BULLETIN OF THE SEISMOLOGICAL STATION

L U N D

Φ = 55° 42' N; ⅄ = 13° 11' E; h = 32 m
Sub-soil: Glacial moraines, depth about 100 m, on cretaceous limestone.

Observatory · Lund · Sweden

Instrument: WIECHERT 1000 kg. horizontal seismograph
Constants:

Component	T	v	r	V
	sec		mm	
NE	11.6	5	1½	195
NW	12.1	6	1	195

SIEMENS clock controlled daily by NAUEN ONOGO signals.
The seismographic records are read in the GEODETIC INSTITUTE, Copenhagen, Denmark.

No.	Date	Hour	Forerunners P	Forerunners S			L	Undef.	△	Remarks
	1931 Jan.		m s	m s	h m s	m s	h m	h m	o	
1	2	0					34			
2	2	10	2	13.1	6.0	14 7				Pacific Ocean, near Mexico.
3	4	0	5.4				11			Greece.
4	7	2					.5			
5	8	11			10 20					Artificial explosion in Limhamn, Sweden.
6	12	15		14 55			18			Faint preceding movement. Asia Minor.
7	12	20	45	53.9			69			Kamtchatka.
8x	15x	2	i 3 34		13 57		27			Mexico.
9	15	21					45			
10	15	23			.5		.7			
11	16	19			44		1.0			Mexico.
12	17	3		13 30			.4			Mexico.
13x	20x	9	35 9							Alaï Mountains.
14	24	14					.5			
15x	27x	20	20 5	28 43	i29 59	32.8			64	Burma.
16	28	5	59.1	62.0			64			Albania. P and S small.
17	28	21			42 26	48 54	1.1			Caroline Islands.
	Febr.									
18x	2x	23			6.8	7 34				New Zealand.
19x	10x	1					58			
20x	10x	6			58.4					Sumatra.
21	12	6					.6			Small forerunners masked by microseisms.
22	13	1			62					New Zealand. Some preceding movement.
23	14	14			23		.7			
24	16	19					.4			Masked by microseisms.
25x	19x	18			5.3		.5			
26x	20x	5	i43 55	i52 30	45 15	i53 19				Siberia.
27	27	10			2 7		1.5			
	March									
28	2	2			39	41.0	1.4			Forerunners masked by microseisms.
29x	7x	0	20 25	23 21			25		16	Yugoslavia.
30	7	1					.5			
31x	7x	11					.1			Faint.
32x	8x	1	53 58	56 56					16	Yugoslavia.
33x	9x	4	0 36	10 14	3 24x	16	21		75	Japan.
34	11	12			43 17x	50.6	1.2			Marianne Islands region.

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No.	Date	Hour	Forerunners P	Forerunners S	Forerunners		L	Undef.	△	Remarks
	1931		m s	m s	h m s	m s	h m	h m	o	
	March									
35	12	11					.5			
36	12	19					.9			Small preceding movement.
37	12	21					.8			Faint.
38	15	17					.2			
39	18	8			22	31 43				Chile.
40	18	20	27.2	38.5	31.2	39 15	1.0			SE of Mindanao.
41	19	6	37 35	47 52			1.1		83	P and PP quite small. Near Luzon.
42	28	12			58	64.6				South Moluccas $e67^m28^s$; $e68^m51^s$.
43	29	18	3 31	12 29					68	
44	31	16					.8			
	April									
45x	3x	23			37 41					
46	6	7					.7			
47	8	20					.1			Faint.
48	9	23	12 45				.7			
49	11	1						.5		Small.
50	11	16					.2			
51	14	22						18		Small.
52	15	17		9 11			12			Atlantic Ocean.
53	19	3					.3			P small, uncertain.
54	20	20	38.8	42.8			47			Asia Minor.
55	21	14						25		Italy. Small.
56	22	1					.2			
57	24	17			42.7		74			
58	26	6						.6		
59x	27x	16	56 27	61 4			64		27	Armenia.
	May									
60	12	1	48 8	57 6					68	
61	12	10						36		
62	13	23					.8			Faint.
63	16	21		11 6			.5			Mexico.
64	17	15			38					
65	20	2								Azores. No time-marks.
66	24	1					.0			
67	28	19					.2			
	June									
68	1	12					.9			
69	2	2		58 46			1.3			Japan.
70	6	12			13 8					Small.
71x	7x	0	26 58	28 10						North Sea.
72	9	5					.8			Faint.
73	9	12	25.4				.9			"
74	9	15					.0			
75	9	17					.4			
76	17	12		31 20			.9			Japan.
77	18	13					28			Small preceding movement.
78	23	6		36.7			.9			Japan. P small, uncertain.
79	29	17		4 3						Japan.
80	30	10		32 8						Italy.
	July									
81	5	7	21 47	26 1			29		24	
82	12	17			9.4	10.8	.5			Pacific Ocean. Small preceding movement.
83	12	22					34			
84	15	16		45 17			.9			
85	17	10					.0			

No. 5 L U N D 1931

No.	Date	Hour	Forerunners P	Forerunners S			L	Undef.	△	Remarks
	1931		m s	m s	h m s	m s	h m	h m	o	
	July									
86	18	5			46 18					
87	18	11	34 41	43 33			1.0		67	Kamtchatka.
88	21	3			55 42	58.8				
89	23	14			40 57	57.1				
90	25	13					.3			Faint.
91	31	0						39		Small.
	Aug.									
92	6	18	25 1							Later phases not clearly marked.
93	7	2			30.9	38.9	.9			Pacific Ocean, e40.6m.
94x	8	9					.3			Small preceding movement.
95x	10x	21x	27							
96	11	7			21.8		28			
97	12	15					35			Faint.
98	13	22			29 20		1.4			
99	15	4	8							
100	16	2					.4			
101	16	11	52 28	62 28					79	Time-correction uncertain. Texas.
102	17	18	1.0							
103	18	9						57		
104x	18x	14	29 31	i36 13	31 19	39.5			46	Mongolia.
105	18	18						.1		
106	18	18					.3			
107x	24x	3					23			
108x	24x	21	43 47	50 33	45.7	53.9	1.0		46	Baluchistan.
109	25	0					.0			
110	25	3			25.1		.6			
111	26	11					.2			
112	26	19					.9			
113x	27x	15	35 43	42 31					46	Baluchistan.
114	28	0		57 45			1.2			"
115	28	19		55 23			1.1			Small preceding movement.
	Sept.									
116	6	8			8 26	12 52	16			Atlantic Ocean, S. of Greenland.
117	6	15					.0			
118	8	19					.9			
119x	9x	14					.3			
120x	9x	20			55 22		1.4			Marianne Islands region.
121	11	14						45		
122	11	16	27.5	30.8			35			P and S small, uncertain.
123	12	2		4 29			.3			
124	13	6					.5			
125	14	3			49.5					
126	16	13					.5			
127	19	8					.6			
128	21	2	31.9	i41 45			1.0			Japan. P small.
129	21	10					1.1			Small preceding uncertain.
130	23	13					38			movement.
131x	25x	6	13.2	24 16	23.7	25 37	.6			Sumatra.
132	26	20			27.6		.7			Small preceding movement.
133	30	11	23 27	30.3					47	Sulaiman Range.
	Oct.									
134x	1x	12					.5			
135x	3x	19			35.0		1.1			Salomon Islands.
136	3	23					.0			Superposed on preceding shock.
137x	3x	23					.7			" "
138x	5x	22	i39 8	i45 17	41 49	48 36				Turkestan.
139x	10x	0			39	41 2				Pacific Ocean.

No. 5 L U N D 1937

No.	Dato	Hour	Forerunners P	Forerunners S			L	Undef.	△	Remarks
	1931		m s	m s	h m s	m s	h m	h m	o	
	Oct.									
140	10	16		55.4			1.1			Sea of Okhotsk.
141	18	1					.7			
142	18	4			49 30					
143	20	16	4.7x							Caspian Sea.
144	23	21					.2			
145	24	3						16		
146	26	5					.2			
147	26	12					.9			
148	27	2					.3			
149	28	6					.3			
	Nov.									
150	1	19					.5			Small preceding movement.
151x	2x	0			48.3	55.3	1.2			Mexico.
152x	2x	10	14 57x	24 50	17 56	29 53	40		78	China Sea.
[illegible]	2	17			39.7		1.0			
154	3	17					0			
155	4	18					.5			
156	5	12	28.0				.7			Altaï. P quite small, uncertain.
157	20	14			.9		1.2			
158	24	9					36			
	Dec.									
159	1	4					.9			
160	1	19					46			
161	18	10					.8			

x affixed to number and date refers to Notes.
x affixed to time of phase indicates that beginning of phase is in time-mark.

No.	Notes

8. Jan. 15. 2^h. Mexico; △ = ca. 90^o. Very strong record. Forerunners strongest on NW. i $_{NE}$ 4^m28^s. i $\overline{S_cP_cS}_{NW}$ 13^m57^s; followed by large oscillations. No simultaneous pulse on NE; e $_{NE}$ $14^m.2$. PS not clearly separated from preceding movement, about $15^m.4$. SS $_{NW}$ $19^m.5$; SSS $_{NW}$ 24^m. On NE very large oscillations of long period in first part of L. Large regular M.

13. Jan. 20. 9^h. Alaï Mountains; △ = ca. 40^o. Deep focus. P small, not quite certain. e $_{NE}$ 35^m 55^s; e 36^m 17^s; i 37^m 55^s; e $_{NE}$ 41^m 17^s; e 42^m 33^s; e $44^m.5$.

15. Jan. 27. 20^h. Burma. The beginning of P small. S large; e $_{NW}$ 28^m 51^s. e $_{NW}$ 29^m 21^s. e $_{NE}$ 29^m 29^s large. M very large.

17. Jan. 28. 21^h. Caroline Islands; △ = ca. 105^o. P' $41^m.5$. PP 42^m 26^s. PPP $44^m.5$. $\overline{S_cP_cS}_{NE}$ 48^m 54^s; e $_{NE}$ 49^m 30^s; e $_{NE}$ 49^m 50^s. PS $_{NE}$ 51^m 35^s. SS $57^m.1$. L earliest on NW.

18. Febr. 2. 23^h. New Zealand; △ = ca. 160^o. Forerunners strongest on NE. P_1' small, $6^m.8$. P_2' 7^m 34^s. e 10^m 25^s. PP 11^m 9^s. e $12^m.5$. PPP $14^m.3$. From about 18^m rather strong movement, but phases not clearly marked. PPS $25^m.o$; SS $_{NE}$ $32^m.1$. Regular L waves begin about $24^h.2$; preceded by less regular waves of long period.

20. Febr. 10. 6^h. Sumatra; △ = ca. 95^o. P quite small, masked by microseisms, a little before 48^m. e $_{NE}$ $59^m.o$; e $_{NW}$ 59^m 3^s. e $_{NE}$ 59^m 14^s. First part of L disturbed by change of sheets. L' about $8^h.8$.

26. Febr. 20. 5^h. Siberia. Deep focus. P and S large. Phases most clearly marked on NE; e $_{NE}$ 46^m 32^s. e $_{NW}$ $54^m.8$. L small.

29. March 7. 0^h. Yugoslavia. The beginning of P small, the reading not quite certain. e $_{NE}$ 21^m23^s. S $_{NE}$ 23^m 21^s. S $_{NW}$ 23^m 29^s. L earliest on NE.

32. March 8. 1^h. Yugoslavia. Strong record. eP 53^m 58^s, quite small; iP 54^m 3^s followed by large oscillations. e 55^m 5^s. iS $_{NW}$ 57^m 3^s, large and clearly marked. On NE small beginning of S 56^m 56^s followed by large oscillations. L immediately after S, very large M.

33. March 9. 4^h. Japan. Strong record. Possibly a small beginning of P earlier than read. e $_{NE}$ 1^m 46^s. PP larger than P. eS $_{NW}$ 10^m 14^s large. eS $_{NE}$ 10^m 19^s, small oscillation; e $_{NE}$ 10^m 39^s large. M large.

45. April 3. 23^h. The phase read, P_1' clearly marked by oscillations of short period. Followed by small oscillations lasting for some minutes. No further phases.

59. April 27. 16^h. Armenia. Strong record. P and S followed by much oscillatory movement. L irregular.

71. June 7. 0^h. North Sea near the coast of England; △ = ca. 700 km. Felt in England. In forerunners and in first part of L oscillations of quite short period superposed on oscillations of longer period. Both P and S followed by oscillations of increasing amplitude.

95. Aug. 10. 21^h. Altaï. Forerunners very large, but all, including P, begin quite faintly, consisting of groups of increasing oscillations. First distinct pulse

No.	Notes

in P 27^m 13^s; increase NE 27^m 25^s; very large oscillations i 27^m 43^s. PP_{NE} 29^m 12^s, 30^s. PP_{NW} 29^m 28^s. e_{NW} 31^m 28^s. Beginning of S uncertain, increase NE 34^m 16^s, 46^s; NW 34^m 30^s. SS_{NW} $37^m.8$; SS_{NE} $37^m.9$. M outside range of paper; pen thrown off NW. Lines cross on NE; later records on the same sheet unreadable.

104. Aug. 18. 14^h. Mongolia. The beginning of P small; i 29^m 34^s, a large swing. Largest amplitudes of P and PP about equal. e_{NE} 32^m 24^s. S large. eSS 39.5; i 39^m 44^s large. L follows soon upon SS, no distinct beginning. Very large M begins between 45^m and 46^m.

108. Aug. 24. 21^h. Baluchistan. Phases well marked, but beginnings not sharp. Increase of P about 43^m 53^s. e_{NW} 50^m 55^s.

113. Aug. 27. 15^h. Baluchistan. Strong record. Much oscillatory movement in forerunners. e 36^m 27^s. PP $37^m.6$; e $38^m.5$. S large, preceded by some increase of movement. e 43^m 19^s, very large oscillations. SS about 46^m, very large. M large.

120. Sept. 9. 20^h. Marianne Islands region. 2 shocks. PP of first shock 55^m 22^s. e $55^m.9$, increase of movement $56^m.3$. Further readings: e_{NE} 61^m 50^s, e_{NW} 62^m 25^s, e_{NE} $63^m.o$, e_{NW} 63^m 34^s, e_{NE} 64^m 40^s, e 64^m 50^s; largest movement at $63^m.o$ and at 64^m 50^s.

131. Sept. 25. 6^h. Sumatra. Δ = ca. 95°. P and PP, $17^m.o$, about equally large. $\overline{S_c P_c S}$ $23^m.7$ not very large, S much larger. PS 25^m 37^s clearly marked. SS $30^m.7$.

135. Oct. 3. 19^h. Salomon Islands. Δ = ca. 130°. Strong record. Additional readings: NE 36^m 15^s; NW $37^m.o$; NE $37^m.7$; NW 38^m 58^s; $40^m.4$; NE 45^m 3^s; NW 46^m 3^s; $47^m.1$; 52^m large; NW $54^m.8$. NE 57^m large.

138. Oct. 5. 22^h. Turkestan. Δ = ca. 43°. Deep focus. Phases in forerunners large and clearly marked; L small. Additional readings: i 40^m 20^s; e 46^m 18^s; e 46^m 38^s.

139. Oct. 10. 0^h. Pacific Ocean; Δ = ca. 125°. Beginning small, uncertain. 41^m 2^s a clearly marked phase on NE. Followed by irregular movement, phases not clearly marked; additional readings $48^m.4$; $52^m.4$; $56^m.9$. The beginning of L uncertain; from about 75^m on NW some very large waves of period of about 1^m. Later large, regular M.

152. Nov. 2. 10^h. China Sea. Phases very clearly marked. On NE, S followed by large oscillations e $25^m.5$. PPP $2o^m.o$. SSS $33^m.9$.