 7	Up	iP	04	25	46
	Sk	eP	04	25	33

» 7	Sk	iP	05	29	21

» 7	Up	iP	06	04	16 D
		i	06	04	38
		iS	06	08	57
				μ	s
	P	z′		0.3	0.7
	S	E		1.2	10
	S	N		1.2	10
	M	E		3.0	19
	M	N		4.8	18
	M	z		3.3	19

△ = 2900 km = 26°.

	Ki	iP	06	05	07
		iPP	06	05	56
		eS	06	10	11
				μ	s
	P	z′		0.2	1.2
	PP	z′		0.2	1.3
	S	N		0.7	17
	M	E		4.9	20
	M	N		2.3	17
	M	z		3.2	17

△ = 3400 km = 30½°.

	Sk	iP	06	04	56
	Lu	iP	06	04	12

Turkey.
Magn. = 5.5 (Up, Ki).

» 7	Up	iP	06	28	41
	Ki	iP	06	27	49

Near southeast coast of Kamchatka.

» 7	Up	iP	14	41	42
	Ki	—			
				μ	s
	M	E		0.4	12
	Sk	iP	14	42	23

Yugoslavia.

» 7	Up	iP	15	14	22 C
		i	15	14	32
	Ki	iP	15	13	30
	Sk	eP	15	14	11

» 7	Sk	iPKP	15	55	15

New Hebrides Islands.

» 7	Up	iPKP	16	30	02
		ePP	16	31	17
		iPKKP	16	40	23
				μ	s
	PKP	z′		0.2	0.8
	PKKP	z′		0.1	1.0
	M	E		1.4	21
	M	N		1.9	21
	M	z		2.3	22
	Ki	iPKP	16	29	51

Column 4

1957					
July 7		ePP	16	30	39
(cont.)		eSKKS	16	37	29
		ePS	16	40	02
		iPKKP	16	40	45
				μ	s
	PKP	z′		0.1	1.0
	M	E		3.4	22
	M	N		2.8	21
	M	z		5.8	23
	Sk	iPKP	16	30	03
		iPKKP	16	40	25

Solomon Islands.

» 7	Up	iP	18	19	23
	Ki	e	18	20	45
		i(PP)	18	21	05

(Iran).

» 8	Up	iP	00	43	32
		i(P)	00	43	47
		i	00	43	48
	Ki	eP	00	43	26
		i(P)	00	43	41
	Sk	eP	00	43	47
		i(P)	00	44	05

India-Burma border.
Presumably two shocks, of which the last one, (P), is the largest.

» 8	Up	iSn	00	48	13
		iSg	00	48	49
				μ	s
	Sg	z′		0.1	0.5

△ = 650 km = 5.8°.

	Ki	e(Sn)	00	49	06
		iSg	00	50	08

△ = 920 km = 8.3°.

	Sk	iPn	00	46	30
		iSg	00	47	25

△ = 360 km = 3.2°.

	Lu	eSg	00	49	28

△ = 790 km = 7.1°.
Norway, 62° N, 6½° E.
Origin time = 00 45 37.

» 8	Ki	iP	13	56	39

» 8	Ki	iP	14	56	59

(Alaska).

» 8	Up	eS	15	53	38
		ipS	15	54	10
				μ	s
	M	E		1.9	28
	M	N		1.2	30
	M	z		2.8	30
	Ki	iP	15	42	55
		eS	15	53	13
		epS	15	53	56
				μ	s
	P	z		0.4	5

Column 1

1957
July 8
(cont.)

		μ/	s
M	E	1.9	24
M	N	0.9	23
M	z	2.8	24
Sk iP		15 42	49
i		15 43	14

Guatemala (h ~ 150 km).

» 9 Ki iP 06 06 32
Aleutian Islands.

» 9 Ki iP 09 16 19
i 09 17 38

» 9 Up iP 10 11 23
ipP 10 11 36
iPP 10 15 04
eS 10 22 25

		μ	s
P	z'	0.2	0.7
M	E	3.1	17
M	N	2.3	20
M	z	3.5	20

△=10250 km=92½°.
Ki iP 10 11 21C
ipP 10 11 35
e(S) 10 22 12
e 10 22 28
i 10 23 39

		μ	s
P	z	0.7	6
P	z'	0.3	1.0
pP	z'	0.4	1.5
(S)	E	0.5	10
M	E	3.1	21
M	N	1.7	18
M	z	5.1	21

Sk iP 10 11 35
ipP 10 11 49
iPP 10 15 31
Near south coast of
Sumatra. h=60 km (Up, Ki, Sk).
Magn.=6.1 (Up, Ki).

» 9 Ki iP 20 24 12
Atlantic Ocean, north of Iceland.

» 9 Ki iP 20 38 37

		μ	s
P	E	0.3	7
P	z'	0.1	1.0
M	E	1.3	17
M	N	0.5	16
M	z	1.4	19

Atlantic Ocean, north of Iceland.

» 9 Ki iP 21 23 56

		μ	s
P	E	0.3	7
P	z'	0.1	1.5
M	E	1.0	16
M	N	0.6	16

Column 2

1957
July 9
(cont.) Atlantic Ocean, north of Iceland.

» 9 Ki iP 22 35 46

		μ	s
P	z'	0.1	1.3

Congo.

» 10 Up iP 04 03 05C
Ki eP 04 02 58
Sk eP 04 03 35

» 10 Up iP 04 53 51D

		μ	s
P	z'	0.1	1.0

Ki iP 04 52 58
i 04 53 10

		μ	s
P	z'	0.2	1.0
M	E	0.5	18
M	N	0.5	18
M	z	0.6	16

Sk iP 04 53 27
i 04 54 15
Aleutian Islands.

» 10 Up iPKP 04 58 10
Sk iPKP 04 58 03
Kermadec Islands region.

» 10 Ki eP 06 09 18

		μ	s
P	E	0.3	8
M	E	1.1	17
M	N	0.5	15
M	z	1.2	18

Atlantic Ocean, north of Iceland.
The P phases are recorded 5—7 sec
earlier on Galitzin E than on Grenet Z'
for this as well as the two North At-
lantic shocks on July 9. The times
given here are read from Grenet Z'.

» 10 Up iP 09 17 03
iPP 09 20 33
eSKS 09 27 28
eS 09 27 50

		μ	s
P	E	0.4	4
P	z	1.1	4
P	z'	0.9	2.0
PP	z	0.5	4
SKS	E	0.9	10
S	N	1.0	10
M	E	6.8	23
M	N	4.9	24
M	z	11	24

△=9850 km=88½°.
Ki iP 09 17 01
i 09 17 18
iPP 09 20 30

Column 3

1957
July 10
(cont.) eSKS 09 27 28

		μ	s
P	z	1.7	5
P	z'	1.4	2.0
PP	E	0.9	10
PP	z	1.4	10
SKS	E	4.0	11
SKS	N	1.5	11
M	E	15	25
M	N	7.2	24
M	z	20	25

△=9800 km=88°.
Sk iP 09 16 49
iPP 09 20 03
Near coast of Panama.
Magn.=6.6 (Up, Ki).

» 10 Up iP 13 27 39C
Ki iP 13 27 18
Batan Islands.

» 10 Up iPKP 16 30 39
Sk iPKP 16 30 35
Off north coast of North
Island, New Zealand (h ~ 250 km).

» 10 Ki iP 23 31 07
Aleutian Islands.

» 10 Up iP 23 42 32
iS 23 46 51

		μ	s
P	z'	0.1	0.5
M	E	0.8	15
M	N	0.4	16
M	z	0.8	15

△=2600 km=23½°.
Ki eP 23 43 45

		μ	s
M	E	0.4	14
M	N	0.5	16
M	z	1.0	16

Sk iP 23 43 12
Lu iP 23 42 00
i 23 42 05
Near south coast of Greece.

» 11 Up iP 08 22 10

		μ	s
P	z'	0.1	0.7

Ki iP 08 21 27
Sk iP 08 22 01
Kurile Islands.

» 11 Up iP 17 22 14
Ki iP 17 22 23C
Sk iP 17 22 40
Hindu Kush.

» 11 Ki iP 21 50 08

Column 4

1957
July 12 Up iP 02 16 41
Ki iP 02 16 40

		μ	s
P	z'	0.1	1.0

Sk iP 02 16 54

» 12 Up i 03 29 15
Ki e(P) 03 26 44
eSg 03 27 27
Sk e(Sg) 03 26 33
Local.

» 12 Up eL 21 55

		μ	s
M	E	0.9	22
M	N	0.9	20
M	z	0.7	19

Ki eL 21 45

		μ	s
M	E	0.9	19
M	N	0.7	20
M	z	1.5	20

Bismarck Sea.

» 12 Up iP 22 24 52

		μ	s
M	N	1.0	18

Ki eP 22 24 29
i 22 24 41

		μ	s
M	E	0.8	20
M	N	0.6	21
M	z	0.7	15

Off east coast of Formosa.

» 12 Up iP 22 46 01

» 13 Up iP 01 10 32C
e 01 20 44

		μ	s
P	z'	0.2	1.0
M	E	1.6	24
M	N	0.9	20
M	z	1.0	20

Ki iP 01 09 39C
i 01 09 50
iS 01 17 50
e 01 18 09
eScS 01 19 28
e 01 19 43

		μ	s
P	z'	0.3	1.0
M	E	1.4	17
M	N	1.1	20
M	z	1.9	19

△=6650 km=60°.
Sk iP 01 10 09
Aleutian Islands.

» 13 Up iP 01 59 19

1957 July 13 (cont.)

Sta	Phase		h	m	s
Ki	iP		01	58	25
	P	z'		μ 0.1	s 1.0
Sk	iP		01	58	56

Aleutian Islands.

Sta	Phase		h	m	s
» 13 Up	iP		03	36	25
	i		03	36	30
	eS		03	40	17
	ePcS		03	44	08
				μ	s
	P	N	0.3		3
	M	E	0.6		10
	M	N	0.6		9
	M	z	0.9		9

△ = 2350 km = 21°.

Sta	Phase		h	m	s
Ki	eP		03	37	37
	eLg2		03	47	03
	e		03	50	23
				μ	s
	M	E	1.2		18
	M	N	0.2		11
	M	z	0.4		10
Sk	iP		03	37	10

Greece.

Sta	Phase		h	m	s
» 13 Ki	ePKP		09	51	21
				μ	s
	M	E	0.8		21
	M	N	0.5		22
	M	z	1.0		21

Samoa Islands region.

Sta	Phase		h	m	s
» 13 Up	iP		16	22	13

Sta	Phase		h	m	s
» 13 Up	iPg		19	24	38
	iSg		19	24	56
	i(Rg)		19	25	05

△ = 160 km = 1.4°.
Explosion at Norrköping, Sweden.
Origin time = 19 24 10.

Sta	Phase		h	m	s
» 14 Up	iP		02	37	53
	iPcP		02	38	19
				μ	s
	P	z'	0.1		0.5
	M	E	1.3		24
	M	N	1.4		25
	M	z	2.2		25
Ki	iP		02	37	06
	i		02	37	20
	eS		02	45	13
				μ	s
	M	E	1.7		21
	M	N	1.4		20
	M	z	3.0		20

△ = 6650 km = 60°.

Sta	Phase		h	m	s
Sk	iP		02	37	42
Lu	iP		02	38	24

Kurile Islands.

1957 July 14

Sta	Phase		h	m	s
Up	eP		04	36	29
Ki	iP		04	37	23

East of Rhodes Island.

Sta	Phase		h	m	s
» 14 Up	iPKP		06	43	14 D
	ipPKP		06	44	03
	iSKP		06	46	32
	ipPKS		06	47	41
				μ	s
	PKP	E	2.5		5
	PKP	N	6.3		6
	PKP	z	25		6
	PKP	z'	1.8		0.8
	SKP	N	2.4		6
	SKP	z	6.7		9
	SKP	z'	1.0		1.5
	M	E	3.2		22
	M	N	5.2		22
	M	z	6.1		23

△ ~ 16100 km ~ 145°.

Sta	Phase		h	m	s
Ki	iPKP		06	42	50
	i		06	43	00
	ipPKP		06	43	50
	iPP		06	45	48
	iSKP		06	46	16
	iPKS		06	46	31
	ipPKS		06	47	23
				μ	s
	PKP	z	2.6		7
	PKP	z'	0.7		1.1
	PP	E	0.8		6
	PP	N	2.2		7
	PP	z	4.4		8
	PP	z'	0.4		1.5
	SKP	z	3.9		7
	SKP	z'	3.2		3
	PKS	E	3.1		8
	PKS	N	3.8		9
	M	E	2.4		19
	M	N	2.8		20
	M	z	5.1		21

△ ~ 15200 km ~ 137°.

Sta	Phase		h	m	s
Sk	iPKP		06	43	06 D
	i		06	43	29
	iSKP		06	46	30
Lu	iPKP		06	43	23
	i		06	43	29

Kermadec Islands region.
h ~ 200 km (Up, Ki).
Magn. = 6.7 (Ki).

Sta	Phase		h	m	s
» 14 Up	iP		07	19	36
Ki	iP		07	19	02

Sta	Phase		h	m	s
» 14 Up	iPKP		08	30	29 C
	i		08	30	33
	iPP		08	34	03
				μ	s
	PKP	N	0.7		1.0
	PKP	z	2.8		1.0

1957 July 14 (cont.)

Sta	Phase		h	m	s
	PKP	z'	1.3		0.7
	PP	N	0.8		5
	PP	z	1.3		5
	M	E	12		23
	M	N	14		24
	M	z	18		25

△ ~ 16450 km ~ 148°.

Sta	Phase		h	m	s
Ki	iPKP		08	30	10
	i		08	30	14
	ePP		08	33	12
	iPKS		08	33	52
	iSKKS		08	40	07
				μ	s
	PKP	z	1.4		6
	PKP	z'	0.3		1.0
	PP	z	1.9		12
	PKS	E	1.6		7
	PKS	N	1.9		8
	M	E	8.3		22
	M	N	12		21
	M	z	28		22

△ ~ 15550 km ~ 140°.

Sta	Phase		h	m	s
Sk	iPKP		08	30	26 C
Lu	ePKP		08	30	39
	i		08	30	46

Kermadec Islands.
Magn. = 6.9 (Up, Ki).
The amplitude of PKP at Skalstugan
is about eleven times as large as at
Kiruna (shadow-zone effect).

Sta	Phase		h	m	s
» 14 Up	iPKP		10	01	47
Ki	ePKP		10	01	43
	iPP		10	03	59
	iPKS		10	05	06
	iPKS		10	05	18
				μ	s
	PKS	N	0.5		8
Sk	iPKP		10	01	52

Tonga Islands.

Sta	Phase		h	m	s
» 14 Up	iP		21	25	22
Ki	iP		21	26	37
Sk	iP		21	26	04

Greece.

Sta	Phase		h	m	s
» 15 Up	eP		09	42	28
				μ	s
	M	E	1.5		17
	M	N	1.1		18
	M	z	1.1		16
Ki	eP		09	43	27
				μ	s
	M	E	0.7		19
	M	N	0.7		22
	M	z	0.9		17
Sk	eP		09	42	51

Atlantic Ocean, west of Gibraltar.

Sta	Phase		h	m	s
» 15 Up	iP		12	31	00

1957 July 15 (cont.)

Sta	Phase		h	m	s
Sk	iP		12	30	54
» 15 Sk	eP		14	16	30
» 15 Up	iP		17	29	15

Sta	Phase		h	m	s
» 15 Up	iP		19	14	53
Ki	eP		19	16	04
Sk	iP		19	15	32

Near south coast of Greece.

Sta	Phase		h	m	s
» 15 Up	iP		20	04	53
Sk	eP		20	05	33

Near south coast of Greece.

Sta	Phase		h	m	s
» 15 Up	iP		23	16	35
	i		23	16	39
				μ	s
	P	z'	0.1		0.6
	M	E	1.3		24
	M	N	1.8		20
	M	z	2.3		19
Ki	iP		23	16	51
	eS		23	23	55
	eSS		23	27	09
				μ	s
	S	E	0.2		7
	M	E	1.4		18
	M	N	0.8		15
	M	z	1.5		16
Sk	iP		23	17	02

Western Pakistan.

Sta	Phase		h	m	s
» 15 Up	iP		23	54	18

Sta	Phase		h	m	s
» 16 Up	iPKP		04	41	35
Sk	iPKP		04	41	27

Kermadec Islands.

Sta	Phase		h	m	s
» 16 Up	iP		06	16	01

South of Honshu, Japan.

Sta	Phase		h	m	s
» 16 Sk	eP		10	26	39

Sta	Phase		h	m	s
» 16 Up	iPKP		15	22	59
Sk	iPKP		15	22	55

Off north coast of North Island,
New Zealand (h ~ 250 km).

Sta	Phase		h	m	s
» 16 Up	iP		16	16	15

Sta	Phase		h	m	s
» 16 Up	ePP		17	14	25
Ki	eP		17	10	21
	e(PP)		17	14	35
Sk	ePP		17	14	54

Near east coast of Borneo.

Sta	Phase		h	m	s
» 16 Up	iP		18	14	19

Honshu, Japan.

Sta	Phase		h	m	s
» 16 Up	iP		19	34	31 C

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1957
July 16,  Ki   iP          19   33   37
(cont.)                          μ    s
          P        z'      0.1  1.0
          Sk   iP          19   34   06
     Unimak Island,
     Aleutian Islands.

» 16  Up   iP          20   26   58 D
           i(PcP)      20   27   23
      Ki   iP          20   26   10
      Sk   iP          20   26   46

» 16  Ki   eP          21   16   05

» 17  Ki   eP          01   35   58

» 17  Up   iP          09   05   11
      Sk   eP          09   04   50
     Aleutian Islands.

» 17  Up   iPKP        11   29   11
           iPP         11   31   02
           i           11   32   27
           eSKSP       11   40   51
                            μ    s
           PKP   z'   0.1  0.7
           PP    E    1.0   15
           PP    N    0.9   17
           PP    z    2.5   16
           M     E    2.9   22
           M     N    2.7   20
           M     z    6.1   23
      Ki   ePP         11   30   18
           ePS         11   40   00
           e(SKKS)     11   46   43
                            μ    s
           PP    E    0.4   12
           PP    N    0.4   12
           PP    z    1.1   11
           M     E    3.1   19
           M     N    2.1   20
           M     z    7.5   22
      Sk   iPKP        11   29   09
     Santa Cruz Islands.
     Magn.=6.3 (Up, Ki).

» 17  Up   eL          13   17
                            μ    s
           M     E    1.1   17
           M     N    0.8   18
           M     z    1.7   19
      Ki   eL          13   17
                            μ    s
           M     E    1.4   19
           M     N    1.0   20
           M     z    2.4   19
     New Guinea.

» 17  Up   iP          18   50   40
                            μ    s
           M     E    1.7   19
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1957
July 17    M     N    1.0   18
(cont.)    M     z    1.7   19
      Ki   e           19   01   54
                            μ    s
           M     E    1.4   19
           M     N    1.1   17
           M     z    2.2   17
      Sk   iP          18   50   53
           i           18   50   58
     Mid-Atlantic Ridge.

» 18  Up   iP          01   25   51
                            μ    s
           P     z'   0.1  1.0
      Ki              —
                            μ    s
           M     E    0.5   18
           M     N    0.3   17
           M     z    0.7   18
      Sk   iP          01   25   28
     Aleutian Islands.

» 18  Up   iP          01   30   51
                            μ    s
           P     z'   0.1  1.0
      Sk   iP          01   30   29
     Aleutian Islands.

» 18  Up   eP          08   40   06
      Ki   iP          08   40   38
     Israel.

» 18  Up   iP          10   19   58

» 18  Up   iP          12   18   01
           i           12   18   28
           iS          12   27   18
                            μ    s
           P     z'   0.6  1.0
           S     N    0.4   3
      Ki   iP          12   17   28
           i           12   17   59
           iS          12   26   16
                            μ    s
           P     z'   0.2  1.1
           S     E    0.5   8
           S     N    0.7   8
      Sk   iP          12   17   58
           iPP         12   20   59
     Off south coast of Honshu,
     Japan (h ~ 400 km).
     Magn.=5.9 (Up, Ki).

» 18  Up   iP          13   33   31
      Sk   e(P)        13   35   19
» 18  Up   iP          20   17   25
» 18  Ki   iP          20   47   57
» 19  Up   iP          03   32   12 D
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1957
July 19                     μ    s
(cont.)    P     z'   0.1  0.6
      Ki   iP          03   32   22
      Sk   iP          03   32   38
     Hindu Kush.

» 19  Up   iP          05   17   06
      Ki   iP          05   17   18

» 19  Sk   iP          10   01   47
     Greece.

» 19  Sk   eP          10   16   49

» 19  Up   iP          11   33   55

» 19  Up   iP          12   09   31
                            μ    s
           P     z'   0.1  0.6
      Ki   iP          12   08   39
                            μ    s
           P     z'   0.1  0.8
     Aleutian Islands.

» 19  Up   iP          13   13   52
           ipP         13   14   19
           iS          13   23   25
           iScS        13   23   51
                            μ    s
           P     z'   0.4  1.5
           S     N    0.9   10
           M     E    1.0   16
           M     N    1.3   20
           M     z    1.5   17
     (△=8650 km=78°).
      Ki   iP          13   13   27
           i           13   13   30
           ipP         13   13   57
           e           13   18   20
           iS          13   22   42
                            μ    s
           P     z'   0.1  1.0
           S     N    1.0   9
           M     E    1.3   15
           M     N    0.6   17
           M     z    1.4   18
     (△=8300 km=74½°).
      Sk   iP          13   13   58
           ipP         13   14   26
           i           13   14   44
     Near north coast of Formosa.
     h=110 km (Up, Ki, Sk).
     Magn.=5.9 (Up, Ki).

» 19  Ki   e           14   37   15
                            μ    s
           M     E    0.4   9
           M     N    0.2   10
           M     z    1.0   18

» 19  Ki   e(S)        22   10   03
```

```
1957
July 19    M     E    0.4   13
(cont.)    M     z    0.5   13

» 20  Up   iP          05   09   39

» 20  Ki   eS          10   19   28
                            μ    s
           S     E    0.6   10
           M     E    0.5   19
           M     N    0.4   16
           M     z    0.9   17
     South of Mozambique.

» 20  Ki   i(PP)       10   52   20
     (South of Alaska).

» 20  Up   iP          11   23   29
                            μ    s
           M     E    0.9   22
           M     N    0.9   20
           M     z    1.8   21
      Ki   iP          11   22   38
                            μ    s
           P     z'   0.1  0.9
           M     E    1.0   26
           M     N    0.3   22
           M     z    0.9   20
      Sk   eP          11   23   16
     Off south coast of Kamchatka.

» 20  Ki   iP          11   34   27

» 20  Up   iP          14   19   20C
           iS          14   28   18
                            μ    s
           P     z'   0.8  1.0
           S     N    0.4   10
           M     E    1.5   23
           M     N    1.4   18
           M     z    2.2   18
     △=7600 km=68½°.
      Ki   iP          14   18   36C
           i           14   18   47
           eS          14   26   57
           eScS        14   28   21
                            μ    s
           P     E    0.2   6
           P     z    0.4   5
           P     z'   0.5  1.0
           S     E    0.4   8
           S     N    0.4   10
           M     E    1.7   20
           M     N    1.9   21
           M     z    3.9   20
     △=6900 km=62°.
      Sk   iP          14   19   11C
           i(PcP)      14   19   33
     Near east coast of
     Hokkaido, Japan.
     Magn.=6 (Up, Ki).
```

Column 1

1957

July 20	Up	iPKP	15	58	08
	Ki	ePKP	15	58	01
		ePKS	16	01	23
	Sk	iPKP	15	58	12
		ePKS	16	01	45

Tonga Islands.

» 20	Up	iP	19	18	40 D
		iPP	19	19	04
	Ki	iP	19	19	57
	Sk	iP	19	19	23

Near east coast of Greece.

» 20	Up	iP	19	45	43
	Ki	iP	19	44	50

		μ	s
P	z'	0.1	1.0

	Sk	iP	19	45	21

Aleutian Islands.

» 21	Ki	e	01	11	41

		μ	s
M	E	0.1	9

» 20	Up	eP	06	16	51

		μ	s
M	E	1.2	19
M	N	0.8	17
M	z	2.9	23

	Ki	eP	06	16	40
		eS	06	27	05
		e	06	27	20

		μ	s
P	z	0.4	7
S	E	0.6	15
M	E	1.5	17
M	N	1.1	17
M	z	2.1	16

	Sk	iP	06	16	34

Near coast of Guatemala.
(h ~ 100 km).

» 21	Up	i(PKP)	06	27	02

		μ	s
M	E	1.5	22
M	N	0.9	21
M	z	1.2	18

Ki —

		μ	s
M	E	1.0	21
M	N	0.6	18
M	z	1.8	20

» 21	Up	iPKP	19	56	40 D
		i	19	56	51

		μ	s
PKP	z'	0.1	0.8

	Ki	ePKP	19	56	25

Kermadec Islands region.
(h ~ 150 km).

Column 2

1957

July 21	Up	e(P)	23	31	01
		i	23	31	25
		i	23	31	34

» 22	Ki	iP	04	00	32

Mindanao Island region,
Philippine Islands.

» 22	Up	iPKP	06	36	45 D
		i	06	36	50
		i	06	36	58
		i	06	47	13

		μ	s
PKP	z	1.1	3
PKP	z'	0.2	0.5

	Ki	iPKP	06	36	30
		i	06	36	52

		μ	s
PKP	z'	0.3	1.7

Kermadec Islands region.
Deeper than normal?

» 22	Up	iPKP	06	41	47 C
		i	06	41	55

		μ	s
PKP	z'	0.2	1.0

Kermadec Islands region.

» 22	Up	iP	08	15	03

» 22	Up	iP	10	27	28
	Ki	iP	10	26	53

Southern Honshu, Japan.
(h ~ 350 km).

» 22	Up	iP	14	08	40 C
	Ki	iP	14	07	47
		i	14	07	57

		μ	s
P	z'	0.1	1.0
M	E	0.4	16
M	N	0.3	17
M	z	0.7	18

	Sk	iP	14	08	16

Aleutian Islands.

» 22	Up	iP	14	20	09
	Ki	iP	14	19	15

Unimak Island region.

» 23	Up	iP	00	56	14
		i	00	56	16
		eS	01	05	11
		ePS	01	05	44
		e(P'P')	01	24	21
		iP'P'	01	24	33

		μ	s
P	N	1.7	14
P	z	3.1	12
P	z'	1.0	1.0
P'P'	z'	0.1	1.5

Column 3

1957

July 23	M	E	8.7	19	
(cont.)	M	N	10	21	
	M	z	8.7	20	

△ = 7550 km = 68°.

	Sk	iP	00	55	55
		iPcP	00	56	29
		eP'P'	01	24	37

△ = 7200 km = 65°.

	Lu	iP	00	56	44
		i	00	56	45

Aleutian Islands.
Magn. = 6.3 (Up).

» 23	Up	iP	01	32	34

» 23	Up	iP	04	00	58
		iPcP	04	01	22

Aleutian Islands.

» 23	Ki	eP	05	10	30
	Sk	iP	05	11	13

Aleutian Islands.

» 23	Up	iPKP	08	13	19
	Ki	ePKP	08	12	57
	Sk	iPKP	08	13	13
		i	08	13	35

South of Kermadec Islands.

» 23	Up	iPKP	08	47	20
	Ki	i(PKP)	08	46	33

Kermadec Islands region.

» 23	Up	iPKP	13	48	52 C

		μ	s
PKP	z'	0.3	0.6

	Ki	ePKP	13	48	33
		iPP	13	51	27
	Sk	ePKP	13	48	45

Kermadec Islands region.
(h ~ 600 km).

» 23	Up	iP	17	46	39 C

» 23	Up	iP	19	44	07 D
		i	19	45	21

		μ	s
P	z'	0.1	0.5

	Ki	iP	19	44	05

		μ	s
P	z'	0.1	1.0
M	E	0.5	18
M	N	0.4	16
M	z	0.6	16

	Sk	iP	19	44	26
		i	19	44	35

» 23	Up	iP	23	25	26

» 24	Up	iPP	02	17	08
		e	02	26	51

Column 4

1957

July 24 (cont.)		e	02	27	08

		μ	s
PP	z'	0.2	2.0
M	E	3.7	20
M	N	1.7	19
M	z	4.1	21

	Ki	ePP	02	16	08
		iPP	02	17	32
		eSKS	02	23	08
		e	02	27	11
		i(SKSP)	02	27	20

		μ	s
PP	E	0.3	8
PP	z	0.4	8
PP	z'	0.4	2.5
SKS	E	0.3	8
M	E	1.7	19
M	N	1.0	20
M	z	3.4	21

Central Chile-Argentina border.
Magn. = 6.3 (Up, Ki).

» 24	Ki	iP	04	17	48

» 24	Up	iPKP	06	25	26
		i	06	25	37
		iPKP2	06	25	48

		μ	s
PKP	z'	0.1	0.8

	Ki	iPKP	06	25	07 C

		μ	s
PKP	z'	0.2	1.4

	Sk	iPKP	06	25	22 D
		i	06	25	32

Off north coast of North
Island, New Zealand.

» 24	Up	iP	08	16	29

Ryukyu Islands (h ~ 240 km).

» 24	Ki	ePKP	10	16	02

New Hebrides Islands.

» 24	Up	e(SKS)	11	13	17
	Ki	e	11	12	35
		e	11	13	43
		e	11	14	27
		e	11	16	17

(Argentina, h ~ 150 km).

» 24	Up	ePKP	11	21	52
		ePKS	11	25	15
		ePKS	11	25	22
		iPKS	11	25	32

		μ	s
PKS	E	0.6	6
PKS	N	1.1	6
M	E	1.8	20
M	N	2.0	20
M	z	2.8	20

	Ki	iPKP	11	21	36

Column 1

1957
July 24 (cont.)

	e(PP)		11	23	32
				μ	s
	PKP	z′		0.1	1.3
	M	E		2.3	20
	M	N		1.4	20
	M	z		3.9	20
Sk	ePKP		11	21	47

New Hebrides Islands.

» 24 Ki	iPKP		13	29	16
Sk	ePKP		13	29	37

Off north coast of North Island, New Zealand.

» 24 Up	—			
			μ	s
M	N		1.2	26
M	z		1.0	20
Ki	eP	14	54	41
			μ	s
M	E		0.8	20
M	N		0.6	19
M	z		1.2	20

Western New Guinea.

» 24 Up	iPKP		15	15	17
Ki	iPKP		15	14	59
Sk	iPKP		15	15	12
	i		15	15	16

Southeast of Kermadec Islands.

» 24 Up	iPKP		18	41	19
Sk	iPKP		18	41	03

South of Kermadec Islands.

» 24 Up	iP		20	57	42
Ki	iP		20	56	54
Sk	iP		20	57	29
» 25 Up	i		01	10	30
	iPcP		01	10	44
Ki	iP		01	09	05

Near south coast of Kamchatka.

» 25 Up	iP		03	35	42

Aleutian Islands.

» 25 Up	iP		07	53	29
	i		07	53	46
	iS		08	02	24
	e		08	02	56
				μ	s
P	z′			0.4	0.8
M	E			3.1	17
M	N			2.4	18
M	z			3.7	18

△ = 7550 km = 68°.

Ki	iP		07	52	38
	iPcP		07	53	21
	e		08	01	10

Column 2

1957
July 25 (cont.)

			μ	s
P	z′		0.1	1.2
M	E		2.6	18
M	N		3.2	17
M	z		5.2	17
Sk	iP	07	53	10
	ePcP	07	53	40

Aleutian Islands.
Magn. = 6.1 (Up, Ki).

» 25 Up	iPKP		08	21	50
				μ	s
PKP	z′			0.1	0.5

About 300 km west of Norfolk Islands. Deep.

» 25 Up	eP		08	47	35
	i(Sg)		08	47	48

Local?

» 25 Up	iP		18	42	40
	iPcP		18	43	03
				μ	s
P	z′			0.1	1.0
Ki	iP		18	41	58
				μ	s
P	z′			0.1	1.0
M	E			0.3	17
M	N			0.4	19
M	z			0.8	16
Sk	iP		18	42	33

Near south coast of Hokkaido, Japan.

» 25 Sk	iPKP2		18	46	47

Off north coast of North Island, New Zealand.

» 25 Ki	eL	20	06	
			μ	s
M	E		0.4	10
M	N		0.3	13
M	z		0.5	15

» 25 Up	iP		22	28	39
Ki	iP		22	28	20
Sk	iP		22	28	45

Luzon, Philippine Islands.

» 25 Up	iP		23	02	10
Sk	iP		23	02	12

» 26 Ki	iP		00	50	08
Sk	iPcP		00	51	13

Aleutian Islands.

» 26 Sk	iP		06	26	55
» 26 Up	iPKP		07	09	50
Ki	iPKP		07	09	21
	i		07	09	31

Column 3

1957
July 26 (cont.)

			μ	s
PKP	z		0.7	6
PKP	z′		0.5	1.8
M	E		0.9	19
M	N		0.4	19
M	z		0.6	17
Sk	iPKP	07	09	34

Off north coast of North Island, New Zealand.

» 26 Ki	i(PKP)		07	18	40
Sk	i(PKP)		07	18	54

» 26 Ki	iP		11	46	33

» 26 Ki	iP		13	47	34
Sk	iP		13	48	09

South of Hokkaido, Japan.

» 26 Up	iP		14	05	50
Ki	iP		14	05	31

Off east coast of Mindanao, Philippine Islands.

» 27 Up	i(P)		00	57	45
	i		00	59	38

Seismic?

» 27 Ki	i(P)		07	01	56
Sk	iP		07	01	22
	i		07	01	49

Guatemala.

» 27 Ki	eP		08	57	07

(Siberia).

» 27 Ki	iP		09	19	30
Sk	iP		09	19	14

Ethiopia.

» 27 Up	iP		13	37	37 C

» 27 Up	iPKP		14	30	49
	i		14	31	00
Ki	iPKP		14	30	30 C
				μ	s
PKP	z′			0.1	1.0
Sk	iPKP		14	30	44

Off north coast of North Island, New Zealand.

» 27 Ki	iP		15	50	38
				μ	s
M	E			0.3	16
M	N			0.3	19
M	z			0.6	17

Off east coast of Mindanao, Philippine Islands.

» 27 Ki	ePKP		19	01	37

Column 4

1957
July 27 (cont.)

			μ	s
M	E		1.0	26
M	N		0.7	25
M	z		1.7	26
Sk	iPKP	19	01	49

New Britain region.

» 27 Up	iP		21	10	24
	i(pP)		21	10	34
				μ	s
(pP)	z′			0.1	1.0
M	E			0.7	18
M	N			0.5	20
Ki	iP		21	09	31
	i(pP)		21	09	41
				μ	s
M	E			0.7	17
M	N			0.7	20
M	z			0.8	16
Sk	iP		21	10	07

Aleutian Islands.

» 28 Up	iPKP		01	50	05
Ki	iPKP		01	49	51
Sk	iPKP		01	50	01

New Hebrides Islands.

» 28 Up	iP		03	10	58
Ki	iP		03	11	02
	i		03	11	11
				μ	s
P	z′			0.1	1.5
Sk	iP		03	10	52

Southern Pacific Ocean.

» 28 Up	iSg		06	22	51

△ = 1170 km = 10.5°.

Ki	i(P*)		06	18	36
	i(S*)		06	19	36

△ = 570 km = 5.1°.

Sk	iSg		06	22	24

△ = 1080 km = 9.7°.

Northern part of Russia, near 67.7° N, 34.0° E.
Origin time = 06 17 04.
The records of Helsinki and Sodankylä were also used in the determination.
Explosion of 50 ton TNT.

» 28 Up	iP		08	52	56
	i!		08	53	10
	i		08	54	48
	iPP		08	56	29
	i(PP)		08	56	35
	iSKS		09	03	21
	iS		09	03	48
				μ	s
P	E			18	20
P	N			16	22
P	z			74	22

Column 1

1957
July 28 (cont.)

PP	E	43	21	
PP	N	38	20	
PP	z	87	20	
PP	z′	2.1	2.0	
S	E	200	28	
S	N	140	28	
S	z	90	25	
M	E	210	24	
M	N	210	25	
M	z	310	24	

△ = 9800 km = 88°.

Ki	iP	08	52	40C
	i!	08	52	57
	i	08	53	56
	i!	08	54	18
	iPP	08	56	03
	i	09	02	37
	i(SKS)	09	02	46
	iScS	09	03	15
	i!	09	03	34
	eP′P′	09	19	07

		μ	s	
P	E	40	21	
P	N	20	21	
P	z	180	22	
P	z′	4.5	2.5	
PP	E	42	20	
PP	z	95	21	
(SKS)	N	9.5	14	
P′P′	z′	0.1	2.0	
M	E	190	20	
M	N	150	21	
M	z	430	20	

△ = 9400 km = 84½°.

Sk	iP	08	52	37C
	i!	08	52	55
	iPP	08	55	57

△ = 9350 km = 84°.

Lu	iP	08	53	07

Mexico. Magn. = 7.8 (Up, Ki).
The body waves have remarkably long periods.

» 28	Ki	iP	10	11	06
		iPP	10	14	21
	Sk	iP	10	11	03

Mexico.

» 28	Ki	iP	12	14	02

» 28	Ki	iP	13	34	15

» 28	Up	iP	13	47	11
	Ki	iP	13	46	54
		iPP	13	50	10
		eScS	13	57	29
		e	13	57	39

		μ	s	
M	E	0.8	20	
M	N	0.3	16	
Sk	iP	13	46	51

Column 2

1957
July 28 (cont.) Mexico.

			i	13	47	06

» 28	Sk	eP	20	30	46

» 29	Ki	eP	00	23	58

Mexico.

» 29	Ki	eP	01	26	21

Lebanon-Syria border.

» 29	Sk	iP	02	59	16

» 29	Up	iPKP	10	17	12
	Sk	iPKP	10	17	10

South of Kermadec Islands.

» 29	Up	iP	13	11	32

Aleutian Islands.

» 29	Up	i(PKP)	17	33	56
		iPP	17	34	16
		eS	17	41	54
		iPS	17	43	39

		μ	s	
PP	E	0.7	4	
PP	z	1.6	4	
PP	z′	0.9	2.2	
S	N	0.9	10	
PS	E	6.5	12	
M	E	11	21	
M	N	5.1	19	
M	z	14	21	

△ ~ 12200 km ~ 110°.

Ki	eP	17	29	56
	iPKP	17	33	54
	iPP	17	34	35
	e	17	40	19
	eS	17	42	18
	iPS	17	44	11
	ePKKP	17	44	47

		μ	s	
P	z	0.4	7	
PP	E	0.8	6	
PP	z	1.2	5	
PP	z′	1.1	3	
S	N	0.7	11	
PS	E	6.5	14	
M	E	15	23	
M	N	5.7	23	
M	z	29	23	

△ ~ 12450 km ~ 112°.

Lu	iPKP	17	33	51

Near coast of Chile.
Magn. = 7.1 (Up, Ki).
Deeper than normal.
PS(E) has unusually large amplitudes both at Uppsala and Kiruna.

» 30	Up	iP	01	49	56
		i	01	50	01

Column 3

1957
July 30 (cont.)

			μ	s	
		P	z′	0.1	0.5
Ki	iP		01	50	37

		μ	s	
P	z′	0.1	1.0	

Iran.

» 30	Up	i(PKP)	08	22	29

» 31	Up	iP	07	45	57
	Ki	iP	07	45	52

Sunda Strait (h ~ 100 km).

» 31	Up	iPKP	20	29	12

Kermadec Islands region.

» 31	Ki	iP	22	05	45

Aug 1	Up	iP	03	28	46

» 1	Up	iP	11	06	57

		μ	s	
P	z′	0.1	0.7	

Hindu Kush (h ~ 200 km).

» 1	Up	iP	16	29	49

		μ	s	
P	z′	0.2	1.0	
Sk	iP	16	29	27

Aleutian Islands.

» 1	Up	iPKP	17	17	18

		μ	s	
PKP	z′	0.1	0.7	
Ki	ePKP	17	16	56
Sk	iPKP	17	17	11C
	i	17	17	25
	i	17	17	34

Kermadec Islands.

» 1	Up	iP	18	04	32

		μ	s	
P	z′	0.1	0.7	
Ki	iP	18	03	59

South of Honshu, Japan.
(h ~ 400 km).

» 1	Ki	iPg	21	43	34
		iSg	21	43	38

		μ	s	
Sg	z′	0.9	1.5	

△ = 30 km = 0.3°.
Probably explosion.

» 1	Ki	e(P)	22	26	35
	Sk	iP	22	26	21

Near coast of Mexico.

» 2	Up	ePKP2	02	32	48
	Ki	ePKP	02	32	10

North Island, New Zealand.

Column 4

1957

Aug 2	Up	iSg	09	19	46
		i	09	19	59

△ = 800 km = 7.2°.

Ki	iSn	09	18	43
	iSg	09	19	22

△ = 720 km = 6.4°.

Sk	e(Sn)	09	19	43
	eSg	09	20	30

△ = 930 km = 8.3°.
Close to the border between Finland and the U.S.S.R., 63.2° N, 31.0° E.
Origin time = 09 15 50.

» 2	Ki	eP	09	52	50

Near south coast of Mindanao, Philippine Islands (h ~ 150 km).

» 2	Up	iP	12	32	41

		μ	s	
P	z′	0.1	1.0	
Ki	iP	12	31	48
Lu	iP	12	32	57

Aleutian Islands.

» 2	Sk	e(P)	13	27	47
		eSg	13	28	09

Local.

» 3	Ki	iP	08	34	03

» 3	Up	iPKP	08	35	28

		μ	s	
PKP	z′	0.1	0.7	
Sk	iPKP	08	35	20C

Kermadec Islands region.

» 3	Ki	eP	10	30	58

Northern Kurile Islands.

» 4	Up	iP	00	29	21

» 4	Up	e	01	09	01

		μ	s	
M	E	4.1	22	
M	N	4.4	24	
M	z	4.7	22	
Ki	e	01	00	32

		μ	s	
M	E	2.3	18	
M	N	2.5	21	
M	z	4.1	19	

Near north coast of New Guinea.
Magn. = 6.2 (Up, Ki).

» 4	Up	iP	04	45	34

» 4	Up	ePP	06	22	56
		eSKS	06	29	57
		iS	06	30	21

Column 1 (p. 134)

1957 Aug 4 (cont.)

Phase	Comp.	μ	s
PP	z	0.4	5
S	N	0.8	10
M	E	0.7	18
M	N	1.1	29
M	z	1.4	26

△ = 9800 km = 88°.

Sta.	Phase			
Ki	eP	06	19	13
	iPP	06	22	31
	eS	06	29	38

Phase	Comp.	μ	s
P	z.	0.5	6
PP	E	0.3	8
PP	N	0.3	8
PP	z	0.5	8
S	E	0.5	8
S	N	0.5	9
M	E	0.6	18
M	N	0.4	19
M	z	1.1	17

△ = 9450 km = 85°.

Sta.	Phase			
Sk	eP	06	19	07

Mexico. Magn. = 6.2 (Up, Ki).

Sta.	Phase			
» 4 Ki	eS	11	51	26

Phase	Comp.	μ	s
S	E	0.7	17
S	N	0.2	10

Mexico.

Sta.	Phase			
» 4 Up	ePP	14	32	38
	iSKS	14	39	40

Phase	Comp.	μ	s
SKS	E	0.5	10
SKS	N	0.5	10
M	E	0.7	17
M	N	0.7	19
M	z	0.9	18

Sta.	Phase			
Ki	iP	14	28	57
	ePP	14	32	13
	eS	14	39	18

Phase	Comp.	μ	s
P	z	0.4	6
PP	E	0.3	8
S	E	1.0	8
S	N	0.6	10
M	E	0.7	14
M	N	0.5	16
M	z	1.0	15

△ = 9450 km = 85°.

Sta.	Phase			
Sk	eP	14	28	50

Mexico. Magn. = 6.2 (Ki).

Sta.	Phase			
» 4 Up	iP	19	53	18
Sk	iP	19	53	27

Sta.	Phase			
» 4 Up	e(PKP)	21	27	26
	ePP	21	27	36
	eSKS	21	33	49

Phase	Comp.	μ	s
M	E	5.3	20
M	N	4.5	21

Column 2 (p. 134)

1957 Aug 4 (cont.)

Sta.	Phase	Comp.			
Ki	M	z	7.4	21	
	e(PKP)		21	27	44
	ePP		21	28	29
	i		21	38	08

Phase	Comp.	μ	s
M	E	5.4	18
M	N	3.2	20
M	z	4.9	19

Prince Edward Island region.

Sta.	Phase			
» 4 Up	iP	23	14	06

Sta.	Phase			
» 5 Up	iP	02	44	31
	i(pP)	02	44	44

Phase	Comp.	μ	s
(pP)	z'	0.1	0.8

Sta.	Phase			
Ki	iP	02	44	10
	i(pP)	02	44	22

Phase	Comp.	μ	s
(pP)	z'	0.1	1.0
M	E	0.3	15
M	N	0.3	16
M	z	0.8	16

Sta.	Phase			
Sk	eP	02	44	37
	i(pP)	02	44	49

Sta.	Phase			
» 5 Ki	eL	05	43	

Phase	Comp.	μ	s
M	E	0.6	20
M	N	0.4	20
M	z	1.2	20

Tonga Islands.

Sta.	Phase			
» 5 Up	iP	10	15	15
	i	10	15	25

Phase	Comp.	μ	s
P	z'	0.1	1.0

Sta.	Phase			
Ki	iP	10	14	22C

Phase	Comp.	μ	s
P	z'	0.1	1.0

Sta.	Phase			
Sk	eP	10	14	58

Kamchatka.

Sta.	Phase			
» 5 Up	iP	13	45	05
Ki	iP	13	44	12

Kamchatka.

Sta.	Phase			
» 5 Up	iP	14	01	53

Phase	Comp.	μ	s
P	z'	0.1	1.0

Sta.	Phase			
Ki	iP	14	01	00
Sk	eP	14	01	37

Near east coast of Kamchatka.

Sta.	Phase			
» 5 Up	iP	14	22	42

Phase	Comp.	μ	s
P	z'	0.2	1.2

Sta.	Phase			
Ki	iP	14	21	49

Phase	Comp.	μ	s
P	z'	0.1	1.0

Sta.	Phase			
Sk	iP	14	22	26

Kamchatka.

Column 3 (p. 135)

1957 Aug

Sta.	Phase			
5 Up	iP	14	38	59
Ki	iP	14	38	06

Kamchatka.

Sta.	Phase			
» 5 Up	iP	15	03	25C

Phase	Comp.	μ	s
P	z'	0.1	1.0

Sta.	Phase			
» 5 Up	iP	16	47	21D

Sta.	Phase			
» 5 Up	eP	17	47	38
Ki	iP	17	47	25
Sk	iP	17	47	20

Near coast of Oaxaca, Mexico (h ~ 100 km).

Sta.	Phase			
» 5 Up	iP	20	11	38
Ki	iP	20	10	46

(Kamchatka).

Sta.	Phase			
» 5 Sk	iP	20	58	38

(Ionian Islands).

Sta.	Phase			
» 5 Up	e(PKP)	21	50	17
	iPKP	21	50	25

Phase	Comp.	μ	s
PKP	z'	0.1	1.3

Sta.	Phase			
Ki	ePKP	21	50	05
Sk	iPKP	21	50	11

Kermadec Islands region.

Sta.	Phase			
» 5 Up	iP	23	15	40
Ki	iP	23	15	09

Phase	Comp.	μ	s
M	E	1.0	22
M	N	0.3	22
M	z	1.4	21

Sta.	Phase			
Sk	iP	23	15	40

Off south coast of Kyushu, Japan.

Sta.	Phase			
» 5 Up	i(P)	23	21	15

Sta.	Phase			
» 6 Up	iP	00	14	30
Ki	iP	00	13	37
Sk	iP	00	14	14

Kamchatka.

Sta.	Phase			
» 6 Up	eP	03	47	12
	i	03	47	17
Ki	iP	03	47	04

Philippine Islands region.

Sta.	Phase			
» 6 Ki	i(P)	10	41	54

Sta.	Phase			
» 6 Up	iP	13	37	46
	i	13	37	57
Sk	i(P)	13	37	50
	i	13	38	03

Sta.	Phase			
» 6 Up	iP	15	10	15
Ki	iP	15	11	19

Column 4 (p. 135)

1957 Aug 6 (cont.)

Sta.	Phase			
Sk	iP	15	10	54

Rhodes Island.

Sta.	Phase			
» 7 Up	iP	00	08	41

Sta.	Phase			
» 7 Sk	e(P)	03	30	54

Sta.	Phase			
» 7 Ki	iP	05	59	25

Phase	Comp.	μ	s
M	E	0.6	17
M	N	0.5	17
M	z	0.8	15

Sta.	Phase			
Sk	iP	06	00	02

Near coast of Kamchatka.

Sta.	Phase			
» 7 Ki	iP	06	02	07
Sk	iP	06	02	43

Near coast of Kamchatka.

Sta.	Phase			
» 7 Up	iP	06	30	14
	i	06	33	00

Sta.	Phase			
» 7 Ki	iP	06	38	58

Sta.	Phase			
» 7 Up	iP	14	10	01
	i	14	10	14

Sta.	Phase			
» 7 Up	iP	15	36	00C
Ki	eP	15	36	11
Sk	iP	15	36	27
	ipP	15	37	03

Hindu Kush. h = 180 km (Sk).

Sta.	Phase			
» 7 Up	iPKP	19	12	28
Sk	iPKP	19	12	20

Kermadec Islands region.

Sta.	Phase			
» 7 Up	iPKP	19	59	06
	i	19	59	16

Phase	Comp.	μ	s
PKP	z'	0.1	0.6

Sta.	Phase			
Ki	iPKP	19	58	58
	iSKP	20	01	32

Phase	Comp.	μ	s
SKP	z'	0.1	1.0

Sta.	Phase			
Sk	ePKP	19	58	59
Lu	iPKP	19	59	22

Fiji Islands (h ~ 550 km).

Sta.	Phase			
» 7 Up	iP	20	35	08

Sta.	Phase			
» 7 Up	iP	23	12	26

Sta.	Phase			
» 8 Up	iP	01	18	07

Phase	Comp.	μ	s
P	z'	0.1	0.8

Sta.	Phase			
Ki	iP	01	19	14

Phase	Comp.	μ	s
P	z'	0.1	1.2

Sta.	Phase			
Sk	iP	01	18	45D
	i	01	18	58

Column 1 (p. 136)

1957
Aug 8   Lu   iP   01   17   52
(cont.) Near coast of Egypt.

» 8   Up   iP   19   53   04
   i   19   53   12

		μ	s
M	N	0.8	17

Ki   iP   19   53   01

		μ	s
M	E	0.4	12
M	N	0.6	18
M	z	0.7	13

Sk   eP   19   53   13
Sinkiang Province, China.

» 8   Up   iP   22   44   24
   i   22   44   33
   eS   22   53   33

		μ	s
P	z'	0.1	0.7

Ki
M	E	1.1	21
M	N	1.3	22
M	z	1.3	16

$\triangle=7900$ km$=71°$.
Ki   iP   22   45   12
   i   22   45   17
   eS   22   55   07
   e   22   55   15

		μ	s
P	z'	0.1	1.2
S	N	0.7	10
M	E	0.9	17
M	N	0.9	20
M	z	2.7	20

$\triangle=8800$ km$=79°$.
Sk   iP   22   44   36
   i   22   44   41
Ascension Island region.
Magn.=5.9 (Up, Ki).

» 8   Ki   iP   23   10   36
Ascension Island region.

» 9   Up   iP   00   08   37C
Sk   iP   00   09   27
(Caspian Sea).

» 9   Up   iP   01   17   57D
Aleutian Islands.

» 9   Up   iP   02   43   33
   ePP   02   47   57
   iSKS   02   54   13
   iS   02   55   37

		μ	s
PP	E	0.1	3.5
S	N	0.2	5
M	E	3.0	19
M	N	7.0	22
M	z	3.7	21

Column 2 (p. 136)

1957
Aug 9
(cont.) Ki $\triangle=11800$ km$=106°$.
Ki   iP   02   43   14
   ePP   02   47   30
   eSKS   02   53   52
   eS   02   55   03
   ePS   02   56   27

		μ	s
P	z'	0.1	1.1
PP	E	0.3	8
PP	z	0.5	8
SKS	E	0.5	7
S	N	0.2	11
M	E	3.0	20
M	N	2.3	18
M	z	6.5	19

$\triangle=11350$ km$=102°$.
New Guinea.
Magn.=6.2 (Up, Ki)

» 9   Up   iP   07   53   55
Ki   iP   07   53   02C
Sk   iP   07   53   33
Aleutian Islands.

» 9   Sk   eP   08   31   40
Greece.

» 9   Up   iP   11   10   35C
   i(pP)   11   11   01
Ki   iP   11   09   47
Sk   eP   11   10   23
Kurile Islands.

» 9   Sk   eP   13   38   04

» 9   Up   iP   18   41   48
Ki   iP   18   40   39
Sk   iP   18   41   26C
Yakutsk Province, U.S.S.R.

» 9   Sk   iPKP   20   03   09
Kermadec Islands region.

» 10   Up   iP   00   12   27C
   i(pP)   00   12   55

		μ	s
P	z'	0.1	0.6

Ki   iP   00   11   40
Sk   iP   00   12   15
Kurile Islands.

» 10   Up   iPKP   02   36   57C
Ki   iPKP   02   36   50
   iSKP   02   39   24
Fiji Islands region.
(h~600 km).

» 10   Ki   eSS   04   34   19

		μ	s
M	N	0.3	19
M	z	1.2	20

Tonga Islands.

Column 3 (p. 137)

1957
Aug 10   Up   iP   19   25   40
   i   19   25   49
Ki   iP   19   25   27
   ePS   19   37   44
   esS   19   38   13

		μ	s
M	E	0.3	17
M	z	0.5	18

Sk   iP   19   25   48C
Celebes Sea (h~300 km).

» 10   Up   iP   20   36   00
   i   20   36   07

		μ	s
P	z'	0.1	0.8
M	E	1.0	15
M	N	0.9	16
M	z	1.8	16

Ki   eP   20   37   11

		μ	s
M	E	0.9	17
M	N	0.5	18
M	z	0.8	12

Sk   iP   20   36   37
   i   20   37   00
Off south coast of
Peloponnesus, Greece.

» 10   Up   iP   21   17   52D
   i(P)   21   18   07C
Ki   iP   21   17   16

» 11   Up   iPKP2   05   32   57D
Ki   iPKP   05   32   25C

		μ	s
PKP	z'	0.3	1.4

Sk   iPKP   05   32   38D
North Island, New Zealand.

» 11   Up   ePKP   14   00   15
Sk   iPKP   14   00   05
   i   14   00   15
Kermadec Islands.

» 11   Up   iP   14   44   47C
Ki   iP   14   45   29

» 11   Up   iP   15   39   39
Sk   iP   15   40   30
Western Turkey.

» 11   Up   iPKP   21   57   25
   iPKS   22   00   54
   e   22   02   16

		μ	s
PKS	N	0.1	5
M	E	1.6	18
M	N	2.5	20
M	z	3.1	18

Ki   iPKP   21   57   08
   e   22   05   02

Column 4 (p. 137)

1957
Aug 11
(cont.)   PKP   z'   0.4   2.0

		μ	s
M	E	2.1	21
M	N	0.9	20
M	z	3.6	20

Sk   ePKP   21   57   20
   i   21   57   23
New Hebrides Islands.

» 12   Up   iP   07   21   50
Ki   eP   07   21   35
Mindanao, Philippine Islands.

» 12   Up   iP   08   08   41
   i   08   08   52
Ki   iP   08   07   47
   i   08   07   57

		μ	s
P	z'	0.1	1.0

Sk   iP   08   08   24
Near east coast of Kamchatka.

» 12   Up   iP   11   30   57
Ki   iP   11   30   21
Off south coast of Honshu,
Japan (h~200 km).

» 12   Up   i(P)   16   40   11
   i   16   40   45
Ki   e(P)   16   39   27
   i   16   39   40
Sk   eP   16   40   05

» 12   Ki   e(P)   20   22   03

» 13   Up   i(P)   00   48   35
Ki   iP   00   47   50
   i   00   47   56

» 13   Up   iP   01   21   12
Ki   iP   01   21   47
Sk   iP   01   21   09
Mid-Atlantic Ridge.

» 13   Up   iP   12   10   03
   i   12   10   13
Ki   iP   12   09   07
   i   12   09   18
   iS   12   16   23

		μ	s
P	z'	0.1	0.9
S	E	0.2	9
S	N	0.2	9
M	N	0.4	22
M	z	0.8	22

$\triangle=5650$ km$=51°$.
Sk   iP   12   09   34
   i   12   09   45
Southern Alaska.

» 13   Up   iP   14   55   35D

```
1957
Aug 13  Ki   iP           14  55  16
(cont.) Sk   iP           14  55  38
        Northern Mindanao,
        Philippine Islands.

»  13   Up   iP           16  02  51C
                      μ    s
             P    z'   0.1  1.0
        Ki   iP           16  02  28C
                      μ    s
             P    z'   0.1  0.9
             M    E    0.5  14
             M    N    0.3  16
             M    z    0.7  13
        Sk   iP           16  02  56
        Near east coast of Formosa.

»  13   Ki   e(P)         19  38  49

»  14   Up   iP           02  49  52
             iS           02  54  19
                      μ    s
             S    N    0.3  7
             M    E    2.0  16
             M    N    1.3  18
             M    z    1.2  17
             △=2800 km=25½°.
        Ki   iP           02  50  58
             e            02  58  50
                      μ    s
             P    z'   0.1  1.0
             M    E    1.4  17
             M    N    0.5  13
             M    z    0.8  14
        Sk   iP           02  50  32
        Lu   iP           02  49  27
        South of Rhodes Island.

»  14   Ki   eP           03  21  54

»  14   Ki   iP           05  21  17
        Sk   iP           05  20  52
        South of Rhodes Island.

»  14   Up   iP           09  31  03 D
        Aleutian Islands.

»  14   Up   iP           09  45  39
        Aleutian Islands.

»  14   Up   iPKP         18  45  54
             iSKP         18  49  18
        Ki   iSKP         18  48  54
                      μ    s
             SKP  z'   0.1  1.4
        Sk   ePKP         18  45  46
             iSKP         18  49  10
        Lu   iPKP         18  46  08 D
        Tonga Islands region.
        (h ~ 200 km).

1957
Aug 14  Up   iP           20  40  11
        Sk   iP           20  40  50
             e            20  41  14
        Off southwest coast of
        Peloponnesus, Greece.

»  14   Up   iP           21  06  06

»  15   Up   iP           06  30  29
        Sk   eP           06  31  11
        Ionian Islands.

»  15   Up   iP           08  45  33C
             i            08  46  23
        Sk   iP           08  45  18C
             i            08  45  41
        Near north coast of Panama.

»  15   Up   iPKP         21  03  09
             iPKKP        21  13  41
        Ki   iSKS         21  08  46
             i            21  09  48
             iSP          21  12  18
             iPS          21  13  31
                      μ    s
             M    E    0.6  20
             M    N    0.3  17
             M    z    0.9  17
        Sk   ePKKP        21  13  43
        Solomon Islands region.
        (h ~ 500 km).

»  16   Ki   iP           01  40  02
        Aleutian Islands.

»  16   Up   iP           06  41  56

»  16   Up   iP           08  38  06
             i            08  38  10
                      μ    s
             P    z'   0.1  0.7
        Ki   iP           08  37  17
        Sk   iP           08  37  53
        Kurile Islands.

»  16   Up   i(P)         15  09  07

»  16   Up   i(P)         20  49  18
                      μ    s
             (P)  z'   0.1  0.5

»  16   Up   iP           21  06  56
        Ki   iP           21  06  26
                      μ    s
             P    z'   0.1  1.0
        Sk   iP           21  06  53
        Volcano Islands.

»  16   Up   i            23  48  46
             i            23  49  08
             iPP          23  49  15

1957
Aug 16       iSKS         23  55  57
(cont.)      ePS          23  57  59
             iSS          00  03  11
                      μ    s
             PP   E    0.3  5.5
             PP   N    0.4  7
             PP   z    0.6  5
             SKS  E    1.5  15
             SKS  N    1.3  14
             M    E    10   19
             M    N    7.5  19
             M    z    16   20
             △=10600 km=95½°.
        Ki   iP           23  45  13
             ePP          23  48  49
             eSKS         23  55  44
             e            23  57  01
             ePS          23  57  26
             eSS          00  02  25
                      μ    s
             PP   E    0.5  5
             PP   z'   0.2  2.0
             SKS  E    0.7  6
             SKS  N    0.4  6
             M    E    18   22
             M    N    6.2  21
             M    z    18   21
             △=10300 km=92½°.
        Sk   iP           23  45  10
             iPP          23  48  44
        Pacific Ocean. Magn.=6.4 (Up, Ki).

»  17   Up   i(P)         02  00  25

»  17   Up   iP           07  57  44
        Sk   eP           07  58  13
        Off south coast of
        Peloponnesus, Greece.

»  17   Up   iP           08  33  21
        Ki   iP           08  33  22
        Sk   iP           08  33  37

»  17   Ki   iP           08  59  42
        Aleutian Islands.

»  17   Ki   i(P)         10  32  57

»  17   Up   iP           12  51  34C
             i(pP)        12  51  56
                      μ    s
             (pP) z'   0.2  0.7
        Ki   iP           12  51  00C
             i(pP)        12  51  22
             eS           13  00  25
                      μ    s
             (pP) z'   0.2  1.0
             M    E    0.6  25
             M    N    0.2  24
             M    z    0.8  19

1957
Aug 17       △=8150 km=73½°.
(cont.) Sk   iP           12  51  30C
             i(pP)        12  51  52
             iPP          12  54  28
        Lu   iP           12  51  59
             i            12  52  17
        Bonin Islands region.
        (pP) could instead be P of
        an aftershock.

»  17   Up   iPKP         18  48  13
        Sk   iPKP         18  48  00
        South Pacific Ocean.

»  17   Up   iP           19  11  38
        Ki   iP           19  11  18
        Sk   eP           19  11  51
        Samar Island region,
        Philippine Islands.

»  17   Ki   iP           23  04  40
        Sk   iP           23  05  14
        Near east coast of Honshu, Japan.

»  18   Ki   eP           02  21  25

»  18   Ki   iP           03  27  57
        South of Rhodes Island.

»  18   Up   iP           08  49  45
             i            08  49  49
             e            09  00  10
             i            09  00  15
             eS           09  00  24
                      μ    s
             P    z    0.4  1.3
             P    z'   0.2  0.8
             S    E    0.4  4.5
             S    N    3.1  12
             M    E    12   22
             M    N    46   22
             M    z    14   20
             △=9650 km=87°.
        Ki   iP           08  49  27
             i            08  49  31
                      μ    s
             P    z'   0.3  1.5
        Sk   iP           08  49  49
        Lu   iP           08  50  04
        Philippine Islands.
        Magn.=6.5 (Up).

»  18   Up   iP           09  15  33C
        Ki   iP           09  15  15

»  18   Up   eP           21  24  22
        Ki   iP           21  24  09
        Sk   iP           21  24  01
        Mexico.

»  18   Up   iP           21  53  12C
```

Column 1

```
1957
Aug 18      i             21  53  26
(cont.)     ePa           21  57  24
            eS            22  01  49
            eScS          22  03  00
                              μ    s
            P      z'     0.3  0.8
            S      E      3.1  16
            M      E      29   22
            M      N      52   21
            M      z      71   21
            △ = 7150 km = 64½°.
      Ki    iP            21  52  22C
            i             21  52  24
                              μ    s
            P      z'     0.3  0.9
      Sk    iP            21  52  58C
            i             21  54  17
      Lu    iP            21  53  48
            Northern Kurile Islands.
            Magn. = 6.5 (Up, Ki).

» 19  Ki    iP            00  28  49
» 19  Up    iP            05  41  55
            Aleutian Islands.

» 19  Up    iP            06  21  27
      Ki    iP            06  20  33C
                              μ    s
            P      z'     0.1  0.8
      Sk    iP            06  21  04
            Aleutian Islands.

» 19  Up    iP            07  28  36
      Ki    iP            07  29  09C
            iPP           07  30  16
                              μ    s
            PP     z'     0.1  1.0
      Sk    iP            07  29  09
            Caspian Sea.

» 19  Up    i             12  07  45
                              μ    s
            M      E      1.2  19
            M      N      1.0  19
            M      z      1.6  19
            Solomon Islands.

» 19  Ki    iP            13  46  07
» 19  Ki    iP            14  30  49
» 19  Up    iP            21  43  02D
            i             21  43  17
                              μ    s
            P      z'     0.1  0.7
      Ki    iP            21  42  09D
            i             21  42  24
                              μ    s
            P      z'     0.1  1.1
      Sk    iP            21  42  40
            Aleutian Islands.
```

Column 2

```
1957
Aug 20  Ki  iP            01  57  48
            Northeastern Afghanistan.

» 20  Up    i(P)          10  28  06
            i             10  28  38
            i             10  29  13
      Sk    iP            10  28  25

» 20  Up    i(P)          10  34  25
                              μ    s
            (P)    z'     0.1  0.7

» 20  Up    iP            15  28  31C
                              μ    s
            P      z'     0.2  0.5
      Ki    iP            15  28  40C
                              μ    s
            P      z'     0.1  0.5
      Sk    iP            15  28  57C
            ipP           15  29  45
            Hindu Kush. h = 240 km (Sk).

» 20  Up    iP            18  32  06
            Near southwest coast of
            Peloponnesus, Greece.

» 20  Up    iP            22  28  05
      Ki    iP            22  27  14

» 20  Up    iP            22  28  22
      Ki    iP            22  27  28C
            Aleutian Islands.

» 20  Up    iP            22  40  14C
      Ki    iP            22  39  40C
            i             22  39  44
                              μ    s
            P      z'     0.2  0.9
      Sk    eP            22  40  17
            i             22  40  20
            Outer Mongolia.

» 21  Ki    iPKP          06  07  48
                              μ    s
            PKP    z'     0.1  1.5
            North Island, New Zealand.

» 21  Up    iP            08  48  59
      Ki    iP            08  49  16

» 21  Up    iP            12  02  12
      Ki    iP            12  01  19
                              μ    s
            P      z'     0.1  1.0
      Sk    iP            12  01  49
            Aleutian Islands.

» 21  Up    iP            15  44  58C
            i             15  45  03
                              μ    s
                   z'     0.1  0.5
```

Column 3

```
1957
Aug 21  Ki  iP            15  44  11
(cont.) Sk  iP            15  44  47
            Kurile Islands.

» 21  Up    iP            19  42  15C
            i             19  42  30
                              μ    s
            P      z'     0.1  0.7
      Ki    iP            19  41  22
            i             19  41  37
                              μ    s
            P      z'     0.1  1.0
      Sk    iP            19  41  53
            Aleutian Islands.

» 22  Up    iP            03  06  20
      Sk    iP            03  07  00

» 22  Up    iP            03  49  03
            i             03  49  10
                              μ    s
            P      z'     0.1  0.9
      Ki    iP            03  48  20
      Sk    iP            03  48  56
            Near south coast of Hokkaido, Japan.

» 22  Up    iP            08  08  56D
                              μ    s
            M      N      2.0  23
            M      z      1.7  24
      Ki    iP            08  08  31
                              μ    s
            P      z'     0.1  1.0
      Sk    iP            08  08  58
            Molucca Passage.

» 22  Ki    i(P)          10  53  50

» 22  Up    iPKP          17  02  47
            iPKS          17  06  01
                              μ    s
            PKS    z'     0.1  0.8
      Ki    iPKP          17  02  33
      Sk    iPKP          17  02  45
            iPKS          17  05  55
            New Hebrides Islands.

» 22  Up    iP            18  35  58
                              μ    s
            P      z'     0.1  0.6
            M      E      1.2  18
            M      N      1.6  18
            M      z      2.1  18
      Ki    iP            18  35  48
      Sk    iP            18  36  13C
            Sinkiang Province, China.

» 22  Up    i(P)          19  16  11

» 23  Up    iP            01  44  31C
```

Column 4

```
1957
Aug 23
(cont.)
                              μ    s
            P      z'     0.1  0.5
      Sk    iP            01  45  11
            Near west coast of
            Peloponnesus, Greece.

» 23  Up    e(SS)         02  35  52
                              μ    s
            M      E      2.0  23
            M      N      2.9  21
            M      z      5.0  25
      Ki                  —
                              μ    s
            M      E      4.6  25
            M      N      1.7  22
            M      z      5.0  23
            Solomon Islands.

» 23  Up    iP            11  54  23
                              μ    s
            M      E      3.3  17
            M      N      2.7  21
            M      z      5.5  22
      Ki    iP            11  54  00C
                              μ    s
            M      E      2.2  13
            M      N      0.9  16
            M      z      2.7  13
      Sk    iP            11  54  28
            Off east coast of Formosa.
            Magn. = 5.8 (Up, Ki).

» 23  Up    iP            17  34  44
      Ki    iP            17  33  45
            Near east coast of Kamchatka.

» 23  Up    iPKP          20  31  21
      Ki    ePKP          20  30  51
      Sk    iPKP          20  30  55
            Kermadec Islands region.

» 23  Up    iP            23  04  38C
                              μ    s
            M      E      0.8  21
            M      N      2.1  25
      Ki    eP            23  04  30
                              μ    s
            M      E      0.5  14
            M      N      0.6  17
            M      z      1.0  15
      Sk    iP            23  04  50
            Java (h ~ 100 km).

» 24  Ki    iP            03  05  59
» 24  Up    i(P)          06  55  23
» 24  Up    i(P)          08  04  12
» 25  Ki    eP            10  15  23
            Aleutian Islands.
```

Column 1

```
1957
Aug 25  Ki   eP           16   54   34
        Near southeast coast of
        Mindanao, Philippine Islands.
»   25  Ki   iP           21   25   31
        Off south coast of Java.
»   26  Ki   eP           02   15   52
        South of Rhodes Island.
»   26  Ki   iP           07   03   58 D
                     μ     s
             P    z'  0.1   1.0
        Sk   iP           07   04   29
        Aleutian Islands.
»   26  Up   eSKS         11   53   22
             eS           11   54   21
             ePS          11   55   57
             e            11   56   34
             e            12   00   32
                     μ     s
             SKS  E   1.0   13
             S    N   0.8   15
             M    E   4.0   19
             M    N   4.0   18
             M    z   5.6   18
        △=11250 km=101½°.
        Ki   ePP          11   47   21
             eSKS         11   53   49
             eS           11   54   51
             ePS          11   56   30
             eSS          12   02   18
                     μ     s
             PP   E   0.4   7
             PP   z   0.5   9
             SKS  E   1.2   15
             S    N   0.4   12
             M    E   14    21
             M    N   3.2   20
             M    z   20    21
        △=11650 km=105°.
        Sk   iP           11   42   43
             i            11   42   49
        Southern Bolivia.
        Magn.=6.2 (Up, Ki).
»   26  Up   iP           11   45   09 C
        Sk   eP           11   45   15
»   26  Sk   iP           13   34   47
        South of Peloponnesus, Greece.
»   26  Up   iSKS         14   22   49
             eS           14   23   28
             ePS          14   24   51
             e            14   25   07
             e            14   29   10
             e            14   29   51
                     μ     s
             S    E   2.1   16
```

Column 2

```
1957
Aug 26       S    N   2.8   20
(cont.)      M    E   5.3   20
             M    N   2.7   20
             M    z   7.7   20
        △=10600 km=95½°.
        Ki   iP           14   12   16
             eSKS         14   22   51
             eS           14   23   34
                     μ     s
             P    z   1.5   14
             S    E   2.1   13
             S    N   1.5   16
             M    E   6.2   18
             M    N   2.3   19
             M    z   10.0  19
        △=10650 km=96°.
        Near coast of Ecuador.
        Magn.=6.4 (Up, Ki).
»   26  Ki   i(P)         19   04   24
»   26  Up   i(P)         20   43   43
                     μ     s
             (P)  z'  0.1   0.6
»   26  Up   i(P)         21   51   07
»   27  Up   iP           11   58   29
             ePcP         12   03   23
             i            12   03   42
        Ki   eLg1         12   07   33
        Sk   iP           11   59   05
        Italy.
»   27  Up   iPKP         21   14   54
             i            21   14   59
                     μ     s
             PKP  z'  0.2   0.5
        Ki   ePKP         21   14   41
             iSKP         21   17   18
                     μ     s
             SKP  z'  0.2   1.8
        Sk   ePKP         21   14   47
             iSKP         21   17   33
        South of Fiji Islands.
        (h ~ 650 km).
»   27  Ki   i(P)         23   08   47
»   28  Up   iPKP         08   38   57 D
                     μ     s
             PKP  z'  0.5   1.4
        Ki   ePKP         08   38   41
        Sk   iPKP         08   38   49 D
        Kermadec Islands region.
»   28  Ki   iP           09   31   52
»   28  Up   i(P)         09   42   38
»   28  Up   iP           23   25   16 D
        South of Honshu, Japan.
        (h ~ 450 km).
```

Column 3

```
1957
Aug 28  Up   iP           23   35   17
             i            23   35   19
                     μ     s
             M    E   1.3   17
             M    N   1.6   18
             M    z   2.9   24
        Ki   iP           23   34   48
             e            23   44   32
             eS           23   45   03
             e            23   47   05
                     μ     s
             P    z   0.2   6
             S    E   0.3   10
             M    E   4.1   22
             M    N   2.5   24
             M    z   6.4   24
        △=9200 km=83°.
        Sk   iP           23   35   14
             iPP          23   38   37
        Mariana Islands.
        Magn.=5.7 (Ki).
»   29  Up   iP           00   03   11
             i            00   03   18
        Ki   iP           00   02   40
        Sk   iP           00   03   06
             iPP          00   06   33
        Mariana Islands.
»   29  Up   iP           01   10   42
        Ki   iP           01   10   14
        Sk   iP           01   10   40
             iPP          01   14   06
        Mariana Islands.
»   29  Up   i(P)         12   16   48
        Ki   iP           12   16   02 C
»   29  Ki   iSKP         14   23   36
        Sk   ePKP         14   21   03
             iSKP         14   23   51
        South of Fiji Islands.
        (h ~ 600 km).
»   29  Up   iP           16   53   14
        Ki   eP           16   52   42
        Mariana Islands.
»   29  Sk   iP           22   07   56
        (Aegean Sea).
»   30  Up   iPKP         04   10   22 C
        Sk   iPKP         04   10   14
        Kermadec Islands region.
»   30  Up   iP           05   48   21
»   30  Up   iP           16   25   31 D
             iPP          16   26   58
             iS           16   31   30
             eLg1         16   38   57
```

Column 4

```
1957
Aug 30                    μ     s
(cont.)      P    z'  0.2   0.9
             PP   E   0.2   3
             PP   z   0.2   3
             PP   z'  0.2   0.9
             S    N   0.3   5
             M    E   6.2   16
             M    N   3.0   14
             M    z   6.8   15
        △=4400 km=39½°.
        Ki   iP           16   25   35 D
             iPP          16   27   06
             eS           16   31   41
                     μ     s
             P    z'  0.2   1.0
             PP   E   0.3   8
             PP   z   0.2   7
             PP   z'  0.2   1.4
             S    E   0.5   11
             S    N   0.2   9
             M    E   7.6   13
             M    N   1.6   14
             M    z   17    17
        △=4450 km=40°.
        Sk   iP           16   25   55
             iPP          16   27   24
        Tadzhik, U.S.S.R.
        Magn.=5.8 (Up, Ki).
»   30  Up   iP           17   05   10
             i            17   05   22
        Ki   iP           17   04   30 C
        Sk   iP           17   05   03 C
        Near east coast of Honshu, Japan.
»   30  Up   iP           20   16   07
             i            20   16   14
             eS           20   26   04
                     μ     s
             P    z'  0.1   0.6
             S    E   0.2   4
             M    E   1.9   15
             M    N   1.4   17
             M    z   3.6   16
        △=8800 km=79°.
        Ki   iP           20   15   47
             i            20   16   23
             eS           20   25   24
                     μ     s
             P    z'  0.1   1.0
             S    E   0.4   6
             M    E   0.6   16
             M    N   0.5   15
             M    z   1.0   16
        △=8350 km=75°.
        Sk   iP           20   16   14
        Batan Islands region.
        Magn.=5.6 (Up, Ki).
»   30  Ki   iP           20   57   38
        Mariana Islands.
```

Column 1

1957

Date	Sta	Phase	h	m	s	
Aug 31	Up	iP	00	18	19	
	Ki	eP	00	17	30	
	Sk	iP	00	18	14	
» 31	Ki	iP	01	54	23	
» 31	Up	iP	01	54	47 D	
	Ki	eP	01	54	46	
	i		01	55	30	
	Sk	iP	01	55	23	

Pamir region.

	Up	iP	12	01	57	
» 31	i		12	02	06	
	iS		12	06	16	

		μ	s
P	z'	0.1	0.5
M	E	1.0	15
M	N	1.2	16
M	z	1.4	16

$\triangle=2650$ km$=24°$.

Ki	iP	12	03	09

		μ	s
M	E	1.8	15
M	N	1.5	19
M	z	2.4	18

Sk	iP	12	02	36

Off southwest coast of
Peloponnesus, Greece.

» 31	Up	iP	12	09	33
	Ki	iP	12	09	03

Outer Mongolia.

Sep 1	Up	iP	12	57	37 D
		iPP	12	59	11
		eSS	13	06	47
		eLg1	13	11	12

		μ	s
P	z	0.2	2
P	z'	0.1	1.3
PP	E	0.1	4
PP	z	0.2	4
M	E	1.3	15
M	N	1.6	18
M	z	1.6	18

$\triangle=4500$ km$=40\frac{1}{2}°$.

Ki	iP	12	57	39 D
i		12	57	43
eS		13	03	50
eLg1		13	11	55

		μ	s
P	z'	0.1	0.9
S	N	0.1	7
M	E	0.8	14
M	N	1.0	13
M	z	1.5	14

$\triangle=4550$ km$=41°$.

Sk	iP	12	58	00 D

Western Sinkiang Province,
China. Magn.=5.4 (Up, Ki).

Column 2

1957

Date	Sta	Phase	h	m	s
Sep 1	Ki	iP	23	10	24

Aleutian Islands.

» 2	Up	iP	00	13	06 D
		eSKS	00	23	36
		eS	00	24	01

		μ	s
P	z'	0.1	0.9
SKS	N	0.2	5
S	N	0.2	3
M	E	2.2	18
M	N	1.7	19
M	z	2.1	18

$\triangle=10200$ km$=92°$.

Ki	iP	00	12	37
eS		00	23	06

		μ	s
P	z	0.5	6
P	z'	0.2	1.0
S	E	0.8	9
S	N	1.0	8
M	E	1.3	18
M	N	1.1	18
M	z	2.2	18

$\triangle=9550$ km$=86°$.

Sk	iP	00	13	03
	iPP	00	16	42

$\triangle=10150$ km$=91\frac{1}{2}°$.
Mariana Islands.
Magn.=5.9 (Up, Ki).

» 2	Up	iP	00	40	24
	Ki	iP	00	39	59 C

Mariana Islands (h~100 km).

» 2	Ki	iP	01	54	04

» 2	Up	iP	03	46	20 C

		μ	s
P	z'	0.2	0.9

Ki	iP	03	46	11

		μ	s
P	z'	0.1	0.9

Sk	iP	03	46	35 C

India-Burma border region.

» 2	Ki	iP	07	04	36

		μ	s
P	z'	0.1	1.0

Sk	iP	07	05	24
i		07	05	27

Jan Mayen Island region.

» 2	Up	iPKS	10	09	18
		e	10	15	41

		μ	s
PKS	N	0.1	4
PKS	z	1.0	6
M	E	0.8	20
M	N	1.4	24
M	z	1.4	20

Column 3

1957

Date	Sta	Phase	h	m	s
Sep 2 (cont.)	Ki	iPKP	10	05	36
		eSS	10	24	31

		μ	s
PKP	z'	0.1	1.7
M	E	1.3	20
M	N	1.0	20
M	z	1.5	20

Samoa Islands.

» 2	Up	iP	10	27	44
	i		10	27	56
	Ki	eP	10	29	10

Rumania.

» 2	Up	iP	10	32	22
		i(Sg)	10	32	37

Local?

» 2	Ki	iP	13	36	37
	Sk	iP	13	36	51

» 2	Up	iP	14	31	18 D
	i		14	31	29
	iS		14	40	19

		μ	s
P	N	0.4	3
P	z	0.8	3
P	z'	0.6	1.3
S	E	0.2	3
S	N	0.3	3
M	N	1.2	25
M	z	1.5	27

$\triangle=7650$ km$=69°$.

Ki	iP	14	30	25 D
i		14	30	37
iS		14	38	41

		μ	s
P	N	0.5	6
P	z	0.8	6
P	z'	0.5	1.0
S	E	0.3	8
S	N	0.5	8
M	E	0.7	19
M	N	0.4	16
M	z	1.0	16

$\triangle=6800$ km$=61°$.

Sk	iP	14	30	55 D
i		14	31	09

Aleutian Islands.
Magn.=6.2 (Up, Ki).

» 2	Ki	i(P)	14	38	40

» 2	Ki	iP	17	31	23

Kurile Islands region.

» 2	Up	iP	18	16	00
	Ki	iP	18	15	07

Aleutian Islands.

» 2	Ki	iP	18	16	32

Column 4

1957

Date	Sta	Phase	h	m	s
Sep 2	Sk	iP	18	20	24

» 2	Up	iP	21	35	01 C
		ipP	21	35	52
		isP	21	36	13
		isPP	21	37	41
		iS	21	40	58
		esS	21	42	15
		eSS	21	44	18

		μ	s
P	E	0.1	1.2
P	z	0.4	1.2
P	z'	0.4	1.0
S	E	0.6	8
M	E	0.8	15
M	N	1.8	15
M	z	2.6	15

$\triangle=4550$ km$=41°$.

Ki	iP	21	35	10 C
isP		21	36	20
isPP		21	37	54
eS		21	41	13
esS		21	42	37

		μ	s
P	z	0.5	8
P	z'	0.6	1.3
S	E	1.0	11
M	E	2.3	17
M	N	1.5	16
M	z	4.9	19

$\triangle=4650$ km$=42°$.

Sk	iP	21	35	27 C

Hindu Kush. h=210 km (Up, Ki).
Magn.=6.4 (Up, Ki).

» 3	Up	iP	05	35	10
	Ki	eP	05	35	00
	Sk	iP	05	35	26

» 3	Ki	iP	05	39	37

» 3	Ki	e(P)	05	47	11

» 3	Sk	ePKP	06	25	51

Santa Cruz Islands.

» 3	Up	iP	08	00	51

		μ	s
P	z'	0.1	1.0

Ki	iP	08	00	00

		μ	s
P	z'	0.1	1.0

Sk	iP	08	00	28

Aleutian Islands.

» 3	Ki	iP	14	40	23

Mariana Islands region.

» 3	Ki	iPKP	14	58	34
		iSKP	15	01	07

Fiji Islands region (h~600 km).

Column 1

```
1957
Sep  3  Up  i(P)              15   24   24
 »   3  Ki  iP                20   28   54
            eS                20   33   14
            e                 20   33   22
                         μ    s
            M      E    0.8   16
            M      N    0.4   17
            M      z    1.0   16
            △=2900 km=26°.
        Sk  i(P)              20   28   11
            i                 20   28   27
        Mid-Atlantic Ridge.

 »   3  Ki  iP                20   52   42
        Southern Irak.

 »   4  Up  iP                08   15   34
                         μ    s
            P      z'   0.1   0.5
        Ki  iP                08   15   55
        Sk  iP                08   16   04
        West Pakistan.

 »   4  Up  i(P)              13   53   19

 »   4  Up  iP                16   56   33

 »   4  Up  iP                20   14   24
        Ki  iP                20   13   32
                         μ    s
            P      z'   0.1   1.3
        Sk  iP                20   14   14
        Aleutian Islands.

 »   5  Up  iP                04   12   31
        Ki  iP                04   11   37
                         μ    s
            P      z'   0.1   1.0
        Alaska.

 »   5  Up  iP                04   14   47
        Ki  eP                04   15   05
        Mid-Atlantic Ridge.

 »   5  Ki  iP                04   26   11

 »   5  Up  iP                07   35   50
        Ki  iP                07   34   56
        Sk  iP                07   35   34
        Near east coast of Kamchatka.

 »   5  Up  iP                11   43   38
            i                 11   43   44
                         μ    s
            P      z'   0.1   0.8
            M      E    1.2   22
            M      N    1.3   24
            M      z    1.6   18
        Ki  iP                11   44   14C
            i                 11   44   20
```

Column 2

```
1957
Sep  5
(cont.)
                         μ    s
            P      z'   0.1   0.7
            M      E    1.0   13
            M      N    0.9   16
            M      z    1.3   13
        Sk  iP                11   44   19
        Southern Iran.

 »   5  Ki  iP                14   03   58
                         μ    s
            P      z'   0.1   1.0
        Java.

 »   6  Ki  iP                01   27   23
        Mariana Islands.

 »   6  Up  iP                05   05   46
            i                 05   06   00
            eS                05   14   50
                         μ    s
            P      N    0.1   2
            P      z    0.4   4
            P      z'   0.1   0.5
            S      N    0.2   3
            M      E    0.9   18
            M      N    0.6   18
            M      z    1.6   18
            △=7650 km=69°.
        Ki  iP                05   04   53
            i                 05   05   08
            eS                05   13   14
                         μ    s
            P      z'   0.1   0.9
            S      N    0.3   8
            M      E    1.0   18
            M      N    0.5   17
            M      z    1.2   18
            △=6800 km=61°.
        Sk  iP                05   05   25
            i                 05   05   49
        Aleutian Islands.
        Magn.=5.7 (Up, Ki).

 »   6  Up  iP                20   26   26
        Ki  eP                20   27   52
                         μ    s
            M      E    0.4   13
            M      N    0.4   14
            M      z    1.3   17
        Sk  iP                20   27   08
        Albania-Greece border.

 »   6  Up  iP                20   28   24
        Ki  eP                20   29   52
        Sk  eP                20   29   10
        Albania-Greece border.

 »   7  Up  iP                01   22   58
        Ki  iP                01   23   01
            i                 01   23   06
        Sk  iP                01   22   44
```

Column 3

```
1957
Sep  7  i                     01   22   50
(cont.)  Western Venezuela.

 »   7  Up  iP                06   59   18
                         μ    s
            P      z'   0.1   0.8
            M      E    3.4   21
            M      N    6.1   21
            M      z    7.8   22
        Ki  iP                06   58   27C
            iPcP              06   59   20
                         μ    s
            P      z'   0.1   1.0
            M      E    4.1   22
            M      N    1.8   19
            M      z    3.3   18
        Sk  iP                06   59   04
        Northern Kurile Islands.

 »   7  Up  iP                10   17   48D
            eS                10   26   41
            e                 10   28   44
            iP'P'            10   45   57
                         μ    s
            P      z    0.6   4
            P      z'   0.5   0.9
            S      E    0.2   4
            S      N    0.2   5
            M      E    4.7   18
            M      N    4.8   18
            M      z    5.0   18
            △=7500 km=67½°.
        Ki  iP                10   16   55D
            ePP               10   19   15
            iScP              10   21   39
            iS                10   25   20
            iP'P'            10   46   25
            i                 10   46   37
                         μ    s
            P      N    0.4   8
            P      z    0.7   7
            P      z'   0.2   0.7
            PP     N    0.6   6
            PP     z    0.7   7
            S      N    0.7   10
            P'P'   z'   0.3   2.0
            M      E    6.5   19
            M      N    3.3   17
            M      z    9.3   20
            △=6700 km=60½°.
        Sk  iP                10   17   27
            iPcP              10   17   59
            eP'P'            10   46   07
        Aleutian Islands.
        Magn.=6.1 (Up, Ki).

 7   Ki  iP                   11   02   51
         i                    11   02   53
         iS                   11   05   03
         △=1310 km=11.8°.
     Sk  eP                   11   04   06
```

Column 4

```
1957
Sep  7  Near west coast of Novaya
(cont.)  Zemlya, 74.0° N, 51.8° E.
         Origin time=10 59 58. Explosion?

 »   8  Up  iP                10   30   51
                         μ    s
            P      z'   0.1   0.9
        Ki  iP                10   29   58D
                         μ    s
            P      z'   0.1   1.0
        Sk  iP                10   30   29
        Aleutian Islands.

 »   8  Up  iP                23   53   16

 »   9  Ki  iPKP              09   19   35
                         μ    s
            M      E    3.1   21
            M      N    1.9   21
            M      z    4.8   21
        Fiji Islands region.

 »   9  Up  i(Pg)             09   44   25
            i(Sg)             09   44   40
            i                 09   44   48
        Local. Seismic?

 »   9  Up  i(P)              12   43   34
                         μ    s
            (P)    z'   0.1   0.6

 »   9  Ki  i(P)              14   25   57

 »   9  Up  i(Pg)             15   42   19
            i(Sg)             15   42   35
            i                 15   42   42
                         μ    s
            (Pg)   z'   0.1   0.5
        Local. Seismic? Same origin as for
        the shock at 09.44 on Sep 9.

 »  10  Up  iP                06   24   00
                         μ    s
            P      z'   0.4   0.9
        Ki  iP                06   23   51
                         μ    s
            P      z'   0.1   0.9
        India-Burma border.

 »  10  Ki  eP                15   40   47
        Philippine Islands.

 »  10  Up  iP                20   08   01
            i                 20   08   06
                         μ    s
            P      z'   0.1   1.0
        Ki  iP                20   08   33
                         μ    s
            P      z'   0.1   1.0
        Mid-Atlantic Ridge.
```

Column 1

```
1957
Sep 11 Ki  i(SKP)            14  02  31
       Fiji Islands region (h ~ 500 km).

»  11  Up  iP                22  27  18

»  11  Up  iP                22  41  03

»  11  Ki  ePKP              23  41  24
       Samoa Islands region.

»  12  Up  iP                00  40  23 D
           i                 00  40  34
           eS                00  50  34
           eScS              00  50  47
           eSS               00  55  48
                                 μ    s
           P       z'        0.1  0.7
           S       E         0.4  3
           S       N         0.4  3
           M       E         4.7  19
           M       N         4.6  18
           M       z         5.0  20
           △=9050 km=81½°.
       Ki  iP                00  40  15 D
           i                 00  40  26
           eS                00  50  18
           eSS               00  55  29
                                 μ    s
           P       z'        0.2  1.2
           S       E         1.7  7
           S       N         1.1  9
           M       E         2.3  20
           M       N         1.3  16
           M       z         4.2  20
           △=8900 km=80°.
       Sk  iP                00  40  04 D
           i                 00  40  17
       North of Honduras.
       Magn.=6.0 (Up, Ki).

»  12  Ki  iP                17  33  45
       Kirghiz-Tadzhik border, U.S.S.R.

»  13  Ki  iP                06  40  22
       Sk  iP                06  40  36

»  13  Up  iP                08  48  05
           P       z'        0.1  0.7

»  13  Up  iP                08  55  18 D
           i                 08  55  40
           i(Sg)             08  56  10
       Local?

»  13  Up  i(P)              09  12  04

»  13  Up  iP                16  43  41
           P       z'        0.1  0.7
```

Column 2

```
1957
Sep 14 Ki  i(P)              02  52  34
           i                 02  52  50
       Seismic?

»  14  Up  iP                21  39  17
       Samar Island,
       Philippine Islands.

»  15  Up  iP                04  35  26
           iPP               04  39  22
                                 μ    s
           P       z'        0.1  0.6
           PP      z'        0.2  1.5
       Ki  iP                04  35  22
           ePP               04  39  12
                                 μ    s
           P       z'        0.2  1.2
           M       E         0.9  15
       Sk  iP                04  35  38
           ePP               04  39  32
       Near north coast of Java.
       (h ~ 300 km).

»  15  Up  i(PKP)            19  01  16
       Solomon Islands (h ~ 150 km).

»  15  Up  iP                22  18  31
                                 μ    s
           P       z'        0.2  1.0
           M       E         0.4  16
           M       N         0.8  17
           M       z         0.6  18
       Ki  iP                22  17  37
                                 μ    s
           P       z'        0.1  1.2
           M       E         0.6  16
           M       N         0.5  16
           M       z         0.7  15
       Sk  iP                22  18  09
       Aleutian Islands.

»  16  Ki  iP                00  18  54
       South coast of Honshu, Japan.

»  16  Sk  eP                00  29  10

»  16  Up  iP                01  41  08
       Ki  iP                01  40  00
           eS                01  44  23
                                 μ    s
           P       z'        0.1  1.6
           M       E         0.6  13
           M       N         0.6  12
           △=2800 km=25°.
       Sk  iP                01  40  42
       Arctic Ocean.

»  16  Up  eL                09  39
                                 μ    s
           M       E         1.1  20
           M       N         0.8  18
```

Column 3

```
1957
Sep 16     M       z         1.2  18
(cont.) Ki eL                09  36
                                 μ    s
           M       E         0.8  15
           M       N         0.5  15
           M       z         1.0  15
       Kamchatka.

»  16  Ki  eP                14  25  45
       Sk  eP                14  25  07
       Mid-Atlantic Ridge.

»  16  Up  eL                15  33
                                 μ    s
           M       N         0.6  17
           M       z         1.2  22
       Ki  eL                15  31
                                 μ    s
           M       E         0.8  18
           M       N         0.5  18
           M       z         1.4  19
       Andaman Sea.

»  16  Ki  iP                18  43  33
           i                 18  43  47

»  16  Up  iP                20  03  16
       Ki  iP                20  02  23
                                 μ    s
           P       z'        0.1  1.1
       Sk  iP                20  02  52
       Unimak Island region.

»  16  Up  iP                22  56  08
           i                 22  56  12
       Sk  iP                22  56  02

»  17  Up  eP                00  46  01

»  17  Sk  eP                09  37  44
       Western Greece.

»  17  Ki  iP                15  57  09

»  17  Ki  eP                16  24  28
       Sk  iP                16  23  48

»  17  Ki  iP                16  53  19

»  17  Up  iP                18  56  02 D
                                 μ    s
           P       z'        0.1  0.5
       Ki  iP                18  55  29 D
       Sk  iP                18  55  59
           iPP               18  59  00
       Off south coast of Honshu, Japan.

»  17  Up  eP                21  15  13
       Ki  eP                21  16  28
       Sk  eP                21  15  54
       Greece.
```

Column 4

```
1957
Sep 18 Up  iP                01  09  57
                                 μ    s
           P       z'        0.1  0.7
           M       E         0.6  16
           M       N         0.6  16
           M       z         0.9  18
       Ki  iP                01  09  00
                                 μ    s
           P       z'        0.2  1.4
           M       E         0.9  18
           M       N         0.7  16
           M       z         1.4  15
       Sk  iP                01  09  37
       Near east coast of Kamchatka.

»  18  Up  iP                18  24  02

»  18  Up  iP                18  26  10
       Ki  iP                18  25  18 C
                                 μ    s
           P       z'        0.1  0.8
       Sk  iP                18  25  48
       Aleutian Islands.

»  18  Ki  eP                23  12  27
           i                 23  12  40
       Aleutian Islands.

»  19  Up  iP                13  53  08
       Ki  iP                13  52  16
                                 μ    s
           P       z'        0.2  1.5
       Sk  iP                13  52  46
       Aleutian Islands.

»  19  Up  iP                17  33  47
           eS                17  37  37
                                 μ    s
           P       z'        0.1  1.0
           S       N         0.8  8
           M       E         0.6  16
           M       N         0.7  15
           M       z         1.0  15
           △=2350 km=21°.
       Ki  iP                17  32  11
           iPP               17  32  21
                                 μ    s
           PP      z'        0.2  1.1
           M       E         0.6  14
           M       N         0.6  12
           M       z         2.0  14
           △=1450 km=13°.
       Sk  iP                17  32  58
       Arctic Ocean, northwest of
       Spitsbergen.

»  20  Up  iP                02  24  09
                                 μ    s
           P       z'        0.1  1.0
       Ki  eP                02  25  23
       Sk  eP                02  24  49
       Greece.
```

Column 1

```
1957
Sep 20  Ki   iP        06   32   28 D
             e         06   35   38
                             μ     s
             P    z'   0.2  1.5
        Sk   eP        06   33   07
        Arctic Ocean.

»   20  Up   iP        08   36   19
        Ki   iP        08   35   31
        Sk   eP        08   36   08
        Kurile Islands.

»   20  Ki   e(Pn)     09   32   49
             i         09   32   54
             iSg       09   33   03
                             μ     s
             Sg   z'   0.2  0.5
        △=120 km=1.1°.
        Sk   ePg       09   33   50
             iSg       09   34   41
        △=460 km=4.1°.
        Northern Sweden, near 67° N, 18½°E.
        Origin time=09   32   27.

»   20  Up   iP        10   09   26
        Ki   iP        10   09   34
        Sk   iP        10   09   51
        Hindu Kush (h∼200 km).

»   20  Up   iP        10   19   43
        Sk   eP        10   18   51

»   20  Ki   eP        19   21   12
        Sk   eP        19   21   20
        Mexico (h∼100 km).

»   20  Up   iP        23   18   24
             i         23   18   30
                             μ     s
             P    z'   0.1  1.0
             M    E    0.5  18
             M    N    0.6  18
             M    z    0.9  18
        Ki   iP        23   17   30C
             i         23   17   38
                             μ     s
             P    z'   0.1  1.0
             M    E    0.6  17
             M    N    0.4  17
             M    z    0.8  16
        Sk   iP        23   18   01
        Aleutian Islands.

»   21  Ki   i(PKP)    16   08   06
             i         16   08   34
        Off north coast of North
        Island, New Zealand.

»   21  Up   iP        16   55   07
        Sk   eP        16   55   49
        Greece.
```

Column 2

```
1957
Sep 21  Up   iP        20   21   44
             iS        20   25   40
             i         20   25   59
                             μ     s
             P    N    0.4   3
             P    z    0.6   3
             P    z'   0.3  1.1
             S    E    1.9  10
             M    E    2.5  15
             M    N    2.1  16
             M    z    2.1  15
        △=2450 km=22°.
        Ki   iP        20   22   47
             i         20   23   22
             eS        20   27   33
             i         20   28   12
             i         20   31   25
                             μ     s
             S    E    0.7   9
             S    N    0.7  12
             M    E    4.6  15
             M    N    3.0  18
             M    z    3.1  15
        △=3100 km=28°.
        Sk   eP        20   22   33
             i         20   27   43
        Northern Turkey.
        Magn.=5.7 (Up).

»   23  Ki   iP        04   18   46
        Southern Afghanistan.

»   23  Up   iP        09   23   54
                             μ     s
             P    z'   0.1  0.5
        Ki   iP        09   23   01
        Sk   eP        09   23   34
        Aleutian Islands.

»   23  Ki   iP        17   29   01

»   24  Up   iP        08   34   29
             i         08   34   39
             iPP       08   38   21
             e         08   44   51
             iSKS      08   45   10
             iS        08   45   42
                             μ     s
             P    z    7.2   7
             P    z'   0.6  0.7
             PP   z    20   17
             PP   z'   5.5  2.5
             S    N    65   26
             M    E    240  28
             M    N    160  22
             M    z    230  27
        △=10550 km=95°.
        Ki   iP        08   34   13C
             iPP       08   37   56
             i         08   44   31
             eS        08   45   07
```

Column 3

```
1957
Sep 24       i!        08   45   42
(cont.)                      μ     s
             P    E    5.5  15
             P    z    17   15
             P    z'   1.9  1.4
             PP   E    3.3   9
             PP   z    6.7  10
             S    E    30   16
             S    N    19   15
             M    E    330  20
             M    N    160  21
             M    z    550  21
        △=10150 km=91½°.
        Sk   iP        08   34   35
             iPP       08   38   31
        △=10700 km=96½°.
        Near south coast of Mindanao,
        Philippine Islands.
        Magn.=7.4 (Up, Ki). The average
        magnitude determined from the P and
        PP waves is 7.2, whereas the average
        magnitude determined from the S
        waves and the surface waves is 7.8.

»   24  Ki   e         09   01   38

»   24  Ki   eP        09   02   25
             eS        09   04   38
             i         09   04   56
             i         09   05   11
        △=1310 km=11.8°.
        Sk   iP        09   03   35
             i(S)      09   07   05
                             μ     s
             (S)  z'   0.3  2.0
        △=1910 km=17.2°.
        Near west coast of Novaya
        Zemlya, 74.0° N, 51.8° E.
        Origin time=08   59   32. Explosion?

»   24  Ki   iP        09   15   03

»   24  Up   iP        09   23   52
        Ki   iP        09   23   35
                             μ     s
             P    z'   0.1  0.8
        Sk   iP        09   23   56
        Near south coast of Mindanao,
        Philippine Islands.

»   25  Up   iP        05   59   18
             eS        06   05   43
             eSS       06   09   04
                             μ     s
             P    z'   0.3  1.5
             S    E    2.7  17
             M    E    3.1  18
             M    N    3.9  19
             M    z    5.5  21
        △∼5000 km∼45°.
        Ki   eP        05   59   33
```

Column 4

```
1957
Sep 25       i         05   59   42
(cont.)      eS        06   06   23
                             μ     s
             P    z'   0.3  1.6
             S    E    1.3  13
             S    N    1.7  15
             S    z    1.2  12
             M    E    4.4  16
             M    N    2.9  16
             M    z    2.6  17
        △=5200 km=47°.
        Sk   iP        05   59   01
        Near Azores Islands.
        Magn.=6.0 (Up, Ki).

»   25  Ki   iP        06   32   03

»   25  Ki   iP        07   51   39

»   25  Ki   eL        10   33
                             μ     s
             M    E    0.5  23
             M    N    0.6  20
             M    z    1.4  28
        New Hannover region.

»   25  Up   i(Sg)     11   16   46
             i         11   17   01
        Sk   e(Sg)     11   19   14
        Local.

»   25  Up   i(Sg)     11   23   48
             i         11   24   02
        Sk   e(Sg)     11   26   21
        Local. The same location as
        for the preceding shock.

»   25  Ki   eP        15   22   39
        Near southeast coast of Mindanao,
        Philippine Islands.

»   25  Ki   iP        16   43   08

»   25  Up   iP        16   49   59
             i         16   50   11
             iSKS      17   00   27
                             μ     s
             M    E    2.5  19
             M    N    2.5  19
             M    z    3.3  19
        Ki   iP        16   49   42
             i         16   49   51
             ePP       16   53   22
             eSKS      17   00   12
                             μ     s
             P    z    0.6  10
             P    z'   0.2  1.2
             M    E    6.0  19
             M    N    1.8  19
             M    z    8.2  20
        △=10100 km=91°.
```

Column 1 (p. 152)

```
1957
Sep 25   Sk   iP              16  50  09
(cont.)       iPP             16  53  54
         Near southeast coast of Mindanao,
         Philippine Islands.
         Magn. = 6.0 (Up, Ki).

 » 25    Ki   iPKP            18  19  21
         New Hebrides Islands.

 » 25    Up                    —
                             μ    s
              M     E        1.2  19
              M     N        1.3  20
              M     z        1.6  18
         Ki   iP             22  30  10
              eSKS           22  40  35
              eS             22  41  06
                             μ    s
              M     E        2.3  20
              M     N        1.5  22
              M     z        3.0  20
         △ = 10150 km = 91½°.
         Near southeast coast of Mindanao,
         Philippine Islands.

 » 25    Up                    —
                             μ    s
              M     E        1.1  20
              M     N        0.9  20
              M     z        1.0  20
         Ki   iP             23  46  38
              eS             23  57  31
                             μ    s
              M     E        1.5  20
              M     N        1.0  24
              M     z        1.5  20
         Near southeast coast of Mindanao,
         Philippine Islands.

 » 26    Ki   iP             02  45  10
         Sk   eP             02  45  32
              e              02  46  12
         Near southeast coast of Mindanao,
         Philippine Islands.

 » 26    Ki   eP             06  13  57
         Near southeast coast of Mindanao,
         Philippine Islands.

 » 26    Up   iP             09  10  26

 » 26    Ki   eP             10  20  44
                             μ    s
              M     E        1.0  21
              M     N        0.3  16
              M     z        1.2  20
         South of Mindanao,
         Philippine Islands.

 » 26    Up   iPKP2          12  23  06
```

Column 2 (p. 152)

```
1957                         μ    s
Sep 26        PKP2   z'      0.1  0.8
(cont.)  Ki   iPKP           12  22  34
              i              12  22  39
                             μ    s
              PKP    z'      0.1  1.0
         North Island, New Zealand.
         (h ~ 150 km).

 » 26    Sk   iP             13  47  38
         Guatemala-Mexico border.

 » 26    Ki   eL             15  06
                             μ    s
              M     E        0.9  20
              M     N        0.4  19
              M     z        1.2  20
         Near southeast coast of Mindanao,
         Philippine Islands.

 » 26    Up   iP             15  12  57
                             μ    s
              P     z'       0.1  0.8

 » 26    Up   eP             19  00  05
              i              19  00  26
              e(S)           19  11  01
                             μ    s
              (S)   E        0.5  5
              M     E        1.5  23
              M     N        2.2  24
              M     z        1.5  27
         Ki   iP             18  59  46
              eSKS           19  10  13
              eS             19  10  38
                             μ    s
              P     z'       0.1  1.5
              SKS   E        0.4  9
              S     N        0.8  7
              M     E        1.6  22
              M     N        1.0  20
              M     z        2.5  23
         △ = 10100 km = 91°.
         Sk   eP             19  00  09
         Near southeast coast of Mindanao,
         Philippine Islands.
         Magn. = 6.0 (Up, Ki).

 » 26    Up   iP             20  02  25
                             μ    s
         —    P     z'       0.1  0.6

 » 27    Up   e              04  26  08
              e              04  28  33
              eSS            04  40  58
                             μ    s
              M     E        3.7  20
              M     N        4.4  24
              M     z        6.6  28
         Ki   iP             04  21  57
              iPP            04  26  01
```

Column 3 (p. 153)

```
1957
Sep 27   eSKS               04  32  32
(cont.)                      μ    s
              P     z'       0.1  1.5
              PP    z'       0.4  2.0
              SKS   E        0.9  9
              M     E        3.1  18
              M     N        3.4  22
              M     z        5.4  19
         △ = 10800 km = 97°.
         Sk   e              04  22  37
              i              04  25  37
              i(PP)          04  26  17
         Spice Islands.
         Magn. = 6.2 (Up, Ki).

 » 27    Ki   iP             04  32  19
         Spice Islands.

 » 27    Up   iP             05  08  28
                             μ    s
              P     z'       0.3  0.9
         Ki   iP             05  07  28C
                             μ    s
              P     z'       0.2  0.8
         Sk   iP             05  08  04
              i              05  08  13
         Eastern Siberia.

 » 27    Ki   iP             05  58  25
         Aleutian Islands.

 » 27    Ki   iP             06  10  25
         Spice Islands.

 » 27    Up   eP             11  27  53
                             μ    s
              P     z'       0.1  1.0
         Sk   iP             11  27  31
         Aleutian Islands.

 » 27    Up   iP             14  34  01C
         Luzon, Philippine Islands.

 » 27    Ki   eP             16  20  32
              i              16  20  41

 » 28    Up   iP             00  38  37C
              i              00  38  44
              iS             00  47  45
                             μ    s
              P     z        1.0  1
              P     z'       0.3  0.5
              S     E        2.6  5
              S     N        3.8  6
              S     z'       0.1  1.0
              M     N        1.7  16
              M     z        1.7  16
         Ki   iP             00  38  04C
              iS             00  46  44
              iSS            00  51  23
```

Column 4 (p. 153)

```
1957                         μ    s
Sep 28        P     z'       1.1  1.0
(cont.)       S     E        4.3  8
              S     N        4.4  7
              M     N        1.5  15
              M     z        2.1  17
         Sk   iP             00  38  34C
              iPP            00  41  33
         Off south coast of Honshu,
         Japan (h ~ 500 km).
         Magn. = 6.3 (Up, Ki).

 » 28    Up   iPKP           14  38  14
              iSKP           14  41  03
              iPP            14  41  23
              iPKS           14  41  57
              ipPKS          14  44  16
              iSS            14  58  50
              isSS           15  02  35
                             μ    s
              PKP   z        12   9
              PKP   z'       2.3  1.0
              SKP   N        4.9  8
              SKP   z        25   10
              SKP   z'       1.5  1.0
              PP    N        7.4  8
              PP    z        16   8
              PKS   E        12   10
              PKS   N        21   10
              M     E        22   28
              M     N        27   25
              M     z        25   27
         △ = 15550 km = 140°.
         Ki   e(PKP)         14  37  55
              iPKP           14  38  08
              iSKP           14  40  33
              isPKP          14  41  34
              esPKS          14  44  51
              iSS            14  57  22
                             μ    s
              PKP   z        4.8  6
              PKP   z'       2.6  1.5
              SKP   N        7.0  10
              SKP   z        22   10
              SKP   z'       5.7  1.5
              sPKP  E        17   9
              sPKP  N        22   10
              M     E        15   17
              M     N        10   20
              M     z        8.3  20
         Sk   iPKP           14  38  07
              iSKP           14  40  55
         Fiji Islands. h = 640 km (Up).
         Magn. = 7.6 (Up).

 » 28    Up   iPKP           15  02  18
                             μ    s
              P     z'       0.1  0.5
         Ki   iPKP           15  02  13
         Sk   iPKP           15  02  15
              i              15  02  23
         Fiji Islands (h ~ 600 km).
```

1957

Sep 28	Up	iP	23	54	11

» 29 Up eL 03 35

		μ	s
M	E	1.5	23
M	N	2.3	25
M	z	3.9	22

South Pacific Ocean.

» 29	Up	iP	06	50	49
	Ki	iP	06	50	36

		μ	s
P	z'	0.1	0.8

	Sk	iP	06	50	56

Celebes (h ~ 200 km).

» 29	Ki	iSKP	07	26	40

		μ	s
		0.1	1.3
SKP	z'		

Fiji Islands (h ~ 650 km).

» 29	Up	iPKP	08	31	51 D
		i	08	32	02
		iSKP	08	34	38
		iPKS	08	35	31
		i(SKKP)	08	42	53

		μ	s
PKP	N	1.1	2
PKP	z	5.3	1.5
PKP	z'	2.4	1.0
SKP	z	1.2	3
SKP	z'	0.6	1.3

	Ki	iPKP	08	31	33
		iSKP	08	34	18
		eSS	08	51	33

		μ	s
PKP	z'	0.2	1.0
SKP	z	1.8	4
SKP	z'	1.9	1.7

	Sk	iPKP	08	31	44
		iSKP	08	34	33

South of Fiji Islands.
(h ~ 600 km).

» 29	Up	iP	12	29	22 C

» 29	Up	iP	13	41	11
	Ki	iP	13	40	18
	Sk	iP	13	40	55

Near east coast of Kamchatka.

» 29	Up	iPKP	13	56	17
	Ki	iPKP	13	56	12

South of Fiji Islands.

» 29	Ki	iP	17	47	28

		μ	s
M	E	1.3	22
M	N	1.2	22
M	z	1.3	21

Off southeast coast of Mindanao,
Philippine Islands.

1957

Sep 30	Ki	iP	09	11	12
	Sk	iP	09	12	24

» 30	Up	iP	11	14	57
		i	11	15	11

		μ	s
P	z'	0.1	0.5

	Ki	iP	11	14	24

Off south coast of Honshu, Japan.

» 30	Ki	e	17	58	18
		e	17	58	23

Local? Seismic?

» 30	Up	iP	20	34	14

		μ	s
M	E	0.7	17
M	N	0.7	16
M	z	1.4	16

	Ki	iP	20	33	33
		eS	20	43	32

		μ	s
S	E	0.8	14
S	N	0.5	14
M	E	1.3	18
M	N	0.7	17
M	z	1.6	17

△ = 8700 km = 78½°.

	Sk	iP	20	33	59

Volcano Islands.

Oct 1	Ki	eL	02	37	

		μ	s
M	E	0.6	16
M	N	0.3	14

	Sk	eP	02	27	44

Albania.

» 1	Ki	iP	03	12	42

		μ	s
M	E	0.6	16
M	N	0.5	15

	Sk	eP	03	12	48
		iS	03	14	43

△ = 1150 km = 10½°.
Jan Mayen Island region.

» 1	Ki	eP	08	16	57
	Sk	iP	08	17	14

West Pakistan.

» 2	Ki	i	01	12	30

Local?

» 2	Ki	eP	11	38	06

		μ	s
M	E	2.0	21
M	N	0.6	21
M	z	1.6	21

Near southeast coast of Mindanao,
Philippine Islands.

1957

Oct 2	Up	iP	12	39	43
		eS	12	49	14

		μ	s
P	z'	0.2	1.2
S	N	0.7	8
M	E	2.3	22
M	N	1.6	20
M	z	3.1	20

△ = 8350 km = 75°.

	Ki	iP	12	39	51
		eS	12	49	37

		μ	s
S	N	0.6	13
M	E	3.3	19
M	N	2.0	20
M	z	3.0	19

△ = 8550 km = 77°.

	Sk	eP	12	39	29
		i	12	39	33

Near coast of Venezuela.
Magn. = 5.8 (Up, Ki).

» 2	Up	iP	13	16	54
	Ki	iP	13	17	30 C

		μ	s
P	z'	0.1	0.8

	Sk	iP	13	17	29

Near south coast of Iran.

» 2	Up	eP	21	10	38
		i	21	10	48

		μ	s
i	z'	0.2	1.0
M	E	0.7	18
M	N	2.0	20
M	z	3.1	22

	Ki	iP	21	10	59
		i	21	11	10

		μ	s
i	z'	0.4	1.0
M	E	2.1	18
M	N	2.4	21
M	z	1.9	19

	Sk	eP	21	11	05
		i	21	11	11

Chagos Islands.

» 3	Up	iP	01	45	42

Hokkaido, Japan.

» 3	Ki	eP	16	49	19

» 3	Up	iP	18	20	51
		i	18	21	24

» 3	Up	iP	18	53	36

» 4	Up	iPKP	01	19	41
	Ki	iPKP	01	19	34 C
		iSKP	01	22	32

Fiji Islands region (h ~ 400 km).

1957

Oct 4	Up	iP	05	37	51
		iS	05	47	31
		i!	05	48	25

		μ	s
P	z'	0.1	0.6
S	N	11	24
M	E	8.7	19
M	N	7.7	20
M	z	17	21

△ ~ 8400 km ~ 75½°.

	Ki	iP	05	38	01
		i(pP)	05	38	11
		eS	05	47	49
		e!	05	48	39

		μ	s
P	z'	0.2	1.2
S	E	3.3	15
S	N	8.6	24
M	E	15	19
M	N	6.3	20
M	z	13	20

△ ~ 8550 km ~ 77°.

	Sk	iP	05	37	38
		i(pP)	05	37	47

Near coast of Venezuela.
Magn. = 6.3 (Up, Ki).

» 4	Ki	i(P)	23	07	10
		i	23	07	21

» 4	Sk	iP	23	27	28 C

Mongolia.

» 5	Up	iP	00	06	37 D

		μ	s
P	z'	0.2	0.5

	Ki	iP	00	05	44

		μ	s
P	z'	0.2	0.8

	Sk	iP	00	06	17

Aleutian Islands.

» 5	Up	iP	05	30	17
	Ki	iP	05	29	37

Off east coast of Honshu, Japan.

» 5	Up	iP	11	42	20
		eS	11	46	58
		e	11	47	13

		μ	s
P	z'	0.2	1.0
M	E	2.2	14
M	N	2.3	13
M	z	3.3	14

△ = 2900 km = 26°.

	Ki	iP	11	43	26 C
		i	11	43	37
		e	11	56	21

		μ	s
i	z'	0.4	1.2
M	E	5.0	19

1957

Oct 5   M   N   2.1   13
(cont.)   M   z   2.5   13
          Sk   iP   11   42   58
          i   11   43   07
          Southeast of Crete.

»   5 Ki   iP   11   51   27

»   5 Up   iP   15   57   22
                         μ   s
          M   E   0.6   11
          M   N   0.6   12
          M   z   0.8   12
          Ki   iP   15   58   28
                         μ   s
          M   E   1.2   16
          M   N   0.5   12
          M   z   0.9   14
          Sk   iP   15   58   00 D
          i   15   58   10
          Southeast of Crete.

»   5 Up   iP   22   48   16
          eSS   22   57   09
          eLg2   23   02   13
                         μ   s
          M   E   1.2   18
          M   z   1.9   18
          Ki   iP   22   48   25
          i   22   48   43
          iPP   22   50   16
          e   22   57   08
          eLg1   23   01   18
          Sk   iP   22   48   43
          iPP   22   50   19
          Tadzhik-Afghanistan border.

»   6 Ki   eP   01   06   07
          Sk   eP   01   05   44
          Near coast of Venezuela.

»   6 Up   iP   09   02   44
                         μ   s
          M   E   2.7   11
          M   N   5.3   11
          M   z   6.5   11
          Ki   eP   09   01   13
          iS   09   03   27
          i   09   03   42
                         μ   s
          M   E   2.6   10
          M   N   2.6   10
          M   z   3.3   10
          △=1310 km=11.8°.
          Sk   iP   09   02   23
          Near west coast of Novaya
          Zemlya, 74.0° N, 51.8° E.
          Origin time=08 58 20.
          Explosion?

»   6 Up   eP   10   34   45
          Southwest of Crete.

1957

Oct 6 Up   iP   16   58   15
          Ki   iP   16   57   40
          Sk   iP   16   58   12

»   6 Up   iP   21   38   34
          Ki   iP   21   37   44
          Sk   eP   21   38   20
          Northern Kurile Islands.

»   6 Up   iP   23   38   03
          Ki   eP   23   37   10
          Aleutian Islands.

»   7 Up   iP   05   21   25
          Ki   iP   05   20   20
          Sk   eP   05   20   52
          Unimak Island region.

»   7 Sk   eP   10   56   44
          Italy.

»   7 Up   iP   13   30   29 C
          ipP   13   30   39
          iS   13   39   22
                         μ   s
          P   N   0.5   2
          P   z   0.8   2
          P   z'   0.7   1.2
          S   E   0.8   6
          S   N   1.3   6
          M   E   2.9   16
          M   N   4.5   17
          M   z   5.5   16
          △=7300 km=65½°.
          Ki   iP   13   29   32 C
          ipP   13   29   42
          eS   13   37   42
                         μ   s
          P   z'   1.1   1.6
          M   E   4.9   16
          M   N   2.4   16
          M   z   4.4   17
          △=6400 km=57½°.
          Sk   iP   13   30   12
          ipP   13   30   23
          Off southeast coast of Kamchatka.
          Magn.=6.5 (Up, Ki).

»   7 Up   iPKP   17   06   57
          iSKP   17   09   41
                         μ   s
          SKP   z'   0.1   0.9
          Ki   ePKP   17   06   48
          iSKP   17   09   13
                         μ   s
          SKP   z'   0.4   2.0
          Sk   ePKP   17   06   49
          eSKP   17   09   34
          Fiji Islands (h ~ 650 km).

»   7 Up   iP   18   49   48
          Ki   iP   18   48   52

1957

Oct 8 Ki   iP   01   40   28
          Off southeast coast of Mindanao,
          Philippine Islands.

»   8 Up   iP   03   49   34
          Pamir.

»   8 Up   iP   05   42   56
          Ki   iP   05   42   07
          Sk   eP   05   42   50
          Kurile Islands.

»   8 Up   iP   07   05   31 C
                         μ   s
          M   E   2.6   20
          M   N   2.9   18
          M   z   2.4   14
          Ki   iP   07   06   46
                         μ   s
          M   E   5.5   16
          M   N   1.7   16
          M   z   1.6   12
          Sk   iP   07   06   12
          Near west coast of Greece.

»   9 Up   i(P)   02   37   18
          Sk   e(P)   02   38   18

» 10 Up   iP   01   54   01
          Ki   iP   01   53   08
                         μ   s
          P   z'   0.1   1.0
          Sk   iP   01   53   39
          Aleutian Islands.

» 10 Up   iP   03   50   13 D
          i   03   50   27
                         μ   s
          P   z'   0.1   1.0
          Ki   iP   03   49   20
          Sk   iP   03   49   50
          Aleutian Islands.

» 10 Up   iPKP   04   05   08
          iSKP   04   07   50
          Ki   ePKP   04   05   00
          iSKP   04   07   28
          South of Fiji Islands (h ~ 700 km).

» 10 Up   iP   05   55   36 C
          i   05   55   49
                         μ   s
          P   z'   0.1   0.6
          Ki   iP   05   54   43
          Sk   iP   05   55   14
          Aleutian Islands.

» 10 Up   iP   06   58   52
          i   06   58   55
          iS   07   02   14
          iLg2   07   04   23

1957

Oct 10   P   z'   0.2   0.5
(cont.)   △=1950 km=17½°.
          Ki   iP   06   57   33
          iS   06   59   43
                         μ   s
          P   z'   0.3   0.5
          S   z'   0.5   1.0
          △=1300 km=11½°.
          Sk   iP   06   58   45
          iS   07   01   55
          iLi   07   03   03
          iLg2   07   04   07
          △=1900 km=17°.
          Near southwest coast of Novaya
          Zemlya, 71° N, 52½° E.
          Origin time=06 54 44.
          Explosion?

» 10 Up   iP   07   49   21 C
                         μ   s
          P   z'   0.3   1.0
          Ki   iP   07   48   28
          iPcP   07   49   13
                         μ   s
          P   z'   0.2   1.2
          Sk   iP   07   48   59
          Aleutian Islands.

» 10 Ki   iP   18   16   22
          Tadzhik-Afghanistan border region.

» 10 Up   iPKP   19   03   12
          Fiji Islands region (h ~ 400 km).

» 10 Up   iP   19   04   51
                         μ   s
          P   z'   0.3   0.6
          M   E   1.6   20
          M   N   3.2   25
          M   z   3.3   23
          Ki   iP   19   03   57
                         μ   s
          P   z'   0.8   0.8
          M   E   2.5   19
          M   N   1.9   23
          Sk   iP   19   04   29 D
          Aleutian Islands.

» 10 Up   i(Pg)   20   21   18
          iSg   20   21   43
                         μ   s
          Sg   z'   0.1   0.5
          △=260 km=2.3°.
          Sk   e(Sn)   20   21   50
          iSg   20   22   08
          △=340 km=3.1°.
          Sweden, near 60.7° N, 13.4° E.
          Origin time=20 20 26.
          Felt.

Column 1

1957
Oct 11 Up iP   00 32 52 D
    Ki iP   00 31 58
    Sk eP   00 32 28
    Aleutian Islands.
» 11 Up iP   03 00 41 D
» 11 Up iP   07 37 57
    Northwestern Turkey.
» 11 Up iP   14 40 32

		μ	s
P	z'	0.2	0.7

    Seismic?
» 11 Up iP   19 51 39
    Iran.
» 12 Up eP   00 18 03
    India-Burma border.
» 12 Up iP   19 10 42

		μ	s
P	z'	0.1	0.9
M	E	3.2	26
M	N	4.2	28
M	z	4.5	25

    Ki iP   19 10 38 C

		μ	s
P	z'	0.2	1.0
M	E	6.0	25
M	N	3.0	22
M	z	4.6	27

    Sk iP   19 10 54 D
    Near south coast of Java.
    Magn.=6.5 (Up, Ki).
» 13 Up iP   04 29 53
    i   04 30 04
    eS   04 38 38

		μ	s
P	N	0.6	3
P	z	1.8	4
P	z'	0.6	1.3
S	E	1.8	8
M	E	6.1	21
M	N	6.0	22
M	z	5.2	21

    △=7100 km=64°.
    Ki iP   04 28 59
    e(S)   04 37 06

		μ	s
P	z'	0.9	2.0
(S)	E	1.1	10
M	E	7.5	18
M	N	5.2	16
M	z	3.5	13

    Sk iP   04 29 37 C
    Lu iP   04 30 24
    Off southeast coast of Kamchatka.
    Magn.=6.4 (Up, Ki).

Column 2

1957
Oct 13 Up iP   06 11 04 D
    Ki iP   06 10 10
» 14 Up eP   01 30 33
» 14 Up iP   13 44 16
    i   13 44 40

		μ	s
P	z'	0.2	0.5

    Sk e(P)   13 46 55
    Local?
» 14 Up iP   13 53 59 C

		μ	s
P	z'	0.1	0.5

» 15 Sk iP   04 14 46 C
    Near south coast of Costa Rica.
» 15 Up iPKP   06 14 50
    i   06 14 54

		μ	s
PKP	z'	0.5	0.6

    Ki ePKP   06 14 26
    Sk iPKP   06 14 43
    Kermadec Islands (h~150 km).
» 15 Up iP   15 01 38
» 16 Ki iPg   12 17 21
    iSg   12 17 45
    △=200 km=1.8°.
» 16 Up iP   19 08 26
» 17 Up iP   04 48 58
» 17 Ki iP   14 33 13
    Off south coast of Honshu, Japan.
» 17 Ki iP   14 44 10
    eSS   14 51 05

		μ	s
M	E	0.6	14
M	N	0.4	14

    North Atlantic Ocean.
» 17 Ki iP   17 42 58
    North Atlantic Ocean.
» 17 Ki iP   19 25 38
    Tadzhik-Afghanistan border.
» 18 Up iP   01 55 41 D

		μ	s
P	N	0.2	2
P	z'	0.1	0.5
M	E	0.7	14
M	N	1.8	15
M	z	1.7	15

    Ki iP   01 56 55

Column 3

1957
Oct 18
(cont.)

		μ	s
M	E	0.7	15
M	N	1.0	12
M	z	1.4	13

    Sk iP   01 56 22
    i   01 56 50
    Greece.
» 18 Up iP   02 56 26
    Sk iP   02 57 09
    Greece.
» 18 Up iP   16 04 37 C
» 18 Up iP   17 33 04
    Ki iP   17 32 36
» 18 Up iP   21 56 25
    Ki iP   21 56 11 C
    Sk iP   21 56 05 C
    Oaxaca, Mexico (h~150 km).
» 19 Up iP   06 58 26
» 19 Up iP   18 40 43 C
    iS   18 50 22
    i   18 50 30

		μ	s
P	E	0.5	5
P	z	2.1	6
P	z'	0.4	1.1
S	E	3.1	12
S	N	3.0	11
M	E	54	17
M	N	94	22
M	z	87	18

    △=8450 km=76°.
    Ki iP   18 40 19 C
    e   18 44 41
    i   18 44 46
    iS   18 49 39
    iPS   18 49 54
    i   19 04 53

		μ	s
P	E	1.8	13
P	z	4.6	13
P	z'	0.2	1.0
S	E	1.0	5
S	N	2.3	8
M	E	52	14
M	N	23	15
M	z	40	12

    △=8000 km=72°.
    Sk iP   18 40 48
    i   18 40 57
    Near east coast of Formosa.
    Magn.=6.5 (Up, Ki).
» 19 Up iP   21 52 43 C
    iS   22 01 26
    isS   22 02 26

Column 4

1957
Oct 19
(cont.)

		μ	s
P	N	0.2	1.5
P	z	0.3	1.0
P	z'	0.4	1.0
S	E	1.0	5
S	N	0.5	2
M	N	1.4	16

    △=7600 km=68½°.
    Ki iP   21 51 58 C
    eS   21 59 58
    i(ScS) 22 01 34

		μ	s
P	z'	0.6	1.1
S	E	0.5	8
S	N	0.5	10
M	E	1.7	19
M	N	1.6	21
M	z	1.3	18

    △=6750 km=61°.
    Sk iP   21 52 34
    Off northeast coast of
    Hokkaido, Japan.
    h=150 km (Up).
    Magn.=6.1 (Up, Ki).
» 20 Ki iP   02 58 30
» 20 Up i(P)   03 31 37
» 20 Up iP   12 15 09
    i   12 15 12
    iS   12 23 50

		μ	s
P	z	0.2	3
S	E	1.8	14
S	N	4.0	12
M	E	5.0	19
M	N	11	20
M	z	11	20

    △=7300 km=65½°.
    Ki iP   12 15 38
    e   12 24 38
    eS   12 24 44

		μ	s
P	z'	0.2	1.5
S	E	0.7	9
S	N	1.2	11
M	E	7.3	19
M	N	5.6	24
M	z	7.3	19

    △=7800 km=70°.
    Mid-Atlantic Ridge.
    Magn.=5.8 (Up, Ki).
» 20 Ki e(PKP) 16 16 12
    (Indian Ocean).
» 21 Sk iPKP   00 36 17
    Santa Cruz Islands (h~100 km).
» 21 Ki iP   14 34 21

1957

Oct 21 (cont.)

				μ	s
	P	z'		0.2	1.5
Sk	iP		14	33	43

Mid-Atlantic Ridge.

» 21 Sk iP   15 00 00 D

India-Burma border region.

» 22 Ki iP   12 57 14

			μ	s
P	z'		0.1	1.2

» 22 Ki iP   15 02 56

» 22 Sk e(P)   18 39 19

» 22 Up iP   20 55 44

			μ	s
P	z'		0.1	0.5
M	N		1.5	25

Ki iP   20 54 58

			μ	s
P	z'		0.1	1.2
M	E		2.2	22
M	N		1.3	23
M	z		2.1	21

Sk eP   20 55 34

Near northeast coast of Hokkaido, Japan.

» 22 Sk iPKP   22 25 44

South of Kermadec Islands.

» 23 Ki iP   04 49 52
Sk iP   04 49 31

Puerto Rico.

» 23 Up iP   06 07 52 C
i(PcP)   06 08 13
e   06 16 20

			μ	s
P	N		0.4	4
P	z		0.9	4
P	z'		0.1	0.5
M	E		4.2	18
M	N		6.7	21
M	z		9.3	21

Ki iP   06 06 58
iPcP   06 07 45
eS   06 15 03

			μ	s
P	N		0.6	6
P	z		0.8	9
P	z'		0.3	0.9
S	N		0.5	10
M	E		5.0	19
M	N		4.4	19
M	z		5.4	19

$\triangle = 6600$ km $= 59\frac{1}{2}°$.

Sk iP   06 07 29 C
i   06 07 55

1957

Oct 23 (cont.) Aleutian Islands. Magn.=6.0 (Up, Ki).

» 24 Ki iPKP   00 36 37

New Hebrides Islands.

» 24 Up iP   02 37 59
eS   02 41 45

			μ	s
P	N		0.2	2
M	E		1.8	16
M	N		2.2	20

$\triangle = 2350$ km $= 21°$.

Ki eP   02 39 20
iLg1   02 47 59

			μ	s
M	E		1.5	15
M	N		0.9	16
M	z		3.5	22

Sk iP   02 38 43

Northwestern Turkey.

» 24 Up iPKP   09 25 50
iSKP   09 28 44

			μ	s
PKP	z'		0.1	0.5
SKP	z'		0.1	0.6

Ki iPKP   09 25 44
iSKP   09 28 20
Sk iPKP   09 25 44

Fiji Islands (h ~ 550 km).

» 24 Up iP   21 57 14

			μ	s
M	E		4.0	19
M	N		6.9	25
M	z		8.7	18

Ki iP   21 56 50

			μ	s
M	E		4.5	18
M	N		3.5	18
M	z		5.3	17

Gulf of California.

» 25 Up iP   01 54 53
i   01 55 04
Ki iP   01 54 30

Off coast of Formosa.

» 25 Up iP   02 23 19
Sk eP   02 23 59

Near northeast coast of Greece.

» 25 Up iP   03 28 04
i   03 28 13

			μ	s
P	z'		0.1	0.7

Ki iP   03 27 42 C

			μ	s
P	z'		0.1	1.0

Sk iP   03 28 10

Batan Islands.

1957

Oct 25 Ki iP   04 47 42 D

			μ	s
P	z'		0.2	1.3

Aleutian Islands.

» 25 Up iP   06 31 07
i   06 31 16

			μ	s
P	z'		0.1	0.5

Ki iP   06 30 45

			μ	s
P	z'		0.5	1.4

Off coast of Formosa.

» 25 Ki e(P)   07 48 19

» 25 Up iP   10 14 13 D
i   10 14 17
iPa   10 18 32
iS   10 22 45
iSa   10 30 38

			μ	s
P	z		0.8	3
P	z'		0.1	0.5
S	N		3.0	14
M	E		34	21
M	N		52	20
M	z		63	20

$\triangle = 7100$ km $= 64°$.

Ki iP   10 13 21
ePa   10 16 54
eS   10 21 13
eSa   10 27 13

			μ	s
P	z		2.4	9
S	N		1.4	13
M	E		35	22
M	N		26	23
M	z		37	24

$\triangle = 6350$ km $= 57°$.

Sk iP   10 14 00

Near south coast of Kamchatka. Magn.=6.3 (Up, Ki).

» 25 Ki iP   11 50 04

Aleutian Islands.

» 25 Up iP   22 57 12 C
Ki iP   22 56 50 C
Sk iP   22 57 13

Luzon, Philippine Islands. (h ~ 200 km).

» 26 Ki iP   04 44 30 D

Molucca Passage.

» 26 Up iPKP   08 44 32
iSKP   08 47 21

			μ	s
PKP	z'		0.2	0.8

Ki iPKP   08 44 24

1957

Oct 26 (cont.)   iSKP   08 46 57

			μ	s
PKP	z'		0.1	1.0
SKP	z'		0.3	1.5

Sk ePKP   08 44 23
iSKP   08 47 13

Fiji Islands (h ~ 600 km).

» 26 Up iP   14 30 26
iPS   14 43 07

			μ	s
P	z		0.3	1.5
P	z'		0.2	0.8
M	E		2.6	17
M	N		5.1	25
M	z		5.0	18

Ki iP   14 30 15
eSKS   14 40 51

			μ	s
P	z'		0.9	1.5
M	E		4.2	18
M	N		1.8	18
M	z		3.9	18

Sk iP   14 30 35 D

Borneo. Magn.=6.4 (Up, Ki).

» 27 Up iP   14 48 22 C
i   14 48 31

» 27 Up iP   22 42 40 C
ipP   22 43 14

			μ	s
P	E		0.2	2
P	N		1.0	2
P	z		2.1	2
P	z'		0.5	0.7

Ki iP   22 41 44 C
ipP   22 42 21

			μ	s
P	z'		0.7	0.6

Sk iP   22 42 22 C

Kamchatka. h=140 km (Up, Ki). Magn.=6.6 (Up, Ki).

» 29 Up iP   00 19 37

Near east coast of Kamchatka.

» 29 Up iP   02 35 02

			μ	s
P	z'		0.1	1.0

Ki iP   02 34 53

			μ	s
P	z'		0.2	1.0

Borneo.

» 29 Up iP   08 13 16
i   08 13 29

			μ	s
P	z'		0.1	0.5

Aleutian Islands.

```
1957
Oct 29  Up   iP              09   01   03
 »  29  Up   iP              23   13   18 D
        Near west coast of
        Peloponnesus, Greece.

 »  30  Up   iP              01   48   26
             i               01   48   28
             iS              01   52   53
                           μ    s
             P     z'      0.2   0.9
             M     E       11    19
             M     N       8.0   11
             M     z       10.0  11
             △=2850 km=25½°.
        Ki   iP              01   49   34 .
                           μ    s
             P     z'      0.1   0.7
             M     E       9.2   16
             M     N       3.1   12
             M     z       4.4   12
        Sk   iP              01   49   06 .
        Dodecanese Islands.
        Magn.=5.7 (Up, Ki).

 »  30  Up   iP              02   24   06
        Ki   iP              02   23   13 D .
                           μ    s
             P     z'      0.2   1.3
        Sk   eP              02   23   43 .
        Aleutian Islands.

 »  30  Up   iP              03   01   35 C
        Ki   iP              03   00   41
        Aleutian Islands.

 »  30  Up   iP              07   35   47
             iPP             07   36   26 ·
             iS              07   40   15
                           μ    s
             P     z'      0.1   0.7
             PP    z'      0.1   0.5
             S     N       3.5   10
             M     E       11    14
             M     N       6.4   14
             M     z       6.2   18
             △=2850 km=25½°.
        Ki   iP              07   36   52 ·
             i               07   38   23
                           μ    s
             P     z'      0.2   0.9
             M     E       13    19
             M     N       4.6   12
             M     z       6.6   12
        Sk   iP              07   36   25 ·
             iPP             07   37   17
        Dodecanese Islands.
        Magn.=5.7 (Up, Ki).

 »  30  Up   iP              13   39   55 C
                           μ    s
             P     z'      0.1   0.7
```

```
1957
Oct 30  Up   iP              19   57   37 C
                           μ    s
             P     z'      0.1   0.7
        Aleutian Islands.

 »  31  Up   iP              02   48   16
             iPcP            02   48   36
        Ki   iP              02   47   36
                           μ    s
             P     z'      0.1   1.2
        Sk   iP              02   48   09
        Honshu, Japan.

 »  31  Up   iP              02   59   36
        California.

 »  31  Up   iP              10   20   55
             eSKS            10   31   29 ·
             iS              10   31   48 .
                           μ    s
             P     z'      0.1   0.7
             S     E       3.9   9
             M     E       7.5   19
             M     N       8.0   22
             M     z       13    19
             △=9950 km=89½°.
        Ki   iP              10   20   53 D .
             eSKS            10   31   22
             eSS             10   37   36
                           μ    s
             P     z'      0.7   1.7
             SKS   E       4.3   10
             M     E       9.0   18
             M     N       7.9   21
             M     z       9.8   17
             △=9900 km=89°.
        Sk   iP              10   20   40
        Off coast of Panama.
        Magn.=6.5 (Up, Ki).

 »  31  Ki   iPKP            15   49   09
        Sk   iPKP            15   49   23
             i               15   49   39
        South of Tasmania.

Nov  1  Ki   iP              14   29   45
        Turkestan.

 »   2  Up   iP              01   29   20
                           μ    s
             P     z'      0.1   1.0
        Ki   iP              01   28   26
                           μ    s
             P     z'      0.2   1.0
        Sk   iP              01   28   56
        Aleutian Islands.

 »   2  Ki   iP              05   41   09
        Mediterranean Sea.

 »   2  Up   iP              07   33   39 D
```

```
1957
Nov  2
(cont.)                    μ    s
             P     z'      0.1   0.7
        Sk   iP              07   33   21
        Near coast of Chiapas,
        Mexico (h ~ 100 km).

 »   2  Ki   iP              16   29   59
        Off southeast coast of Mindanao,
        Philippine Islands.

 »   2  Up   iPKP            18   49   33
             i(PKS)          18   52   56
                           μ    s
             M     E       4.3   23
             M     N       6.3   23
             M     z       7.8   22
        Ki   iPKP            18   49   19
             i               18   49   21
             i(PKS)          18   52   53
                           μ    s
             PKP   z'      0.1   0.7
             M     E       3.8   24
             M     N       2.9   23
             M     z       5.8   22
        Sk   iPKP            18   49   30 C
             e(PKS)          18   52   50
        New Hebrides Islands.
        Magn.=6.4 (Up, Ki).

 »   3  Up   iP              02   34   46
        Ki   iP              02   33   54
        Aleutian Islands.

 »   3  Up   i(Sg)           06   11   51
        Ki   e(P)            06   08   33
             i(Sg)           06   08   59
        Local.

 »   3  Up   iP              12   56   23
        Ki   i(P)            12   56   07

 »   4  Up   iP              02   41   33
        Ki   iP              02   40   40
        Aleutian Islands.

 »   4  Sk   e(P)            03   14   03

 »   4  Ki   iP              20   26   58 D
        Aleutian Islands.

 »   5  Ki   iP              00   46   46
        Philippine Islands.

 »   5  Up   iPKP            10   12   30
             iSKP            10   14   53
        Ki   iPKP            10   12   15
        Sk   iPKP            10   12   27
        New Hebrides Islands region.
        (h ~ 650 km).

 »   5  Ki   e(P)            14   50   50
```

```
1957
Nov  5  Up   iP              20   02   20 D
        Ki   iP              20   01   26
        Aleutian Islands.

 »   6  Sk   iP              00   59   41

 »   6  Up   iP              13   23   59
                           μ    s
             P     z'      0.1   0.9
        Ki   iP              13   23   15
                           μ    s
             M     E       1.6   20
             M     N       1.2   19
             M     z       2.4   20
        Sk   i(P)            13   24   01
        Kurile Islands region.

 »   6  Up   iP              14   04   17
        Ki   i(P)            14   03   19

 »   6  Sk   i(P)            17   48   48
             i               17   49   26
        Local?

 »   6  Ki   iP              22   06   50
        East of Crete.

 »   7  Up   eL              07   34
                           μ    s
             M     E       1.8   20
             M     N       2.2   20
             M     z       2.7   22
        South Pacific Ocean.

 »   7  Ki   iP              22   27   30 D

 »   8  Up   iP              09   14   41
                           μ    s
             P     z'      0.1   0.6
        Ki   eP              09   13   58
        Sk   e(P)            09   14   37
        Near east coast of Hokkaido, Japan.

 »   8  Ki   e(P)            16   30   47

 »   9  Ki   iP              05   14   24

 »   9  Ki   iP              06   26   59
        Near Unimak Island.

 »   9  Up   iP              22   16   29
        Ki   iP              22   15   16
             i               22   15   27
                           μ    s
             P     z'      0.1   1.0
             M     E       2.1   18
             M     N       1.7   15
             M     z       2.8   15
        Sk   iP              22   15   29
             iS              22   17   15
             △=1020 km=9.2°.
```

1957
Nov 9 East of Jan Mayen, near 71° N, 4° W.
(cont.)   Origin time = 22 13 12.

» 10 Up iP   00 00 44
     eS   00 04 40

		μ	s
P	z′	0.1	0.7
M	E	1.6	20
M	N	2.8	16
M	z	3.1	18

$\triangle = 2400$ km $= 21\frac{1}{2}°$.
Ki eP   00 01 59

		μ	s
M	E	2.6	20
M	N	2.6	19
M	z	1.6	13

Sk iP   00 01 25
Greece.

» 10 Up ePP   02 56 30
      ePPS   03 07 40

		μ	s
PP	z	1.0	5
M	E	4.7	22
M	N	3.9	20
M	z	2.6	19

Ki e   03 01 40
   ePS   03 05 14

		μ	s
M	E	5.7	21
M	N	5.0	23
M	z	4.8	20

Sk ePP   02 56 18
Solomon Islands.
Magn.=6.5 (Up, Ki).

» 10 Up eL   04 35

		μ	s
M	E	2.6	20
M	N	3.4	26
M	z	2.1	20

Ki eL   04 35

		μ	s
M	E	1.3	18
M	N	1.0	20
M	z	1.7	20

Solomon Islands.
Magn.=6.0 (Up, Ki).

» 10 Up iPKP   05 47 44

		μ	s
M	E	2.9	24
M	N	3.2	26
M	z	4.3	24

Ki ePKP   05 47 33

		μ	s
M	E	3.7	20
M	N	3.2	22
M	z	5.5	22

Tonga Islands region.
Magn.=6.3 (Up, Ki).

1957
Nov 10 Up iP   08 37 46

		μ	s
M	E	1.7	16
M	N	2.3	20
M	z	1.7	16

Ki iP   08 37 12

		μ	s
M	E	3.6	18
M	N	3.5	18
M	z	2.3	18

Sk eP   08 37 41
Near south coast of Honshu, Japan.
Magn.=5.8 (Up, Ki).

» 10 Up iP   09 52 20
    Ki e(PcP)   09 51 55

		μ	s
M	E	1.2	16
M	N	0.6	17

Sk iP   09 52 16
South of Honshu, Japan.

» 10 Up iP   10 33 46 D
     i(pP)   10 34 08

		μ	s
(pP)	z′	0.1	1.0

Ki iP   10 33 49
   i(pP)   10 34 10
   eS   10 44 17

		μ	s
(pP)	z′	0.1	0.9

Sk iP   10 33 33
   i(pP)   10 33 55
Northern Colombia.

» 10 Ki eP   12 03 08
    Sk iP   12 03 15
       e   12 05 00

» 10 Up iP   12 34 45
    Ki iP   12 34 13
    Sk iP   12 34 41

» 10 Ki iP   18 14 56
Near east coast of Borneo.

» 10 Up iP   19 31 49
     iS   19 41 20

		μ	s
P	z′	0.2	1.0
S	E	0.5	7
S	N	0.6	5
M	E	8.5	19
M	N	9.5	19
M	z	6.2	18

$\triangle = 8300$ km $= 74\frac{1}{2}°$.
Ki iP   19 31 12
   eS   19 40 14

		μ	s
P	z′	0.4	1.5
S	E	0.9	9

1957
Nov 10
(cont.)

S	N	1.1	9
M	E	23	20
M	N	22	19
M	z	8.5	15

$\triangle = 7650$ km $= 69°$.
Sk iP   19 31 44
   i   19 31 46
Near south coast of Honshu, Japan.
Magn.=6.1 (Up, Ki).

» 10 Ki iP   19 41 35
Near south coast of Honshu, Japan.

» 10 Ki iP   20 04 12
    Sk iP   20 04 48
Near south coast of Honshu, Japan.

» 10 Up iP   22 24 08
    Ki iP   22 23 12

		μ	s
P	z′	0.1	1.0

Sk eP   22 23 39
Kenai Peninsula, Alaska.

» 11 Up iPKP   06 43 46
     i   06 43 50
     i   06 43 54

		μ	s
PKP	z′	0.1	0.9

Ki ePKP   06 43 25
Sk iPKP   06 43 39 C
   i   06 43 57
Kermadec Islands.

» 11 Up iP   14 23 32
     i   14 23 47
Aleutian Islands.

» 11 Up iP   18 33 44
    Ki eP   18 33 26
    Sk iP   18 33 19
Near coast of Guerrero, Mexico.

» 12 Up iP   00 15 01
    Sk iP   00 14 44
Cayman Islands, Antilles.

» 12 Up iPKP   00 39 31 D

		μ	s
PKP	z′	0.1	0.7

Ki iPKP   00 39 20
Sk iPKP   00 39 30
Tonga Islands region.

» 12 Up iP   05 41 32
Aleutian Islands.

» 12 Up iSg   14 17 23
    Sk eSg   14 17 48
Off south coast of Norway.

1957
Nov 12 Up iSg   14 20 44
     Sk eSg   14 21 10
Off south coast of Norway.

» 12 Up iSg   14 23 42
     $\triangle = 540$ km $= 4.9°$.
Sk ePg   14 22 58
   eSg   14 24 14
$\triangle = 640$ km $= 5.8°$.
Off south coast of Norway,
58.2° N, 9.0° E.
Origin time=14 21 02.
This shock as well as the two
preceding and the following ones are
foreshocks of Nov. 17 at 16.20.

» 12 Up eSg   14 35 13
    Sk iSg   14 35 44
Off south coast of Norway.

» 12 Ki e(P)   14 46 18

» 13 Up iPKP   17 42 28
     i   17 42 34

		μ	s
PKP	z′	0.8	0.7
M	E	9.2	23
M	N	16	22
M	z	17	22

Ki   —

		μ	s
M	E	11	23
M	N	6.3	21
M	z	12	20

Sk iPKP   17 42 24
   i   17 42 28
Kermadec Islands region.
Magn.=6.8 (Up, Ki).

» 14 Up iP   04 45 47
    Sk iP   04 45 26
Aleutian Islands.

» 14 Sk iP   05 30 59 C
Aleutian Islands.

» 14 Up iP   14 21 13
    Ki eP   14 22 19
    Sk iP   14 21 55
     i   14 22 05
Near northwest coast of Corfu.

» 14 Ki iP   19 40 00

» 15 Ki e(P)   01 26 12

» 15 Up iP   06 18 00
    Ki iP   06 17 08

		μ	s
P	z′	0.1	1.0

Aleutian Islands.

1957

Nov 15 Up iP   08 05 28
		μ	s
P	z'	0.1	0.8
M	E	3.7	19
M	N	3.4	19
M	z	4.4	18

Ki eP   08 05 14
iS   08 15 51
		μ	s
S	N	0.9	8
M	E	4.7	17
M	N	2.1	20
M	z	3.8	20

△=9650 km=87°.
Mindanao, Philippine Islands.
Magn.=6.0 (Up, Ki).

» 15 Up iP   12 13 21
Near south coast of Honshu, Japan.

» 15 Up iP   16 41 07
ePcP   16 41 44
i   16 42 07
		μ	s
P	z'	0.1	0.9
M	E	6.2	19
M	N	6.8	21
M	z	7.8	22

Ki iP   16 40 15 D
		μ	s
M	E	7.2	22
M	N	4.4	19
M	z	7.2	20

Sk iP   16 40 51
Near east coast of Kamchatka.
Magn.=6.0 (Up, Ki).

» 16 Up iP   01 59 51
		μ	s
P	z'	0.1	0.6

Ki eP   01 58 57
Sk eP   01 59 32
Aleutian Islands.

» 16 Ki iP   13 00 11
i1   13 00 18
i2   13 00 31
		μ	s
i1	z'	0.2	0.7

Sk i(P)   13 02 27
Near Kiruna, possibly explosion.

» 16 Up iP   19 23 57

» 17 Up iP   06 07 53C
iPcP   06 08 22
iS   06 16 07
iScS   06 17 08
		μ	s
P	z'	1.2	0.6

Ki iP   06 07 06C

1957

Nov 17
(cont.)
		μ	s
P	z'	1.1	1.0

Sk iP   06 07 42C
ipP   06 09 01
Sea of Okhotsk.
h=320 km (Sk).

» 17 Up iPn   16 20 57 D
iSn   16 21 51
iS*   16 22 06
iSg   16 22 18
		μ	s
Sn	z'	0.1	0.5
S*	z'	0.1	0.5
Sg	z'	0.1	0.5

△=540 km=4.9°.
Ki iSg   16 25 38
△=1220 km=11.0°.
Sk e(Sn)   16 22 05
iSg   16 22 49
△=640 km=5.8°.
Off south coast of Norway,
58.2° N, 9.0° E.
Origin time=16 19 36.
Felt in south Norway. — Four fore-
shocks on November 12. The three S
phases (Sn, S*, Sg) are exceptionally
well defined on the Uppsala short-
period records.

» 17 Up eL   16 37
		μ	s
M	E	1.7	19
M	N	1.1	20
M	z	1.9	18

Ki eL   16 44
		μ	s
M	E	2.2	22
M	N	0.9	19
M	z	1.6	21

» 17 Up iP   18 06 16C
i   18 06 37
iS   18 15 28
		μ	s
P	z'	0.2	0.6

Ki iP   18 05 44
ipP   18 07 25
		μ	s
P	z'	0.2	0.8

Sk iP   18 06 13
iPP   18 09 14
South of Honshu, Japan.
h=460 km (Up, Ki).

» 17 Ki eP   20 31 08
		μ	s
M	E	0.5	13

South of Rhodes Island.

» 18 Up iP   03 08 35
		μ	s
P	z'	0.1	0.6

1957

Nov 18 Ki iP   03 09 10
(cont.) Sk iP   03 09 09
Southern Iran.

» 18 Up iP   10 23 04
		μ	s
P	z'	0.4	0.9
M	E	1.5	22
M	N	1.4	18
M	z	1.7	20

Ki iP   10 22 11C
		μ	s
P	z'	0.1	0.9
M	E	1.2	18
M	N	1.0	18
M	z	1.1	16

Aleutian Islands.
Magn.=6.1 (Up, Ki).

» 18 Up iP   10 29 51
Ki iP   10 28 59
(Aleutian Islands).

» 18 Ki e(P)   11 46 20

» 18 Up iP   12 12 18
		μ	s
P	z'	0.1	0.5

» 18 Up iP   15 05 03
		μ	s
P	z'	0.1	0.8

Ki iP   15 04 10
Aleutian Islands.

» 18 Up iP   15 07 55
Sk iP   15 08 35
Albania.

» 18 Up iP   15 21 53 D
Ki eP   15 21 00
Sk e(P)   15 20 44

» 18 Up iP   15 24 00C
		μ	s
P	z'	0.2	0.5

Ki iP   15 23 15
		μ	s
P	z'	0.2	1.0

Sk iP   15 23 51 D
Kurile Islands.

» 18 Ki eP   19 10 45

» 18 Ki eP   20 20 51

» 19 Up iP   01 56 27
Ki eP   01 55 56
i   01 56 11
Sk eP   01 56 27
Ryukyu Islands.

1957

Nov 19 Up iP   11 33 53
Ki eP   11 33 19
Bonin Islands region.

» 19 Up iP   16 24 14C
ipP   16 24 41
		μ	s
P	z'	0.2	0.5

Ki iP   16 23 25C
		μ	s
P	z'	0.1	1.0

Sk iP   16 24 02 D
Kurile Islands.
h=110 km (Up).

» 19 Ki iP   20 14 31
South of Rhodes Island.

» 19 Up iP   23 26 41C
		μ	s
P	z'	0.1	0.7

Ki eP   23 26 02
Off south coast of Honshu, Japan.

» 20 Ki iP   02 47 40C
		μ	s
P	z'	0.1	0.7

Volcano Islands.

» 20 Sk eP   12 36 52

» 20 Up iP   12 51 17
eS   13 00 14
i   13 01 33
		μ	s
P	N	2.4	15
P	z	4.4	13
P	z'	0.2	1.0
S	E	3.3	16
S	N	5.4	20
M	E	11	20
M	N	19	21
M	z	21	22

△=7400 km=66½°.
Ki iP   12 50 23
i   12 50 43
eS   12 58 32
e   12 58 42
		μ	s
P	N	1.4	15
P	z	1.6	8
P	z'	0.7	1.2
S	E	3.9	18
M	E	18	18
M	N	8.1	18
M	z	12	18

△=6500 km=58½°.
Sk iP   12 50 53
iPcP   12 51 25
Unimak Island.
Magn.=6.4 (Up, Ki).

Column 1

```
1957
Nov 20  Ki   iP              16   25   36
 »  20  Ki   i(P)            21   06   39
 »  21  Up   iPKP            14   54   05
             i               14   54   14
        Sk   iPKP            14   54   01
             i               14   55   14
        Kermadec Islands region.

 »  21  Ki   eP              16   32   17
             i               16   32   23
 »  22  Ki   iP              16   55   36
 »  22  Up   iP              18   14   28 D
                         μ      s
             P     z'   0.2    0.5
        Ki   iP              18   13   55 D
        Sk   iP              18   14   24
        Bonin Islands region (h ~ 400 km).

 »  23  Ki   iP              01   05   02
        Aleutian Islands.

 »  23  Up   iP              01   09   34
                         μ      s
             P     z'   0.3    1.2
             M     E    1.9    28
             M     N    1.8    20
             M     z    2.2    18
        Ki   iP              01   08   41
             iPcP            01   09   27
                         μ      s
             P     z'   0.3    1.5
             M     E    2.4    24
             M     N    1.4    21
             M     z    1.9    20
        Sk   eP              01   09   10
        Aleutian Islands.
        Magn. = 6.2 (Up, Ki).

 »  23  Up   iP              18   51   43
                         μ      s
             P     z'   0.1    0.7
        Ki   eP              18   50   51
        Aleutian Islands.

 »  24  Up   iP              01   36   41
                         μ      s
             P     z'   0.1    0.9
        Aleutian Islands.

 »  24  Up   eP              09   48   30
        Ki   eP              09   47   15
        Sk   e(P)            09   47   57
        Near northeast coast of Greenland.

 »  24  Up   i(P)            19   00   44
             i               19   02   03
        Seismic?
```

Column 2

```
1957
Nov 25  Ki   iP              04   19   49 D
             i               04   20   13
        Sk   iP              04   20   18 C
        Alaska (h ~ 150 km).

 »  25  Up   iP              07   47   18
             i               07   47   30
        Ki   eP              07   46   25
        Aleutian Islands.

 »  25  Up   iP              19   06   45
        Off coast of Oregon, U.S.A.

 »  25  Up   iP              22   28   40
        Off coast of Oregon, U.S.A.

 »  25  Up   iP              22   48   30 D
             iPP             22   52   26
             ePS             23   01   10
                         μ      s
             P     z    0.8    3
             P     z'   0.2    0.9
             M     E    4.4    16
             M     N    5.1    18
             M     z    6.9    16
        △ = 10650 km = 96°.
        Ki   iP              22   48   20
             i               22   48   26
             eSKS            22   58   51
                         μ      s
             P     z'   0.4    1.5
             M     E    7.4    17
             M     N    3.8    18
             M     z    7.9    16
        △ = 10400 km = 93½°.
        Sk   iP              22   48   39
        Near east coast of Borneo.
        Magn. = 6.3 (Up, Ki).

 »  26  Up   iP              00   49   19
        Ki   iP              00   49   26
        Pamir.

 »  26  Up   iP              01   55   59
                         μ      s
             P     z'   0.1    0.7
        Ki   iP              01   55   59
                         μ      s
             P     z'   0.2    1.3
        Sk   iP              01   56   14
        Near northeast coast of Sumatra.

 »  26  Up   i(P)            01   56   31
        Ki   i(P)            01   56   32
        Sk   i(P)            01   56   47
        This could be pP of preceding
        shock or an aftershock.

 »  26  Up   iP              05   23   30
             i(PP)           05   27   44
             ePS             05   36   11
```

Column 3

```
1957
Nov 26
(cont.)
                         μ      s
             P     z    0.6    3
             M     E    2.6    20
             M     N    4.6    24
             M     z    2.9    17
        △ = 10650 km = 96°.
        Ki   iP              05   23   20
             iPP             05   27   13
             eSKS            05   33   44
                         μ      s
             P     z'   0.6    1.7
             PP    z'   0.4    2.0
             M     E    3.0    18
             M     N    2.1    17
             M     z    2.7    18
        △ = 10400 km = 93½°.
        Near east coast of Borneo.
        Magn. = 6.3 (Up, Ki).

 »  26  Up   iP              08   20   06 D
             i               08   21   09
             eS              08   23   56
                         μ      s
             P     N    1.0    2
             P     z    1.2    2
             P     z'   0.3    0.5
             S     E    1.2    8
             M     E    1.9    10
             M     N    1.6    9
             M     z    1.8    9
        △ = 2300 km = 20½°.
        Ki   iP              08   21   21
                         μ      s
             P     z'   0.1    1.3
             M     E    1.6    10
             M     N    0.8    13
             M     z    1.1    11
        Sk   iP              08   20   49
             i               08   20   53
             i               08   21   04
        Near east coast of Greece.
        Magn. = 6.2 (Up).

 »  26  Ki   iP              10   55   48

 »  26  Up   iP              11   39   02
        Aleutian Islands.

 »  26  Up   iP              11   46   49
                         μ      s
             P     z'   0.2    1.0
             M     E    2.4    17
             M     N    2.4    18
             M     z    2.5    16
        Ki   iP              11   45   57
             iPcP            11   46   41
             e(S)            11   54   31
                         μ      s
             M     E    2.2    18
             M     N    2.0    17
             M     z    2.5    17
```

Column 4

```
1957
Nov 26  Sk   eP              11   46   34
(cont.) Aleutian Islands.

 »  26  Up   iP              11   54   46
             eS              11   58   40
                         μ      s
             P     N    0.9    3
             P     z    0.6    2
             P     z'   0.1    0.7
             S     E    1.4    7
             M     E    5.2    16
             M     N    1.9    10
             M     z    2.7    9
        △ = 2300 km = 20½°.
        Ki   iP              11   56   01
                         μ      s
             M     E    4.3    16
             M     N    1.2    11
             M     z    1.6    12
        Sk   iP              11   55   32
        Near east coast of Greece.
        Magn. = 5.8 (Up).

 »  26  Ki   i(P)            12   47   51
        Seismic?

 »  26  Ki   iP              19   18   53
        Near north coast of Luzon,
        Philippine Islands.

 »  27  Up   iP              01   06   26
             i               01   06   49

 »  27  Up   iP              03   12   47 D
             iS              03   16   39
             i               03   18   41
                         μ      s
             P     N    2.3    3
             P     z    2.3    3
             P     z'   0.4    0.5
             S     E    2.1    8
             S     N    1.8    7
             S     z    2.2    8
             M     E    5.0    13
             M     N    3.5    9
             M     z    4.3    9
        △ = 2300 km = 20½°.
        Ki   iP              03   14   02
             iPcP            03   17   13
             e(S)            03   18   56
             iLg2            03   23   35
                         μ      s
             P     z'   0.1    1.2
             M     E    5.5    15
             M     N    2.0    12
             M     z    1.4    14
        △ = 3150 km = 28½°.
        Sk   iP              03   13   29
        East coast of Greece.
        Magn. = 6.3 (Up).
```

Column 1

1957
Nov 27 Ki   iP   03   34   04
     Near south coast of Mindanao,
     Philippine Islands.

» 27 Up   ePg   13   31   23
     iSn   13   31   54
     iSg   13   32   11
     △ = 420 km = 3.8°.
     Sk   iSg   13   32   42
     Probably Oslo Fjord, 59.1° N, 10.5° E.
     Origin time = 13   30   06.

» 27 Ki   eP   14   08   15

» 27 Ki   e(P)   16   56   12
     Local? Seismic?

» 28 Ki   iP   05   22   28
     Near east coast of Mindanao,
     Philippine Islands.

» 28 Ki   iP   08   51   55

» 28 Ki   iP   15   42   22

» 28 Ki   ePKP   21   09   08
     ePS   21   20   48
     e   21   26   29

               μ   s
     M   E   1.2   17
     M   N   1.0   20
     M   z   1.0   18
     Sk   ePKP   21   09   20
     New Hebrides Islands.

» 29 Up   iP   00   24   36

» 29 Up   i(P)   02   01   25

» 29 Up   iP   22   33   36 D
     ipP   22   34   30
     iPKP   22   37   35
     iPP   22   37   51
     i   22   38   32
     i!   22   38   39
     i(pPP)   22   38   43
     i   22   38   48
     iSKS   22   43   46
     i   22   44   30
     iS   22   45   01
     isS   22   46   40
     i!   22   47   39
     ePKKP   22   49   08

               μ   s
     P   z   0.6   3
     P   z'   0.8   2.0
     pP   E   1.6   6
     pP   z   5.1   6
     PKP   E   1.1   5
     PKP   N   0.7   5
     PP   z   2.8   5
     PP   z'   0.2   1.0
     SKS   E   79   20

Column 2

1957
Nov 29   SKS   N   18   18
(cont.)   S   N   53   18
     M   E   70   24
     M   N   130   27
     M   z   83   23
     △ ~ 11700 km ~ 105½°.
     Ki   eP   22   33   46
     ipP   22   34   45
     i   22   37   54
     ePP   22   38   01
     i   22   38   37
     i!   22   39   10
     i   22   41   24
     iSKS   22   44   01
     i   22   44   52
     iS   22   45   29
     i(SP)   22   47   15
     i   22   48   24
     iPKKP   22   49   02
     i   22   49   21
     iSS   22   53   15
     isSS   22   54   39
     i   22   56   37
     iSSS   22   57   32

               μ   s
     PP   E   2.1   6
     SKS   E   53   17
     SKS   N   4.2   13
     S   N   27   16
     PKKP   z'   1.9   1.5
     M   E   47   18
     M   N   25   18
     M   z   37   19
     △ ~ 12100 km ~ 109°.
     Sk   iP   22   33   27
     ipP   22   34   25
     iPP   22   37   44
     ipPP   22   38   38
     iPKKP   22   49   13
     i   22   49   19
     i   22   49   40
     △ ~ 11600 km ~ 104½°.
     Southern Bolivia.
     h = 240 km (Up, Sk).
     Magn. = 7.5 (Up, Ki).
     The records are very complex and the
     analysis above not quite satis-
     factory: several large and definite
     phases are left unidentified and the
     agreement with the USCGS solution is
     not perfect. — PKKP very clearly
     shows multiplicity.

» 30 Up   iP   02   11   04

               μ   s
     P   z'   0.2   1.3
     Ki   iP   02   11   39 C
     i   02   11   47

               μ   s
     P   z'   0.4   1.7
     Amirante Islands.

Column 3

1957
Nov 30 Ki   iP   17   46   27
     i   17   46   34

               μ   s
     P   z'   0.3   1.5
     Arctic Ocean.

» 30 Up   iP   20   39   09
     Kurile Islands.

» 30 Up   iP   21   48   12 C
     i   21   48   26

               μ   s
     P   z'   0.4   0.9
     Ki   iP   21   47   22
     Sk   iP   21   47   59
     Kurile Islands.

» 30 Up   iP   22   05   09 C

               μ   s
     P   z'   0.3   0.8
     M   E   2.1   16
     M   N   3.8   17
     M   z   2.8   16
     Ki   eP   22   04   20
     eS   22   12   37

               μ   s
     S   E   1.1   14
     M   E   4.9   16
     M   N   3.5   18
     M   z   5.6   18
     △ = 6650 km = 60°.
     Sk   iP   22   04   57
     Kurile Islands.
     Magn. = 6.2 (Up, Ki).

» 30 Up   iP   23   12   39
     Ki   iP   23   12   08 D
     Sk   eP   23   12   36

Dec 1 Up   iP   01   11   24 C

               μ   s
     P   z'   0.4   1.0
     Ki   eP   01   10   35
     Sk   iP   01   11   11 D
     Kurile Islands.

» 1 Up   iP   01   19   57 C
     i(P)   01   21   28 C
     i   01   22   54

               μ   s
     P   N   0.5   4
     P   z   1.1   4
     P   z'   0.7   1.0
     (P)   z'   0.1   0.5
     M   E   2.1   18
     M   N   1.8   17
     M   z   4.7   18
     Ki   eP   01   19   09
     i(P)   01   20   40

               μ   s
     M   E   2.8   18

Column 4

1957
Dec 1   M   N   2.3   20
(cont.)   M   z   2.9   20
     Sk   iP   01   19   45
     i   01   19   59
     i(P)   01   21   14
     Probably two shocks of the same
     origin in the Kurile Islands, (P)
     belonging to the second shock.

» 1 Up   iP   01   46   52

               μ   s
     P   z'   0.1   1.0

» 1 Ki   iP   01   48   23
     Aleutian Islands.

» 1 Up   iP   02   23   29 C

               μ   s
     P   z'   0.1   0.9
     Ki   eP   02   22   42
     Sk   eP   02   23   17
     Kurile Islands.

» 1 Up   iP   03   30   16 C

               μ   s
     P   z'   0.2   1.0
     Ki   eP   03   29   32
     Sk   iP   03   30   04 D
     Kurile Islands.

» 1 Ki   iP   04   43   36
     Sk   e(P)   04   43   43
     e   04   45   36

» 1 Up   iP   05   21   34 C

               μ   s
     P   z'   0.1   0.7
     Ki   eP   05   20   46
     Sk   iP   05   21   23 D
     Kurile Islands.

» 1 Up   iP   10   11   03

               μ   s
     P   z'   0.1   0.5
     Ki   iP   10   10   16
     Sk   iP   10   10   51
     Kurile Islands.

» 1 Up   iP   10   11   30

               μ   s
     P   z'   0.3   0.7
     Ki   iP   10   10   41
     Sk   iP   10   11   17
     Kurile Islands.

» 1 Up   iP   11   18   35

» 1 Up   iP   14   39   01
     Off south coast of Mindanao,
     Philippine Islands.

1957

Dec	Sta	Ph	h	m	s
1	Up	iP	17	52	21
» 1	Up	iP	19	16	34
	Ki	iP	19	15	41
	i		19	16	15
	Sk	e	19	16	42

Aleutian Islands.

» 2	Up	iP	04	25	20
	i		04	25	23
	i		04	25	33
	Sk	eP	04	26	15

Rumania (h ~ 150 km).

» 2	Up	iP	12	54	21

		μ	s
P	z'	0.1	0.6

	Ki	iP	12	55	28
	Sk	iP	12	54	41

Near coast of Algeria.

» 3	Up	iP	00	04	24C

		μ	s
P	z'	0.1	0.6

	Ki	iP	00	03	07
	Sk	iP	00	03	43
	i		00	03	46

Near northeast coast of Greenland.

» 3	Up	iP	01	57	08

		μ	s
P	z'	0.1	0.9

	Ki	iP	01	56	15

Aleutian Islands.

» 3	Up	iP	21	57	18D

		μ	s
P	z'	0.1	1.0

	Ki	iP	21	56	25D

		μ	s
P	z'	0.2	1.0

	Sk	iP	21	56	56

Aleutian Islands.

» 3	Up	iP	23	42	17

		μ	s
P	z'	0.1	0.5

	Ki	iP	23	41	24

Aleutian Islands.

» 4	Up	iP	00	40	40
	Ki	iP	00	40	27D

Molucca Passage.

» 4	Up	iP	03	46	30C
		iPP	03	48	25
		iS	03	53	39

		μ	s
P	E	10	3
P	N	5.8	4
P	z	21	3

1957 — Dec 4 (cont.)

		μ	s
P	z'	1.7	0.7
PP	E	51	7
PP	N	17	6
PP	z	25	4
S	E	310	18
M	E	620	15
M	N	400	15
M	z	930	13

$\triangle \sim 5350$ km $\sim 48\frac{1}{2}°$.

	Ki	iP	03	46	05
	i		03	46	20
		iPP	03	48	00
	i		03	50	16
		iS	03	52	44

		μ	s
P	E	21	6
P	N	2.9	7
P	z	25	5
P	z'	6.4	1.0
PP	E	37	7
PP	N	13	8
PP	z	28	8
S	E	88	14
S	N	81	12
S	z	27	8
M	E	390	16
M	N	280	16
M	z	290	14

$\triangle = 5050$ km $= 45\frac{1}{2}°$.

	Sk	iP	03	46	37

Outer Mongolia.
Magn. = 7.8 (Up, Ki).

» 4	Ki	iP	04	27	16
» 4	Up	iP	04	30	39
» 4	Up	iP	04	37	43
	Ki	iP	04	37	17

(Outer Mongolia).

» 4	Ki	iP	04	56	52
» 4	Ki	iP	05	09	12

		μ	s
P	z'	0.1	1.0

	Sk	iP	05	09	46C

Outer Mongolia.

» 4	Up	iP	05	25	17
	Sk	iP	05	25	23

(Outer Mongolia).

» 4	Up	iP	05	28	48
	Ki	iP	05	28	23

(Outer Mongolia).

» 4	Ki	iP	05	33	52
» 4	Up	iP	08	02	05D

1957 — Dec 4 (cont.)

		μ	s
P	z'	0.1	1.0

	Ki	iP	08	01	37C

Outer Mongolia.

» 4	Up	iP	09	18	04
	i		09	18	09
	Ki	iP	09	17	37
	i		09	17	42

		μ	s
P	z'	0.2	1.0

	Sk	iP	09	18	11
	i		09	18	16

Outer Mongolia.

» 4	Up	iP	11	28	19

		μ	s
M	E	1.7	12
M	z	2.4	12

	Ki	eP	11	27	52

		μ	s
M	E	1.5	12
M	N	1.4	15
M	z	1.6	16

	Sk	eP	11	28	26

Outer Mongolia.

» 4	Up	iP	12	43	55
	Ki	eP	12	43	26

(Outer Mongolia).

» 4	Up	iP	13	29	02
		eSS	13	39	59
		i(Lg1)	13	46	49
		iLg2	13	47	55

		μ	s
P	z'	0.5	1.2
M	E	5.9	18
M	N	4.4	10
M	z	4.0	13

	Ki	iP	13	28	34
		eSS	13	38	55
		e(Lg1)	13	44	33
		eRg	13	48	23
		iRg	13	48	46

		μ	s
P	z'	0.7	1.4
M	E	5.7	11
M	N	4.6	14
M	z	5.6	10

	Sk	iP	13	29	08

Outer Mongolia.
Magn. = 6.5 (Up, Ki).
The Mongolia aftershock series is another confirmation of the law $M—M_1 = $ ca 1.2, where M is the magnitude of the main shock and M_1 is the magnitude of the largest aftershock. In this particular case $M—M_1 = 7.8—6.5 = 1.3$.

» 4	Up	iP	13	46	20

1957 — Dec 4 (cont.)

	i		13	46	26
	Ki	iP	13	45	58

(Outer Mongolia).

» 4	Up	iP	18	54	00
	Ki	iP	18	53	34
	Sk	eP	18	54	07

Outer Mongolia.

» 4	Up	iP	22	25	46
	Ki	iP	22	25	17

		μ	s
P	z'	0.2	1.3

	Sk	iP	22	25	52

Outer Mongolia.

» 4	Up	iP	23	50	41

		μ	s
P	z'	0.1	1.0

	Ki	iP	23	50	15D
	Sk	eP	23	50	48

Outer Mongolia.

» 5	Ki	iP	06	22	19
» 5	Up	iP	14	00	56
		iPP	14	01	24
	i		14	02	48
	Ki	eP	14	02	00
	Sk	iP	14	01	32

South of Rhodes Island.

» 5	Up	iP	14	07	42
		iS	14	10	07
		iT	14	15	10
	i		14	15	15

		μ	s
M	E	1.3	14
M	N	5.1	15
M	z	5.6	19

$\triangle = 1440$ km $= 13.0°$.

	Ki	iP	14	06	11
		iS	14	07	24
		eT	14	10	54
	i		14	11	35

		μ	s
P	z'	0.2	0.9
S	z'	0.3	1.0
T	z'	0.5	0.7
M	E	4.1	19
M	N	5.6	19
M	z	5.8	18

$\triangle = 690$ km $= 6.2°$.

	Sk	iP	14	06	46
		iS	14	08	24
		iT	14	12	45
	i		14	14	01

$\triangle = 920$ km $= 8.3°$.
Atlantic-Arctic Ocean, east of Jan Mayen, near 71.4° N, 6.1° E.
Origin time = 14 04 40.

1957

Dec 5 (cont.) The T phases are remarkably strong at all three stations. Clear T phases have previously been observed at all three of our stations only in two shocks in the Arctic Ocean on February 21—22, 1956.

»	5	Up	iP	18	17	48C
»	5	Up	iP	18	18	19

		μ	s
P	z'	0.1	0.5
M	E	1.2	13
M	z	1.9	14

	Ki	iP	18	17	52
	Sk	iP	18	18	26

Outer Mongolia.

»	5	Ki	eP	18	35	32
»	5	Up	iP	19	25	45
»	6	Up	iP	04	00	31
		Ki	iP	03	59	45
		Sk	eP	04	00	22

Kurile Islands.

»	6	Up	iP	08	47	25
			i	08	47	50
		Ki	iP	08	46	38

		μ	s
P	z'	0.1	0.9

Kurile Islands.

»	6	Ki	iPKP	10	00	27

Sandwich Islands.

»	6	Up	iP	20	50	39
»	6	Up	iP	21	20	17

		μ	s
P	z'	0.1	0.5

»	6	Up	iPKP	21	32	41
		Ki	iPKP	21	32	34
		Sk	ePKP	21	32	33

Tonga Islands.

»	6	Up	i(P)	21	47	42

		μ	s
(P)	z'	0.3	0.5

»	6	Up	iP	22	06	49
»	7	Ki	iP	03	29	36

Flores Sea (h ∼ 550 km).

»	7	Ki	i(P)	06	14	53
»	7	Ki	iP	09	02	31
			iS	09	05	52

△ = 2000 km = 18°.

1957

Dec 7 Ural Mountains, 60° N, 60° E.
Origin time = 08 58 15.
Chemical explosion, charge = 432 ton.

»	7	Up	iP	13	22	15
		Ki	iP	13	21	46

(Outer Mongolia).

»	7	Up	iP	14	20	13C
			i	14	20	21

		μ	s
P	z'	0.3	0.9
M	E	1.7	16
M	N	1.3	15
M	z	2.6	15

	Ki	iP	14	19	48C

		μ	s
P	z'	0.2	1.5
M	E	3.7	12
M	N	1.1	17
M	z	3.3	12

	Sk	eP	14	20	23

Outer Mongolia.
Magn. = 6.1 (Up, Ki).

»	7	Up	eP	17	55	25
		Ki	iP	17	55	03
		Sk	iP	17	55	38

»	8	Ki	eP	04	24	37

»	8	Up	iP	06	21	52D
			i	06	21	57

		μ	s
P	z'	0.1	0.8

	Ki	iP	06	21	25
		i	06	21	30

		μ	s
P	z'	0.2	1.0

	Sk	iP	06	21	59

Outer Mongolia.

»	8	Sk	e	08	22	57
			iSg	08	23	17

Off Norwegian coast near Bergen.

»	8	Up	iP	12	28	14
			i	12	28	26

		μ	s
P	z'	0.1	0.9

	Ki	iP	12	27	35

		μ	s
M	E	1.5	16

	Sk	iP	12	28	08

Off east coast of Honshu, Japan.

»	8	Up	iP	14	53	20
			i	14	53	29
		Ki	—			

		μ	s
M	N	0.7	15

Off east coast of Honshu, Japan.

1957

Dec	8	Up	iP	15	37	59
		Ki	iP	15	37	33

		μ	s
P	z'	0.1	1.0

	Sk	iP	15	38	05

Outer Mongolia.

»	8	Up	iP	16	35	46
		Ki	i(P)	16	35	11
			i	16	35	18

		μ	s
M	E	1.5	13
M	N	1.3	15
M	z	2.2	13

	Sk	eP	16	35	53

Outer Mongolia.

»	8	Ki	iP	21	37	09

		μ	s
P	z'	0.1	1.0

	Sk	iP	21	37	43

Outer Mongolia.

»	9	Ki	i(P)	00	48	12

»	9	Up	iP	01	28	28D
		Ki	iP	01	28	08

Near north coast of Luzon, Philippine Islands.

»	9	Up	iP	03	25	34

»	9	Ki	eP	08	06	08

Iceland.

»	9	Ki	iPKP	16	08	33
		Sk	iPKP	16	08	44

New Hebrides Islands.

»	9	Up	iP	22	17	00
			i	22	17	13

		μ	s
P	z'	0.2	0.7

	Ki	iP	22	16	05C

		μ	s
P	z'	0.5	0.9

	Sk	iP	22	16	29C

Yukon.

»	10	Up	i(Sg)	13	34	43
		Sk	e(Sg)	13	35	09

Local?

»	10	Up	ePKP	14	54	45
			ePP	14	55	58
			e(SKSP)	15	05	45

		μ	s
PP	z	2.4	8
M	E	8.4	20
M	N	9.1	18
M	z	13	19

1957

Dec 10 (cont.)

	Ki	ePKP	14	54	28
		ePP	14	55	12
		e	15	04	15
		e	15	04	21
		ePS	15	04	38

		μ	s
PP	E	1.3	15
PP	N	0.9	15
PP	z	2.8	15
M	E	14	22
M	N	9.5	21
M	z	12	19

	Sk	ePKP	14	54	46

Solomon Islands.
Magn. = 6.8 (Up, Ki).

»	11	Up	i(P)	12	20	43
»	11	Up	iP	18	23	13
		Ki	iP	18	22	38

		μ	s
M	E	1.8	15
M	N	1.9	16
M	z	1.8	17

	Sk	iP	18	23	10

Off south coast of Honshu, Japan.

»	11	Up	iP	22	04	05
			i	22	04	27

		μ	s
P	z'	0.1	0.7

	Ki	iP	22	03	39

		μ	s
P	z'	0.1	1.0

	Sk	iP	22	04	14

Outer Mongolia.

»	12	Up	iPg	08	24	53
			iSg	08	25	24

		μ	s
Sg	z'	0.1	0.5

△ = 270 km = 2.4°.

	Ki	eSg	08	28	15

△ = 840 km = 7.6°.

	Sk	eSg	08	27	19

△ = 660 km = 5.9°.
Southwest coast of Finland, 60.2° N, 22.4° E.
Origin time = 08 24 05.

»	12	Up	i(PKS)	10	09	44

		μ	s
(PKS)	z'	0.1	0.6

	Ki	iPKP	10	06	05
	Sk	iPKP	10	06	11
		i	10	08	57

New Hebrides Islands.

»	12	Up	iSg	11	57	20

△ = 900 km = 8.1°.

	Ki	iPn	11	53	35

1957

Dec 12 (cont.)
```
        iSn            11  54  05
        iSg            11  54  14
        i              11  54  42
                       μ    s
     Sg     z'   0.1   0.5
     △=270 km=2.4°.
Sk   eSn               11  54  51
     iSg               11  55  15
     △=480 km=4.3°.
Lofoten, west coast of
Norway, 68.0° N, 14.0° E.
Origin time=11 52 54.
Felt.
```

```
» 12 Ki  e(P)          16  40  35
         i             16  40  42
     Seismic?

» 12 Ki  i(P)          18  02  36

» 12 Up  iPKP          18  57  29
                       μ    s
     M      E    1.7   21
     M      N    1.9   21
     M      z    3.0   21
     Ki  iPKP          18  57  13
     Sk  iPKP          18  57  24
     New Hebrides Islands.

» 12 Up  iP            20  15  16 D
         i             20  15  29
                       μ    s
     P      z'   0.1   0.7
     Ki  iP            20  15  10
     Sk  iP            20  15  32 D
     Assam.

» 13 Ki  i(P)          01  44  23

» 13 Up  iP            01  44  34
         ipP           01  44  49
                       μ    s
     pP     z'   0.2   1.2
     Ki  iP            01  44  35
         ipP           01  44  51
                       μ    s
     P      z'   3.8   1.8
     Sk  iP            01  44  21
         ipP           01  44  36
     Colombia.
     h=60 km (Up, Ki, Sk).

» 13 Up  iP            01  51  28 C
         i             01  52  24
         iPP           01  52  38
         iS            01  56  39
         iSS           01  58  25
                       μ    s
     P      E    5.4   6
     P      N    4.2   6
     P      z    13    7
```

1957

Dec 13 (cont.)
```
         P      z'   0.7   0.7
         PP     E    13    7
         PP     N    8.5   7
         PP     z    13    7
         S      E    34    20
         S      N    35    16
         M      E    83    14
         M      N    78    18
         M      z    130   17
     △=3550 km=32°.
Ki   iP            01  52  10 C
     i             01  53  16
     iPP           01  53  29
     iS            01  57  53
     e             01  59  31
     i             02  00  05
     iSS           02  00  22
     iSSS          02  00  54
     i             02  01  43
                       μ    s
     P      E    6.4   7
     P      N    6.6   6
     P      z    12    7
     P      z'   5.2   1.3
     PP     E    10    9
     PP     N    11    9
     PP     z    11    9
     PP     z'   4.0   2.0
     S      E    15    8
     S      N    45    19
     M      E    84    13
     M      N    86    13
     M      z    102   13
     △=4100 km=37°.
Sk   iP            01  51  59 C
     Iran.
     Magn.=7.1 (Up, Ki).

» 13 Up  iP            02  00  04
                       μ    s
     P      z'   0.4   1.0
     Sk  iP            01  59  58

» 13 Up  iP            09  15  26
         i             09  16  06
     Ki  iP            09  15  35
     Sk  iP            09  15  51
     Northern Afghanistan.

» 13 Up  iP            10  04  41
     Eastern Greece.

» 13 Up  i(Sg)         11  04  47
         i             11  05  59
         i             11  06  12
     Ki  e(Sg)         11  07  06
     Sk  e(Sg)         11  06  43
         e             11  07  50
         i             11  08  43
     Local. Possibly two or
     three shocks.
```

1957

```
Dec 13 Ki  iP          11  37  14
       Sk  eP          11  37  40
» 13 Sk  e(P)          11  41  28
» 13 Ki  i             17  08  29
     Seismic?

» 13 Up  iP            20  37  23
         eS            20  46  18
         i             20  47  36
                       μ    s
     P      z'   0.1   0.9
     M      E    2.1   16
     M      N    2.4   17
     M      z    3.1   18
     △=7500 km=67½°.
     Ki  iP            20  36  30
         eS            20  44  44
                       μ    s
     P      z'   0.3   1.0
     S      N    0.7   11
     M      E    4.2   18
     M      N    2.9   20
     M      z    2.9   20
     △=6650 km=60°.
     Sk  iP            20  37  01
     Aleutian Islands.
     Magn.=5.9 (Up, Ki).

» 14 Ki  eP            00  26  34
     Northern Iran.

» 14 Ki  iP            03  01  09 C
     Alaska.

» 14 Up  iP            04  44  33

» 14 Ki  e(P)          08  19  44
     Seismic?

» 14 Ki  iP            16  13  55 D
     Sk  iP            16  14  25
     Aleutian Islands.

» 14 Up  iP            17  06  17
     Ki  iP            17  05  24
     Aleutian Islands.

» 16 Up  iP            17  38  42
         i             17  38  50
     Ki  iP            17  37  37
     Sk  iP            17  38  14
         i             17  38  21
     Vancouver Island.

» 16 Ki  iP            23  12  41
                       μ    s
     P      z'   0.1   1.0
     Iran.
```

1957

```
Dec 17 Up  iP          05  20  42
           ipP         05  20  56
           iS          05  29  14
           e           05  29  33
                       μ    s
     P      z'   0.1   0.8
     pP     z    5.3   7
     pP     z'   1.4   1.5
     S      E    2.7   7
     M      E    21    20
     M      N    24    19
     M      z    28    18
     △=7050 km=63½°.
     Ki  iP            05  19  49 C
         ipP           05  20  01
         i(Lg1)        05  39  34
         e(Rg)         05  43  45
         e(Rg)         05  44  17
                       μ    s
     pP     z'   1.9   1.7
     M      E    23    15
     M      N    21    16
     M      z    28    15
     Sk  iP            05  20  25
         ipP           05  20  39
         i(PcP)        05  21  00
     Near east coast of Kamchatka.
     h=60 km (Up, Ki, Sk).
     Magn.=6.6 (Up, Ki).

» 17 Up  eSg           06  13  38
     Norwegian coast, district of Sogn.
     Felt.

» 17 Ki  iP            08  46  08
     Near east coast of Kamchatka.

» 17 Up  iPKP          14  09  08
         i             14  09  13
         iPP           14  11  10
         i             14  12  23
         iSKKS         14  17  56
         iPKKP         14  18  39
         i             14  20  53
         e             14  21  41
         e             14  22  14
                       μ    s
     PKP    z    8.6   7
     PKP    z'   0.7   1.0
     PP     E    9.7   15
     PP     N    7.8   10
     PP     z    20    12
     M      E    48    20
     M      N    120   28
     M      z    76    21
     △~13900 km~125°.
     Ki  iPKP          14  08  56
         i             14  09  30
         ePP           14  10  26
         eSKS          14  15  44
         iPKKP         14  19  05
         iPS           14  20  04
```

Column 1

1957
Dec 17
(cont.)

	iPcPPKP		14 23 05	
	i(SKKS)		14 26 39	

		μ	s
PKP	z'	0.6	1.0
PP	E	6.6	15
PP	N	5.1	15
PP	z	19	18
SKS	N	5.8	9
PKKP	z'	0.7	1.1
PcPPKP	z'	0.6	1.7
M	E	63	22
M	N	27	19
M	z	64	22

△ = 13350 km = 120°.

Sk	iPKP	14 09 07
	i	14 09 37
	i	14 11 17
	iPKKP	14 18 45

△ = 13800 km = 124°.
Santa Cruz Islands.
Magn. = 7.6 (Up, Ki).

» 17 Up iP   19 13 39
     i   19 13 50

		μ	s
P	z'	0.1	0.7

» 18 Up iPKP   21 03 51
     i   21 03 57
   Ki ePKP   21 04 04
Sandwich Islands.

» 19 Ki eP   12 13 40
   Sk eP   12 14 18
Kamchatka.

» 19 Up iP   16 05 48
   Ki iP   16 06 25
Off south coast of Arabia.

» 20 Up iP   22 14 20

» 21 Up iP   16 10 08
   Ki eP   16 11 15
   Sk eP   16 10 57
Algeria.

» 21 Up iP   18 59 00
   Ki iP   19 00 09
Algeria.

» 23 Up eP   12 41 55
     i   12 42 00
     eS   12 48 18

		μ	s
P	z'	0.1	0.6
M	E	7.1	18
M	N	14	23
M	z	8.7	20

△ = 4600 km = 41½°.

   Ki iP   12 42 24

Column 2

1957
Dec 23
(cont.)

   i   12 42 28

		μ	s
P	z'	0.2	1.2
M	E	3.7	16
M	N	8.5	23

Atlantic Ocean, near the Azores.
Magn. = 5.9 (Up, Ki).

» 23 Up iP   19 41 55
Luzon, Philippine Islands.

» 23 Up iP   23 41 59

		μ	s
P	z'	0.2	0.6

» 23 Up iP   23 42 13
     iS   23 44 42
   Ki iP   23 43 27
     e(S)   23 47 43
   Sk iP   23 43 07
     i   23 49 03
Rumania.

» 24 Up iP   18 10 22 D

		μ	s
P	z'	0.1	0.5

   Ki iP   18 09 50
   Sk iP   18 10 18
(Arctic Ocean).

» 25 Up iP   02 19 52
     ipP   02 20 04
   Ki iP   02 18 58
     ipP   02 19 10

		μ	s
pP	z'	0.1	1.3
M	E	0.7	19
M	N	0.4	14

   Sk eP   02 19 34
     ipP   02 19 46
Near east coast of Kamchatka.

» 25 Up eP   10 12 43
   Sk iP   10 12 14

» 25 Ki iP   11 33 55
Iran.

» 25 Up iP   12 58 37

» 25 Up iP   13 52 35
   Ki iP   13 51 40

		μ	s
P	z'	0.1	0.7

   Sk iP   13 52 17
Near east coast of Kamchatka.

» 25 Up iP   16 37 50
     i(PcP)   16 38 15
     eS   16 47 31

Column 3

1957
Dec 25
(cont.)

		μ	s
P	z'	0.4	1.0
M	E	1.2	19
M	N	1.0	19
M	z	2.1	20

△ = 8450 km = 76°.

   Ki iP   16 37 59
     i   16 38 09
     eS   16 47 50

		μ	s
P	z'	0.1	1.0
S	E	0.9	10
S	N	1.4	7
M	E	2.4	17
M	N	1.0	18
M	z	1.8	17

△ ~ 8600 km ~ 77½°.

   Sk iP   16 37 39
Venezuela.
Magn. = 6.0 (Up, Ki).

» 25 Ki eP   20 47 28
Iran.

» 26 Up e(Sg)   10 27 23
   Sk e(Sg)   10 29 13
Local.

» 26 Up iPKP   12 29 04 C
     iPKP2   12 29 12
     i(PKS)   12 32 27

		μ	s
PKP	z'	0.7	0.8

   Ki iPKP   12 28 44
     iPKS   12 32 28

		μ	s
PKP	z'	0.2	1.0

   Sk iPKP   12 28 56
     i   12 28 59
     i   12 29 47
Kermadec Islands.

» 26 Up iP   15 06 24
     eS   15 10 01

		μ	s
P	z'	0.4	1.5

△ = 2200 km = 20°.

   Ki iP   15 07 47 D
   Sk iP   15 07 09
Turkey.

» 27 Up iP   01 39 36
   Ki eP   01 38 58
Near east coast of Honshu, Japan.

» 27 Ki iP   05 10 49

		μ	s
P	z'	0.2	1.0

   Sk iP   05 11 00
     i   05 12 46

Column 4

1957
Dec 27 Up iP   07 52 25

		μ	s
P	z'	0.1	0.8

   Sk iP   07 51 53
North Atlantic.

» 27 Up iP   08 39 39
   Ki iP   08 39 11
   Sk eP   08 39 37

» 27 Up iP   15 11 18
   Ki iP   15 10 23
   Sk iP   15 11 00
Near east coast of Kamchatka.

» 28 Up iP   05 44 53 D
   Ki iP   05 44 27
   Sk iP   05 45 00
Outer Mongolia.

» 28 Up eL   15 20

		μ	s
M	E	5.0	19
M	z	7.0	20

Bolivia.

» 29 Up iP   00 52 37
     i(Sg)   00 53 02
Local?

» 30 Up iP   05 29 07

» 30 Up iP   12 56 59

		μ	s
P	z'	0.1	0.6

   Ki iP   12 56 05 C

		μ	s
P	z'	0.1	0.8

   Sk iP   12 56 36
Aleutian Islands.

» 30 Up iP   13 40 44
   Ki eP   13 40 48
   Sk iP   13 40 32
Near coast of Venezuela.

» 30 Up iP   14 10 42
     i   14 10 48
   Ki iP   14 10 22
     i   14 10 33

		μ	s
M	E	1.0	14

   Sk iP   14 10 55
Near north coast of Luzon,
Philippine Islands.

» 30 Up iP   18 49 09 C
   Ki iP   18 48 05
South of Unimak Island.

» 30 Up i(P)   22 37 38

Up = Uppsala, Ki = Kiruna

1957				μ	s
Dec 30					
(cont.)	(P)	z'		0.2	0.7
Seismic?					

» 30 Up iP   22 40 44
         i(Sg)   22 41 52
   Local?

» 31 Ki iP   00 26 20
         i   00 26 28
     Sk iP   00 26 25
         i   00 28 14
         i   00 28 18

» 31 Up iP   04 40 59

» 31 Up iP   09 10 14
     Sk iP   09 10 07

» 31 Up iP   10 27 02
         eS   10 31 32

			μ	s
P	z'		0.2	1.3
S	E		0.9	6
S	N		1.2	7
M	E		1.2	19
M	N		1.4	20
M	z		1.7	19

$\triangle = 2850$ km $= 25\frac{1}{2}°$.

   Ki iP   10 27 00
       e(S)   10 31 44

			μ	s
P	z'		0.2	1.3
M	E		2.6	20
M	N		1.5	17

   Sk iP   10 26 29C

1957
Dec 31 iPP   10 26 56
(cont.) North Atlantic Ocean, about
         1000 km southwest of Iceland.
         Magn. = 5.4 (Up, Ki).

» 31 Sk iP   12 03 17

» 31 Up i   13 12 44

			μ	s
i	z'		0.2	1.3

     Ki iP   13 12 19
     Sk i(P)   13 12 12C
   North Atlantic Ocean.

» 31 Up ePKP   14 48 10
         iPKP2   14 48 38
         i   14 48 47
         ePP   14 52 05

			μ	s
PKP2	z'		0.9	1.3
M	E		2.6	20
M	N		2.7	20
M	z		4.5	20

     Ki iPKP   14 48 03
         i   14 48 09
         iPKP2   14 48 18
         e   15 01 47

			μ	s
PKP	z'		3.2	1.7
M	E		3.3	19
M	N		1.7	19
M	z		3.6	20

     Sk iPKP   14 48 10
         iPKP2   14 48 36
   Off coast of South Island,
   New Zealand.