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10 MAR 1960
R6

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR JANUARY, 1960

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.	1st August 1957	21.2	21.2	0.00	62.5
E.	1st August 1957	21.1	21.1	0.00	52.0
Z.	17 December 1957	10.7	11.4	-0.05	121

(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	e	05	55	-				Very small. 2½°N., 96°E.
		F	06	20	-				Near Sumatra. USCGS.
2	NE	eL	07	40	-				Small. 56½°N., 163½°E. Near
		F	08	00	-				Kamchatka. USCGS.
2	E	eSS	12	55	41				
	E	eLQ	13	06	-				South Atlantic Ocean, west of
	E	MQ		12	-	26	8½		Bouvet Island. USCGS.
	E	M		17½	-	20	3		
	N	M		20½	-	20	5½		
	Z	M		20½	-	20	4		
		F	14	10	-				Mag. = 6½
3	ZV	iP	11	33	39	1.5	0.4		
	ZV	e		34	43				44°N., 84½°E. Sinkiang Province,
	N	eL		50	-				China. USCGS.
	E	M		55	-	16	1½		
	N	M		55	-	15	4		
		F	12	15	-				
3	ZV	iP	20	23	10	1.8	0.8		Confused by strong microseisms.
	ZV	i		23	13				39½°N., 15½°E. Tyrrhenian Sea.
	ZV	i		23	22				h about 250Km. USCGS.
	ZV	i		23	53				Mag. = 5.9
	NE	e(S)		26	07				
4	NE	eL	06	32	-				Confused by strong microseisms.
	N	M		49½	-	20	5		
	E	M		50	-	16	4½		
		F	07	25	-				

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JANUARY, 1960

International Seismological Centre

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
4	ZV	iP	12	56	20				Confused by very strong
	NE	M	13	06	-				microseisms. 45°N., 27°E.
		F		15	-				Roumania. USCGS.
7	E	e(S)	13	55	05				
	N	ePS		56	55				Sandwich Islands.
	N	eSS	14	02	45				Mag. $6\frac{1}{4}$-$6\frac{1}{2}$(Pas). USCGS.
	E	eLQ		13	-				
	E	M		21	-	18	5		
	N	M		30	-	19	$5\frac{1}{2}$		
	Z	M		30	-	18	$3\frac{1}{2}$		
		F	15	25	-				Mag. = $6\frac{1}{4}$-$6\frac{1}{2}$
7	ZV	e(P)	23	30	24				
	NE	eL	24	02	-				$6\frac{1}{2}$°N., $94\frac{1}{2}$°E. Nicobar Islands.
	N	M		11	-	20	$1\frac{1}{2}$		USCGS.
	E	M		12	-	20	$1\frac{1}{2}$		
		F		40	-				
8	ZV	e(P)	08	03	47				
	N	M	09	10	-				
		F	-	-	-				in break.
8	E	e	12	13	-				
	E	M		22	-	19	$1\frac{1}{2}$		55°S., $27\frac{1}{2}$°W. Sandwich Islands.
	N	M		31	-	16	1		USCGS.
		F		55	-				
8	N	eSS	15	20.5	-				$55\frac{1}{2}$°S., $27\frac{1}{2}$°W. Sandwich Islands.
	E	eL		31	-				USCGS.
	E	M		$38\frac{1}{2}$	-	19	3		
	N	M		48	-	18	$2\frac{1}{2}$		
		F	16	30	-				Mag. = $6\frac{1}{4}$
8	E	eL	22	19	-				
	E	M		26	-	19	$1\frac{1}{2}$		Sandwich Islands.
		F		50	-				
9	ZV,Z	eP	04	04	14			3100	
	NE	eS		08	53	13	3.3(SH)		37°N., 29°E. Southwestern Turkey.
	N	eL		12.0	-				USCGS.
	N	M		13	-	13	4		
	E	M		16	-	15	$1\frac{1}{2}$		
	Z	M		16	-	12	$1\frac{1}{2}$		
		F		25	-				Mag. = $5\frac{1}{2}$-$5\frac{3}{4}$
9	ZV,Z	iP	07	32	43	4	2.5	5600	Compression. Confused by
	ZV	esP		33	33				microseisms. Depth = 150 Km.
	ZV	ePcP		33	54				36°N., 69°E. Hindu Kush. USCGS.
	ZV,Z	iScP		37	29				
	N	e(S)		39	43				Mag. = 6
11	NE	eL	03	15	-				Small. $28\frac{1}{2}$°N., 131°E.
		F		30	-				Ryukyu Islands. USCGS.
11	N	eL	03	44	-				Confused by strong microseisms.
	N	M		$59\frac{1}{2}$	-	20	3		16°N., $96\frac{1}{2}$°E. Near south coast of
	E	M	04	04	-	20	2		Burma. USCGS.
		F		25	-				Mag. = 6

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DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
12	NE	eL	02	30	-				Confused by strong microseisms.
	E	M		42	-	24	4		23½°N., 122°E. Near east coast
	N	M		42	-	22	4½		of Formosa. USCGS.
		F	03	15	-				Mag. = 6¼
12	E	eL	03	55	-				Confused by strong microseisms.
	E	M	04	10	-	18	3		55½°S., 27°W. Sandwich Islands
	N	M		10	-	20	3		region. USCGS.
		F		35	-				Mag. = 6¼
13	ZV,Z	eP	15	53	29	7	4.5	10250	Dilatation.
	ZV,Z	i		53	33				Depth = 130Km.
	ZV,Z	ipP		54	03				
	ZV	esP		54	16				
	ZV,Z	iPP		57	09	7	4.9		
	Z	epPP		57	35				16°S., 72°W. Southern Peru.
	Z	iPPP		59	09				h about 200 Km.
	NE	iSKS	16	03	55				Mag. 7½(Pas), 7½-7¾(Berk).
	NE	iS		04	19	18	99(SH)		Many casualties and extensive
	E	isS		05	16				property damage at Arequipa.
	ZE	iPS		05	37				USCGS.
	E	isPS		06	16				
	N	iSS		10	27				
	NE	isSS		11	11				
	N	iSSS		14	15				
	N	eLQ		17	-				
	E	M		22½	-	32	240		
	N	M		23	-	33	410		
	N	M		27½	-	23	110		
	E	M		29½	-	22	140		
	Z	M		30	-	21	73		
		F	18	50	-				Mag. = 7.3
13	ZV,Z	i(P)	16	41	39				51½°N., 180° Andreanof Islands.
	ZV,Z	e		41	51				USCGS.
14	NE	eL	21	47	-				Confused by microseisms.
	E	M		55	-	16	3		11°N., 43°W. Atlantic Ocean. USCGS.
	N	M		55	-	16	2		
		F	22	10	-				Mag. = 5¾
15	ZV,Z	iP	09	43	23	6	3.6	10400	Compression. Confused by
	Z	ipP		44	05				microseisms.
	ZV,Z	ePP		47	15	7	3.1		Depth = 160Km.
	EN	eSKS		53	45				
	EN	eS		54	17	20	10.0(SH)		15°S., 75°W. Near coast of
	EN	eSSS	10	04	29				Southern Peru. 4 injured and
	N	eLQ		08	-				minor damage in Ica Province.
	N	M		10	-	27	24		Mag. 7(Pas). 6½(Berk) h about
	E	M		10	-	28	15		150Km. USCGS.
	ZNE	eLR		16	-				
	N	M		22½	-	19	21		
	E	M		23½	-	18	38		
	Z	M		23½	-	18	26		
		F	12	30	-				Mag. 6¾
16	ZV,Z	eP	21	00	15	5	1.3		Compression. 63°N., 151°W.
									Alaska. USCGS.

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DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
17	N	eL	03	44	-				
	N	M		50	-	18	$1\frac{1}{2}$		$14\frac{1}{2}$°S., $74\frac{1}{2}$°W. Near coast of
	E	M		51	-	18	2		Peru. h about 150Km.
		F	04	05	-				Mag. = $6\frac{1}{4}$(Pas). USCGS.
19	ZV,Z	iP	02	28	40				52°N., 158°E. Near Kamchatka. USCGS.
21	NE	e	11	55	-				
	N	M	12	03	-	18	$1\frac{1}{2}$		
		F		25	-				
23	ZV,Z	e(PP)	05	00	55				Confused by strong microseisms.
	N	ePPS		11	33				
	N	eSS		16	49				4°S., $127\frac{1}{2}$°E. Ceram Island region.
	NE	eL		38	-				Mag. $6\frac{1}{2}$(Pas). USCGS.
	N	M		51	-	22	5		
	E	M		52	-	21	$7\frac{1}{2}$		
		F	06	30	-				Mag. = $6\frac{1}{2}$
23	ZV,Z	iPKP	06	43	05				17°S., 177°W. Fiji Islands. USCGS.
23	ZV	iPP	07	50	09				Confused by strong microseisms.
	N	eL	08	30	-				4°S., $127\frac{1}{2}$°E. Ceram Island region.
	N	M		41	-	23	5		USCGS.
	E	M		42	-	21	7		
		F	10	05	-				Mag. = $6\frac{1}{2}$
23	NE	eL	18	42	-				Confused by microseisms.
	E	M	19	05	-	25	$4\frac{1}{2}$		4°S., $127\frac{1}{2}$°E. Ceram Island region.
	N	M		06	-	26	$4\frac{1}{2}$		USCGS.
		F	20	00	-				Mag. = $6\frac{1}{4}$
24	E	eSS	05	03	31				Confused by microseisms.
	E	eSSS		08	47				
	E	eLQ		22	-				$15\frac{1}{2}$°S., 179°W. Fiji Islands.
	E	M		40	-	21	6		Mag. $6\frac{1}{4}$-$6\frac{1}{2}$(Pas). USCGS.
	N	M		$42\frac{1}{2}$	-	20	$6\frac{1}{2}$		
	Z	M		42	-	20	$6\frac{1}{2}$		
		F	07	00	-				Mag. = $6\frac{1}{2}$
25	E	eLQ	17	29	-				16°S., 179°W. Fiji Islands.
	E	M		50	-	20	$1\frac{1}{2}$		Mag. $6\frac{1}{4}$(Pas). USCGS.
	N	M		50	-	20	3		
		F	18	45	-				Mag. = $6\frac{1}{4}$
26	NE	e	03	50	-				Very small.
		F	04	05	-				
26	NE	eS	10	03.3	-				
	N	eL		06	-				$39\frac{1}{2}$°N., $39\frac{1}{2}$°E. Turkey. USCGS.
	E	M		11	-	20	2		
	N	M		11	-	19	$2\frac{1}{2}$		
		F		25	-				Mag. = $5\frac{1}{2}$
26	ZV,Z	eP	13	10	59				38°N., 29°E. Turkey. USCGS.
	N	M		20	-	16	1		
		F		30	-				

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DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
26	ZV	iP	20	31	12				Compression. 46°N., 26½°E. Roumania. h = 150 Km. BCIS.
29	NE	eL	08	34	-				Confused by microseisms.
	E	M		43	-	22	1½		
	N	M		44	-	21	2		
		F	09	15	-				
31	N	e(S)	05	31	32				Confused by very strong microseisms.
	NE	eL		48	-				
	E	M	06	05	-	18	9		33½°N., 134½°E. Near Shikoku, Japan. USCGS.
	N	M		05½	-	16	13		
	Z	M		05½	-	14	7		
		F		55	-				Mag. = 6¼

All the magnitudes are the "unified magnitudes" denoted by "m".

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ED 13 APR 1960 R.6.

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR FEBRUARY, 1960

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.	1st August 1957	21.2	21.2	0.00	62.5
E.	1st August 1957	21.1	21.1	0.00	52.0
Z.	17 December 1957	10.7	11.4	-0.05	121

(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	iP	12	04	51			2800	Dilatation. Confused by microseisms.
	ZV	ePP		05	10				
	N	eS		09	12				35°N., 23½°E. Near west coast of Crete. USCGS.
	N	eL		12½	-				
	N	M		15	-	18	7		
	E	M		16	-	16	3		
		F		30	-				Mag. = 5¾
4	N	ePKS	04	09	03				Confused by strong microseisms.
	N	ePS		17	18				
	N	ePPS		18	57				
	N	eSSS		28	56				4½°S., 153½°E. New Ireland region. USCGS.
	NE	eL		47	-				
	N	M		52	-	32	18		
	E	M		52	-	34	28		
	N	M	05	13½	-	20	8		
	E	M		15	-	20	5		
		F	06	30	-				Mag. = 6½
4	NE	e	10	25	-				Small. 5°S., 154°E. New Ireland region. USCGS.
		F	11	00	-				
4	NE	e	17	13	26				Confused by strong microseisms.
	E	eL		30	-				39°N., 143°E. Off east coast of Honshu, Japan. USCGS.
	E	M		41½	-	20	8½		
	N	M		42½	-	21	6½		
	Z	M		44	-	21	4½		
		F	18	30	-				Mag. = 6¼

Form 3717.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

FEBRUARY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
4	NE	eL	21	40	-				Confused by strong microseisms.
	E	M		49	-	20	2		39½°N., 142½°E. Near Honshu,
	N	M		50	-	20	1½		Japan. USCGS.
		F	22	05	-				
5	NE	e	03	00	-				Very small. 37°S., 95½°W.
		F		15	-				South Pacific Ocean. USCGS.
8	N	e(PKKP)	13	14	09				
	NE	ePS		15	59				58°S., 67°W. Drake Passage. USCGS.
	NE	eSS		22	43				
	NE	eL		36	-				
	E	M		58½	-	20	10½		
	N	M		58½	-	20	8½		
	Z	M	14	01	-	19	9		
		F	15	15	—				Mag. = 6½
10	ZV	ePKP	00	14	38			12700	Confused by microseisms.
	ZV,Z	ePP		15	43				
	E	e(S)		22	49				
	E	ePS		25	15				4°S., 128°E. Ceram, Mag.6½-6¾(Pas).
	N	eSS		31	51				USCGS.
	N	eL		42½	-				
	N	M		58	-	30	29		
	E	M		58	-	30	21		
	N	M	01	10½	-	20	17		
	E	M		10½	-	20	12		
	Z	M		12½	-	20	7		
		F	02	40	-				Mag. = 6¾
11	N	eL	00	32	-				15½°S., 173°W. Samoa Islands
	N	M		42	-	20	2		region. USCGS.
	E	M		42	-	20	1½		
		F	01	25	-				
11	N	e	22	00	-				Small. 11½°S., 166½°E. Santa Cruz
		F		25	-				Islands. USCGS.
14	NE	e	20	30	-				Small. Confused by microseisms.
		F	21	10	-				Indian Ocean. USCGS.
16	NE	eL	13	34½	-				Confused by strong microseisms.
	E	M		37	-	20	2½		22°N., 45½°W. Atlantic Ocean.USCGS.
	N	M		37	-	20	2		
		F		45	-				Mag. = 5¾
17	NE	eL	13	35	-				Small. 30°S., 112½°W. Easter
		F	14	20	-				Islands region. Mag. 6½(Pas).
									USCGS.
19	ZV,Z	iP	10	45	37	5	4.6	5770	Compression. Confused by strong
	ZV,Z	ipP		46	25				microseisms.
	ZV,Z	i		46	32				Depth = 220 Km.
	ZV,Z	iPcP		46	48				
	NE	iS		52	41	9	15.5(H)		36°N., 70½°E. Hindu Kush
	NE	esS		54	01				h about 200 Km. USCGS.
	E	eSS		56	32				
	E	e		57	28				
	N	e(PKKP)	11	07	31				
		F		45	-				Mag. = 6½

FORM 3718

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M.O. 609

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

FEBRUARY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
21	NE	e	02	10	-				Very small. 42°S., 173°E.
		F		35	-				New Zealand. USCGS.
21	NE	e	04	25	-				Very small.
		F		35	-				
21	ZV,Z	eP	08	17	23	4	1.6	1900	Confused by microseisms.
	ZV,Z	i		17	25				36°N., 4½°E. Northern Algeria.
	N	eS		20	30				47 killed, 88 injured and many
	E	eL		21	-				houses destroyed. USCGS.
	E	M		22	-	19	11		
	N	M		23½	-	16	7½		
	Z	M		23½	-	14	7½		
		F		40	-				Mag. = 5.6
21	NE	eL	09	33	-				Confused by microseisms.
	E	M		50	-	20	2		38°N., 42°E. Turkey. USCGS.
	N	M		50	-	20	2		
		F		55	-				Mag. = 5½
22	N	eL	21	15	-				Confused by strong microseisms.
	E	M		16	-	17	1		39°N., 21°E. Greece. USCGS.
	N	M		16	-	17	2½		
		F		23	-				Mag. = 5¼
23	N	eL	00	41	-				Confused by microseisms.
	E	M		42½	-	16	2		39°N., 20½°E. Greece. USCGS.
	N	M		42½	-	16	4		
		F		53	-				Mag. = 5½
23	NE	eS	07	42	40	7	4.6		Confused by strong microseisms.
	N	eL		44½	-				39°N., 20°E. Greece. USCGS.
	E	M		46	-	18	5		
	N	M		46	-	18	13		
	Z	M		47½	-	16	2½		Mag. = 5¾
		F	-	-	-				overlapped by next shock.
23	N	eL	07	48	-				Confused by strong microseisms.
	E	M		49½	-	17	1½		39°N., 20½°E. Greece. USCGS.
	N	M		49½	-	17	5		
		F	08	10	-				Mag. = 5½
23	N	eL	08	51	-				Confused by strong microseisms.
	E	M	09	08	-	20	1		
	N	M		08	-	20	1½		23½°N., 121½°E. Formosa. USCGS.
		F		20	-				
23	NE	e	17	15	-				Very small. 6°S., 154½°E.
		F		35	-				Solomon Islands. USCGS.
24	ZV,Z	iPKP	21	56	20				
	ZV,Z	iPP		58	25				7½°S., 156°E. Solomon Islands.
	N	ePKS		59	48				Mag. 6½-6¾(Pas). USCGS.
	NE	eL	22	34	-				
	Z	M		53	-	22	8		
	N	M		53	-	23	10		
	E	M		56	-	21	7		
		F	24	10	-				Mag. = 6½

FORM 3718

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

FEBRUARY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
26	N	e	01	50	-				Very small. $2\frac{1}{2}$°S., 128°E.
		F	02	15	-				Ceram Sea. USCGS.
26	NE	e	03	10	-				Very small. 1°S., 138°E.
		F		30	-				New Guinea. USCGS.
26	ZV,Z	iP	23	41	23				Confused by strong microseisms.
	E	eL	24	01	-				$51\frac{1}{2}$°N., 178°W. Aleutian Islands.
	E	M		$23\frac{1}{2}$	-	20	5		USCGS.
	N	M		24	-	20	5		
		F		55	-				Mag. = $6-6\frac{1}{4}$.
27	NE	e	01	00	-				Very small. $51\frac{1}{2}$°N., 178°W.
		F		20	-				Aleutian Islands. USCGS.
27	NE	eL	08	48	-				Confused by strong microseisms.
	E	M		56	-	19	3		$51\frac{1}{2}$°N., 178°W. Aleutian Islands.
	N	M		57	-	20	2		
		F	09	25	-				Mag. = 6
29	ZV,Z	iP	23	45	14	5	3.6	2500	Compression. Confused by strong
	ZV,Z	iPP		45	46	6	4.0		microseisms.
	E	eS		49	18	14	12.3(H)		30.5°N., 9.7°W. B.C.I.S.
	N	eL		$50\frac{1}{2}$	-				Morocco. Over 12000 dead, 25000
	E	M		54	-	20	30		wounded and major property damage
	N	M		$54\frac{1}{2}$	-	20	25		at Agadir.
	Z	M		$54\frac{1}{2}$	-	20	16		
		F	24	50	-				Mag. : m = 6.1 ; M = 5.7

All the magnitudes are the "unified magnitudes" denoted by "m".

FORM 3718

DS 73965/11 R 94 140 4/60 KL

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METEOROLOGICAL OFFICE, EDINBURGH 16 MAY 1960 R.6.

M.O. 669

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

10

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR MARCH, 1960

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.	1st August 1957	21.2	21.2	0.0	62.5
E.	1st August 1957	21.1	21.1	0.00	52.0
Z.	17 December 1957	10.7	11.4	-0.05	121

(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	eP	22	00	45			2180	Confused by microseisms.
	NE	eS		04	18				
	N	eL		04½	-				52°N., 30°W. North Atlantic
	E	M		06	-	18	3		Ocean. USCGS.
	N	M		06	-	18	5½		
		F		20	-				Mag. = 5½
4	ZV	eP	02	28	01				50½°N., 177°W. Andreanof Islands.
	ZV	e		28	13				USCGS.
4	ZV,Z	iP	04	05	40	6	2.1		Confused by microseisms.
	Z	ePP		09	07				31°N., 129°E. Near Kyushu, Japan.
	E	ePS		17	03				h about 100 Km.
	N	eL		29	-				Mag. 6½(Pas). USCGS.
	E	M		47	-	20	2½		
	N	M		48	-	19	2½		
		F	05	10	-				Mag. = 6¼
4	ZV,Z	eP	16	30	10			2200	
	E	eS		33	46				72°N., 1½°W. Jan Mayen Island
	E	M		36½	-	16	1½		region. USCGS.
	N	M		37	-	18	1½		
		F		45	-				
4	NE	eL	21	52	-				7½°N., 94°E. Nicobar Islands.
	N	M	22	04	-	20	1½		USCGS.
		F		30	-				

Form 3717.

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN

MARCH, 1960

DATE.	COMPT.	PHASE.	G.M.T. h.	m.	s.	PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
5	ZV	iP	11	35	29				
	N	M	12	05½	-	17	1½		29°N., 81°E. Nepal. USCGS.
	E	M		06	-	18	1		
		F		10	-				
5	E	e(SKKS)	14	15	21				
	N	eSS		24	12				
	NE	eL		35	-				1°N., 129°E. Halmahera Island.
	N	M		42½	-	32	28		USCGS.
	E	M		44	-	31	31		
	E	M		58	-	23	30		
	N	M	15	01	-	21	26		
	Z	M		01	-	20	7		Mag. = 6¾
		F	16	25	-				
6	NE	eL	03	16	-				1°N., 129°E. Halmahera Island
	E	M		28½	-	20	2		aftershock. USCGS.
	N	M		34	-	20	1½		
		F	04	05	-				
6	NE	eL	04	46	-				
	E	M		59½	-	20	4½		24°N., 108°W. Gulf of California.
	N	M		59½	-	20	3		Mag. 5-5¼ (Berk) USCGS.
	Z	M		59½	-	20	4		
		F	05	20	-				
7	ZV	iP	06	23	08				52°N., 153°E. Near Kamchatka.USCGS
8	N	eL	13	12	-				Confused by microseisms.
	E	M		27	-	22	2		65°S., 179½°E. Antarctic Ocean.
	N	M		27	-	22	3		USCGS.
		F		50	-				
8	ZV,Z	iPKP	16	52	47	6	32	15900	Dilatation. Confused by very
	ZV,Z	ipPKP		53	51				strong microseisms.
	Z	isPKP		54	14				Depth = 250 Km.
	ZV,Z	iPP		56	05	6	12.5		PPH 14 sec. 6 μ
	ZN	i		57	33				16½°S., 168½°E. New Hebrides
	E	eSS	17	14	33				Islands. Mag. 7-7¼(Pas). USCGS.
	E	esSS		15	53				
	NE	eL		42	-				
		F	18	50	-				Mag. = 7.0
10	ZV,Z	eP	00	07	21				Confused by strong microseisms.
	N	eL		30	-				
	E	M		44	-	22	3		16°S., 72°W. Southern Peru.
	N	M		44	-	22	2½		1 killed, several injured.
		F	01	05	-				h about 150 Km. USCGS.
10	N	e	01	49	-				Confused by strong microseisms.
	N	M	02	16	-	20	1½		
	N	M		16	-	20	3		
		F		30	-				

FORM 3718

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MARCH, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
10	N	e	09	53	-				Small. 10°S., 161°E.
		F	10	15	-				Solomon Islands. USCGS
10	ZV	iP	14	44	37				Dilatation. 47°N., 152°E. Kurile Islands. USCGS.
10	N	eL	14	46	-				15°S., 174°W. Samoa Islands
	N	M	15	04	-	22	1½		region. USCGS.
		F		30	-				
12	ZV,Z	iP	11	58	08	6	2.2	2020	
	ZV,Z	ePP		58	35				42°N., 21°E. Southern Yugoslavia.
	E	iS	12	01	27	9	5.8		1 killed, several injured at
	NE	eL		02.8	-				Tetovo. USCGS.
	N	M		04.0	-	15	25		
	E	M		05½	-	9	34		
	N	M		05½	-	9	21		
	Z	M		05½	-	8	29		
		F		40	-				Mag. = 5¾
12	ZV,Z	ePKP	20	49	52				6°S., 152°E. New Britain.
	ZV,Z	ePP		51	48				Mag. 6½(Pas) USCGS
	NE	ePKS		53	15				
	NE	eL	21	34	-				
	N	M		46	-	22	4½		
	E	M		48	-	22	3½		
		F	22	50	-				Mag. = 6¼
13	NE	e	05	23½	-				36°56'N., 3°11'E. Mediterranean,
	N	M		24½	-	14	1		near Algiers. BCIS.
		F		30	-				
15	ZV	eP	09	33	00				51°N., 174½°W. Andreanof Islands. USCGS.
16	N	e	01	25	-				Very small. 59½°S., 26°W.
		F		35	-				Sandwich Islands. USCGS.
16	NE	eL	18	48	-				Small. 15½°S., 173½°W.
		F	19	50	-				Samoa Islands region. USCGS.
19	NE	eL	20	10	-				
	N	M		28	-	22	2		3°S., 138°E. New Guinea. USCGS.
	E	M		29	-	22	1½		
		F		45	-				
20	ZV	i(P)	13	49	20				
	E	eL	14	16	-				40°N., 143½°E. Off Honshu, Japan.
	E	M		25	-	20	2		h about 60 Km. USCGS.
	N	M		29	-	20	2		
		F		55	-				
20	ZV,Z	eP	17	19	59	7	11.0	9400	PH 16 sec. 12.4 μ
	ZV,Z	iPP		23	17	8	8.8		PPH 16 sec. 17.8 μ
	NE	iS		30	22	19	80(H)		
	NE	iPS		31	24				40°N., 143½°E. Off northeast coast
	E	iSS		35	22				of Honshu, Japan. h about 60 Km.
	E	eLQ		42	-				Mag. 7(Pas). USCGS.
	E	M		59	-	22	690		
	N	M		59	-	22	520		

FORM 3718

contd.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MARCH 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
contd.									
20	Z	M	18	00½	-	21	370		
		F	21	50	-				Mag. = 7.3
20	NE	e	23	48	-				Small. 17°N., 46½°W. North
		F	24	00	-				Atlantic Ocean. USCGS.
21	ZV,Z	iP	00	47	22	6	1.9	9400	Compression.
	NE	eS		57	44	16	2.7(H)		
	NE	eSS	01	03	12				39½°N., 143°E. Near Honshu, Japan.
	E	eL		11	-				Mag. 6½(Pas). USCGS.
	E	M		23½	-	21	9		
	N	M		26	-	22	9		
	Z	M		26	-	21	3½		
		F	02	15	-				Mag. = 6¼-6½
21	NE	e	03	05	-				Small. 16°S., 173°W. Tonga Islands
		F		25	-				region. USCGS.
21	NE	eL	07	35	-				
	E	M		40½	-	20	1½		40°N., 143½°E. Near Honshu, Japan.
	N	M		40½	-	20	1½		USCGS.
		F	08	05	-				
21	ZV	iP	09	30	53			9400	
	NE	eS		41	16				40°N., 143°E. Near Honshu, Japan.
	NE	eL		58	-				USCGS.
	E	M	10	07½	-	21	7		
	N	M		07½	-	21	6		
	Z	M		10	-	20	3½		
		F		45	-				Mag. = 6¼
21	NE	e	20	35	-				Very small. 21°S., 70½°W.
		F		50	-				Off Chile. USCGS.
21	NE	e	23	40	-				Very small. 39½°N., 143½°E.
		F	24	00	-				Near Honshu, Japan. USCGS.
22	NE	e	00	05	-				Very small. 39½°N., 143°E.
		F		25	-				Near Honshu, Japan. USCGS.
22	NE	e	02	35	-				Very small. 16°N., 97½°W.
		F		55	-				Off Oaxaca. USCGS.
22	NE	eSS	03	16.8	-				61½°S., 154°E. 400 miles northwest
	NE	eL		38	-				of Balleny Islands. USCGS.
	E	M	04	12	-	22	2		
	N	M		12	-	22	5½		
	Z	M		12	-	21	2		
		F		40	-				Mag. = 6¼
22	N	eL	13	57	-				Jalisco, Mexico. Mag. 5½-5¾(Berk).
	E	M	14	09½	-	16	2		USCGS.
	N	M		09½	-	18	1		
		F		25	-				

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SEISMOLOGICAL BULLETIN

MARCH, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
23	ZV,Z	eP	00	35	53	6	6.6	9400	Confused by microseisms.
	ZV,Z	i		36	02				PH 14sec. 3.8 μ
	ZV,Z	ePP		39	14	9	3.2		PPH 14sec 4.7 μ
	NE	e(SKS)		46	22				39½°N., 143°E. Near east coast of
	NE	eS		46	33	15	24(H)		Honshu, Japan.
	NE	e		46	51				Mag. 6½-6¾(Pas)
	NE	eSS		51	56				
	E	eLQ	01	00	-				
	E	M		12½	-	20	170		
	N	M		12½	-	20	120		
	Z	M		15	-	20	30		
		F	03	30	-				Mag. = 7.0
23	ZV	eP	01	19	48				39½°N., 143°E. Near Honshu, Japan. USCGS.
23	NE	e	08	30	-				Small. 40°N., 142½°E. Near Honshu,
		F		50	-				Japan. USCGS.
23	NE	eL	11	08	-				39½°N., 143°E. Near Honshu, Japan.
	E	M		18½	-	20	2½		h about 100 Km. USCGS.
	N	M		18½	-	20	2		
		F		35	-				
23	NE	eL	12	30	-				39½°N., 143°E. Near Honshu, Japan.
	E	M		40	-	20	2		USCGS.
	N	M		40	-	20	1½		
		F	13	00	-				
23	NE	e	16	35	-				Small. 39°N., 144°E. Near Honshu,
		F	17	00	-				Japan. USCGS.
24	NE	e	22	20	-				Very small. 39½°N., 143½°E. Near
		F		30	-				Honshu, Japan. USCGS.
23	ZV,Z	eP	22	35	10			9400	Confused by microseisms.
	NE	eS		45	34	16	3.9(H)		
	NE	eSS		50.9	-				39½°N., 143°E. Near Honshu,Japan.
	E	eL	23	02	-				Mag. 6(Pas). USCGS.
	E	M		12	-	20	10		
	N	M		12	-	21	10		
		F	24	05	-				Mag. = 6¼
23	ZV	eP	23	10	48			950	Superimposed on previous shock.
	ZV,Z	e(Pg)		11	24				
	ZV,E	eSn		12	24				46½°N., 8oE. Switzerland.
	NE	iS_x		12	53				Minor damage at Brigue and Sierre.
	E	i(Lg)		13	12				USCGS.
	NE	iSg		13	22				
		F		20	-				
24	ZV,Z	eP	06	06	35				47°N., 152½°E. Kurile Islands.USCGS
24	NE	e	10	40	-				Small. 50½°N., 173°W.
		F	11	05	-				Andreanof Islands. USCGS.

FORM 3718

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MARCH, 19 60

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
26	NE	eL	04	53	-				Confused by microseisms.
	E	M	05	15	-	20	2		13½°S., 166°E. New Hebrides Islands.
	N	M		15	-	20	2		Mag. 6¼(Berk). USCGS.
		F	06	20	-				
26	NE	eL	09	56	-				13½°S., 166½°E. New Hebrides Islands.
	N	M	10	20	-	20	2½		Mag. 6½(Berk). USCGS.
	E	M		21	-	20	2½		
		F	11	25	-				
27	ZV	eP	20	28	19				Confused by microseisms.
	NE	eL		50	-				20°N., 104½°W. Jalisco, Mexico.
	E	M	21	05½	-	18	3½		Mag. 6-6¼(Pas). USCGS.
	N	M		05½	-	20	1½		
		F		25	-				Mag. = 6
27	ZV	$ePKP_2$	23	49	09				37½°S., 177°E. Off New Zealand.
	ZV	ePP		52	57				USCGS.
28	ZV	iP	00	25	44			9000	Compression. Confused by
	NE	eS		35	49	19	4.6(H)		microseisms.
	N	eLQ		47½	-				7½°N., 82°W. Off south coast of
	E	M		56	-	20	4½		Panama. Mag. 6½-6¾(Pas). USCGS.
	N	M		56	-	20	3		
	Z	M		56	-	20	3		
		F	01	40	-				Mag. = 6¼
28	ZV	e(P)	20	53	18				Confused by microseisms.
	E	M		59½	-	18	1½		58°N., 32½°W. North Atlantic Ocean.
	N	M		59½	-	18	1½		USCGS.
		F	21	10	-				
29	ZV,Z	ePKP	06	50	38			15700	17°S., 167°E. New Hebrides Islands.
	ZV,Z	ePP		53	45				Mag. 6¾(Pas). USCGS.
	NE	eSS	07	12	41				
	E	eLQ		32	-				
	E	M		58½	-	20	5½		
	N	M	08	01	-	20	14		
	Z	M		01	-	20	6½		
		F	09	20	-				Mag. = 6½
29	N	eL	23	12	-				6°S., 147°E.
	E	M		20	-	26	2		New Guinea. USCGS.
	N	M		24½	-	24	2½		
		F	24	15	-				
30	N	eL	11	53	-				13½°S., 166°E. New Hebrides Islands.
	E	M	12	19	-	20	½		USCGS.
	N	M		19	-	21	1		
		F		35	-				
30	NE	e	12	40	-				
	E	M		55½	-	18	½		
	N	M		55½	-	18	1		
		F	-	-	-				overlapped by next shock.

FORM 3718

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MARCH, 1960

DATE	COMPT.	PHASE	G.M.T. h.	G.M.T. m.	G.M.T. s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
30	NE	e	13	07	-				
	E	M		09½	-	18	1		
	N	M		10	-	20	1½		
		F		25	-				
30	ZV,Z	ePKP	15	39	20				Small. 22½°S., 174°E.
	N	eL	16	33	-				Loyalty Islands region. USCGS.
		F	17	40	-				
31	N	eL	03	41	-				Small. 39½°N., 143°E.
		F	04	05	-				Off Honshu, Japan. USCGS.
31	NE	eL	12	15	-				49°N., 129½°W. Off coast of
	E	M		20	-	20	½		Vancouver Island. USCGS.
	N	M		20	-	20	1		
		F		35	-				
31	NE	e	16	35	-				Small. Pacific Ocean. USCGS.
		F	17	00	-				
31	ZV	eP	20	08	39				
	N	eS		18	47				26°N., 110°W. Gulf of California.
	NE	eL		30	-				Mag. 5½-5¾ (Berk). USCGS.
	E	M		38½	-	21	3		
	N	M		39	-	21	6		
	Z	M		40	-	19	1½		
		F	21	30	-				

All the magnitudes are the "unified magnitudes" denoted by "m".

FORM 3718

DS748391/1R94 140 4/60 XL

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METEOROLOGICAL OFFICE. EDINBURGH 15 JUN 1960 R6 17

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AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR APRIL, 1960

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.	1st August 1957	21.2	21.2	0.0	62.5
E.	1st August 1957	21.1	21.1	0.00	52.0
Z.	17 December 1957	10.7	11.4	-0.05	121

(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.	Δ km.	REMARKS.
1	ZV	ePKP	03	13	52				22°S., 179½°W. Fiji Islands. USCGS.
1	NE	eL	14	44	-				49°N., 129½°W. Off coast of
	E	M		50½	-	19	2½		Vancouver Island. USCGS.
	N	M		51	-	19	2		
		F	15	15	-				
5	NE	eSS	07	53	-				61°S., 26°W. Sandwich Islands.
	E	eL	08	04	-				USCGS.
	E	M		20½	-	18	1½		
	N	M		20½	-	20	3		
		F	09	10	-				Mag. = 6-6¼
5	N	eL	17	31	-				
	E	M		33½	-	18	1		65°N., 2°W. North Atlantic Ocean.
	N	M		34	-	20	1		USCGS.
		F		40	-				
6	N	e	14	07	-				Very small.
		F		14	-				
7	ZV	ePKP	14	06	31				24°S., 179½°W. Fiji Islands.
	ZV	e		06	43				h about 500 Km. USCGS.
8	ZV,Z	ePKP$_1$	00	15	20				Depth = 220 Km.
	ZV,Z	i		15	25				
	ZV,Z	i		15	31				21°S., 177°W. Tonga Islands.
	ZV,Z	epPKP		16	16				Mag. 6(Berk). USCGS.
	E	eSS		37	55				
	E	esSS		39	25				
		F	01	40	-				

Form 3717.

M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

APRIL, 1960

International Seismological Centre

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
9	N	e	03	30	-				Very small. 40°N., 143°E.
		F		50	-				Near Honshu, Japan. USCGS.
10	NE	e	00	48	-				Very small. 36°N., 142°E.
		F	01	20	-				Near Honshu, Japan. USCGS.
12	N	e	04	35	-				Small.
		F		42	-				Western Turkey. USCGS.
13	NE	eL	08	39	-				Confused by microseisms.
	E	M		40½	-	22	2½		44½°N., 127°E. Manchuria. USCGS.
	N	M		40½	-	22	2½		
		F	09	05	-				Mag. = 6
13	NE	eL	13	12	-				Confused by strong microseisms.
	N	M		24½	-	20	3		15½°N., 92½°W. Guatemala-Mexico
	E	M		25½	-	18	4½		border. USCGS.
		F		45	-				Mag. = 6
15	N	eL	04	18	-				Confused by strong microseisms.
	N	M		35	-	20	2		27°S., 113°W. Easter Island region.
	E	M		36	-	19	1½		Mag. 6½(Pas). USCGS.
		F	05	00	-				
15	ZV,Z	iP	11	51	12				Compression.
	NE	eL	12	18	-				40½°N., 142°E. Near coast of
	N	M		30	-	20	2		Honshu, Japan. USCGS.
		F		45	-				
15	N	ePKS	22	28	16				13½°S., 166°E. New Hebrides
	NE	e		46	16				Islands. Mag. 6½(Pas). USCGS.
	NE	eL	23	15	-				
	E	M		35	-	20	1		
	N	M		35	-	20	2		
		F	24	25	-				
17	N	eL	16	41	-				21°S., 175½°W. Tonga Islands.
	N	M	17	02	-	20	1		USCGS.
		F		20	-				
17	ZV	ePKP	22	08	22				20°S., 180° Fiji Islands. USCGS.
18	ZV	eP	08	19	36				28°N., 139½°E. Bonin Islands region. USCGS.
21	E	eSS	02	50.0	-				
	E	M	03	18	-	17	1½		2½°., 110°W. Pacific Ocean.
	N	M		18	-	17	½		Mag. 5¾(Berk). USCGS.
		F		40	-				
22	ZV,Z	iPKP	20	45	48				Compression. 17½°S., 174½°W.
	ZV,Z	epPKP		46	42				Tonga Islands. USCGS.
									Depth = 210 Km.
23	NE	e	13	43	-				Very small. 45°N., 98°E.
		F		55	-				Outer Mongolia. USCGS.

FORM 3718

M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

APRIL, 1960

International Seismological Centre

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
24	ZV	iPP	03	39	53				6°S., 113½°E. Java Sea.
	E	eSKKS		45	32				h about 600 Km. USCGS.
	ZE	ePS		48	56				
	ZE	esS		50	06				
		F	04	55	-				
24	ZV,Z	iP	12	23	01	4	1.5	5260	28°N., 54½°E. Southern Iran.
	ZV	ePP		24	56				500 dead, many injured and
	NE	eS		29	52	12	2.5(H)		major property damage at Gerash
	NE	eSS		33	20				and Lar. USCGS.
	N	eL		37	-				
	E	M		44	-	20	6½		
	N	M		44	-	20	5½		
	Z	M		44½	-	16	2		
		F	13	30	-				Mag: m = 6.1, M = 5.8
25	NE	eL	15	30	-				56°N., 155°W. Kodiak Island
	N	M		39½	-	16	½		region. USCGS.
		F		48	-				
25	ZV,Z	e(P)	16	33	49				
	N	eL		40.0	-				38½°N., 25°E. Aegean Sea. USCGS.
	E	M		41	-	20	1½		
	N	M		41½	-	17	2½		
		F		55	-				Mag. = 5½
27	NE	e	23	35	-				Very small. 18°N., 120°E.
		F		55	-				Philippine Islands. USCGS.
28	NE	eL	03	02	-				59½°S., 26°W. Sandwich Islands.
	N	M		10	-	24	1		USCGS.
		F		30	-				
28	NE	e	06	05	-				Small. 3½°S., 144½°E.
		F		40	-				Near New Guinea. USCGS.
29	ZV	ePKP	19	50	45				
	ZV,Z	ePP		51	19	5	1.9		
	NE	eSKS		57	17				0°., 122°E. Celebes. USCGS.
	NE	eS		59	13	10	1.4		
	E	ePS	20	00	41				
	N	eL		23	-				
	N	M		36	-	28	6½		
	E	M		38	-	27	6		
	Z	M		38	-	27	2		
		F	21	25	-				Mag. = 6½
30	ZV,Z	ePP	04	20	39				
	E	eSKS		26	35				0°., 122°E. Celebes. USCGS.
	N	eL		53	-				
	N	M	05	06	-	28	2½		
	E	M		08	-	28	3		
		F		30	-				Mag. = 6
30	E	e	10	22	26				
	N	eL		24	-				
	N	M		27	-	16	1		
		F		35	-				

FORM 3718

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

APRIL, 1960

International Seismological Centre

DATE	COMPT.	PHASE	G.M.T.			PERIOD	AMPLITUDE	Δ	REMARKS
			h.	m.	s.	sec.	μ	km.	
29	N	eL	21	43	-				Small. 0°., 121½°E.
		F	22	10	-				Celebes. USCGS.

All the magnitudes are the "unified magnitudes" denoted by "m".

FORM 3718

DS76084/11R94 140 5/60XL

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METEOROLOGICAL OFFICE, EDINBURGH 18 JUL 1960

M.O. 669

R.6.

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR MAY, 1960

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.	1st August 1957	21.2	21.2	0.00	62.5
E.	1st August 1957	21.1	21.1	0.00	52.0
Z.	17 December 1957	10.7	11.4	-0.05	121

(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	e	01	28	-				44°N., 84½°E. Sinkiang
		F		40	-				Province, China. USCGS.
2	ZV	e (PKP)	12	28	46				
	ZV	e		29	20				0°, 121½°E. Celebes. USCGS.
	NE	eL		55	-				
	E	M	13	16	-	26	2		
	N	M		16	-	26	2		
		F		35	-				
2	E	e	18	47	14				
	N	M		51	-	16	1		
		F	19	00	-				
3	ZV	eP	07	07	31				29½°N., 55°E. Iran. USCGS.
3	ZV	eP	08	06	44				29°N., 99½°E. China. USCGS.
		F		55	-				
3	ZV	eP	22	35	28				32°N., 140°E. Near Japan. USCGS.
4	NE	eL	19	42	-				Very small. 20°S., 173°E.
		F	20	30	-				Loyalty Islands. USCGS.
5	ZV	eP	11	37	44				Small. 52½°N., 158½°E.
		F	12	25	-				Near Kamchatka. USCGS.
6	ZV	eP	18	59	03				54°N., 161°E. Near Kamchatka. USCGS.
8	ZV	iP	14	41	26				45½°N., 151°E. Kurile Islands. USCGS.

Form 8717.

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MAY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
9	NE	e	02	00	-				Very small.
		F		07	-				
9	ZV	e(P)	16	36	43				6½°N., 33½°W. Atlantic Ocean.
	NE	eL		52	-				USCGS.
		F	17	10	-				
10	NE	e	21	00	-				Very small. Pacific Ocean. USCGS.
		F		30	-				
11	N	eL	19	30	-				3°S., 131°E. Ceram Sea.
	E	M		42	-	23	5½		Mag. 6½(Pas). USCGS.
	N	M		42	-	23	3		
		F	20	25	-				Mag. m = 6¼, M=6
12	ZV,Z	iP	22	44	35	5	1.2	8800	
	NE	eS		54	30	10	3.5(H)		7½°N., 81°W. Panama. USCGS.
	N	eL	23	05	-				
	E	M		15	-	22	3		
	N	M		16	-	20	1½		
	Z	M		17	-	20	1½		
		F	24	00	-				Mag. m = 6.2, M = 5.9
13	NE	e	10	40	-				Very small. 20°N., 109°W.
		F	11	00	-				Revilla Gigedo Islands. USCGS.
13	ZV,Z	iP	16	18	43	5	1.6	8100	
	ZV,Z	e		18	56				
	NE	eS		28	08	8	1.6		55°N., 161½°W. Alaska Peninsula.
	ZNE	e		28	24				USCGS.
	N	e		28	44				
	N	eSS		32.7	-				
	E	eL		38	-				
	E	M		49	-	24	3½		
	N	M		49	-	24	4½		
	Z	M		51	-	20	1		
		F	17	40	-				Mag. m = 6¼, M = 6
13	NE	e	18	37	-				
	N	M		45	-	20	1		
		F	19	10	-				
13	NE	e	22	00	-				Very small. 32½°S., 179°W.
		F		50	-				Kermadec Islands. USCGS.
14	ZV	iP	22	31	33				Compression. 53½°N., 159½°E.
	N	M	23	11	-	19	½		Kamchatka. USCGS.
		F		30	-				
15	NE	e	00	05	-				Very small.
		F		15	-				
15	NE	e	06	55	-				Very small.
		F	07	15	-				
15	NE	eL	14	10	-				small. 24°N., 121½°E. Near Formosa.
		F		35	-				USCGS.

FORM 3718

International Seismological Centre From the ISC collection scanned by SISMOS

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MAY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
18	ZV,Z	iP	06	47	55	5	2.5	9800	Compression.
	ZV,Z	epP		48	11				Depth = 60 Km.
	ZV,Z	ePP		51	25	5	1.4		29°N., 130°E. Ryukyu Islands.
	Z	epPP		51	39				h about 100 Km. USCGS.
	NE	eSKS		58	13				
	NE	eS		58	35	9	4.4(H)		
	NE	esPS	07	00	05				
	NE	esSS		04	49				
	E	eL		17	-				
	N	M		32	-	22	36		
	E	M		32½	-	19	27		
	Z	M		32½	-	19	18		Mag. m = 6.7, M = 6.7
		F	08	50	-				
18	NE	eS	08	56	19				27°N., 52½°E. Persian Gulf.
		F	09	45	-				USCGS.
19	ZV,Z	iP	02	15	53	1.3	0.8(ZV)	5870	Depth = 160 Km.
	ZV	e		16	18				36°N., 71°E. Hindu Kush.
	ZV,Z	epP		16	29				h about 200 Km. USCGS.
	NE	eS		23	07				
	N	eSS		26.9	-				
		F		55	-				Mag. m = 6¼, M = 6
19	ZV,Z	eP	10	25	22	6	2.1	9650	
	E	e(SKS)		35	31				17°S., 66°E. Mascarene Islands
	N	eS		35	56	14	3.5(H)		region. USCGS.
	NE	eSS		41.9	-				
	NE	eLQ		49.0	-				
	E	M	11	06	-	20	4		
	N	M		06½	-	20	7		
	Z	M		06½	-	20	1½		
		F	12	35	-				Mag. m = 6.3, M = 6.1
20	NE	eS	04	29	39				Persian Gulf. USCGS.
		F		55	-				
20	ZV,Z	$ePKP_1$	11	32	27	8	2.1	17100	
	ZV,Z	$ePKP_2$		32	52				28°S., 167½°E. Norfolk Island.
	Z	ePP		36	28	8	2.3		Mag. 6½-6¾(Pas). USCGS.
	Z	ePPP		39	44				
	NE	eL	12	24	-				
	E	M		36	-	20	9		
	N	M		36	-	20	6		
	Z	M		36	-	20	2		
		F	14	15	-				Mag. m = 6.5, M = 6.3
21	ZV,Z	eP	06	45	49			2300	
	E	eS		49	32				37½°N., 21°E. Near west coast of
	E	M		53½	-	16	½		Greece. USCGS.
	N	M		53½	-	16	1		
		F	07	10	-				
21	NE	e	09	10	-				Small. 15½°N., 121½°E.
		F		30	-				Philippine Islands. USCGS.

FORM 3718

International Seismological Centre From the ISC collection scanned by SISMOS

SEISMOLOGICAL BULLETIN

MAY, 19 60

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
21	ZNE	eP	10	17	20	22	6	12200	Compression. PH 24 sec. 5.4 μ
	ZV,Z	iPKP		21	18				PPH 24 sec. 30 μ
	ZV	iPP		21	48	22	22		37½°S., 73½°W. Near coast of Chile.
	NE	eSKS		27	54				Many casualties and extensive
	NE	iS		29	27	26	52(H)		property damage at Conception and
	NE	iPS		31	24				surrounding area. Mag. 7¼-7½(Berk).
	NE	iSS		37	22				USCGS.
	NE	eLQ		48½	-				
	E	M	11	05	-	20	860		
	N	M		05	-	20	600		
	Z	M		05½	-	19	600		
		F	16	40	-				Mag. m = 7.6, M = 8.1
21	NE	e	20	00	-				Small. Chile. USCGS.
				25	-				
21	NE	e	23	00	-				Very small.
		F		20	-				
22	NE	e	02	25	-				Very small.
		F	03	00	-				
22	NE	e	04	40	-				Small. 37½°S., 73°W. Chile. USCGS.
		F	05	25	-				
22	NE	eL	06	55	-				38°S., 73½°W. Chile. USCGS.
	E	M	07	04	-	20	½		
	N	M		04	-	20	1		
		F		45	-				Mag. m = 5¾, M = 5¼
22	NE	e	08	38	-				
	NE	eL	09	03	-				37½°S., 73°W. Chile. USCGS.
	E	M		13	-	20	1		
	N	M		14	-	20	1		
	Z	M		14	-	20	½		
		F		45	-				Mag. m = 6, M = 5½.
22	Z	eP	10	45	09				38°S., 73½°W. Near coast of Chile.
	ZV,Z	ePP		49	39	7	2.1		Mag. 6½(Pas). USCGS.
									PH 24 sec. 1.4 μ.
									Mag. m = M = 6½
22	Z	eP	10	47	13	20	2.6	12300	PH 24 sec. 2.0 μ
	ZV,ZNE	ePP		51	42	12	5.7		PPH 24 sec. 10.4 μ
	NE	eSKS		57	50				
	NE	eS		59	24	24	13.6		37½°S., 73°W. Near coast of Chile.
	NE	ePS	11	01	14				Mag. 7¼-7½(Pas). USCGS.
	NE	eSS		07	14				
	NE	eLQ		18½	-				
	E	M		36	-	20	61		
	N	M		36	-	20	42		
	Z	M		36	-	19	32		
		F	15	20	-				Mag. m = 7.1, M = 7.3
22	ZV,Z	iP	19	10	28	8	2.1	12300	Compression. PH 24 sec. 3.1 μ
	Z	ePKP		14	14				PPH 24 sec. 18.0 μ
	ZV,ZNE	iPP		15	01	8	8.5		38oS., 73½oW. Near coast of Chile.
	NE	eSKS		21	04				Mag. 7¾(Berk). USCGS.
	NE	eS		22	44	25	23(H)		

FORM 3718 contd.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MAY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
contd.									
22	NE	iPS	19	24	31				
		F	-	-	-				Mag. m = 7.4, M = 7.8
22	ZV,Z	eP	19	25	22	15	7.7		38°S., 73½°W. Near Chile.
	ZV,Z	iPP		29	55	12	5.7		Mag. 7½-7¾(Berk). USCGS.
									Mag. m = 7½, M = 7¾.
22	ZV,ZNE	iP	19	25	42	16	21.5	12300	PH 24 sec. 33 μ
	ZV,ZNE	iPP		30	15	12	41.5		Dilatation. PPH 25 sec. 60 μ
	NE	iSKS		36	15				38°S., 73½°W. Near coast of Chile.
	NE	iS		37	53	25	148(H)		Mag. 8¼-8½(Pas). 8½(Berk). USCGS.
	Surface waves, on Galitzin records, beyond range of registration.								
	ZV	M	20	20	-	20	1400		Mag. m = 8.1, M = 8.9
		F	-	-	-				overlapped by next shock.
23	Z	ePP	00	44	53				38½°S., 75°W. Near coast of Chile. USCGS.
23	ZV,Z	ePP	01	10	27				Chile. USCGS.
23	ZV,Z	ePP	03	05	52	6	1.1		41½°S., 73½°W. Southern Chile.
	Z	M		52½	-	19	6½		USCGS.
	N	M		52½	-	19	8		
	E	M		53½	-	19	8		
		F	-	-	-				Mag. m = 6.6, M = 6.5.
23	ZV,Z	ePP	03	15	53				43°S., 75½°W. Near coast of Chile.
		F	04	50	-				USCGS.
23	ZV,Z	ePP	05	32	53				38°S., 73½°W. Chile. USCGS.
	N	eLQ		58½	-				
	E	M	06	14	-	22	7½		
	N	M		14	-	22	8		
	Z	M		14	-	22	5		
		F	07	20	-				Mag. m = 6½, M = 6¼
23	Z	e	07	29	-				48°S., 77°W. Off coast of Chile.
	E	M	08	16	-	20	5½		USCGS.
	N	M		16	-	20	4		
	Z	M		16	-	20	3½		
		F	-	-	-				Mag. m = 6¼, M = 6.
23	NE	e	09	00	-				Small. 40½°S., 75½°W. Near coast
		F		55	-				of Chile. USCGS.
23	NE	e	10	25	-				37½°S., 73°W. Chile. USCGS.
	E	M		54	-	20	2		
	N	M		54	-	20	2		
	Z	M		54	-	20	1½		
		F	11	30	-				Mag. m = 6, M = 5½
23	ZV,Z	eP	10	57	41				43½°S., 73½°W. Chile. USCGS.
	E	M	11	45	-	20	3½		
	N	M		45	-	20	4		
	Z	M		45	-	20	3		
		F	12	40	-				Mag. m = 6¼, M = 6.

FORM 3718

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MAY, 19 60

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
23	NE	e	14	37	-				Small. Near coast of Chile. USCGS.
		F	15	45	-				
23	NE	e	20	50	-				Small.
		F	21	25	-				
24	NE	e	04	10	-				Small.
		F		55	-				
24	NE	e	08	45	-				Small.
		F	09	20	-				
24	ZV,Z	ePKP1	15	06	49			18700	
	Z	iPKP2		07	55				
	ZN	ePP		11	48	9	2.6		PPH 12 sec. 1.4 μ
	NE	e(SKKS)		18	39				
	NE	eLQ		57	-				44½°S., 167½°E. South Island,
	E	M	16	14	-	30	15		New Zealand.
	N	M		14	-	30	22		Mag. 6¾-7(Pas), 6¼-6½(Berk).USCGS.
	E	M		25	-	20	13		
	N	M		26	-	20	8		
	Z	M		26	-	20	4		
		F	17	55	-				Mag. m = 6.5, M = 6.3
24	NE	e	21	22	-				50½°S., 74°W. Southern Chile.
	E	M		37	-	20	1½		USCGS.
	N	M		37	-	20	1½		
		F	22	25	-				
24	NE	e	23	40	-				Very small.
		F		55	-				
25	NE	e	01	15	-				Very small.
		F		40	-				
25	NE	e	04	05	-				Very small. 44°S., 168°E.
		F		35	-				New Zealand. USCGS.
25	NE	e	05	35	-				
	E	M		49	-	20	3		Southern Chile. USCGS.
	N	M		49	-	20	2		
	Z	M		49	-	20	1½		
		F	06	20	-				
25	Z	ePP	08	54	24	6	3.7	12800	PPH 24 sec. 1.1 μ
	NE	ePS	09	04	11				45°S., 76°W. Off coast of Chile.
	NE	eLQ		24½	-				Mag. 6¾(Pas). USCGS.
	E	M		36½	-	22	41		
	N	M		36½	-	22	40		
	Z	M		36½	-	22	24		
		F	11	45	-				Mag. m = 6.9, M = 7.0
25	NE	e	14	32	-				Small. 1°N., 129½°E.
		F	15	15	-				Halmahera. USCGS.

FORM 3718

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MAY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
26	ZNE	e	00	58.0	-				
	N	M		58¾	-	16	1		
		F	01	07	-				
26	NE	e	02	10	-				Very small.
		F		50	-				
26	ZV,Z	iP	05	14	27	8	7.4	2010	Compression. NEe
	NE	eS		17	45	12	23(H)		PH 12 sec. 7.0 μ
	Z	i		17	58				
	NE	eL		19	-				40.6°N., 20.6°E. Albania.
	E	M		20½	-	20	54		6 killed and serious property
	N	M		20½	-	20	150		damage. BCIS
	E	M		21	-	12	55		
	N	M		21	-	15	170		
	Z	M		21	-	9	30		
		F	06	30	-				Mag. m = 6.1, M = 5.8
26	NE	e	12	50	-				Very small.
		F	13	15	-				
26	NE	e	16	05	-				Very small.
		F		25	-				
26	ZV,Z	iP	20	16	30				Compression. 27°N., 93°E.
	ZV,Z	i(pP)		16	50				Eastern India. USCGS.
26	NE	e	20	55	-				
	N	M	21	04	-	20	½		
	E	M		05½	-	20	1		
		F		30	-				
27	NE	e	01	55	-				Very small.
		F	02	15	-				
27	NE	e	04	07	-				Very small. 41°S., 76°W.
		F		35	-				Chile. USCGS.
27	NE	e	21	30	-				Very small. Northern Chile—
		F	22	00	-				Bolivia border. USCGS.
27	NE	e	23	34	-				45°S., 77°W. Off coast of Chile.
	N	eL		53	-				USCGS.
	E	M	00	09	-	23	3		
	N	M		09	-	23	2		
		F		50	-				Mag. m = 6¼, M = 6
28	NE	e	03	59	-				Small. 39½°S., 74½°W. Chile. USCGS.
		F	04	25	-				
28	NE	e	11	34	-				38°S., 73°W. Chile. USCGS.
	NE	eL	11	52	-				
	E	M	12	08	-	20	3½		
	N	M		08	-	20	3		
	Z	M		08	-	20	3		
		F		55	-				Mag. m = 6¼, M = 6

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

MAY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
29	ZV,Z	ePP	07	58	28	6	1.1	12200	
	Z	e		58	45				38°S., 72½°W. Chile.
	Z	ePPP	08	00	47				Mag. 6½(Pas). USCGS.
	NE	ePS		07	51				
	NE	eL		24	-				
	E	M		41½	-	20	9		
	N	M		42	-	20	7		
	Z	M		42	-	20	7		Mag. m = 6.6, M = 6.5
		F	-	-	-				overlapped by next shock.
29	E	M	09	37	-	20	1½		37½°S., 73°W. Southern Chile.
	N	M		38	-	20	1½		USCGS.
		F	10	25	-				
29	NE	e	15	00	-				Very small. 37½°N., 73°W. Chile.
		F		20	-				USCGS.
29	NE	eL	22	10	-				Near coast of southern Chile.
	E	M		30	-	20	1		USCGS.
	N	M		30	-	20	1		
		F	23	10	-				
31	NE	e	03	09	-				39½°S., 75°W. Chile.
	NE	eL		25	-				Mag. 6(Berk). USCGS.
	E	M		40	-	22	2		
	N	M		41	-	22	2½		
		F	04	40	-				Mag. m = 6, M = 5¾.
31	ZV	iP	11	12	15	6	2.1	6550	Ze
	NE	eS		20	17	16	2.5(H)		18°N., 62°W. Leeward Islands.
	ZE	ePS		20	42				Mag. 5¾(Berk). USCGS.
	NE	eL		29½	-				
	Z	M		33	-	20	5½		
	E	M		33	-	20	6½		
	N	M		33½	-	20	6½		
		F	12	35	-				Mag. m = 6.1, M = 5.8

FORM 3718

DS77832/1 R94 140 7/60 XL

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METEOROLOGICAL OFFICE, EDINBURGH
17 AUG 1960
R6

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

28

SEISMOLOGICAL BULLETIN FOR JUNE, 1960

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.	1st August 1957	21.2	21.2	0.00	62.5
E.	1st August 1957	21.1	21.1	0.00	52.0
Z.	17 December 1957	10.7	11.4	-0.05	121

(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	e	05	28	-				
	NE	eL		49	-				38°S., 73°W. Chile. USCGS.
	N	M	06	07	-	20	2		
	E	M		09	-	20	3		
		F		45	-				
1	NE	eL	22	10	-				42°S., 74°W. Near coast of Chile USCGS.
	N	M		19	-	20	1		
		F		35	-				
2	Z	ePP	06	17	56				
	ZNE	ePS		27	30				46½°S., 74°W. Southern Chile. USCGS.
	NE	eL		48	-				
	E	M	07	06	-	19	4½		
	N	M		06	-	19	4		
	Z	M		06	-	19	3½		
		F		45	-				Mag. m = 6.3, M = 6.1
2	NE	e	07	46	-				33½°N., 60°E. Iran. USCGS.
	N	M		54½	-	17	½		
		F	08	05	-				
2	ZV,Z	ePKP	08	06	22				
	NE	ePKS		09	42				5½°S., 151½°E. New Britain. Mag. 6½ - 6¾ (Pas) USCGS.
	NE	e		26	16				
	NE	eL		40	-				
	Z	M	09	04½	-	22	7		
	N	M		04½	-	22	11		
	E	M		05½	-	22	7		
		F	10	35	-				Mag.: m = M = 6½

Form 3717.

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE, 19 60

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
2	NE	e	13	05	-				Very small 33½°N., 49°E. Iran. USCGS.
		F		15	-				
2	N	e	18	35	-				Very small 18½°N., 61°W. Leeward Islands. USCGS.
		F		45	-				
2	ZV,Z	iPKP	19	17	56				20½°S., 178½°W. Fiji Islands. h about 550 Km. USCGS.
2	ZV,Z	e (PKP)	20	07	20				20½°S., 178½°W. Fiji Islands. h about 550 Km. USCGS.
2	NE	e	22	30	-				Very small. 38½°S., 74°W. Chile. USCGS.
		F		45	-				
3	ZV,Z	iPKP	13	42	17	5	1.7		Compression 17½°S., 179°W. Fiji. h = 600 Km. USCGS.
3	ZV,Z	eP	16	30	19	6	0.7		41½°N., 141½°E. Near south coast of Hokkaido. Japan. h = 100 Km. USCGS.
	NE	eL		56	-				
	E	M	17	10	-	20	1		
	N	M		10	-	20	1½		
	Z	M		10	-	20	1		
		F		30	-				
3	NE	e	19	15	-				Small. 42½°S., 75°W. Chile. USCGS.
		F		35	-				
3	NE	e	22	50	-				Very small.
		F	23	05	-				
4	ZV,Z	iP	02	39	33	3	0.7		Compression
	NE	e		49	55				
	N	eL	03	01	-				20°N., 95½°W. Near coast of Jalisco, Mexico. USCGS.
	N	M		09	-	28	1½		
	E	M		15	-	18	1		
	N	M		15	-	18	1		
	Z	M		15	-	18	1		
		F		35	-				Mag.: m = 6; M = 5¾
4	NE	eL	03	52	-				39°S., 73½°W. Near coast of Chile. USCGS.
	N	M	04	07	-	20	½		
		F		30	-				
4	ZV,Z	iP	08	14	56				Compression
	N	e		19	03				
	E	eL		20½	-				Azores
	N	M		21½	-	14	1		
		F		35	-				
4	ZV,Z	eP	11	10	31				39½°N., 30½°W. Azores Islands region. USCGS.
	N	e		14	31				
	E	eL		16½	-				
	N	M		17	-	14	1		
		F		35	-				

FORM 3718

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M.O. 7009

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
5	NE	e	06	45	-				Very small. 65°S., 178°E.
		F	07	25	-				Antarctic Ocean. USCGS.
5	NE	e	20	50	-				Small 31½°S., 177°W. Kermadec
			21	50	-				Islands. USCGS.
6	ZV,Z	iP	01	29	41	3	1.0	8580	
	ZV,Z	i		29	49				41°N., 125°W. Off coast of
	NE	eS		39	27	12	1.6(H)		Northern California
	NE	eSS		44	12				Mag. 5½ - 5¾ (Berk) USCGS
	N	eL		51	-				
	E	M		59	-	19	5		
	N	M	02	00½	-	19	5½		
	Z	M		03½	-	15	5		
		F	03	00	-				Mag. : = 6.2, M = 5.9
6	Z	eP	06	10	44			13000	
	ZV,Z	ePKP		14	34				PPH 12 sec. 1.3μ
	ZV,Z	ePP		15	29	8	2.3		45½°S., 73½°W. Near coast of
	ZNE	e		16	34				Chile. Mag 6¾ (Pas) USCGS
	NE	iPPS		26	21				
	NE	eSKKS		32.4	-				
	NE	e		37	30				
	NE	eL		44	-				
	E	M	07	01	-	20	160		
	N	M		03½	-	20	105		
	Z	M		05½	-	18	120		
		F	10	45	-				Mag. : m = 7.0, M = 7.1
6	NE	e	18	03	-				
	E	M		21	-	20	1½		46°S., 73½°W. Near coast of
	N	M		21	-	20	1½		Chile. USCGS.
	Z	M		21	-	20	1		
		F		40	-				
7	NE	e	06	09	-				Small. 17°S., 98°E.
		F		45	-				Indian Ocean. USCGS.
7	ZNE	e	11	00	-				Small
		F		10	-				
7	ZV,Z	iP	13	08	54				Compression. 53°N., 158½°E.
									Near Kamchatka. USCGS
7	ZNE	e	14	00	-				Small. Off coast of Southern
		F		20	-				Chile. USCGS
8	ZV,Z	iP	16	25	55	3	1	(3380)	
	NE	e(S)		30	52				35°N., 35°W. North Atlantic
	N	eL		32½	-				Ocean. USCGS.
	N	M		34	-	20	4½		
	E	M		35	-	16	3		
	ZE	eScS		36	28				
		F	17	20	-				Mag. : m = 5.9, M = 5.4
8	NE	e	22	39	-				Small
		F	23	05	-				
9	NE	e	02	59	-				Very small. 39½°N., 39½°E.
		F	03	10	-				Turkey. USCGS

FORM 3718

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
9	N	eL	08	33½	-				Strait of Otranto. USCGS
	E	M		35	-	20	2		
	N	M		35	-	20	3½		
		F		45	-				
9	ZV,Z	iPKP	11	43	37	8	3.2		18°S., 169°E. New Hebrides Islands.
	N	eL	12	35	-				
	Z	M		49	-	21	2		
	N	M		49	-	21	4½		
	E	M		50	-	21	3		Mag. : m = 6¼, M = 6
		F	13	40					
9	ZV,Z	iP	17	52	45	5	2.2	2600	
	ZV,Z	i		52	55				38°N., 26°W. Azores Islands. USCGS
	NE	e		56	16				
	E	iS		56	54	12	6.8(H)		
	NE	eL		58	-				
	E	M		59	-	16	7		
	N	M		59½	-	16	8½		
	Z	M		60	-	16	4½		Mag. : m = 5.9, M = 5.4
		F	18	55	-				
10	Z	ePKP	21	31	39				15½°S., 174°W. Samoa Islands region. USCGS
	N	eL	22	20	-				
	Z	M		33	-	20	1		
	N	M		33	-	20	3		
	E	M		36	-	19	1½		
		F	23	30	-				
11	NE	eSKS	00	57	35				21°S., 64½°W. Southern Boliva, h about 300 Km. USCGS
	E	M	01	14½	-	20	1		
	N	M		14½	-	20	1		
		F		35	-				
11	Z	iPKP	15	33	29				PPZ 7 sec. 2.1μ
	ZNE	iPKS		36	57				
	Z	e		49	29				9°S., 152½°E D'Entrecasteaux Islands USCGS
	NE	eL	16	12	-				
	N	M		23	-	24	19		
	E	M		23½	-	24	24		
	N	M		36	-	20	10		
	E	M		36	-	20	10		
	Z	M		36	-	20	7		Mag. ; m = 6.6, M = 6.5 overlapped by next shock.
		F	-	-	-				
11	Z	ePKP	16	56	58				
	ZN	ePKS	17	00	27				9½°S., 152½°E. D'Entrecasteaux Islands. USCGS
	NE	eL		35	-				
	N	M		46½	-	23	19		
	E	M		47	-	24	26		
	N	M		59	-	20	14		
	E	M		59	-	20	7		
	Z	M		59	-	20	7		Mag. ; m = 6.6, M = 6.5
		F	19	40	-				
12	NE	e	00	50	-				Small. 37°S., 75°W. Off coast of Chile USCGS
		F	01	30	-				

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
12	NE	eL	08	10	-				
	E	M		24	-	20	$3\frac{1}{2}$		36°S., 98°W. South Pacific
	N	M		24	-	20	3		Ocean. USCGS
	Z	M		24	-	20	2		
		F	09	30	-				Mag. ; = $6\frac{1}{4}$, M = 6
12	NE	e	23	20	-				Very small
		F		30	-				
13	NE	eL	06	34	-				
	E	M		52	-	20	$1\frac{1}{2}$		$44\frac{1}{2}$°S., $76\frac{1}{2}$°W. Off coast of
	N	M		53	-	20	$1\frac{1}{2}$		Southern Chile. USCGS
		F	07	25	-				
14	NE	e	00	35	-				Very small
		F	04	00	-				
14	NE	e	03	50	-				Small. 43°S., 73°W. Chile.
		F	04	25	-				USCGS
15	NE	e	00	45	-				Small. 9°S., $152\frac{1}{2}$°E.
		F	01	10	-				D'Entrecasteaux Islands. USCGS
15	NE	e	12	15	-				Small
		F		35	-				
15	ZV,Z	iP	15	49	16	6	0.8	9200	Compression
	ZV,Z	i		49	29				
	Z	ePP		52	30				41°N., $142\frac{1}{2}$°E. Near north coast
	NE	eS		59	32				of Honshu, Japan. USCGS
	NE	eL	16	16	-				
	E	M		29	-	22	2		
	N	M		29	-	22	$4\frac{1}{2}$		
	Z	M		29	-	22	$1\frac{1}{2}$		
		F	17	00	-				Mag, : m = 6.1, M = 5.8
15	NE	e	23	50	-				32°S., $177\frac{1}{2}$°W. Kermadec
	E	M	24	21	-	20	1		Islands. USCGS
	N	M		21	-	20	$1\frac{1}{2}$		
		F	-	-	-				Overlapped by next shock.
16	E	M	00	40	-	20	1		$\frac{1}{2}$°S., 133°E. New Guinea. USCGS
	N	M		40	-	20	$1\frac{1}{2}$		
16	E	M	01	03	-	19	$2\frac{1}{2}$		
	N	M		03	-	20	3		
	Z	M		03	-	20	$2\frac{1}{2}$		
		F	02	15	-				
17	ZV	iPKP	05	21	15				18°S., 178°W. Fiji Islands
									USCGS
17	ZV,Z	iP	16	47	28				
	E	eL	17	08	-				$52\frac{1}{2}$°N., $173\frac{1}{2}$°W. Andreanof
	E	M		$27\frac{1}{2}$	-	20	$1\frac{1}{2}$		Islands. USCGS
	N	M		$27\frac{1}{2}$	-	20	$1\frac{1}{2}$		
	Z	M		$27\frac{1}{2}$	-	20	1		
		F	18	15	-				

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JUNE 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
18	NE	e	02	15	-				Very small
		F		25	-				
18	NE	e	03	55	-				Small. D'Entrecasteaux Islands USCGS
		F	04	40	-				
19	ZV,Z	iPKP	12	40	37				15°S., 178½°W. Fiji Islands USCGS
19	ZV	iP	12	46	52				44½°N., 149°E. Kurile Islands. USCGS
19	N	eL	18	00	-				28°N., 142½°E. Bonin Islands USCGS
	E	M		13½	-	20	½		
	N	M		13½	-	20	½		
		F		40	-				
19	NE	e	22	30	-				Very small
		F	23	00	-				
20	ZNE	eP	02	15	39	16	1.9	12500	PH 22 sec 1.5μ
	ZV,Z	iPP		20	14	16	8.6		PPH 22 sec 6.6μ
	NE	eSKS		26	21				
	NE	eS		27	46	22	9.8(H)		38°S., 73½°W. Near coast of Chile Mag. 7 (Pas) 7½ (Berk) USCGS
	NE	ePS		29	41				
	NE	eSS		35	50				
	NE	eSSS		39	46				
	NE	eL		48	-				
	Z	M	03	06	-	20	61		
	N	M		06	-	20	75		
	E	M		08	-	20	86		
		F	06	40	-				Mag. : m = 7.2, M = 7.5
20	Z	eP	13	14	15			12700	Compression
	Z	ePKP		18	08				
	ZV,Z	ePP		18	48	8	3.2		PPH 20 sec 2.8μ
	Z	ePPP		20	54				
	NE	eSKS		24	51				39½°S., 73°W. Chile. Mag. 6¾ (Pas), 7 (Berk) USCGS
	NE	e		25	06				
	NE	eS		26	24	22	4.2(H)		
	NE	iPS		28	22				
	N	eSS		34	28				
	NE	eL		45	-				
	E	M	14	00	-	22	43		
	N	M		01	-	22	58		
	Z	M		01	-	22	28		
		F	17	25	-				Mag. : m = 6.9, M = 7.0
20	NE	eL	17	52	-				38½°S., 74°W. Off coast of Chile USCGS
	E	M	18	05	-	20	½		
	N	M		05	-	20	½		
		F		30	-				
21	NE	e	09	25	-				Very small. 4½°S., 105°W. Pacific Ocean,. USCGS
		F		50	-				
21	NE	eL	22	21	-				61°S., 21°W. Sandwich Islands region. USCGS
	E	M		34½	-	20	½		
	N	M		34½	-	20	1½		
		F	23	10	-				

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE 19 60

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
22	NE	e	04	25	-				very small. 62°S., 156½°E.
		F		50	-				Antarctic Ocean. USCGS
22	NE	e	07	35	-				very small. Near coast of Chile.
		F		55	-				USCGS
22	ZV,Z	iP	16	22	18			6800	12°N., 57½°E. Arabian Sea.
	N	eS		30	34				USCGS
		F	17	05	-				
22	NE	e	21	15	-				very small. 38½°S., 73½°W.
		F		35	-				Near coast of Chile. USCGS
25	ZV,Z	$ePKP_1$	02	22	35				
	ZV,Z	$ePKP_2$		23	11				30½°S., 177°W. Kermadec Islands
	NE	eL	03	20	-				USCGS
	E	M		33	-	20	½		
	N	M		34	-	20	½		
		F	04	20	-				
25	ZV	iPg	14	30	26			430	very small 51.5°N., 5.7°E.
	ZV,N	eSg		31	17				Holland - Belgium frontier
		F		33	-				BCIS
25	Z	ePKP	15	01	45				
	ZV,Z	i		02	24				30½°S., 177°W. Kermadec Islands.
	ZV	e		02	30				Mag. 6½-6¾ (Pas) 5¾ (Berk)
	N	eL		57	-				USCGS
	Z	M	16	13	-	20	2½		
	N	M		13	-	20	4½		
	E	M		14	-	20	3½		
		F	17	25	-				Mag. : m = 6½, M = 6¼
27	NE	e	17	15	-				very small
		F		45	-				
27	NE	e	18	10	-				
	E	M		24	-	20	1½		
	N	M		24	-	20	1½		
		F	19	20					
29	NE	eL	02	46	-				
	E	M	03	01	-	20	3½		Southern Chile
	N	M		03	-	20	3		USCGS
	Z	M		03	-	20	3		
		F		40	-				Mag. :m = 6¼, M = 6
29	ZV,Z	$ePKP_2$	04	49	47				
	E	M	06	00	-	20	1½		30°S., 177½°W. Kermadec Islands
	N	M		00	-	20	3		USCGS
		F		40	-				
29	ZV,Z	iP	10	27	16	6	2.3	2040	Confused by microseisms
	NE	e(S)		30	37				
	E	eL		30½	-				47½°N., 27°W. Atlantic Ocean
	E	M		33	-	20	3		USCGS
	N	M		33	-	20	2		
	Z	M		33	-	20	3		
		F	11	05	-				Mag. : m = 5.4, M = 4.6

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JUNE 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
29	NE	e	17	40	-				Small. 53°N., 168½°W. Fox Islands USCGS
	F	F	18	20	-				
30	ZV,Z	iP	20	09	20				Dilatation. 60°N., 151°W. Kenai Peninsula, Alaska. USCGS

FORM 3718

DS 79716/11/R94 140 8/60XL

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METEOROLOGICAL OFFICE, EDINBURGH
15 SEP 1960
R-6

35

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR JULY, 1960

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.	1st August 1957	21.2	21.2	0.00	62.5
E.	1st August 1957	21.1	21.1	0.00	52.0
Z.	17 December 1957	10.7	11.4	-0.05	121

(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	E	e(S)	08	19	20				56°N., 165°E. Komandorskie Islands. USCGS.
	N	eL		34	-				
		F	09	15	-				
2	NE	e	09	53	-				
	E	M	10	04	-	20	½		45½°S., 73½°W. Southern Chile. USCGS.
	N	M		04	-	20	½		
		F		20	-				
2	N	e	12	20½	-				
	E	M		56	-	20	½		56°S., 27°W. Sandwich Islands. USCGS.
	N	M		57	-	20	1		
		F	13	30	-				
2	ZV	iP	12	55	31				41°N., 131½°E. Sea of Japan. USCGS.
3	NE	e	04	00	-				Small. 52°N., 174°W. Andreanof Islands. USCGS.
		F		25	-				
3	NE	e	07	55	-				Very small. 52°N., 173°W. Andreanof Islands. USCGS.
		F	08	10	-				
3	ZV,Z	iP	20	32	50	7	11.4	8870	Dilatation. PH 8 sec. 4.2 μ
	ZV,Z	i		32	55				
	Z	ePP		35	48	7	2.0		
	N	iS		42	49	10	8.3(H)		50½°N., 177°W. Andreanof Islands, Aleutian Ialands. Mag. 6½(Berk).
	N	eSS		48	04				
	N	eSSS		51	20				
	N	eL		58	-				
	E	M	21	13	-	19	7½		
	N	M		14½	-	19	8		
	Z	M		14½	-	18	2½		Mag.: m = 6.6, M = 6.5 overlapped by next shock.
		F	-	-	-				

Form 3717.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JULY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
3	ZV,Z	eP	23	04	29				Dilatation. 50½°N., 177°W.
		F	24	15	-				Andreanof Islands. USCGS.
4	ZV,Z	eP	04	39	43	7	2.6	7700	
	ZV,Z	e		39	55				52°N., 131½°W. Queen Charlotte
	NE	eS		48	46	16	6.7(H)		Islands. Mag. 6½-6¾(Pas). USCGS.
	N	eSS		53	18				
	N	e		56	26				
	N	eL	05	01	-				
	E	M		05½	-	24	36		
	N	M		06	-	24	44		
	N	M		10½	-	17	45		
	E	M		11	-	16	37		
	Z	M		11	-	16	28		
		F	07	50	-				Mag.: m = 6.6, M = 6.5
4	E	e(S)	13	30	20				
	NE	eL		44	-				52°N., 131°W. Queen Charlotte
	N	M		52	-	17	4		Islands. USCGS.
	E	M		52½	-	16	3		
	Z	M		52½	-	16	2½		
		F	14	35	-				Mag.: m = 6, M = 5¾
4	NE	eL	22	31	-				
	E	M		35	-	20	½		43°S., 73°W. Southern Chile.USCGS.
	N	M		35	-	20	1		
		F	23	05	-				
5	NE	e(PS)	06	14	08				
	NE	eL		31	-				39°S., 73½°W. Near coast of Chile.
	E	M		47	-	20	1		USCGS.
	N	M		47	-	20	1		
		F	07	30	-				
5	ZV,Z	iP	21	26	47				8°S., 71½°W. Brazil. USCGS.
6	ZV	iP	05	25	32			5700	Depth = 220 Km.
	N	eS		32	32				36½°N., 70½°E. Hindu Kush region.
	N	esS		33	56				USCGS.
		F	06	10	-				
8	NE	eL	13	30	-				31°N., 130½°E. Near Kyushu, Japan.
	N	M		46	-	22	½		USCGS.
		F	14	00	-				
8	NE	e	19	10	-				Very small.
		F		25	-				
8	NE	e	21	10	-				Very small.
		F		35	-				
9	NE	e	01	10	-				Very small. 50°N., 177½°W.
		F		25	-				Andreanof Islands. USCGS.
9	NE	eL	01	28	-				25½°N., 125½°E. Ryukyu Islands.
	E	M		33	-	20	1½		USCGS.
	N	M		33	-	20	2		
		F	02	05	-				

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DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
9	NE	e	18	44	-				Small.
		F	19	00	-				
9	ZV	e(P)	22	47	09				41°N., 21°E. Southern Yugoslavia.
	NE	eL		52½	-				USCGS.
	N	M		53	-	16	1		
		F	23	05	-				
10	ZV,Z	eP	00	18	45	6	1.3	10500	
	ZV,Z	ePP		22	38	6	1.1		
	E	eSKS		29	19				0°., 98°E. Off west coast of
	EN	eSKKS		29	33				Sumatra. USCGS.
	N	eS		29	53	20	6.0		
	E	ePS		31	19				
	N	eL		48	-				
	N	M	01	04	-	20	9		
	E	M		08	-	20	7		
	Z	M		08	-	20	3½		
		F	03	10	-				Mag.: m = 6.5, M = 6.3
11	ZV,Z	ePKP	12	14	45				16°S., 172°W. Tonga Islands.
									USCGS.
13	NE	e	06	45	-				Small.
		F	07	10	-				
13	Z	e	08	14½	-				53½°S., 1½°E. Bouvet Islands
	N	eL		46	-				region.USCGS.
	Z	M		53½	-	22	4½		
	N	M		53½	-	22	9½		
	E	M		54½	-	20	5½		Mag.: m = 6½, M = 6¼
		F	09	40	-				
13	ZV,Z	eP	10	25	05				
	NE	eS		28	45				Greece. USCGS.
	N	M		32	-	17	2		
		F		40	-				
13	ZV,Z	eP	13	05	37	6	1.9	2200	Dilatation.
	ZNE	eS		09	13	10	3.2(H)		41°N., 23½°E. Greece.
	N	eL		10½	-				Minor damage on Chalcidice
	N	M		12½	-	17	8		Peninsula. USCGS.
	E	M		13	-	16	3		
	Z	M		13½	-	8	3½		
		F		40	-				Mag: m = 5.5, M = 4.8
13	NE	e	21	10	-				Very small. 34°N., 139°E.
		F		35	-				Off Honshu, Japan. USCGS.
14	NE	eL	02	55	-				Small. 25°N., 124½°E.
		F	03	15	-				Ryukyu Islands. USCGS.
14	ZNE	e	10	55	-				
	N	eL	11	16	-				5°N., 127½°E. Molucca Passage.
	E	M		29	-	22	2		USCGS.
	N	M		31	-	22	2½		
		F		45	-				

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DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
14	NE	eL	19	03	-				Small. 7°N., 38½°E.
		F		25	-				Ethiopia. USCGS.
15	ZV,Z	iP	05	13	45				Very small. 12°S., 45½°E.
	NE	eL		44	-				Off Madagascar. USCGS.
		F	06	00	-				
15	ZV,Z	eP	23	48	22				Small.
	NE	eL		54	-				
		F	24	00	-				
17	NE	eL	05	37	-				36°N., 69°E. Hindu Kush.
	E	M		48½	-	20	2½		h about 200 Km. USCGS.
	N	M		48½	-	20	1½		
		F	06	10	-				
17	NE	e	20	10	-				Small. 10°S., 13°W.
		F		25	-				Ascension Island region. USCGS.
18	NE	eL	02	37	-				4½°S., 151°E. New Britain region.
	E	M		52½	-	26	4		h about 200 Km. USCGS.
	N	M		54	-	26	5		
		F	03	30	-				
18	ZV	iP	19	02	09				7°S., 51½°E. Amirante Islands.
	ZV	e		02	18				USCGS.
19	ZV	eP	04	32	11				7°S., 80°W. Near coast of Peru.
		F	05	25	-				USCGS.
19	ZV,Z	epP	16	15	53				16½°N., 92½°W. Mexico.
									h about 200 Km. USCGS.
20	ZV,Z	e(P)	09	42	34				
	N	e(S)		52	33				49°N., 157½°E. Kurile Islands
	N	M	10	19	-	20	1½		region. USCGS.
	E	M		20	-	20	1½		
		F		35	-				
20	ZV,Z	ePKP	21	18	51				
	ZV,Z	i		18	53				20½°S., 169°E. New Hebrides Islands
	NE	eL	22	00	-				USCGS.
	E	M		25	-	22	1½		
	N	M		26	-	22	2		
	Z	M		26	-	22	2		
		F	23	25	-				
22	NE	eL	06	45½	-				
	N	M		47	-	18	1½		
	E	M		48	-	16	2½		
	Z	M		48	-	16	2		
		F		55	-				
24	ZV	e(P)	10	00	22				56°N., 164°E. Near coast of
	E	M		33	-	20	2½		Kamchatka. USCGS.
	N	M		34	-	19	2½		
	Z	M		34	-	19	1		
		F	11	55	-				

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JULY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
25	ZV,ZN	eP	03	52	34	8	1.2	8120	PH 16 sec. 1.3 μ
	Z	ePP		55	25				55°N., 163°E. Near coast of
	NE	eS	04	01	58	14	3.2(H)		Kamchatka. Mag. 6½(Pas). USCGS.
	N	ePPS		02	42				
	N	eSS		07	06				
	E	eL		13½	-				
	E	M		26	-	20	6		
	N	M		26	-	20	13		
	Z	M		26	-	20	3		
		F	06	55	-				Mag.: m = 6.2, M = 5.9
25	ZV,Z	iP	11	23	29	7	13.6	8150	Dilatation. PH 14 sec. 8.5 μ
	Z	ipP		24	06				PPH 14 sec. 5.1 μ
	ZV,ZN	isP		24	20				54°N., 159°E. Kamchatka.
	ZN	iPP		26	16	8	4.8		h about 100 Km. Mag. 6¾(Berk),
	NE	iS		32	49	16	28(H)		7 (Pas). USCGS.
	N	esS		33	20				
	ZNE	ePS		33	46				
	N	ePPS		34	18				
	E	eSS		37	32				
	N	eL		48	-				
		F	14	30	-				Mag.: m = M = 6.8
25	NE	e	21	39	-				Small. 32°N., 56½°E. Iran. USCGS.
		F		55	-				
25	NE	e	22	40	-				Small. 3°S., 148°E.
		F	23	05	-				Bismarck Sea. USCGS.
26	NE	e	04	40	-				Very small. 40½°N., 144½°E.
		F	05	00	-				Off Hokkaido, Japan. USCGS.
26	ZV,Z	eP	12	42	10				40½°N., 37°E. Turkey. USCGS.
	N	M		54	-	18	1		
		F	13	05	-				
27	NE	e	04	15	-				Very small. 59.4°S., 25.1°E.
		F	05	00	-				Sandwich Islands. USCGS.
27	ZV,Z	ePP	10	24	40			13000	
	E	eSKS		30	30				44.7°S., 75.1°W. h about 25 Km.
	E	eSKKS		31	36				Near coast of southern Chile.
	NE	ePS		34	21				USCGS.
	E	eL		54	-				
	E	M	11	10½	-	20	3		
	N	M		12½	-	20	4		
	Z	M		12½	-	19	3		
		F	12	40	-				Mag.: m = 6¼, M = 6
28	ZV,Z	iPKP	00	43	55	6	4.7		
	ZV,Z	e		44	11				19½°S., 170½°E. Loyalty Islands.
	NE	eL	01	26	-				USCGS.
	E	M		51	-	20	2½		
	N	M		51	-	20	4		
	Z	M		51	-	20	1½		
		F	02	50	-				Mag.: m = 6¼, M = 6
29	ZV,Z	e(P)	10	54	23				
	N	eL	11	14	-				26.9°N., 90.3°E. India. USCGS.
	E	M		23	-	24	1		
	N	M		23	-	24	3½		
		F		35	-				

FORM 3718

International Seismological Centre From the ISC collection scanned by SISMOS

M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

JULY, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
29	N	eSS	14	54.3	-				31.7°N., 67.0°E. Eastern
	E	M	15	06	-	20	2		Afganistan. h about 64 Km.
	N	M		06½	-	20	4		USCGS.
		F		35	-				
29	ZV,Z	iP	17	44	02	8	6.4	9200	PH 16 sec. 3.5 μ
	ZV,Z	iPP		47	16	8	4.3		PPH 18 sec. 9.0 μ
	N	iS		54	17	18	9.0(H)		
	E	iPS		54	43				40.1°N., 142.3°E. Honshu, Japan.
	N	ePPS		55	27				h about 50 Km. Mag. 6¾(Pas).USCGS.
	E	eSS		59	51				
	NE	eL	18	09	-				
	E	M		17½	-	28	95		
	N	M		18	-	27	70		
	E	M		23	-	20	40		
	N	M		24½	-	20	56		
	Z	M		24½	-	20	36		Mag.: m = M = 6.7
		F	20	40	-				
30	NE	e	14	45	-				Small. 56.3°N., 163.9°E.
		F	15	10	-				Near Kamchatka. USCGS.
30	ZV,Z	e(PKP)	03	14	48				PPH 16 sec. 2.2 u
	NE	ePKS		18	19				
	NE	e		34	37				5.6°S., 150.0°E. New Britain.
	NE	eL		55	-				Mag. 6¾(Pas). USCGS.
	E	M	04	13	-	21	35		
	N	M		14	-	20	47		
	Z	M		14	-	20	24		
		F	06	00	-				Mag.: m = M = 6¾
30	NE	eL	08	03	-				6.0°S., 150.0°E. New Britain.
	E	M		22	-	22	3½		USCGS.
	N	M		22	-	22	4½		
	Z	M		22	-	22	3		
		F		50	-				Mag.: m = 6¼, M = 6
31	N	eSS	15	35	13				
	NE	eL		43	-				43.6°S., 74.3°W.
	E	M	16	00	-	20	2		Near coast of Central Chile.
	N	M		00	-	20	1½		USCGS.
	Z	M		00	-	20	1		
		F		30	-				
31	NE	e	19	50	-				Small. 2.8°S., 148.2°E.
		F	20	10	-				Bismarck Sea. USCGS.
31	ZV	iP	22	35	28			5300	
	ZV	i		34	46				27.9°N., 54.6°E.
	N	eS		42	15				Southern Iran.
	N	eL		49	-				h about 127 Km. USCGS.
	N	M		54	-	24	1		
	E	M		56	-	20	½		
		F	23	15	-				

FORM 3718

DS80000/1 R94 140 8/60 XL

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METEOROLOGICAL OFFICE, EDINBURGH 13 OCT 1960 R.6.

669

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AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR AUGUST, 1960

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.	1st August 1957	21.2	21.2	0.00	62.5
E.	1st August 1957	21.1	21.1	0.00	52.0
Z.	17 December, 1957	10.7	11.4	-0.05	121

(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	02	29	15	4	1.3	5290	27.9°N., 54.2°E. h about 110 Km. Southern Iran. USCGS.
	N	eS		36	02				
	N	eSS		39	31				
	N	eL		43	-				
	N	M		48	-	24	$3\frac{1}{2}$		
	E	M		50	-	20	2		
	Z	M		51	-	16	$\frac{1}{2}$		Mag.: m = 6, M = $5\frac{3}{4}$
		F	03	25	-				
2	ZV,Z	iPKP	05	26	58				22.2°S., 171.5°E. h about 108 Km. Loyalty Islands. USCGS.
	Z	ePP		30	36				
	N	ePSKS		40	55				
	Z	eSP		41	11				
	E	eL	06	11	-				
	E	M		32	-	22	$\frac{1}{2}$		
	N	M		32	-	21	1		
		F	07	30	-				
2	ZV,Z	$ePKP_2$	09	50	49				28.2°S., 176.6°W. h about 61 Km. Kermadec Islands. USCGS.
	E	M	11	00	-	20	$\frac{1}{2}$		
	N	M		00	-	20	1		
		F		50	-				
2	ZV	eP	20	57	44			3660	84.2°N., 2.3°E. h about 40 Km. North Polar region. USCGS.
	N	eS	21	02	59				
	E	eL		$05\frac{1}{2}$	-				
		F		20	-				

Form 3717.

M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

AUGUST, 1969

International Seismological Centre

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
2	NE	e	02	14	-				Very small.
		F		30	-				
4	ZV,Z	iP	07	46	46	8	2.0	8760	PH 14 sec. 2.1 μ
	E	eS		56	34	16	3.5(H)		
	NE	e		56	59				51.4°N., 179.1°E. h about 83 Km.
	N	ePS		57	32				Rat Islands.
	N	eSS	08	01	59				Mag. 6-6¼(Pas). USCGS.
	E	eL		07½	-				
	E	M		25	-	20	8		
	N	M		25½	-	20	11		
	E	M		32	-	18	15		
	N	M		32½	-	18	11		
	Z	M		32½	-	16	7		Mag.: m = 6.2, M = 5.9
		F	-	-	-				overlapped by next shock.
4	E	M	10	03	-	21	½		51.0°N., 179.4°E. h about 100 Km.
	N	M		04	-	20	1		Rat Islands. USCGS.
		F	11	10	-				
4	NE	e	14	50	-				Very small. 51.3°N., 178.8°E.
		F	15	15	-				Rat Islands. USCGS.
5	ZV	e(P)	05	57	24				
	E	eL	06	01½	-				
	E	M		02½	-	16	½		
	N	M		03½	-	16	½		
		F		15	-				
5	Z	e(P)	22	39	33				
	N	eSS		54.8	-				51.0°N., 178.7°E. h about 15 Km.
	E	M	23	17	-	20	1		Rat Islands. USCGS.
	N	M		18	-	20	1		
		F	24	20	-				
6	NE	e	15	35	-				Small. 42.4°S., 74.8°W.
		F	16	20	-				Near coast of Chile. USCGS.
8	ZV,Z	e(P)	12	37	31				Small. 12.0°N., 44.4°E.
		F	13	25	-				Gulf of Aden. USCGS.
8	NE	e	15	55	-				Small. 1.9°S., 11.1°W.
		F	16	20	-				South Atlantic Ocean. USCGS.
8	ZV	e(P)	20	41	57				36.0°N., 27.3°E. h about 87 Km.
	N	M		51	-	18	1		Dodecanese Islands. USCGS.
		F	21	05	-				
9	NE	e	06	58	-				Very small. 21.2°S., 71.6°W.
		F	07	20	-				Off coast of Chile. USCGS.
9	NE	e	07	35	-				56.1°N., 164.2°E. Off coast of
		F	-	-	-				Kamchatka. USCGS.
9	ZV,Z	eP	07	51	21	8	1.3	8850	
	ZV,Z	e		51	27				
	NE	eS	08	01	19	16	5.1(H)		

FORM 3718
contd.

M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

AUGUST, 1960

International Seismological Centre

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
contd.									
9	N	e	08	01	47				40.0°N., 126.6°W. h about 25 Km.
	NE	eSS		06	07				Off coast of California. USCGS.
	N	eSSS		09	39				
	NE	eL		14	-				
	N	M		25½	-	17	17		
	E	M		26½	-	16	19		
	Z	M		27	-	16	14		
		F	10	35	-				Mag.: m = 6¼, M = 6.
9	ZV,Z	ePKP	17	06	14				24.5°S., 177.1°W. h about 186 Km.
	ZV,Z	i		06	32				Tonga Islands region.
	NE	eL		48	-				Mag. 6-6¼(Pas). USCGS.
	E	M	18	12	-	20	2½		
	N	M		12	-	20	4		
	Z	M		12	-	20	2½		
		F	19	35	-				Mag.: m = 6¼, M = 6
10	NE	eL	00	44	-				11.5°S., 166.3°E. h about 80 Km.
	N	M		58	-	22	1		Santa Cruz Islands. USCGS.
		F	01	35	-				
10	NE	e	12	00	-				Very small.
		F		15	-				
11	NE	eL	03	37	-				0.0°., 121.6°E. h about 46 Km.
	E	M		59	-	26	1		Celebes. USCGS.
	N	M	04	00	-	26	2		
		F		25	-				
11	NE	e	05	40	-				Small. 8.8°N., 126.1°E.
		F	06	20	-				Philippine Islands. USCGS.
12	NE	e	14	00	-				Small. 36.1°N., 141.4°E.
		F		25	-				Near Honshu, Japan. USCGS.
13	NE	e	05	25	-				Very small.
		F		45	-				
13	ZV,Z	iP	07	23	27	5	1.2	9150	
	ZV,Z	i		23	40				
	ZV,Z	i		23	55				
	ZV,Z	ePP		26	38				40.6°N., 142.0°E. h about 60 Km.
	NE	eS		33	41				Near coast of Honshu, Japan.
	NE	e		34	09				USCGS.
	NE	eL		45	-				
	E	M	08	03	-	21	2		
	N	M		03	-	21	3½		
	Z	M		03	-	20	2		
		F		35	-				Mag.: m = 6.1, M = 5.8
13	ZV,Z	eP	14	29	31			12300	
	Z	ePKP		33	25				
	Z	ePP		34	14	7	3.3		39.7°S., 74.8°W. h about 61 Km.
	Z	ipPP		34	29				Near coast of southern Chile.
	NE	eSKS		40	09				USCGS.
	N	ePS		43	41				
	NE	eL	15	03	-				
	E	M		17½	-	20	27		
	N	M		18	-	20	24		
	Z	M		18	-	20	17		
		F	18	00	-				Mag.: m = 7.0, M = 7.1

FORM 3718

M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

AUGUST, 1960

International Seismological Centre

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
13	NE	e	22	45	-				Very small.
		F	23	15	-				
14	NE	e	04	40	-				Small. 45.4°N., 151.1°E.
		F	05	10	-				Ryukyu Islands. USCGS.
14	NE	e	21	42	-				Very small.
		F		50	-				
14	ZV	e(P)	22	46	08				36.0°N., 69.3°E.
	N	M	23	07	-	23	1		Hindu Kush. USCGS.
		F		20	-				
15	NE	e	06	07	-				Very small. 55.7°N., 163.9°E.
		F		50	-				Komandorskie Islands. USCGS.
15	NE	e(S)	07	22	19				13.4°S., 65.8°E.
	NE	eL		35	-				Indian Ocean. USCGS.
	N	M		55	-	20	1½		
	E	M		57	-	20	1		
		F	08	20	-				
17	NE	eL	10	05	-				20.1°S., 11.4°W. h about 87 Km.
	E	M		10	-	20	½		South Atlantic Ocean. USCGS.
	N	M		15	-	20	1		
		F		30	-				
17	NE	eL	11	55	-				19.8°S., 12.2°W. h about 25 Km.
	E	M	12	00½	-	20	1		South Atlantic Ocean. USCGS.
	N	M		05½	-	20	1½		
		F		25	-				
17	NE	e	21	05	-				Very small.
		F		25	-				
18	ZV,Z	iP	20	59	14				44.5°N., 147.6°E.
		F	21	40	-				Kurile Islands. USCGS.
18	NE	e	23	47	-				Very small. 11.4°S., 166.2°E.
		F	24	20	-				Santa Cruz Islands. USCGS.
21	NE	e	18	40	-				Very small. 44.6°N., 148.7°E.
		F	19	00	-				Kurile Islands. USCGS.
23	NE	eL	09	25	-				29.0°N., 59.9°E. h about 116 Km.
	E	M		32½	-	18	2		Southeastern Iran. USCGS.
	N	M		32½	-	18	4½		
		F		50	-				
23	NE	eL	14	31	-				Small. 0.9°N., 26.0°W.
		F	15	10	-				Atlantic Ocean. USCGS.
23	NE	eL	23	45	-				Confused by microseisms.
	E	M	24	10	-	20	2		
	N	M		10	-	20	3		
	Z	M		10	-	20	2½		
		F	25	10	-				

FORM 3718

M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

AUGUST, 1960

International Seismological Centre

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
24	NE	eS	02	04	53				56.3°N., 163.8°E. h about 25 Km.
	NE	eSS		09	47				Near coast of Kamchatka.
	E	eL		14½	-				USCGS.
	E	M		28	-	20	3½		
	N	M		28	-	20	3		Mag.: m = 6, M = 5¾
		F	03	15	-				
24	ZV,Z	ePKP	06	08	45				
	N	M	07	10	-	20	1½		
	E	M		12½	-	20	1½		
		F	08	05	-				
24	ZV	eP	19	39	20				24.4°N., 95.0°E. Burma-India border. USCGS.
25	ZV,Z	iP	17	53	45				
	E	eL	18	16	-				52.7°N., 169.6°W. h about 38 Km.
	Z	M		34	-	19	1½		Fox Islands. USCGS.
	N	M		34	-	20	2½		
	E	M		34½	-	19	1½		
		F	19	25	-				Mag.: m = 6, M = 5¾
25	NE	e	23	45	-				Small.
		F	24	35	-				
26	NE	e	00	42	-				Small.
		F	01	50	-				
26	ZV	iP	07	19	07				Small. 28.1°N., 66.7°E.
		F		55	-				West Pakistan. USCGS.
26	NE	e	18	50	-				13.5°S., 165.9°E. New Hebrides
		F	20	35	-				Islands. USCGS.
27	Z	e(P)	10	22	45			(3050)	
	NE	eS		27	22	16	3.5(H)		
	N	M		32½	-	18	1½		
		F		50	-				
27	ZV,Z	iP	18	27	44				49.9°N., 153.7°E.
	ZV	i		28	12				Kurile Islands. USCGS.
28	ZV,Z	e(P)	06	17	39			(9150)	
	E	e(S)		27	51				
	E	M		46	-	26	1½		
		F	05	20	-				
29	NE	e	18	10	-				Very small.
		F		25	-				
30	NE	e	07	50	-				
	E	M		55	-	20	1½		
	N	M		55	-	20	1		
		F	08	05	-				
31	NE	e	08	20	-				Very small.
		F		30	-				

FORM 3718

DS81657/1 R94 140 10/60XL

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M.O. 669

METEOROLOGICAL OFFICE, EDINBURGH
14 NOV 1960
R6

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AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR SEPTEMBER, 1960

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.	1st August 1957	21.2	21.2	0.00	62.5
E.	1st August 1957	21.1	21.1	0.00	52.0
Z.	1st 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	e	08	55	-				Small. 27.6°S., 176.9°W.
		F	09	40	-				Tonga Islands region. USCGS.
1	ZV,Z	e(PKP)	09	47	47				16.8°S., 167.6°E. h about 63 Km.
	NE	eL	10	35	-				New Hebrides Islands. USCGS.
	E	M		55½	-	20	1½		
	N	M		55½	-	20	1½		
		F	-	-	-				overlapped by next shock.
1	Z	e(PKP)	10	54	36				16.5°S., 167.6°E. New Hebrides
	N	M	12	03	-	20	1½		Islands. USCGS.
		F	-	-	-				overlapped by next shock.
1	N	M	12	42	-	20	1½		16.6°S., 167.4°E. New Hebrides
		F	13	10	-				Islands. USCGS.
1	ZV,Z	eP	15	48	30	6	1.3	7950	
	NE	eS		57	45	14	1.5(H)		56.1°N., 153.7°W. h about 24 Km.
	NE	ePS		58	04				Kodiak Island, Alaska.
	N	eSS	16	02	06				Mag. 6-6¼(Pas). USCGS.
	E	eL		07	-				
	Z	M		20	-	20	2½		
	N	M		20	-	20	5½		
	E	M		20½	-	18	7		
		F	17	40	-				Mag.: m = 6.2; M = 5.9

Form 3717.

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

SEPTEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
1	ZV,Z	ePKP	20	21	34				16.1°S., 179.6°W. h about 183 Km.
	N	M	21	28	-	20	½		Fiji Islands.
		F	22	20	-				USCGS.
2	N	eS	14	07	06	12	1.1		28.7°N., 98.3°E. h about 48 Km.
	N	eSS		11	58				Tibet. USCGS.
	E	M		31½	-	20	3		
	N	M		32	-	20	4		
		F	15	10	-				Mag.: m = 5.9; M = 5.5
2	ZV,Z	eP	22	14	37	6	0.7	8360	52.0°N., 171.4°W. h about 49 Km.
	E	eS		24	12				Fox Islands, Aleutian Islands.
	E	M		54	-	19	5		Mag. 5¾-6 (Pas). USCGS.
	N	M		54½	-	19	5½		
	Z	M		54½	-	19	2½		
			24	45	-				Mag.: m = 6.0; M = 5.6
3	NE	e	00	55	-				Very small. 43.2°N., 144.4°E.
		F	01	30	-				Near Hokkaido, Japan. USCGS.
3	NE	e	07	00	-				Small. 20.9°S., 174.4°W.
		F		35	-				Tonga Islands. USCGS.
3	ZV,Z	iPP	13	02	42	8	1.8		Confused by microseisms.
	NE	ePKS		03	26				6.1°S., 154.5°E. h about 457 Km.
		F	14	15	-				Solomon Islands. USCGS.
3	ZV,Z	iP	23	58	38	6	2.6	8960	Compression.
	N	eS	24	08	41				
	E	e		08	59				44.6°N., 149.1°E. h about 27 Km.
	N	eSS		14	07				Kurile Islands. Mag. 6¼(Pas).
	NE	eL		22	-				USCGS.
	E	M		35	-	20	4½		
	N	M		36½	-	20	5½		
	Z	M		40	-	18	2		Mag.: m = 6¼; M = 6
		F	25	45	-				
4	NE	e	05	55	-				Very small. 56.3°N., 153.1°W.
		F	06	15	-				Kodiak Island. USCGS.
6	ZV,Z	iPKP	14	22	42				Compression. 20.4°S., 169.4°E.
									USCGS. Loyalty Islands.
6	ZV	e(P)	15	36	51				41.9°N., 142.5°E. Near Hokkaido,
									Japan. USCGS.
6	NE	e	17	48	-				
	E	M		51	-	18	1½		
		F	18	15	-				
7	ZV,Z	iP	01	30	36	4	1.1	10150	Compression.
	E	eS		41	30				37.2°S., 16.1°W. h about 25 Km.
	E	M	02	05	-	24	½		Tristan da Cunha region. USCGS.
	N	M		05	-	24	1½		
		F		45					
8	NE	e	11	50	-				Small. 6.2°N., 126.2°E.
		F	12	25	-				Near Mindanao. P.I. USCGS.

FORM 3718

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

SEPTEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
8	ZV	eP	14	43	41				52.5°N., 158.8°E. Kamchatka. USCGS
9	ZV	iP	10	14	11				36.4°N., 71.6°E. Hindu Kush. USCGS
9	ZV,Z	iP	16	24	04			2220	
	E	eS		27	42	13	1.3		71.5°N., 2.4°W. h about 23 Km.
	N	e		27	56				Jan Mayen Island region. USCGS.
	E	eL		29	-				
	E	M		30½	-	16	1½		
	N	M		31	-	18	1½		
		F		45	-				Mag.: m = 5; M = 4
9	ZV,Z	iP	20	09	16			2300	
	ZV	e		09	28				71.7°N., 1.3°W. h about 23 Km.
	E	eS		13	00	13	1.5		Jan Mayen Island region. USCGS.
	N	e		13	10				
	E	eL		14	-				
	E	M		16	-	16	1½		
	N	M		16½	-	18	1½		
		F		35	-				Mag.: m = 5; M = 4.
10	ZV,Z	eP	00	24	52			2870	34.4°N., 26.4°E. h about 10 Km.
	NE	eS		29	16	16	3.9		Crete. USCGS.
	N	M		34½	-	16	2½		
		F		45	-				
10	ZV,Z	e(P)	10	01	45				
	E	M		09	-	18	½		
	N	M		09	-	16	1		
		F		25	-				
10	NE	e(SKS)	11	07	48				Small. 4.0°N., 122.6°E.
		F	12	10	-				Celebes Sea. USCGS.
10	NE	e	14	55	-				Very small. 11.2°S., 163.1°E.
		F	15	30	-				Solomon Islands. USCGS.
12	ZV,Z	iP	12	30	04	4	0.9		27.3°N., 128.4°E. h about 48 Km.
	NE	eL	13	00	-				Ryukyu Islands. USCGS.
	E	M		13	-	24	2		
	N	M		13	-	24	3		
		F		30	-				Mag.: m = 6¼; M = 6
13	NE	e	01	40	-				Very small.
		F	02	00	-				
15	NE	e	00	30	-				Very small. 20.9°S., 174.1°W.
		F	01	10	-				Tonga Islands. USCGS.
16	NE	e	02	03	-				Very small. 38.5°N., 68.7°E.
		F		20	-				Tadzhik SSR. USCGS.
17	ZV,Z	iP	08	04	45			8560	Compression. 49.3°N., 155.4°E.
	N	eS		14	30				Kurile Islands. USCGS.
		F	-	-	-				overlapped by next shock.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

SEPTEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
17	ZV,Z	iP	08	17	25	6	1.1	8580	Compression.
	ZV,Z	e		17	50				49.4°N., 155.2°E. h about 28 Km.
	Z	ePP		20	19				Kurile Islands. USCGS.
	N	eS		27	11				
	E	e		27	30				
	E	eL		37	-				
	E	M		56½	-	19	5		
	N	M		57½	-	19	6½		
	Z	M		57½	-	19	3		
		F	09	45	-				Mag.: m = 6.2; M = 5.9
17	ZV,Z	ePKP	20	16	01				
	NE	eL		58	-				20.9°S., 174.5°W. h about 28 Km.
	E	M	21	21	-	20	1½		Tonga Islands.
	N	M		21	-	20	1½		USCGS.
		F	22	25	-				
19	ZV,Z	ePP	03	56	50				15.6°N., 120.0°E.
	NE	eSKS	04	03	34				Luzon Island. P.I. USCGS.
	NE	ePPS		05	53				
	E	eSS		10	38				
	E	M		32½	-	20	3½		
	N	M		32½	-	19	4		
		F	05	30	-				Mag. m = 6¼; M = 6
19	ZV,Z	eP	19	13	14	5	0.9	8640	
	ZV,Z	ePP		16	07				
	N	eS		23	00	14	1.9		6.9°N., 77.5°W. h about 66 Km.
	E	e		23	14				Colombia-Panama border.
	N	eLQ		33½	-				Mag. 6-6¼(Pas). USCGS.
	E	M		40	-	26	14		
	N	M		40	-	24	7		
	Z	M		40	-	26	9		
	N	M		43½	-	20	5		
	E	M		44	-	20	9		
		F	20	50	-				Mag. m = 6.1; M = 5.8
20	ZNE	e	04	35	-				Small. 49.9°N., 88.4°E.
		F		50	-				USSR. USCGS.
22	ZV,Z	eP	05	48	22	4	1.0	6800	Dilatation.
	N	eS		56	38	9	1.4		3.4°S., 29.1°E. h about 29 Km.
	E	e		56	50				Belgian Congo. USCGS.
	E	eL	06	03	-				
	Z	M		13	-	19	2½		
	N	M		13	-	19	6½		
	E	M		14	-	19	6		
		F	07	20	-				Mag. m = 6.1; M = 5.8
22	E	eL	09	30½	-				P and S lost during changing of
	Z	M		40½	-	19	10		charts. 3.3°S., 29.3°E. h about
	N	M		40½	-	19	33		28 Km. Belgian Congo. USCGS.
	E	M		41½	-	19	24		
		F	-	-	-				Mag.: m = 6½; M = 6¼.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

SEPTEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
22	ZV,Z	iP	09	25	05	8	3.3		Dilatation. 2.8°S., 29.8°E.
	Z	M		49½	-	20	22		Belgian Congo. USCGS.
	N	M		49½	-	20	35		
	E	M		51	-	20	30		
		F	12	30	-				Mag.: m = 6½; M = 6¼
23	NE	eL	24	20	-				22.2°S., 174.8°W. h about 39 Km.
	E	M		33	-	20	1		Tonga Islands
	N	M		33	-	20	½		USCGS.
		F	25	15	-				
25	ZV	iPKP	15	58	56				Very small. 17.3°S., 173.4°W.
	N	F	17	40	-				Tonga Islands. USCGS.
26	NE	e	15	55	-				Very small. 51.6°N., 172.2°W.
		F	16	15	-				Fox Islands. USCGS.
28	E	eL	05	59	-				
	E	M	06	08½	-	20	1		
	N	M		08½	-	20	1½		
		F		20					
28	NE	eL	20	52½	-				Small.
		F	21	00	-				
29	ZV,Z	eP	11	32	09	6	0.7	11200	Depth = 460 Km.
	ZV,Z	ePP		36	27	10	2.0		
	ZV,Z	i		36	32				18.9°N., 144.7°E. h about 469 Km.
	ZV	epPP		37	57				Mariana Islands. USCGS.
	NE	eSS		50	27				
	E	M	12	15½	-	21	3½		
	N	M		15½	-	21	3½		
		F	13	15	-				Mag.: m = 6.2; M = 5.9
29	NE	e	19	30	-				Very small.
		F		55	-				
30	NE	e	06	45	-				
	E	M	07	15	-	19	3		
	N	M		15	-	20	1½		
	Z	M		15	-	19	½		
		F		55	-				
30	NE	e	08	25	-				Very small.
		F		55	-				

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METEOROLOGICAL OFFICE EDINBURGH 14 DEC 19 Rb

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR OCTOBER, 1960

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 August 1957	21.1	21.1	0.00	52.0
Z.	1 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.
1	ZV	iP	05	35	59				Compression. 35.4°N., 26.2°E.
	N	F		55	-				Near Crete. USCGS.
1	ZV,Z	iP	16	22	48			8500	
	ZV	e		22	58				52.2°N., 172.6°W. h about 41 Km.
	N	eS		32	31				Fox Islands. Aleutian Islands.
	NE	ePS		33	03				USCGS.
	N	eSS		37	49				
	N	eL		45½	-				
	Z	M		58½	-	20	2		
	N	M		58½	-	20	2½		
	E	M	17	00	-	20	2½		
		F	18	10	-				Mag.: m = 6; M = 5½-5¾
2	NE	e	05	35	-				Small. 61.0°S., 23.3°W.
		F	06	10	-				Sandwich Islands. USCGS.
3	NE	e	20	45	-				Small. 5.7°S., 103.0°E. Off coast
		F	21	15	-				of Sumatra. USCGS.
4	NE	e	10	50	-				Very small. 7.5°S., 155.3°E.
		F	11	30	-				Solomon Islands. USCGS.
6	ZV	e(P)	16	29	24				52.2°N., 107.2°E. h about 46 Km.
	NE	eL		50	-				Lake Baikal region. USCGS.
	E	M		58	-	16	1½		
	N	M		58	-	16	2		
	Z	M		58	-	16	1		
		F	17	10	-				Mag.: m = 5¾; M = 5-5¼

Form 3717.

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14 DEC 1960

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

OCTOBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
6	ZV,Z	iP	20	00	05	8	4.8	2260	Compression. PH 14sec. 8 μ
	ZV	ePP		00	33				
	N	eS		03	45				58.2°N., 31.6°W. h about 63 Km.
	E	e		03	51				North Atlantic Ocean.
	NE	eL		04½	-				USCGS.
	E	M		06	-	20	18		
	N	M		06	-	20	15		
	Z	M		06	-	20	11		
		F	21	10	-				Mag.: m = 5.9; M = 5.4
7	ZV,ZNE	eP	03	19	57	8	1.9	2300	Compression. PH 14sec. 1.8 μ
	N	eS		23	39				
	N	eL		24½	-				58.1°N., 31.9°W. h about 71 Km.
	E	M		26	-	20	5		North Atlantic Ocean. USCGS.
	N	M		26	-	20	3½		
	Z	M		26	-	20	2½		
		F		55	-				Mag.: m = 5.4; M = 4.6
7	ZV,Z	iPKP	15	37	23			13100	
	ZV,Z	e		37	40				
	ZV,Z	ePP		38	41	8	2.9		7.4°S., 130.7°E. h about 45 Km.
	NE	eSKS		44	17				Banda Sea. USCGS.
	NE	eSKKS		45	45				
	NE	ePS		48	35				
	NE	eSKKS		55	11				
	N	eLQ	16	08	-				
	N	M		26	-	23	45		
	E	M		35	-	24	14		
	N	M		35	-	24	16		
	Z	M		35	-	24	9		
		F	18	20	-				Mag.: m = 6.8; M = 6.8
7	NE	e	20	50	-				Small. 20.4°S., 113.7°W.
		F	22	25	-				Easter Island region. USCGS.
8	ZV,Z	e(P)	02	04	04			(9500)	
	ZV,Z	i		04	15				16.7°N., 97.9°W. h about 74 Km.
	NE	eS		14	29				Oaxaca, Mexico. USCGS.
	E	M		40	-	20	1		
	N	M		40	-	20	½		
		F	03	10	-				
8	ZV,Z	iP	06	04	07	8	2.9	8720	Dilatation. Depth = 600 Km.
	ZV,ZNE	epP		06	13	10	4.9		PH 14 sec. 2.0 μ
	ZV,Z	iPP		07	15	10	3.4		pPH 14 sec. 4.6 μ
	ZV,Z	epPP		08	55				PPH 14 sec. 3.3 μ
	NE	iS		13	15	14	32(H)		40.0°N., 129.7°E. h about 608 Km.
	E	iPS		13	55				Sea of Japan. USCGS.
	E	esS		16	32				
	N	esPS		17	29				
	N	eSSS		22	09				Mag.: m = 6.3; M = 6.1
		F	08	30	-				

FORM 3718

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

OCTOBER, 19 60

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
8	ZV,Z	eP	20	52	42			9600	
	NE	eS	21	03	11				7.9°N., 92.9°E. h about 84 Km.
	N	eL		15	-				Nicobar Islands. USCGS.
	N	M		32½	-	21	4½		
	E	M		36	-	20	3½		
	Z	M		36	-	20	1		
		F	22	40	-				Mag.: m = 6-6¼; M = 5¾-6.
9	ZV,Z	iP	09	12	51	5	1.8	9100	Dilatation.
	ZV,Z	e(pP)		13	25				
	ZV,Z	ePP		16	17				40.8°N., 141.2°E. h about 155 Km.
	N	iS		22	57				Near coast of Honshu, Japan.
	NE	e(SKS)		23	07				USCGS.
	N	e		23	31				
	N	e(PPS)		24	45				
	NE	eSS		28	17				
	NE	eL		37	-				
	N	M		45	-	26	15		
	E	M		46	-	25	20		
	Z	M		50	-	16	2		
		F	10	35	-				Mag.: m = 6¼; M = 6.
13	ZV,Z	eP	02	25	34				Very small. 45.2°N., 25.8°E.
		F		40	-				Romania. USCGS.
13	ZV,Z	iP	15	04	06	7	2.0	8100	Compression.
	NE	eS		13	28	12	2.3(H)		PH 16 sec. 2.8 μ
	N	ePPS		14	12				54.8°N., 161.2°E. h about 35 Km.
	N	eSS		18	28				Kamchatka. USCGS.
	NE	eL		23	-				
	E	M		36	-	21	7½		
	N	M		36	-	20	9½		
	Z	M		36	-	20	3½		
		F	17	45	-				Mag.: m = 6.3; M = 6.1
14	ZV,Z	eP	13	22	38				59.8°N., 136.4°W. Alaska. USCGS.
14	NE	eL	18	35	-				
	N	M		53	-	20	1½		37.9°S., 74.7°W. h about 25 Km.
	E	M		54	-	20	1½		Off coast of Chile.
		F	19	30	-				USCGS.
14	ZV,Z	iP	21	31	04	5	1	8400	Compression. Confused by microseisms.
	Z	e		31	19				
	N	eS		40	41				
	E	ePPS		41	03				51.7°N., 172.1°W. h about 50 Km.
	N	e		46	15				Fox Islands, Aleutian Islands.
	N	eL		56	-				USCGS.
	Z	M	22	06½	-	20	5		
	N	M		06½	-	20	13		
	E	M		08½	-	20	11		
		F	24	30	-				Mag.: m = 6.3; M = 6.1
14	ZV,Z	iP	23	00	24	6	3.4	2200	Confused by microseisms.
	E	eS		04	01				
	NE	e		04	21				55.5°N., 35.2°W. h about 40 Km.
	E	eL		05½	-				North Atlantic Ocean. USCGS.
	N	M		06½	-	20	10		
	E	M		07½	-	19	12		

FORM 3718
Contd.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

OCTOBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
contd.									
14	Z	M	23	07½	-	16	7		
		F	-	-	-				Mag.: m = 5¾; M = 5-5¼
15	ZV,Z	e(P)	01	58	51			2200	Confused by microseisms.
	N	e(S)	02	02	29				
	E	eL		04	-				55.6°N., 35.6°W. h about 37 Km.
	N	M		05	-	20	3½		North Atlantic Ocean. USCGS.
	E	M		06	-	18	4½		
	Z	M		06½	-	16	3		
		F		25	-				Mag.: m = 5½; M = 4¾
15	NE	e	06	45	-				Small.
		F		55	-				
16	NE	e	10	15	-				Very small. 9.4°N., 90.6°W.
		F		35	-				Off coast of Nicaragua. USCGS.
17	ZV,Z	iP	15	57	34			8900	4.8°N., 78.4°W. h about 83 Km.
	NE	eS	16	07	29				Off coast of Colombia. USCGS.
		F		45	-				
17	ZV,Z	e(P)	16	08	12				Near coast of Colombia. USCGS.
17	ZV	iP	19	09	17				Very small. 31.7°., 40.7°W.
	NE	M		21	-				Atlantic Ocean. USCGS.
		F		30	-				
17	NE	eL	22	47	-				
	E	M	23	01	-	20	1½		14.6°N., 92.8°W. h about 128 Km.
	N	M		01	-	18	1		Mexico-Guatemala border. USCGS.
	Z	M		01	-	20	1		
		F		30	-				
18	NE	e	01	05	-				Very small. 52.5°N., 170.2°W.
		F		20	-				USCGS. Fox Islands.
20	ZV,Z	e(PKP)	11	25	17				11.0°S., 164.9°E. h about 40 Km.
	Z	ePP		28	07	8	0.7		Santa Cruz Islands region. USCGS.
	E	M	12	31	-	20	1½		
	N	M		31	-	20	1½		
		F	13	30	-				Mag.: m = 6; M = 5½
22	Z	e(PP)	08	44	10				
	Z	e(pPP)		44	42				10.3°S., 161.2°E. h about 93 Km.
	NE	e(SP)		54	26				Solomon Islands region. USCGS.
	NE	eL	09	18	-				
	E	M		40	-	24	3½		
	N	M		40	-	24	7		
	Z	M		40	-	24	4		
		F	10	35	-				Mag.: m = 6½; M = 6¼
22	NE	e	19	24	-				46.1°N., 21.0°E.
	N	M		26½	-	18	1½		Romania-Hungary border. BCIS
		F		33	-				

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

OCTOBER, 19 60

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
23	N	eS	06	44	56				
	NE	eL		48	-				31.2°N., 40.7°W. h about 61 Km.
	E	M		51	-	18	1		Atlantic Ocean. USCGS.
	N	M		51	-	18	1½		
		F	07	15	-				
24	NE	e	04	25	-				
	N	M		37	-	18	1		
		F		50	-				
24	N	e	18	10	-				6.0°S., 150.0°E. h about 122 Km.
	N	M		27	-	20	1		New Britain region. USCGS.
		F		40	-				
26	N	e	23	05	-				Very small.
		F		12	-				
27	ZV,Z	iP	15	43	57			2370	
	NE	eS		47	47	10	2.2 (H)		71.3°N., 8.6°W. h about 43 Km.
	NE	eL		48½	-				Jan Mayen Island region. USCGS.
	E	M		50½	-	16	1½		
	N	M		50½	-	18	1½		
		F	16	15	-				Mag.: m = 5.3; M = 4.5
28	ZV,ZN	iP	04	23	18	9	5.0	2350	Compression. PH 10 sec. 4.7 μ
	ZNE	iS		27	06	10	21 (H)		
	NE	eL		28½	-				71.3°N., 8.6°W. h about 48 Km.
	E	M		30	-	16	19		Jan Mayen Island. USCGS.
	N	M		30	-	18	15		
	Z	M		30	-	16	9		
		F	05	50	-				Mag.: m = 6.0; M = 5.6
28	ZV,Z	iP	07	51	14			2350	71.3°N., 8.4°W. h about 61 Km.
	NE	eS		55	02	10	2.0 (H)		Jan Mayen Island. USCGS.
	E	M		58	-	16	½		
	N	M		58	-	18	1½		
		F	08	35	-				Mag.: m = 5.2; M = 4.3
28	ZV, ZN	iP	13	29	50	5	5.4	8300	Dilatation. PH 6 sec. 3.3 μ
	Z	i		30	26				
	ZV,Z	iPP		32	39	5	2.2		
	NE	eS		39	18	12	5.6 (H)		52.0°N., 157.4°E. h about 96 Km.
	NE	esS		39	50				Kamchatka. USCGS.
	NE	ePS		40	06				
	NE	eSPP		40	38				
	NE	eSS		44	00				
	E	esSS		44	58				
	E	eL		53	-				
		F	15	15	-				Mag.: m = 6.6 ; M = 6.5
28	ZV,Z	e (P)	22	42	13				
	N	eSKS		52	36				34.4°N., 141.1°E. h about 96 Km.
	NE	eS		52	52	9	3.1 (H)		Near east coast of Honshu, Japan.
	E	eL	23	06	-				USCGS.
	E	M		23	-	20	8		
	N	M		23½	-	22	9½		
	Z	M		24	-	22	3		
		F	24	15	-				Mag.: m = 6.4; M = 6.2

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SEISMOLOGICAL BULLETIN

OCTOBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
29	NE	eL	00	14½	-				Small. 44.0°N., 11.3°E.
		F		28	-				Italy. USCGS.
29	NE	eL	01	56	-				
	E	M	02	03½	-	18	1½		25.5°N., 67.6°E. h about 23 Km.
	N	M		03½	-	18	3½		West Pakistan. USCGS.
		F		25	-				
29	ZV	e(P)	04	26	04			(5900)	
	NE	eS		33	30				15.4°N., 46.4°W. h about 38 Km.
	NE	eL		39	-				North Atlantic Ocean. USCGS.
	E	M		44	-	18	1½		
	N	M		44	-	18	1½		
	Z	M		44	-	18	1½		
		F	05	05	-				Mag.: m = 5½-5¾; M = 5
29	NE	e	10	45	-				15.8°S., 172.9°W. h about 99 Km.
	N	M		56	-	22	1		Samoa Islands region. USCGS.
		F	11	35	-				
29	ZV,Z	iP	13	30	25				Dilatation.
	EN	eL		34½	-				
	E	M		36	-	20	2		
	N	M		36	-	18	2		
	Z	M		36	-	18	½		
		F		55	-				
30	ZV,Z	eP	08	36	49				
	NE	eL		40½	-				
	E	M		42½	-	19	2		
	N	M		42½	-	18	1½		
	Z	M		42½	-	18	1½		
		F	09	05	-				
30	Z	eP	12	28	06			10600	Confused by microseisms.
	Z	ePP		31	50	8	0.7		
	E	eSKS		38	37				
	NE	eS		39	20	20	2.3(H)		
	E	eL		55	-				
	Z	M	13	08½	-	20	3		
	E	M		08½	-	20	6		
	N	M		09	-	20	5½		
		F	14	50	-				Mag.: m = 6.2; M = 5.9
30	NE	e	16	46	-				Very small. 1.0°S., 127.0°E.
		F	17	25	-				Spice Islands. USCGS.
30	NE	eSKS	21	56	34				22.8°S., 68.0°W. h about 60 Km.
	NE	ePPS		59	06				Chile-Bolivia border. USCGS.
		F	22	45	-				

FORM 3718

DS83909/1 BN531 140 12/60 XL

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METEOROLOGICAL OFFICE, EDINBURGH
16 JAN 1961
R.6.
37

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR NOVEMBER, 1960

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.	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 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.	Δ km.	REMARKS.
1	NE	eL	06	44	-				11.1°S., 12.7°W. h about 35 Km.
	Z	M		53½	-	18	2		Ascension Island region. USCGS.
	N	M		53½	-	18	2½		
	E	M		54	-	18	1½		
		F	07	35	-				Mag.: m = 5¾; M = 5¼
1	ZV,Z	ePP	09	04	58	8	1.6	12450	Confused by microseisms.
	ZV,Z	e(pPP)		05	29				
	NE	eSKS		11	10				38.4°S., 74.4°W. h about 97 Km.
	NE	eS		12	50	18	3.8(H)		Near coast of Chile. USCGS.
	ZNE	eSP		14	37				
	NE	eLQ		31½	-				
	NE	eLR		36½	-				
	E	M		49	-	21	36		
	N	M		49	-	21	46		
	Z	M		49	-	21	41		
		F	11	55	-				Mag.: m = M = 6.7
1	NE	e	13	25	-				Confused by strong microseisms.
	E	M		32	-	21	2½		38.5°S., 75.0°W. h about 64 Km.
	N	M		32½	-	21	2		Near coast of Chile. USCGS.
		F	14	15	-				
1	E	M	16	24	-	16	2		Confused by strong microseisms.
	N	M		24½	-	16	3		40.9°N., 21.0°E. h about 33 Km.
		F		30	-				Greece-Yugoslavia border. USCGS.
2	ZV,Z	i(PKP)	17	34	13				Confused by very strong microseisms.
	NE	eL	18	11	-				
	E	M		39½	-	20	8		10.9°S., 164.9°E. h about 25 Km.
	N	M		40	-	20	11		Santa Cruz Islands. USCGS.
	Z	M		40	-	20	7		
		F	19	55	-				Mag.: m = 6½; M = 6.

Form 3717.

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M.O. 669

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

NOVEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
5	ZV,Z	iP	20	25	16	6	6.9	2200	Compression. PH 6 sec. 6.8 μ
	NE	eS		28	51				39.2°N., 20.5°E. h about 49 Km.
	NE	eL		31½	-				Near coast of Greece. USCGS.
	E	M		32½	-	16	16		
	N	M		32½	-	16	46		
	Z	M		32½	-	8	9		
		F	21	15	-				Mag.: m = 6.1; M = 5.8
6	ZV,Z	iP	04	49	56	6	2.0	8200	Compression.
	N	e(S)		59	25				
	NE	eL	05	10	-				53.0°N., 159.8°E. h about 32 Km.
	E	M		26½	-	20	4½		Near coast of Kamchatka. USCGS.
	N	M		29½	-	20	7		
	Z	M		29½	-	18	3½		
		F	06	20	-				Mag.: m = 6.3, M = 6.0
6	ZV	e(PKP_2)	06	35	25				
	NE	eL		23	-				31.0°S., 177.7°W. h about 184 Km.
	E	M	07	45	-	20	2		Kermadec Islands region. USCGS.
	N	M		46	-	20	4		
	Z	M		46	-	20	3		
		F	08	45	-				Mag.: m = 6¼; M = 6.
6	ZV,Z	iP	22	21	51			8500	Compression.
	NE	eS		31	31				52.7°N., 168.0°W. h about 42 Km.
	NE	eL		43	-				Fox Islands, Aleutian Islands.
	E	M		57	-	20	2		USCGS.
	N	M		57½	-	20	3		
	Z	M		57½	-	20	3		
		F	23	55	-				Mag.: m = 6; M = 5½
7	NE	e	13	55	-				Very small. 32.2°N., 131.5°E.
		F	14	50	-				Kyushu, Japan. USCGS.
8	NE	e	00	55	-				Very small. 41.1°N., 105.5°E.
		F	01	05	-				China-Mongolia border. USCGS.
8	NE	e	04	45	-				Very small. 27.8°N., 44.3°W.
		F	05	05	-				North Atlantic Ocean. USCGS.
8	ZV	iP	05	34	23				Compression. 45.2°N., 149.8°E.
									Kurile Islands. USCGS.
8	ZV	iP	05	39	36				Compression. 45.2°N., 149.8°E.
									Kurile Islands. USCGS.
8	E	e	05	47	-				
	E	M		48½	-	16	½		
		F		55	-				
8	NE	eL	12	11	-				Small. 44.9°N., 125.2°W.
		F		35	-				Near coast of Oregon. USCGS.
9	Z	e(PP)	03	37	35			12800	
	E	eS		45	24				
	NE	ePS		47	12				60.7°S., 24.8°W. h about 37 Km.
	N	ePPS		48	18				Sandwich Islands. USCGS.
	NE	eSS		53	24				
	E	eSSS		57	22				

FORM 3718

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SEISMOLOGICAL BULLETIN

NOVEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
contd.									
9	NE	eLQ	04	06	-				
	E	M		19½	-	18	6½		
	N	M		22	-	18	7½		
	Z	M		22	-	18	6		
		F	05	50	-				Mag.: m = 6½; M = 6¼
9	ZV	eP	10	55	15			8150	Confused by microseisms.
	N	eS	11	04	40				
	N	eSSS		13	06				32.7°N., 103.4°E. h about 47 Km.
	NE	eL		17½	-				Szechwan Province, China.
	E	M		24½	-	20	20		
	N	M		24½	-	20	32		
	Z	M		24½	-	20	8		
		F	12	30	-				Mag.: M = 6½
9	N	e	20	30	-				Confused by strong microseisms.
	N	eL		48	-				
	E	M	21	00½	-	20	2		23.2°S., 70.6°W. h about 52 Km.
	N	M		00½	-	20	6		Near coast of Chile. USCGS.
	Z	M		00½	-	20	6		
		F		50	-				Mag.: m = 6¼; M = 6
10	N	eL	15	35	-				Confused by very strong
	N	M		59	-	20	5½		microseisms. 2.6°S., 139.4°E.
		F	16	45	-				Near New Guinea. USCGS.
11	N	eL	05	41½	-				Confused by very strong
	N	M		43	-	18	11		microseisms. 39.5°N., 21.1°E.
		F		55	-				Greece-Albania region. USCGS.
13	N	e(SS)	07	11	37				Confused by strong microseisms.
	N	eL		22	-				
	N	M		41	-	21	4½		1.4°N., 127.2°E. h about 59 Km.
		F	08	25	-				Molucca Passage. USCGS.
13	ZV,ZN	iP	09	32	28	8	18.5	8600	Dilatation. PH 12 sec. 11.0 μ
	ZV,Z	i(pP)		32	46				
	Z	iPP		35	18	8	5.3		
	NE	iS		42	10	17	21(H)		51.1°N., 168.8°W. h about 65 Km.
	NE	iPS		42	52				Fox Islands, Aleutian Islands.
	N	eSS		47	04				Mag. 7(Pas). USCGS.
	NE	eL		53	-				
	Z	M	10	05½	-	24	26		
	N	M		05½	-	24	40		
	E	M		07½	-	24	30		
		F	12	40	-				Mag.: m = 7.0; M = 7.1
14	NE	eL	20	35	-				Confused by strong microseisms.
	E	M		48	-	20	3		14.5°N., 92.8°W. h about 100 Km.
	N	M		48	-	20	3		Near Chiapas, Mexico. USCGS.
		F	21	10	-				
15	NE	e	07	40	-				Confused by strong microseisms.
	E	M	08	02	-	20	1½		62.5°S., 161.7°W.
	N	M		02	-	20	3		Antarctic Ocean. USCGS.
		F		35	-				
17	ZV	iP	23	10	05				Small. Confused by microseisms.
	ZV	i		10	11				38.0°N., 89.5°E. h about 24 Km.
	N	eL		26	-				Sinkiang Province, China. USCGS.
	N	M		35	-				
		F		50	-				

FORM 3718

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

NOVEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
18	N	e	06	13	-				Very small. 35.0°N., 28.6°E.
		F		25	-				Near Crete. USCGS.
19	N	eL	13	01	-				
	E	M		25	-	20	1		8.6°N., 137.6°E.
	N	M		25	-	20	1½		Caroline Islands region. USCGS.
		F		50	-				
20	ZV,ZE	iP	22	14	54	6	2.0	10100	Confused by microseisms.
	NE	e(SKS)		25	09				
	N	iS		25	42	20	19(H)		6.8°S., 80.7°W. h about 93 Km.
	ZE	eSP		26	49				Near coast of Peru. 2 killed
	NE	eSS		31	25				and extensive property damage
	N	eL$_Q$		40½	-				from seismic sea wave. Mag.
	N	M		45	-	30	45		6¾(Pas). USCGS.
	E	M		49	-	27	50		
	E	M		52	-	21	36		
	N	M		52	-	21	22		
	Z	M		52	-	21	28		
		F	25	35	-				Mag.: m = M = 6.7
22	N	eL	03	15	-				
	E	M		30	-	21	1		7.0°S., 80.8°W. Near coast of
	N	M		30	-	21	½		Peru. USCGS.
		F		40	-				
22	E	eSS	04	14.1	-				
	NE	eL		47	-				19.2°S., 173.1°W. h about 25 Km.
	E	M		56½	-	20	1½		Tonga Islands region. USCGS.
	N	M		56½	-	20	3		
		F	05	45	-				
22	N	ePS	06	48	19				
	NE	eSS		53	49				35.9°S., 52.3°E. h about 21 km.
	N	eL	07	04	-				Indian Ocean. USCGS.
	E	M		18	-	20	2		
	N	M		19	-	20	3		
		F		45	-				Mag.: m = 6; M = 5¾
22	Z	e(P)	12	48	27				Confused by microseisms.
	NE	e	13	07	49				
	N	eL		12	-				
	E	M		31	-	20	5		
	N	M		31	-	20	5		
	Z	M		31	-	20	5		
		F	14	30	-				
23	ZV,Z	ePKP	14	32	18			16800	Confused by microseisms.
	ZV,Z	e		32	51				
	ZV,Z	ePP		36	08	8	3.4		24.2°S., 176.1°W. h about 28 Km.
	NE	eSS		55	29				South of Tonga Islands region.
	N	M	15	37	-	20	27		USCGS.
	E	M		40	-	20	35		
	Z	M		40	-	20	25		
		F	17	00	-				Mag.: m = M = 6¾
23	ZV,Z	e(P)	18	16	32				
	N	eL	19	07	-				

FORM 3718

contd.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

NOVEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
contd.									
23	E	M	19	24	-	20	2		
	N	M		24	-	20	1½		
		F	20	05	-				
24	NE	eL	05	45	-				Confused by strong microseisms.
	N	M	06	00	-	28	10		
	E	M		08	-	20	3		4.6°S., 153.0°E. New Britain
	N	M		08	-	20	4		region. USCGS.
		F		30	-				Mag.: m = 6¼; M = 6
24	ZV,Z	iPKP	07	12	34			16800	Confused by strong microseisms.
	ZV,Z	ePP		16	21				
	N	eSS		35	19				24.2°S., 176.1°W. h about 23 Km.
	E	e		35	58				South of Tonga Islands.region.
	N	eL		54	-				USCGS.
	E	M	08	21	-	20	75		
	N	M		21	-	20	66		
	Z	M		21	-	20	58		
		F	10	00	-				Mag.: m = 7; M = 7¼
27	NE	e	22	20	-				Very small.
		F		55	-				
28	E	eL	19	56.0	-				
	N	M		57	-	16	1½		
	E	M		57½	-	20	3		
		F	20	15	-				
29	NE	e	10	30	-				Confused by strong microseisms.
	N	M		43	-	20	2		
		F	11	00	-				

FORM 3718

DS84562/11K94 140 1/61XL

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METEOROLOGICAL OFFICE, EDINBURGH
15 FEB 1961
R6 42

No. 669

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR DECEMBER, 1960

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 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.
1	NE	e	04	15	-				Confused by strong microseisms.
		F		25	-				38.1°N., 30.6°E. Turkey. USCGS.
1	NE	eL	21	18	-				Confused by strong microseisms.
	E	M		28½	-	20	12		48.8°N., 129.3°W. h about 15 Km.
	N	M		28½	-	20	11		Off coast of Vancouver Island.
	Z	M		29	-	20	9		USCGS.
		F	22	10	-				Mag.: M = 6
1	NE	eL	22	17½	-				Confused by strong microseisms.
	E	M		28	-	20	3½		49.0°N., 129.3°W. h about 60 Km.
	N	M		28	-	20	3		Near Vancouver Island. USCGS.
	Z	M		28½	-	20	3		
		F		55	-				Mag.: M = 5½
2	ZV	iP	09	24	13			10800	Confused by microseisms.
	ZV,E	ePP		28	11				PH 24 sec. 4.3 μ
	NE	e(SKKS)		35	05				PPH 28 sec. 8.8 μ
	NE	eS		35	30	26	26(H)		
	ZNE	ePPS		37	23				24.5°S., 69.9°W. h about 37 Km.
	NE	eSSS		45	19				Near coast of Chile.
	NE	eL		51	-				Mag. 7-7¼(Berk). USCGS.
	E	M	10	04½	-	21	153		
	N	M		05	-	20	120		
	Z	M		05	-	20	100		
		F	12	35	-				Mag.: M = 7.3
2	E	M	10	31½	-	20	30		Superimposed on previous shock.
	N	M		31½	-	20	28		24.3°S., 69.8°W.
	Z	M		31½	-	20	15		Near coast of Chile. USCGS.
		F	-	-	-				Mag.: M = 6¾

Form 3717.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

DECEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
3	ZV,Z	iP	04	35	00	8	7.4	7480	Compression. Confused by strong microseisms.
	ZV,Z	iPPP		39	09				
	NE	eS		43	49	14	7.2(H)		PH 14 sec. 4.2 μ
	NE	eSSS		51	01				42.8°N., 104.5°E. h about 45 Km.
	NE	eL		55	-				Outer Mongolia. USCGS.
	E	M	05	06	-	17	93		
	N	M		06	-	16	115		
	Z	M		06½	-	14	68		
		F	06	35	-				Mag.: M = 6.7
5	ZV	iP	18	01	13				54.8°N., 161.2°E. Near Kamchatka. USCGS.
5	ZV	iP	18	18	59				54.3°N., 161.2°E. Near Kamchatka. USCGS.
5	ZV,Z	iP	21	25	37			(1700)	Dilatation.
	ZV,Z	i		25	45				
	ZV,E	e(S)		28	29				35.7°N., 65°W. h about 66 Km.
	NE	eL		29	-				Straits of Gibraltar. USCGS.
	E	M		32½	-	20	3		
	N	M		32½	-	20	3		
		F		47	-				
6	NE	e	04	04	-				Confused by microseisms.
	E	M		17	-	16	1½		42.9°N., 104.5°E. h about 55 Km.
	N	M		17	-	16	1½		Outer Mongolia. USCGS.
		F		35	-				
6	ZV,Z	iP	09	09	29				Compression. 21.4°S., 69.0°W. Chile. USCGS.
6	NE	eL	09	30	-				
	E	M		48	-	20	9		8.5°N., 82.7°W. h about 116 Km.
	N	M		48	-	20	8		Near coast of Panama. USCGS.
	Z	M		48	-	20	8		
		F	10	30	-				Mag.: M = 6
8	ZV	iPKP	01	43	00				21.8°S., 179.4°W. Fiji Islands. USCGS.
9	ZV	iP	21	29	38				72.0°N., 1.6°W. Jan Mayen region. USCGS.
11	NE	eL	01	36	-				Confused by microseisms.
	N	M		44	-	16	2½		36.8°N., 84.5°E. h about 77 Km.
	E	M		45	-	16	1½		Sinkiang Province, China. USCGS.
		F	02	00	-				
11	NE	eL	19	52	-				Confused by microseisms.
	E	M	20	16	-	20	1½		15.7°S., 166.9°E. h about 133 Km.
	N	M		16	-	20	3		New Hebrides Islands region.
	Z	M		16	-	20	3		USCGS.
		F	21	20	-				

FORM 3718

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SEISMOLOGICAL BULLETIN

DECEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
13	ZV	ePKP	07	56	42			18900	Confused by strong microseisms.
	ZV	iPKP$_2$		58	04				
	ZV	ePP	08	01	52				52.1°S., 160.9°E. h about 29 Km.
	N	eSS		22	40				Macquarie Islands. Mag.7¼(Paw),
	E	e		27	50				7(Pal.) USCGS.
	E	e		38	58				
	N	eL$_Q$		46.1	-				
	E	M	09	21½	-	20	21		
	N	M		21½	-	20	29		
	Z	M		21½	-	20	23		Mag: M = 7
		F	-	-	-				overlapped by next shock.
13	E	M	11	01½	-	19	3		27.7°N., 142.4°E. h about 133 Km.
	N	M		01½	-	19	4½		Bonin Islands region. USCGS.
		F	11	40	-				
14	NE	e	02	05	-				Small. Confused by strong
		F		45	-				microseisms.Santa Cruz Islands.USCGS
15	NE	e	00	17	50				Confused by strong microseisms.
	NE	eL		42½	-				
	E	M		54½	-	19	11		2.9°N., 126.5°E. h about 77 Km.
	N	M		57½	-	20	9		Molucca Passage. USCGS.
	Z	M		58	-	20	8		
		F	01	35	-				Mag.: M = 6½
16	ZV,Z	eP	18	26	14			(2400)	Confused by microseisms.
	N	e(S)		30	07	16	5.4(H)		43.8°N., 28.9°W. h about 21 Km.
	N	M		31½	-	14	3		North Atlantic Ocean. USCGS.
	E	M		32	-	14	2		
		F	18	55	-				
17	ZV	e(P)	13	19	01				
	N	e(S)		22	54				North Atlantic Ocean.
	N	M		24½	-	16	2		
	E	M		25	-	14	1½		
		F		35	-				
17	ZV	iP	16	56	55				47.3°N., 153.6°E. Kurile Islands. USCGS.
18	NE	e	02	04	-				Very small. 45.0°N., 15.0°E.
		F		08	-				Yugoslavia. BCIS.
18	N	eL	19	03	-				
	E	M		28	-	20	3		8.5°N., 125.9°E. h about 36 Km.
	N	M		28½	-	19	1½		Mindanao, Philippine Islands.
	E	M		28½	-	19	1½		USCGS.
		F		45	-				
21	ZV,Z	iP	14	50	28				61.6°N., 152.3°W. Alaska. USCGS.
21	N	eL	23	44	-				62.5°S., 167.1°E. h about 29 Km.
	N	M	24	11	-	20	1½		North of Balleny Islands. USCGS.
	N	M		11	-	20	1		
		F		35	-				

FORM 3718

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND

SEISMOLOGICAL BULLETIN

DECEMBER, 1960

DATE	COMPT.	PHASE	G.M.T. h.	m.	s.	PERIOD sec.	AMPLITUDE μ	Δ km.	REMARKS
22	ZV	eP	03	15	02				
	N	eL		42	-				9.8°N., 94.2°E. h about 60 Km.
	N	M		55	-	20	1		Nicobar Islands. USCGS.
	E	M		56	-	20	½		
		F	04	25	-				
22	NE	e	07	50	-				Small. 30.8°S., 177.1°W.
		F	08	35	-				Kermadec Islands. USCGS.
22	NE	eL	15	35	-				27.8°S., 176.1°W. Kermadec Islands
	E	M		43	-	20	½		region. USCGS.
	N	M		43	-	20	1½		
		F	16	25	-				
22	ZV,Z	i(PP)	21	23	51				Compression. 6.8°S., 155.3°E.
	NE	e		40	31				h about 469 Km. Solomon Islands.
		F	22	35	-				USCGS.
23	NE	e	11	40	-				Small. Confused by microseisms.
		F	12	10	-				Philippine Islands. USCGS.
27	NE	eL	11	07	-				Confused by very strong
	E	M		16	-	20	4½		microseisms. 41.3°N., 124.9°W.
	N	M		17	-	20	5½		Off coast of California. USCGS.
		F		35	-				Mag.: 5¾-6.
28	N	e	05	50	-				Small. Confused by very strong
		F	06	00	-				microseisms. Greece. USCGS.
21	NE	e	11	10	-				Confused by strong microseisms.
	E	M		42	-	20	6½		44.8°S., 75.6°W. h about 30 Km.
	N	M		44	-	20	8		Near coast of Chile. USCGS.
	Z	M		44	-	20	7½		
		F	12	35	-				Mag.: M = 6¼
29	NE	e	18	28	-				Confused by strong microseisms.
	E	M		33½	-	20	2		
	N	M		33½	-	20	4		
		F		45	-				

FORM 3718

DS87013/1 R94 140 2/61 XL