AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR JANUARY, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS: (I) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ah}{\pi l}$ sec.$^{-1}$
N.	1st October 1960	21.3	21.4	+0.01	64.0
E.	1st November 1960	20.7	20.7	-0.01	59.3
Z.	1st Sept. 1960	11.1	9.1	+0.01	156.0

(II) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK. TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
2	ZV,Z	iPKP	10	31	10				
	ZV	e		34	40				Confused by microseisms.
	N	eSKP		34	42				
	N	eL	11	07	-				12.4°S., 166.4°E. h about 161 Km.
	E	M		32	-	24	5		Santa Cruz Islands region. USCGS.
	N	M		33	-	24	7		
	Z	M		33	-	24	6		
		F	12	30	-				
									Mag.: M = 6¼
5	ZV,Z	iP	14	18	22	10	3.1	8600	
	ZV,Z	iPP		21	27				Confused by microseisms.
	NE	eS		28	07	20	4.7(H)		PN 14 sec. 2.5μ
	E	e		28	25				
	N	eScS		28	41				51.6°N., 176.3°W. h about 37 Km.
	E	eLQ		39	-				Andreanof Islands. Aleutian
	Z	M		54	-	20	6		Islands. USCGS.
	N	M		54	-	20	15		
	E	M		56	-	20	14		
		F	16	00	-				
									Mag.: M = 6.2
5	ZV,Z	iP	15	21	50				
									45.7°N., 149.3°E. Kurile Islands. USCGS.
5	NE	ePS	16	24	33				
	NE	eSPP		25	12				Confused by microseisms.
	NE	eSS		30	31				
	NE	eL		44	-				4.1°S., 143.0°E. h about 108 Km.
	E	M	17	10½	-	20	3		New Guinea. USCGS.
	N	M		10½	-	20	5		
	Z	M		10½	-	20	2½		
		F	18	10	-				
									Mag.: M = 6¼

Form 3717.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JANUARY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
5	ZV,Z	ePKP	18	17	33				Confused by microseisms.
	E	esSS		40	23				21.2°S., 169.3°E. h about 123 Km.
	E	M	19	24½	-	22	11		Loyalty Islands region.
	N	M		24½	-	22	20		Mag. 6¾(Pas). USCGS.
	Z	M		24½	-	22	11		
		F	-	-	-				Mag.: M = 6¾
5	ZV,Z	ePKP	18	34	19				Confused by microseisms.
	ZN	eSKP		37	55				21.0°S., 169.1°E. h about 124 Km.
	E	esSS		57	11				Loyalty Islands. Mag. 6¾(Pas).
	E	M	19	41½	-	22	17		
	N	M		41½	-	22	33		
	Z	M		41½	-	21	17		
		F	21	25	-				Mag.: M = 6¾-7
7	ZV	iP	15	57	44				
	N	eS	16	01	21				37.7°N., 21.1°E. h about 22 Km.
	N	eL		03	-				Near west coast of Greece.
	E	M		06	-	16	½		USCGS.
	N	M		06	-	16	1		
		F	16	20	-				
7	N	eL	19	02	-				57.2°S., 25.3°W. h about 94 Km.
	N	M		18	-	20	1½		Sandwich Islands. USCGS.
		F		35	-				
10	ZV,Z	iP	14	34	11	8	3.2	8460	Compression. Confused by strong microseisms.
	ZV,Z	i		34	16				
	NE	eS		43	51	20	7.0(N)		PH 14 sec. 3.0 μ
	E	eSKS		44	11				49.9°N., 156.2°E. h about 29 Km.
	N	e		44	33				Kurile Islands region.
	N	eSS		49	03				Mag. 6¼(Berk). USCGS.
	NE	eL		54	-				
	E	M	15	11	-	21	36		
	N	M		14	-	20	29		
	Z	M		15	-	20	19		Mag.: M = 6.3
		F	17	10	-				
11	NE	e(S)	12	21	33				Confused by microseisms.
	NE	eL		32	-				51.8°N., 171.0°W. h about 47 Km.
	E	M		52½	-	19	4		Fox Islands, Aleutian Islands.
	N	M		52½	-	20	7		USCGS.
	Z	M		52½	-	20	6		Mag.: M = 6
		F	13	50	-				
12	ZV,Z	iP	14	24	36				Compression. 57.4°N., 155.9°W. Alaska Peninsula. USCGS.
14	ZV	iP	16	50	31			8670	Confused by microseisms.
	ZV	e		50	42				53.9°N., 163.7°W. h about 41 Km.
	N	eS	17	00	21				Unimak Islands region. USCGS.
	N	e		00	38				
	NE	eL		09	-				
	N	M		27½	-	20	3½		
	E	M		28½	-	20	4½		Mag.: M = 5¾
		F	18	15	-				

FORM 3718

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JANUARY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
15	ZV	ePKP1	17	04	11				20.4°S., 169.5°E. h about 182 Km.
	ZV	iPKP2		04	46				Loyalty Islands region. USCGS.
16	ZV	iP	04	11	09				18.2°N., 102.4°W. Near Mexico. USCGS.
16	ZV,N	iP	07	32	54			9300	Compression. PN 12 sec. 3.4 μ
	ZV,N	ePP		36	08				PPN 16 sec. 4.8 μ
	N	eSKS		42	52				36.0°N., 141.1°E. h about 131 Km.
	N	eS		43	04	16	6		Near coast of Honshu, Japan.
	N	ePS		44	30				Mag. 6¾-7(Pas). USCGS.
	N	eL	08	00	-				E and Z component out of action.
	N	M		16	-	18	112		Mag.: M = 7.
		F	10	35	-				
16	ZV,Z	iP	11	32	19				Confused by microseisms.
	NE	e(S)		42	52				35.7°N., 140.6°E. h about 157 Km.
	NE	eL		55	-				Near coast of Honshu, Japan. USCGS.
	E	M	12	15	-	19	8		
	N	M		15½	-	18	11		
	Z	M		15½	-	18	8		Mag.: M = 6¼
		F	-	-	-				overlapped by next shock.
16	ZV,Z	iP	12	25	11	10	5.0	9600	
	NE	eS		35	36	20	19.7(H)		36.2°N., 141.7°E. h about 105 Km.
	N	ePS		36	48				Honshu, Japan. Mag. 6½-6¾(Pas).
	E	eSS		41	28				USCGS.
	E	eL		51	-				
	E	M	13	07½	-	18	67		
	N	M		08	-	18	80		
	Z	M		08	-	18	43		Mag.: M = 6¾
		F	-	-	-				overlapped by next shock.
16	ZV	eP	14	16	39			9600	
	E	eS		27	14	18	4.3		36.3°N., 141.2°E. h about 127 Km.
	E	eSS		32	48				Near coast of Honshu, Japan.
	E	M		57	-	18	10		USCGS.
	N	M		57	-	19	10		
		F	15	45	-				Mag.: M = 6
16	ZV,Z	iP	15	53	53	7	3.0	9600	
	ZV,Z	i		54	06				36.4°N., 140.6°E. h about 147 Km.
	ZV,Z	ePP		56	59				Near coast of Honshu, Japan.USCGS.
	E	iS	16	04	28	20	6.3(H)		
	E	eSS		10	18				
	NE	eL		20	-				
	E	M		37	-	18	30		
	N	M		37	-	18	36		
	Z	M		37	-	18	22		
		F	17	40	-				Mag.: M = 6¼
18	NE	e	00	15	-				Very small. 21.4°S., 169.3°E.
		F	01	00	-				Loyalty Islands region. USCGS.
19	ZV,Z	iP	17	34	12				Compression.
	NE	eL		54	-				49.7°N., 155.8°E. h about 31 Km.
	E	M	18	15	-	20	1½		Kurile Islands. USCGS.
	N	M		15	-	20	3		
	Z	M		15	-	20	2		
		F		35	-				Mag.: M = 5¾

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JANUARY, 1961

DS88561/1 R94 140 3/61 XL

DATE	COMPT	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
20	ZV,Z	iP	17	20	27			7900	
	NE	eS		29	38	16	2.3		56.4°N., 152.3°E. h about 46 Km.
	N	eSS		34	14				Sea of Okhotsk. USCGS.
	E	eL		39	-				
	E	M		$55\frac{1}{2}$	-	16	7		
	N	M		$55\frac{1}{2}$	-	18	6		
	Z	M		$55\frac{1}{2}$	-	16	6		
		F	18	45	-				Mag.: M = 6
20	ZV,Z	iP	22	47	23				Compression. 38.1°N., 141.2°E. Near Honshu, Japan. USCGS.
21	NE	e	03	53	-				Very small. $35\frac{1}{4}$°N., $10\frac{1}{2}$°E.
		F	04	03	-				Tunisia. BCIS
22	ZV,Z	ePKP	03	43	38				
	ZV,Z	ePP		46	14				
	N	ePKS		47	08				11.9°S., 166.2°E. h about 25 Km.
	E	eSS	04	04	34				Santa Cruz Islands. USCGS.
	EN	eL		21	-				
	Z	M		45	-	21	11		
	N	M		45	-	21	20		
	E	M		46	-	21	15		
		F	06	45	-				Mag.: M = $6\frac{3}{4}$
23	NE	e	05	25	-				Small. 42.9°N., 145.3°E.
		F		50	-				Hokkaido, Japan. USCGS.
25	ZV	iP	19	16	09				49.8°N., 156.0°E. Kurile Islands. USCGS.
26	NE	eSS	16	55.8	-				Confused by strong microseisms.
	NE	eL	17	16	-				21.4°S., 169.5°E. h about 119 Km.
	N	M		$40\frac{1}{2}$	-	20	10		Loyalty Islands. USCGS.
	E	M		42	-	20	5		
		F	18	50	-				Mag.: M = $6\frac{1}{4}$
26	ZV	iPKP	19	08	35				Confused by strong microseisms.
	E	M	20	14	-	20	$1\frac{1}{2}$		20.7°S., 169.5°E. h about 106 Km.
	N	M		14	-	20	3		Loyalty Islands region. USCGS.
		F		35	-				
28	ZV	eP	07	22	48				Small. Confused by strong microseisms. 39.3°N., 22.0°E.
		F		35	-				Northern Greece. USCGS.
28	NE	eL	20	46	-				Confused by strong microseisms.
	E	M	21	10	-	21	$3\frac{1}{2}$		21.3°S., 169.5°E. Loyalty Islands
	N	M		10	-	22	$7\frac{1}{2}$		region. USCGS.
		F		40	-				Mag.: M = $6\frac{1}{4}$
31	ZV	e (P)	01	00	(03)			7760	P in time break. Confused by
	NE	e S		09	09	16	5.3(H)		strong microseisms.
	N	ePS		09	49				55.8°N., 153.9°W. h about 26 Km.
	NE	eSS		13	31				Near Kodiak Island, Alaska. USCGS.
	E	eL		18	-				
	E	M		34	-	20	9		
	N	M		34	-	20	8		
	Z	M		34	-	20	9		
		F	02	35	-				Mag.: M = $6\frac{1}{4}$.
31	ZV,Z	iP	17	53	08				Compression. Confused by microseisms.

FORM 3718

M.O. 703

R6

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR FEBRUARY, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS: (I) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ak}{\pi l}$ sec.$^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(II) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
4	N	eL	19	46	-				Confused by strong microseisms.
	E	M	20	06	-	20	8		24.0°N., 122.7°E. h about 14 km.
	N	M		06½	-	20	10		Off coast of Formosa. USCGS.
	Z	M		06½	-	20	7½		
		F		35	-				Mag.: M = 6¼
5	ZV,Z	iP	15	50	37			9100	Dilatation. Confused by
	NE	eS	16	00	44				microseisms. 8.0°N., 82.8°W.
	N	eL		12	-				h about 49 km. South of Panama.
	E	M		25	-	19	2½		USCGS.
	N	M		25	-	18	2½		
		F		45	-				Mag.: M= 5½-5¾
5	NE	eL	18	45	-				Confused by microseisms.
	E	M		58	-	20	1½		38.4°S., 78.2°E. h about 25 km.
	N	M		58	-	20	1½		Indian Ocean. USCGS.
		F	19	35	-				
6	ZV,Z	iP	18	27	35				44.8°N., 149.1°E. Kurile Islands. USCGS.
6	ZV	iPKP	22	04	22				Confused by strong microseisms.
	ZV	i(pPKP)		04	35				
	N	ePKS		07	46				6.8°S., 155.3°E. h about 59 km.
	NE	eL		38	-				Solomon Islands. USCGS.
	Z	M	23	03½	-	22	12		
	N	M		03½	-	22	12		
	E	M		05	-	22	14		
		F	24	40	-				Mag.: M = 6½
7	ZV	eP	21	13	51				43.9°N., 147.1°E. Kurile Islands. USCGS.

Form 3717.

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

FEBRUARY, 19 61

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
8	ZV	iP	08	15	54				10.6°S., 71.0°W. h about 669 km. Brazil-Peru border. USCGS.
8	ZV,Z	ePKP	18	09	34				20.4°S., 178.1°W. h about 543 km. Tonga Islands. USCGS.
9	ZV,Z	iPKP	02	28	39				Confused by microseisms.
	ZV	$ePKP_2$		28	54				
	ZV,Z	e		32	13				28.2°S., 177.4°W. h about 37 km.
	NE	eL	03	14	-				Kermadec Islands. USCGS.
	E	M		49½	-	20	2½		
	N	M		52	-	20	3		
		F	04	30	-				Mag.: M = 6
9	NE	e	21	20	-				Very small. 9.9°S., 111.3°E.
		F		45	-				Off coast of Java. USCGS.
11	N	e	06	27	44				Confused by microseisms.
	N	M		49½	-	21	3		
	E	M		50	-	20	3		
		F	07	15	-				
11	ZV,Z	ePKP	21	20	59			17200	Confused by microseisms.
	ZV	ipPKP		21	09				
	ZV,Z	$iPKP_2$		21	28				28.2°S., 177.5°W. h about 41 km.
	ZV	ePP		25	03				Kermadec Islands. USCGS.
	NE	gSKSSKS		45	16				
	E	eL	22	06	-				
	E	M		29	-	21	3		
	N	M		29	-	21	1½		
		F	23	35	-				Mag.: M = 6
12	NE	e	02	20	-				Very small. 34.8°S., 106.9°W.
		F		35	-				Easter Island region. USCGS.
12	ZV,Z	iP	22	05	58	6	9.1	9000	Compression. PH 18sec. 7.7 μ
	ZV,Z	i(pP)		06	15				PPH 20sec. 5.4 μ
	NE	iS		16	04	20	29(H)		
	NE	e		16	24				43.7°N., 147.6°E. h about 45 km.
	NE	eSS		21	14				Kurile Islands.
	E	eLQ		28	-				USCGS.
	ENZ	eL		37	-				
	Z	M		43½	-	20	19		
	N	M		43½	-	20	65		
	E	M		45½	-	20	95		Mag.: M = 7.0
		F	-	-	-				overlapped by next shock.
12	ZV	iP	23	38	51				44.0°N., 147.7°E. h about 23 km.
	N	M	24	16½	-	20	10		Kurile Islands. USCGS.
	E	M		18½	-	20	12		
		F	26	10	-				Mag.: M = 6¼

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

FEBRUARY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
13	E	eL	07	46	-				
	E	M	08	09	-	20	3		17.0°S., 173.7°W. h about 43 km.
	N	M		09	-	20	3½		Tonga Islands region. USCGS.
	Z	M		10	-	20	2½		
		F	09	00	-				
13	ZV,Z	iP	16	39	38	5	2.0	9050	Compression. Confused by
	NE	eS		49	46				microseisms.
	N	eSS		55.3	-				43.7°N., 149.6°E. h about 25 km.
	NE	eL	17	05	-				Kurile Islands. USCGS.
	N	M		18	-	20	2½		
	E	M		19	-	20	3½		
		F	18	05	-				Mag.: M = 5¾
14	ZV	eP	00	27	50				43.7°N., 147.5°E. Kurile Islands. USCGS.
14	ZV,Z	iP	03	34	19			9000	Compression. Confused by
	NE	eS		44	25				microseisms.
	NE	eL	04	00	-				43.8°N., 147.9°E. h about 20 km.
	N	M		12	-	20	3		Kurile Islands. USCGS.
	E	M		13	-	20	3½		
		F		50	-				Mag.: M = 5¾
15	ZV,Z	iP	10	57	29			9000	Compression. Confused by
	NE	eS	11	07	35	16	4.7(H)		microseisms.
	N	eSS		12	45				
	E	eL		20	-				43.7°N., 147.4°E. h about 69 km.
	Z	M		35½	-	19	2		Kurile Islands. USCGS.
	N	M		35½	-	19	6½		
	E	M		36½	-	20	6½		
		F	12	50	-				Mag.: M = 6
15	ZV	i(P)	11	39	20				30.8°N., 84.4°E. Tibet. USCGS.
16	NE	e	03	53	-				Small.
		F	04	05	-				
16	ZV,Z	iP	14	07	06				Compression. Confused by
	NE	eL		33	-				microseisms.
	N	M		45	-	20	1½		43.2°N., 148.0°E. h about 71 km.
	E	M		46½	-	20	1½		Kurile Islands. USCGS.
		F	15	20	-				
18	ZV	eP	01	16	17				Small.
	NE	eL		42	-				44.0°N., 147.5°E. h about 28 km.
		F	02	15	-				Kurile Islands. USCGS.
18	N	e(S)	17	19	14				
	NE	eL		30	-				1.3°S., 15.7°W. h about 25 km.
	E	M		36½	-	18	1½		Atlantic Ocean. USCGS.
	N	M		36½	-	18	1½		
		F	18	10	-				
19	NE	e	13	05	-				Small. 14.1°S., 13.9°W.
		F		20	-				South Atlantic Ocean. USCGS.
20	ZV	e(P)	22	39	29				2.5°S., 77.6°W. Ecuador. USCGS.

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

FEBRUARY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
21	ZV	e(P)	03	06	52				36.5°N., 23.3°E. Near coast of Greece. USCGS.
22	NE	e	22	36	-				
	N	M	23	22	-	20	1½		28.4°S., 177.2°W. h about 78 km.
	E	M		22	-	20	1		Kermadec Islands region. USCGS.
		F	24	05	-				
23	N	e	03	33	-				35.0°N., 27.3°E.
	N	M		38	-	20	1½		Dodecanese Islands region. USCGS.
		F		50	-				
23	ZV,Z	iP	04	28	53	6	1.8	(9400)	Compression.
	NE	e(S)		39	17	14	2.8(H)		38.2°N., 142.7°E. h about 119 km.
	E	eSS		45	01				Off coast of Honshu, Japan. USCGS.
	NE	eL		52	-				
	E	M	05	08	-	19	7½		
	N	M		08	-	20	5½		
	Z	M		08	-	19	2½		
		F		50	-				Mag.: M = 6
23	NE	eS	21	56	20				Confused by microseisms.
	N	eL		58	-				40½°N., 25½°E. Aegean Sea. BCIS.
	E	M	22	00½	-	16	1½		
	N	M		00½	-	16	4		
		F	-	-	-				overlapped by next shock.
23	N	eL	22	08½	-				38.9°N., 35.2°E. h about 14 km.
	N	M		11	-	16	2		Turkey. USCGS.
		F		20	-				
24	NE	e	03	45	-				Small. 26.1°N., 125.4°E.
		F	04	15	-				Ryukyu Islands. USCGS.
26	NE	eL	06	41	-				
	E	M	07	05	-	20	3		32.7°S., 111.2°W. h about 29 km.
	N	M		05	-	20	2		Easter Island region. USCGS.
	Z	M		05	-	20	2		
		F	08	10	-				
26	ZV,Z	iP	18	23	30	10	12.6	9400	Compression. PH 18 sec. 10.8 μ
	ZV,Z	iPP		26	44	14	8.8		PPH 18 sec. 11.6 μ.
	Z	ePPP		28	48				
	NE	eS		33	52	24	70(H)		31.4°N., 131.2°E. h about 54 km.
	N	iPPS		35	24				Near coast of Kyushu, Japan.
	NE	eSS		39	32				1 killed, several injured and
	NE	eLR		51	-				extensive property damage. USCGS.
	E	M		56½	-	31	440		
	N	M		56½	-	31	357		
	E	M	19	04½	-	20	240		
	N	M		05½	-	20	203		
	Z	M		05½	-	20	150		
		F	22	35	-				Mag.: M = 7.5
27	NE	e	11	20	-				Small. 38.7°S., 72.4°W.
		F		50	-				Southern Chile. USCGS.

FORM 3718

M.O. 707

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

FEBRUARY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
27	E	e(S)	21	49	44				Confused by microseisms.
	N	M		54½	-	18	1½		Aegean Sea.
		F	22	05	-				
27	NE	e	22	07	-				Small. 36.2°N., 26.9°E.
		F		15	-				Aegean Sea. USCGS.

FORM 3718

D509158211/R94 140 4/61XL

M.O. 703

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR MARCH, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS: (I) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ak}{\pi l}$ sec.$^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(II) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
1	N	e	14	53	-				Very small. 18.9°S., 11.6°W.
		F	15	25	-				Atlantic Ocean. USCGS.
5	NE	eL	02	30	-				Small. 10.7°S., 161.6°E.
		F	03	05	-				Solomon Islands region. USCGS.
6	N	e	08	32	-				
	N	M		33.0	-	16	1		
		F		37	-				
7	NE	e	07	12	49				
	NE	eL		34	-				43.3°S., 80.4°W. h about 60 Km.
	E	M		46	-	24	2		Off coast of Chile. USCGS.
	N	M		46	-	24	1½		
		F	08	15	-				
7	ZV,Z	iPKP$_1$	10	30	31	8	13	17200	Dilatation.
	ZV,Z	iPKP$_2$		31	03				
	ZV,Z	iPP		34	37	8	11.7		PPN 16 sec. 8.3 μ
	Z	i		40	59				
	N	e		44	55				28.2°S., 175.7°W. h about 43 Km.
	E	eSS		54	23				Kermadec Islands region.
	E	eL	11	15	-				Mag. 7¼-7½(Pas). USCGS.
	E	M	12	01	-	18	36		
	N	M		04½	-	18	46		
	Z	M		04½	-	18	20		
		F	14	15	-				Mag.: M = 7.1
7	NE	e	19	47½	-				38.2°S., 78.1°E. h about 30 Km.
	NE	eL		56	-				Indian Ocean. Mag. 6(Pas) USCGS.
	E	M	20	14	-	20	1½		
	N	M		14	-	20	1½		
		F		50	-				

Form 3717.

M.O. 709

17 MAY 1961

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MARCH, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
8	NE	e	00	15	-				Small. 4.7°S., 153.2°E.
		F		35	-				New Britain region. USCGS.
9	ZV	e(P)	04	08	32			(5860)	Confused by microseisms.
	NE	eS		15	56				10.9°N., 41.7°W. h about 27 Km.
	NE	eL		21	-				Atlantic Ocean. USCGS.
	E	M		25	-	20	3		
	N	M		26	-	20	3		
		F		50	-				Mag.: M = 5¼
11	ZV,Z	iP	01	43	33	6	1.3	8600	Compression. Confused by
	NE	eS		53	20	12	2.0(H)		microseisms.
	NE	eSS		58.5	-				48.7°N., 154.6°E. h about 26 Km.
	NE	eL	02	03	-				Kurile Islands. USCGS.
	E	M		21	-	20	6½		
	N	M		23	-	20	7		
	Z	M		23	-	20	6		
		F	03	10	-				Mag.: M = 6
11	ZV	iP	08	50	23				Confused by microseisms.
	NE	eL	09	04	-				11.2°N., 43.3°E. h about 18 Km.
	E	M		16½	-	16	4½		Near coast of British Somaliland.
	N	M		17	-	16	5		USCGS.
		F		45	-				
12	ZV,Z	iPKP$_2$	23	42	00				Small. Confused by microseisms.
	NE	eL	24	30	-				28.4°S., 176.0°W. Tonga Islands
		F	25	35	-				region. USCGS.
13	ZV,Z	eP	08	16	27			9500	Confused by microseisms.
	NE	eS		25	53	10	4.0(H)		
	N	eL		39	-				19.2°N., 107.3°W. h about 49 Km.
	N	M		46	-	26	5½		Off coast of Mexico.
	E	M		48	-	26	6½		USCGS.
	N	M		52	-	20	1½		
	E	M		52	-	20	4		
		F	09	20	-				Mag.: M = 6
13	E	eS	15	41	49				Small. 35.8°N., 26.6°E.
	NE	eL		44½	-				Dodecanese Islands. USCGS.
		F		55					
13	ZV,Z	eP	19	22	47			3050	
	E	eS		27	24	14	2.9(H)		34.4°N., 26.5°E. h about 25 Km.
	N	e		27	31				Crete. USCGS.
	N	eL		30	-				
	N	M		32	-	20	3½		
	E	M		33	-	20	1½		
		F		45	-				Mag.: M = 5
15	NE	e	10	52	-				3.3°S., 150.7°E. h about 21 Km.
	N	M	11	31	-	21	4		New Ireland region. USCGS.
	E	M		32	-	20	3		
	Z	M		32	-	20	2		
		F	12	30	-				Mag.: M = 6
15	NE	e	23	02	-				
	E	M		06	-	21	2		
		F		20	-				

FORM 3718

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MARCH, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
16	ZV,Z	ePP	14	05	25	10	2.5		Confused by microseisms.
	NE	ePS		14	53				
	NE	eSSS		25	43				8.2°S., 122.0°E. h about 74 Km.
	NE	eL		40	-				Flores Island. Some casualties
	E	M		51	-	28	17		and major property damage.
	N	M		51	-	28	29		Mag. 6¼-6½(Pal). USCGS.
	E	M		58	-	21	10		
	N	M		58	-	21	11		
	Z	M		59	-	20	4		
		F	16	25	-				Mag.: M = 6.5
16	NE	e	19	06	-				Confused by microseisms.
	NE	eL		17	-				8.1°S., 122.0°E. h about 43 Km.
	N	M		35	-	21	1½		Flores Island. USCGS.
		F		50	-				
17	NE	e	15	23	-				Small.
		F		55	-				
17	NE	eL	21	15	-				24.3°S., 175.6°W. h about 79 Km.
	N	M		40	-	20	2½		Tonga Islands region.
	E	M		42	-	20	2½		USCGS.
		F	22	20	-				
18	NE	e	03	05	-				Very small. 8.2°S., 122.0°E.
		F		35	-				Flores Island. USCGS.
18	Z	e(PP)	15	20	09				
	NE	e		27	09				
	N	eSS		41	03				
	E	e		48	11				
	NE	eL	16	03	-				
	E	M		37	-	18	18		
	N	M		38	-	19	28		
	Z	M		38	-	19	24		
		F	17	45	-				
19	NE	e	05	28	-				Very small. 40.5°N., 142.9°E.
		F		55	-				North of Honshu, Japan. USCGS.
19	N	e	08	15	-				Small. 16.0°S., 168.2°E.
		F		45	-				New Hebrides Islands. USCGS.
20	ZV	iP	03	39	27				36.6°N., 71.1°E. Hindu Kush.USCGS.
20	NE	e	06	38½	-				11.5°N., 86.3°W. h about 122 Km.
	E	M		59½	-	20	4½		Off coast of Nicaragua.
	N	M		59½	-	20	4		Mag. 6-6¼(Pas). USCGS.
	Z	M		59½	-	20	2½		
		F	07	50	-				
20	ZV,Z	ePKP	16	12	34				Confused by microseisms.
	ZV,ZN	iPKP		12	37	6	12.3		Dilatation.
	ZV,Z	ipPKP		13	29				18.4°S., 175.2°W. h about 175 Km.
	E	eSS		34	36				Tonga Islands. Mag. 6½-6¾ (Pas).
	E	esSS		36	02				USCGS.
	E	e		54	26				
	E	M	17	17	-	20	4½		
	N	M		17	-	20	4		
		F	18	20	-				Mag.: M = 6¾

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MARCH, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
31				0085					
20	E	eSS	24	25	44				Confused by microseisms.
	Z	M	25	10	-	20	6		24.2°S., 175.9°W. h about 25 Km.
	N	M		10	-	20	7		Tonga Islands region. USCGS.
	E	M		11	-	20	8		
		F	26	30	-				Mag.: M = 6¼
23	NE	e	01	07	-				Very small. 44.0°N., 12.7°E.
		F		17	-				Italy. BCIS
24	NE	e	10	43	-				Very small.
		F		55	-				
24	ZV,Z	iP	23	09	52				Compression.
	ZV,Z	ePP		13	17				
	N	e(S)		20	25				35.3°N., 140.9°E. h about 102 Km.
	E	e		20	44				Near coast of Honshu, Japan.
	NE	eL		37	-				USCGS.
	E	M		52	-	20	2		
	N	M		52	-	20	3		
	Z	M		52	-	20	2		
		F	24	25	-				
25	NE	e	21	45	-				Very small. 37.1°S., 51.6°E.
		F	22	15	-				Indian Ocean. USCGS.
28	ZV,ZE	iPKP	09	55	01	12	5.9	12200	
	ZV,ZE	ePP		55	37	12	6.3		
	NE	eSKS	10	01	39				
	Z	ePS		05	09				
	ZE	ePPS		06	17				
	NE	eSS		11	13				
	N	eL		21	-				
	E	M		45	-	21	50		
	N	M		45	-	22	50		
	Z	M		45	-	21	27		
		F	12	35	-				Mag.: M=7
28	NE	e	12	51½	-				Confused by microseisms.
	NE	eL	13	03	-				
	E	M		18½	-	20	3		
	N	M		18½	-	20	2		
		F	14	00	-				
28	NE	e(S)	21	25	37				
	E	M		53½	-	20	2		
	N	M		53½	-	20	1½		
		F	22	20	-				
30	N	eL	08	20	-				
	N	M		25	-	20	3		
	E	M		25½	-	20	2		
	Z	M		31	-	18	2		
		F	08	50	-				
30	N	e	09	38	-				
	N	M	10	09	-	20	3		
	E	M		09½	-	20	2½		
		F	11	10	-				

Rb.

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M.O. 703

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR APRIL, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS : (i) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ak}{\pi l}$ sec.$^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(ii) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
1	ZV,Z	iP	15	27	45	5	8	5900	Compression. PH 6 sec. 4.4 μ
	ZV,Z	iPP		29	43				
	NE	eS		35	12	12	11(H)		39.6°N., 77.7°E. h about 21 Km.
	NE	eScS		37	26				Sinkiang Province, China.
	E	eSS		38	50				USCGS.
	NE	eL		43½	-				
	E	M		52½	-	18	71		
	N	M		52½	-	18	57		
	Z	M		52½	-	18	48		
		F	17	20	-				Mag.: M = 6.7
4	NE	e	01	47	-				Small. 39.7°N., 78.1°E.
		F	02	05	-				Sinkiang Province, China. USCGS.
4	ZV	e(P)	09	55	58				
	ZV	i		56	03				
	N	eS	10	03	35	12	2.5(H)		40.1°N., 77.8°E. h about 16 Km.
	EN	eSS		07	13				Sinkiang Province, China. USCGS.
	EN	eL		12	-				
	E	M		21	-	18	69		
	N	M		21	-	18	63		
	Z	M		21	-	18	45		
		F	11	30	-				
4	ZNE	e	22	46	-				Very small. 62¼°N., 2¼°E.
		F		55	-				North Sea. BCIS
5	NE	e	07	12	-				Small. 39.7°N., 78.1°E.
		F		30	-				Sinkiang Province, China. USCGS.

Form 3717.

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

APRIL, 1961.

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
6	ZV	eP	01	43	08				
	E	M	02	08	-	18	4		39.6°N., 77.8°E. h about 33 Km.
	N	M		08	-	18	3½		Sinkiang Province, China. USCGS.
	Z	M		08	-	18	3		
		F		25	-				
6	NE	eL	04	37	-				Small. 40.1°N., 124.8°W.
		F	05	10	-				Near coast of California. USCGS.
6	ZV,Z	iP	18	21	18			5400	
	ZV,Z	i		21	24				27.8°N., 56.7°E. h about 109 km.
	N	eS		28	13	14	1.5(H)		Southern Iran. USCGS.
	N	eL		35	-				
	N	M		39	-	32	4		
	E	M		43	-	24	2		
	N	M		43	-	24	2½		
		F	19	25	-				Mag.: M = 5-5¼
7	NE	e(S)	20	15	19				
	NE	eL		27	-				57.2°N., 163.3°E. h about 20 km.
	E	M		38½	-	20	1½		Near east coast of Kamchatka.
	N	M		38½	-	20	½		USCGS.
		F	21	15	-				
7	ZV,Z	eP	21	26	44				39.3°N., 73.0°E. h about 44 km.
	N	eL		43	-				Kirghiz-Tadzhik border. USCGS.
	E	M		47	-	19	1½		
	N	M		47	-	19	3½		
		F	22	10	-				Mag.: M = 5¼
8	NE	e	00	45	-				Small.
		F	01	00	-				
8	ZV	eP	04	34	44				2.2°S., 79.2°W. Ecuador. USCGS.
8	ZV	eP	04	59	36				2.1°S., 79.1°W. Ecuador. USCGS.
8	ZV	eP	09	16	24				2.1°S., 79.1°W. Ecuador. USCGS.
8	ZV	ePKP	16	19	21				18.2°S., 168.6°E. New Hebrides Islands.USCGS.
8	Z	ePP	18	18	43				
	NE	eSS		28	05				38.2°S., 72.7°W. h about 60 km.
	NE	eL		44	-				Chile. USCGS.
	Z	M	19	04	-	20	4		
	N	M		04	-	20	8		
	E	M		06	-	20	9		
		F	20	40	-				Mag.: M = 6¼
8	NE	e	22	20	-				Small. 14.8°N., 145.1°E.
		F		50	-				Mariana Islands. USCGS.
9	NE	e(S)	07	45	11				36.5°N., 121.3°W. h about 11 km.
	N	eSS		50	13				San Benito County, California.
	NE	eL		56	-				Moderate property damage. USCGS.
	E	M	08	07	-	16	3		
	N	M		07	-	17	4½		
	Z	M		07	-	16	1½		
		F		30	-				Mag.: M = 5¾

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

APRIL, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
9	ZV,Z	eP	15	48	04			9800	Compression.
	ZV,Z	ePP		51	35				
	NE	eSKS		58	29				24.1°N., 122.2°E. h about 13 km.
	NE	eS		58	45	14	4.2 (H)		Near coast of Formosa.
	NE	ePS		59	55				USCGS.
	NE	eSS	16	04	53				
	NE	eLR		16½	-				
	E	M		29	-	22	40		
	N	M		31	-	22	56		
	Z	M		32	-	20	33		
		F	17	45	-				Mag.: M = 6¼
10	NE	e	07	44	-				Small.
		F	08	05	-				
10	N	e	20	45	-				0.2°S., 132.9°E. Near coast of
	N	M		56	-	20	1½		New Guinea. USCGS.
		F	21	15	-				
12	ZV,Z	iP	22	32	26			8800	
	ZV,Z	ePP		35	34				13.1°N., 88.9°W. h about 122 km.
	E	eS		42	12				Salvador. Minor property damage.
	NE	eL		54	-				USCGS.
	E	M	23	02	-	22	4		
	N	M		02	-	22	4½		
	Z	M		02	-	22	1½		
		F		35	-				Mag.: M = 5¾-6
13	ZV,Z	iP	16	43	59	6	1.3	6000	Compression.
	NE	eS		51	30				
	NE	eSS		55	08				40.1°N., 77.8°E. h about 19 km.
	N	eL		58	-				Sinkiang, China. USCGS.
	E	M	17	09	-	17	184		
	N	M		09	-	17	160		
	Z	M		09	-	17	127		
		F	18	45	-				Mag.: M = 6½
16	ZV	iP	11	52	15				53.5°N., 158.7°E. Kamchatka. USCGS.
16	NE	e	12	50	-				Very small. 51.6°N., 130.6°W.
		F	13	15	-				Near Vancouver Island. USCGS.
17	ZV	e(P)	16	30	45				3.9°N., 31.5°W. h about 25 km.
	N	M		49	-	22	1		Mid-Atlantic Ocean. USCGS.
		F	17	05	-				
17	EN	e(S)	20	58	36				Very small. 20.8°S., 68.5°W.
		F	21	35	-				Chile-Bolivia border. USCGS.
18	NE	e	19	45	-				Very small.
		F	20	10	-				
19	ZV,Z	iP	16	24	42	4	1.4		Compression. 44.2°N., 148.0°E.
	NE	eL		55	-				h about 51 km. Kurile Islands.
	E	M		58	-	24	3		USCGS.
	N	M		59	-	22	2		
		F	17	20	-				Mag.: M = 5¾-6.

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

APRIL, 1961.

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
19	NE	e	18	55	-				Very small.
		F	19	10	-				
19	ZV	iP	20	32	04				
	E	e(S)		42	11				44.6°N., 150.2°E. h about 27 km.
	NE	eL		55	-				Kurile Islands. USCGS.
	E	M	21	09½	-	20	1½		
	N	M		11½	-	18	1½		
		F		40	-				
19	ZV	eP	22	20	05				44.9°N., 149.5°E. h about 34 km.
		F	23	10	-				Kurile Islands. USCGS.
20	NE	eL	22	48	-				15.2°S., 173.7°W. h about 25 km.
	Z	M		59	-	20	2		South of Samoa Islands. USCGS.
	N	M		59	-	20	4		
	E	M	23	00	-	20	1½		
		F		30	-				Mag.: M = 6.
21	NE	e	20	10	-				Small. 48.1°N., 154.6°E.
		F		30	-				Kurile Islands. USCGS.
21	ZV,Z	eP	20	22	43			8800	
	NE	eS		32	38	12	1.8(H)		47.7°N., 154.6°E. h about 27 km.
	NE	eL		52	-				Kurile Islands. USCGS.
	E	M	21	02	-	18	3		
	N	M		02½	-	18	3		
		F		30	-				Mag.: M = 5.6
21	ZV	e(P)	21	38	50				Small. 51.7°N., 173.9°W.
		F	22	30	-				Andreanof Islands. USCGS.
22	E	eL	01	26	-				
	E	M		45½	-	20	1½		
	N	M		45½	-	20	2		
		F	02	10	-				
22	ZV,Z	iP	19	14	17				Dilatation. 2.8°S., 80.8°W.
									Near Ecuador. USCGS.
22	NE	e	20	05	-				Small.
		F		25	-				
23	ZV,Z	iP	05	27	28			9800	Dilatation.
	NE	eS		38	03				26.2°N., 129.8°E. h about 110 km.
	NE	eL		58	-				Ryukyu Islands. USCGS.
	N	M	06	07½	-	20	3½		
	E	M		08½	-	20	4½		
		F		40	-				Mag.: M = 6.
23	Z	iP	09	13	55	6	5	9000	Compression. PH 12 sec. 2.8 μ
	NE	eS		23	59	15	13.4(H)		
	N	e		24	33				44.6°N., 150.2°E. h about 44 km.
	E	eL		41	-				Kurile Islands. USCGS.
	E	M		53½	-	18	27		
	N	M		53½	-	19	32		
	Z	M		56	-	16	18		
		F	12	25	-				Mag.: M = 6.5

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

APRIL, 19 61

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
23	ZV,Z	iP	17	03	15			(9000)	
	ZV,Z	i		03	28				
	ZV,Z	e		03	37				
	E	e (S)		13	22				
	NE	eL		33	-				
	E	M		42	-	20	1½		
	N	M		43	-	19	1½		
		F	18	25	-				
24	NE	e	13	00	-				44.5°N., 150.2°E. Kurile Islands.
		F		30	-				USCGS.
25	ZV,Z	eP	01	29	51			(9000)	
	NE	e (S)		39	57	13	1.6 (H)		44.5°N., 150.0°E. h about 78 km.
	NE	eL		52	-				Kurile Islands. USCGS.
	E	M	02	09	-	20	2		
	N	M		09½	-	19	2½		
		F		45	-				Mag.: M = 5.6
26	ZV,Z	eP	07	51	12	6	1.4	(9100)	
	NE	e (S)	08	01	21	15	4.8 (H)		44.6°N., 149.9°E. h about 20 km.
	N	eSS		06.7	-				Kurile Islands.
	E	eL		15	-				USCGS.
	E	M		30½	-	20	7½		
	N	M		31	-	20	7½		
	Z	M		31	-	20	4½		
		F	09	30	-				Mag.: M = 6.1
26	ZV,Z	eP	19	44	46				44.6°N., 150.1°E.
	N	M	20	24	-	20	1		Kurile Islands. USCGS.
		F		50	-				
28	ZV	e (Pg)	20	51	10			750	Very small.
	ZNE	e (S*)		52	21				47.7°N., 7.9°E. h about 20 km.
	ZE	e (Sg)		52	40				West Germany. USCGS.
		F		55	-				
29	ZV,Z	iP	09	31	26				40.6°N., 127.5°W. Off coast of
	ZV,Z	i		31	33				California. USCGS.
29	ZV,Z	iP	09	33	45	6	7	2230	Compression.
	Z	iPP		34	12	6	4.2		
	N	eS		37	24	11	17.4 (H)		72°N., 7½°W.
	E	i		37	28				North Atlantic Ocean. BCIS
	NE	eL		38½	-				
	E	M		40	-	19	9		
	N	M		40½	-	20	19		
	Z	M		40½	-	20	12		
		F	11	10	-				Mag.: M = 5.6
29	NE	e	11	20	-				Small.
		F		45	-				
30	ZV,NE	eP	07	38	19	11	3 (PH)	2200	Compression.
	NE	eS		41	54	11	4.0 (H)		52.0°N., 31.9°W. h about 38 km.
	NE	eL		42½	-				North Atlantic Ocean. USCGS.
	E	M		44½	-	19	9		
	N	M		44½	-	20	4		
		F	08	35	-				Mag.: M = 4.8

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

APRIL, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
30	ZV,Z	eP	11	27	29	5	1	(8900)	
	EN	e(SKS)		37	37				44.6°N., 149.7°E. h about 70 km.
	E	eL		53	-				Kurile Islands. USCGS.
	E	M	12	06½	-	20	3		
	N	M		07	-	19	2½		
		F	13	05	-				Mag.: M = 5.6
30	NE	e	15	13	-				
	NE	eL		45	-				
	E	M	16	06	-	20	1½		
	N	M		06½	-	20	2		
		F	17	10	-				

FORM 3718

DS93415/1 R94 140 6/61 XL

M.O. 703

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR MAY, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS: (i) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ak}{\pi l}$ sec.$^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(ii) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
2	NE	eL	03	20	-				71.2°N., 6.9°W. h about 22 Km.
	N	M		24	-	16	2		Jan Mayen Island region. USCGS.
		F		40	-				
2	NE	e	21	00	-				Small. 27.8°S., 176.4°W.
		F		35	-				Kermadec Islands. USCGS.
2	ZV,Z	ePKP1	23	04	38			17060	27.8°S., 176.5°W. h about 47 km.
	ZV,Z	ePKP2		05	07				Kermadec Islands region.
	ZV,Z	ePP		08	36				Mag. 6¾(Pas). USCGS.
	E	eSS		28	29				
	NE	eL		57	-				
	N	M	24	15½	-	20	14		
	E	M		17	-	19	8		
	Z	M		17	-	18	6		
		F	25	50	-				Mag.: M = 6¾
4	NE	e	02	50	-				Very small. 40.6°N., 127.1°W.
		F	03	10	-				Off California. USCGS.
4	NE	e	07	20	-				Small. 17.7°N., 46.4°W.
		F		35	-				Atlantic Ocean. USCGS.
5	ZV,Z	ePKP	14	03	29				27.8°S., 176.1°W. h about 84 km.
	E	eSS		27	13				Kermadec Islands region. USCGS.
	N	M	15	10	-	20	3		
	E	M		10	-	20	2		
	Z	M		10	-	20	2		
		F	16	20	-				Mag.: M = 6

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MAY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
5	NE	e	16	50	-				27.3°S., 176.1°W. Kermadec Islands region. USCGS.
	N	M		56	-	20	½		
		F	17	35	-				
5	N	e	19	55	-				Very small. 27.5°S., 176.0°W. Kermadec Islands. USCGS.
		F	20	05	-				
5	NE	e	22	05	-				Very small. 28.2°S., 177.4°W. Kermadec Islands. USCGS.
		F		25	-				
5	ZV,Z	e(P)	16	08	19				37.4°N., 11.2°E. h about 30 km. Mediterranean Sea, off Tunisia. USCGS.
	NE	eL		12½	-				
	E	M		13½	-	18	3		
	N	M		14	-	16	2		Mag.: M = 4½
		F		16	-				
6	ZV,Z	iP	19	47	33			6080	1.2°S., 15.5°W. h about 24 km. Atlantic Ocean. USCGS.
	EN	eS		55	09	14	1.3		
	NE	eL	20	04	-				
	N	M		11	-	20	3		
	E	M		12	-	18	3		Mag.: M = 5-5¼
		F		30	-				
6	N	e	24	25	-				Small. 17.2°S., 167.9°E. New Hebrides Islands. USCGS.
		F		45	-				
7	ZV,Z	i(PKP)	00	44	31				6.1°S., 154.4°E. h about 123 km. Solomon Islands region. USCGS.
	NE	ePKS		57	59				
	NE	eL	01	18	-				
	E	M		37½	-	26	6½		
	N	M		37½	-	26	5½		
	N	M		46½	-	20	3		
	E	M		47	-	20	3		
	Z	M		47	-	20	2½		
		F	02	35	-				Confused by microseisms.
7	NE	eSS	10	52.8	-				5.8°N., 126.8°E. h about 89 km. Off coast of Mindanao, P.I. USCGS.
	NE	eL	11	02	-				
	E	M		22	-	20	4		
	N	M		22	-	20	3½		Mag.: M = 6
		F		45	-				
7	NE	e	13	10	-				Small. 35.2°N., 134.5°E. Honshu, Japan. USCGS.
		F		35	-				
7	NE	e	15	49	-				Confused by strong microseisms. 71.2°N., 7.1°W. Jan Mayen Island region. USCGS.
	E	M		52	-	16	2½		
	N	M		53	-	16	3½		
		F	16	10	-				
8	ZV,Z	ePP	19	40	49				24.3°S., 69.7°W. h about 48 km. Northern Chile. USCGS.
	N	eL	20	06	-				
	E	M		17½	-	20	3		
	N	M		17½	-	20	3		
	Z	M		17½	-	20	1		Mag.: M = 5¾
		F		45	-				
10	NE	e	17	16	-				Very small.
		F		30	-				

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MAY, 1961.

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
11	Z	ePP	08	57	20				
	NE	eL	09	31	-				37.2°S., 73.6°W. h about 47 km.
	E	M		40	-	20	4½		Near coast of Chile. USCGS.
	N	M		40	-	20	4½		
	Z	M		40	-	20	4		
		F	10	45	-				Mag.: M = 6
12	NE	e	06	05	-				Very small.
		F		50	-				
13	NE	eL	14	47	-				27.8°S., 176.2°W. Kermadec
		F	-	-	-				Islands. USCGS.
13	N	M	15	46	-	20	1½		27.9°S., 176.0°W. Kermadec
	E	M		48	-	20	1½		Islands. USCGS.
		F	-	-	-				overlapped by next shock.
13	ZV,Z	iPKP	15	11	36	4	1.6		17.5°S., 178.8°W. h about 556 km.
		F	17	00	-				Fiji Islands. USCGS.
13	ZV	eP	16	01	47				43.4°N., 147.8°E. Off Hokkaido, Japan. USCGS.
14	NE	e	04	00	-				Small. 27.9°S., 176.3°W.
		F		40	-				Kermadec Islands. USCGS.
14	ZV,Z	eP	15	12	22				67.7°N., 18.4°W. h about 47 km.
	NE	eL		17½	-				North of Iceland. USCGS.
	E	M		18	-	20	1		
	N	M		18½	-	20	1		
		F		30	-				
14	ZV,Z	eP	15	42	26	5	1.1	2180	
	NE	e(S)		46	00				67.7°N., 18.4°W. h about 23 km.
	NE	eL		47½	-				North of Iceland. USCGS.
	E	M		48	-	20	2½		
	N	M		48½	-	20	2½		
		F	16	05	-				Mag.: M = 5
14	NE	e	20	10	-				Very small. 40.8°N., 127.4°W.
		F		25	-				Off California. USCGS.
16	NE	eL	18	47	-				27.9°S., 176.4°W.
	N	M		58	-	20	½		Kermadec Islands region. USCGS.
		F	19	35	-				
16	ZV,Z	eP	21	58	18			9800	Dilatation.
	NE	eSKS	22	08	44				30.0°N., 132.0°E. h about 25 km.
	NE	eS		08	58	11	1.6(H)		Ryukyu Islands.
	NE	eL		25	-				USCGS.
	E	M		37½	-	20	10		
	N	M		37½	-	20	4		
		F	23	20	-				Mag.: M = 5¾
17	ZV,Z	eP	19	41	12	6	1.4	8540	Compression. PN 20 sec. 2.8 μ
	E	eS		50	56	16	2.7		
	N	e		51	31				52.0°N., 173.9°E. h about 21 km.
	N	eSS		55	57				Near Islands, Aleutian Islands.
	NE	eL	20	06	-				USCGS.

FORM 3718

contd.

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MAY, 19 61

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
contd. 17	E	M	20	17½	-	19	5½		
	N	M		17½	-	19	4½		
	Z	M		17½	-	19	2½		
		F	22	30	-				Mag.: M = 5.9
19	NE	e	00	05	-				Very small.
		F		30	-				
19	NE	e	10	00	-				Very small. 11.3°N., 88.3°W.
		F		20	-				Off coast of Nicaragua. USCGS.
19	NE	eL	17	18	-				24.1°N., 123.4°E.
	E	M		27	-	25	3½		Ryukyu Islands. USCGS.
	N	M		27	-	25	3½		
		F		55	-				Mag.: M = 5¾
20	ZV,Z	eP	18	02	36				
	NE	eL		25	-				6.5°S., 31.7°E. h about 58 km.
	N	M		32½	-	16	½		Tanganyika. USCGS.
		F		45	-				
21	ZV,Z	eP	17	54	11				3.1°S., 80.9°W. Near coast of Ecuador. USCGS.
22	ZV,Z	ePKP	14	04	15			16500	
	ZV,Z	e		04	32				
	NE	eSS		26	53				
	N	eL		58	-				
	E	M	15	13½	-	20	4½		
	N	M		15½	-	20	3		
	Z	M		15½	-	20	2½		
		F	16	35	-				Mag.: M = 6-6¼
22	ZV,Z	ePKP	17	52	09			16500	
	ZV,Z	i		52	15				22.8°S., 176.1°W. h about 35 km.
	E	eSS	18	14	49				Tonga Islands region. USCGS.
	E	eL		33	-				
	N	M		56	-	21	6½		
	E	M		57	-	24	9½		
	Z	M		57	-	21	4½		
		F	20	05	-				Mag.: M = 6½
23	ZV,Z	iP	02	50	39	6	4.9	2600	Compression.
	ZV,Z	i		50	51				36.4°N., 28.3°E. h about 49 km.
	NE	eS		54	45	14	10.5(H)		Dodecanese Islands. Moderate
	NE	eL		55½	-				property damage. USCGS.
	E	M	03	00½	-	24	73		
	N	M		00½	-	21	90		
		F	04	55	-				Mag.: M = 5.9
23	ZV,Z	eP	03	52	17				9.8°N., 84.0°W. Costa Rica.
	ZV,Z	ePP		54	59				USCGS.
23	NE	e	05	40	-				
		F	06	35	-				

FORM 3718

SEISMOLOGICAL BULLETIN

MAY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLI-TUDE μ	Δ km.	REMARKS
23	ZV,Z	eP	16	56	46				
	ZV,Z	ePP		59	53				12.6°N., 87.3°W. h about 138 km.
	N	eL	17	18½	-				Near coast of Nicaragua. USCGS.
	E	M		27½	-	19	2		
	N	M		28	-	20	1		
	Z	M		28	-	19	½		
		F		55	-				
25	NE	e	13	23	-				
	N	M		26	-	16	1½		
		F		35	-				
25	NE	e	14	05	-				Small.
		F		10	-				
27	NE	e	23	30	-				Very small.
		F		45	-				
29	NE	e	01	00	-				Very small.
		F		30	-				
29	NE	eL	08	14	-				27.7°N., 141.7°E. h about 25 km.
	E	M		30	-	20	1½		Bonin Islands. USCGS.
	N	M		30	-	20	2		
		F	09	10	-				
29	NE	e	11	10	-				Small.
		F		55	-				
29	NE	e	19	45	-				Small.
		F	20	25	-				
31	N	eL	14	51	-				
	N	M		06	-	14	1½		29.8°N., 114.0°W. h about 74 km.
	E	M		07½	-	14	4		Gulf of California.
	Z	M		07½	-	14	2		Mag. 5½(Pas). USCGS.
		F		30	-				
31	NE	e	20	15	-				
	E	M		33½	-	20	1½		
	N	M		33½	-	20	2		
		F		55	-				

FORM 3718

DS94274/1/R94 140 7/61XL

M.O. 703

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR JUNE, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS : (i) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN " VORLESUNGEN ÜBER SEISMOMETRIE " (LEIPZIG, 1914) OR G. W. WALKER " MODERN SEISMOLOGY " (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1 sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ak}{\pi l}$ sec.$^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(ii) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
1	NE	eL	10	32	-				19.5°N., 69.3°W. Near coast of Dominican Republic. USCGS.
	E	M		40	-	20	1		
	N	M		41	-	18	1		
		F		55	-				
1	ZV,Z	eP	23	38	32	6	2.4	6100	PH 12 sec. 1.6μ
	ZV,Z	i		38	37				
	ZV,Z	i(PcP)		39	55				10.6°N., 39.3°E. h about 51 km.
	N	eS		46	09	20	6.9		Ethiopia. Considerable damage at
	E	iS		46	13	18	6.2		Kara-Kore. USCGS.
	N	eSS		49	41				
	E	eSS		49	49				
	E	M	24	00½	-	20	20		
	N	M		01½	-	20	26		
	Z	M		03	-	14	6		Mag.: M = 6.1
		F	-	-	-				overlapped by next shock.
2	ZV,Z	eP	00	18	09				10.3°N., 39.6°E. Ethiopia. USCGS.
2	ZV,Z	iP	05	00	26	6	2.0	5950	Dilatation. PH 12 sec. 1.6 μ
	ZV	e(PcP)		01	37				
	N	eS		07	54	14	3.8(H)		9.8°N., 40.0°E. h about 41 km.
	NE	eSS		11	31				Ethiopia. USCGS.
	E	M		22½	-	20	13		
	N	M		23	-	20	11		
	Z	M		23	-	20	6		Mag: M = 5.8
		F	-	-	-				
2	ZV	iP	05	31	49				Dilatation, Ethiopia. USCGS.

Form 8717.

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
2	ZV,Z	iP	05	54	07	6	1.2		Dilatation.
	ZV	i(PcP)		55	18				10.3°N., 39.8°E. h about 31 km.
	E	M	06	16	-	20	7		Ethiopia. USCGS.
	N	M		16½	-	20	6		
		F	-	-	-				Mag.: M = 5.7
2	E	M	07	34	-	20	1		10.3°N., 40.0°E. Ethiopia. USCGS.
	N	M		34½	-	20	2		
		F	08	30	-				Mag.: M = 5¼
2	ZV	eP	18	38	51				Very small. 2.9°S., 79.9°W.
		F	19	30	-				Near Ecuador. USCGS.
3	NE	e	00	00	-				Small.
		F		25	-				
3	NE	e(S)	01	34	13				
	NE	eL		46	-				56.1°N., 164.8°E. h about 29 km.
	E	M		59	-	20	1½		Off coast of Kamchatka. USCGS.
	N	M		59	-	20	½		
		F	02	35	-				
3	NE	eL	06	28	-				Small. 39.0°N., 32.3°E.
		F		45	-				Turkey. USCGS.
3	ZV,Z	e(P)	15	32	31			(6100)	Small.
	N	e(S)		40	07				9.8°N., 39.8°E. Ethiopia. USCGS.
	NE	M		59	-				
		F	16	25	-				
4	ZV,ZE	iP	07	43	09	5	4.3	6700	Dilatation. PH 8 sec. 2.6 μ
	ZV,Z	ePcP		43	53				
	ZV,Z	ePP		45	18				33.8°N., 81.8°E. h about 46 km.
	ZV,Z	ePPP		46	38				Tibet. USCGS.
	NE	eS		51	18	12	2.4(H)		
	ZE	ePS		51	35				
	NE	eLR	08	03	-				
	E	M		08½	-	20	11		
	N	M		08½	-	18	20		
	Z	M		12	-	16	12		
		F	09	20	-				Mag.: M = 6.2
4	ZV,Z	iP	07	53	49				34.2°N., 82.2°E. Tibet. USCGS.
4	ZV,Z	eP	14	01	35				
	N	M		26	-	20	1		33.6°N., 82.4°E. Tibet. USCGS.
		F		35	-				
5	ZV,Z	eP	03	39	29				28.3°N., 54.8°E. h about 81 km.
	E	M	04	00	-	20	½		Southern Iran. USCGS.
	N	M		01	-	18	½		
		F		15	-				

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE, 1961.

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
6	ZV,Z	eP	21	05	33				Small. 39.3°N., 77.9°E.
	NE	M		30	-				Sinkiang Province, China. USCGS.
		F		40	-				
7	ZV,Z	iP	14	25	11			6500	Compression.
	NE	eS		33	11				
	E	eLQ		40½	-				5.4°S., 11.6°W. h about 17 km.
	E	M		50½	-	18	3		Ascension Island region. USCGS.
	N	M		50½	-	19	4½		
	Z	M		50½	-	19	2		
		F	15	45	-				Mag.: M = 5½
9	ZV	eP	04	05	13				34.5°N., 73.8°E. Northern India. USCGS.
9	ZV,Z	iP	09	43	51				40.8°N., 50.7°E. Caspian Sea.USCGS.
10	E	eL	09	34	-				8.1°N., 103.4°W.
	E	M		42	-	20	1½		South of Mexico. USCGS.
		F	10	10	-				
10	N	eLQ	21	21½	-				24.1°S., 112.1°W. h about 47 km.
	E	M		42	-	19	3		Easter Island region. USCGS.
	N	M		42	-	20	1½		
	Z	M		42	-	20	1		
		F	22	55	-				Mag.: M = 5¾-6.
11	ZV,Z	iP	05	18	56	5	5.9	5300	Compression. PH 6 sec. 3.6 μ
	Z	iPP		20	54	5	5.9		
	N	iS		25	50	20	8.3		28.9°N., 54.6°E. h about 38 km.
	E	iS		25	51	20	14.0		Southern Iran. Major property
	NE	eSS		29	13				damage, many casualties in Lar
	N	eL		31	-				area. USCGS.
	E	M		40½	-	18	56		
	N	M		40½	-	18	51		
	Z	M		43	-	16	15		
		F	08	35	-				Mag.: M = 6.8
11	ZV,Z	iP	05	38	45				27.3°N., 54.5°E. Iran. USCGS.
11	ZV	eP	06	55	19				29.3°N., 55.2°E. Iran. USCGS.
11	N	e	10	28	-				Very small. 46.6°N., 27.4°W.
		F		33	-				North Atlantic Ocean. USCGS.
11	ZV,Z	iP	12	38	53				Compression. Iran. BCIS
11	ZV,Z	iP	12	39	57			5200	Compression.
	ZV,Z	ePP		41	49				
	NE	eS		46	45				28.0°N., 54.6°E. h about 36 km.
	N	eL		50	-				Iran. USCGS.
	E	M	13	01	-	20	3		
	N	M		01½	-	19	2		
		F	13	45	-				Mag.: M = 5¼
11	ZV,Z	iP	14	06	31				27.6°N., 54.6°E. h about 63 km.
	E	M		28	-	20	1½		Southern Iran. USCGS.
	N	M		28	-	18	1		
		F		45	-				Mag.: M = 5

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
11	NE	eL	17	56	-				
	E	M		58½	-	22	1½		
	N	M		58½	-	22	2½		
		F	18	15	-				
12	NE	e	00	50	-				Very small.
		F	01	15	-				
12	ZV,Z	eP	10	10	41				Very small. 21.5°N., 106.0°E.
	N	M		46	-				North Viet-Nam. USCGS.
		F	11	10	-				
13	NE	eL	17	45	-				
	N	M		56½	-	18	½		
		F	18	10	-				
13	ZV,Z	iPKP$_1$	21	57	28	4	1.1		Depth = 150 km.
	ZV,Z	iPKP$_2$		57	32				21.4°S., 176.4°W. Tonga Islands
	ZV,Z	ipPKP$_1$		58	09				region. USCGS.
	ZV,Z	ipPKP$_2$		58	14				
14	NE	e	00	50	-				28.3°N., 54.9°E.
		F	01	15	-				Iran. USCGS.
14	ZV,Z	eP	20	41	31	6	0.9		
	E	M	21	03	-	20	1½		10.8°N., 40.1°E. h about 56 km.
	N	M		04	-	20	1½		Ethiopia. USCGS.
		F		50	-				
15	NE	e	01	45	-				Very small. 6.8°N., 73.0°W.
		F	02	05	-				Venezuela. USCGS.
15	NE	e	06	45	-				Very small.
		F	07	05	-				
15	ZV,Z	iP	23	36	51				Compression.
	NE	eL	24	02	-				45.4°N., 151.3°E. h about 38 km.
	N	M		15	-	18	1		Kurile Islands. USCGS.
	E	M		15½	-	18	1		
		F		40	-				
16	NE	e	04	25	-				Very small. 45.6°N., 151.3°E.
		F		45	-				Kurile Islands. USCGS.
16	NE	eL	07	54	-				41.1°S., 74.5°W. h about 17 km.
	E	M	08	10½	-	22	1½		Off coast of southern Chile. USCGS.
	N	M		10½	-	21	1½		
		F		40	-				
16	ZV,Z	iP	10	43	15	4	2.4	8100	Dilatation. 8.8°N., 73.4°W.
	ZV,Z	ipP		43	57				Northern Colombia. USCGS.
	N	eS		52	29	10	3.6		
	N	e		53	09				
		F	11	40	-				Mag.: M = 6.0
17	ZV,Z	eP	08	14	25				Very small. 28.7°N., 55.3°E.
		F		45	-				Southern Iran. USCGS.

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
17	NE	eL	11	35	-				Small. 11.9°S., 75.3°W.
		F	12	15	-				Peru. USCGS.
17	ZV	eP	15	19	35				Confused by microseisms.
	ZV	e		19	56				
	N	eL		41	-				14.2°N., 92.2°W. Mexico-Guatemala
	Z	M		52½	-	20	4		border. USCGS.
	E	M		52½	-	20	6½		
	N	M		54	-	20	2		Mag.: M = 6
		F	16	50	-				
18	ZV,Z	$iPKP_1$	14	14	29				31.3°S., 179.8°E. h about 434 km.
	ZV,Z	$iPKP_2$		15	11				Kermadec Islands. USCGS.
18	NE	e	23	35	-				Small. 56.7°S., 141.6°W.
		F	24	20	-				South Pacific Ocean. USCGS.
19	N	eL	02	32	-				39.3°N., 142.9°E. h about 85 km.
	E	M		42	-	20	2		Off coast of Honshu, Japan.
	N	M		43	-	20	3		USCGS.
		F	03	15	-				
19	N	e	03	30	-				Small.
		F		50	-				
19	NE	eL	08	16	-				39.2°N., 142.9°E. h about 98 km.
	E	M		29	-	20	2		Off coast of Honshu, Japan. USCGS.
	N	M		29	-	20	1½		
		F		50	-				
19	ZV,Z	iP	17	13	23			5750	Compression. Depth = 200 km.
	ZV,Z	ipP		14	08				36.6°N., 71.0°E. Hindu Kush.
	ZV,Z	e		14	29				USCGS.
	NE	eS		20	26	8	2(H)		
		F		45	-				Mag.: M = 5¾
19	ZV	eP	22	28	49				53.7°N., 160.7°E. Kamchatka. USCGS.
20	ZV,Z	eP	03	30	53			6000	
	NE	eS		38	24				11.5°N., 44.5°E. h about 30 km.
	NE	eL		45	-				Gulf of Aden. USCGS.
	E	M		52	-	20	1½		
	N	M		52	-	20	1½		
		F	04	30	-				
21	ZV	eP	04	09	24				15.3°N., 87.3°W. Honduras. USCGS.
21	NE	e	06	55	-				Small. 27.9°N., 55.0°E.
		F	07	20	-				Iran. USCGS.
21	ZV,Z	eP	16	10	04			3000	
	E	eS		14	37	14	1.5		37.7°N., 29.0°E.
	N	eL		17.0	-				Central Turkey. BCIS.
	N	M		19	-	16	6		
	E	M		21	-	15	2½		
	Z	M		21	-	15	2		
		F		35	-				

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
21	NE	e	21	10	-				Small. 7.6°S., 110.0°E.
		F		35	-				Near coast of Java. USCGS.
22	Z	eP	00	59	51			1800	42.4°N., 19.6°E. h about 53 km.
	N	eS	01	02	52				Albania-Yugoslavia border. USCGS.
	N	eL		04	-				
	N	M		05½	-	15	7		
	E	M		06½	-	20	6½		
		F		30	-				
22	NE	e	04	34	-				Very small. 17.9°S., 168.9°E.
		F		40	-				New Hebrides Islands. USCGS.
23	ZV	eP	09	07	37			8400	43.9°N., 128.9°W. h about 56 km.
	NE	eS		17	16	14	2.1 (H)		Off coast of Oregon. USCGS.
	NE	ePS		17	50				
	NE	eSS		22	06				
	NE	eL		27½	-				
	E	M		37½	-	19	4½		
	N	M		37½	-	19	4½		
	Z	M		38	-	18	2		Mag.: M = 5¾
		F	10	45	-				
23	ZV	eP	16	44	56				28.5°N., 55.5°E. h about 54 km.
	E	M	17	06½	-	18	1		Iran. USCGS.
	N	M		06½	-	18	1		
		F		20	-				
24	NE	eL	05	45	-				Small. 13.6°N., 90.2°W.
		F	06	15	-				Near El Salvador. USCGS.
24	NE	eL	10	24	-				Small. 4.1°N., 97.5°E.
		F		50	-				Sumatra. USCGS.
25	NE	e	17	20	-				21.7°N., 143.1°E. h about 13 km.
	E	M		44½	-	19	2		North of Mariana Islands. USCGS.
	N	M		44½	-	19	2		
		F	18	25	-				
25	N	e	20	00	-				Very small.
		F		45	-				
26	NE	e	08	15	-				Very small. 21.3°S., 170.1°E.
		F		45	-				Loyalty Islands. USCGS.
27	ZV,Z	eP	07	15	23			8350	27.8°N., 99.4°E. h about 33 km.
	ZV,Z	e		15	42				Yuman Province, China. USCGS.
	ZV	ePP		18	16				
	NE	eS		24	58	16	4.4 (H)		
	NE	eL		39	-				
	E	M		50	-	22	11		
	N	M		50	-	20	7½		
	Z	M		50	-	17	3½		Mag.: M = 6·0
		F	09	05	-				
28	NE	e	23	25	-				Very small.
		F		40	-				

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE, 19 61

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
29	ZV,Z	ePKP	09	42	21				
	Z	ePP		45	23				
	N	ePKS		45	59				
	NE	eL	10	30	-				
	E	M		48	-	20	1		
	N	M		49	-	20	1		
		F	11	50	-				
29	NE	e	22	15	-				Very small.
		F		45	-				
30	ZV	e(P)	05	10	52			(3000)	
	E	e(S)		15	26				
	N	eL		18½	-				
	N	M		20	-	20	1		
		F		30	-				

FORM 3718

DS 95567/1 R94 140 8/8 XL

M.O. ....

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR JULY, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS: (i) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ak}{\pi l}$ sec.$^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(ii) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK. TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY. SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
1	ZV,Z	eP	13	23	48				Small. 15.3°S., 75.0°W.
		F	14	15	-				Near coast of Peru. USCGS.
5	NE	e(L)	03	47	-				
	E	M	04	04	-	20	1½		
	N	M		04	-	20	1½		
		F		25	-				
6	NE	e	16	33	-				
	E	M		40	-	18	1		7.0°S., 13.1°W. h about 19km.
	N	M		40	-	18	½		Ascension Island region. USCGS.
		F		55	-				
√ 6	ZV	ePKP	22	29	10			16300	
	ZV	i		29	12				PPN 18 sec. 2.5 μ.
	ZV	i		29	16				
	ZV,Z	ePP		32	43	14	3.9		20.0°S., 169.0°E. h about 47 km.
	N	eSS		51	19				New Hebrides Islands. USCGS.
	E	eLQ	23	12	-				
	E	M		36	-	22	16		
	N	M		36	-	22	26		
	Z	M		36	-	22	14		
		F	25	15	-				Mag.: M = 6¼-6½
7	Z	ePKP	13	29	51			14000	5.7°S., 149.7°E. h about 57 km.
	Z	ePP		31	47	8	0.7		New Britain. USCGS.
	NE	ePKS		33	09				
	N	eSKKS		49	43				
	E	M	14	29	-	20	9		
	N	M		30	-	20	14		
	Z	M		30	-	20	7		
		F	15	45	-				Mag.: M = 6¼

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JULY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	△ km.	REMARKS
7	NE	e	17	35	-				Small. 24.8°N., 98.5°E.
		F		55	-				Burma-China border. USCGS.
7	ZV,Z	iPKP$_1$	22	39	13				20.1°S., 169.2°E. h about 89km.
	ZV,Z	iPKP$_2$		39	23				Loyalty Islands region. USCGS.
	E	M	23	46	-	20	½		
	N	M		46	-	20	1		
		F	24	30	-				
8	ZV,Z	ePKP	02	54	59	8	2.1		
	E	eSS	03	18	27				20.0°S., 168.8°E. h about 52 km.
	E	M	04	03	-	20	2		Loyalty Islands. USCGS.
	N	M		04	-	20	2½		
	Z	M		04	-	20	2		
		F	05	20	-				Mag.: M = 5¾
8	ZV,Z	ePKP	15	54	18	6	3.4		
	ZV,Z	i		54	21				20.1°S., 169.8°E. h about 44 km.
	E	M	17	02	-	20	3		Loyalty Islands. USCGS.
	N	M		02½	-	21	4½		
	Z	M		02½	-	20	2½		
		F	18	15	-				Mag.: M = 6-6¼
8	ZV,Z	e(P)	21	33	40				
	ZV	i		33	45				
	E	M	22	40	-	22	1		
	N	M		40	-	22	1½		
		F	-	-	-				overlapped by next shock.
8	ZV,Z	iPKP	22	08	47				20.2°S., 169.0°E.
	E	M	23	15	-	22	½		Loyalty Islands region.
	N	M		15	-	22	1		USCGS.
		F	24	10	-				
9	NE	e	07	05	-				Small. 15.0°N., 87.2°W.
		F		30	-				Honduras. USCGS.
9	ZV,Z	eP	08	14	16				Small. 28.8°N., 54.7°E.
	ZV	i		14	21				Iran. USCGS.
		F		50	-				
10	NE	e	04	13	-				Very small. 19.2°S., 68.4°W.
		F		50	-				Chile-Bolivia border. USCGS.
11	ZV,Z	eP	09	44	25	5	1.5		8.3°N., 93.3°E. h about 163 km.
	N	e		54	49				Nicobar Islands region. USCGS.
	E	M	10	24	-	20	1½		
	N	M		24	-	20	4		
	Z	M		24	-	20	1		
		F	11	40	-				Mag.: M = 5.8
12	ZV,Z	iP	02	53	14				
	N	eL		59	-				40.1°N., 23.5°E. h about 129km.
	E	M	03	00½	-	18	½		Greece. USCGS.
	N	M		00½	-	18	2		
		F		10					

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JULY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	△ km.	REMARKS
13	NE	e	22	20	-				22.8°N., 122.7°E. h about 100 km.
	E	M		34	-	20	2½		Off Formosa. USCGS.
	N	M		34	-	20	3		
		F	23	00	-				
15	NE	e	00	55	-				Small. 13.1°N., 120.4°E.
		F	01	35	-				Luzon. USCGS.
16	NE	e	15	20	-				Small. 22.7°S., 171.2°E.
		F	16	05	-				Loyalty Islands region. USCGS.
17	E	eSKS	01	23	46				16.7°N., 97.7°W.
	E	M		50	-	20	½		Oaxaca, Mexico. USCGS.
		F	02	10	-				
17	ZV,Z	eP	16	32	57			9400	
	N	eS		43	14				35.7°N., 141.2°E. h about 75 km.
	E	e		43	38				Near Honshu, Japan. USCGS.
	E	M	17	12½	-	20	3½		
	N	M		16	-	18	4		
	Z	M		16	-	18	1½		
		F		50	-				Mag.: M = 5¾-6
18	ZV,Z	iP	14	16	32	8	8.5	9900	Dilatation. PH 10sec. 3.7 μ
	ZV,Z	iPP		20	04	8	5.8		PPH 10sec. 3.2 μ
	NE	eSKS		26	58				
	NE	iS		27	16	11	20 (H)		29.4°N., 131.6°E. h about 21 km.
	Z	ePS		28	18				Northern Ryukyu Islands. USCGS.
	N	eSS		33	00				
	NE	eLR		44	-				
	E	M		56	-	21	165		
	N	M		56½	-	19	70		
	Z	M		57	-	20	27		
		F	18	30	-				Mag.: M = 7.1
18	ZV	eP	14	46	55				29.9°N., 131.2°E. Ryukyu Islands. USCGS.
18	NE	e	20	10	-				Small. 29.3°N., 131.6°E.
		F		40	-				Ryukyu Islands, USCGS.
18	NE	e	24	30	-				Small. 29.7°N., 131.4°E.
		F		50	-				Ryukyu Islands. USCGS.
19	NE	e	04	40	-				Very small. 58.8°S., 25.3°W.
		F	05	00	-				Sandwich Islands. USCGS.
19	NE	e	06	15	-				Very small. 29.2°N., 131.2°E.
		F		40	-				Ryukyu Islands. USCGS.
19	NE	eL	07	15	-				Small. 29.6°N., 131.7°E.
		F		50	-				Ryukyu Islands. USCGS.
19	E	e	11	20	-				Small. 29.8°N., 131.5°E.
		F		40	-				Ryukyu Islands. USCGS.

FORM 3718

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JULY, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
19	E	eS	12	22	23				29.6°N., 131.5°E.
	E	M		51½	-	21	1½		Northern Ryukyu Islands.
	N	M		51½	-	20	1½		USCGS.
		F	13	20	-				
19	ZV,Z	eP	23	05	29			2300	Dilatation.
	E	eS		09	12				
	NE	eL		21	-				37.7°N., 20.2°E. h about 37 km.
	N	M		13½	-	16	2		Near coast of Greece. USCGS.
	E	M		15	-	16	2		
		F		35	-				
20	NE	e	07	35	-				10.3°N., 124.9°E. h about 25 km.
	N	M		52	-	19	1½		Samar, Philippine Islands. USCGS.
	E	M		53	-	19	1		
		F	08	15	-				
20	NE	e	09	50	-				Very small. 28.4°N., 133.6°E.
		F	10	15	-				Ryukyu Islands. USCGS.
20	NE	e	21	25	-				Very small. 31.8°S., 177.2°W.
		F	22	00	-				Kermadec Islands. USCGS.
21	NE	e	04	40	-				Very small.
		F	05	00	-				
21	NE	e	19	20	-				
	N	M		44	-	18	1½		29.6°N., 131.6°E.
	E	M		46	-	18	1½		Northern Ryukyu Islands.
		F	20	25	-				USCGS.
21	NE	e	23	25	-				Very small. 29.6°N., 131.6°E.
		F		55	-				Ryukyu Islands. USCGS.
23	ZV,Z	ePKP	14	23	17				18.5°S., 168.2°E. h about 44 km.
	NE	eL	15	11	-				New Hebrides Islands.
	Z	M		36½	-	20	2		
	E	M		36½	-	20	6½		
	N	M		37½	-	20	2½		Mag.: M = 6¼
		F	-	-	-				overlapped by next shock.
23	ZV,Z	ePKP	14	36	13				18.4°S., 168.1°E. New Hebrides. USCGS.
23	ZV,Z	ePKP	15	49	55				
	N	M	16	55	-	20	3		
	E	M		56	-	20	1½		
	Z	M		56	-	20	1		
		F	17	55	-				
23	ZV,Z	iPKP	22	10	45	8	35	16500	Compression. PPH 16sec. 18.7 μ
	ZNE	ePP		14	09	12	10		
	NE	eSS		34	11				18.3°S., 168.3°E. h about 44 km.
	E	eLQ		52	-				New Hebrides Islands.
	Z	M	23	16	-	21	42		USCGS.
	N	M		16	-	21	108		
	E	M		17	-	22	78		
		F	26	30	-				Mag.: M = 7½

M.O. 105

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JULY, 19 61.

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
23	ZV,Z	iPKP	22	21	35				
24	ZV	ePKP	00	05	57				18.4°S., 167.8°E. New Hebrides. USCGS.
24	ZV	ePKP$_1$	01	49	40				21.1°S., 179.3°W. h about 642 km.
	ZV	ePKP$_2$		49	49				Fiji Islands. USCGS.
25	ZV	eP	02	59	50			9500	8.8°S., 71.3°W. h about 642 km.
	E	eS	03	09	27				Western Brazil. USCGS.
25	NE	e	09	50	-				Very small. 18.4°S., 167.7°E.
		F	10	05	-				New Hebrides. USCGS.
27	NE	e	18	46	-				35.2°N., 25.4°E.
	N	M		50	-	19	1½		Aegean Sea. USCGS.
		F	19	00	-				
28	ZV,Z	iP	01	17	44	5	2.8	9300	Compression.
	ZV,Z	ipP		18	18				Depth = 133 km.
	ZV,Z	ePP		20	56				
	E	eSKS		27	51				2.2°S., 77.1°W.
	ZNE	ePS		28	48				Ecuador. USCGS.
	E	eSS		33	28				
	N	eL		41	-				
	E	M		52	-	18	2½		
	N	M		52	-	18	1½		
		F	02	40	-				Mag.: M = 6-6¼
28	ZV,Z	ePKP	06	31	18				
	Z	ePP		34	38	8	1.2		
	NE	eSS		53	43				18.6°S., 167.7°E. h about 41 km.
	E	M	07	31	-	20	½		New Hebrides Islands. USCGS.
	N	M		32	-	20	½		
		F	08	40	-				
28	N	eSKS	10	36	50				20.0°N., 109.2°W.
	N	M	11	03	-	18	2½		Pacific Ocean.
	E	M		03½	-	18	3½		USCGS.
		F	-	-	-				
28	NE	eL	11	15	-				20.2°N., 109.1°W.
		F		50	-				Pacific Ocean. USCGS.
28	ZV	iP	15	31	56				43.4°N., 146.1°E. Kurile Islands. USCGS.
29	N	e	12	50	-				Small.
		F	13	10	-				
29	ZV,Z	ePKP$_1$	16	47	15				
	ZV,Z	ePKP$_2$		47	25				23.9°S., 176.1°W. h about 23 km.
	E	M	17	57	-	20	1		Tonga Islands region. USCGS.
	N	M		57	-	20	1		
		F	18	50	-				

M.O. 703

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR AUGUST, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS: (i) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ak}{\pi l}$ sec.$^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(ii) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
1	N	e	00	43	-				Very small.
		F		50	-				
1	NE	e	03	38	-				Very small. 15.5°N., 46.6°W.
		F		50	-				Atlantic Ocean. USCGS.
1	ZV,Z	ePKP	05	59	13				
	Z	ePP	06	01	45	6	1.3		9.8°S., 160.5°E. h about 50 km.
	NE	eL		34	-				Solomon Islands region. USCGS.
	N	M		59	-	22	13		
	E	M	07	01	-	21	8		
	Z	M		01	-	21	3½		Mag.: M = 6.3
		F	-	-	-				overlapped by next shock.
1	Z	ePP	07	40	21				56.8°S., 25.1°W. h about 44 km.
	E	M	08	23½	-	18	7		Sandwich Islands region. USCGS.
	N	M		24	-	18	12½		
	Z	M		24	-	18	8½		Mag.: M = 6¼
		F	-	-	-				overlapped by next shock.
1	E	e(S)	10	01	31				
	N	e		03	15				57.1°S., 26.1°W. h about 31 km.
	N	eSS		09	17				Sandwich Islands. USCGS.
	E	M		36½	-	19	2½		
	N	M		36½	-	19	4		
	Z	M		36½	-	19	3		
		F	11	40	-				Mag.: M = 6
1	NE	e	15	35	-				Very small. 17.8°S., 167.7°E.
		F	16	20	-				New Hebrides Islands. USCGS.

Form 8717.

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

AUGUST, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	△ km.	REMARKS
2	NE	e	02	25	-				Very small. 53.3°S., 134.9°W.
		F		45	-				South Pacific Ocean. USCGS.
2	NE	e	02	50	-				18.9°S., 168.0°E. New Hebrides.
		F	-	-	-				overlapped by next shock.
2	E	M	03	36	-	19	1		
	N	M		37	-	18	2		56.7°S., 24.8°W.
	Z	M		37	-	18	1		Sandwich Islands. USCGS.
		F	04	15	-				
2	NE	e	04	50	-				57.6°S., 26.6°W.
	N	M	05	02	-	18	½		Sandwich Islands. USCGS.
		F		25	-				
2	ZV,Z	iP	12	24	14				Compression. 44.5°N., 148.7°E.
									Kurile Islands. USCGS.
3	ZV,Z	iP	03	18	07			6860	Dilatation.
	NE	eS		26	15				18.2°N., 66.2°W. h about 141 km.
	NE	e		27	43				Puerto Rico. USCGS.
		F	04	00	-				
3	NE	e	07	19	-				
	E	M	08	01	-	20	1		3.5°S., 130.8°E.
	N	M		01	-	20	½		Ceram. USCGS.
		F		35	-				
4	ZV,z	e(P)	18	41	54			3580	
	NE	e(S)		47	04				34.8°N., 38.7°W. h about 26 km.
	N	eL		49.0	-				North Atlantic Ocean. USCGS.
	E	M		50½	-	19	2		
	N	M		50½	-	19	4		
		F	19	25	-				Mag.: M = 5
4	ZV,Z	iP	23	05	04			9000	
	NE	eS		15	08				45.3°N., 151.1°E.
	NE	eL		27	-				Kurile Islands. USCGS.
	E	M		44	-	18	1½		
	N	M		44	-	19	2½		
		F	24	30	-				
7	NE	e	04	49	-				
	NE	eL	05	18	-				2.7°S., 121.6°E.
	N	M		34	-	22	1½		Celebes. USCGS.
	E	M		34½	-	20	1½		
		F		55	-				
7	NE	e	13	40	-				28.1°S., 176.5°W.
	N	M		53	-	20	1		Kermadec Islands region.
	E	M		54	-	20	½		USCGS.
		F	14	40	-				

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

AUGUST, 19 61

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
8	ZV,Z	iP	12	30	18			8700	Dilatation. Disturbed by
	ZV,Z	ePP		33	22				microseisms.
	NE	iS		40	09	12	5.0 (H)		50.9°N., 170.7°W. h about 24 km.
	NE	eLR		55	-				Fox Islands, Aleutian Islands.
	Z	M	13	07	-	20	4		USCGS.
	N	M		07	-	20	6½		
	E	M		07½	-	20	4½		
		F	14	10	-				Mag.: M = 6-6¼
9	ZV,Z	iPKP	16	22	14				19.1°S., 168.7°E. New Hebrides
	ZV,Z	i		22	27				Islands. USCGS.
10	NE	e	02	05	-				Very small. 54.1°N., 131.9°E.
		F		30	-				U.S.S.R. USCGS.
10	NE	e	12	50	-				Very small. 37.2°N., 136.9°E.
		F	13	10	-				Near Honshu, Japan. USCGS.
11	NE	e	05	10	-				Very small. 32.5°N., 131.3°E.
		F		35	-				Kyushu, Japan. USCGS.
11	NE	e	06	50	-				Small. 32.6°N., 131.4°E.
		F	07	30	-				Kyushu, Japan. USCGS.
11	ZV,ZNE	iP	16	03	48	6	22.6	9100	Compression. Depth = 71 km.
	ZV,Z	ipP		04	07				PH 12 sec. 10.3 μ
	ZV,Z	iPP		06	54				42.9°N., 145.1°E.
	NE	iS		13	53	11	47 (H)		Eastern Hokkaido, Japan.
	E	i		14	08				Slight tsunami. USCGS.
	Z	iSP		14	37				
	E	eSS		18	51				
	E	eL		25	-				
	N	M		38½	-	24	137		
	E	M		39	-	22	80		
	Z	M		39	-	24	57		
		F	20	20	-				Mag.: M = 7.5
11	Z	e (PP)	22	56	29				
	NE	ePKS	23	04	23				2.8°S., 122.1°E.
	E	M		49	-	20	1½		Eastern Celebes. USCGS.
	N	M		49	-	21	1½		
		F	24	40	-				
11	ZV	iP	23	46	05				42.8°N., 145.1°E.
	ZV	i		46	17				Eastern Hokkaido, Japan. USCGS.
	ZV	i		46	30				
13	NE	eL	06	42	-				Small. 25.3°N., 121.5°E.
		F	07	20	-				Near Formosa. USCGS.
13	NE	e	22	39	-				Small. 45.0°N., 9.9°E.
		F		43	-				North Italy. USCGS.
14	NE	e	01	08	-				Very small.
		F		12	-				North Italy.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

AUGUST, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
14	ZV,Z	ePKP	19	10	47				
	NE	eL		54	-				24.2°S., 175.7°W.
	E	M	20	18	-	20	1½		Tonga Islands region.
	N	M		18	-	20	1½		Mag. 5½(Berk) USCGS.
		F	21	10	-				
14	NE	eL	22	48	-				31.8°N., 131.2°E.
	E	M	23	00	-	20	1½		Off Kyushu, Japan.
	N	M		00	-	20	1		USCGS.
		F		25	-				
14	ZV,Z	iPKP	23	48	23				
	ZV,Z	i		48	27				20.3°S., 169.4°E. h about 97 km.
	NE	eL	24	37	-				New Hebrides Islands.region.
	E	M		55	-	22	3½		USCGS.
	N	M		55	-	22	4½		
	Z	M		55	-	22	2½		
		F	25	50	-				Mag.: M = 6-6¼
15	ZV,Z	iP	19	16	53			10000	
	NE	eS		27	42				32.8°N., 142.4°E. h about 39 km.
	NE	eL		47	-				South of Honshu, Japan. USCGS.
	E	M		57	-	19	3½		
	N	M	20	02	-	18	3½		
	Z	M		02	-	18	1		
		F		35	-				Mag.: M = 5¾
16	NE	e	16	45	-				
	N	M		55	-	20	2		13.8°S., 14.7°W.
	E	M		56	-	18	2		South of Ascension Island. USCGS.
	Z	M		56	-	18	1		
		F	17	05	-				
17	Z	iP	21	28	49	5	6.4	8800	Dilatation. PH 6 sec. 3.6 μ
	Z	ipP		29	31				Depth = 170 km.
	Z	ePP		31	50				46.3°N., 149.3°E.
	NE	eS		38	33	12	8.5(H)		Kurile Islands. USCGS.
	E	esSS		44	40				
	E	M	22	01½	-	26	10		
	N	M		01½	-	24	6		
		F	23	00	-				Mag.: M = 6.5
18	NE	e	06	50	-				Very small.
		F	07	00	-				
19	ZV,ZE	iP	05	21	30	8	11.7	9450	Dilatation. PH 12 sec. 6.9 μ
	ZV,Z	ipP		23	40				Depth = 600 km.
	ZE	iPP		24	50				
	ZNE	iSKS		30	56				10.7°S., 71.0°W. h about 649 km.
	NE	iS		31	08	11	77(H)		Peru-Brazil border. USCGS.
	ZE	iSP		32	16				
	NE	esS		35	04				
	NE	eSS		37	08				Mag.: M = 7.0
		F	-	-	-				overlapped by next shock.
19	ZV,Z	iP	05	29	16				
19	ZV,Z	iP	05	39	08				

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SEISMOLOGICAL BULLETIN

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DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
19	ZV,Z	iP	05	46	08	4	3.2	9500	Compression.
	ZV,Z	ePP		49	28				
	NE	eS		56	36	12	14.2(H)		36.0°N., 136.5°E. h about 17 km.
	Z	ePS		57	32				Off coast of Honshu, Japan.
	NE	eLR	06	14	-				5 killed, many injured, moderate
	E	M		21	-	20	80		property damage.
	N	M		21	-	21	64		USCGS.
	Z	M		26	-	16	22		
		F	08	50	-				Mag.: M = 7.0
20	NE	e	02	45	-				Very small. 17.8°S., 169.0°E.
		F	03	20	-				New Hebrides Islands. USCGS.
20	ZV,Z	iPKP	05	23	55				Compression. 17.8°S., 178.8°W.
	ZV,Z	epPKP		25	05				Fiji Islands. USCGS.
21	ZV,Z	iP	07	09	19				36.3°N., 71.5°E. Hindu-Kush. USCGS.
21	ZV,Z	ePKP	16	26	32				17.8°S., 174.4°W. Tonga Islands. USCGS.
21	ZV	i(P)	17	12	54				40.9°N., 138.9°E. Japan. USCGS.
23	ZV,Z	iP	04	21	20			5450	Compression.
	E	eS		28	21				
	NE	eL		39	-				38.7°N., 68.7°E. h about 25 km.
	E	M		45	-	20	4½		Tadzhik S.S.R. USCGS.
	N	M		45	-	20	1½		
	Z	M		45	-	20	2½		
		F	05	00	-				Mag.: M = 5¼
24	NE	e	22	10	-				Very small. 21.3°S., 173.1°E.
		F		35	-				Loyalty Islands. USCGS.
24	ZV,Z	e(P)	22	53	07				43.0°N., 145.0°E. Hokkaido.USCGS.
25	ZV	e(Pg)	12	24	41			950	
	ZV,NE	e(S)		25	33				47.5°N., 10.5°E.
	NE	e(Sg)		26	33				Algau Alps. BCIS.
	N	M		27	-	14	1½		
		F		29	-				
27	ZV,Z	eP	02	02	49				15.3°S., 13.1°W. South of
	E	eL		21	-				Ascension Island. USCGS.
	E	M		26½	-	20	1½		
		F		45	-				
27	ZV,Z	eP	16	34	17			8940	Confused by microseisms.
	NE	eS		44	19				46.6°N., 154.1°E. h about 31 km.
	E	M	17	08	-	20	3½		Kurile Islands. USCGS.
	N	M		08	-	20	2½		Mag.: M = 5½
		F	-	-	-				overlapped by next shock.
27	ZV,Z	ePP	17	06	12				Confused by microseisms.
	E	M		50	-	24	4		18.3°N., 146.6°E. Mariana Islands.
	N	M		50	-	24	5		USCGS.
		F	18	30	-				Mag.: M = 6

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DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
27	ZV,Z	iP	22	13	53			2650	
	NE	eS		18	01				35.9°N., 23.7°E. h about 69 km.
	N	eL		20½	-				Near west coast of Crete. USCGS.
	N	M		23½	-	20	3		
	E	M		24½	-	20	3		
		F		35	-				
28	ZV,Z	iPKP	10	02	57				18.6°S., 178.0°W. h about 574 km.
	ZV,Z	ipPKP		05	07				Fiji Islands. USCGS.
28	NE	e	21	34	-				Small.
		F		40	-				
28	ZV,Z	eP	21	40	12				14.0°S., 74.4°W. Near Peru. USCGS.
29	NE	e	15	25	-				Small. 52.2°N., 170.8°W.
		F		50	-				Fox Islands. USCGS.
30	NE	eS	03	51	51				7.0°N., 33.2°W. h about 69 km.
	NE	eL		57	-				North Atlantic Ocean. USCGS.
	E	M		58½	-	18	1		
	N	M		59	-	18	1½		
		F	04	20	-				
31	ZV,Z	iP	02	00	19	6	4.2	9570	Dilatation. PH 9 sec. 2.6 μ
	ZV,Z	ipP		02	27				Depth = 600 km.
	E	iSKS		09	48				10.6°S., 70.9°W.
	NE	iS		10	03	12	33(H)		Peru-Brazil border. USCGS.
	NE	esS		13	46				Mag.: M = 6.5
		F	-	-	-				overlapped by next shock.
31	ZV,Z	iP	02	08	48	8	16		Dilatation. PH 12 sec. 9.3 μ
	ZV,Z	i		08	50				Depth = 610 km.
	ZV,Z	ipP		11	00				10.4°S., 70.7°W.
	E	iSKS		18	17				Peru-Brazil border. USCGS.
	EN	iS		18	32	12	145(H)		
	NE	eSP		19	36				
	NE	eSS		24	38				Mag.: M = 7.3
		F	05	30	-				

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DS 96982/1 R94 140 10/61 XL

No. 703

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR SEPTEMBER, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS: (I) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2	$\frac{Ak}{\pi l}$ $sec.^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(II) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
1	Z,N	eP	00	24	06	10	0.9	12500	PN 16 sec. 0.6 μ
	ZN	ePP		28	46	8	2.9		PPH 16sec. 3.4 μ
	E	iS		36	28	16	14.2(H)		
	E	esS		37	22				59.3°S., 27.3°W. h about 131 km.
	N	ePS		38	16				Sandwich Islands region. USCGS.
	E	eSS		44	18				
	E	eLQ		55	-				
	E	M	01	09½	-	20	8½		
	N	M		11½	-	20	11½		
	Z	M		11½	-	20	6½		
		F	03	15	-				Mag.: M = 7.2
1	ZV	iPKP	16	55	40				16.4°S., 176.6°W. Fiji Islands. USCGS.
1	ZV	iPKP	19	00	10				18.0°S., 178.3°W. Fiji Islands. USCGS.
1	ZV,Z	eP	19	02	47	8	1.9	9300	
	ZV,Z	ePP		05	53				13.5°N., 92.5°W. h about 37 km.
	NE	eS		13	07	8	3.1(H)		Off coast of Guatemala. USCGS.
	N	eL		26	-				
	Z	M		36½	-	20	2½		
	N	M		36½	-	20	3		
	E	M		38½	-	19	5		
		F	20	30	-				Mag.: M = 6.1
2	ZV	iP	00	37	56				Compression.
	NE	eL	01	00	-				52.0°N., 170.9°W. h about 39 km.
	N	M		14	-	20	1		Fox Islands. USCGS.
		F		40	-				

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

SEPTEMBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
2	NE	e	11	30	-				Very small. 2.0°S., 67.5°E.
		F		45	-				Indian Ocean. USCGS.
2	ZV,Z	eP	14	20	54				
	NE	eL		27	-				38.9°N., 23.6°E. h about 20 km.
	E	M		28	-	16	½		Near coast of Greece. USCGS.
	N	M		28	-	16	1½		
		F		35	-				
4	NE	e	00	33	-				Very small. 41¾°N., 2½°W.
		F		37	-				Spain. BCIS.
4	NE	e	05	40	-				Very small. 46.9°N., 154.2°E.
		F	06	05	-				Kurile Islands. USCGS.
√ 4	ZV,Z	eP	10	01	06				
	E	M		38	-	20	1		51.4°N., 178.1°W.
	N	M		38	-	20	½		Andreanof Islands. USCGS.
		F	11	10	-				
5	NE	e	00	50	-				Small. 38.4°N., 23.5°E.
		F		57	-				Near coast of Greece. USCGS.
5	NE	e	01	28	-				Small. 38.3°N., 23.5°E.
		F		38	-				Near coast of Greece.
5	NE	e	02	48	-				Small. 80.0°N., 2.3°W.
		F	03	15	-				Arctic Ocean. USCGS.
√ 5	ZV,Z	eP	06	21	56			5700	
	ZV,Z	e		22	27				38.6°N., 73.3°E. h about 50 km.
	NE	eS		29	09				Tadzhik S.S.R. USCGS.
	E	M		48½	-	20	1½		
		F	07	05	-				
√ 5	ZV,Z	eP	11	45	27	5	1.7	7400	
	ZV,Z	e		45	38				59.8°N., 150.6°W. h about 44 km.
	ZV,Z	ePP		48	01	6	1.5		Kenai Peninsula.
	NE	eS		54	15				USCGS.
	NE	ePS		54	32				
	E	eL	12	02	-				
	E	M		16	-	16	4		
	N	M		16	-	19	4		
	Z	M		16	-	16	3		Mag.: M = 6¼
		F	13	15	-				
8	NE	e	05	20	-				51.8°N., 131.2°W. h about 54 km.
	E	M		34	-	18	1½		Queen Charlotte Islands. USCGS.
	N	M		34	-	18	1½		
		F	06	00	-				
8	Z	eP	11	40	50			12150	
	ZV,Z	ePP		45	26	6	2.9		PPH 16 sec. 3.1μ
	NE	eSKS		51	17				
	NE	e		52	13				56.1°S., 27.3°W. h about 125 km.
	NE	eS		52	51	13	12(H)		Sandwich Islands region. USCGS.
	ZN	ePS		54	49				
	ZN	ePPS		55	41				
	NE	eSS	12	00	53				

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contd.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

SEPTEMBER, 19 61

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	△ km.	REMARKS
contd.									
8	NE	eSSS	12	04	45				
	E	eL_Q		11	-				
	N	eL_R		14½	-				
	E	M		24	-	20	45		
	N	M		25	-	22	59		
	Z	M		25	-	22	34		
		F	15	10	-				Mag.: M = 7.3
9	NE	e	09	50	-				Very small. 52.5°N., 169.4°W.
		F	10	10	-				Fox Islands. USCGS.
9	NE	e	19	50	-				Small. 1.5°N., 90.6°W.
		F	20	15	-				Galapagos Islands. USCGS.
10	ZV,Z	eP	04	57	42				22.7°S., 63.1°W. Argentina. USCGS.
10	E	eL	09	14	-				
	N	eL		17	-				Ho = 09 00 10 (BCIS)
	E	M		21	-	24	1.0		
	M	M		21	-	24	1.2		Nuclear explosion in Novaya
	N	M		24½	-	13	2.5		Zemlya region.
	Z	M		24½	-	13	1.7		
		F		30	-				
10	NE	e	16	30	-				Very small. 37.2°N., 36.6°E.
		F		45	-				Turkey. USCGS.
11	ZV,Z	iP	02	58	42				Small. 51.3°N., 179.7°W.
		F	03	55	-				Andreanof Islands. USCGS.
11	NE	e	20	55	-				Very small. 4.1°S., 134.3°E.
		F	21	20	-				Aroe Islands. USCGS.
12	E	eL	10	24	-				Confused by microseisms.
	N	M		32½	-	12	1.2		Ho = 10 08 20 (BCIS)
	Z	M		32½	-	12	0.9		Nuclear explosion in Novaya Zemlya.
		F		37	-				
12	ZV,Z	iP	12	39	19				Confused by microseisms. 43.8°N., 147.8°E. Near Japan.USCGS.
12	NE	e	19	55	-				Small. Confused by microseisms.
		F	20	15	-				32.1°N., 115.1°W. California.USCGS.
12	NE	eL	20	20	-				Confused by microseisms.
	E	M		34	-	18	1½		59.4°S., 29.2°W.
	N	M		34	-	18	2		Sandwich Islands. USCGS.
		F	21	10	-				
13	NE	eL	22	10	-				Confused by strong microseisms.
	E	M		22	-	22	3½		41.6°S., 73.2°W. Southern Chile.
	N	M		22	-	22	3		USCGS.
		F		55	-				
14	ZV,Z	iP	08	10	33				Confused by strong microseisms.
	ZV,Z	i		10	38				33.6°N., 48.8°E. Iran. USCGS.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

SEPTEMBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
14	NE	eL	10	15	-				Confused by microseisms.
	N	M		20¾	-	12	1.4		Ho = 09 56 30 (BCIS)
	Z	M		20¾	-	12	0.9		Nuclear explosion in Novaya
		F		25	-				Zemlya.
15	ZV,Z	iP	01	52	11			3280	Compression. Confused by
	ZV,Z	ipP		52	26				microseisms.
	E	eS		57	02	14	3.6		Depth = 60 km.
	E	M	02	05	-	20	9		35.1°N., 33.9°E.
	N	M		05	-	20	17		Cyprus. USCGS.
	Z	M		06½	-	16	10		
		F		45	-				Mag.: M = 5¾
17	ZV	eP	08	54	51				Confused by microseisms.
	NE	eL	09	23	-				23.9°N., 122.2°E. Off Formosa.
	E	(M)		31½	-	22	6		USCGS.
	N	(M)		31½	-	22	3		Break in recording between 09 32
		F	10	10	-				- 09 40.
18	NE	eL	00	25	-				Small. 5.9°S., 147.4°E. Near
		F		45	-				New Guinea. USCGS.
18	NE	eL	03	02½	-				
	E	M		04	-	20	2		
	N	M		05	-	18	1		
		F		15	-				
18	N	eL	05	22	-				35.0°N., 26.3°E. h about 83 km.
	N	M		24	-	18	1		Crete. USCGS.
		F		31	-				
18	NE	eL	08	19	-				Ho = 07 59 52 (Kew)
	N	M		24	-	12	1.2		Nuclear explosion in Novaya
	Z	M		24	-	12	0.9		Zemlya.
		F		26	-				
18	ZV	i(P)	11	08	06				40.8°N., 50.1°E.
	ZV	i		08	15				Caspian Sea. USCGS.
	E	M		25	-	20	1		
		F		35	-				
19	ZV,Z	iP	02	37	51			9900	Depth = 560 km.
	ZV,Z	epP		39	54				
	ZV,Z	ePP		41	32				20.3°S., 63.2°W. h about 609 km.
	NE	iSKS		47	27				Southern Bolivia. Mag. 6½(Pas).
	E	ePS		49	05				
	N	esS		51	38				
	N	esSS		57	12				
		F	03	45	-				
19	ZV,Z	eP	09	58	27			8950	
	ZV,Z	ePP	10	01	28				6.7°N., 82.4°W.
	NE	eS		08	30	11	2.6(H)		South of Panama. USCGS.
	E	eSS		13	50				
	NE	eL	10	20	-				
	E	M		33½	-	20	2½		
	N	M		34	-	20	1½		
	Z	M		34	-	20	1		
		F	11	10	-				Mag.: M = 5.7

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SEISMOLOGICAL BULLETIN

SEPTEMBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
19	NE	e	22	30	-				Small. 60.1°S., 22.9°W.
		F	23	10	-				Sandwich Islands. USCGS.
20	NE	e	08	32	-				Ho = 08 12 28 (Kew)
	N	M		36¾	-	12	1,1		Nuclear explosion in Novaya
	Z	M		36¾	-	12	0.8		Zemlya.
		F		40	-				
20	ZV,Z	ePKP	19	22	45			13800	
	ZV	ePP		24	41				3.6°S., 150.9°E. h about 30 km.
	NE	eSKKS		31	32				New Britain. USCGS.
	E	M	20	15	-	20	3½		
	N	M		16	-	24	3½		
	Z	M		16	-	22	1½		
		F	21	25	-				Mag.: M = 6
24	ZV,Z	iP	19	16	48				18.4°N., 98.6°W. h about 81 km.
	ZV,Z	epP		17	10				Mexico. USCGS.
24	ZV,Z	eP	21	53	50				
	NE	eL	22	21	-				
	E	M		36	-	20	1½		33.3°N., 141.3°E. h about 93 km.
	N	M		36	-	19	1		South of Honshu, Japan. USCGS.
		F	23	00	-				
25	NE	e	06	00	-				Very small.
		F		40	-				
27	NE	eL	13	00	-				Confused by microseisms.
	E	M		09½	-	18	2½		59.4°S., 24.2°W. h about 110 km.
		F		45	-				Sandwich Islands. USCGS.
27	ZV,Z	iP	19	32	36				Confused by microseisms. 52.5°N., 168.7°W. Fox Islands. USCGS.
27	ZV,Z	iP	19	38	52				Confused by microseisms.
	NE	eL	20	00	-				52.2°N., 168.7°W.
	E	M		18	-	18	2		Fox Islands. USCGS.
	N	M		18	-	18	1½		
		F	20	50	-				
28	E	e	03	48	36				Confused by microseisms.
	NE	eL	04	06	-				30.5°N., 141.3°E. h about 125 km.
	E	M		19½	-	20	3		South of Honshu, Japan. USCGS.
	N	M		20	-	20	2		
		F		55	-				
28	ZV,Z	iP	22	45	12				27.6°N., 57.1°E. h about 56 km.
	ZV	i		45	20				Southern Iran. USCGS.
29	ZV	iP	17	02	51				Confused by microseisms.
	ZV	i		03	07				42.9°N., 145.4°E. Japan. USCGS.
29	NE	e	19	32	33				Confused by microseisms.
	NE	eL		58	-				
	N	M	20	11	-	20	1		
	E	M		12	-	20	2½		
		F		35	-				
29	ZV	eP	22	50	22				1.7°N., 79.3°W. Near coast of Colombia. USCGS.
30	ZV	iP	00	33	33				44.4°N., 148.9°E. Kurile Islands. USCGS.

FORM 3718

DS 98112/1 R94 140 11/61 XL

M.O. 703

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR OCTOBER 19 61

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS : (I) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS : FOR NOTATION SEE FÜRST B. GALITZIN " VORLESUNGEN ÜBER SEISMOMETRIE " (LEIPZIG, 1914) OR G. W. WALKER " MODERN SEISMOLOGY " (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ak}{\pi l}$ sec.$^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(II) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE : MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
2	Z	iP	07	26	33			2500	
	NE	eS		30	29	13	5.4(H)		37.2°N., 22.2°E. h about 72 km.
	NE	eL		34	-				Near coast of Greece. USCGS.
	N	M		36½	-	14	9		
	E	M		37	-	16	9½		
	Z	M		37	-	16	7½		
		F	08	10	-				Mag.: M = 5-5¼
2	NE	e	08	46	-				Small.
		F	09	15	-				
2	N	e	10	54	-				Ho = 10 31 04
	N	M		55½	-	13	0.8		Nuclear explosion in Novaya
		F		58	-				Zemlya
4	NE	e	03	30	-				Small. 13.2°S., 166.5°E.
		F	04	35	-				New Hebrides. USCGS.
4	NE	eL	07	49	-				Ho = 07 31 00 (BCIS)
	N	M		55½	-	12	2.4		Nuclear explosion in Novaya
	Z	M		55½	-	12	1.5		Zemlya.
		F	08	00	-				
5	ZV,Z	ePKP	18	28	20				19.4°S., 169.0°E. Loyalty Islands. USCGS.
5	E	e(S)	22	58	36				
	NE	eL	23	18	-				
	E	M		33	-	18	1½		
	N	M		33	-	18	2		
		F		45	-				

Form 3717.

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

OCTOBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
6	ZV	iP	03	24	17			(1800)	36½°N., 1¼°E.
	E	e(S)		27	17				Algeria. BCIS
		F		37	-				
6	NE	eL	07	16½	-				Ho = 07 00 10 (BCIS)
	E	M		20½	-	24	1.9		Nuclear explosion in Novaya
	N	M		20½	-	24	1.7		Zemlya.
	N	M		24½	-	12	2.5		
	Z	M		24½	-	12	1.4		
		F		30	-				
8	NE	e	22	40	-				Very small. 53.1°N., 166.7°W.
		F	23	00	-				Fox Islands. USCGS.
10	NE	eL	18	26	-				4.7°S., 138.2°E.
	E	M		40	-	20	1½		New Guinea. USCGS.
	N	M		40	-	20	1		
		F		55	-				
10	ZV,Z	iPKP	19	03	23				16.1°S., 176.3°W. Fiji Islands. USCGS.
13	NE	e	05	40	-				Very small. 55.9°S., 27.2°W.
		F	06	05	-				Sandwich Islands region. USCGS.
13	NE	e	11	30	-				Very small. 60.3°S., 34.3°W.
		F	12	10	-				Sandwich Islands region.
13	ZV,Z	ePKP	17	47	54				22.0°S., 176.9°W. Tonga Islands. USCGS.
14	ZV,Z	ePKP	16	33	29				19.1°S., 168.4°E.
	ZV,Z	e		33	35				New Hebrides. USCGS.
17	NE	eL	05	19	-				Confused by strong microseisms.
	E	M		26	-	20	3½		55.8°S., 0.5°E. Bouvet Islands.
	N	M		26	-	20	5		
		F		50	-				Mag.: M = 6
18	N	eS	17	18	30	16	4.3(H)		Confused by strong microseisms.
	E	ePS		20	16				
	NE	eSS		26	12				36.7°S., 72.6°W. h about 67 km.
	NE	eL		37½	-				Near coast of Chile. USCGS.
	E	M		50½	-	22	19		
	N	M		50½	-	22	11		
	Z	M		50½	-	22	12		
		F	19	35	-				Mag.: M = 6½
20	NE	eL	08	24	-				Confused by microseisms.
	N	M		31½	-	13	1.1		Ho = 08 07 10 (BCIS)
	Z	M		31½	-	13	0.9		Nuclear explosion in Novaya
		F		35	-				Zemlya.
22	NE	e	11	00	-				Small. 19.9°S., 172.4°E.
		F		40	-				New Hebrides Islands. USCGS.

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

OCTOBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	△ km.	REMARKS
23	N	ePS	00	37	59				Confused by microseisms.
	E	eLQ		56	-				
	E	M	01	13½	-	20	3		60.4°S., 33.4°W. Sandwich Islands
	N	M		13½	-	20	6		region. USCGS.
	Z	M		13½	-	20	4		
		F	02	10	-				Mag.: M = 6-6¼
23	E	eL	08	46	-				Ho = 08 31 26 (BCIS)
	E	M		51½	-	24	4.8		
	N	M		51½	-	24	5.0		Nuclear explosion in Novaya
	N	M		55¾	-	13	5.6		Zemlya.
	Z	M		55¾	-	13	4.9		
		F	09	01	-				
23	NE	e	15	24	-				Confused by strong microseisms.
	E	M		40½	-	22	6½		
	N	M		40½	-	22	9		
		F	16	30	-				
24	ZV,Z	iP	07	37	21				45.0°N., 146.4°E. Off Hokkaido, Japan. USCGS.
26	NE	e	01	16	15				Confused by microseisms.
	N	e		21	17				
	E	eL		33	-				
	E	M		53½	-	21	8½		
	N	M		54	-	21	10		
	Z	M		54	-	21	8½		
		F	02	45	-				
26	NE	e(S)	15	51	31				Confused by microseisms.
	N	eL	16	07	-				0.4°S., 98.6°E. Off west coast
	N	M		27	-	20	5		of Sumatra. USCGS.
	E	M		31	-	20	4½		
		F	17	10	-				Mag.: M = 6
28	ZV	iP	10	54	12				33.7°N., 48.5°E. Iran. USCGS.
	N	M	11	11	-	20	1		
		F		25	-				
28	NE	e	15	40	-				Small. 38.7°S., 73.3°W. Near
		F	16	10	-				coast of Chile. USCGS.
28	N	e	23	07	38				
	E	M		25	-	14	2½		
	N	M		25	-	16	2½		
	Z	M		25	-	16	2½		
		F		40	-				
28	NE	e	24	00	-				Very small. 13.9°S., 166.3°E.
		F		55	-				New Hebrides. USCGS.
29	NE	e(S)	09	32	49				
	E	M		51	-	20	11		49.0°N., 128.7°W. Vancouver
	N	M		51½	-	20	7		Island region. USCGS.
	Z	M		51½	-	20	4		
		F	10	50	-				Mag.: M = 6

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

OCTOBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	△ km.	REMARKS
29	NE	e	15	20	-				Small. 48.7°N., 128.3°W. Vancouver Island. USCGS.
		F		40	-				
30	ZV,Z	eP	02	28	16				42.3°N., 126.7°W. Off coast of Oregon. USCGS.
	NE	eL		51	-				
	E	M	03	00	-	20	1½		
	N	M		00	-	20	1½		
		F		30	-				
30	ZV	iP	08	39	55				H_0 = 08 33 30 (BCIS)
	N	ePcS		46	15				Nuclear explosion in Novaya Zemlya.
	E	eL		48	-				
	E	M		54	-	24	8.3		
	N	M		54	-	24	7.7		
	N	M		58	-	13	12.5		
	Z	M		58	-	12	6.5		
		F	09	20	-				
30	NE	e	13	30	-				Small. 1.0°N., 29.5°W. Mid-Atlantic Ocean. USCGS
		F		50	-				
30	NE	e	22	00	-				28.9°N., 141.8°E. South of Honshu, Japan. USCGS.
		F		35	-				
31	NE	eL	08	47	-				Confused by microseisms.
	N	M		54	-	13	3.6		H_0 = 08 29½
	Z	M		54	-	13	3.5		Nuclear explosion in Novaya Zemlya region.
		F	09	03	-				

FORM 3718

DS99283/1 R94 140 12/61 XL

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR NOVEMBER, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS: (i) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1 sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ah}{\pi l}$ sec.$^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(ii) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
4	NE	eL	07	38	-				Confused by microseisms.
	N	M		45½	-	13	2.3		H = 07h. 21m. Possible nuclear
	Z	M		45½	-	13	2.1		explosion?
		F		50	-				
6	NE	eL	06	36	-				13.3°S., 166.0°E. Santa Cruz
	N	M		51	-	20	1½		Islands region. USCGS.
	E	M		51	-	20	1½		
		F	07	35	-				
7	NE	e	02	10	-				Small. 11.6°N., 126.1°E.
		F		25	-				Philippine Islands. USCGS.
10	ZV	iPKP	18	19	29				17.5°S., 178.8°W. Fiji Islands. USCGS.
12	E	eSS	02	36½	-				Confused by microseisms.
	E	M		53	-	16	3½		08°N., 29.5°E. Congo region.
	N	M		53	-	16	5		USCGS.
	Z	M		53	-	16	3½		
		F	03	20	-				Mag.: M = 5½
14	NE	eL	05	15	-				Confused by microseisms.
	Z	M		25	-	20	4		7.3°N., 82.4°W. Off coast of
	E	M		25	-	20	6		Panama. USCGS.
	N	M		26	-	20	3		
		F		50	-				Mag.: M = 6
15	ZV,Z	iP	07	29	27	6	9.8	9000	PH 12 sec. 4.0 μ
	ZV,Z	ipP		29	39				PPH 20 sec. 3.7 μ
	Z	ePP		32	25	6	1.5		Depth = 41 km.

Form 3717. contd.

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

NOVEMBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
contd.									
15	NE	iS	07	39	34	10	19 (H)		
	NE	e (sS)		39	53				43.1°N., 145.1°E.
	NE	iPS		40	05				Near coast of Hokkaido, Japan.
	E	eSS		44	33				USCGS.
	E	eL		52	-				
	N	M	08	04	-	24	37		
	Z	M		04½	-	24	21		
	E	M		05	-	23	29		
		F	10	20	-				Mag.: M = 6¾
18	NE	e	12	50	-				Small. 27.0°S., 176.3°W.
		F	13	25	-				Kermadec Islands.
									USCGS.
18	NE	e	22	50	-				Small. 23.7°N., 121.8°E.
		F	23	15	-				Near Formosa. USCGS.
20	NE	e	00	05	-				Small. 0.8°N., 124.3°E.
		F		40	-				Celebes. USCGS.
20	NE	e	04	30	-				
	N	M		36	-	16	1		
	E	M		38	-	16	1½		
		F		50	-				
20	ZV,Z	ePKP	12	04	08				
	E	M	13	12½	-	20	1½		
	N	M		12½	-	20	1½		
		F	14	10	-				
20	ZV,Z	iP	18	05	21	5	3.0	4100	
	ZV	i		05	25				31.3°N., 40.9°W. h about 44 km.
	N	eS		10	58	9	2.4		North Atlantic Ocean.
	E	eL		13	40				USCGS.
	E	M		17½	-	18	5		
		F	19	10	-				
23	ZV	e (Sn)	01	15	43				45.8°N., 9.5°E.
	ZV	i		16	17				Italian Alps. BCIS
	ZV	e		16	48				
		F		20	-				
25	ZV,Z	e (P)	20	32	29				Confused by microseisms.
	E	M	21	11	-	23	2		36.4°N., 141.4°E. Near Honshu,
		F		30	-				Japan. USCGS.
27	E	eL	06	40	-				Confused by strong microseisms.
	E	M		52	-	22	5		31.6°N., 131.1°E. Near coast of
	N	M		52½	-	22	3		Kyushu, Japan. USCGS.
	Z	M		52½	-	22	4		
		F	07	20	-				Mag.: M = 6
27	E	e	17	39	37				Confused by strong microseisms.
	E	M	18	21	-	20	5		
	N	M		21	-	20	2		
		F		50	-				

FORM 3718

M.O. 703

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

NOVEMBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
28	ZV	e(P)	09	03	33				Confused by microseisms.
	N	M		11	-	16	3		39.4°N., 27.2°E.
	E	M		12	-	16	2		Anatolia. BCIS
		F		20	-				
29	E	e	10	04	-				
	E	M		11½	-	20	5½		
		F		25	-				

FORM 3718

DS 60151/1 R94 140 1/62 XL

M.O. 703

S4

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR DECEMBER, 1961

Lat. 51° 28′ 6″ N, Long. 0° 18′ 47″ W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION: RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS: (i) GALITZIN APERIODIC SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FÜRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914) OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1913).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1. sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ^2.	$\frac{Ah}{\pi l}$ $sec.^{-1}$
N.	1 October 1960	21.3	21.4	+0.01	64.0
E.	1 November 1960	20.7	20.7	-0.01	59.3
Z.	1 September 1960	11.1	9.1	+0.01	156.0

(ii) VERTICAL SEISMOGRAPH, PERIOD 1·5 SECS., DIRECT OPTICAL REGISTRATION (ZV.).

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.
TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.
SEISMOMETRIC READINGS CAN BE DETERMINED TO THE NEAREST SECOND.

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
1	ZV,Z	ipP	21	26	31	6	4.9	9800	Dilatation.
	NE	eSKS		35	47				
	NE	eS		36	03	10	3.6(H)		26.5°N., 124.9°E. h about 206km.
	NE	eSP		37	13				East China Sea. USCGS.
	E	iPS		37	44				
	E	M	22	08	-	20	3½		
	N	M		08½	-	20	2		
		F		35	-				Mag.: M = 6¼
2	ZV,Z	iP	12	44	08			1950	
	ZV,Z	ipP		44	21				36.5°N., 8.6°E. h about 62 km.
	E	eS		47	19	10	2.3		Northern Tunisia. USCGS.
	N	eL		48	-				
	E	M		49½	-	18	3½		
	N	M		50	-	20	5½		
	N	M		50½	-	15	8½		
	E	M		51	-	12	6		
	Z	M		51	-	12	3½		
		F	13	25	-				Mag.: M = 4¾
3	NE	e	17	15	-				Very small. 11.6°S., 166.1°E.
		F		50	-				Santa Cruz Islands. USCGS.
3	NE	eL	18	47	-				Small. 41.2°N., 44.0°E.
		F	19	10	-				Armenia S.S.R.-Turkey border. USCGS.
4	ZV	iP	12	49	17				Confused by strong microseisms.
	N	eL	13	08	-				33.2°N., 95.3°E.
	E	M		17	-	20	8½		Tibet.
	N	M		17	-	20	11		
		F	14	10	-				Mag.: M = 6

Form 3717.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

DECEMBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
5	NE	e	14	10	-				Confused by strong microseisms.
	E	M		32½	-	20	6½		50.8°S., 139.8°E.
	N	M		34	-	20	7½		Southwest of Tasmania. USCGS.
		F	15	30	-				Mag.: M = 6¼.
6	ZV,Z	iP	06	00	57				13.7°N., 93.6°E. h about 53 km.
	NE	eL		26	-				Andaman Islands. USCGS.
	E	M		38½	-	20	4		
	N	M		38½	-	20	5½		Mag.: M = 5¾-6.
		F	07	15	-				
6	ZV	iPKP	13	55	40				Confused by microseisms.
	E	M	15	03½	-	20	3		23.5°S., 176.0°W. Tonga Islands
	N	M		03½	-	18	3		region. USCGS.
		F		55	-				
6	ZV,Z	iP	16	51	38			8400	Compression. Confused by
	ZV,Z	i		51	55				microseisms.
	N	eS	17	01	15				
	N	ePPS		02	03				49.4°N., 155.2°E.
	E	eSS		06	00				Kurile Islands. USCGS.
	E	eL		12	-				
	E	M		30½	-	20	11		
	N	M		31½	-	20	13		
	Z	M		31½	-	20	6½		
		F	18	20	-				Mag.: M = 6¼
9	ZV	e(P)	02	26	39				Confused by very strong
	NE	eL		44	-				microseisms. 56.3°N., 153.9°W.
	E	M		57	-	20	4½		Kodiak Island, Alaska. USCGS.
	N	M		57½	-	20	5		
		F	03	35	-				Mag.: M = 5¾
9	NE	e	04	40	-				Small. Confused by very strong
		F	05	10	-				microseisms.
									14.9°S., 75.7°W. Peru. USCGS.
9	NE	eSS	11	53½	-				Confused by strong microseisms.
	NE	eL	12	7½	-				43.7°S., 75.2°W. Near coast of
	E	M		23½	-	20	18		southern Chile. USCGS.
	N	M		23½	-	20	14		
	Z	M		23½	-	20	10		
		F	13	40	-				Mag.: M = 6¾
9	ZV,Z	iPKP	20	08	29				21.7°S., 179.9°E. h about 620 km.
	ZV	i		08	38				Fiji Islands. USCGS.
11	ZV	iP	16	58	07				36.5°N., 23.5°E. Near Greece. USCGS.
12	ZV,Z	iP	23	18	32				Compression. 43.5°N., 146.2°E.
	ZV	i		18	48				Near coast of Hokkaido, Japan.
	ZV	i		18	55				USCGS.
		F	24	10	-				

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DATE	COMPT	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
14	NE	eL	08	00	-				
	E	M		24	-	22	2½		3.1°S., 140.9°E. Near coast of
	N	M		24	-	21	3		New Guinea. USCGS.
		F		45	-				
17	NE	e	23	20	-				
	N	M		48	-	20	1½		54.5°S., 143.9°E.
	E	M		50	-	20	1		South of Tasmania. USCGS.
		F	24	30	-				
18	NE	eL	21	46½	-				
	N	M		48½	-	16	2½		
	E	M		49	-	16	1½		
		F		55	-				
20	ZV,Z	iP	13	37	10	6	2.0	8600	Dilatation.
	ZV,Z	i		37	16				4.6°N., 75.6°W. h about 176 km.
	ZV,Z	ipP		37	50	9	4.6		Colombia. 23 killed, 100 injured,
	NE	iS		46	45	15	38 (H)		and moderate property damage.
	NE	eScS		47	11				USCGS.
	ZE	eSP		47	33				
	N	ePS		47	53				
	N	eSS		51	49				
	N	eLQ		57	-				
		F	15	25	-				Mag.: M = 6¾
24	ZV	i (P)	07	02	55				43.8°N., 143.9°E. Near Hokkaido, Japan. USCGS.
25	ZV	e (PKP)	14	15	20				20.4°S., 173.7°W. Tonga Islands. USCGS.
26	NE	e	07	00	-				
	E	M		20	-	20	1½		44.2°S., 38.1°E. Prince Edward
	N	M		20	-	20	3		Islands region.
		F		40	-				
27	NE	e	17	10	-				1.7°S., 12.9°W.
	E	M		16	-	18	3		Atlantic Ocean. USCGS.
	N	M		16	-	18	2		
		F		40	-				Mag.: M = 5¼
28	NE	e	00	23	44				
	NE	e		34	10				41.2°S., 175.7°E. h about 57 km.
	N	e		35	22				Near coast of North Island, New
	NE	eL	01	00	-				Zealand. USCGS
	E	M		26	-	20	9½		
	N	M		26	-	20	9½		
	Z	M		26	-	20	7½		
		F	02	35	-				Mag.: M = 6½
30	ZV	iP	00	51	17			8600	Confused by strong microseisms.
	E	eS	01	01	01	20	9.8 (H)		
	N	e		01	42				
	E	eSS		05	46				52.3°N., 177.7°E. h about 52 km.
	E	eL		10	-				Rat Islands, Aleutian Islands.
	N	M		27½	-	20	21		USCGS.
	E	M		29½	-	20	17		
	E	M		34	-	17	19		
	N	M		37	-	18	25		

FORM 3718

contd.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

DECEMBER, 1961

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
contd.									
30	Z	M	01	38½	-	16	15		
		F	03	40	-				Mag.: M = 6½
30	ZV	i(P)	07	17	51				Confused by strong microseisms.
	E	M		42½	-	18	5		39.7°N., 77.7°E. Sinkiang Province
	N	M		42½	-	18	5		China, USCGS.
		F	08	00	-				

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