



SEISMOLOGICAL BULLETIN.

JANUARY 19 39

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939									
January									
20		e F	21	20 45					Very small
22		e F	5	15 30					Very small
22	ZNE	eL F	14 15	38 10					
23	NE ZNE E	i eL M F	2	32 34 38 0	9 47	13	-26		
23		e F	13 14	27 10					
25	Z Z Z Z NE Z ZNE NE ZE ZNE ZNE ZE ZNE ZNE ZNE ZNE E ZN E ZE ZN ZNE ZNE Z E N	iP ipP ePKP iPP ipPP i isPP iSKS isSKS iSP isSP i iSS isSS i i i iSSS i i i M M M F	3	46 46 50 51 51 51 51 57 57 4 0 0 2 5 6 7 7 10 10 10 11 14 16 31 31 33 7	31 53 39 1 19 27 32 5 53 14 48 31 53 13 3 47 9 39 55 9 25 16 9 16 52			12000	Dilatation. N.E.,e.  large movement  Very destructive in Chile. 34° S., 73° W. (Strasbourg.)  Depth of focus about 75 km.  large movements.  large movements.
27	ZNE	eL F	14 15	53 10					
27		e F	20	20 30					
29	ZNE	eL F	19 20	30 10					Confused by microseisms.

**KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.**

**SEISMOLOGICAL BULLETIN.**

.....JANUARY.....1939...

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			h.	m.	s.				
1939									
January									
30	Z	iPKP	2	37	43			14700	Dilatation. N.E.,e
	ZNE	iPP		40	1				
	ZNE	iPKS		41	3				Solomon Islands.
	NE	i		41	26				7° S., 156° E. (Strasbourg)
	NE	iSKKS		46	54				
	ZNE	iSKSP		50	0				
	ZE	iPPS		52	46				
	E	i		56	12				
	E	i		56	54				
	NE	iSS		57	13				
	E	iPSS		57	42				
	NE	i		59	44				
	E	i	3	4	50				
	NE	eL		12					
	Z	eL		20					
	E	M		27	38	25	-310		
	N	M		28	1	25	+370		
	Z	M		28	35	28	-370		
		F	7	10					
31	Z	i	0	11	58				N.E.,e.
	NE	e		13	50				
	Z	e		18	6				
	ZNE	e		23	24				
	NE	i		43	39				
	ZNE	eL		46					
	E	M		56	9	26	+15		
		F	2	20					
Correction to Kew Seismological Bulletin; December, 1938.									
The times tabulated for the earthquake of 26th December are all 6 seconds too early; the entries should be corrected to read :-									
	NE	i	22	10	38				
	E	i		10	45				
	N	i		14	6				
	N	i		14	35				
	NE	i		14	46				
	ZNE	L		15					
		F		25					
( Signed )									
F.J.W. Whipple Superintendent 6th February 1939.									



SEISMOLOGICAL BULLETIN FOR... FEBRUARY.....19.39.

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 <sub>1</sub> .	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ <sup>2</sup> .	$\frac{Ak}{ml}$
N.	1937, Dec. 14	sec. 24.2	sec. 8.1	0.00	sec <sup>-1</sup> 77.3
E.	1937, Dec. 15	24.8	8.3	0.00	76.3
Z.	1937, Dec. 30	13.3	13.0	-0.01	75.4

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.				
1939.									
February									
3		e F	0	6 15				Very small	
3	Z	ePKP	5	45	44		15100	Diffracted waves N.E., e.	
	Z	iPP		48	16				
	ZNE	iPKS		49	15				
	Z	iPPP		51	35				
	Z	e		52	27				
	N	iSKS		52	51				
	E	e		56	43				
	NE	iSKSP		58	27				
	ZNE	iPPS	6	0	13				
	NE	iSS		6	17				
	NE	eSSS		11	3				
	NE	eL		21					
	Z	eL		27					
	E	M		34	53	27	+31		
	Z	M		45	15	22	-17		
	N	M		45	32	21	+22		
	F		8	20					
3	ZNE	eL	21	39					
		F	22	10					
4	ZNE	eL	6	22				Confused by microseisms	
		F	7	0					

**SEISMOLOGICAL BULLETIN.**



From the ISC collection scanned by SISMOS

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939. February									
6	ZN	i	7	29	21				
	E	i		29	31				
	N	i		29	45				
	ZNE	i		29	52				
	ZNE	i		30	9				
	ZNE	i		30	16				
	ZN	i		30	24				
	ZE	i		30	32				
	Z	i		30	43				
	ZE	i		31	16				
		F		37					
6	ZNE	e	10	42					
	ZNE	eL		48					
		F	11	0					
7	ZNE	eL	4	56					
		F	5	20					
8	NE	eL	7	10					
	Z	eL		16					
		F		30					
8	ZNE	eL	21	2					
		F		25					
9	ZNE	eL	16	9					
	E	M		11	17	22	+9		
		F		35					
16	ZE	iP	19	3	44			9570	Compression.
	NE	iS		14	22				Love waves.
	NE	eL		32					Rayleigh waves.
	ZNE	eL		39					
	N	M		43	43	20	-19		
	Z	M		46	0	20	-19		
		F	20	15					
17		e	16	45					
		F		55					
23		e	16	9					
		F		25					
24	ZE	i	14	36	51				
	ZNE	eL		56					
		F	15	15					
27	ZNE	eL	18	1					
		F		15					
28	ZNE	eL	3	42					
		F	4	5					

( Signed )

F.J.W. Whipple  
Superintendent  
4th February 1939.





M.O. 444

**KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.**

**SEISMOLOGICAL BULLETIN.**

MARCH 1939

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TITUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 March									
13	ZNE	eL F	6	34					
16	ZNE	eL F	21	35					
17	E ZE	i eL F	13	44	1				
20	Z Z Z NE N NE Z E Z NE Z N E Z	iP iFP ePPP eS ipS i eSP isPS iPPP eL eL M M M F	3	35	5			9500	N.E., e. Felt in Kiu Shiu, Japan. Focal depth 55 km. (Strasbourg)
									By path exceeding 180°
						18	-21		
						20	-22		
						13	+12		
20	ZNE	eL F	5	56					
21	Z Z Z NE E N E E ZN NE E NE ZNE N E Z	iP i iPP i iSKS iS iPS iPPS i iSS iPKKP LQ LR M M M F	1	24	31			10070	Indian Ocean, to S.W. of Sumatra. 2°S., 91° E. (Strasbourg)
						24	+73		
						20	+70		
						20	-69		
22	ZNE	eL F	4	48					Confused by microseisms.
22		e F	8	43					Confused by microseisms.
			9	45					



**SEISMOLOGICAL BULLETIN.**

MARCH .....1939...

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 March 23		e F	17	40					Very small
			18	15					
25	ZNE	eL F	6	38					( Signed )  J.M. Stagg Superintendent 5th April 1939.
			7	5					





**SEISMOLOGICAL BULLETIN FOR.....APRIL.....19..39.**

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)  
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COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T <sub>1</sub> .	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ <sup>2</sup> .	$\frac{Ak}{ml}$
N.	1937, Dec. 14	sec. 24.2	sec. 8.1	0.00	sec <sup>-1</sup> 77.3
E.	1937, Dec. 15	24.8	8.3	0.00	76.3
Z.	1937, Dec. 30	13.3	13.0	-0.01	75.4

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.				
1939. April 4	Z	e	10	30	35				
	ZNE	eL	11	30					
		F	12	15					
5	ZNE	iPKP <sub>1</sub>	17	2	20			16700	Dilatation. Z large movement.  Focal Depth 150 km. North of New Zealand, (Strasbourg)
	N	i		2	27				
	ZN	i		2	41				
	Z	i		3	6				
	ZN	i		3	40				
	ZN	i		4	5				
	ZNE	iPP		6	1				
	E	e		14	11				
	ZNE	iPSKS		16	7				
	N	iPPS		19	1				
	Z	i		20	10				
	E	i		24	51				
	NE	iSS		25	7				
	Z	esSS		26	11				
	NE	iSSS		30	31				
	Z	i		36	11				
NE	eL		43						
Z	eL		52						
N	M		18	7	28	22	-63		
Z	M			7	58	22	+52		
E	M			9	47	20	+41		
	F		20	10					
6	ZE	e	17	58	41				Not very distant.
	ZNE	eL	18	3					
		F	18	10					

# SEISMOLOGICAL BULLETIN.



From the ISC collection scanned by SISMO5

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 April 6	ZNE	eL F	21	57					Very small.
			22	2					
10	ZNE	e F	14	16					Very small
				26					
12	NE Z	e e F	14	23					Very small
				28					
				40					
15	ZNE	eL F	21	25					
			22	15					
18	Z	iP	6	36	22			11370	N,E,e.
	Z	iPKP		40	10				
	ZE	iPP		40	30				
	Z	i		44	32				
	E	i		45	50				
	ZE	iSKS		46	58				N,e.
	NE	i		47	8				27°S 71°W (U.S.C.G.S.)
	E	iSKKS		47	43				Felt in Northern Chile.
	N	i		47	51				
	NE	i		47	58				
	NE	eS		48	18				
	Z	i		49	26				
	NE	iPS		49	44				
	ZE	i		50	30				
	NE	iPPS		50	38				
	E	iSS		54	54				N,e.
	NE	eLQ	7	4					
	Z	eLR		11					
	N	M		16	17	20	+74		
	Z	M		16	22	21	+110		
	E	M		17	12	22	-130		
		F	-	-	-				
18			8	50					No record from Galitzin
19			9	40					Instruments.
19	ZNE	e F	14	13					Very small.
				20					
20/21	Z	e	22	27	32				
	Z	i		31	58				N,E,e.
	EZ	e		38	41				
	Z	e		42	24				
	ZNE	eL	23	43					
	F		0	15					

**KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.**

**SEISMOLOGICAL BULLETIN.**

APRIL

19 39

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 April 21	ZN	iP	4	39	56			8300	Focal Depth 525 km.
	Z	i		39	59				
	N	iP <sub>c</sub> P		40	14				
	ZN	ipP		41	48				
	Z	i		41	52				
	Z	isP		42	44				
	Z	isP <sub>c</sub> P		42	50				
	ZN	ipp		42	56				
	ZN	epPP		44	30				
	N	ePPP		44	44				
	ZE	e		48	22				
	ZNE	iS		48	52				
	ZN	e		49	4				
	ZN	iS <sub>c</sub> S		49	10				
	ZN	isp		49	30				
	N	isS		52	8			E,e.	
	Z	isSP		52	46				
	N	i		52	55				
	E	iSS		54	0				
	NE	isSS		56	44				
	Z	eSSS		57	43				
	E	e		59	50				
	Z	i	5	0	10			E,e.	
		F	6	40					
23	Z	iP	16	32	24			5900	Compression N,e.
	Z	ipp		34	19				
	Z	ePPP		35	36				
	Z	iP <sub>c</sub> S		37	34				
	NE	iS		39	55				
	Z	isp		39	58				
	ZNE	i		40	5				
	E	iS <sub>c</sub> S		42	10				
	E	SS		43	48				
	E	SSS		45	38				
	Z	L		48	40				
	NE	L		49	40				
	N	M		52	5	15	+11		
	E	M		52	13	15	+26		
	Z	M		59	31	12	-10		
		F	18	15					
26	ZNE	eL	12	03					
		F		23					
28	ZE	eP	0	37	40			2320	
	N	iS		41	30				
	Z	iP <sub>c</sub> P		41	44				
	ZNE	eL		43					
		F	1	15					
28	NE	e	13	14					Very small
		F		21					

# SEISMOLOGICAL BULLETIN.



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DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 April 30	Z	e	03	11	52				
	Z	e		12	16				
	Z	i		14	49				N,E,e.
	Z	i		15	24				
	E	i		15	32				
	ZE	i		17	30				
	ZNE	i		17	48				
	Z	i		18	8				
	NE	i		18	26				
	Z	i		18	36				
	ZNE	i		18	54				large movement.
	Z	i		20	07				
	Z	i		20	44				
	N	i		21	06				
	Z	i		21	56				
	N	i		22	18				
	Z	i		22	56				
	ZE	e		24	38				
	N	i		24	49				large movement.
	NE	i		26	46				
	ZN	i		27	46				
	ZE	i		28	43				N,e.
	ZN	i		30	12				
Z	i		33	0					
E	i		35	45				Z,N,e.	
N	i		37	16					
E	i		40	20					
Z	i		40	48					
NE	i		41	22					
NE	eLQ			52					
Z	eLR		4	0					
N	M			18	12	18		-180	
E	M			21	19	20		-220	
Z	M			22	6	18		+240	
	F		-	-	-				

( Signed )

J.M. Stagg  
Superintendent  
5th May 1939.



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

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).

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E.	1937, Dec. 15	24.8	8.3	0.00	76.3
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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.	COMP.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1938 Mar	Z	oP <sub>I</sub>	06	10	52			9,230  N, e. Three consecutive shocks.  Destructive in Akita, Japan.  40°N. 139°E. (USCGS) Z, e.	
	Z	iP <sub>II</sub>		12	32				
	Z	iP <sub>III</sub>		17	38				
	Z	e		18	50				
	N	iSKS <sub>I</sub>		21	12				
	E	iS <sub>I</sub>		21	14				
	E	ePS <sub>I</sub>		22	32				
	N	iSKS <sub>II</sub>		22	56				
	E	eS <sub>II</sub>		22	58				
	Z	ePS <sub>II</sub>		23	58				
	N	i		26	20				
	Z	eSS <sub>I</sub>		27	24				
	N	e		27	44				
	N	eS <sub>III</sub>		28	00				
	Z	e		29	48				
	Z	eSSS <sub>I</sub>		31	04				
	Z	e		31	58				
	Z	eSSS <sub>II</sub>		33	04				
	NE	eLQ		36					
	Z	eLR		40	38				
E	M		47	36	17	+89			
N	M		50	49	14	+48			
Z	M		51	43	12	+35			
	F		08	55					

SEISMOLOGICAL BULLETIN.

MAY 19 39

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1939. May 1	ZNE	eL F	12	38				9,100	Very small
1	Z	eP	16	18	14				
	Z	ePP		21	32				
	N	eS		28	30				
	NE	eL <sub>Q</sub>		44	08				
	Z	eL <sub>R</sub>		49	08				
	E	M		54	56	16	+22		
	N	M		58	14	14	-14		
	Z	M		59	08	12	-10		
		F	18	5					
2	Z	eP	13	27	12			8,850	
	Z	i		28	05				
	Z	iPP		30	14				
	NE	iS		37	15				30°N 114°W (USCGS)
	N	iSKS		37	28				
	NE	i		40	24				
	NE	iSS		42	24				
	N	e		45	40				
	E	eSSS		45	58				
	NE	eL <sub>Q</sub>		47	38				
	Z	eL <sub>R</sub>		51	38				
	N	M		59	00	21	+133		
	E	M	14	03	29	15	-108		
	Z	M		03	29	16	+101		
		F	16	15					
6	Z	eP	06	12	37			8,940	Confused by microseisms
	EN	eS		22	44				5°N 84°W (USCGS)
	E	iPS		23	45				
	E	e		27	04				
	E	iSS		28	32				
	E	eSSS		31	34				
	EN	eL <sub>Q</sub>		34	38				
	Z	eL <sub>R</sub>		38					
	Z	M		43	25	20	-11		
	N	M		45	44	20	+ 9		
	E	M		54	35	20	+15		
		F	07	20					
6	NE	eL	17	51					
	Z	eL		57					
		F	18	20					
8	ZNE	iP	01	51	49			2,450	Compression
	N	i		54	11				Amplitudes of iP as read, in mm.
	ZNE	iS		55	50				Z N E
	E	i		57	34				+5.0 +2.3 +4.0
	NE	L		58	08				Azimuth = 240°
	N	M		59	55	13	-193		Felt in San Miguel (Azores)
	E	M	02	00	26	10	+150		
	Z	M		01	22	8	-118		37.5°N 24.5°W (Strasbourg)
		F	05	30					
8	Z	e	08	57					
		F	09	06					



**SEISMOLOGICAL BULLETIN.**

..... May ..... 19 39 .....

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939									
May									
8	Z	eP	16	20	18			2,560	Small movements
	Z	e		20	30				
	Z	ePP		20	44				
	Z	ePPP		20	54				
	E	eS		24	28				
	E	e		24	36				
	ZNE	eL		26					
		F	17	20					
9	ZNE	eL	08	04					
		F		33					
9	ZNE	e	16	36	33				Very small
	ZNE	eL		38					
		F	17	12					
9	ZNE	eL	17	51					Very small
		F	18	0					
10	Z	eP	07	56	13			8,620	Small
	Z	eP <sub>c</sub> P		56	26				
	NE	eS	08	06	04				51°N 179°W
	NZ	ePS		07	00				(USCGS)
	NE	eSS		10	28				
	N	eSSS		15	04				
	NE	eL <sub>Q</sub>		17	08				
	Z	eL <sub>R</sub>		21	38				
	ZNE	eL	10	05					By path greater than 180°
		F	10	40					
11	ZNE	eL	18	48					Very small
		F	19	00					
12	ZNE	eL	03	02					Small
		F	03	25					
14	Z	e	18	32	23				
	Z	e		37	15				
	Z	e		41	17				
	NE	eL	19	30					Surface waves small
	Z	eL		35					
		F	20	20					
14/15	Z	e	23	40	55				Surface waves very small.
	ZNE	e		44	59				
		F	00	25					
15	-	-	10	20	to				No record on Galitzin Instruments.
			11	03					
15	ZNE	eL	22	04					
		F		13					

**SEISMOLOGICAL BULLETIN.**

May 19 39.

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 May 16	Z	iP	07	33	10			9,800	
	Z	ePP		36	47				
	E	eS		43	59				
	E	eLQ		56					
	Z	eLR	08	03					
	F		09	15					
16	-	-	09	41	to				No record on Galitzin Instruments.
			11	50					
16	-	-	13	17	to				No record on Galitzin Instruments.
			15	47					
17	-	-	13	19	to				No record on Galitzin Instruments.
			15	58					
17	Z	eP	18	44	15			10,690	
	ZN	iPP		48	19				
	Z	e		50	25				
	Z	ePPP		50	59				
	NE	iSKS		54	49				
	E	eS		55	43				
	ZN	ePS		56	59				
	Z	ePPS		58	15				
	NE	eSS	19	02	31				
	E	eSSS		06	07				
	NE	eLQ		11					
	Z	eLR		19					
	E	M		20	49	34	+42		
	N	M		22	20	30	-28		
	Z	M		29	54	21	-16		
	F		21	40					
18	-	-	09	19	to				No record on Galitzin Instruments.
			11	05					
19	-	-	09	04	to				No record on Galitzin Instruments.
			10	35					
19	Z	e	18	42	52				Very small.
	E	e		48	54				
	E	e		51	16				
	NE	e	19	09	22				
	ZNE	eL	19	28					
	F		20	00					
20	-	-	08	18	to				No record on Galitzin Instruments.
			09	02					
20		F	10	20					Missed owing to changing records.

M.O. 444

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

May 19 39

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1939									
May									
21	ZNE	i	20	40	45			Very small	
	Z	e			54				
	ZN	i		43	03			Surface waves poorly developed.	
	ZNE	e		50	18				
		F	21	30					
22	Z	e	01	55	21				
	NE	e	02	05	25				
	NE	eL		31	30				
	Z	eL		42	00				
	Z	eL	03	42	00			By path greater than 180°	
		F	04	10					
22	ZE	eL	07	07					
		F		30					
22	-	-	09	04	to			No record on Galitzin Instrument.	
			12	00					
23	ZE	e	04	29	21			Very small	
	ZE	e			45				
	ZN	e		31	35				
	NE	e		37	58				
	N	e	05	06				Surface waves very small	
		F	05	40					
23	ZN	e	19	13	35			Very small	
	ZN	e		25	35				
		F		40					
24	-	-	10	48	to			No record on Galitzin Instruments.	
25			10	07					
25	-	-	11	11	to			No record on Galitzin Instruments.	
				50					
25	-	-	13	13	to			No record on Galitzin Instruments.	
			14	0					
25	-	-	14	58	to			No record on Galitzin Instruments.	
			15	42					
26	Z	eP	09	50	42		6,620	Very small	
	E	eP <sub>c</sub> P		51	26				
	Z	ePP		53	00				
	Z	ePPP		54	29				
	ZNE	eS		58	51				
	-	-	-	-	-			10.02 to 10.11 missed while changing records.	
	Z	e	10	11	39				
	Z	iSS		13	17				
	Z	i		15	19				
	ZE	eSSS		15	31				
	NE	eLQ		16	00				
	Z	eLR		18	00				
	N	M		19	22	16	+11		
	Z	M		19	34	15	+11		
	E	M		20	40	12	+ 8		
		F	11	20					

**KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.**

**SEISMOLOGICAL BULLETIN.**

May 19 39.

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 May 26	Z	e	18	10	53				Very small
	Z	e		17	59				
	ZNE	e		20	52				
	Z	e		37	23				
	NE	eL		47					
	Z	eL		56					
		F	20	45					
27	Z	iP	03	57	14		8,300	Focal depth 75 km.	
	ZNE	ipP		57	32				
	N	isP			45				
	Z	e		58	25				
	NE	iS	04	06	38				
	N	ipS		07	11				
	E	isS		07	15				
	N	iPS		07	26				
	NE	e		07	54				
	E	eSS		11	55				
	NE	eSSS		15	29				
	Z	e		18	21				
	ZNE	eL		22	35				
	Z	e		33	25				
		F	05	25					
27	-	-	21	46				Galitzin vertical component ceased recording.	
28	-	-	10	18	to			No record on Galitzin Instrument	
			12	55					
30	NE	eL	01	22				Very small	
		F		30					
30	NE	e	10	23	00			No vertical component record.	
	N	e		25	44				
	NE	e		26	40				
	N	e		33	54				
	NE	e		36	16				
	N	e		36	34				
	E	e		38	52				
	N	e		39	37				
	E	e		40	50				
		F	11	20					
31	NE	e	00	32	29			No vertical component record. E, e.	
	N	i		35	49				
	NE	i		37	16			N, e.	
	E	e		37	44				
	E	i		38	11				
	E	i		40	22				
	N	e		40	42				
		F		55					
31	NE	eL	19	46				Very small	
		F		59					

( Signed )  
J.M. Stagg  
Superintendent  
6th June 1939.

AIR MINISTRY, METEOROLOGICAL OFFICE, LONDON.

20 JUL 1939

File

KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.

SEISMOLOGICAL BULLETIN FOR JUNE 1939.

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 <sub>1</sub> .	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ <sup>2</sup> .	$\frac{Ak}{\pi l}$
N.	1937, Dec. 14	sec. 24.2	sec. 8.1	0.00	sec <sup>-1</sup> 77.3
E.	1937, Dec. 15	24.8	8.3	0.00	76.3
Z.	1937, Dec. 30	13.3	13.0	-0.01	75.4

TIME SERVICE: MINUTE TIME-MARKS ARE MADE ELECTROMAGNETICALLY BY CONTACT CLOCK (~~XXXXXXXXXX~~); 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.				
1939. June									
1	NE	eL F	01	20	39 30				Very small.
2	E E NE E E NE	e e e e e eL F	03	52	57 55 58 57 59 44 01 53 02 45 24				No vertical component record.
3	-	-	10	04					Galitzin vertical component restarted recording.
4	Z Z	e e F	00	43	57 53 22 01 45				Very small
4	Z ZNE	e eL F	12	17	16 24 20				Very small.
4	NE ZNE	eL eL F	16	22	29 50				
5	Z NE NE Z	i e e e F	23	09	33 16 38 17 53 18 46 55				
7	NE	eL F	02	02	40				



M.O. 444

**KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.**

**SEISMOLOGICAL BULLETIN.**

JUNE 1939

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1939. June 7	ZNE	eL F	20	37					
8	ZNE	eL F	02	22					
8	ZNE	eL F	16	30					
8	Z NE Z Z NE Z N Z NE NE N E ZN N NE E E E ZNE	iPKP e i ePP e e ePKS e e e e ePPP eSKS e eSS ePSS e eSSS eL F	21	06	17			16,000	Compression  15°S 173°W (USCGS) Samoa Islands.
9	ZNE	eL F	01	03					
9	E	eL F	20	06					
10	E	eL F	09	07					
12	Z Z Z E NE NE NE E NE Z E N	iP eP <sub>c</sub> P e eP <sub>c</sub> S eS eS <sub>c</sub> S eSS eSSS eL eLR M M F	04	15	12			6,520	21°N 66°W (USCGS)
						26	+26		
						17	+12		
			05	40					
13	NE	eL F	16	30					Very small
13	Z NE NE	e e eL F	20	58					
			21	08					
				36					
			22	00					



SEISMOLOGICAL BULLETIN.

JUNE .....19 39.

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 June 16	ZNE	eL F	22	36 48					
17	ZNE	eL F	13 14	20 20					
18	NE ZNE	eL eL F	04 05	40 49 10					
18	NE Z	e e F	12 13	55 58 10					
18	Z Z NE ZNE	i i e eL F	16 17	58 07 24 55	02 16 52				
19	Z NE ZNE	e eL eL F	22 23	08 34 39 25	28				
20	ZNE	eL F	13	20 35					
21	ZNE	e F	12 14	30 15				Very small	
22	Z Z N ZN ZE N E NE ZE ZE Z E N Z	iP e iPP eP <sub>c</sub> S iS <sub>c</sub> S iPS iS <sub>c</sub> S e eSS eLQ eL <sub>R</sub> M M M F	19 19 19 33 34 37 38 39 41 45 46 48 21	27 29 29 33 44 48 35 52 10 16 20 48 00 54 30			5,180	Z,e, Destructive at Accra (Gold Coast).	
24	ZNE	eL F	00 01	35 05					
24	ZNE	eL F	05	07 30					

**KEW OBSERVATORY, RICHMOND, SURR**

**SEISMOLOGICAL BULLETIN.**

JUNE 1939.

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939.									
June									
27/28	Z	e	23	18	33				
	Z	e		22	58				
	Z	e		23	38				
	Z	e		25	15				
	ZE	e		29	14				
	NE	e		30	46				
	ZNE	e		31	57				
	Z	e		33	00				
	ZE	e		33	38				
	ZE	e		34	14				
	Z	e		38	15				
	E	e		38	46				
	E	e		39	20				
	Z	e		49	58				
	NE	eL		54					
	Z	eL	00	02					
	E	M		06	11	24	-33		
	N	M		10	21	21	-19		
	Z	M			29	23	+23		
		F	01	40					
29	ZNE	eL	21	32					
		F	22	05					

( Signed )  
 J.M. Stagg  
 Superintendent  
 6th July 1939.

SEISMOLOGICAL BULLETIN FOR.....JU



From the ISC collection scanned by SISMO

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

File

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 <sub>1</sub> .	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ <sup>2</sup> .	$\frac{Ak}{\pi l}$
N.	1939, June 30	sec. 24.5	sec. 8.2	0.00	sec <sup>-1</sup> 77.7
E.	1937, Dec. 15	24.8	8.3	0.00	76.3
	1939, July 21	24.3	8.1	0.00	72.8
Z.	1937, Dec. 30	13.3	13.0	-0.01	75.4
	1939, July 24	- constants	unknown		-

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.				
1939.						sec.	μ	km.	
July									
2	Z	e	17	12	13				Very small
	Z	e			23				
	Z	eL F	18	18	27				
2	Z	eL F	20	25	45				Very small
2/3	Z	e	23	53	45				
	NE	eL		53	57				
	Z	eL F		54	17				
			00	10					
4	Z	e	18	39	45				Surface waves poorly developed.
	Z	e		40	04				
	Z	e			34				
	Z	e		43	38				
	Z	e		44	18				
	NE	e		48	57				
	ZNE	e		49	03				
	N	e			22				
	N	e			29				
	ZN	e		50	36				
	ZN	e			50				
	NE	e		51	09				
	N	e			33				
	ZNE	e		52	41				
	Z	e		55	38				
	N	e		57	36				
	NE	eL	19	01					
	Z	eL F		05					
			20	35					



SEISMOLOGICAL BULLETIN.

JULY 19 39

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI-TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939									
JULY									
5/6	Z	e	22	59	44				
	Z	i			48				
	Z	i			53				
	Z	i	23	00	01				
	Z	e		02	16				
	ZN	e			24				
	Z	e			31				
	Z	e			36				
	NE	e			43				
	Z	e		03	22				
	N	e			49				
	ZN	e		05	30				
	ZN	e			49				
	ZN	e		07	02				
	N	e		09	16				
	ZN	e		10	06				
	Z	e		13	18				
	NE	e		13	42				
	N	e		16	00				
	Z	e			50				
	E	e		21	58				
	NE	e		26	56				
	NE	eL		39					Surface waves poorly developed.
	Z	eL		46					
		F	01	10					
6	Z	e	01	24	42				Very small
	Z	e		27	10				
6	ZNE	eL	04	26					Small
		F		35					
8	ZNE	eL	03	24					
		F		40					
12	Z	iP	20	20	38			8,900	
	NE	eS		30	43				
	NE	eL <sub>Q</sub>		50					Very small
	Z	eL <sub>R</sub>		52					
		F	21	30					
12/13	ZE	ePKP	03	08	19			16,000	
	Z	ePP		11	11				
	N	ePKS		12	04				
	N	e		13	29				
	N	e		14	19				
	NE	e		15	00				
	Z	ePPP			05				
	N	e(SKS)			41				
	N	e		16	16				
	N	e			35				
	N	eSKKS		18	44				
	Z	e			53				
	Z	e		21	27				
	NE	eSKSP		22	19				
	ZNE	e		28	17				
	NE	eL <sub>Q</sub>		52					Long waves small
	Z	eL <sub>R</sub>	00	06					
	E	M		02	24	26	+10		
	N	M		03	04	32	+20		



**SEISMOLOGICAL BULLETIN.**

JULY.....1939...

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 JULY 12/13	Z	M F	01	16	13	18	-11		
13	NE Z	eL eL F	17 18	56 01					
14	Z Z E E NE NE Z	iP e(PcP) eS e e(SS) eLQ eLR F	08 09 09 09 09 10	43 43 52 53 58 06 10 15	17 26 53 05			8,300     Long waves small	
16	ZNE	eL F	09 10	30 15					
16	Z Z Z N E NE Z	eP e ePP eS eSS eLQ eLR F	12 12 12 13 13 13 14	34 37 38 45 51 58 01 10	32 02 08 08 12			9,000 Small	
18	Z Z Z Z NE E N NE NE NE Z N Z E	eP e(PcP) ePP ePPP eS e(PS) e(ScS) eSS eSSS eLQ eLR M M M F	03 03 03 03 04 04 04 04 04 04 04 04 04 04 04 06	37 38 40 42 47 48 48 51 55 56 59 08 08 18 22	56 49 35 48 16 06 32 42 37			8,000         49°N 130°W (U.S.C.G.S.)         -26 -39 +24	
18	ZNE	eL F	12 13	10 00				Very small	
19/20	Z Z Z Z N NE Z	e e e e e eL eL F	23 23 23 23 00 00 01	31 35 39 53 00 00 30	23 45 51 11			Very small	

**SEISMOLOGICAL BULLETIN.**

..... JULY ..... 1939 .....

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 JULY 20.	Z	i	02	41	40				N,E,e
	Z	i			47				
	Z	i			55				
	Z	e			59				
	Z	e	44	11					
	Z	e	45	21					
	Z	e	48	59					
	N	e	51	13					
	Z	e	55	08					
	N	e			41				
	Z	e	57	51					
	N	e	58	55					
	E	e	03	03	51				
	N	e	08	35					
	Z	e	15	11					
	ZNE	eL F	25 04	40				Surface waves poorly developed	
20	ZNE	eL F	17 18	26 20				Very small	
23	ZNE	eL F	16	02 50				Small	
24	NE	eL F	22	19 40					
25	N NE N NE	eP eS e eL F	03	45 49 53 54	37 57 15		2,690	Small	
			04	27					
25	NE	eL F	15	35 45					
26	NE	eL F	05	29 35					
27	NE NE	e eL F	05 06	33 00 25	24			Very small	
27/28	E NE	e eL F	23 00	49 12 40	33			Small	
28	NE	eL F	01 02	57 07					
28	N NE NE	e e eL F	10 11	18 22 26 00	12 24			Very small	
28	NE NE	e eL F	16	15 20 50	52			Very small	



**KEW OBSERVATORY, RICHMOND, SURF**

**SEISMOLOGICAL BULLETIN.**

JULY 1939

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 JULY 31	ZNE	eL F	13 14	47 00				Small	
31	NE	eL F	19	29 55					

(Signed) G. D. Robinson  
for Superintendent  
August 5th, 1939.



LOCALITY OF STATION: RIVER GRAVEL RESTING ON LC

INSTRUMENTS: GALITZIN SEISMOGRAPHS, PHOTO-GALVANOMETRIC REGISTRATION, THREE COMPONENTS.

CONSTANTS: FOR NOTATION SEE FIRST B. GALITZIN "VORLESUNGEN ÜBER SEISMOMETRIE" (LEIPZIG, 1914)  
OR G. W. WALKER "MODERN SEISMOLOGY" (LONDON, 1918).

COMPONENT.	NAME FROM BOOK OF CONSTANTS APPRY.	GALVANOMETER FREE PERIOD T <sub>1</sub>	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ <sup>2</sup> .	$\frac{Ak}{\pi l}$
N.	1939, June 30	sec. 24.5	sec. 8.2	0.00	sec-1 77.7
E.	1939, Feb. 21	24.3	8.1	0.00	72.8
Z.	1939, June 24	-	Constants	unknown	-

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

DATE.	COMPT.	PHASE	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1939. 1	ZN	e	16	07	33			9,380	Very small
	Z	e		08	07				No long waves
	Z	e F		11	25				
2	Z	eP	00	58	20			2,600	
	Z	e(E)			36				
	Z	e	01	08	30				
	Z	ePI		08	18				
	Z	e		08	19				
	N	eS			49				
	N	e		11	01				
	N	eSS		11	33				
	NE	eLQ		21	17				
	Z	eLR F		03	17				
2	NE	eL F	09	00					
2	Z	eP	13	11	23				
	NE	eS		13	36				
	ZN	e			55				
	N	e		14	06				
	NE	eLQ		14					
	Z	eLR F		14					
3	Z	e	02	41	12				Small
	ZNE	eL	03	51					
		F	04	51					



DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939.									
3	Z	iP	12	38	02			2,720	
	NE	eS		42	24				
	NE	e			38				
	N	e		44	06				
	N	e		45	34				
	ZNE	eL		47					
	N	M		46	48	13	-13		
		F	13	20					
5	ZNE	eL	21	22					
		F		30					
8	NE	eL	00	45					
	Z	eL		52					
		F	01	00					
9	ZNE	eL	03	41					
		F	04	00					
9/10	Z	eP	23	48	58			2,750	Very small
	ZNE	eS		53	22				
	NE	eL <sub>Q</sub>		57	30				
	Z	eL <sub>R</sub>		58					
		F	00	20					
12	Z	i	02	26	40				
	Z	e		27	31				
	Z	e		29	55				13°S 169°E
	Z	e			59				(U.S.C.G.S.)
	Z	e		30	05				
	ZN	e			47				
	Z	e		31	43				
	N	e		36	31				
	Z	e		41	15				
	N	e		44	25				
		F	04	35					Surface waves poorly developed.
12	Z	iP	10	02	07			8,870	
	NE	eS		12	11				
	NE	eL <sub>Q</sub>		27					45°N 143°E
	Z	eL <sub>R</sub>		30					(U.S.C.G.S.)
		F	12	00					
16	NE	eL	17	37					
	Z	eL		41					
		F	18	35					
17	ZNE	eL	16	35					
		F		50					
18	NE	eL	05	16					
		F		28					



**SEISMOLOGICAL BULLETIN.**

August 1939

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI-TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939.									
18/19	Z	iPKP	22	35	38			16,000	
	Z	i			42				
	Z	e			54				
	ZN	e		36	16				
	ZN	e			30				
	ZN	ePP		39	02				
	ZN	ePKS			24				
	N	e		40	24				
	Z	e			59				
	Z	e		41	22				
	N	e		44	08				
	N	e		47	12				
	Z	eSKSP		50	04				
	N	e		51	14				
	NE	eSS		58	06				
	N	e	23	01	46				
	N	eSSS		03	56				
	N	e		19	42				
	NE	eLQ		24					
	Z	eLR		30					
	N	M		40	41	20	-15		
		F		01	00				
19	Z	i	01	07	10				
	N	e		13	00				
	NE	eL	02	00					
	Z	eL		07					
		F	03	20					
21	NE	e	15	41				Small	
	NE	eL		45					
		F	16	55					
21	NE	eL	19	46				Very small	
		F	20	15					
22	N	e	00	18	59			Small	
	NE	e		29	19				
	NE	eL		48					
		F		35					
22	ZNE	e	12	56	59			Very small	
	N	e		57	27				
	E	e			35				
	E	e			53				
		F	13	05					
23	Z	e	04	55	53			Small	
	NE	eL	05	45					
		F	07	05					
25	Z	i	04	07	18				
	ZN	e		10	35				
	NE	eL		40					
		F	06	00					



**SEISMOLOGICAL BULLETIN.**

AUGUST.....19...39.

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI-TUDE.	Δ	REMARKS.
			h.	m.	s.				
1939 26	NE	eL F	04	17				Very small	
26	NE	eL F	09	09					
28	NE	eL F	22	00					
30	N N ZNE	e e eL F	00	33	58			Very small	
				38	16				
			01	25					
								( Signed )	
								George C. Simpson, K.C.B., D.Sc., F.R.S Superintendent 9th September 1939.	

**SEISMOLOGICAL BULLETIN FOR OCTOBER 19 39**

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 <sub>1</sub>	PENDULUM FREE PERIOD T.	DAMPING CONSTANT μ <sup>2</sup> .	$\frac{A}{a}$
N.	1939, June 30	sec. 24.5	sec. 8.2	0.00	sec <sup>-1</sup> 77.7
E.	1939, July 21	24.3	8.1	0.00	72.8
Z.	1939, July 24	-	constants	unknown	-

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.				
1939. October						sec.	μ	km.	
1			0	00					Galitzin instruments out of action.
			10	45					
2			10	15					Galitzin instruments out of action
			14	00					
7	Z	e	21	03	10				Very small
	ZE	e		15	-				
	Z	eL		50					
		F	22	15	-				
7	Z	eL	22	50	-				Very small
		F	23	05	-				
10	Z	iP	18	44	31			9800	Compression
	Z	i(P <sub>c</sub> P)			42				
	Z	ipP			52				
	Z	isP			59				
	Z	iPP		47	53				(Focal depth about 75 km.)
	Z	iPPP		49	45				
	Z	ipPPP			57				
	NE	iSKS		54	57				
	ZNE	eS		55	05				
	ZE	epSKS			17				
	NE	ipS			25				
	NE	isS			37				
	E	eSS	19	00	39				
	E	eSSS		04	01				
	E	eL		10.5					
	ZNE	eLR		15					
	E	M		17	30	27	+58		
	Z	M		26	-	20	(+140)*		* Approximate value
	N	M		30	43	14	-30		
		F	21	15					



**KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.**

**SEISMOLOGICAL BULLETIN.**

OCTOBER 1939

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1939									
October									
13			15	10	-			No record on Galitzin instruments	
			21	10	-				
15	ZE	e	4	57	-			Very small	
		F	5	05	-				
15	Z	e(P)	4	07	51		(1100)	eP from short period	
	N	i(S <sub>n</sub> )		09	47			vertical instrument only	
	ZE	e(S*)		10	35				
	N	i(S <sub>g</sub> )		11	04				
	ZE	eL		12	26				
		F		25					
17	ZN	iPKP	6	41	27		15,500	Compression, eE	
	Z	i			45				
	Z	epPKP		42	07			Focal depth about 150k.m.	
	Z	isPKP			25				
	Z	iPP		44	40			Azimuth about N.	
	N	iSKP			55				
	Z	i		45	04				
	N	iPKS			13				
	Z	ipPP			16				
	N	isPP			39				
	ZN	i		46	19				
	ZN	ePPF		47	55				
	Z	i		48	47				
	NE	ipSKS		49	19				
	N	eSKKS		50	37				
	N	ipSKKS		51	19				
	N	ePS		54	55				
	Z	iPPP		56	19			by path greater than 180°	
	Z	ipPPP			55			" " " " "	
	Z	isPPP		57	08			" " " " "	
	N	iSKKS			31			" " " " "	
	Z	i		59	11				
	Z	i			20				
	N	e	7	03	00				
	NE	isSS			13				
	N	i		04	46				
	N	eSSS		07	52				
	ZNE	eL		20	-				
	N	M		45	35	18	+6		
	Z	M		46	28*	24	-7*	* Approximate values	
	E	M		46	30	21	+18		
	ZNE	eL	8	00	-			By path greater than 180°	
		F	9	20	-				
19	Z	e	12	14	54			Small, confused by microseisms	
	ZNE	eL		18	-			Reported felt at Ottawa	
		F		25	-				
19	Z	iP	22	37	58		2090	eN	
	NE	iS		42	18			eZ	
	ZE	e		44	54			Confused by microseisms	
	NE	eL		45.5					
	Z	eL		48	-				
		F	23	00	-				

**SEISMOLOGICAL BULLETIN.**



From the ISC collection scanned by SISMO

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLI- TUDE.	Δ
			h.	m.	s.			
1939 October 20	NE	eL F	20	50	-			Very small No Z record
26	NE NE	e eL F	1	10	20			No Z record Small
31	NZ	i	6	54	23			possibly not seismic

( Signed )

G.C. Simpson K.C.B.  
Superintendent

2nd November 1939.

**KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.**

**SEISMOLOGICAL BULLETIN FOR NOVEMBER 1939**

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 $\mu^2$ .	$\frac{Ak}{\pi l}$
N.	1939, June 30	sec. 24.5	sec. 8.2	0.00	sec-1 77.7
E.	1939, July 21	24.3	8.1	0.00	72.8
Z.	1939, July 24 1939, Nov. 21	14.25 constants	12.3 unknown	-0.01	73.4

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.	$\Delta$	REMARKS.
			h.	m.	s.				
1939. November									
4	ZNE	eL F	10	38	-			Early phases probably lost when changing record.	
5	ZN N N	e i i(L) F	2	18	59 25 51 26 09 45 -			ZE, e Confused by large microseisms	
7	ZNE	e F	4	41	- 50 -			Confused by microseisms very small	
8	N ZNE N	e eL M F	17	46	00 50 - 52 27 18 00 -	16	+12	Confused by microseisms not very distant	
10	ZN	eL F	18	28	- 40 -			very small	
10	ZN	eL F	21	25	- 50			very small	
18	N ZNE	e eL F	1	54.5	- 2 10 - 3 00 -			Confused by microseisms	
20			14	45	- 16 25			No record during standardisation	

NOVEMBER

1939

## SEISMOLOGICAL BULLETIN.

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD. sec.	AMPLI- TUDE. $\mu$	$\Delta$ km.	REMARKS.
			h.	m.	s.				
1939 November 21	Z	iP	8	55	08			3150.	P and S small movements, long waves larger in comparison. Destructive in N.E. Anatolia
	N	iS	9	00	02				
	N	eL		03.5	-				
	N	iScS		05	52				
	ZE	eL		07.5	-				
		F		45	-				
21	ZE	iP	11	10	30		(9,200)	eN Compression	
	ZE	i			52			eN	
	ZE	ipP		11	12			eN	
	ZE	isP			42			eN	
	ZE	ipPP		14	21			)Record missing	
				16	-			)	
				20	40				
	N	i(S)		20	30			Depth about 200 km.	
	NE	i(pS)		21	36			Azimuth north of east	
	NE	i(SP)			42				
	N	e(PS)		22	06				
	Z	i			20				
	E	i			36				
	Z	i			56				
	Z	i		23	16				
	ZN	i(SS)		25	56				
	N	i(sSS)		26	52				
	N	i(SSS)		30	00				
	N	i(pSSS)			50				
	N	i(sSSS)		31	05				
	Z	i		35	45				
		F	12	20	-				
21			14	15				No record during standardisation	
			16	15					
21	ZN	eL	22	30	-				
		F		50	-				
25	ZN	eL	0	30	-				
		F	1	30	-				
25			9	45	-			No record on Galitzin instruments.	
26			9	45	-				

(Signed)

G.C. Simpson K.C.B.  
Superintendent.

4th December 1939.

**KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.** *File Hall*

18 JAN 1940

**SEISMOLOGICAL BULLETIN FOR DECEMBER 1939**

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, 1918).

COMPONENT.	DATE FROM WHICH CONSTANTS APPLY.	GALVANOMETER FREE PERIOD T <sub>1</sub> sec.	PENDULUM FREE PERIOD T. sec.	DAMPING CONSTANT μ <sup>2</sup> .	$\frac{Ak}{\pi l}$ sec <sup>-1</sup>
N.	1939, June 30	24.5	8.2	0.00	77.7
E.	1939, July 21	24.3	8.1	0.00	72.8
Z.	1939, July 24 1939, Nov. 21	14.25	constants 12.3	unknown -0.01	73.4

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. sec.	AMPLITUDE. μ	Δ km.	REMARKS.
			h.	m.	s.				
1939									
1	ZN	e F	7	55	-				Confused by microseisms
5	Z	iP	8	42	18		8780		e, NE.
	Z	iP <sub>c</sub> P			23				
	Z	ePP		45	11				Confused by microseisms
	E	iS		52	17				e, ZN.
	ZE	iSKS			36				
	E	eSS		57	16				
	E	eSSS	9	01	31				
	N	eL <sub>Q</sub>		04	-				
	ZE	eL <sub>R</sub>		07	-				
	E	M		19	25	17			
	Z	M		20	02	17			-31
	N	M		21	14	16			-43
		F	10	10	-				-25
16	ZN	iP	10	58	44		8880		Compression e, E.
	Z	iP <sub>c</sub> P			59				
	Z	e		59	52				
	Z	e	11	00	32				
	Z	ePP		01	52				
	Z	ePPP		04	04				
	NE	iS		08	48				
	N	iSKS			57				
	ZNE	ePS		09	12				
	NE	iPPS			24				
	Z	e			54				
	N	e		10	40				
	N	eSS		14	01				
	N	e		19	$\frac{1}{2}$				
	ZNE	eL <sub>R</sub>		28	$\frac{1}{2}$				
	Z	M		31	09	29			-45
	N	M		32	32	28			+42

**KEW OBSERVATORY, RICHMOND, SURREY, ENGLAND.**

**SEISMOLOGICAL BULLETIN.**

DECEMBER 1939.

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD.	AMPLITUDE.	Δ	REMARKS.
			h.	m.	s.				
1939									
16	E	M F	38 12	13 15	-	20	+15		
21	ZE	iP(1)	21	06	51			8630	Compression eN
	ZE	iP <sub>c</sub> P(1)			57				eN
	Z	ePP(1)	09	35					
	Z	iP(2)			47				
	Z	i	10	43					eE
	Z	iP(3)	11	53					eNE
	Z	iPP(3)	14	57					eNE
	E	iS(1)	16	43					
	N	iSKS(1)	17	03					
	NE	iPS(1)			17				Azimuth about west
	E	i			53				
	Z	iS(2)	19	37					Three successive shocks, probably with others following.
	E	iSKS(2)			47				
	ZNE	iPS(2)	20	09					
	Z	i	21	05					
	N	iSS(1)			25				Felt at San Jose Costa Rica.
	NZ	iSKS(3)			59				
	E	iPS(3)	22	11					
	EN	i			33				
	Z	i	23	03					
	NE	eSS(2)	24	27					
	ZNE	eL	30	-					
	N	M	22	12	18	21	+345		
	Z	M			27	20	-420		
	E	M			50	19	-140		
22		F	01	00	-				
22	ZE	iP	04	56	03			8710	Compression
	ZE	i	05	00	05				
	NE	iS	05	59					
	E	iSKS	06	13					
	E	e(PPS)			52				
	ZE	eSS	11	37					
	N	eLQ	18	-					
	Z	i	19	19					
	ZE	eLR	22 <sup>1</sup> / <sub>2</sub>						
	Z	M	26	21		17	-34		
	N	M	31	46		20	+23		
	E	M	43	29		18	+25		
		F	-	-	-	-	-		Overlapped by next shock.
22	ZE	e	07	18	-				
	ZNE	eL		35	-				
		F	08	15	-				
23	Z	e	17	43	55				
	ZNE	eL		55	-				
		F	18	15	-				



**SEISMOLOGICAL BULLETIN.**

DATE.	COMPT.	PHASE.	G.M.T.			PERIOD. sec.	AMPLI- TUDE. μ	Δ km.	REMARKS.
			h.	m.	s.				
1939 25	ZNE	e F	06	47	-				Not very distant
				53	-			2150	eE
25	Z N N N ZE N	iP eS i iL eL M F	12 13	57 00 01	19 55 00 37				
				02½		13	+11		
				03	31				
				35	-				
25	ZNE	eL F	17 18	30 00	- -			3350	Very destructive in N.E. Anatolia
27	ZE ZNE Z ZNE ZNE ZNE E E*	iP i(PP) i(PPP) i(P <sub>c</sub> P) iS i iL M* F	00	03 04	26 15 47 09 33 48 19				From 0009 to 0020 hours traces are not clearly legible owing to rapid large movements. *True maxima exceed limit of registration, largest movement which can be definitely identified is given here.
				07	09				
				08	33				
				12	19				
				16½*		20	-1800		
			04	30	-			3110	iP from short period instrument.
28	Z NE ZE ZNE	iP eS i eL F	03	31 36	14 05 17				
				42½	-				
			04	05	-				Confused by microseisms
29	ZNE	e F	11 12	45 05	- -				

(Signed)  
G.C. Simpson K.C.B.  
Superintendent.  
3rd January 1940