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BULLETIN
OF THE SEISMOLOGICAL STATION
KØBENHAVN

NOS. 1 — 4

1927



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No. 1.

1927.

Den danske Gradmaaling.

Proviantgaarden, Copenhagen, Denmark.

Bulletin of the seismological station

KØBENHAVN

$\varphi = 55^{\circ}41' \text{ N. } \lambda = 12^{\circ}27' \text{ E. } h = 13 \text{ m.}$

Foundation: chalk.

No. 1 March, April 1927

Instruments:

Galitzin horizontal pendulums with galvanometric registration:

N component (no. 151) $l = 11.9 \text{ cm. } T_1 = 11^{\text{s}}.74 \text{ } A_1 = 100 \text{ cm.}$
E component (no. 152) $l = 11.9 \text{ cm. } T_1 = 11^{\text{s}}.92 \text{ } A_1 = 100 \text{ cm.}$

For the rest of the constants the following mean values were adopted:

N				E			
Date	μ^2	T	k	Date	μ^2	T	k
$\frac{1}{2} - \frac{10}{2}$	-0.06	12.5	76	$\frac{1}{2} - \frac{22}{2}$	0	12.6	63
$\frac{10}{2} - \frac{21}{2}$	0.10	12.7	76	$\frac{22}{2} - \frac{1}{2}$	0.08	12.7	101
$\frac{21}{2} - \frac{1}{2}$	0	12.5	102				

Wiechert 1000 kg. horizontal seismograph.

Wiechert 1300 kg. vertical seismograph.

The mean values of the constants were:

Component	T	ν	q	V
<i>N</i>	9.1	4.1	0.6	222
<i>E</i>	9.3	3.8	0.5	194
<i>Z</i>	6.1	5	0.2	165

Milne-Shaw seismograph, *N* component, of the standard type with the approximate constants $T = 12^{\text{s}} \nu = 20 \text{ } V = 175$

No. 1.

— 2 —

1927.

København.

No.	Date	Phase	Time (G. M. T.)	Period	Amplitude			Remarks				
					A _N	A _E	A _Z					
	1927		<i>N E Z</i>	<i>h m s</i>	sec	μ	μ	μ				
1	March 3	<i>P</i>	<i>e e</i>	1 19.6					$\Delta =$ c. 12000 km. South Celebes and Flores according to Batavia. No time-marks on Galitzin <i>N</i> com- ponent.			
		<i>P'</i>		23.7								
		<i>PP</i>		23 59								
			<i>e e</i>	24 29								
		$\overline{S_e P_e S}$		30 9								
		<i>PS</i>		33.1								
		<i>PPS</i>		34.1								
		<i>SS</i>		39								
				44								
			<i>e e</i>	46								
			<i>e</i>	48								
		<i>L (Q)</i>	<i>e</i>	53								
		<i>M₁*</i>		56.9	55	— 111						
		<i>L</i>	<i>e e</i>	57								
		<i>M₂*</i>		2 2.6	25	— 77						
		<i>M₃</i>		14.3	19		— 40					
		<i>M₄*</i>		14.4	17; 20	30		— 33				
		<i>C</i>			c. 18							
<i>L'</i>		3 11	c. 30									
<i>M₁'</i>		25.8	20		5							
<i>F</i>		4.2										
2	" 3	<i>P</i>	<i>e e e</i>	17 1 45					Kamtschatka or Kurile Islands. No time-marks on Galitzin <i>N</i> com- ponent.			
		<i>PP</i>		4.6								
		<i>S</i>		11.2								
		<i>SS</i>		16.1								
			<i>e</i>	23								
		<i>L</i>		27								
		<i>M₁</i>		28.4	35		19					
		<i>M₂</i>		30.6	25		— 19					
		<i>M₃*</i>		34.9	20	— 7						
		<i>M₄</i>		36.2	15		— 10					
		<i>C</i>			c. 15							
		<i>F</i>		19.1								
		3	" 6	<i>P</i>	<i>e e</i>	1 42 38						$\Delta =$ 5600.
				<i>PPP</i>	<i>e</i>	45.7						
				<i>S</i>		49 49						
<i>L</i>				57								
<i>F</i>				2.7								
4	" 7			<i>P</i>	<i>i e i</i>	9 39 32					$\Delta =$ 8330. Compression. Japan. The beginning of the record dis- turbed by work at the station.	
		<i>PR₁</i>		42 19								
		<i>PR₂</i>		44 17								
		<i>PR₃</i>		45 17								
		<i>S</i>	<i>i i (?)</i>	49 17								
			<i>e e</i>	53.5								

No. 1.

— 3 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
		N	E	Z	h	m	s		A _N	A _E	A _Z	
4	1927 March 7	SR ₁					54.1					Maxima on the horizontal components can not be evaluated as the light is too faint on the photographic records and the pens of the Wiechert seismograph have left the paper on one side.
		SR ₂					58.7					
		L (Q)	e	e	10	2						
		L (R)					11					
		M					17.2	15			600	
		C						c. 15				
		L'					11.8					
5	" 9	F					14					
			e	e	16	36.6						
			e			41.4						
		L	e			50						
		"		e		53						
		M ₁				53.3		22	— 4			
		M ₂				54.1		22		4		
6	" 12	C						c. 20				
		F				17.7						
7	" 12	L			13	0						△ = 15—16000. South-Eastern Pacific.
		F				25						
8	" 13	P'		e	19	4.1						
		PP				6.6						
		P _c P _c S				7.6						
		SS				24.7						
		SSS				30.3						
		L				42						
		M ₁				53.6		26		4		
		M ₂			20	4.7		20		— 3		
9	" 14	M ₃				4.8		20	2			
		F				21.2						
10	" 13		e	e	5	57						
		L			6	28						
		F				7.4						
11	" 14				22	3						
		L				17						
12	" 15	F			4	51						No Z record. China according to Sverdlovsk.
					5	6						
					18.0							
		L			18	15		13	5			
		M ₁				17.5		14		— 5		
13	" 15	M ₂				26.4						No records from 8 ^h 0 ^m to 17 ^h 30 ^m .
		F				19.0						
14	" 15				17	30						
						50						

No. 1.

— 4 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	sec	μ	μ	μ
13	March 15	P		e	e	21 58.4				Kouen-Loun according to Sverdlovsk. L irregular.
		S	e	i		22 6 22				
		SS				11.3				
		(L)				17				
		M ₁				19.7	10	— 12		
		M ₂				23.2	13		— 9	
		M ₃				24.3	12		— 9	
		M ₄				26.5	11	— 9		
		F				23.2				
14	" 16	P			e	7 4 27				Kurile Islands according to Sverdlovsk.
		S	e	e		14.5				
		L				32				
		M ₁				40.1	18	3		
		M ₂				40.3	18		5	
		F				8				
15	" 20		e			16 35.2				
				e		40.5				
		L				54				
		F				18				
16	" 20	L				c. 9 35				Disturbed, change of sheets.
17	" 21	(L)				10.7				The beginning disturbed by work at the station.
		F				11.3				
18	" 21	S _c P _c S	e	e		15 29 47				There is a faint movement previous to the first given phase.
		S	i	i		30 34				
				e		35.6				
		SS	i	e		37 35				
		(SSS)				40.9				
				e		47				
		L	e			51				
		"		e		52				
		M ₁				55.8	32	— 18		
		M ₂				56.3	28	13		
		M ₃				16 3.5	20		— 7	
		M ₄				4.8	20	7		
		M ₅				12.5	17	— 6		
		M ₆				14.0	17		9	
		F				17.7				
19	" 22		e			1 20				
		L				39				
		F				2.6				
20	" 22	L				23 7				
		F				13				

No. 1.

— 5 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
					<i>h</i>	<i>m</i>	<i>s</i>		<i>A_N</i>	<i>A_E</i>	<i>A_Z</i>	
	1927		<i>N</i>	<i>E</i>	<i>Z</i>			sec	μ	μ	μ	
21	March 24		<i>e</i>			14	52.4					Crete. Reading of first phases uncertain because of microseismic move- ment.
			<i>e</i>				55.2					
			<i>e</i>	<i>e</i>			55.8					
		<i>L</i>					59					No <i>Z</i> record.
		<i>M₁</i>				15	2.7	13	12			
		<i>M₂</i>					3.3	12		12		
22	" 25	<i>F</i>					18					Reading of first phases uncertain as under 21.
				<i>e</i>		3	54.7					
		<i>S</i>					56.9					
		<i>L</i>					59					
		<i>M₁</i>				4	2	16		— 4		
		<i>M₂</i>					3.2	15	— 4			
23	" 25	<i>F</i>					20					Aleutic Islands according to Sverd- lovsk. Strong irregular microseismic move- ment.
		<i>P</i>	<i>e</i>		<i>e</i>	13	6 6					
		<i>S</i>					15.4					
		<i>L</i>					30					
		<i>M₁</i>					33.6	22		— 6		
		<i>M₂</i>					43.6	18	— 6			
24	" 25	<i>M₃</i>					45.0	17		— 7		Three similar groups of <i>L</i> waves.
		<i>F</i>					14.2					
		<i>L</i>				21	8					
		<i>F</i>					10					
25 a	" 29	<i>L</i>				22	43					
		<i>F</i>					48					
25 b	" 29	<i>L</i>				23	18					
		<i>F</i>					22					
25 c	" 29	<i>L</i>				23	26					
		<i>F</i>					30					
26	" 30	<i>L</i>				8						Very faint. No time-marks on Galitzin records.
27	" 30	<i>L</i>										Time cannot be determined, time- marks failing. Probably between 14 ^h and 16 ^h .
28	" 31	<i>L</i>				21	50					Strong irregular microseismic move- ment.
		<i>M₁</i>					52.2	16		5		
		<i>M₂</i>					52.5	15	— 5			
		<i>F</i>					22.2					
29	April 1	<i>P'</i>	<i>i</i>	<i>e</i>	<i>i</i>	19	24 59					*) Time-mark.
					<i>e</i>		26 33*)					
		<i>P_cP_cS</i>	<i>e</i>	<i>e</i>	<i>i</i>		28 1					
			<i>e</i>		<i>e</i>		30 29					

No. 1.

— 6 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks				
							A _N	A _E	A _Z					
	1927		N	E	Z	h	m	s	sec	μ	μ	μ		
29	April 1	PPP				31	19							
			e		e	33.6								
		$\overline{S_e P_e P_e S}$				34	33							
					e	36.7								
		$\overline{S_e P_e S P}$				37	55							
		PPS				40	13							
		SS				47.0								
		SSS				51.3								
		F				21.4								
30	" 3	L				14	33							
		F				52								
31	" 4		e		e	5	20.7							
		L				38								
		F				6.1								
32 a	" 6					19	13							
		F				20							Irregular movement visible on Galitzin records only.	
32 b	" 6					20	37							
		F				54								
33	" 7	L				18	41							
		F				55								
34	" 9	L				9	48							
		F				10.1								
35	" 9		e		e	17	15	59 ^{*)}						*) Time-mark.
			e		e	20.2								
		L	e			36								
		"		e		42								
		F				18								
36	" 9	L				19	56							
		F				20.1								
37	" 10	(L)				12							Seismic?	
		F				14								
38	" 13	P			e	13	56	42					Luzon. An increase of L about 15 ^h 19 ^m is probably due to a second chock which occurs 50 ^m after the first one.	
					e	57	21							
					e	14	6.8							
		$\overline{S_e P_e S}$	i			7	5							
		PS	i	e		8	13							
		SS				13.2								
		SSS				17.2								
			e			19.7								
					e	25.0								

No. 1.

— 7 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks		
									A _N	A _E	A _Z			
	1927		N	E	Z	h	m	s	sec	μ	μ	μ		
38	April 13	L (Q)	e			27								
		L		e		30								
		M ₁				29.5		28	19					
		M ₂				31.9		18		— 7				
		M ₃				32.6		15	10					
		M ₄				41.1		15			7			
		F				15.5								
39	" 14	P		e	e	6	37	58					Chile and Argentine.	
		P'			e	41	55							
			e	e		42.2								
		PP	e	i	e	42	42							
					i	43	13							
			e			45	13							
		PPP			e	45	36							
		S _c P _e P _e S		i		49	31							
		"	i			38								
		S	e	i		50	23							
		PS	e	e		52.1								
		PPS	i	e		53	3							
					e	54	6							
		SS				58								
		SSS				7	2							
		L	e			12								
		M ₁				14.3		30	— 32					
		M ₂				27.7		20		— 28				
		M ₃				27.9		20	— 23		22			
		M ₄				33.8		18	15					
		M ₅				35.8		18		18				
		F				9.1								
40	" 16	P			e	8	26	24*)					*) Time-mark. The sheets were changed shortly after the beginning of L, and the whole record has been dis- turbed by work at the station. Strong microseismic movement.	
			e	e		35	58							
				e		48.9								
		(L)	e			54								
		"		e		57								
F				10.8										
41	" 19	P			e	17	42	40*)					*) Time-mark. Luzon and Formosa. No Galitzin E record. The Galitzin Z component, other- wise not in function, has recorded this earthquake.	
					e	43.2								
		PP			e	47	1							
		PPP			e	49	25							
		S _c P _e S	i	e	e	53	8							
		(PS)	e	e	e	54	2							
		SS				59.2								
			i			18	5	37						
		L				13								
		M ₁				16.0		32	39					
		M ₂				16.3		25	— 34					

No. 1.

— 8 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	μ	μ	μ	
41	April 19	M ₃				19.8	— 19	13	14	
		M ₄ *				24.0				
		M ₅				24.1				
		F				18.9				
42	" 21					4 3				
		F				13				
43	" 22	L				11 32				
		F				47				
44	" 24		e	e		11 34 39				
			e	e		35 29				
			e	e		37 55				
			e	e		41.5				
		F				11.9				
45	" 27				e	3 9.6				
			e			12.7				
			e	e		13.4				
				e		15				
		L				58				
		F				4.7				
46	" 27	P			e	19 28 46				
		S	i	e		39 9				
		L				20 0				
		M ₁				1.8	7	— 6		
		M ₂				6.8		— 6		
		M ₃				8.8	— 7			
		M ₄				10.0		— 5		
		F				20.7				
47	" 28					11 13				No Galitzin records.
						20				
	" 29*)									*) No records from 5 ^h 50 ^m to 13 ^h 47 ^m .
48	" 30			e		14 11 40				No Galitzin N record.
			e			11.8				
			e	e		15 50				
				e		18 24*)				
			e			19.4				
			e	e		20.8				
		M ₁				24.5	8	16		
		M ₂				27.4	14	15		
		F				15.5				

No. 2.

1927.

Geodætisk Institut

(Den danske Gradmaaling)
 Proviantgaarden, Copenhagen, Denmark.



Bulletin of the seismological station

KØBENHAVN

$\varphi = 55^{\circ}41' N.$ $\lambda = 12^{\circ}27' E.$ $h = 13 m.$

Foundation: chalk.

Instruments:

No. 2 May, June 1927

Galitzin horizontal pendulums with galvanometric registration.

Constants (mean values):

Component	l	T_1	A_1	μ^2	T	k
N	11.9 cm	11 ^s .74	100 cm	0.11	12 ^s .5	103
E	11.9 cm	11 ^s .92	100 cm	0.05	13 ^s .0	100

The Galitzin pendulums were dismantled on June 24th.

Wiechert 1000 kg. horizontal seismograph.

Wiechert 1300 kg. vertical seismograph.

Constants (mean values):

Component	T	ν	q	V
N	9.1	4.1	0.5	225
E	9.4	3.8	0.4	195
Z	6.1	5	0.1	165

Milne-Shaw seismograph, N component, with the approximate constants $T = 12^s$ $\nu = 20$ $V = 175$; from $25/5$ $V = 350$.

No. 2.

— 2 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
		N	E	Z	h	m	s		A _N	A _E	A _Z	
	1927							sec	μ	μ	μ	
1	May 2	L			6	37						
		F				44						
2	" 2	L			12	9						
		F				21						
3	" 2		e	e	13	0	5					
		L				30						
		F				14.0						
4	" 2	L			22	30		10		— 2		
		M				38.5						
		F				48						
5	" 3		e	e	14	6		20		— 3		N components disturbed.
		L				17						
		M				44						
		F				53.6						
						15.9						
6	" 4		e		14	53						
		F				15 9						
7	" 7	L			22	32						No Galitzin N records from May
		F				23.0						7th 15h to May 8th 9h.
8	" 7		e		3	42						
		F				54						
9	" 9	P		i	10	39	42			+	+	△ = 4700 km.
		"		i		45				+		
		"	e			40.0						L irregular.
		PP	e			41 23						
		PPP	e			41 33						
		S				46 2						
		SS				49.3						
		(L)				52						
		M ₁			11	4.1		12	— 7			
		M ₂				4.9		12		— 7		
		F				12.1						
10	" 9	P	e		20	18.5						Epicentrum according to la Paz
		S				28 48						18° N 93° W.
		SSS				35						
		L				45						
		M ₁				51.3		25		— 11		
		M ₂				52.7		22	+ 4			
		M ₃				56.7		18	— 6			
		F				21.7						

No. 2.

— 3 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	μ	μ	μ	
11	May 10		e	e	e	6 27 33				
		L				54				
		F				8.8				
12	" 10			e		18 58				
			e			19 0				
		F				19 5				
13	" 10			e		20 19				
			e			21				
			e	e		34				
		F				20.9				
14	" 11			e		1 46				
		L				2 17				
		F				2.8				
15	" 13	(L)				0 34				
		F				1.2				
16	" 13	S				15 36 13				There is a faint previous movement masked by microseisms. Galitzin N disturbed. China Sea.
		PS				37 28				
		SS				42				
		L	e			16 0				
		M				8.7				
		F				16.8				
17	" 13-14	(P)	e	i	i	23 28 54	+	+	-	
			e	e		36 25				
			e			37 38				
			e	i	e	38 32				
		SS				44 52				
			e			56				
		L	e			0 1				
		"		e		4				
		M ₁				7.3	30	- 10		
		M ₂				10.0	30	- 10		
		M ₃				10.2	18	- 4		
		M ₄				11.9	17		+ 5	
		F				1.5				
18	" 14	L				7 18				
		F				32				
19	" 14		e	e		20 39				
		F				56				
20	" 15	P	e	e	e	2 50 15				Jugo Slavia near Belgrade.
			i			41				
		S	e	e	e	52 40				

No. 2.

— 4 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
			N	E	Z	h	m	s	sec	μ	μ	μ	
20	1927 May 15		e	e	e	53	16						
				e			48						
					e		57						
			i			54	32						
		L		e		54.3							
		"	e		e	55							
		M ₁				56.4		10	-28				
		M ₂				56.7		10		-24	-30		
		M ₃				58.4		9	31	-31	17		
		M ₄				0.7		9		23			
		F				4.7							
20a	" 15					3	19						
		M ₁				21.2		10	-4				A second shock superposed on
		M ₂				22.2		9		-5			the preceding one.
		M ₃				22.7		9	6				
21	" 15	L				6	41						
		F					48						
22	" 16	P	e	e	e	12	13	36					Δ = 9160 km.
		S	e	i			23	59					
		SS					29.5						
		L					44						
		M ₁					51.0	17	4		7		
		M ₂					51.5	17					
		M ₃					58.3	16	-6				
		C						c. 15					
		F					15.1						
23	" 17		e	e		6	33	43					
				e			39.2						
		L					53						
		F					7.6						
24	" 17	P	e	e		21	54						
		PP					57	14					
		S	e	i		22	2	49					*) Time-mark.
		PS					3	35*)					*) faint, beginning uncertain.
		SS					7.3						
		L*)											
		F					23.0						
25	" 18	L				1	56						
		F					2.3						
26	" 18	L				10.1							
		F				10.7							

No. 2.

— 5 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
27	May 18-19			e		23	14	58					
		L						35					
		M ₁						39.6	19		— 2		
		M ₂						44.5	15		— 2		
		M ₃						45.0	14	— 1			
		F						0.1					
28	" 19	P		e		5	39						Epicentre 2°, 3 N 83°, 5 W according to La Paz.
		PP	e	e				42.6					
			e					47.2					
		S				49	36						
		SS						55					
		L	e			6	6						
		"		e				8					
		M ₁						14.3	22	2			
		M ₂						15.4	22		3		
		F						7.6					
29	" 19	L				20	1						
		F						14					
30	" 20					11	15						
		F						49					
31	" 20	L				14	7						
		F						15					
32	" 20		e	e		22	32.1						
		L						53					
		F						23.5					
33	" 21			e		8	20.4						
			e					22					
		F						8.9					
34	" 21	(P)			e	17	12	58					
			e	e				13 12					
					e			16 26					
			e	e				22 59					
				e				34 52					
		F						18.8					
35	" 22	P		e		1	59						Epicentre 20°, 5 S 69°, 5 W according to La Paz.
		PP		e		2	3						
		S _c P _c S	e	i				9 21					
		S	e					10.3					
		F						3.1					
36	" 22			e		12	13.6						
			e	e				22 4					
		L	e					45					

No. 2.

— 6 —

1927.

København.

No.	Date	Phase	Time (G. M. T.)	Period	Amplitude			Remarks
					A _N	A _E	A _Z	
			<i>N E Z</i>		<i>μ</i>	<i>μ</i>	<i>μ</i>	
			<i>h m s</i>	<i>sec</i>				
36	1927 May 22	<i>L</i>						
		<i>M₁</i>	46					
		<i>M₂</i>	47.9	14	1			
		<i>F</i>	54.8	15		— 3		
			13.6					
37	" 22							
			22 11					
			12					
		<i>M₁</i>	16.3	12	— 3			
		<i>M₂</i>	21.0	14		— 2		
38	" 22 23	<i>P</i>	22 42 52		—	—	+	
		<i>PP</i>	45.9					
		<i>PPP</i>	46.9					
		"	47.1					
		"	49.0					
		<i>S</i>	51.2					
			52.8					
		<i>SS</i>	56					
		<i>L</i>	23 0					
		<i>M (N)</i>	3—17	8—12				
		<i>M (E)</i>	6—18	8—12				
		<i>M (Z)</i>	7—15	8—12				
		<i>F</i>	4.7					
38 a	" 23	<i>L</i>	3 15					
		<i>M₁</i>	19.0	13	— 11			
		<i>M₂</i>	23.8	13		9		
39	" 23	<i>L</i>	5 9					
		<i>F</i>	5.4					
40	" 23	<i>L</i>	7 8					
		<i>F</i>	7.5					
41	" 23	<i>L</i>	10.5					
		<i>F</i>	11.1					
42	" 23		14 9					
		<i>L</i>	22					
		<i>M₁</i>	24.1	12	— 10	5		
		<i>M₂</i>	29.0	12		— 5		
		<i>F</i>	15.2					
43	" 23	<i>L</i>	16 58					
		<i>F</i>	17 16					
44	" 23		22.6					
		<i>L</i>	22 57					
		<i>M₁</i>	14.2	20	— 1			
		<i>M₂</i>	17.2	18		— 2		

No. 2.

— 7 —

1927.

København.

1888 MAY 1927

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
45	May 24		e	e		0	3.4						
		L	e				16						L irregular.
		"		e			17						
		M					17.9						
		F					1.4	13	- 6	4			
46	" 24					5	18						
		F					34						
47	" 24					7	25						
		F					7.7						
48	" 24					12	29						
		F					13.4						About 12 ^h 55 ^m a long periodic movement begins which possibly is not connected with the preceding movement.
49	" 24					16	28						
		L					34.4	13	- 3				
		M											
		F					17.1						
50	" 24					20	58						
		F					21 16						
51	" 25			e		2	57						
			e				58						
		M ₁					59.1	18		4			
		M ₂				3	0.7	11		1			
		F					3.5						
52	" 26					2	50						
		F					57						
53	" 26					12	1						
		F					9						
54	" 26					17	41						
		F					49						
55	" 27			e		3	6						
		L	e				25						
		"		e			26						
		M					28.1	12	- 3	1			
		F					3.9						
56	" 27					17	36						No time marks on Galitzin N.
		F					50						
57	" 28					2	1						"
		F					2.2						
58	" 28					2.5							"
		F					3.3						

No. 2.

— 8 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	μ	μ	μ	
59	May 28	F				23 18 43				No-time marks on Galitzin N.
60	" 29	L F				10 51 11 7				"
61	" 29	F				17 22 33				"
62	" 31		ε			13 13.1 23.4				Very faint. Galitzin N disturbed.
		F		ε		14.1				
63	" 31	L F				23 4 21				No Galitzin N record.
64	June 1	F				c.17 30 49				No Galitzin N record. No time-marks on Galitzin E.
65	" 1	L F				c.20.4 21.2				As under 64. Regular long-periodic movement.
66	" 2	F				6 29 45				As under 64.
67	" 2		ε			16 47 34*) 55 41				*) Time-mark.
			ε	ε		59.5				
			ε	ε		17 5.0				
		L	ε			10				
		"		e		11				
		M ₁				10.9	15	— 8		
		M ₂				13.9	12	8		
		M ₃				17.9	12		7	
		F				18.5				
68	" 3	P			ε	7 26 37*) 41				*) Time-mark. Moluccas and New Guinea according to Batavia.
		"	e	e	e	29 58				
		P'	ε	e	e	30.6				
		PP	e	e	e	31 15				
		"	e			23				
		PPP				33.4				
		S _c P _c P _c S	e	e		37.8				
		S	e			38 46				
		PS			e	40 35*) 51				*) Time-mark.
		"	i	i		46.6				
		SS	e			47.0				
		m				58	20	— 72		
			e							

No. 2.

— 9 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks			
							A _N	A _E	A _Z				
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
68	June 3	L (Q)	e			8	2						
		L		e	e		6						
		M ₁					8.7		24	137			
		M ₂					14.2		25	—236			
		M ₃					17.0		22		—125		
		M ₄ *					18.9		23			92	
		M ₅					20.3		24		—136		
		L'					9.4						
		M ₁ '					25.9		20	10			
		M ₂ '					32.2		21		—17		
		C							c. 18				
		F					12.3						
69	" 3	L				20	56						
		F					21.1						
70	" 5					4	5						
		F					4.2						
71	" 5	P	i	i	i	8	30	2		+	—	+	Azimuth SE. △ = 2700 km. Asia Minor.
				e			30.4						
		S					32	2					
		L					34	13					
							38						M disturbed by change of sheets.
72	" 5	L				23	23						
		F					23.6						
73	" 6					4	3						
		F					4.5						NB. From June 6th the Galitzin pendulums, especially the E com- ponent, have often been out of function.
74	" 6		e	e		6	0	5					
		L		e			24						
		"			e		26						
		F					7.3						
75	" 6		e			12	48.3						
		L				13	22						
		F					14.1						
76	" 6		e		e	18	44	4					
				e			18						
				e			33						
			e		e		48.0						
				e			49.2						
			e			19	3						
		L		e			37						
		"			e		44						
		M ₁					40.5	35		4			
		M ₂					51.1	22		4			
		C						18—20					
		F					21.0						

No. 2.

— 10 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	μ	μ	μ	
77	June 7	F				3 49 4.2				
78	" 7	L F				10 26 10.8				
79	" 7	F				23 38 45				
80	" 8	F				5 18 24				
81	" 9	L F				4 6 4.3				NB. June 9th & 10th there is a disturbance of unknown origin in the direction N—S.
82	" 10	L F	e			17 32.7 56 18.6				
83	" 11	L F	e e	e		2 56.8 3 0.1 3.4 4.3				
84	" 14	F				1 17 27				
85	" 14	L F	e e			4 23.3 38.8 42 5.9				
86	" 14	L F	e e	e		17 36 46 37 59 18 28 20.3				
87	" 17	L F				7 1 9				
88	" 18	L F	e			1 19.1 40 2.1				

No. 2.

— 11 —

1927.

København.

No.	Date	Phase				Time (G. M. T.)			Period	Amplitude			Remarks
										A _N	A _E	A _Z	
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
89	June 19	L				0	38						
		F				41							
						1.3							
90	" 20	P	e			14	26						No Z-record.
		S	e	e		36	25						
			e	e		42							
		SS	e			42							
				e		44							
		L		e		53							
		"	e			54							
		M ₁				55.3		29		— 5			
		M ₂				15	3.1	17		— 9			
		M ₃				3.4		17	7				
		M ₄				5.8		13	3				
		F				15.9							
91	" 22		e	e		0	8	51					
			e	e		14							
			e			21	6						
		L				24							
		F				1.0							
92	" 23	L				11	50						
		F				12	17						
93	" 24		e	e		0	5						
			e			9.0							
						12							
		L				14							
		M ₁				14.9		13		4			
		M ₂				15.4		11	6				
		F				0.8							
94	" 26	P				11	24	52*)					*) Time-mark. Crimean Peninsula.
		S	e			27	58						
		"		e		28	2						
		L				30							
		M ₁ *				30.6		7			— 22		
		M ₂ *				31.0		5		33			
		M ₃ *				31.2		13; 4	— 96		18		
		M ₄ *				32.4		8; 11	— 42	— 49			
		F				13.1							
95	" 27	L				5	19						
		F				23							

No. 2.

— 12 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
			N	E	Z	h m s	μ	μ	μ	
96	June 27	F	e	e	i	12 43 36 13.6				
97	" 28	L F				2 25 2.7				
98	" 28	L F				17 57 18.4				
99	" 30	P S " L M ₁ * M ₂ * M ₃ * F	e	e		23 3 50 7 11 19 10 10.4 11.4 11.6 23.9				Greece. △ = 2000 km.
								18	7	
							5			

No. 3.

1927.

Geodætisk Institut

Proviantgaarden, Copenhagen, Denmark.

Bulletin of the seismological station

KØBENHAVN

$\varphi = 55^{\circ}41' \text{ N.}$ $\lambda = 12^{\circ}27' \text{ E.}$ $h = 13 \text{ m.}$

Foundation: chalk.

No. 3. July—Sept. 1927

Instruments:

Wiechert 1000 kg. horizontal seismograph.

Wiechert 1300 kg. vertical seismograph.

Constants (mean values):

Component	T	ν	q	V
N	9.2	4.5	0.5	225
E	9.4	4.0	0.5	195
Z	6.1	5	0.1	165

Milne-Shaw seismograph, N component, with the approximate constants $T = 12^s$ $\nu = 20$ $V = 350$.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
1	July 1	P				8	23.5						Greece.
				e			24	43					The beginning disturbed.
		S					27	12 *)					*) Time-mark.
		m ₁					27.4		7; 6	85	— 138		
		m ₂					27.7		7			— 69	
		L		e			29						
		"	e				30						
		M ₁					31.9		11		51		
		M ₂					33.6		8	41			
		M ₃					34.6		9			34	
		F					9.8						
2	" 2	L				2	43						
		F					53						
3	" 2	L				8	43						
		F					47						
4	" 2					20	58.3						
		L				21	12						
		M					14.5	20		2			
		F					21.8						
5	" 3	P			ε	8	29.6						
		PP	ε		ε		33.6						
		S	e				40						L disturbed by change of sheets.
		L				9	4						
		F					9.9						
6	" 3	P'			ε	10	57	14					Δ = c. 140°.
			ε				57.9						17° S. 175° W. according to Wel-
		PP	e	ε	e	11	0	10					lington.
		P _e P _e S			ε			43					
		SS	ε	ε			18						
		L					44	c. 35					
		M					51.4	24		3			
		F					13.2						
7	" 3					16	42						
		F					53						
8	" 3	L				22	33						
		F					42						
9	" 4					0	45						
		F					49						

No. 3.

— 3 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	μ	μ	μ	
10	July 4		e			14 31 35				
			e			35.4				
		L				38				
		M				41.2				
		F				15.0	12	1		
11	" 4	L				15 40				
		F				59				
12	" 6	P			e	0 9 27*)				*) Time-mark.
			ε			13.3				
		L				18				
		F				0.6				
13	" 7					8 10				
		F				33				
14	" 7	P			i	20 14 46			+	△ = 46°. Persia.
		m				15.3	3		-3	
		S	i	e		21 27				
		m				21.9	10	4		
		SS				24.6				
		L				30				
		M ₁				33.6	9	3		
		M ₂				39.1	11	3		
		F				21.6				
15	" 8	L				1 13				
		F				31				
16	" 10					4 23.0				
		L				5 10				
		F				6.1				
17	" 11	L				c. 8 50				Disturbed by change of sheets.
18	" 11	P	e	e	i	13 10 5	÷	+	÷	Palestine.
		S				14.8				
			e			15.3				
		L				19				
		M ₁				22.1	20	35	36	
		M ₂				23.9	18		20	
		F				14.3				
19	" 12	P	i	e	i	21 19 19	÷	÷	+	Azimuth NE. △ = 70°. Japan.
			e			24				
		S	i	i	e	28 35				
		L				(42)				
		M ₁				46.5	11		6	
		M ₂				46.7	8	-6		
		F				23.2				

No. 3.

— 4 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
20	July 14	L				7	7						
		F					11						
21	" 14-15					23	45						
		L				0	(16)						
		F				0.8							
22	" 15	P		e	i	3	54	21			+		Turkestan. △ = 41°.
		S		e			54						
		SS		e		4	0	31					
		"		e			3.8						
		F		e			4.1						
						4.3							
23	" 15					18	54						
		F				19.7							
24	" 15					21	43						
		F					55						
25	" 16		e	e	e	1	31	31					
			e	e	e		33.7						
			i	e	e		35	39					
		L ₁					38						
			i	e	e		39	40					
			e				42						
		L ₂					44						
		F				2.0							
26	" 16		i	e	e	2	20	39					
		L					25						
		F				2.6							
27	" 17	L				9	39						
		F				10	1						The record was disturbed from 9h 0m to 9h 39m.
28	" 18	P'	e	e	i	11	39	39			+		△ = c. 150°.
			e	e	e		40	7					Probably White Island, New Zealand, according to Wellington.
			e	e			40.4						
		PP					43	47					
		$\frac{S_e P_e S}{S_e P_e P_e S}$					47						
		$\frac{S_e P_e P_e S}{S_e P_e S P}$					50	33					
		PPS					54.1						
		SS					57						
		SSS				12	3						
		L					9						
		M ₁					35						
		M ₂					45.0		25	- 9			
		F					47.7		25		3		
						13.6							

— 5 —

1927.

København.

No.	Date	Phase				Time (G. M. T.)			Period	Amplitude			Remarks
										A _N	A _E	A _Z	
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
29	July 22	P	e	i	i	4	2	9		+	÷	+	Persia.
		S						7.6					△ = c. 35°.
								11					
		L	e					13					
		"		e	e			17					
		M ₁						17.6	20	-69			
		M ₂						21.1	16		38		
		M ₃						22.3	16			-31	
		M ₄						22.5	12	-38			
		F						7.1					
30	" 22	S				8	50	15					Disturbed by change of sheets.
		L						58					Persia.
		F						10.0					
31	" 22					20	46	9					
		F						21.3					
32	" 23	L				18		2					
		F						18.6					
33	" 23					19	24						
		F						28					
34	" 23	P	e	e	i	20	24	59			+		Persia. △ = 36°.
		S						30 33 ^{*)}					*) Time-mark.
			e					34.0					
		L	e					37					
		"		e	e			40					
		M ₁						41.7	13		6		
		M ₂						42.4	15	6			
		M ₃						44.0	13			-5	
		M ₄						44.1	12		-3		
		F						22.2					
35	" 23-24	P				22	47	30			+		Persia. △ = 36°.
		S						53.0					Repetition of preceding shock.
			e					56					
		L	e					59					
		"		e		23		2					
		M ₁						4.9	16	4			
		M ₂						6.6	12		-2		
		F						0.4					
36	" 24					13		33					
		F						14.1					
37	" 24					14		14					
		F						50					
38	" 24					20		22					
		F						40					

No. 3.

— 6 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
			N	E	Z	h m s	sec	μ	μ	μ
39	1927 July 25	L F				4 13 40				
40	" 25		e	e	e	20 39 40.0 40.2 40.6 41.2 20.9	3 3 8	6	3	Eastern Alps.
41	" 26					12 15 53 17.0 22				From July 26 th till Aug. 22 nd there is an uncertainty of 1—2 seconds in time determinations.
42	" 27	P S L F				15 3 48 13 54 28 34 16.0				Δ = 79°. Japan.
43	" 28					6 58 7.2				
44	" 28	P S L M ₁ M ₂ M ₃ M ₄ M ₅ F	e	e	i	16 28 55 29 10 37.9 50 55.5 56.2 17 5.5 8.4 8.5 17.8	23 24 19 18 18	— 8 9 4 — 5 — 4		Δ = c. 67°. Alaska.
45	" 29	P PP S L " M ₁ M ₂ F	e	e	i	0 14 21 16.8 23 30 40 43 44.4 51.4 1.5	18 15	— 6 — 4		Δ = 69°. Bay of Bengal.
46	" 29					11 57 12.1				
47	" 30	P S L M ₁ M ₂ F				14 30 22 40.6 59 15 7.4 8.4 15.5	17 17	— 3 2		Δ = c. 81°. East of Japan.

No. 3.

— 7 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
48	July 31	L				18	3						
		F				18.5							
49	" 31	L				21.1							
		F				21.3							
50	Aug. 1		e	e		11	52	36					
			e	e		53	21						
			e			53.7							
			e			55.2							
		L				12	18						
		F				13.2							
51	" 1	P	e		e	17	17	31					Δ = c. 71°.
		S	e	e		26.9							
		L				39							
		M ₁				54.1			16	— 3			
		M ₂				57.6			17		3		F in following.
52	" 1		e		e	18	57	52					
		S		e		19	7	6					
		"	e			7.2							
		SS	e			11.6							
		L				21							
		M ₁				34.5			17	5			
		M ₂				37.8			16		— 5		
		F				21.0							
53	" 2	P			e	1	2	40					Δ = c. 90°.
		S				11.6							
		PS				12.6							
		L				25							
		F				2.2							
54	" 3					6	28.2						
		L				56							
		F				7.4							
55	" 3	L				12	25						
		F				12.9							
56	" 3					13	15						
		F				23							
57	" 4					16	14						Disturbed before 16h 14m.
		F				17.1							
58	" 5	P				21	24	49					Δ = 76°.
		PP				27	46						Japan.
		PPP				29	34						The record is disturbed by change of sheets.
						31.1							
						34.4							

No. 3.

— 8 —

1927.

København.

No.	Date	Phase				Time (G. M. T.)			Period	Amplitude			Remarks
										A _N	A _E	A _Z	
			N	E	Z	h	m	s	sec	μ	μ	μ	
58	1927 Aug. 5	S				34	39						
		SS				39.9							
		SSS				42.9							
		L				49							
		M ₁				58.0			23		193		
		M ₂				58.4			27			161	
		M ₃				22	0.4		22	142			F in following.
59	" 6	P				0	25	5 ^{*)}					*) Time-mark. Δ = 67°. Alaska.
		S				34	5						
			c			35.4							
		SS				39.5							
		SSS				41.5							
		L				47							
		M ₁				52.6			23		5		
		M ₂				55.7			22	5			
		M ₃				1	3.4		20	4			
		M ₄					3.6		18			5	
		L'				2	44						
		F				3.4							
60	" 6	L				21	25						
		F				41							
61	" 7					6	37.2						
		(L)				41							
		M ₁				42.8			10		1		
		M ₂				44.2			7	1			
		F				7.4							
62	" 7	(L)				22	5						
		F				22.5							
63	" 8	P	ε		ε	0	1	16					Δ = 19°.
		"		ε				30					
		S		ε		4	43						
		"	ε			4.8							
		L				6.6							
64	" 8	F				0.4							
		P				0	29	37					Δ = 19°.
		S				33	3						
		L				34.9							
		M				36.3			16	1			
65	" 8	F				1.0							
		P				1	8	55					Δ = 67°.
		PPP				13.6							
		S				17	55						
		PS				18.7							
		(SSS)				26.5							

No. 3.

— 9 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
			N	E	Z	h m s	μ	μ	μ	
65	1927 Aug. 8	L				33				
		M				38.9		1		
		F				2.7				
66	" 8	P	e			3 48 38				Δ = 19°.
		"		e		48.7				
		S				52 5				
		L				54.1				
		M				56.3		— 1/2		
		F				4.4				
67	" 8		e	e		19 6.6				
			e	e		8.2				
				e		10.9				
			e			11.5				
			e			16.1				
			e			20.3				
		L				(40)				
		F				20.1				
68	" 9	L				2 1				
		F				2.7				
69	" 10	P	e	e	e	1 48 16 ^{*)}				Δ = c. 83°.
			e	e		54				Central America.
		PP			e	51 36				
		PPP			e	53 37				
		S				58.7				
						58 56				
		PS				59.9				
			e			2 1.6				
		SS				4				
			e			5.4				
		SSS				9.1				
		L				13				
		M ₁				25.9	19	9		
		M ₂				29.6	18			
		M ₃				29.7	20			
		F				4.6			— 12	
70	" 10	P	e	e	e	11 50 33				Δ = c. 105°.
		PP	e	e	e	54 57				New Guinea.
		PPP		e	e	58 5				
		<u>S_cP_cS</u>				12 1 5				
		<u>S_cP_cP_cS</u>				2.2				
		PS				4 3				
		PPS				4.7				
			e			4 55				
			e			8.3				
		SS				9.4				

No. 3.

— 10 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks			
							A _N	A _E	A _Z				
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
70	Aug. 10	SS				10	0						
		m				10.0			12	12			
		SSS				14							
		e				20.0							
					e	20.2							
		L	e			26							
		"		e		30							
		M ₁				35.5	17	- 39	41				
		M ₂				38.8	24			- 54			
		M ₃				47.4	16		- 28				
		M ₄				47.8	18	- 50		64			
		L'				13 50							
		F				15.6							
71	" 11	L				6	27						
		F				6.9							
72	" 12	P			e	0	45	34					△ = 74°. Japan.
					e	47	21						
		S	e	e		55	11						
			e	e		58	34						
		SS				1	1	12					
		SSS				3.8							
		L				17							
		F				1.7							
73	" 12	P		e	e	10	30	29					△ = 40°.
		PP		e	e	32	0						
			e			36	9						
		S		e		36	35						
		"	e			36	49						
		SS				39.6							
			e			42	11						
		L				42							
		M ₁				48.5	8		9	- 8			
		M ₂				48.6	8	8					
		F				11.8							
74	" 12	S				16	30.7						
		SS				34.1							
		L				37.2							
		M				42.5	8	- 2	2	- 2			
		F				17.2							
75	" 13		e			1	2.3						
				e		2.4							
		F				9							
76	" 13		e			8	11.4						
		F				15							

No. 3.

— 11 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	μ	μ	μ	
77	Aug. 13	L				12 10.7				
		F				36				
						13.2				
78	" 15		e			c. 9 50				
79	" 16		e			21 35.9				
			e			41 16				
			e			45 21				
			e			52				
		L				22 11				L and the preceding movement possibly refer to different shocks.
		F				22.6				
80	" 17		e			8 13				
			e			16.0				
		F				8.5				
81	" 18	P		e	e	19 40 1				△ = 79°. East of Japan.
			e			5				
				e		41 9				
		PP				43.1				
			e			44.3				
		PPP				46.1				
		S	e	e		50 7				
			e			14				
			e			50.7				
				e		52 23				
		SS				55.4				
		SSS				59				
			e	e		20 3.1				
			e	e		6.1				
		L				9				
		M ₁				14.0	15	— 71		
		M ₂				14.2	15	— 74		
		M ₃				18.2	13	— 66		
		M ₄				22.5	13			
		F				22.8		— 60	29	
82	" 19-20		e			23 39 9				
			e			44				
		L				0 0				
		F				0.8				
83	" 20	L				20 46				
		F				21.0				
84	" 20		e			21 50.2				
		(S)	e			59 36				
			e			22 17				
		L				20				

No. 3.

— 12 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	μ	μ	μ	
84	Aug. 20	M ₁				27.5	5	4		
		M ₂				33.1				
		F				23.8			— 5	
85	" 21	P	e	e	i	0 7 21		—	—	Δ = c. 85°.
						9.9				South of Panama.
			e			10.4				
		PP		e	e	10.8				
			e			11.9				
		PPP				13.1				
			e			14.5				
			e			16.8				
		S _c P _c S		e		17.6				
				e	e	17 51*)				*) Time-mark.
			i			18 7				
				e		13				
		m				18.3	8	13		
		PS				19.1				
			e			20.1				
			e			21.9				
		SS		e		23.6				
		"			e	23.8				
		SSS				27.3				
		L				32				
		M ₁				40.4	27	29		
		M ₂				41.4	21; 23	18	— 17	
		F				3.0				
86	" 21					10 43				
		L				59				
		F				11.3				
87	" 21					17 35.5				
			e			38.9				
		F				45				
88	" 23	P	e			6 41 28				Δ = c. 75°.
		"		e		41.9				
		PP	e	e		44.5				
		S				51.2				
			e			54.0				
		SSS				7 1.0				
			e			8				
		L				11				
89	" 24	M ₁				20.6	13; 12	16	12	F disturbed.
		M ₂				23.3	15		— 10	
89	" 24	P	e	e	e	9 8.0				Δ = c. 79°.
		PPP				13.1				Japan.
		S	e	e		18 6*)				*) Time-mark.
		SS				23.0				

No. 3.

— 13 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks			
							A _N	A _E	A _Z				
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
89	Aug. 24	SSS						26.6					
			e					31					
		L	e					39					
		"		e				41					M disturbed by change of sheets
		F						10.9					
90	" 24	L				16	2						
		F				16.6							
91	" 24	P			e	18	21	11					Δ = 79°.
		"	e	e	i			18					
		S	e	e		31	18						
		"	i	e				33					
		L	e			49							
		"		e		50							
		M ₁				53.4			20	- 32			
		M ₂				59.8			15; 16		- 27	- 35	
		F				20.1							
92	" 25	L				0	35						
		F				1.1							
93	" 25		e			17	16	50					
			e			25							
		L				44							
		F				18.2							
94	" 25	L				23	30						
		F				23.9							
95	" 26	L				1	23						
		F				1.7							
96	" 27					12	49						
		F				13.3							
97	" 29	L				6	16						
		F				6.8							
98	" 29	L				8	9						
		F				9.0							
99	Sept. 2	L				2	57						
		F				3	7						
100	" 3	P				19	58	7					Δ = 63°.
		PPP				20	2						Atlantic Ocean.
		S				6	36						
			e			7.7							
		L (Q)	e			13							
		L		e		15							
		"	e			17							

No. 3.

— 14 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
100	Sept. 3	M ₁				19.2			18			8	
		M ₂				19.4			16	28			
		M ₃				20.0			15		12		
		C							15—16				
		F				22.8							
101	" 5	L				20	34						
		F				47							
102	" 6	P				7	20	58					Disturbed by change of sheets.
103	" 7	L				13	31						
		F				14.3							
104	" 7	P'		ε	ε	20	17						
		L				21	16						
		F				22.3							
105	" 8	P				8	57	47					Δ = c. 25°.
		S				9	2.0						
		L				4							
		M ₁				6.5			17	— 4			
		M ₂				6.6			13		— 4		
		F				9.6							
106	" 8	L				18	11						
		F				19.1							
107	" 9	L				0	17						
		F				0.7							
108	" 9					1	10.8						
		F				1.3							
109	" 10					4	35						
		F				42							
110	" 10		ε			16	46						
			ε			52.1							
			ε			56							
		L				17	18						
		F				17.9							
111	" 11	P	e	ε	e	22	19	51				+	Crimea.
		"	e	i	i	59							
		m ₁				20.1			7; 6; 6	14	6	— 25	
			e			20.4							
				e		20.7							
				e		22.4							
		S		e		22	51						
		"	i		e	23	1						
		m ₂				23.1			6; 3	38	29		
			i	i		23	26*)						*) Time-mark.

*) Time-mark.

— 15 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
111	Sept. 11	m ₃	i			23.6			6	— 65	56		
			i	i		25	3						
			i	i			19						
		M ₁	i	i	i	25.6							
						26.2			6		c. 300		The pen was thrown off the Wiechert
		M ₂				27.4			10			c. 700	N-component.
													F in following.
112	" 11-12	P	e	e	e	23	48	41					
		S				51	49						Crimea.
			e	e	e	53	59						
					e	54	14						
			i	i			24						
		M				56.2			9		53	46	
		F				0.9							
113	" 12	P	e	e	e	3	24	13					Crimea.
		S				27	14						
				e			37						
			e	e		27.7							
			e	e	e	28							
			i	i	i	29.7							
		M ₁				29.9			7			44	
		M ₂				31.7			10		— 178	171	
		F				5.0							
114	" 12	P		e	e	6	37	32					Crimea.
		S				40.5							
			e	e	e	40.8							
				e		40.9							
			e			41.7							
			e			42.6							
			e	e	e	43							
		M ₁				44.9			9		— 27		
		M ₂				45.1			8			— 18	
		F				7.3							
115	" 12	P			e	7	46	37					Crimea.
		S				49							
			e		e	51.9							
			e			52.5							
		M				54.0			10; 8		3	— 1	
		F				8.2							
116	" 12	S				13	8.4						Crimea.
			e			9.8							
				e		10.7							
			e			10.8							
		M ₁				12.2			5	5			
		M ₂				12.9			10		7		
		F				13.6							

No. 3.

— 16 —

1927.

No. 5

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks			
							A _N	A _E	A _Z				
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
117	Sept. 12	F				13	43.1						
						13.9							
118	" 12	P	ε	ε	ε	14	28	1					Crimea.
		"			e			6					
		S	e			31		8					
		"		e				11					
			e			31.4							
			e			32.0							
				e		33.2							
			e			33.3							
		M ₁				35.1			12	53			
		M ₂				35.6			12		49		
		M ₃				35.8			10	35			
		M ₄				40.3			9		32		
		F				16.0							
119	" 12	F				16	41.2						
						16.9							
120	" 12	F				16	58						
						17.1							
121	" 12	F				18	20						
						18.5							
122	" 12	L				19	39						
		F				43							
						19.9							
123	" 13	F				0	34						
						0.7							
124	" 13	F				2	18.1						
						2.4							
125	" 13	P'			e	10	35	14					△ = c. 140°.
					ε		36	52					Probably in New Hebrides region
					ε		37	17					according to Wellington.
		PP	ε	ε	ε		38.0						
		P _c P _c S	e	e			38	51					
		PPP					41						
		PS					49						
		SSS				11	1						
		L					20						
		F				12.7							
126	" 14	L				2	8						
		F					15						

No.

127

128

129

130

131

132

133

134

135

136

137

138

No. 3.

— 17 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks			
							A _N	A _E	A _Z				
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
127	Sept. 14	S				2	40.1						Crimea.
			e				40	19					
			e				41	42					
				e			42.5						
		M ₁					44.6	9		— 12			
		M ₂					44.8	9			11		
128	" 14		e	e	e	2	55.1						
		M					57.2	9		5	— 3		
		F					3.3						
129	" 14					5	17						
		L					18						
		F					24						
130	" 16					c. 7	30						
131	" 16		e	e		8	31.5						Disturbed by change of sheets.
		L					33.0						
		F					9.0						
132	" 16		e	e	e	15	58	2					
			e			16	7.4						
		L					25						
		M					31.0	15; 17	— 2	— 3			
		F					17.4						
133	" 17					1	22						
		L					38						
		F					2.3						
134	" 18					2	46						
		L					3.5						
		F											
135	" 18					6.7							
		L					7.0						
		F											
136	" 19					c. 9	30						Disturbed.
		L					c. 10.1						
		F											
137	" 21					5	51						
		F					56						
138	" 23	P			e	14	2	47					△ = 47°.
		S	e	e			9	38					Turkestan.
			e				12.7						
		SS					13	16					
		(L)					15.2						
		(L)	e	e	e		15.7						
		M ₁					19.1	10		26			
		M ₂					19.3	6			22		
		M ₃					22.0	8	39				
		M ₄					22.8	11; 10		24	— 49		
		F					15.4						

No. 3.

— 18 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks											
							A _N	A _E	A _Z												
139	1927 Sept. 24	P	N	E	Z	h	m	s	sec	μ	μ	μ	Crimea.								
	S													6	18	9					
	e	e	21	11																	
			21.4																		
	e	e	21	33																	
			39																		
	e	e	22.8																		
			23																		
	M ₁	e	e	e	24.3	11	— 33														
					25.8	10	— 62														
M ₂				25.9	10					55											
M ₃																					
F				7.3																	
140	" 24	L																			
														18.0							
														18 23							
141	" 30	F																			
														19.1							
142	" 30	P											△ = c. 78°.								
														PP	7	49.6					
		S																			
														52 52							
		SS																			
														59.6							
		e	e	8	4.8																
				10																	
		L												M is disturbed.							
															16						
F																					
													9.1								
142	" 30	L																			
														19 5							
F																					
														19.3							

No. 4.

1927.

Geodætisk Institut

Proviantgaarden, Copenhagen, Denmark.

Bulletin of the seismological station

KØBENHAVN

$\varphi = 55^{\circ}41' N.$ $\lambda = 12^{\circ}27' E.$ $h = 13$ m.

Foundation: chalk.

No. 4. Oct.—Dec. 1927

Instruments:

Galitzin horizontal pendulums with galvanometric registration.

Constants (mean values):

Component	l	T_1	A_1		μ^2	T	k
N	12.5 cm	$12^{\circ}.63$	100 cm	from $7/12$	0	11.6	100
E	12.4 cm	$12^{\circ}.69$	100 cm	from $15/12$	0	11.4	85

Wiechert 1000 kg. horizontal seismograph.

Wiechert 1300 kg. vertical seismograph.

Constants (mean values):

Component	T	ν	q	V
N	9.2	4.5	0.4	222
E	9.4	4.0	0.5	197
Z	6.1	5	0.2	165

Milne-Shaw seismographs, N and E components, with the approximate constants $T = 12^s$ $\nu = 20$ $V_N = 350$ $V_E = 285$.

No. 4.

— 2 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	sec	μ	μ	μ
1	Oct. 1	L				1 18				
		F				1.7				
2	" 2	(S)		e		5 11				
		SS	e			17				
		L				29				
		F				5.8				
3	" 5					17 21				
		F				17.6				
4	" 7		e	e		14 27.3				
		L				30				
		F				14.7				
5	" 7	L				19 47				
		F				20.0				
6	" 7	L				21 53				
		F				22.2				
7	" 8	S				10 51.7				
		SS				55				
		L				11 0				
		F				11.6				
8	" 8	L				13 9				
		F				13.8				
9	" 8		e	e	e	19 51 40				△ = 8°.
				e	e	52 32				Schwadorf near Vienna.
				e		58				
		L				53 20				
		M ₁				53.7	3	-12		
		M ₂				53.8	4		4	
		M ₃				54.3	9	-7		
		M ₄				54.8	10	9		
		F				20.2				
10	" 10	L				18 33				
		F				18.9				
11	" 11	L				0 42				
		F				1.4				
12	" 11	L				1 51				
		F				2.2				
13	" 11	L				3 46				
		F				4.2				

No. 4.

— 3 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks			
							A _N	A _E	A _Z				
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
14	Oct. 11	L				5	5						
		F				5.5							
15	" 11		ε	ε	ε	14	52.4						
		M ₁					54.4	9		— 2			
		M ₂					55.1	9		1			
		F				15.0							
16	" 11	P	e		e	17	41	53					
		S					51.2						
		SS					56						
		SSS				18	0						
		L					5						
		F				18.7							
17	" 12		ε			6	49						
			ε				59						
		L				7	9						
		M ₁					12.7	16	— 3				
		M ₂					20.0	14		— 3			
		F				7.8							
18	" 12	L				8	38						
		F				9.0							
19	" 13					8	3						
		F				8.2							
20	" 14	L				10	15						
		F				10.6							
21	" 15	L				7	7						
		F				7.5							
22	" 15	L				11	59						
		F				12.5							
23	" 16	L				7	25						Disturbed.
		F				7.5							
24	" 16	L				13	20						
		F				13.8							
25	" 16					15	11						
		F				15.5							
26	" 19	L				14	41						
		F				15.5							
27	" 19-20	L				23	11						
		F				0.0							

No. 4.

— 4 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks
							A _N	A _E	A _Z	
	1927		N	E	Z	h m s	μ	μ	μ	
28	Oct. 23	F				16 58 17.1				
29	" 24	P PP PPP	i	e	i	16 10 30 12.9 14.4 16.9	+		—	Δ = 63°. Destructive in south-eastern Alaska.
		S	e	e		19 5 10 13				
		SS	e	e		20.4 23.0 23.2				
		L	e	e		27				
		"	e	e		29				
		"				30				
		M ₁				35.5	30	235		
		M ₂				36.4	25		— 197	
		M ₃				37.1	19	— 121		
		M ₄				37.8	22	167		
		M ₅				41.3	13		— 49	
		M ₆				47.6	14	— 66		
		L'				18 29				
		M ₁ '				50.2	18	13		
		M ₂ '				19 2.2	17	— 7		F in following.
30	" 24	L M F				19 48 20 1.2 21.3	14	13	8	
31	" 25	L F				22 20 22.7				
32	" 27	L F				8 43 9.4				
33	" 27	L F	e			20 9 30 20.9				
34	" 28	S L M ₁ M ₂ F				15 45 15 16 4 14.9 19.4 16.9	12 15	— 1	1	
35	" 28	F				21 54 22 6				

No. 4.

-- 5 --

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks			
							A _N	A _E	A _Z				
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
36	Oct. 29	(S)	ε			1	39.5						
		L					48						
		F					2.6						
37	" 30	P			ε	3	13.4						
					e		13 33						
		S		e			17.0						
		L					19						
		M ₁					21.9	14			3		
		M ₂					23.1	14	— 5				
		F					3.8						
38	" 31					18	51						
		F					19.1						
39	" 31	L				23	53						
		F					0.1						
40	Nov. 2	L				21	56						
		F					22.3						
41	" 2-3	L				23	41						
		F					0.1						
42	" 4	P	i	e	i	14	3 23						Δ = 80°.
		PP					6.4						Destructive in California.
		S	e	e			13 36						
		SS					18.4						
		SSS					22.4						
		L					30						
		M ₁					39.6	19	134				
		M ₂					41.3	18		108			
		L'				16	18						
		F					17.3						
43	" 5	L				7	16						
		F					7.8						
44	" 6	L				3	21						
		F					3.7						
45	" 6			e		15	59.2						
				e		16	3.4						
							3.7						
		L					29						
		F					17.1						
46	" 7	L				1	18						
		F					2.1						

No. 4.

— 6 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks		
									A _N	A _E	A _Z			
	1927		N	E	Z	h	m	s	sec	μ	μ	μ		
47	Nov. 8	PP	ε			3	27						△ = c. 90°.	
		S _c P _c S		e			34.3							
		S _c P _c P _c S	e				34.6							
		SS	e	e			42.1							
		L					52							
		M ₁				4	14.1	20	— 8					
		M ₂					19.0	17		— 4				
		F				5.8								
48	" 9		e	ε		1	42							
		L				2	3							
		M					19.2	18		2				
		F					2.9							
49	" 10	L				3	59							
		F					4.4							
50	" 12	L				12	51							
		F					13.2							
51	" 12	P	ε	e	e	14	52	28					△ = 34°. Persia.	
		S					57	53						
		SS				15	0.1							
			e				1.1							
			e	e			1.9							
		L	e				4							
		"					7							
		M ₁		e			9.4	11		3				
		M ₂					10.0	12	4					
				F				16.4						
52	" 12	L				22	31							
		F					23.0							
53	" 14	P	i	e	i	0	20	33		+		—	△ = 47°. Siberia.	
		PP					22.4							
							24.0							
		P _c S					26							
		S		e			27	18						
		"	i		e		20							
					i		26							
		SS					30.3							
			e	e	e		30.7							
			e	e			32							
		M ₁					38.4	5				15		
		M ₂					39.3	22	296					
		M ₃					39.6	20		— 179				
		F				2.4								

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
54	1927 Nov. 14	P	N	E	Z	h	m	s	sec	μ	μ	μ	△ = 47°. Repetition of preceding shock.
			e		i	5	4	58					
		PP			e			5.0					
								6 47					
		S			e			8.3					
					e	11	44						
					e			46					
					e			50					
55	" 14	SS	e					14.6	5 17; 18	— 421	283	35	F disturbed.
			e		e			15					
		M ₁						23.2					
		M ₂						23.6					
		F						7.5					
		P	e		e	7	34						
		PP	e	e				38 19					
		"	e	e	e			36					
		PPP			e			40 51					
			e					41.6					
		S _c P _c S		e				44					
		S	e					45.8					
					e			46.0					
			e					46.7					
		PS	e	e	e			48.0					
		PPS	e	e				48.5					
56	" 14	SS	e	e				54	28 28 c. 18	— 29	— 16	F disturbed.	
		L	e			8	9						
		"		e	e			11					
		M ₁						14.8					
		M ₂						22.2					
		C											
		P	e			15	23						
				e				30					
		S	e	e				33 0					
		SS	e	e				38.9					
57	" 14	SSS	e					43	21 17	— 4	— 1		
		L						54					
		M ₁				16	7.6						
		M ₂					9.3						
		F						17.1					
								17 12					
		F						17.4					
58	" 15	P			e	8	40	43		—	Aleutic Islands. Disturbed by change of sheets.		
		L				9	4						
		F						10.2					
59	" 15	F				15.0 15.2							

No. 4.

— 8 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A _N	A _E	A _Z		
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
60	Nov. 15	P				21	57	11					Δ = 46°.
		S				22	3	56					
		(SS)						7.8					
								9					
		L						13					
		M ₁						15.7	14		— 9		
		M ₂						17.7	13	— 6			
F					23.0								
61	„ 16-17	P				21	23	42					Δ = c. 99°.
		PP						27.6					
		S _c P _c S						34.1					
		S						34.7					
		PS						36					
		SS						41.8					
		L						(47)					
		M ₁				22	0.6		35			— 59	
		M ₂					1.3		30	— 109			
		M ₃					2.5		21		— 38		
		M ₄					10.4		23			41	
		M ₅					12.0		19		— 32		
		F					0.3						
62	„ 17	L				14	48						
		F				15.2							
63	„ 17	L				15	45						
		F				16.3							
64	„ 17	L				23	29						
		F				39							
65	„ 18					3	41						
		S _c P _c S		ε	e			48.6					
		L				4	10						
		M ₁					17.8	22	— 12				
		M ₂					24.8	18		12			
		M ₃					24.9	19			— 11		
		F					5.3						
„ 18											No records from c. 8 ^h till 14 ^h .		
66	„ 19					7	17						
		F				37							
67	„ 19	L				8.7						Disturbed.	
		F				9.7							
68	„ 19	L				18	14						
		F				18.5							

No. 4.

— 9 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks			
							A _N	A _E	A _Z				
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
69	Nov. 20	L				18	9						
		F				18.7							
70	" 21	L				19.7							
		F				20.2							
71	" 21-22	PPP				23	35.2						Δ = c. 120°. 44° S. 74° W.
		S _c P _c S					38.5						
		PS	e				41.6						
		SS	e	e			49.8						
		SSS		e			54						
		L				0.0							
		M ₁				0	14.2	30	— 59				
		M ₂					16.8	25				30	
		M ₃					20.4	22				— 60	
		M ₄					23.5	27		58			
		M ₅					23.9	20				— 62	
		M ₆					24.2	20	28				
		M ₇					32.0	19		— 58			
		F				2.4							
72	" 22	L				13	29						
		F				14.2							
73	" 23	L				0	54						
		F				1.3							
74	" 26	S _c P _c S	e	i		13	18	12					Δ = c. 100°. 23.6° S. 68° W. according to La Paz.
			e	i			18	56					
		PS	e	e			21.0						
		(L)	e	e			37.6						
		F				14.5							
75	Dec. 1	S _c P _c S		e		5	1	57					Δ = c. 100°. Celebes, according to Batavia.
			e				2.6						
		SS		e			8						
		L					31						
		M					38.6	24	— 17				
		F				6.2							
76	" 1					23	13						
		F				25							
77	" 4	L				4	35						
		F				50							
78	" 5	L				18	48						
		F				18.9							

No. 4.

— 10 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks			
							A _N	A _E	A _Z				
	1927		N	E	Z	h	m	s	sec	μ	μ	μ	
79	Dec. 11		ε			16	11.9						
				e			16.2						
		L				16.8							F in following.
80	" 11		ε	e		17	50	20					
				ε	ε		52.8						
			e				58						
		L				18	17						
		M ₁					21.8		30	— 9			
		M ₂					31.9		23		— 3		
		F				19.1							
81	" 12					20	21.9						
		F				21.1							
82	" 15		ε	ε		16	37						
		L		e		17	7						
		"			e		8						
		F				17.8							
83	" 28	F	ε		i	9	5	45			+		Δ = c. 65°.
		"		ε			6.0						Kamtchatka.
		PP	ε		i		8	11					
		S	ε	ε			14.5						
		SS	e				19.0						
		SSS	e		e		22.5						
		L		e			27						
		"	e				31						
		M ₁					33.3		19	— 7			
		M ₂					33.5		19		— 5		
		M ₃					39.7		12; 15	— 4	— 9		
		F				10.4							
84	" 28	P	e		i	18	31	15			+		Δ = 65°.
		"		e			18						Kamtchatka.
		m ₁					31.5		8		— 27		
		PP	e	e	i		33	50					
		m ₂					33.9		11		— 36		
		PPP					35	43					
		S	e	ε			40	8					
		"	e	i			15						
				e			41.0						
			e				41	49					
		SS		e	e		44.4						
		"	i				44	42					
		SSS					47						
		L		e			49						
		"	e				52						
		M ₁					58.9		20	— 188			
		M ₂					59.9		16		— 144		

No. 4.

— 11 —

1927.

København.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
		N	E	Z	h	m	s		A _N	A _E	A _Z	
84	1927 Dec. 28											
		M ₃			19	0.5		19			83	
		M ₄				6.2		14			81	
		M ₅				6.3		14	118			
		L'			21.0							
85	" 30	F			22.5							
		L			13	2						
86	" 30-31	F			13.7							
		L			23	54						
87	" 31	F			0.5							
		L			14	22						
88	" 31	F			39							
		L			19	30						
		F			20.4							

The seismological station København was erected during the autumn 1926 and the service inaugurated in November that year. During the first months the time-service occasionally failed and it was not until March 1927 that the working of the station was considered satisfactory and the publication of the records began.

The station is equipped with

- 1 Wiechert 1000 kg. horizontal seismograph,
- 1 Wiechert 1300 kg. vertical seismograph,
- 3 component Galitzin pendulums with galvanometric registration,
- 2 component Milne-Shaw seismographs,
- 2 component Wood-Anderson torsion seismometers.

The instruments are not always all working and in each bulletin it is stated which instruments have been working during the corresponding period and their constants for that period are given.

The time-marking clock is controlled daily by scientific time-signals from Nauen or from Tour Eiffel, and time is known with an accuracy of $\frac{1}{10}$ sec.

The coordinates of the station are: $\varphi = 55^{\circ}41' N.$, $\lambda = 12^{\circ}27' E.$, $h = 13$ m. The lithologic foundation consists of chalk.

Seismometric readings: Notation

- P — normal first preliminary tremors, longitudinal waves.
 - $PP...$ — longitudinal waves reflected at the earth's surface.
 - S — normal second preliminary tremors, transverse waves.
 - $SS...$ — transverse waves reflected at the earth's surface.
 - $PS; PPS; ...$ — waves reflected at the earth's surface which travel partly as longitudinal, partly as transverse waves.
 - P' — longitudinal waves that have traversed the earth's central core.
 - $\overline{S_e P_e S}$ — waves which traverse the mantle as transverse waves but are refracted through the core with longitudinal oscillation.
 - $\overline{P_e P_e S}$ — waves which pass the mantle on one side of the core as longitudinal waves, on the other side as transverse waves and are refracted through the core with longitudinal oscillation.
 - $\overline{S_e P_e} \overline{P_e S}$ — waves which traverse the mantle as transverse waves, are refracted through the core with longitudinal vibration and are reflected on its inner boundary.
 - L — long, or surface, waves; main phase. (L_Q — transverse waves; L_R — Rayleigh waves).
 - L' — surface waves travelling along the major arc to the station.
 - $M(M_1, M_2, ...)$ — waves of greatest amplitude in the surface waves.
 - $m(m_1, m_2, ...)$ — waves of greatest amplitude in other phases.
 - C — regular waves at the end of main phase.
 - F — end of discernible movement.
 - i — sharply defined beginning of a phase.
 - e — gradual beginning of a phase.
 - ϵ — beginning of a phase which is but faintly discernible.
 - A_N, A_E, A_Z — half amplitude of earth motion measured from the position of equilibrium in microns (1 micron, $\mu = \frac{1}{10^3}$ mm) positive towards north, east or zenith.
 - Δ — arcual distance from the station to the epicenter.
- M and m are, as a rule, measured on the Galitzin records; if they are measured on the records of other seismographs they are marked with an asterisk. The time of M and m is not corrected for retardation.