

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR..... JANUARY..... 1948

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 : 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	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ^2 .	$\frac{Ak}{\pi l}$
N.	1940 Nov. 29	24.5 ^{sec.}	8.2 ^{sec.}	0.00	74.3 ^{sec.-1}
E.	1940 Nov. 27	24.0	8.0	0.00	81.5
Z.	1940 Dec. 14	14.4	14.2	0.00	75.9

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.	PERIOD.	AMPLITUDE.	Δ	REMARKS.
1	NE	eL F	06 ^h 57 ^m - 07 00 -	sec.	μ	km.	
4	ZN Z ZE ZN Z N Z ZN - ZN N N E ZE N - E N E Z - N - E ZNE NE E	iPKP ₁ i i(PKP ₂) iPKP ₁ i(PKP ₂) e(SKP) esPKP ₁ e(sPKP ₂) -(PP) e(ppp) e(SKS) e(sPP) e(PPP) e(SKKS) e(pppp) -(pSKS) e(SKSP) e(PSKS) e(SPP) e(pPS) -(pSP) e(PPS) -(PSP) e(sPS) -(sSP) eSS esSS eSSS F	09 15 17 23 38 17 40 48 18 22 38 (55) 21 16 (30) 22 10 (45) 24 18 36 27 (52) 28 (50) 30 48 31 24 32 (16) (48) 37 (20) 40 (50) 43 (15) 10 00 -			16500	Dilatation. Focal depth about 600K } Short period vertical instr.
4	ZNE	eL F	13 27 - 30 -				
5	ZNE	eL F	23 41 - 50 -				

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JANUARY 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.		
			h.	m.	s.						
6	ZNE	iP	17	35	(41)			9300	Compression In minute time-break		
	ZNE	ePP		38	(59)						
	ZNE	ePPP		41	(14)						
	ZNE	eS		46	07						
	N	e(ScS)			29						
	Z	e(PS)		47	07						
	E	e(SS)		51	19						
	N	e(SSS)		54	(29)						
	E	M		18	17	54	16			+12	
	Z	M			18	52	16			-13	
	F		19	40	-						
7	NE	eL	16	09	-						
	F			40	-						
10	ZNE	e	05	41	(42)				Preliminary phases con- fused with microseisms		
	Z	e		46	(42)						
	E	e		51	(32)						
	NE	e		56	(27)						
	ZNE	e	06	02	(02)						
	F		07	45	-						
16	Z	e(P)	11	20	44			(8200)	Weak pulses		
	NE	e(S)		30	(16)						
	NE	e(SS)		35	(06)						
	NE	e(L)		40	-						
	F		12	30	-						
17	ZNE	eL	02	38	-						
	F		03	00	-						
17	ZNE	eL	07	29	-						
	F		09	30	-						
20	NE	eL	11	10	-						
	F		13	00	-						
22	NE	e(L)	14	30	-						
	F		15	30	-						
23	ZNE	eL	15	00	-						
	F			20	-						
24	ZNE	eP	18	00	(31)			11200	Compression. Destructive in Phillipines. Clear pulse		
	NE	iSKS		11	11						
	Z	eS			58						
	ZNE	iPS		13	35						
	NE	eSS		19	05						
	E	M		50	(33)	19	>-1045				
	Z	M		51	(11)	25	>+1280				
	N	M		52	(19)	17	>+948				
	F		23	30	-						
	25	ZNE	eL	06	50	-					
F			07	20	-						

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DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
26	ZNE	e	15	05	02				
	N	i		07	41				
	E	e		08	12				
	Z	i			25				
	ZNE	M		13	10	20	-102		
	NE	M			35	20	-68		
	E	M		14	37	18	-35		
		F	16	00	-				
√ 27	Z	i(PKP)	12	17	08			(13000)	Dilatation
	ZNE	i			13				
	Z	e(PP)		18	(19)				
	ZN	e(PP)+(PKS)	20		35				Strong clear pulse
	ZN	e(SKS)	23		58				
	N	e(SKKS)	25		07				
	N	e(PS)	27		53				
	N	e(PKKS)	31		(34)				
	ZN	e(SS)	34		(19)				
	E	e(SSS)	39		(09)				
	Z	M			56	13	12	+12	
		F	14	30	-				
27	ZN	eL	18	50	-				
		F	19	15	-				
√ 28	ZE	i	04	16	(49)				In minute time-break
	N	e		21	(09)				
	N	e		22	(03)				
	N	M		47	23	22	+25		
	E	M		51	33	18	+11		
	Z	M		52	23	12	-10		
		F	05	30	-				
√ 28	ZE	i(P)	16	00	10			(5400)	Short period vertical instr.
	NE	e(PP)-(PSS)		01	44				No Galitzin Z
	E	e(S)		07	10				
	E	e(SS)		10	10				
	NE	e(LQ)		11	-				
	N	M		21	59	20	+48		
	E	M		25	06	16	+70		
		F	17	30	-				
29	NE	eL	01	28	-				No Galitzin Z
		F		40	-				
30	ZE	iP	08	53	22			6200	Compression
	ZE	iPcP		54	19				
	ZE	ePP		55	39				
	ZE	ePPP		56	(32)				
	NE	iS	09	01	(07)				
	Z	i			(27)				
	NE	eScS		03	(12)				
	E	eSS		05	-				
	NE	eLQ		07 ¹ / ₂	-				
	N	eLr		10	-				
	Z	i(PKKP)		15	03				
	N	M		24	55	20	-88		
	E	M		25	15	16	-52		
	Z	M			26	16	-54		
	F		11	00	-				

M.O. 502

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

JANUARY 1948

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ		REMARKS.
			h.	m.	s.			sec.	μ	
31	Z	e(L) F	07	50	-					
				55	-					
31	NE	e(L) F	14	45	-					
				50	-					
31	NE	e(L) F	17	43	-					
				45	-					

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

25 MAR 1948
Hall

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR FEBRUARY 19 48

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

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E.	1940. Nov. 27	24.0	8.0	0.00	81.5
Z.	1940. Dec. 14	14.4	14.2	0.00	75.9

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK.

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DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
4	Z	1(P)	04	56	56				Short period vertical inst. No Gal.Z. Max. about 05.29½ -. Confused by microseisms.
	N	e(L) F	05 06	23 00	- -				
6	NE	e(L) F	11	02	-				Weak pulse
				10	-				
6	NE	e	23	09	56				Weak pulse
	NE	e(L)		15	-				
	ZNE	e(L)		20	-				
		F		45	-				
9	NE	e(L) F	06	12	-				Dilatation. Strong pulse. Azimuth (SE). 35.5°N, 27.2°E (U.G.G.I.) In minute time break. In minute time break. Overlapped by next shock?
				15	-				
9	ZNE	1P	13	03	44		2900		
	NE	1PP		04	38				
	NE	1P ₀ P		06	(46)				
	ZNE	eS		08	14				
	NE	eSS		09	(46)				
	ZNE	e(LR)		12	-				
	N	M			37	20	>+1048		
	Z	M		15	19	14	>-367		
	E	M		16	45	(15)	>(-381)		
		(F)		16	45	-			
9	Z	1(P)	15	12	44			About 11500?	Weak pulse. Short period vertical instrument.
	ZE	e(S)		23	(24)				
	ZE	e(SKS)		24	(36)				
	ZNE	e(L)		50	-				
		(F)		16	45	-			

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

FEBRUARY 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
10	Z ZNE	e(P) e(S) F	16	03	26			(1900)	Non-seismic interference Max. about 16.08½ --.
				06	36				
				25	-				
10	N	e(L) F	16	36	-				
				40	-				
10	N E	e(L) e(L) F	19	47	-				
				59	-				
			20	15	-				
11	Z	i(P)	15	52	24			(7200)	(Compression). Weak pulse. Short period vertical inst.
	E NE ZNE	e(S) e(LQ) e(LR) F	16	01	02				
				09	-				
				12	-				
			17	45	-				
11	N	eL F	18	17	-				
				25	-				
11	ZNE	eL F	22	35	-				
			23	15	-				
12	Z	e(P)	22	32	37			(3100)	Weak pulse. Short period vertical instrument. Confused by microseisms.
	NE NE	e(S) e(LR) F		37	21				
				40½	-				
			23	00	-				
13	Z E N N NE NE NE ZNE N Z E	e(P) e(PP) e(S) e(Ss) e(SS) e(SSS) e(LQ) e(LR) M M M F	05	07	(00)			(6600)	Short period vertical inst. Confused by microseisms. Weak pulse.
				09	(10)				
				15	(07)				
				16	(52)				
				19	(21)				
				21	00				
				22	-				
				25	-				
				29	39	22	-73		
				34	51	17	-83		
					56	16	-44		
			06	30	-				
13	N	e(L) F	08	30	-				
				35	-				
14	NE	e(L) F	02	10	-				
				15	-				
14	NE Z	eL eL F	12	45	-				
				54	-				
			13	10	-				
14	NE	e(L) F	14	38	-				
				50	-				

M.O. 542 502.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

FEBRUARY 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
14	Z	e(P)	22	13	20			(9700)	Short period vertical inst. Weak pulse.
	NE	e(S)		24	15				
	N	e(SS)		29	58				
	N	e(SSS)		34	17				
	NE	e(LQ)		37 ¹ / ₂	-				
	ZNE	e(LR)		40	-				
	F		23	30	-				
15	Z	e(P)	18	00	21			(3000)	Short period vertical inst. Weak pulses. Weak pulse.
	ZE	e(PP)		01	05				
	ZE	e(PPP)			(25)				
	ZNE	e(S)		05	(01)				
	E	e(SS)		06	(33)				
	NE	e(LR)		08	-				
	Z	e(S _c S)		10	56				
	F			30	-				
16	B	e(L)	02	07	-				
	F			35	-				
17	ZNE	e(L)	22	30	-				
	F		23	15	-				
18	ZNE	eL	02	30	-				
	F		03	25	-				
18	ZN	1P	20	36	29			3700	Compression. Azimuth N'yly?
	Z	e(PP)		37	(30)				
	Z	e(P _c P)		39	(02)				
	E	e		41	23				
	ZNE	eS			49				
	ZNE	eP _c S		42	59				
	ZNE	eSS		43	41				
	E	eL _Q		44 ¹ / ₂	-				
	ZNE	eLR		45 ¹ / ₂	-				
	NE	eS _c S		46	58				
	N	M		48	59	20	+38		
	E	M		54	00	13	+34		
	Z	M			04	12	-47		
	ZNE	e(PKKP)	21	1 ¹ / ₂	-				
	F		22	30	-				
21	ZNE	e(L)	13	50	-				Confused by microseisms
	F		14	10	-				
21	ZNE	e(L)	15	17	-				
	F			25	-				
26	ZNE	e(L)	04	35	-				Confused my microseisms
	F		05	00	-				
28	Z	1(P)	02	09	15			(7600)	Compression. N.,e.

M.O. 542 502.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

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DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
28 (Cont'd)	E	e(PP)	02	11	(50)				} Weak pulses. Confused by microseisms.
	NE	e(S)		18	(14)				
	N	e(PS)			(24)				
	NE	e(SS)		22	(44)				
	E	e(SSS)		25	(50)				
	NE	e(LQ)		27 ¹ / ₂	-				
	NE	e(LR)		30 ¹ / ₂	-				
	F		03	30	-				
28	E	e(L)	22	49	-				
		F		55	-				

M.O. 502

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON. 17 APR 1948.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR MARCH 19 48

Lat. 51° 28' 8" N, Long. 0° 18' 47" W, Height above M.S.L. 5m.

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N.	1940. Nov. 29	24.5 ^{sec.}	8.2 ^{sec.}	0.00	74.3 ^{sec.}
E.	1940. Nov. 27	24.0	8.0	0.00	81.5
Z.	1940. Dec. 14	14.4	14.2	0.00	75.9

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			h.	m.	s.							
✓ 1	ZE	eP	01	27	17			12 800				
	Z	ePKP		31	07							
	ZNE	ePP		32	16							
	Z	ePPP		34	24							
	Z	eSKS		37	27							
	E	eSKKS		39	06							
	E	e(PS)		41	37							
	Z	iPS		41	44							
	Z	i		42	50							
	Z	iSPP		43	06							
	N	iSS		48	20							
	E	i		52	11							
	N	iSSS		52	24							
	ZNE	e		59	34							
	ZNE	eLR		2	07					-	20	+48
	E	M			22					23	22	+80
N	M			23	20	18	-48					
Z	M			23	25							
ZE	eL ₂		3	26	-							
	F		4	30	-							
2	Z	iP	08	54	33			10,200	Very small. Marked by microseisms.			
	ZNE	eLR	09	01	-							
		F		10	-							
✓ 3	Zv	eP	09	23	03				Short period Z instrument only.			
	NE	eSKS		33	(37)							
	NE	eS		34	02				No Galitzin Z record till 14h 52m.			
	NE	eSS		40	19				Near NW Luzon.			
	N	eSSS		44	34				180N., 1190E. (U.S.C.G.S.)			
	N	eLQ		50	-							

M.O. 502.....

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

MARCH 19 48

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			h.	m.	s.				
24	NE	e F	00	16	-				Very small; possibly not seismic.
24	ZV E E NE NE NE N	ePP eSKS e(PPS) eSS eSSS eL M F	05	37	50			(11,200)	Short period Z inst. only. Off Southern Sumatra 60S., 104°E. (U.S.C.G.S.)
				44	18				
				47	20				
				52	54				
				56	30				
			06	04		23			
				21	11			-24	
			07	55					
24	NE	eL F	08	05	-				No Z record.
				15	-				
24	NE	eL F	22	41	-				
				50	-				
25	NE	eL F	07	04	-				Very small.
				10	-				
26	ZV ZV E ZNE ZE	eP ePP eS eL iP _c S F	03	06	21			2260	Short period Z instrument Also shown on Z. Well marked phase.
				07	00				
				10	01				
				11	-				
				14	21				
				25	-				
26	NE	e F	13	42	-				
				15	20				
27	NE	e F	09	32	-				
				55	-				
29	ZV E E E ZE	eP eS eSS e eL F	02	38	20			3000	Short period Z inst. only. No N record.
				42	57				
				44	08				
				45	08				
				50	-				
			03	10	-				
29	ZV ZNE NE Z Z ZNE N E	eP ePP eS eS i eL M M F	10	27	52			2600	Short period Z instrument.
				28	36				
				32	00				
				32	05				
				33	19				
				34	-				
				37	22	16		+22	
				38	56	14		-18	
			11	15	-				
29	ZV ZV ZV ZV ZNE N E	e(P) i i i i e eL F	12	10	28				Short period Z inst. only. Confused by microseisms. Possibly more than one shock
				10	32				
				10	57				
				11	13				
				13	56				
				24	53				
			12	50	-				
			14	10	-				

FORM 3

M.O. 502

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

2 JUN 1948

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR APRIL 19 48

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N.		sec.	sec.		sec ⁻¹
E.					
Z.					

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			h.	m.	s.				
3	NE	e	08	40	-				Confused by microseisms; possibly not seismic.
		F		55	-				
4	NE	e	11	50	-				Doubtful if seismic.
		F	12	50	-				
4	NE	e	13	45	-				Doubtful if seismic.
		F	14	05	-				
4	NE	e	15	45	-				Doubtful if seismic.
		F	16	15	-				
8	ZN	e	00	48	35				Doubtful if seismic.
	N	e		59	16				
	N	e	01	10	23				
	NE	e		45	09				
	ZNE	eL		51	-				
8	ZV	F	02	15	-				Short period Z instrument.
		e	14	06	25				
		e		07	10				
		e	14	48	-				
9	NE	eL	15	31	-				
		F		50	-				
13	NE	eL	09	55	-				
		F	10	25	-				
14	NE	e	10	46	-				Possibly not seismic.
		F	11	10	-				

M.O. 502

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

APRIL 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
15	NE	e F	20	40	-				
16	-	-	-	-	-				
17	ZV,ZNE ZV ZV,ZNE ZNE ZE ZNE ZE Z NE ZNE ZNE ZNE Z NE ZNE N Z	iP i iPP iSKS iS iPS iPPS i i e eSS i i eLQ eLR M M F	16	24	18			9700	Adjusting: 14 ^h 14 ^m to 15 ^h 53 ^m , and 16 ^h 48 ^m to 17 ^h 00 ^m . Compression. Short period Z instrument Large motion.
						14	-225		
						12	+430		
18	ZV,ZNE ZV,ZNE ZV,ZE ZNE ZNE ZNE ZE E Z Z Z NE Z Z Z N Z	i e e e e e e e e e eLQ e e eLR M M F	12	40	18				Short and long period Z instruments.
						21	+49		
						20	+77		
20	ZE	eL F	02	50	-				Very small on N-S component.
			03	05	-				
20	E	e F	20	01	-				No records on N-S and Z components. Possibly not seismic.
				20	-				
21	E	e F	01	50	-				No records on N-S and Z components. Possibly not seismic.
			02	05	-				

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

APRIL 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.	
			h.	m.	s.					sec.
-	-	-	-	-	-				N-S unserviceable: 20d.11h.05m. to 23d.16h.52m. E-W unserviceable: 21d.09h.16m. to 23d.16h.52m. Z unserviceable: 20d.11h.05m. to 24d.10h.58m. Strips on pendulums corroded and broken.	
21	ZV	iP	20	32	26			6700	Short period Z instrument only.	
	ZV	iPP		32	31					
	ZV	iP _c P		32	55					
	ZV	iPP		35	01					
	ZV	i (PPP)		37	05					
	ZV	iP _c S		37	23					
	ZV	eS		40	50					
	ZV	eSS		41	09					
	ZV	eSS		45	09					
	ZV	eL		51	-					
		F	22	35	-					
22	ZV	eP	00	38	45			6860		Short period Z instrument only.
	ZV	iPP		38	48					
	ZV	i		39	01					
	ZV	eP _c P		39	22					
	ZV	eS		47	07					
	ZV	eL		57	-					
		F	01	50	-					
23	E	e	20	30	-				Very small. Z not recording.	
		F		55	-					
26	ZE	e	09	36	57					
	Z	i		37	48					
	ZNE	eL		43	-					
	N	M		44	34	18	+16			
	Z	M		44	38	14	+24			
		F	10	30	-					
26	ZE	eL	10	52	-					
		F	11	10	-					
27	Z	e	02	40	-					
		F	03	05	-					

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

JUN 10 1948

Hall

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.
SEISMOLOGICAL BULLETIN FOR MAY 19 48

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: 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 .	PENDULUM FREE PERIOD T .	DAMPING CONSTANT μ^2 .	$\frac{Ak}{\pi l}$
N.		sec.	sec.		sec-1
E.					
Z.					

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.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1		e F	02	11	-				
				50	-				
4	ZNE	eL F	14	33	-				
			15	05	-				
7	-	-	09	50	to			No records; adjusting Z pendulum.	
			15	56	-				
8	ZV,Z	iP	02	58	39			Small but clear on short and long period instruments.	
	E	i		58	48			Kurile Islands.	
	EZ	i		59	06			46½°N., 151°E. (U.S.C.G.S.)	
	E	i		59	11				
		F	03	12	-				
✓ 9	ZVZE	iP	02	21	49		(9670)	Compression.	
	ZV	iPcP		22	01			Off Southern Japan.	
	ZE	ePP		25	13			30°N, 129°E (U.S.C.G.S.)	
	E	e(SKS)		32	11				
	E	e(S)		32	33				
	ZE	iPS		32	46				
	NE	e		44	53				
	Z	e		45	41				
	NE	e		46	49				
	Z	e		47	41			Possibly SKKSΩ.	
	ZNE	eLQ		53	-			Possibly P2 ¹ P2 ¹ .	
	ZNE	eLR	03	05	-				
	E	M		08	30	15	+40		
	Z	M		08	35	15	-37		
		F	05	25	-				
9	ZE	e	08	35	53			Very small.	
		F	10	30	-				

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

MAY 19 48

SEISMOLOGICAL BULLETIN.

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
√ 11	ZV,E	i	09	08	47	18	+4	9670	Probably deeper focus than normal. 09.h14 ^m to 09.h26 ^m changing records
	ZV,E	i		09	05				
	ZE	e		27	33				
	ZE	e		28	24				
	ZNE	eL		42	-				
	ZE	e		46	23				
	E	e		53	58				
√ 12	Z	M		58	02	19	-50	9220	Compression. Off north-east coast of Honshu, Japan. 38°N, 142½°E. (U.S.C.G.S.)
	Z	F	11	25	-				
	ZV,ZE	iP	01	09	34				
	ZV,Z	e		09	51				
	ZV	e		10	09				
	E	ePP		12	41				
	ZE	e		12	53				
	ZE	ePPP		14	59				
	ZE	eSKS		19	49				
	ZE	eS		20	17				
	ZE	ePS		21	01				
	ZE	ePPS		21	29				
	ZE	eSS		25	47				
NE	eLQ		38	-					
ZNE	eLR		48	-					
E	M		48	15					
Z	M		51	12					
√ 14	Z	F	04	55	-	19	+41	9220	
	ZV	e	13	37	03				
	ZNE	eL	14	01	-				
	Z	M		17	20				
14	Z	F		15	25	16	+3	9220	
	ZV	iP	18	51	59				
	ZV	eS	19	02	23				
	ZNE	eL		22	-				
√ 14/15	Z	M		20	22	19	+110	8090	Emergent on ZE. South of Alaska Peninsula 54½°N, 161°W. (U.S.C.G.S.)
	Z	F		20	22				
	ZV,ZE	iP	22	43	16				
	ZV,ZNE	iPcP		43	22				
	ZV,ZE	ePP		46	06				
	Z	e		47	08				
	ZE	e(PPP)		47	38				
	ZV,ZE	iS		52	43				
	ZV	ePS		53	32				
	ZV	eSS		58	12				
	ZNE	eLQ		59	-				
	E	e	23	01	20				
	ZE	eLR		13	-				
E	M		17	32					
Z	M		20	27					
15	Z	F	03	40	-	19	+80	9220	
	ZE	e	18	51	-				
	ZE	eL		54	-				
		F	19	25	-				

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

MAY

1948

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
16	ZE	e F	22	06	-				
				26	-				
17	ZV	eP	18	00	04		8220	Small.	
	ZV	i		00	14			South of Alaska.	
	E	e		02	03			55°N, 161°W. (U.S.C.G.S.)	
	E	eS		09	34				
	E	e		20	02				
	ZE	eL		25°	-				
		F	19	25	-				
20		e	07	01	-			Possibly not seismic	
		F	08	10	-				
√ 22	E	e	19	58	(01)			Very doubtful.	
	ZE	eL	20	45	-				
	E	M	21	09	19	20	+5		
		F	22	00±	-				
23	ZE	e	04	47	-			Very small.	
		F	05	10	-				
√ 25	ZV	eP	07	22	54		8020	N-S pendulum removed for	
	ZV, ZE	ePcP		23	16			overhaul 24d. 09h. 28m.	
	ZE	e		23	24				
	ZE	eS		32	27				
	E	ePS		32	45			Sikang Province, China.	
	E	eSS		36	11			30°N, 99½°E. (U.S.C.G.S.)	
	E	e		37	39				
	E	e		44	25				
	ZE	eL		57	-				
	E	M		58	03	12	+65		
	Z	M	8	02	41	13	-25		
		F	10	35	-				
25	Z	e	19	20	-				
		F		40	-				
28	ZV, E	iPg	17	02	53		120	Clearly shown on short	
	ZV, E	iSg		03	07			periods instruments, also	
		F		06	-			recorded on Galitzin Z and	
								E. Observed by Met. Office,	
								Mildenhall and adjacent	
								stations.	
29	E	eP	04	53	09		(2100)	Depth of focus probably	
	ZE	epP		53	47			about 200 km.	
	ZE	eS		56	30				
	E	ePcP		57	19				
	E	eL		59	-			Very poorly developed.	
		F	05	15	-				
30	E	eL	14	44	-			Traces on Z component.	
		F	15	10	-				
31	E	e	14	46	-			Traces on Z component.	
		F	15	10	-			Possibly artificial.	

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR.....JUNE.....19 48

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: 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 .	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ ² .	$\frac{Ak}{\pi^2}$
N.		sec.	sec.		sec ⁻¹
E.					
Z.					

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.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1	ZV ZV	e e F	14	12	05 14 17	sec.	μ	km.	Small; possibly artificial.
1	ZV E ZV ZE	e e e eL F	19	09	04 31 26 08 53 -				
			20	35	-				
7	ZV,E ZV,E ZV ZV ZV ZV,E	e e i i i i i F	07	17	46 36 48 58 06 16 22 -				
8	E	eL F	04	07	- 26 -				Z light failed.
11	-	-	09	22	to				No records; installing the N-S component.
			14	57	-				
13	ZV,Z NE	e e F	06	38	47 22 57 -				On long and short period Z.
14	-	-	09	23	to				Removing Z for overhaul.
			15	20	-				

SEISMOLOGICAL BULLETIN.

JUNE

19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.	
			h.	m.	s.					sec.
√ 15	ZV	iP	11	57	30	17	(-20)	(9120)		
	ZV	i		57	48					
	ZV	e(S)	12	07	50					
	ZV	e(PS)		08	51					
	N	e(SS)		14	23					
	N	e		18	38					
	NE	eL		25	-					
15	NE	eF	21	42	-	30	(-4)			
			22	15	-					
17	N	eF	07	02	-	17	(-20)			
				18	-					
18	ZV,N	i	01	13	02	30	(-4)			
	ZV	i		15	15					
	ZV	e		16	24					
	ZV,N	i		16	28					
	ZV	e		27	48					
	NE	eL		54	-					
	N	M	02	04	05					
18	ZV	eL	07	49	24	17	(-20)			
			N	08	05					-
					35					-
18	-	-	10	40	to	17	(-20)		Adjusting N-S and E-W Galitzin pendulums.	
			14	45	-					
21	-	-	13	53	to	17	(-20)		Adjusting N-S and E-W galvanometers.	
			14	50	-					
23	E	e	03	49	53	17	(-20)		Very small.	
			NE		51					20
			NE		51					29
			NE		52					49
					57					-
√ 27	ZV	e	00	20	09	19	+4			
	E	e		29	51					
	E	e		38	33					
	E	e		42	23					
	NE	eL		48	-					
	E	M		57	06					
		F	01	45	-					
27	NE	eF	07	50	-	17	(-20)			
			08	10	-					
27	ZV	i	13	00	53	17	(-20)			
	E	e		03	50					
	E	e		09	19					
	E	e		09	56					
	NE	eL		14	-					

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.
SEISMOLOGICAL BULLETIN.

JUNE

19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
27	E	M F	13 14	18 15	57 -	17	-2		
27	ZV E E NE E	eP e e(s) eL M F	21 22 22 23	50 59 00 30	40 56 11 40 -	17	-2	(8160)	
✓28	ZV ZV ZV EN ZV N NE NE E N	iP iP _c P iPP eS iSP eSS e eL M M F	07 26 26 29 36 37 40 47 51 08 07 10	26 26 29 36 37 40 47 51 05 01 13 -	05 14 20 31 38 05 01 -	15 14	+80 (+100)	9260	
✓29	ZV ZV N ZV E NE NE N E	i i i i e e eL e M F	10 10 10 10 11 11 13	48 51 51 53 58 10 10 38 39 53 15	05 23 49 21 51 05 -	20	+10	eNE.	
29	ZV ZV N N N N	i i e e eL F	16 16 18 18 20 25 17	13 13 18 18 20 25 20	01 11 16 38 40 -			Possibly deeper than normal.	
✓30	ZNE ZV,NE NE N ZV,NE N E NE NE E N	iP iPP i eS e e eL M M F	12 12 26 26 29 29 30 31 32 33 33 14	26 26 26 29 29 30 31 32 33 33 50	(01) 13 48 38 45 50 44 -	14 14	-83 (-220)	2220 In minute gap. Large movement.	

M.O. 502

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR JULY 19 48

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

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COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T_1	PENDULUM FREE PERIOD T	DAMPING CONSTANT μ^2	$\frac{Ak}{\pi l}$
N.		sec.	sec.		sec ⁻¹
E.					
Z.					

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TIME COMPARISONS ARE MADE DAILY WITH SIGNALS FROM GREENWICH OBSERVATORY.

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DATE.	COMPT.	PHASE.	G.M.T.			PERIOD. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
			h.	m.	s.				
3	ZV, E	eP	13	09	11				Visible on Galitzin seismograph but very small.
	E	e F		09 15	26 -				
3	NE	eL	15	53	-				
		F	16	15	-				
5	ZV,	eP	14	01	53		(5,320)	Uccle. $\Delta=4800$ Km. $T_0 = 13.53.31$ G.M.T.	
	ZV,	i		01	58				
	E	e(s)		08	49				
	NE	e		13	15				
	NE	e		14	53				
	NE	eL		18	-				
7	E	M		31	09	17	+10	10,030	Off Southern Coast of Honshu Island, Japan. 33°N., 136°E. (U.S.C.G.S.)
		F		16	00	-			
7	ZV,	eP	02	31	59		14	+11	
	E	eSKS		42	27				
	NE	eS		42	59				
	NE	L	03	03	-				
	E	M		16	49				
8	E	F	04	50	-				
		ZV,	iP	12	39	13		2330	Near Jan Mayen Land. 71°N., 6°W. (U.S.C.G.S.)
		NE	eS		42	59			
		ZV,	e		43	06			
		ZV,	e		43	17			
NE	L		44	-					
8	E	M		45	42	15	10		
		F		13	15	-			

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

JULY, 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
14/15	ZV, E N E E E E NE E	eP ePP ePPP eSKS eSS ePPP eSSS eL M F	22	49	55			(13500)	New Guinea. 4°S., 142°E. (U.S.C.G.S.) by path >180°
15	E E E	e(SKS) e(SS) eL F	11	26	32				Pacific Ocean. 10°N., 104°W. (U.S.C.G.S.)
16	E E E E E	e(S) e e(SS) eL M F		41	41				Near coast of Guatemala. 14½°N., 92°W. (U.S.C.G.S.)
16	-	-	15 ^h 22 ^m	to					No records.
17	-	-	13	28	to				Visits to pit by Met. Association.
18	ZV,E	e F	07	44	-				Short period records only.
19	ZV, N ZV, ZV,N N E N	e e i e e e e F	18	16	30				L waves very poorly developed.
20	E	eL F	01	50	-				
✓ 20	ZV,E E E E NE E NE E	eP e(SKS) e(PS) e e e eL M F	11	15	45				Off SW coast of Peru. 17°S., 74½°W. (U.S.C.G.S.)
						20	+30		Components out of action; installing Z to 16.00h.

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KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

.....JULY.....19 48.

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE	Δ	REMARKS.
			h.	m.	s.				
22	NE	eL F	18	05	-				
				45	-				
22	E	eL F	20	40	-				
			21	00	-				
22	E	eL F	21	28	-				
				45	-				
23		eL F	20	26	-				Very small.
				40	-				
23	N	e	21	10	-				
	NE	e		18	04				
	NE	eL F		22	-				
			22	05	-				
24	ZNE	iP	06	08	30			2670	Near SW coast of Crete 35°N., 24°E. (U.S.C.G.S.)
	ZNE	iPP		08	59				
	Z	i		10	59				
	N	iS		12	43				
	ZE	i		12	58				
	E	i		14	34				
	ZE	e		16	09				
	E	eLQ		17	-				
	Z	i		17	21				
	E	eLR		19	-				
	E	M	06	19	26	22		+85	
		F	08	35	-				
25	N	eL F	01	25	-				
			02	25	-				
26	NE	e F	13	35	-				Very small.
			14	00	-				
26	NE	e F	20	01	-				
			22	30	-				
27	NE	e F	06	12	-				
				30	-				
29	NE	e F	00	55	-				
			02	10	-				
30	ZV,	e	03	37	57				Short period.
	N	e		47	21				
	N	e		48	04				
	N	e		50	35				
	N	eL		53	-				
		F	04	25	-				

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

Yale

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR.....AUGUST.....19 48.

Lat. 51° 28' 8" N, Long. 0° 18' 47" W, Height above M.S.L. 5m.

LITHOLOGIC FOUNDATION : RIVER GRAVEL RESTING ON LONDON CLAY.

INSTRUMENTS : 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, 1918).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T ₁ .	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ ² .	$\frac{Ak}{\pi l}$
N.		sec.	sec.		sec-1
E.					
Z.					

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.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1	E	e	19	46	-	19	+13		
		F	20	30	-				
5	E	e	00	08	-			Very small.	
		F		28	-				
5	E	e	22	55	-			Very small; possibly not seismic.	
		F	23	10	-				
7	Z	eP	14	53	09	19	+13	9160 Off Honshu Island, Japan. 34°N, 142°E. (U.S.C.G.S.)	
	Z	e		57	23				
	E	eS	15	03	29				
	NF	e		03	45				
	E	e		03	05				
	E	eL		23	-				
	E	M		32	44				
8	N	e	01	45	-				
		F	02	20	-				
9	Z	e	03	32	18			Very small.	
	N	e		35	54				
	ZN	eL		41	-				
	F		04	00	-				
11	Z	1P	10	48	20	22	-12	8550 N-S defective. Southern Mexico. Felt in State of Vera Cruz. 17½°N, 95½°W. (U.S.C.G.S.)	
	EZ	1S		58	11				
	EZ	1PS		58	30				
	E	eSS	11	03	27				
	E	e		07	55				
	E	eL		11	-				
	E	M		22	23				
	F		12	10	-				

M.O. 502.....

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

AUGUST 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
12/13	NE	e	23	00	22				
	E	eL		16	-				
		F	00	20	-				
14	NE	eL	17	25	-				
		F	18	20	-				
17	NE	e	17	42	-				
		eL		55	-				
		F	18	30	-				
17	NE	e	19	51	-				
		F	20	22	-				
18	NE	e	19	18	-			Very small.	
		F		40	-				
18	ZV,	eP	21	16	07	13	+8	2880	
	ZNE	eS		20	35				
	ZV,E	e		21	01				
	Z,E	e(SS)		21	14				
	Z,E	eL		22	-				
	E	M		23	09				
		F		40	-				
19	E	e	01	43	04				
	NE	eL	02	00	-				
		F		45	-				
19	ZV,Z,E	eP	20	11	18			8910 South of Panama. 50°N, 82°W. (U.S.C.G.S.)	
	ZV,	e		11	33				
	E	eS		21	27				
	E	e(PS)		22	21				
	E	eL		35	-				
		F	21	18	-				
20	ZNE	e	19	32	-				
		F	20	20	-				
21	ZV,	e(P)	08	48	24				
	NE	e		53	20				
	NE	L		54	-				
		F	09	06	-				
22	ZV,	iP	23	20	01			Very small; confused by microseisms.	
	ZV,E	i		22	40				
	ZV,E	e		23	10				
	E	e		24	50				
		F		30	-				
25	ZV,ZNE	iP	06	22	44			11000	
	ZV,ZNE	iP		22	56				
	ZV	i		23	43				
	ZV,ZNE	iPP		26	31				
	ZV,ZNE	i		26	38				
	NE	eS		33	20				
	NE	esS		33	33				
	N	e		33	59				

M.O. 502

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

AUGUST 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
✓ 25	ZV,Z	e	06	34	48	17	+45		
	NE	ePS		35	13				
	NE	ePPS		35	34				
	ZNE	eSS		40	37				
	NE	eSSS		44	33				
	ZNE	eL		47	-				
	E	M	07	09	35				
	F	10	15	-					
26	NE	e	15	16	-				
	N	eL		23	-				
		F		55	-				
27	ZV,Z	iP	10	48	06			1970	
	Z	i		49	09				
	NE	eS		51	21				
	NE	e(L)		53	(10)				
		F	11	28	±				
27	ZV,	eP	17	02	47			(10335) Very small.	
	NE	e(S)		12	00				
	NE	e		12	55				
		F		30	-				
28	ZV,Z	eP	02	39	31			9000	
	NE	eS		49	44				
	NE	e		53	20				
	NE	eL	03	03	-	16	+5		
	E	M		14	42				
		F	04	25	-				
28	NE	eL	13	40	-				
		F	14	50	-				
29	ZV,Z	i	17	57	20				
	N	e	18	00	42				
	ZV,	e		02	30				
	N	i		05	20				
	N	e		07	14				
	N	i		17	25				
	NE	eL		36	-				
		F	20	20	-				
29/30	N	e	23	53	12				
	N	e		54	18				
	NE	eL	00	12	-	17	+4		
	E	M		21	42				
		F		35	-				
30	NE	e	01	45	37				
	NE	eL		47	-				
	F	02	10	-					
30	-	-	08	58	-to			Removed E-W pendulum	
			10	07	-			for overhaul.	

AIR MINISTRY, METEOROLOGICAL OFFICE,

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR SEPTEMBER 19 48

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 : 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	PENDULUM FREE PERIOD T	DAMPING CONSTANT μ^2	$\frac{Ak}{\pi l}$
N.		sec.	sec.		sec-1
E.					
Z.					

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.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1		e F	00	39	-				
			01	55	-				
1	ZN	eL F	19	55	-				
			22	05	-				
2/3	N	e	23	59	21			Confused by microseisms.	
	N	e	00	00	19				
	N	e		10	33				
	N	i		15	49				
	N	eL		18	(13)				
	N	M		31	22	24	(+140)		
		F	02	15	-				
4	ZN	e	15	33	(05)				
	N	e		35	41				
	N	e		41	07				
	N	eL		55	-				
	N	M	16	11	18	17	(-12)		
		F		18	-				
6	N	e	08	30	06				
	N	eL		52	-				
	N	M	09	03	17	20	(+10)		
		F	10	50	-				
7	ZV,E	i	08	24	06			Probably deep focus.	
	ZV,E	i		24	49				
	ZV,	i		25	10				
	ZV,E	i		27	05				
	NE	i		31	10				
	N	e		35	22				
	N	e		35	42				
	N	eL		40	-				
		F	09	10	-				

M.O. 502.....

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

SEPTEMBER 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
7		e F	15 55	-				Possibly not seismic.	
			16 15	-					
√ 8	ZNE	iPKP ₁	15 28	59			(16700)	Tonga Islands region.	
	ZN	iPKP ₂	29	34				21°S., 174°W. (U.S.C.G.S.)	
	ZNE	iPP	32	23					
	NE	eSKSP	42	49					
	NE	e	43	07					
	E	eSS	51	37				Large.	
	E	eSSP	53	01					
	N	eSSS	54	39					
	NE	e	57	23					
	E	e	16 10	39					
	ZNE	eL	18	-					
	N	M	32	26	26	(+675)			
		F	21 45	-					
10	N	e F	02 55					Very small.	
			03 05						
10	N	e F	07 04						
			10						
10	N	e F	12 22	-				Possibly not seismic.	
			55	-					
√ 10	ZNE	iP	14 00	49			8935	Off E.coast of Hokkaido,	
	Z	i(pP)	01	01				Japan. 44°N., 146½°E.	
	Z	i	01	12				(U.S.C.G.S.)	
	ZN	ePP	04	06					
	N	e	07	03					
	ZNE	iS	10	59					
	N	iS _c S	11	14					
	ZN	iPS	11	33					
	N	eSS	16	01					
	ZN	i	17	18					
	NE	eL	25						
	N	M	34	05	26	(+140)			
		F	18 10	-					
11	N	e F	00 44	-				Very small.	
			01 05	-					
11	N	e F	01 56	-					
			03 05	-					
11	ZNE	e	08 57	46				Deep focus.	
	ZNE	e	57	59					
	Z	e	58	45					
	ZNE	e	09 01	23					
	ZNE	e	01	45					
	ZNE	e	02	05					
	ZNE	e	02	29					
	N	e(L)	04	-				Very poorly developed.	
		F	(30)						

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.
SEISMOLOGICAL BULLETIN.

SEPTEMBER 1948

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
12	Z	e	03	39	33				
	Z	i		39	41				
	Z	i		40	03				
	N	e	04	12	-				
	N	eL F		35 05	- 30				
19	Z	e(P)	06	25	59				
	NE	eL		53	-				
		F	07	45	-				
20		-	09	52	to			No records; adjusting Z.	
		-	16	51	-				
20	ZV, ZV, NE	i(P)	18	05	23				
		i		05	44				
		eL		10	-				
		F		28	-				
21		-	12	49	to			No records; adjusting Z.	
		-	16	42	-				
21	N N N NE N	e(S)	17	57	(18)				
		e(SS)	18	02	44				
		e		03	46				
		eL		05	(18)				
		M		17	15	15	(+40)		
		F		30	-				
✓ 23	ZV, ZV, NE N NE N	eP	01	05	01			9000	
		ePP		08	04				
		eS		15	14				
		ePS		15	44				
		eL		33	-				
		M		41	25	21	(+17)		
		F	02	30	-				
24	NE	e	16	55	-				
		F	17	25	-				
24	NE NE N	e	21	09	12				
		eL		42	-				
		M		57	21	20	(+9)		
		F	23	10	-				
✓ 24/25	Z ZN ZNE N	e(PP)	23	45	(40)				
		eS		52	28				
		eL	00	12	-				
		M		19	19	20	(+11)		
		F	01	25	-				
25	NE	eL	04	04	-				
		F		45	-				

M.O. 502

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.
SEISMOLOGICAL BULLETIN.
SEPTEMBER.....19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ		REMARKS.
			h.	m.	s.			sec.	μ	
26	Z	e	01	18	30				Probably deep focus.	
	Z	e		19	02					
	Z	e		21	02					
	Z	e		21	30					
	Z	e		21	46					
	ZN	e		22	42					
	ZN	eL		58	-					
	ZN	F	03	00	-					
26	ZN	eL	08	30	-					
		F		50	-					
28	ZV,E	1P	21	48	25			8280	Confused by microseisms.	
	ZV,	ePP		51	08					
	ZV,E	e(PPP)		54	21					
	ZV,NE	eS		58	02					
	NE	eSKS		58	40					
	NE	eSS	22	02	49					
	E	e		03	20					
	NE	i(SSS)		07	08					
	NE	e		16	11					
	E	i		16	59					
	NE	eL		19	-					
	N	M		21	43	18	(+70)			
	N	F	23	25	-					
30	E	eL	03	18	-					
		F	04	15	-					
30	ZE	e	19	40	-					
				55	-					

M.O. 502

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON, 27 Dec 1948

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR OCTOBER 1948

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: 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	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ ² .	$\frac{Ak}{\pi^2}$
N.		sec.	sec.		sec ⁻¹
E.					
Z.					

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.			PERIOD.	AMPLITUDE.	Δ	REMARKS.	
			h.	m.	s.					
1	NE	eL	03	54	-					
		Z	eL	04	02					-
		F		25	-					
1	ZN	e	22	19	-			Very small.		
		F		30	-					
2	ZNE	eL	15	50	-					
		F	16	20	-					
3		e	01	39	-			Possibly not seismic.		
		F		45	-					
✓ 4	ZV, Z	i	06	09	50	22	(+31)	4870	Destructive around Askhabad, U.S.S.R. 38°N., 58°E. (U.S.C.G.S.).	
		NE	e		20					16
		E	e		20					50
		NE	eL		41					-
		Z	eL		46					-
		N	M		52					51
		F		07	55					-
		ZV, ZNE	iP	20	20					06
		ZV, ZNE	ePP		21					44
		ZNE	ePPP		22					50
✓ 5/6	ZNE	eS		26	35	19	(+340)			
		E	i		26				41	
		ZV	iSS		29				30	
		ZV	i		31				48	
		ZNE	eL		33				-	
		N	M		47				21	
		N	M		56				34	
		F		01	05				-	
					15	(+240)				

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M.O. 502

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

OCTOBER 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI-TUDE.	Δ	REMARKS.
			h.	m.	s.				
6	ZV,ZE	iP	01	32	44	18	(+5)	4843	
	ZV,Z	ePP		34	32				
	ZNE	eS		39	11				
	ZNE	eSS		42	16				
	ZNE	eL		47	-				
	N	M		53	38				
	N	F		02	20				
8	ZNE	eL	19	39	-				
		F	20	15	-				
10	ZNE	eL	02	45	-				
		F	03	20	-				
10	ZV,Z	iP	17	48	14	14	(+51)	2765	
	NE	eS		52	34				
	ZNE	i		52	42				
	ZNE	eL		55	-				
	N	M		58	02				
	N	F		18	25				
15/16	ZN	e	23	13	00	18	(+13)		
	ZN	e		18	54				
	ZNE	eL		22	-				
	N	M		48	00				
	N	F		01	20				
19	N	eL	01	17	-				Confused by microseisms.
		F		24	-				
21	Z	e	05	00	08	23	(+15)		
	Z	e		23	20				
	NE	e		24	24				
	ZNE	eL	06	08	-				
	N	M		20	15				
	N	F		07	30				
✓ 23	NE	eL	05	31	-	22	(+21)		Confused by microseisms.
	Z	eL		40	-				
	N	M		47	13				
	N	F		06	08				
23	N	e	21	52	-				
		F	22	00	-				
26	ZE	e	20	40	-				No "N" record.
		F	21	10	-				
✓ 28	ZV,ZE	iP	20	58	06	18	(-28)	9315	
	ZV,	i		58	24				
	N	eS	21	08	35				
	N	ePS		10	03				
	NE	e (SSS)		16	15				
	N	e		18	41				
	ZNE	eL		27	-				
	N	M		40	27				
	N	F		22	15				
	N	F		22	15				

M.O. 502

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON. 29 DEC 1948

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR NOVEMBER 19 48

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: 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 I.	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ^2 .	$\frac{Ak}{\pi^2}$
N.		sec.	sec.		sec ⁻¹
E.					
Z.					

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.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1	ZNE	e	12	26	-	24	(+30)		
		eL		44	-				
1/2	ZNE	F	13	25	-	24	(+30)		
		eL	23	55	-				
3	ZN	F	00	25	-	24	(+30)		
		ePKP	05	38	51				
3	NE	e	06	01	41	24	(+30)		
		e		14	13				
3	N	e		19	57	24	(+30)		
		e		25	-				
3	ZNE	eL		43	14	24	(+30)		
		M	07	55	-				
5	Z	F	10	02	to)	24	(+30)	Standardisation of V.	
		e	17	14)				
6	Z	F	15	20	-	24	(+30)		
		e	16	15	-				
8	E	F	06	50	-	24	(+30)	Possibly not seismic.	
		e	07	00	-				
10	E	F	08	00	-	24	(+30)	Possibly not seismic.	
		e		10	-				
13	ZV,	eP	04	48	50	14	(-30)		
		e		53	56				
13	ZE	e		54	19	14	(-30)		
		e		55	57				
13	Z	i		57	54	14	(-30)		
		eL		59	39				
13	ZE	M	05	30	-	14	(-30)		
		F							

M.O. 502

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

NOVEMBER 19 48

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
13	ZV, ZE	ePKP	07	20	17				
		eL	08	19	-				
		F	09	30	-				
13/14	NE	e	23	48	-				
	NE	eL	00	10	-				
		F	01	25	-				
14	NE	eL	06	57	-				
		F	07	30	-				
19	ZV, ZE	iP	01	16	18			8,680	
	N	eS		26	14				
	N	e		26	34				
	ZN	eL		37	-				
		F	02	30	-				
21	ZV, Z	i	19	29	40				
	ZV, Z	i		30	26				
	Z	e		40	33				
	ZN	e		40	51				
	N	eL		51	-				Poorly developed.
		F	21	20	-				
22	ZV, Z	e(P)	09	18	56				
	ZN	eL		57	-				
		F	10	40	-				
26	ZV, Z	eP	05	55	35			7140	No "N-S" record.
	ZV, Z	e		55	49				
	ZV, ZE	ePP		57	32				
	E	iS	06	04	11				
	ZE	e		07	20				
	ZE	eSS		08	25				
	ZE	i		09	00				
	ZE	i		09	46				
	E	i		14	52				
	E	i		20	22				
	E	i		28	22				
	E	e		35	54				
	ZE	eL		37	-				
	E	M		42	00				
		F	09	20	-	31			
28	ZV, Z	i	21	54	34				
	ZV, Z	e		54	47				
	NE	e	22	01	40				
	E	e		12	40				
	ZNE	eL		19	-				
		F		35	-				

M.O. 502

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON. *Ball*

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR DECEMBER 1948

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: 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	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ^2 .	$\frac{Ak}{\pi^2}$
N.		sec.	sec.		sec ⁻¹
E.					
Z.					

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.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
✓ 4	E	iP	00	35	15	18	(+45)	9070	Only E-W record. Disturbed by microseisms.
	E	ePP		38	24				
	E	eS		45	32				
	E	ePS		46	21				
	E	eSS		51	05				
	E	e		54	39				
	E	eSSS		57	01				
	E	eL	01	02	-				
	E	M		11	20				
		F	03	20	-				
5	ZNE	eL	00	23	-				Disturbed by microseisms.
		F		55	-				
5	Z	e	07	01	56	19	(+15)		Doubtful; confused by microseisms
	ZNE	e		02	14				
	ZNE	e		07	22				
	E	e		11	57				
	E	e		13	04				
	E	e		18	44				
	NE	e		22	23				
	ZNE	eL		33	-				
	N	M	08	06	54				
	F	09	45	-					
6	E	e	14	45	-				Possibly not seismic.
		F	15	15	-				
7/8	NE	e	23	52	-				
		F	00	20	-				
8	ZNE	eL	17	07	-				
		F		46	-				

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M.O. 502.....

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN.

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DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.			
			h.	m.	s.							
9	N	e(P)	13	32	(48)			(5315)	Very small; confused by microseisms.			
	ZE	e(S)								39	44	
	ZNE	eL								54	-	
		F	15	05	-							
12	Z	e(P)	13	29	(14)			(8650)	Doubtful; confused by microseisms.			
	E	e(S)								39	(10)	
	ZNE	eL								56	-	
		F	14	25	-							
14	ZNE	eL	16	55	-							
		F	17	20	-							
15	ZV,E	e	19	29	(33)				Very small; confused by microseisms			
	E	e								40	21	
	ZNE	eL								56	-	
		F	20	35	-							
16	ZV,E	e	07	38	12							
		ZNE	eL	08	18	-						
		F	09	57	-							
20/21	NE	e	23	25	-	24	(-12)					
	NE	eL								50	-	
	E	M								56	31	
	Z	eL								00	01	-
		F		25	-							
21	NE	e	20	14	-							
		ZNE								eL	41	-
		F								21	25	-
23	Z	iP	08	52	43			7980				
		e								53	54	
		ePP								55	30	
	ZNE	eS	09	02	04							
	NE	eSS		06	56							
	NE	e(SSS)		11	04							
	ZNE	eL		14	-							
	N	eL(2)	11	04	-							
		F	12	00	-							
25	ZNE	e	15	31	-				Small.			
		F	16	20	-							
26	ZNE	e	07	41	-							
		eL								52	-	
		F								08	35	-
29	NE	e	07	00	-				Confused by microseisms.			
		F								40	-	
31	E	e	00	02	-	17	-20		Confused by microseisms.			
		ZNE								eL	23	-
		Z								M	32	17
		F								01	45	-