

Geodætisk Institut

Proviantgaarden, Copenhagen, Denmark.

Bulletin
of the seismological station

SCORESBY-SUND

 $\varphi = 70^{\circ}29' N.$ $\lambda = 21^{\circ}57' W.$ $h = 69$ m.

Lithologic foundation: Gneiss.

No. 3. Jan.—June 1929.

Instruments:

Galitzin pendulums with galvanometric registration.

Constants:

Component	l	T_1	A_1		T	k
N	cm 12.0	sec 12.4	cm 100		sec 11	75
				until $10/6$ from $10/6$	$12^{2/3}$	90
E	12.0	11.9	100		10	65
				until $2/3$ $2/3$ — $27/6$ from $27/6$	$11^{1/2}$	70
Z	14.1	10.1	100		12	85

The values of T and k are approximate mean-values; the damping has been nearly aperiodic. Z has not been very stable; the period has varied from about 2^s to 6^s .

Time-corrections have been determined daily by means of Nauen scientific time-signals and time is, in general, known to the second.

Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks
			P	S						
	1929									
	Jan.		<i>m s</i>	<i>m s</i>	<i>h m s</i>	<i>m s</i>	<i>h m</i>	<i>h m</i>	°	
1	4	17			55 55					
2	6	0			5 10					
3	8	8						29		
4	8	9						33		
5*	13*	0	<i>i</i> 13 3	<i>i</i> 21 4	15.5	<i>i</i> 25 0			58	
6	13	16						36		
7	13	19						24		
8	14	3						.1		
9	14	18						.4		
10*	16*	8			22.3	29.5	.8			
11*	17*	11	56.6	64 11					55	
12	19	3							57	
13	20	15			.3					
14	21	6						.2		
15	21	10	40.2	<i>i</i> 48 12	44.9				58	
16	22	15						.4		
17*	24*	20	47 58	56.9	50.8	62.4			67	
18	25	2					.1			
19	26	3					.1			
20	26	15					.0			
21	28	22					.7			
22	30	17			21.7		.8			
23	31	18			.5		.7			
	Febr.									
24*	1*	17	<i>i</i> 23 52	31 32						
25*	2*	0	11.9	21 9	21 37		.5		70	
26	3	3					.5			
27	3	18					.7			
28	4	7						.2		
29	4	11					.0			
30	5	4					.3			
31	6	7			7 24					
32	8	2			31		.7			
33	10	4					.3			
34*	10*	15	50.6	59.6	53.4	60.0				
35	10	17					.7			
36	13	22					.9			
37	15	8					.6			
38	17	21						.4		
39*	22*	20	52 6	60 22	61 37	61 58			60	
40*	26*	9	<i>i</i> 9 59	17.4			.4		53	
41	27	20						1		
	March									
42	1	7		47.0	42.6	50.5	55		Alaska.	
43	1	9			12.2		20			
44	1	16					.3			
45	1	19					.5			
46	1	21					.6			

Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks
			P	S						
	1929									
	March		<i>m s</i>	<i>m s</i>	<i>h m s</i>	<i>m s</i>	<i>h m</i>	<i>h m</i>	°	
47	3	3						.4		
48	3	9					.4			
49	3	16						59		
50	3	18					.7			
51	5	16					.6			
52*	7*	1	<i>i</i> 44 25	52 17					57	
53	9	2	24.4		34.7	35.0	.9			
54*	9*	11			10.4	15.2	.9			
55	10	0					.9			
56*	10*	14			51 53	57 40				
57	10	23			4		.3			
58	11	13					.9			
59	12	3					.0			
60	13	11						19		
61	14	23					.0			
62	15	13					.9			
63	15	18			11.6		.15			
64	16	6					.9		Faint.	
65	18	2						12		
66	18	23			41.6		1.0			
67	19	10					.0			
68*	19*	21	5 4							
69	20	21			39.6		.9			
70*	21*	2	48 20	58 1	62				74	
71	23	20			34		.9			
72	26	5						30		
73	27	22					.27			
74	28	3					.8			
75	28	20			.7		1.2			
76	30	16					.9			
77	31	3					.8			
78	31	6					.3		Faint preceding movement.	
79	31	20			38 8		.9			
	April									
80	2	4					.1			
81	5	9					.2			
82	6	0					.0			
83	6	1						56		
84	6	4			15.6		21			
85	6	5						13		
86	7	19	43.5	52 48			1.1		70	
87	8	10			<i>i</i> 39 17	40 16			Faint preceding movement.	
88	9	3					.3			
89	9	4			21		.9			
90	9	6					.0			
91	10	6					.0			
92	10	10					.0			
93	10	18					.5			
94	13	7					.9			

Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks				
			P		S									
			m	s	h	m	s	m	s	h	m	h	m	°
	1929													
	June													
191	21	5			5.1		5.8	.7						
192	22	16						.7						
193	22	18			59.1									
194	22	22								37				
195	23	4						.1						
196	23	7						.3						
197	23	22			11	29	12.3	.8						
198	24	18			49			1.1						
199	25	5						.0						
200	25	7						.0						
201	26	6	39	19	47.3		42.8	1.0		58				
202	26	17	0	46	10.2			.4		72				
203	26	17						.9						
204*	27*	13	2	55		6	11	8	6					
205	27	22						.5						
206*	27*	22	40.4		i 41	25								
207	28	1			.2			.6						
208	28	2						.3						
209	30	2	58	28	62.4		69.9							
210	30	5			.5			1.2						

Scoresby-Sund.

NOTES

- No. 5. Jan. 13. 0^h. Kurile Islands. Large earthquake. No Z record. First forerunners large on N; *iPPP*, 15^m53^s, followed by large oscillations. S exceptionally large on E, followed by large movement, possibly other phases. *i_E* 27^m45^s followed by very large movement, largest maxima in the record. L of long duration.
- No. 10. Jan. 16. 8^h. Philippine Islands. Additional readings: 30^m22^s; SS 36^m.0.
- No. 11. Jan. 17. 11^h. Venezuela. No Z record. P quite small. S clearly marked on N. From S the movement has the appearance of L waves.
- No. 17. Jan. 24. 20^h. Central America. P, PP and PPP, 52^m40^s, clearly marked on E, quite small on N. S small, not clearly marked, read on E; following movement larger. SS and SSS, 65^m, large groups of oscillations. The beginning of L uncertain; M large, regular. There may be an error of some seconds in time-determination, since the rate of the clock has changed abruptly.
- No. 24. Febr. 1. 17^h. Zéravchan; △ = c. 54°. Deep focus (depth c. 200 km.). Strong movement follows P. On Z, *pP* 24^m46^s and *sS* 25^m8^s clearly marked. S; *isS* 32^m53^s; 34^m.9 clearly marked on N. 37^m.0 begins a group of very large oscillations. L small, irregular.
- No. 25. Febr. 2. 0^h. Atlantic Ocean. The beginning of P quite small, the reading uncertain; increasing movement without clearly marked phases. S read on E; no corresponding movement on N; 21^m37^s clearly marked on N and E. After S continued strong movement without clearly marked phases.
- No. 34. Febr. 10. 15^h. Central America. Phases not clearly marked. P quite small, the beginning possibly earlier than read. SS 64^m.2. The beginning of L uncertain; some regular M groups.
- No. 39. Febr. 22. 20^h. Atlantic Ocean. The beginning of P not quite certain. S large and well defined; in following movement distinct onsets. 67^m.5 large oscillations (*iL?*), immediately followed by a few M groups.
- No. 40. Febr. 26. 9^h. Alaska. *iP_Z* possibly preceded by small movement. S not clearly marked.
- No. 52. March 7. 1^h. Aleutian Islands. Very strong record. P very large, followed by large movement. S very large, earliest on N, possibly 52^m11^s, but not quite certain owing to strong preceding movement; *S_E* 52^m21^s. Following movement very strong. M very large.
- No. 54. March 9. 11^h. New Zealand region. Increasing movement without clearly marked phases. L begins about 11^h.9—12^h.0. Some regular M groups about 20 min. later.
- No. 56. March 10. 14^h. Marianne Islands. Faint movement on Z 47^m.5, possibly P. PP 51^m53^s. Distinct pulses 57^m40^s; 58^m7^s. L faint, the beginning uncertain.
- No. 68. March 19. 21^h. Central America. The beginnings of later phases not clearly marked.
- No. 70. March 21. 2^h. Central America. No Z record; N disturbed. The beginning of L uncertain.
- No. 110. May 1. 15^h. Persia. Strong record. *iP* 46^m41^s, followed by strong movement. PPP 49^m.7. On N, S clearly defined, *i* 54^m2^s; on E some increase of movement 53^m52^s; large movement begins *i* 54^m13^s. *i_N* 58^m.5 followed by very large movement.
- No. 129. May 18. 6^h. Asia Minor. No Z record. P quite small, most clearly marked on E. PP larger. S large, clearly marked on N and E. SS large on N, hardly marked on E. On N strong movement continues into L, the beginning of which is uncertain.
- No. 130. May 20. 5^h. Aleutian Islands. P small but distinct on Z. S small, not well defined. The beginning of L uncertain.
- No. 139. May 26. 22^h. Pacific Ocean near Alaska. The beginning of P quite small, not clearly marked, followed by larger movement; *e* 48^m52^s. S large, read on N, begins later on E. SS immediately followed by movement of large amplitude and periods of about 1 min. Later M very large.
- No. 149. June 2. 21^h. Two earthquakes, Japan Sea and Pacific Ocean according to URSS. No N record. *iP* 49^m40^s, well defined on Z, and *iS* 58^m48^s, sharp and large on E, seem to belong to the first earthquake; 61^m8^s possibly S of the second.
- No. 150. June 3. 20^h. Turkestan. No E record. S quite small, the beginning uncertain, about 45^m.9.
- No. 162. June 9. 9^h. Kurile Islands. E record only. P small, the beginning not quite certain. L early, clearly marked.
- No. 165. June 10. 23^h. Arctic Sea. P (dilatation) unusually large, marked by 3 large oscillations of period of about 16 sec. S large; *iS* read on N; on E earlier increase of movement, later large movement continued in large L group, *iL* 8^m28^s. On N, L clearly separated from S; *iL_N* 9^m4^s. Regular M groups, period 10—12 sec.
- No. 166. June 12. 12^h. Pacific Ocean. Distinct later phases, but beginnings not clearly marked.
- No. 168. June 13. 0^h. Kurile Islands. *e_Z* 24^m49^s seems to be P of a second shock; the corresponding S not clearly marked. *i* 36^m23^s, P of a third, stronger shock; S 45^m1^s.
- No. 169. June 13. 9^h. Mindanao region. The beginning of P small, the reading not quite certain. PP well marked. *S_cP_cS* and later phases, 50^m.3; 51^m8^s; 56^m.4, well defined on N. L earliest on E.

Scoresby-Sund.

NOTES

- No. 177. June 15. 19^h. Mindanao region. Additional readings: 60^m28^s; 77^m.1.
- No. 181. June 16. 23^h. New Zealand. $\Delta = 150^\circ$. Several well marked phases, especially on *N*. *PP* 10^m55^s; 14^m6^s; *i_N* 15^m33^s, a strong phase, on *N* only; 20^m.4; 25^m.6; 27^m.6; *SS* 30^m.3; 31^m.4. *M* large, regular.
- No. 204. June 27. 13^h. South Sandwich Islands. *P* small; *P'* larger. Phases most clearly marked on *N*, but no time-marks; largest phases about 9^m.6; 17^m; 24^m; 28^m. On *E* 12^m48^s; 15^m.0. Large, regular *M*.
- No. 206. June 27. 22^h. $\Delta = c. 500$ km. *P* begins quite faintly, increases without distinct pulse; continued oscillations of about 10 sec. period. *i_N* 41^m25^s; *e_E* 41^m.5; movement increases into regular *M* group of period of about 10 sec.

Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks
			P	S						
	1929 July		m s	m s	h m s	m s	h m	h m	°	
1	2	0			.9	62.3	1.5			
2	2	2					.9			
3	3	1	0 58	7.3	3.1	10.9			43	
4	3	2					.8			
5	3	8						.8		
6	3	18			22.8		.8			
7	3	21						.1		
8*	4*	4	36 17	42.3	37.8	45			40	
9*	4*	7	18 7	21.2						
10*	4*	7								
11*	4*	8	0 25	3.4						
12	4	9			.8		1.2			
13*	5*	14	i 28 52	36 47	31.2	40.5			57	
14*	5*	22	46 5	54.1	48.3	58.3			58	
15	6	2	13 38	21.7	25.7					
16*	6*	9	56 14	i 64 19	68.1				59	
17	6	14					.3			
18	7	3					.3			
19	7	6			29		.7			
20	7	9			37.0		1.0			
21*	7*	21	i 32 59	40 57	35.4	44.8			57	
22	8	2			14.5		.6			
23	8	10					.6			
24	8	17					.3			
25	8	18					.8			
26	8	19			.4		.6			
27	9	1					.3			
28	9	5			55		1.7			
29	9	8			.9		1.1			
30	9	17			48		1.3			
31	10	15					.2			
32	10	16					.8			
33	11	1					.9			
34	11	13			54		1.0			
35	11	21	6 52	15	10.4	19	.4		41	
36	12	16	2.5	8 38	4 0		.15			
37	12	18	11.5	21.6			.7			
38	12	23						40		
39	13	5					.8			
40	13	7			.8		1.0			
41	13	15			10.3		.7			
42	14	6					.8			
43	14	8					.6			
44	14	9			18.4					
45*	14*	9	47 4	55 28	50 55				62	
46*	15*	7	53 37	61 13	55.6	64 52	1.2		54	
47	15	10					.3			
48	16	1					.9			
49	16	20					.2			
50*	17*	8	i 47 54	55 48	51.2	60.2			57	

Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks
			P	S						
	1929 July		m s	m s	h m s	m s	h m	h m	°	
51	17	20			.4		1.0			
52	18	7					.3			
53	20	12					.0			
54	21	10			47.2		1.1			
55	21	13			40.2		1.1			
56	23	15					.8			
57*	23*	18	44 48	45 56						
58	23	20		7 23						
59	23	21						2		
60	23	21					.8			
61	24	3					.6			
62	24	19						35		
63	25	0			33.9					
64	25	13					.1			
65	25	15	18 30	27.0			.7		63	
66	25	23	9 52		20.3					
67	26	18					.0			
68	26	22	59 46	69 16	62.6	69.9	1.4		72	
69	27	13			12.1		.3			
70	30	4	5 3	14.2			.5		69	
71	30	7	55.0	64.0			1.3			
	Aug.									
72	1	5	14 41		24 57	25 14				
73	1	8			35.1		1.4			
74	3	13			10.0		.8			
75	3	15			15.9		.9			
76	3	18	55 22	63 17			1.3		57	
77	3	21						.9		
78	4	9			19.4	22.6	.27			
79	4	15			25 33		.28			
80	4	22			40		1.4			
81	5	14			.8		1.3			
82*	6*	1	31 27							
83	6	13					.3			
84	6	18						23		
85	7	7					.6			
86	7	20					.9			
87	8	13	9 31	19 37	12.6	24.6			79	
88	9	3					.5			
89	10	2						10		
90	11	18			28.8		1.3			
91	12	11						43		
92	12	20					.9			
93	13	19			31		.9			
94	13	20						46		
95	14	2			37.5		1.3			
96	14	6						57		
97	14	15						.8		
98	14	19			13 9		.6			

Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks
			P	S						
			m s	m s	h m s	m s	h m	h m	°	
99	1929 Aug. 15	15					.6			
100	15	20	8 9	17 45					73	
101	16	11					.0			
102	16	21			48 58		1.3			
103	16	23	31 48					34		
104	17	8							3	
105	17	23	52 2	61 20	56.3	59.8	1.3		70	
106	18	6					.8			
107	18	8			55		1.5			
108	19	2	i 55 27	65.7	58.6	71.2	1.4		81	
109	19	11					.6			
110	19	17			59.1		1.2			
111	19	20	56 50	67.1			1.5		81	
112	20	16	50 41	60.9			1.3		80	
113	21	10			.0					
114	22	17					.6			
115*	27*	23						29		
116*	28*	5						41		
117*	28*	5						59		
118*	28*	15						37		
119*	28*	15						49		
120*	28*	15						57		
121	28	19	2.8	12.0	5.4		.4			
122*	28*	22						44		
123	29	6						.5		
124	29	18						34		
125	29	20					.5			
126*	29*	23						36		
127	30	7			34.7		1.0			
128	31	19			39.7		.9			
129	Sept. 1	16			.3		1.0			
130	2	11			37 0	37 50				
131	3	12	18.1	26 34	33.6		.7		62	
132	4	9						45		
133	4	22			45		.9			
134	5	10					.6			
135	5	14					.7			
136	8	8							32	
137	8	11						18		
138	8	14						.6		
139	9	4					.5			
140	10	20			42.9		1.4			
141	10	22					.5			
142	11	22			41 22		1.0			
143	14	3					.2			
144	14	13			27.9		.6			
145	17	5			55		1.2			
146	17	13					.3			

Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks
			P	S						
			m s	m s	h m s	m s	h m	h m	°	
147*	1929 Sept. 17*	19			33.6	36.9	.7			
148	21	17						0		
149	22	13						.4		
150	26	16					.3			
151	27	23			36			50		
152	Oct. 2	9			.8		1.4			
153	2	17						38		
154	5	3			.5		.9			
155*	5*	17	9 36	i 17 27			.5		57	
156	6	6			27.9		.7			
157*	6*	8	4.1	14 32	20.0	23.9	.5			
158	6	14					.6			
159	7	16					.3			
160	8	17			37 48	38 49				
161	14	10	19 16	27.0	30.5		.6		56	
162	14	20					.6			
163	16	20			48 59	54.0	1.1			
164	18	0					.5			
165*	19*	10	26.5		36 50	37.8				
166	19	20			44 51					
167	20	16					.6			
168	21	11					.5			
169	24	7					.3			
170	Nov. 1	7			5 38		.2			
171	4	16					.6			
172	5	12					.5			
173	8	4					.0			
174	9	2					.2			
175	11	12						28		
176	13	1					.7			
177*	15*	19			8 30	15 4	.6			
178	16	11					.5			
179*	17*	4			1.2	8 2				
180	18	6					.7			
181*	18*	20	38 19		43 23					
182*	23*	0			21.3	28 15	1.0			
183	27	8					.3			
184	Dec. 6	12					.5			
185	6	17			.2		.7			
186	6	21					.4			
187	9	7			.2					
188	13	5			1.6			8		
189	13	9					.5			
190	14	22						32		

Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks				
			P		S									
			m	s	h	m	s	m	s	h	m	h	m	°
	1929 Dec.													
191	15	1											40	
192*	17*	11	8	16	16	8	10	46						
193	17	18								.2				Small preceding movement.
194	17	21					58.0			.4				
195	18	5								.5				
196	18	7					22			.7				
197	18	13								.5				Small preceding movement.
198	24	5								.8				
199	30	12								.1				
200	31	1					27.3	36.1		.8				
201	31	5								.6				

Scoresby-Sund.

NOTES

- No. 8. July 4. 4^h. Alaska. *P* small, *PP* larger. *S* quite small on *E*, larger but not very clearly marked on *N*. After *SS* movement continues into *L*, which is irregular.
- Nos. 9-11. July 4. 7^h, 8^h. 3 records of similar appearance, probably earthquakes from one and the same origin. The first shock the strongest, but *P* and *S* quite small, their readings not certain. The beginning of *L* uncertain; a regular *M* group. The second, smallest, shock about 17 min. after the first one, *P* and *S* not distinguishable. *P* and *S* of the third shock small, uncertain.
- No. 13. July 5. 14^h. Aleutian Islands. Strong record, phases clearly marked. *PP* small, *PPP* 32^m25^s much larger, and larger than *P*. *SSS* 43^m.3 large and clearly marked on *N*. *M* large.
- No. 14. July 5. 22^h. Pacific Ocean. *PPP* 49^m.6 larger than *P* and *PP*. *S* quite small, uncertain, followed by larger movement, which on *N* begins by a clearly marked pulse 54^m36^s, possibly *PS*. 56^m.0 a clearly marked phase.
- No. 16. July 6. 9^h. Atlantic Ocean. First forerunners quite small. From about 70^m some waves of long period and large amplitude; following *L* small.
- No. 21. July 7. 21^h. Aleutian Islands. Large record, clearly marked phases. *PP* small. *PPP* 36^m.4, larger than *P* and *PP*. A distinct phase 38^m.9. Some increase of movement before *S*. *PS* large, 41^m28^s; following movement large. *SSS*, 47^m.4, and following movement very large. Very large *M*.
- No. 45. July 14. 9^h. Sea of Okhotsk. No *E* record. Phases clearly marked. *P* increases 47^m15^s. *PPP* about as large as *P*. After *S*, movement of long period; the beginning of *L* uncertain. 10^h16^m.3 a clearly marked phase on *Z*, possibly *P* of another shock, but other phases not distinguishable.
- No. 46. July 15. 7^h. Persia. Clearly marked phases. On *N*, a well defined phase 63^m24^s, possibly $\overline{S_c P_c S}$. *L* regular, not large.
- No. 50. July 17. 8^h. Pacific Ocean. No *Z* record. No *PP* but large *PPP*. The beginning of *S* small. 57^m.7 possibly $\overline{S_c P_c S}$. 62^m.4 *SSS* or the beginning of *L*.
- No. 57. July 23. 18^h. Iceland. No *N* record. *P* begins quite faintly, possibly a few seconds earlier than read; from 44^m57^s stronger movement of short period superposed on long period movement. 45^m56^s a pulse on *E*, read for *S*. i_E 46^m7^s, immediately followed by very large *M*. e_Z 46^m7^s; M_Z begin about 1/2 min. later.
- No. 82. Aug. 6. 1^h. Near earthquake; Jan Mayen according to *URSS*. The beginning of *P* not very clearly marked, followed by oscillations of period of about 10 sec., large on *E*. e_N 32^m23^s; large *M* groups begin on *N* 32^m.8. On *E*, irregular not large movement from about 32^m.5; small *M* groups begin about 33^m.4, a large *M* group about 34^m.7. In *M* period of about 8 sec.
- Nos. 115-120, 122. Aug. 27, 28. Small wave-groups, all very much alike but of different strength. They all begin quite faintly, earliest on *E*; *N* records on the whole stronger. The first group begins on *E* 28^m21^s with waves of period of about 10 sec.; from about 29^m.3 smaller movement with waves of short period superposed; from about 30^m.0 larger waves of period of 6-7 sec. *N* begins 28^m.8 with somewhat irregular waves; from about 29^m.7 quite regular waves of period of 6-7 sec. Small *Z* records of first 2 groups only.
- No. 126. Aug. 29. 23^h. Group of waves, larger and of a somewhat different type from nos. 115-120. The beginning more definite, and simultaneous on *N* and *E*, 35^m.6. No *Z* record.
- No. 147. Sept. 17. 19^h. Pacific Ocean. No *Z* record. Very strong microseisms. Some movement previous to first phase read. e_N 33^m45^s. Large *M*.
- No. 155. Oct. 5. 17^h. Kamtchatka. *P* clearly marked on *N* and *Z*; *PP* and *PPP* distinct phases on *N*, but beginning not clearly marked. After *S*, about 19^m.0, another phase. *SR* visible, but not clearly marked. On *N*, some large regular waves in first part of *L*.
- No. 157. Oct. 6. 8^h. Pacific Ocean. No *Z* record; some microseismic movement; the reading of *P* not certain. *PR* quite small.
- No. 165. Oct. 19. 10^h. Chile. No *Z* record; some microseismic movement; the beginning of *P* faint, possibly earlier than read. *PP* 29^m.9, not large. 37^m.8 on *N* only; followed by large movement of long period. e_E 38^m.6. *SS* 43^m.3. Rather strong movement of long period continues after *S*. In first part of *L* somewhat irregular large oscillations of long period; later *L* not large.
- No. 177. Nov. 15. 19^h. Caroline Islands; $\Delta = \text{ca. } 100^\circ$. *P* possibly 4^m.3, quite faint. *PP* 8^m30^s. On *N*, following phases very clearly marked: $\overline{S_c P_c S}$ 15^m4^s; \overline{PS} 17^m35^s; *SS* 23^m.2. e_E 15^m.7 possibly $\overline{S_c P_c P_c S}$.
- No. 179. Nov. 17. 4^h. Mindanao region. $\overline{S_c P_c S}$ 8^m2^s very clearly marked on *N* and *E*. Followed by irregular movement without clearly marked phases.
- No. 181. Nov. 18. 20^h. New Foundland. *N* and *E* records quite unreadable owing to exceptionally strong microseismic movement. The beginning of *P* not quite certain. *Z* stopped working at about 47^m.

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NOTES

No. 182. Nov. 23. 0^h. New Guinea; $\Delta = \text{ca. } 110^\circ$. Additional readings: PS 30^m43^s; SS 36^m.6.

No. 192. Dec. 17. 11^h. Between Kamtchatka and Aleutian Islands according to Strasbourg. Very strong record. On Z, P seems to begin quite faintly 8^m16^s, increases 8^m23^s and again *i* 8^m38^s. The reading of S not quite certain owing to the difficulty of disentangling the traces of the different lines; later phases unreadable.