

**ADELAIDE OBSERVATORY,
SOUTH AUSTRALIA.**

SEISMOLOGICAL BULLETIN.

Prepared under the direction of
G. F. DODWELL, B.A., F.R.A.S.,
GOVERNMENT ASTRONOMER.

ϕ . 34°. 55'. 38 0". S. λ . 9^h. 14^m. 19-81^s. E. Height above Mean Sea Level—134 feet.

SITUATION.—5 miles West of Mount Lofty Ranges, 5 miles East of Sea Coast.

FOUNDATION.—Marly Limestone and Clay of Adelaide Plains, to depth of 40 feet. Miocene Sandstone probably below. Depth of bedrocks not known, probably 1,000 to 2,000 feet.

INSTRUMENTS.—Milne's Horizontal Pendulum, No. 50, 1904 Pattern. E.—W. Component Recorded.
Milne-Shaw Seismograph, No. 35. N.—S. Component.

NOTATION.

- | | | |
|-------------------|--|-----------------------|
| I. = perceptible. | II. = striking. | III. = very striking. |
| | d (domesticus) = local. | |
| | v (vicinus) = near (less than 1000km.). | |
| | r (remotus) = distant (1000km.—5000km.). | |
| | u (ultimus) = very distant (over 5000km.). | |

PHASES.

- | | |
|-----------------------------------|---|
| P (primae) | = 1st preliminary tremors (commencement). |
| S (secundae) | = 2nd preliminary tremors (commencement). |
| L (longae) | = 2nd principal phase, Rayleigh waves. |
| M (maximae) | = maximum amplitude of L waves. |
| C (coda) | = a prominent wave among the "after tremors." |
| F (finis) | = last perceptible movement (non-microseismic). |
| PR ₁ , PR ₂ | = 1st and 2nd reflected waves of P. |
| SR ₁ , SR ₂ | = 1st and 2nd reflected waves of S. |
| i (impetus) | = abrupt commencement, clearly defined. |
| e (emersio) | = gradual commencement, not clearly defined. |
| E, N | = E-W or N-S component of earth oscillation. |
| Δ | = approximate distance from epicentre in km. |
| E.Q. | = earthquake. |


ADELAIDE OBSERVATORY.
 Monthly Seismological Bulletin JANUARY 1931.

Bulletin No. 1

No.	Date	Phase	Time (Greenwich) H. M. S.	Recorded Period of Waves N-S	A N	A E	Δ in Kms.	Remarks.
1	2	i(S) i i L Me ₁ Mn ₁ Me ₂ Mn ₂ Mn ₃ Me ₃ Mn ₄ F	10 10 27 19 18 25 00 42 10 51.0 51 10 54.8 57.3 58.9 11 00.0 03:2 12 00	19 15 18 15	0.9 1.2 1.3 1.0	0.8 2.6 1.4		Phases obscured by micros. Off Mexican Coast.
2	5	eP iS L Mn F	18 11 20? 13 59 14 14 14 40 18 25	10	0.3		1600?	Very small movement- E-W movement lost in micro.
3	7	i iL Mn F	12 54 36 57 56 13 00 35 13 15	10	0.7			no definite Mg. in micros.
4	10	P iS iL Me Mn ₁ Mn ₂ F	21 29 55 34 07 35 32 35.5 36 50 39 10 22 25	9 9	1.3 1.4	0.6	2650?	P. in hour break.
5	12	i(S) L Mn Me F	20 57 39 21 20 08 31 10 33 25 21 50	20	0.7	0.7		
6	15	No E-W record from 13th 2H 47 ^m to 16th 3 ^h 12 ^m .						Mexico.
		i(S) i i i(GR ₂) i iL Mn ₁ Mn ₂ F	2 13 07 17 27 22 11 29 09 29 21 40 40 43 44 55 35 57 20 5 35	18 45 approx. 20 17	1.4 6.4 6.9			
7	15	e e i i(L) Mn F	21 22 00 27 28 33 13 34 20 40 30 22 10	20	1.0			
8	15	iP iS L Mn ₁ Mn ₂ Mn ₃ Mn ₄ F	22 49 32 54 50 58 43? 23 03 00 04 05 06 15 07 05 24 40	12 14 10 10	16.5 25.2 11.5 14.5		3600	

Adelaide Observatory Seismological Bulletin

January 1931 Continued.

No.	Date	Phase	Time (Greenh.) H.M. S.	Recorded Period of Waves N-S	A N mm	A E mm	 in kms.	Remarks.
9	16	i	19 42 56	20	0.8	1.0		
		e	50 23					
		e	20 16 05					
		Mn ₁	25 20					
		Me	28.4					
		Mn ₂	31 20					
F	21 10? in micros.	18	0.5					
10	17	i	3 13 13	22	0.7	0.7		
		e	20 18					
		e	26 48					
		L	41 25?					
		Me ₁	52.0					
		Mn ₁	53.0					
		Me ₂	55.5					
		Me ₃	59.5					
		Mn ₂	4 00.8					
Me ₄	03.0	16	0.7	0.6				
F	4 50? in micros.			0.5				
11	18	i(S)	13 28 53	23	0.7	0.7		Strong micros present.
		Mn	36.3					
		Me	40.7					
12	19	eP	12 30 12	12	4.8	2.7	3220	
		iS	35 07					
		iSR ₂	36 40					
		i	36 55					
		L	37 36					
		Mn ₁	42 00					
		Me ₁	42 00					
		Me ₂	43.5					
		Mn ₂	44 20					
Mn ₃	45 10	10	3.0	2.1				
F	13 50		3.4					
13	19	iP	16 00 39	8	1.6	1.1	2870?	i(S) very small.
		i	01 11					
		i(S)	05 10					
		i	05 42					
		iL	07 09					
		Me	07.1					
		Mn ₁	08 43					
		Mn ₂	11 11					
F.	17 05							
14	20 21	e	23 57 32	14	0.9	0.3		
		iS	0 00 35					
		L	03 38?					
		Me	04.3					
		Mn	07 15					
		F.	0 45					

Seismological Bulletin January 1931 Continued.
 Adelaide.

No.	Date MYM Jan.	Phase	Time Recorded		Period of Waves N-S	A		A in kms.	Remarks.	
			H.	M. S.		N mm	E mm			
15	24	iS	13	56 30	20	1.9	0.9	5400		
		i(SR ₁)		59 32						
		L	14	02 23						
		Me ₁		09.7						0.9
		Me ₂		11.8						0.9
		Mn ₁		12 00						0.8
		Me ₃		17.1						
		F. ₃	14	40 in micros.						
16	28	iP	21	32 29	14	9.0	6.2	5400		
		iPR ₁		34 13						
		iS		39 30						
		i(SR ₁)		42 42						
		i		45 11						
		iL		46 49						
		Me ₁		49.0						4.5
		Mn ₁		50 50						4.0
		Me ₂		51.0						
		Mn ₂		53 00						10.2
		Me ₃		53.6						12.0
		Mn ₃		53 55						13.5
		Mn ₄		55 25						
		Mn ₅		57 40						4.5
Me ₄		58.1								
Mn ₆		59 20	10.8							
		F	23	55? in micros.						

CONSTANTS. Milne-Shaw (N-S Component) Period to 20th, 14^s.5; from 20th, 16^s.

Damping ratio 20 ; 1. Magnification 150.

Milne (E-W Component) Period 19^s.6 Sensitivity 0".33

ADELAIDE OBSERVATORY.


Seismological Bulletin FEBRUARY 1934

Bulletin. No. 2

StaNo.	Date	Phase	Time (Green ⁿ) H. M. S.	Recorded Period Waves N-S	A		△ in kms.	Remarks.		
					N mm	E mm				
17	2	iP	22 53 04			8.8	3470	Hawkes Bay New Zealand 0.22 46 42 On extreme edge of pa- per, may not be S. Mn's approx line run off paper. Against stops. Milne from 23 ^h 04 ^m 20 ^s to 23 ^h 07 ^m 40 ^s .		
		(19) ^N	58 00							
		iS ^E	58 14							
		i	58 38							
		i	59 50							
		L	23 01 00?							
		Mn ₁	01 10						19	65
		Me ₁	01 10							7.5
		Mn ₂	02 50						12.5	109.5
		Me ₂	02 50							
Mn ₃	03 20	12	108.5							
F	2 35									
18	3	i(L)	8 54 43	16		0.4		Red. indis- tinct.		
		Mn	57 20							
		Me	59.5							
		F	9 45							
19	3	e	12 47 29					Small ampli- tude, no definite max.		
		e?	47 26							
		F	13 05							
20	4	i	4 46 45	18		0.9		Phases masked by micros & changing paper.		
		Mn	5 01 40							
		Me	04.3							
		F	5 16							
21	8	i	9 08 46					Milne-Shaw line dif- ficult to read, owing to large level chan- ges.		
		L	12 00?							
		Me	15.8							
22	8	e	1 55.0					Milne-Shaw line off paper.		
		i	58 00							
		Me ₁	59 45							
		Me ₂	2 02 20							
23	10	eP	6 42 55				4700	Milne-Shaw line off paper.		
		iPR ₂	45 13							
		iS	49 18							
		i	51 12							
		iL	54 57							
		Me ₁	58.8							
		Me ₂	7 00.5						7.6	
		Me ₃	01.8							
		Me ₄	04.1							
		Me ₅	05.7						8.1	
Me ₆	07.7	7.4								
Me ₇	08.9	8.3								
24	11	eP	17 09 55?	18		2.1	3000?	Mistakes in Preliminary bulletin.		
		iS	14 14							
		iL	16 10							
		Mn	19 30							
		Me	21 20							
		F	18 15							
25	12	e	5 52.9					Milne-Shaw line off paper at 2h 50 ^m .		
		iS	58 38							
		i	6 02 00							
		L	05 05							
		Me ₁	09 20							
		Me ₂	13 00							
		Me ₃	16 10							
		Me ₄	18 20							
		F	7 15							
									1.0	
		4.3								
		2.1								
		1.5								

) against stops.

ADELAIDE OBSERVATORY.
Seismological Bulletin February 1931 Continued.

No.	Date	Phase	Time (Greenh) H. M. S.	Recorded Period of Waves N-S	A N mm	A E mm	 in kms.	Remarks.
26	13	1P	1 33 41				3410	0. 1 st 27 th 34 th Milne off kaxak level. Mn ₂ & Mn ₃ approx in amplitude and time.
		i	34 39					
		iS	38 48		8.8			
		i	39 30					
		iL	40 45					
		Mn ₁	41 25	15	41.9			
		Mn ₂	44.0	14	132			
		Mn ₃	46.5	12	115			
Mn ₄	47.7	12	65					
F	4 45							
26	14	eP?	14 07 13				4780?	
		iS	13 40					
		i	17 16					
		L	18 46					
		Mn ₁	22 15	20	4.1			
		Me ₁	25 00			0.8		
		Me ₂	28 40			3.0		
		Mn ₂	29 30	20	2.9			
		Me ₃	33 25			1.8		
F	15 40							
28	16	eP	19 00.6				8500?	P. very small very small in- definite move- ment on Milne
		iS	10 14					
		e	19 18					
		L	26.07					
		Mn ₁	33.7	21	0.6			
		Mn ₂	39.2	20	0.6			
F	20 205							
29	18	eL	19 30 37					Nothing defin- ite on Milne
		Mn	24 20					
		F	19 50					
30	19	eP	17 48 05				5530	Reported felt at Cocos. Is. Red. confused
		iS	55 14					
		L	18 01 34?					
		Mn ₁	03 50	18	9.5			
		Me ₁	06 40			2.5		
		Mn ₂	06 50	15	8.6			
		Mn ₃	07 55	18	6.7			
		Mn ₄	09 50	20	7.5			
		Me ₂	10 00			9.2		
		Me ₃	13.3			2.2		
Me ₄	15.9			3.5				
F	19 40							
31	19	iP	21 37 10					Phases obscur- ed by micros.
		i(S)	21 43 41					
		L	48 30?					
		Mn	51.0	18	1.7			
		Me	53.5			0.8		
		F	22 07? in micros.					
32	20	iP	5840 56		2.5		8300	P & S very sharp, follow- ing phases small.
		iS	54 29		6.4			
		i	56 05					
		L	6 08 10?					
		Me ₁	10 50			1.0		
		Mn	15 10	20	20			
		Me ₂	19 20			0.7		
		F	7 30					

ADELAIDE OBSERVATORY.

Seismological Bulletin FEBRUARY 1931 Continued.

No.	Date Feb.	Phase	Time (Greenh) H. M. S.	Recorded Period of Waves N-S	A		△ in kms.	Remarks.
					N mm.	E mm.		
33	22	e? e L Mn	21 22 12 40 49 46 30 50 10	11	1.1			
34	24	1 L Me Mn Me ₂ F	17 39 40 44 15 43.5 48 40 52.5 18 50	13 *	1.2 1.2	0.5 0.5		
35	25	1 L Mn	21 10 25 14 12 16.7	16				Only few waves scarcely perceptible on Milne.
36	26	L Mn ₁ Mn ₂ F	18 59 46? 19 02 46 03 50 19 20	12 12	1.2 1.1			Phases very indefinite-masked by irregular long period waves.
37	27	e 1 L Me Mn F	1 46 07 49 17 54 15? 58.5 58.45 2 20	15	0.9	0.4		
38	27	1P 1S 1 1 L Me ₁ Mn Me ₂ F	9 45 03 50 52 53 18 55 40 55 40 10 01 55 10 03 50 10 20 10 45	17	1.9 2.0 2.4	1.3 1.5	4130	

Constants. Milne-Shaw(N-S Component) Period 15.0 secs.
 Damping ratio 20 : 1
 Magnification(nominal) 150
 Milne(E-W Component) Period 19.4
 Sensitivity 0".38

ADELAIDE OBSERVATORY.
Seismological Bulletin MARCH 1931

No.	Date Mar.	Phase	Time (Green ⁿ) H. M. S.			Recorded Period of Waves N-S	A		△ in kms.	Remarks.
							N mm.	E mm.		
39	2	1P	2	24	47				3200?	just before hour break- S. may be in break.
		iPR ₂	26	49						
		iS	28	40?						
		iL	31	40						
		Mn ₁	33	10	15	16.3				
		Me ₁	35	00			2.6			
		Mn ₂	36	15	14	21.2				
		Me ₂	39	00			2.9			
F	4	05								
40	3	e	19	40	50?				Phases ob- scured by mberos.	
		L	18	36?						
		Mn	23	05	10	0.5				
		Me	22	.1			0.6			
		F	19	36						
41	5	e	0	31	35?					
		k	12	32						
		L	34	35						
		Mn	35	.5	11	0.4				
		Me	36	.7			0.4			
F	0	50								
42	5	e	22	07	.1					
		L	09	.8						
		Mn	12	.7	10	0.5				
		Me	13	.0			0.3			
		F	22	18						
43	7	eP	10	07	00				3470	
		iS	12	10						
		iSR ₂	14	20						
		iL	15	23						
		Mn ₁	18	10	18	3.7	2.1			
		Me ₁	18	.5						
		Mn ₂	19	20	12	6.4				
		Mn ₃	20	25	10	4.7				
		F	11	50						
44	7	e	12	33	25					
		L	33	58						
		Mn	35	30		0.7				
		Me	35	30			0.4			
		F	12	50						
45	7	eS	18	30	38?				Phases very small and indefinite.	
		L	33	40						
		Mn	35	20	18	1.0				
		Me	36	.0			0.7			
		F	19	24						
46	7	e	23	31	09					
		L	31	37						
		Mn	32	50	11					
		F	23	53						
47	8	e	2	54	.5				Red. indis- tinct. here. Milne-Shaw line off paper from 2430 ^m to 6 ^m 19 ^m .	
		i	3	03	04					
		e	05	36						
		Me ₁	10	.8			0.8			
		Me ₂	14	.7			0.7			
		F	3	45						
48	8	e	6	08	.5					
		e(L)	13	44						
		Me	15	.0			0.8			
		F	8 ⁷	45 ⁰						

ADELAIDE OBSERVATORY.

Seismological Bulletin March 1931 Continued.

No.	Date	Phase	Time			Recorded Period of Waves N-S	A		△ in kms	Remarks.
			H.	M.	S.		N mm.	E mm.		
48	8	e	6	08	5					
		e(L)		12	44					
		Me		15	0			0.8		
		F	7	10						
49	8	eP	8	30	46					
		e		40	40					
		eL		43	55					
		M ₁		45	5					
		M _n		46	20	12	0.3		Very small	
		F	9	25						
50	8	eP	11	56	55				3360	
		S	12	01	59					
		iL		04	06					
		M _{n1}		04	40	8	1.5			
		M _{n2}		08	00	15	2.8			
		Me		09	35			2.3		
		M _{n3}		09	35	11	8.1			
		F	12	15						
51	9	eP	4	00	44				8160	
		iS		10	13					
		i		15	44					
		L		21	45					
		iL ₂		23	30					
		M _{n1}	4	34	15	19	2.4			
		Me ₁		34	3			1.4		
		M _{n2}		41	35	19	1.8			
		Me ₂		43	5			1.9		
		iW ₂	6	22	56					
		F	7	50						
52	11	iP	6	09	44				2900	
		i		10	21					
		iS		14	17					
		i		15	04					
		L		16	10					
		Me ₁		16	3			1.2		
		M _n		18	25	10	3.3			
		Me ₂		19	3			0.9		
		F	7	10						
53	11	eP	12	36	37				6340	
		iS		44	31					
		i		51	21					
		i(L)		53	00					
		Me ₁		56	45			1.5		
		Me ₂		58	50			1.6		
		M _{n1}	13	00	45	20	3.2			
		M _{n2}		02	20	16	3.0			
		M _{n3}		04	40	15	2,3			
		Me ₃		05	5			1,2		
		Me ₄		07	0			1,4		
		F	14	19						
54	12	e(S)	10	58	30					
		e	11	05	45					
		L		09	53					
		M _{n1}		14	30	20	1.4			
		Me ₁		14	30			0.6		
		M _{n2}		18	20	14	1.2			
		Me ₂		18	30			0.6		
		F	13	10						

Lines of milne shaw record run together e(S) and L. strong on Milne.

ADELAIDE OBSERVATORY.
Seismological Bulletin March 1931 Continued.

No.	Date	Phase	Time (Green ⁿ) (H. M. S.)	Recorded Period of Waves N-S	A N mm.	A E mm.	△ in kms.	Remarks.
55	18	e	8 25 30					
		i	27 05					
		i	31 18?					
		L	47 10?					
		Mn ₁	53 00	24	2.5			
		Me ₁	55 15			0.9		
		Mn ₂	58 00	18	2.3			
		Me ₂	9 00 25			1.2		
		Mn ₃	03 00	18	2.6			
Me ₃	04 10			1.1				
F	11 10							
56	18	iP	20 21 30		2.5		4510	0 = 20 ⁿ 18 ^m 49 ^s
		iPR ₁	23 06					
		iS	27 41		6.8			
		i	28 10					
		i(SR ₂)	30 45					
		iL	31 30					
		Me ₁	32 10			3.8		
		Me ₂	36 05			2.3		
		Me ₃	38 40			4.0		
		Mn ₁	38 50	20	6.0			
		Me ₄	39 30			3.7		
		Mn ₂	40 05	18	6.5			
		Mn ₃	42 55	16	6.4			
F	21 55							
57	19	iP	6 24 38				6040	0 = 6 ⁿ 25 ^m 13 ^s
		iS	42 15					
		L	50 11					
		Me ₁	52 40					
		Mn ₁	54 50	20	IXX 1.0			
		Me ₂	55 40		3.7			
		F	7 55			0.9		
58	28	iP	12 44 23				3220	0 = 12 ⁿ 38 ^m 27 ^s
		i	45 09					
		iS	49 24					
		iL	51 19		39			
		Mn ₁	53 40	13	47.6			
		Me ₁	55 00					
		Mn ₂	55 00	10	56.5			
		Mn ₃	56 15	10	38.0			
		Me ₂	56 20			11.6		
		Mn ₄	57 35	12	57.5			
		Mn ₅	58 15	12	30.9			
Me ₃	59 50			5.4				
F	14 35							
59	30	eL	15 26 24					
		Mn	31.3	17	0.6			
		Me	31.3					
		F	15 42			0.3		

Constants. Milne-Shaw. N-S Component
 Period 1st-8th, 13^s.5; 8th to 31st, 15^s.0
 Damping ratio 20 : 1. Magnification (nominal) 150.
 Milne. E-W. Component.
 Period 19^s.8 Sensitivity 0".38

ADELAIDE OBSERVATORY.



From the ISC collection scanned by SISMOS

Seismological Bulletin APRIL 1931.

No.	Date	Phase	Time		Recorded Period of Waves N-S	A		△ in kms.	Remarks.
			(Green ⁿ) H. M. S.	S.		N	E		
60	3	eP	23	25 57				3480	0- 23 19 35
		iS		31 08					
		L		34 00					
		Me1		35 25			1.0		
		Mn1		38 00	17	1.2			
		Me2		39 30			0.7		
		Mn2		41 05	14	1.6			
		Me3		42 20			1.1		
F	24	30							
61	5	eP	21	36 39					Very small No definite Mn.
		i		41 12					
		i		43 07					
		Me		48.2			0.4		
		F	22	20					
62	6	iP	6	56 09				3360	0.- 6 49 56
		i		56 23					
		i		57 06					
		iS	7	01 13					
		i		01 32					
		iSR1		03 04					
		iSR2		03 28					
		L		04 05					
		Mn1		07 55	20	10.0			
		Mn2		09 20	17	11.9			
F	8	40						E-W line off paper.	
63	9	iP	19	10 01				3740	May be two earthquakes.
		iS		15 28					
		i		17 36					
		i(S ₂)		21 50					
		iL		23 42					
		Mn1		24 40	12	3.0			
		Mn2		25 55	10	5.1			
		Mn3		26 50	11	3.4			
		Me		27.5			0.7		
		F	20	00? in micros.					
64	9	i	23	23 00					
		eL		35.07					
		Me		40.5			0.2		
		Mn		42.4	24	0.4			
		F	24	02					
65	11	iS	15	14 31					
		L		17 30					
		Me1		21 00			0.4		
		Mn1		22 35	17	1.8			
		Me2		23 30			0.4		
		F	15	56					
66	12	eP	2	06 40†				3360?	Milne-Shaw line ran off paper at 2h7 ^m . record changed at 2 ^h 16 ^m to 2 ^h 18 ^m
		S		11 44					
		L		15 00					
		Me1		16.3			2.1 ^x		
		Me2		17.9			2.7 ^x		
		Mn		18 20	11	16.1			
		Me3		19.0			1.9		
		Mn		19 30	11	14.8			
F	3	45							
67	15	iS	12	10 33					
		L		14 11					
		Mn		18 50	184	1.0			
		Me		20.6			0.3		
		F	12	52					


x- may be affected by movement of person in room, but not noticeable on record.

ADELAIDE OBSERVATORY.

Seismological Bulletin April 1931 Continued.

No.	Date	Phase	Time	Recorded	A	A	Remarks.
			(Greenh) H. M. S.				
68	16	eP	21 41 06				3950
		iS	46 44				
		i	49 34				
		L	51 09				
		Mo ₁	52.3			0.6	
		Mn ₁	53 45	18	1.7		
		Mn ₂	55 50	10	1.9		
F	22 55						
69	17	e	5 39 36				
		iL	43 01				
		Mn ₁	46 00	19	1.3		
		Mn ₂	49 00	13	1.5		
		F	6 27				
70	17	xi	9 18 51				Very short waves
		Mn	20 50	7	0.3		
		F	9 30				
71	20	eL	16 52 00				Other phases very small, in micros. No. def. max.
		Mn	53 25	10			
		F	17 00				
72	21	e	23 51 14				
		i	53 20				
		i	54 43				
		Mn ₁	56 20	15	2.4		
		Mn ₂	57 00	14	4.2		
		Mn ₃	57 35	14.3	3.0		
		Me	58.2			2.5	
F.	in next quake.						
73	22	iP	0 18 06				
		L	21 15				
		Mn ₁	24 00	20	2.4		
		Mo ₁	26.6			0.5	
		Mn ₂	27 40	13	3.0		
		Mo ₂	29.7			1.7	
		Mo ₃	32.6			1.0	
		F	1 35				
74	24	e	5 59 00				
		eL	6 02 30?				
		Mn	05.0	17	0.5		
		Me	05.4			very small	
		F	6 35				
75	24	iP	17 28 43				3410
		iPR ₁	29 39				
		iS	33 50				
		i	34 15				
		i	36 20				
		i(L)	36 40				
		Mo ₁	38.97			1.8	
		Mn ₁	41 50	15	12.7		
		Mo ₂	42.2			5.5	
		Mn ₂	42 25	15	8.4		
		Mn ₃	45 35	15	6.0		
		Mo ₃	46.1			3.7	
		Mn	18 56 25	14	1.5		
		Me	56.9	22	22.2	0.9	
F	19 40						
76	24	e	20 00 50				Long period waves Very small on Milne (E.-W.)
		Mn	06.5	22	0.7		
		F	20 45				

ADELAIDE OBSERVATORY.
Seismological Bulletin April 1931, Continued.

No.	Date	Phase	Time (Green ^h) H. M. S.	Recorded Period of Waves N-S	A N mm.	A E mm.	 in kms.	Remarks.
77	25	e Mn F	8 44 14 50 00 9 30	16	0.3			Very small
78	25	e? e i Me Mn F	19 29 00 20 47 35 09 39.0 45 00 20 03	10	0.5	0.4		
79	25	e L Me Mn F	22 15 15 20 20 22.2 24 40 22 50	15	0.7	0.4		
80	27	e e Mn ₁ Mn ₂ Me ₃ F xxxxxxx	17 18 35 28 23 41.9 58.0 18 00.0 18 43	36 18	0.6 0.5	0.6		
81	27	e? e i Mn F	21 17 00 20 20 24.00 28.1 21 45	14	0.4			
82	28	e Mn F	7 33 35 35.5 7 47	12	0.3			

CONSTANTS. Milne-Shaw(N.S. Component) Period 1st to 27th-16^s.0 to 16^s.7.
27th to 30th- 15^s.0
Damping ratio 20 : 1. Magnification (nom.)150.
Milne.(E-W.Component) Period 187 secs.
Sensitivity 0".39.

ADELAIDE OBSERVATORY.

Seismological Bulletin MAY 1931.

Bulletin No. 5

No.	Date May	Phase	Time (Greenh)		Recorded Period of Waves N-S	A		△ in kms.	Remarks.
			H.	M. S.		N mm.	E mm.		
83	3	eL Mn F	2	42.0 46.0 55	13		0.9		
84	4	i i Me Mn F	17	37 45 42 00 44.5 47 40 55	10		0.5	Very small	
85	6	eP eS i i L Mn ₁ Mn ₂ Me ₁ Mn ₃ Mn ₄ Mn ₅ Me ₂ F	15	01 40? 07 29 10 10 10 54 11 26 13 55 14 55 15.6 16 10 17 25 18 15 18.6 20					4130?
86	6 7	i Mn F	23	56 24 0 03.5 0 15	10		0.3		Very small
87	7	e e Mn Me F	5	09 21 10 42 14 05 16.4 5 45	13		0.8 0.5		
88	10	1(L) Mn Me F	20	06 42 09.4 13.5 20 25?	18		0.4 0.3		Micros strong throughout 10th & 11th.
89	11	1? L Mn Me F	3	32 05 40 20? 48 20 48.5 4 12?	14		0.8 0.3		ditto.
90	15	i i i L Mn ₁ Mn ₂ F	7	53 25 56 50 57 40 59 04 8 01 35 04 30 8 30			1.5 0.4 0.4		Very sudden commencement. i's all larger than max. phas- es. Very small on Milne.
91	16	eL Mn Me F	21	24 06 30 35 30.8 21 50?	14		0.8 0.2		Phases masked by heavy micros.
92	17	eL Mn ₁ Me Mn ₂ F	12	20 50 23 20 25.0 27 20 13 02	14 16		0.5 0.6		Earlier phases small-in micros.

ADELAIDE OBSERVATORY.
Seismological Bulletin May 1931 Continued.

No.	Date	Phase	Time		Recorded Period of Waves N-S	A N mm.	A E mm.	△ in kms.	Remarks.			
			H.	M. S.								
93	20	i	2	52 33					Phase between 2h45 ^m .4 and 48 ^m .0, line obliterated. Very long waves, period 85 ^s from 3 ^h 38 ^m to 3h36 ^m			
		e	3	01 50								
		i		13 15								
		L		18 27?								
		Mn ₁		32.5						40	1.1	
		Mn ₂		50.4						20	1.7	
		Me ₁		51.0								0.7
		Mn ₃		53.8						16	2.1	
		Me ₂		54.6								1.3
		Mn ₄		58.6						20	1.5	
Me ₃		58.7			1.3							
F		5 08										
94	24	eP	21	33 20?					Very small, masked by micros.			
		i		35 06								
		iS		36 23								
		L		37 00						2	1.4	
		Mn		37 00						8	1.4	
		Me		39.0								0.2
F		21 55										
95	27	L	7	20 37	16	0.4						
		Mn		25 20								
		F		7 40								
96	30	eP	18	54 20?	13				P. very small. May be micro. All phases masked by micros. Large- est movement (Milne) at 65 ^m .7			
		iP		55 17								
		i(S)		56 11								
		L		57 30								
		Mn		58 05								
F		19 08										

CONSTANTS. Milne-Shaw(N-S Component)

Period 14 secs. Damping ration 20 : 1. Magnification
(Nom. 150.)

Milne(E-W Component)

Period 18.8 secs. Sensitivity 0".39.

		(Greenw.)		period of				
June		H. M. S.		Waves N-S		N	S	in kms.
						mm.	mm.	
97	1	i(S)	1 01 07					Obscured by micros.
		L	01 38					
		Mn	02 30	10		0.8		
		F	1 21					
98	1	eP	12 01 06?					3100? Obscured by micros.
		iS	05 51					
		L	08 50					
		Mn ₁	13 40	14		1.9		
		Mn ₂	14 15	14		1.9		
		Me	14 20				0.6	
		F	12 40					
99	2	e	5 52 06					Irregular
		L	56 05					
		Mn	57 30	x.		1.0		
		Me	59.0				0.3	
100	4	iP	9 56 12					3160 0=2 ^h 50 ^m 16 ^s
		iS	10 01 03					
		SR ₁	02 20					
		L	03 30					
		Me ₁	07.0				0.6	
		Me ₂	08.5				0.6	
		Mn	08 40	11		1.8		
		F	10 40					
101	9	Mn	14 17.0	13		2.6		Milne-Shaw faulty red. off level at 14 ^h 58 ^m .
		Me	24.0				4.5	
102	13	e	15 43 47					Milne red. partly fogged
		e?	47 08					
		L	51 05					
		Mn ₁	55 10	15		1.4		
		Mn ₂	57 45	14		1.5		
		Me	59.0				1.5	
		F	16 43					
103	17	eP	17 07 55					3130 0= 17 ^h 02 ^m 01 ^s
		i	08 16					
		iS	12 44					
		i	14 03					
		iL	16 20					
		Me ₁	17.9				0.4	
		Me ₂	18.8				0.6	
		Me ₃	20.3				0.5	
		Mn ₁	21 25	11		2.0		
		Mn ₂	22 20	10		2.3		
		F	18 20					
104	22	L	15 45 20?					Phases small, in micros.
		Mn ₁	48 03	15		1.8		
		Me ₁	48.6				0.6	
		Mn ₂	49 30	14		1.6		
		Me ₂	50.4				1.0	
		Me ₃	52.1				1.1	
		Me ₄	54.0				0.8	
		F	16 35					
105	23	iS	6 25 29					
		e	39 39					
		eL	48 50					
		Mn	54.5	26		0.5		
		Me	57				0.2	
		F	7 12					
106	27	e(P)	18 07.0?					Phases masked by very strong micros.
		i(S)	12 27					
		L	18.0					
		Me	20.6				0.7	
		Mn	23.0	15		1.6		
		F	18 45					

Constants. Milne-Shaw Period 12^s.5 to 11th, adjusted to 15^s on 11th.
 Damping ratio 20:1. Magnification 150.
 Milne. Period 18^s.3 Sensitivity 0".39

ADELAIDE OBSERVATORY.

Seismological Bulletin JULY 1931- Bulletin No. 7

No.	Date	Phase	Time (Green ⁿ)			Recorded Period of Waves N-S.	A		Remarks.
			H.	M.	S.		N mm.	E mm.	
107	8	e [?] L Mn F	19	23	08 27 30? 28.5 19 26	22	0.4		Me very small & indefinite.
108	12	e i(s) i Me ₁ Me ₂ Me ₃ F	17	00	.1 01 18 05 00 12.1 22.0 26.1 18 35		0.8 0.5 0.5		Milne-Shaw off level for E.Q.'s 108-111 & 114
109	14	eP iS L Me F	15	46	35? 51 51 54 44 56.9 16 05		0.3	3550?	Milne-Shaw off level
110	20	e e L Me F	8	41	.1 45 51 53 48 59 20 9 45		0.5		Milne-Shaw off level.
111	21	i i i L Me ₁ Me ₂	3	42	28 43 36 47 25 51 29 54 05 57 00		0.9 0.9		Preceded by micros. Milne-Shaw off level
112	23	eP i iS i iL Mn ₁ Me ₁ Mn ₂ Me ₂ F	14	26	53 28 15 31 26 32 30 33 40 34 20 34 25 37 25 38 05 15 26	10 17	5.3 5.0 2.0 2.5	2910	P. very small.
113	24	i Mn Me F	0	58	07 58 12? 58 15 1 01		4? 0.5		Trace very faint, rapid movement.

Local shock, felt in city and suburbs generally, also in country from Bute and Saddleworth in the North to Meningie in South East.

114	27	e L Me	12	35	00 36 27 40 55			0.6	
115	28	i Mn	3	53	45 59.3	15	0.6		

During July the seismographs were affected by great level changes, the Milne-Shaw (N-S Component) becoming almost unmanageable, the trace running off the paper and the light spot off the cylindrical lens in a few hours. Period taken on July 22nd was found to be 20^s.4, the increase probably being caused partly by the E-W level changes. This period was reduced to 14^s.0, enabling a larger trace to be registered, but gradually increased again, until at end of month only 4 hours trace was obtainable without adjustment. Recourse was had during the month to the expedient of changing record twice per day. A quantitative investigation of the level changes is in progress.

CONSTANTS. Milne-Shaw (N-S Component) Period 1st-21st, 17-20 seconds; 22nd to 31st, 14-18 seconds. Damping ratio 20 : 1. Magnification 150. Milne (E-W Component) Period 1st to 20th, 17.5 seconds; 21st to 31st, 18-20 seconds. Sensitivity to tilt 0".40 to 0".30.

ADELAIDE OBSERVATORY.
SEISMOLOGICAL BULLETIN AUGUST 1931

No.	Date	Phase	Time ⁿ (Green ⁿ)			Recorded Period of Waves N-S	A A		△ in kms.	Remarks.	
			H.	M.	S.		mm.	mm.			
116	1 Aug	iP	18	27					Milne (E-W) off level		
		iS	21	22							
		iL	22	11							
		Mn ₁	22	50	9.5	5.0					
		Mn ₂	23	32	7	5.3					
		Mn ₃	24	50	9	4.6					
		F	20	30							
117	3	e	9	16.6					Milne-Shaw off level.		
		Me	21.0			0.2					
118	6	iP	15	34 29					May be micro.		
		Mn	43	35	16	0.5					
		F	16	00							
119	7	iP	2	17 58				3470	against stops.		
		iPR ₁	18	56							
		iPR ₂	19	09							
		iS	23	08							
		i	23	20		12.0					
		i	23	46							
		iL	25	38							
		Mn ₁	29	30	6	17.0					
		Me ₁	29.5								
		Mn ₂	31	00	10	34.0					
		Me ₂	32.2		8	48.0 16.4					
		Mn ₃	32	45		49.0					
		Me ₃	35.3				11.0				
		F	4	14							
120	7	i	7	33 03					very small.		
		iL	36	41							
		Mn	37	35	10	1.3					
		Me	38.0								
		F	7	48							
121	7	e	11	16 24					Very small on Milne.		
		L	19	55							
		Mn	20	10	11	0.6					
		F	11	27							
122	7	1(S)	12	04 06					P. in micros.		
		L	05	40?							
		Mn	06	15	11	0.9					
		F	12	22							
123	8	e?	21	08 35					Obscured by mi- cros.		
		i	12	30							
		L	14	11							
		Mn	15	20	16	1.7					
		Me	18.2				0.3				
		F	21	35							
124	10	iP	9	48 06				1950			
		iS	51	18							
		iL	51	45							
		Me	52.5				1.1				
		Mn ₁	52	40	9	3.9					
		Mn ₂	53	30	9	4.0					
		Mn ₃	54	45	8	4.0					
		Mn ₄	55	50	7	3.0					
		Mn ₅	57	00	8	3.5					
				F	10	45					
125	10	eP	21	31 55					Milne-Shaw off level at 13 ⁿ 20 ^m		
		i	37	34							
		i	39	00							
		i	46	38							
		iL	50	54							
		Me ₁	58	10			11.0				
		Me ₂	22	03 00			15.4				
		Me ₃	04	30			17.2				
		Me ₄	08	50			13.6				
				iP	00	06 25					Long period waves.
				F	1	05					

ADELAIDE OBSERVATORY.

SEISMOLOGICAL BULLETIN AUGUST 1931 Contd.

No.	Date	Phase	Time Recorded		Period of Waves N-S	A N mm.	A E mm.	△ in kms.	Remarks.
			(Green ⁿ . H. M. S.)						
126	13	iP	22	14 30				4300	
		iS		20 30					
		i		21 27					
		L		24 24					
		Mn ₁		28 30	20	0.8			
		Me ₁		30.1			1.0		
		Mn ₂		32 00	16	0.9			
		Me ₂		32.1			1.0		
		F	23	34					
127	17	eL	6	51.0					
		Me		52.6			0.5		
		F	7	06					
128	18	e	14	45 00				Milne-Shaw of level.	
		e		54 02					
		e		58 18					
		iL	15	13 48					
		Me ₁		15 40			0.9		
		Me ₂		20 55			1.6		
		Me ₃		26 00			1.4		
		Me ₄		29 00			1.7		
129	22	e	22	44 20					
		L		49 25					
		Me		52.3			0.5		
		F	23	18					
130	27	eP	15	40 45?				Very small.	
		i		45 35					
		iS		51 13					
		i		51 40					
		i		51 55					
		i	16	00 54					
		i		02 11					
		iL		05 36					
		Me ₁		12.5			1.7		
		Mn ₁		15 20	20	5.0			
		Me ₂		15 40			1.9		
		Mn ₂		18 20	21	7.2			
		Me ₃		20 35			5.7		
		Mn ₃		21 35	19	8.6			
		Me ₄		23 40			13.6		
Mn ₄		24 50	16	6.7					
Me ₅		26 50			6.3				
Mn ₅		26 55	19	6.1					
		F	17	45? in micros.					

CONSTANTS. Milne-Shaw(N-S Component)
 Period 13^s Damping ratio 20 : 1. Magnification 150.

Milne(E-W Component)
 Period 1st-13th, 20^s to 23^s.5
 14th-31st, 20^s.
 Sensibility 1st-13th, 0".30 to 0".15
 14th-31st, 0".30.

Note. Tilt effects great throughout the month; vide note to previous month.

ADELAIDE OBSERVATORY.

Seismological Bulletin SEPT. 1931

No.	Date	Phase	Time (Greenh) H. M. S.	Recorded Period of Waves N-S	A		△ in kms.	Remarks.
					N mm.	E mm.		
131	8	e	20 56 40	15	1.3			Poor record.
		Mn	57 30					
132	9	iP	20 47 38		1.4	5770		Single wave. Train of waves. Very sudden. " "
		i	48 09					
		i	50 50					
		is	55 00					
		i	55 35					
		i	57 03					
		iSR ₂	59 51					
		L	21 02 15?					
		Me	05.6					
		Mn ₁	10 55					
		Mn ₂	14 15	18	1.8			
		F	22 00					
133	11	e	21 16 35	14	0.5			
		L	20 32					
		Mn	22 40					
		Me	23 10					
		F	21 41					
134	11	e	22 32 10	20	0.9			Long irregular waves.
		Mn	39 30					
		Me	40 55					
		F	23 00? in micros.					
135	15	S	21 17 57?	12	1.3			Phases masked by strong micros. No Milne record, drum jammed.
		i	19 26					
		Mn	21 25					
		F	21 35					
136	19	e	7 50.0?	16	0.8			uncertain, record not clear.
		i	55 10?					
		Me	8 06.1					
		Mn	07 33.5					
		F	8 25					
137	21	i(S)	2 40 29	20	1.4			Both instruments off level for greater part of 20th.
		L	51 36?					
		Me	59 35					
		Mn	3 00 55					
		F	3 40					
138	21	es	10 45 30	20	1.1			
		L	52 20?					
		Mn	59 00					
		Me ₁	11 04 40					
		Me ₂	09 30					
		F	11 45					
139	21	i	13 40 44	14	1.5			
		is	45 28					
		i	46 45					
		i	47 45					
		L	49 46					
		Mn	53 35					
		Me	54.9					
		F	14 20		0.5			
140	22	e	9 31 00	15	1.0			N-S rec. difficult, lines run together.
		i	40 24					
		L	45.0?					
		Me	46.5					
		Mn	48 30					
141	23	e	22 58 25	15	1.0			A few long waves of small amplitude.
		Mn	23 04 20					
		F	23 18					

ADELAIDE OBSERVATORY.

Seismological Bulletin SEPTEMBER 1931 Continued.

No	Date	Phase	Time (Greenh)	Recorded Period of	A N	A E	△ in kms.	Remarks.
	Sent.		H. M. S.	Waves N-S	mm	mm		
142	25	iP	6 08 00				4800	Felt at Cocos Is.
		iSR ₁	09 49					
		iS	14 28		6.7			
		i	15 36					
		iSR)	17 07					
		i	17 55		11.0			
		L	18 52					
		Mn ₁	23.1	16	38.0			
		Mn ₂	23.8	20	32.0			
		Me ₁	24.6			10.1		
		Me ₂	26.8			17.0		
		Mn ₃	28.5	20	35.6			
		Me ₃	29.7			13.0		
		Me ₄	34.0			13.2		
		F	9 20					
143	25	eP	16 40 29				2570	
		iPR ₁	40 51					
		iS	44 35					
		L	45 46					
		Mn ₁	46 40	8	2.8			
		Me	47 05			1.2		
		Mn ₂	47 20	10	5.0			
		F	17 40					
144	25	eP	20 36 32				2640	
		iS	40 45					
		L	42 10					
		Mn ₁	43 45	9	3.7			
		Mn ₂	45 00	7	2.6			
		Me	45.5			0.4		
		F	21 19					
145	28	e	9 14.0					Milne-Shaw off level.
		eL	16.9					
		Me	19.2			0.6		
		F	9 25					
146	28	L	17 48.1					Difficult record, lines superposed.
		Mn	50.2	16	0.7			
		Me	52.0			0.2		
		F	18 04					
147	29	ki	5 27 43					Irregular waves, no definite maximum.
		e	32.1					
		F	5 55					

CONSTANTS. Milne-Shaw(N-S Component) Period 20^s on 4th, changed back to 15^s, rose to 20^s.5 by end of month. Damping ratio 20 : 1. Magnification 150.

Milne(E-W Component) Period 6th-15th, 21^s to 26^s; 19th-24th, 15^s.5; 25th-30th, 18^s.0 Sensibility 6th-15th 0".30-0".20; 19th-30th, 0".35

Note.

Milne seismograph period became very long owing to N-S level ~~changes~~ changes and instrument was raised on 17th to enable period to be adjusted. Period again changed on the 25th by accidental jolt in resetting pointer on levelling screw.

ADELAIDE OBSERVATORY.

Monthly Seismological Bulletin OCTOBER 1931

XX No.	Date Oct.	Phase	Time (Green ^h) H. M. S.	Recorded Period of Waves N-S	A		△ in kms.	Remarks.
					N mm.	E mm.		
148	3	iP	19 19 51				3550	Lines too faint at max.
		iPR ₁	20 43					
		i(PR ₂)	21 14					
		iS	25 07		12.1			
		i	25 25		30.0			
		i(SR ₂)	27 07		36.0			
		i(L)	27 40					
		Mn ₁	30.5	19	105+			
Mn ₂	31.5		105+					
Milne against stops from 19 ^h 30. ^m 3 to 19 ^h 34. ^m 6								
149	3	P	21 26 33 ^v				3700	Preliminary phases masked by previous shock.
		i(S)	31 38					
		L	33 19					
		Mn ₁	35 55	19	6.5			
		Me ₁	36.5			2.3		
		Mn ₂	36 55	14	6.7			
		Me ₂	37.7			1.6		
Me ₃	39.1			1.7				
150	3	eP	22 02 03 ^v				3700	Preliminaries masked by previous shock.
		i(S)	07 30					
		L	10 35					
		Mn ₁	13 10	20	10.2			
		Me ₁	13.7			4.6		
		Mn ₂	15 00	16	23.5			
		Me ₂	15.0			9.7		
Me ₃	16.6			9.8				
151	3	iP	22 54 08					
		iS	59 16					
		iSR ₁	23 00 45					
		i	01 25					
		L	02 00					
		Mn ₁	05 05	17	46.0			
		Me ₁	06.2			9.5		
		Mn ₂	06 40	18	45.0			
Me ₂	07.8			11.0+				
152	4	e	0 58 00					Milne-Shaw trace off sheet at 0 ^h 45 ^m .
		e	1 04 00					
		Me	07.0			1.8		
153	4	L	6 40 35 ^v					Confused record.
		Mn	42 30	12	0.5			
		Me	42.5			0.2		
154	4	e	6 56 43					
		L	58.9					
		Me	7 01.9			0.6		
		Mn	02 35	13	1.6			
		F	7 25					
155	4	e	8 38 08					very small.
		Mn	41 10	15	0.5			
		Me	41 10					
		F	8 55					
156	4	L	9 36.8					
		Me	38.4			0.3		
		Mn	38 35	15	0.6			
		F	9 57					
157	4	e(L)	11 46 49					
		Mn	49.0	13	0.5			
		F	12 08					
Very small movement preceding, confused with micros.								
158	4	eL	13 42 20					
		Mn	46 18	14	0.8			
		Me	48.0			0.3		
		F	14 15					
Very small movement preceding, confused with micros.								
Also very small movements on 4th at 17 ^h 40 ^m to 17 ^h 49 ^m , and 21 ^h 30 ^m to 21 ^h 35 ^m and 23 ^h 57 ^m to 24 ^h 01 ^m .								
159	4	e	23 01.4					
		Mn	23 03 30	14	0.5			
		Me	23.5			0.3		
		F	23 18					

TA
Signal
01110
(N. 100)

100
6

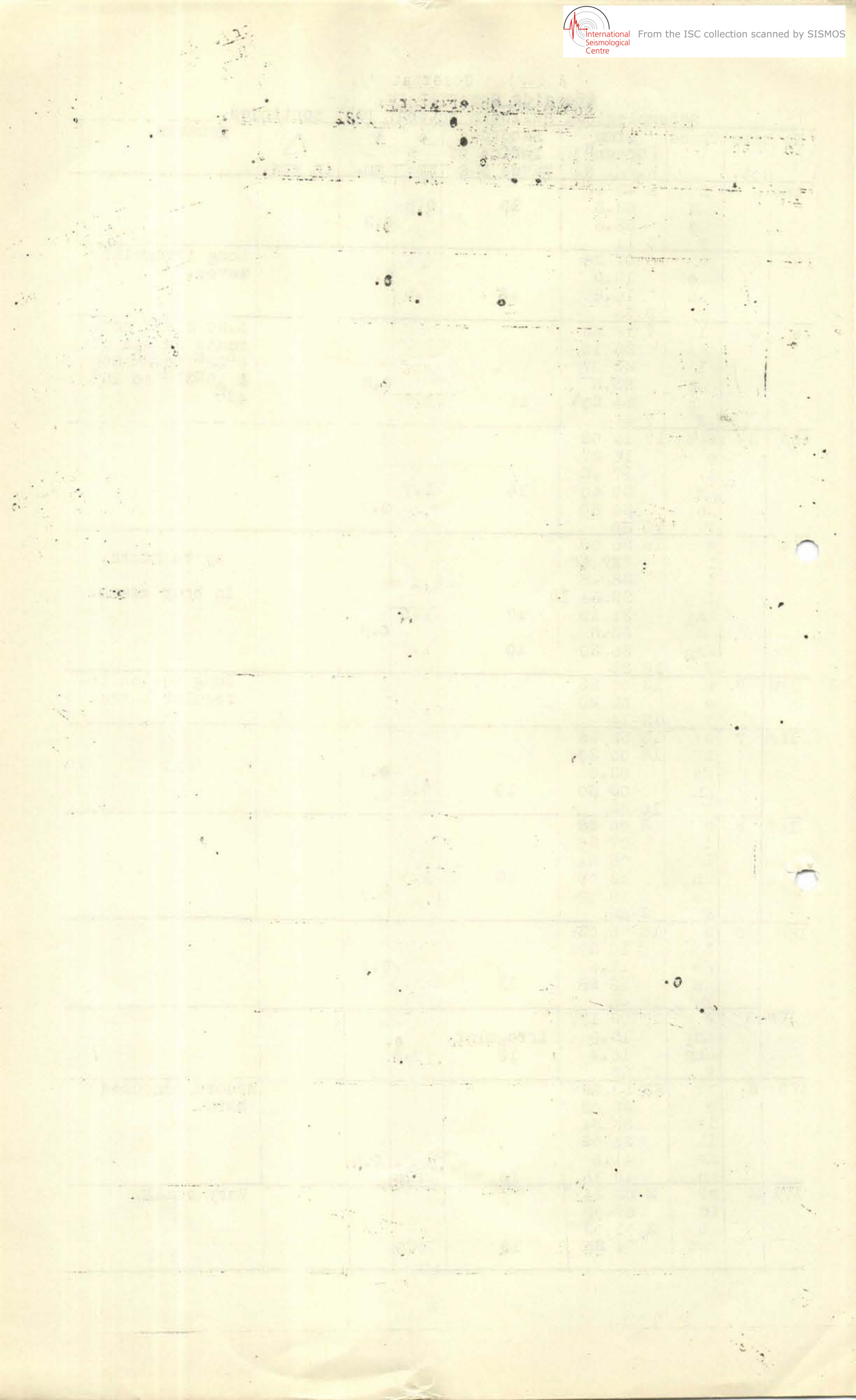
70
100
2

F
100

Adelaide Observatory.

Seismological Bulletin October 1931 continued.

No	Date	Phase	Time (Green ^h) h. m. s.	Recorded Period of Waves N-S	A N mm.	A S mm.	△ in kms.	Remarks.
160	5	L In ne F	1 49 43 53.5 53.5 3 11	15	0.6	0.3		
161	5	e ne In F	5 07 26 15.9 16.5 5 35	16	0.5	0.2		Long irregular waves.
162	5	i i i ne In F	7 18 52 22 10 23 07 23.5 24 20 7 46	11	0.7	0.2		also small move- ments on 5th at 8 ^h 33 ^m to 8 ^h 50 ^m & 12 ^h 31 ^m to 12 ^h 42 ^m
163	6	e(S) e L In ne F	17 14 06 16 27 17 45 20 40 20 50 17 50	16	1.7	0.9		
164	6	e i i L In ne In ne In F	18 25 00 27 46 28 48 29 54 +9 31 10 32.5 35 30 19 21	17 10	1.0 1.2	0.5		May be micro. In hour break.
165	7	e e F	12 00 23 02 30 12 14					Long period ir- regular waves.
166	7	e L ne In F	15 55 35 16 00 30 02.6 02 50 16 23	10	0.6	0.2		
167	8	e i L In ne F	2 05 08 07 26 08 51 13 05 15 00 2 32	19	1.0	0.7		
168	8	e L ne In F	16 06 03 10 20 12.5 13 25 16 45	11	1.0	0.4		
169	8	e In In F	17 09 17 12.5 16.4 17 25	Irregular. 13	0.5			
170	8	eP e iV iL ne In	23 23 55 33 03 35 24 36 09 41.5 42 15	15	1.2	0.5		Record confused here.
171	9	eP iS L In	2 52 34 57 05 3 00 03 04 25	13	0.9			Very small.



Adelaide Observatory.

Seismological Bulletin October 1934 Continued.

No	Date Oct.	Phase	Time (Green ^h)		Recorded Period of Waves N-S	A		△ in kms.	Remarks.
			H.	M. S.		N mm	E mm		
172	10	1P	0	26 23	20	76	78	3550	Approx. record faint. Milne(E-W) agnst. stops from 33 ^m .7 to 41 ^m .7
		1PR ₂		27 40					
		i		27 50					
		iS		31 42					
		iL		34 36					
		Mn ₁		39.0					
		Mn ₂		40.5					
		Me ₃		42.3					
Me ₄		44.9							
173	10	i	1	24 15	13	18.5	9.7		Phases lost in previous shock.
		Mn		26 25					
		Me		28.2					
174	10	i	1	41 40					Very confused record on Milne-Shaw.
		i		44 38					
		Me ₁		49.2					
		Me ₂		51.3					
175	10	i	2	25 10	12	6.6	3.0		Phases masked by previous shock.
		i(L)		28 16					
		Mn ₁		30.0					
		Me ₁		30.8					
		Mn ₂		31 20					
		Me ₂		32.7					
		Mn ₃		36 25					
		Me ₃		38.0					
176	10	P	3	02 00'	13	14.6	6.1	3900'	Masked by previous movement
		iS		07 37					
		L		11 07					
		Mn ₁		14 10					
		Me ₁		14 30					
		Mn ₂		15 15					
		Me ₂		16 25					
177	10	e	5	39 35	16	1.1	0.2		
		e		42 00					
		Mn		45 20					
		Me		46.5					
178	10	e	7	11 18	18	1.3	0.9		
		e		14 00					
		L		16 48'					
		Mn ₁		20 00					
		Me ₁		21 00					
		Mn ₂		29 10					
		Me ₂		30 25					
179	12	e	0	44 22	12	3.1	0.8	3400'	Phases masked by micros.
		e		46 15					
		iS		50 11					
		i		52 25					
		L		54 30'					
		Me		57 10					
		Mn		57 50					
		F	1	20					
180	12	eP	3	16 27'	16	2.9	1.0	3400'	Very small. Further L wave.
		iS		11 29					
		L		14 06					
		i		16 25					
		Mn ₁		17 24.5					
		Me ₁		19.4					
		Mn ₂		19 30					
		Me ₂		20.5					
181	12	e	10	30.27	14	1.4	0.5		Confused record.
		L		34 40'					
		Me		37.5					
		Mn		37 50					
		F	10	55					

Adelaide Observatory.
Seismological Bulletin OCTOBER 1931.

No.	Date	Phase	Time (Greenh)		Recorded Period of K Waves N-S	A N mm	A E mm	△ in kms.	Remarks.
			h.	M. S.					
182	13	eP	13	30 25	15	1.6	0.6	3200	Given one hour out in prelim- inary bulletin. P. very small. S. sharp.
		iS		35 18					
		L		37 35					
		Mn ₁		40 25					
		Mn ₂		42 25					
		Me		43 05					
F	1+	23							
183	13	iS	4	46 37	18	1.8	0.7		P. very small, in micros.
		L		49 44					
		Mn ₁		52 25					
		Me ₁		53 05					
		Mn ₂		53 15					
		Mn ₃		54 00					
		Me ₂		55 05					
		F	5	40					
184	13	eP	10	57 40	12	1.9	0.9		Confused re- cord.
		L	11	03.5					
		Mn		05 55					
		Me		07 05					
185	13	e	11	28 00	12	1.4	0.7		Confused re- cord; also phases obscur- ed by micros & previous movement
		L		32 35					
		Mn		35 25					
		Me		36 55					
		F	12	40					
186	13	iS	20	22 39	12	1.7	0.6		P. in micros.
		L		26 45					
		Me		30.5					
		Mn		30 45					
		F	21	1X5					
187	18	eP	0	45 36	12	9.1	3.1	3300	
		iS		50 26					
		i		52 10					
		i(L)		53 06					
		Me ₁		56 45					
		Mn ₁		57 00					
		Mn ₂		58 00					
		Mn ₃		59 10					
		Me ₂	1	00 00					
F	2	20							
188	18	eP	4	37 04	14	3.8	0.9	3280	Very sharp Irregular, a- nother impulse impulse super- posed. Regular waves.
		iS		42 03					
		Mn		45 35					
		Me ₁		45 45					
		Me ₂		50 20					
		Mn		52 05					
		F	5	51					
189	18	e	23	36 19	14	1.2	0.2		
		L		39 47					
		Mn		44 00					
		Me		44 00					
190	23	F	0	09					
		L	1	40.7	13	0.6			
Mn		43.6							
F	1	51							
191	23	e	6	26 00	19	0.7	0.2		Masked by micros. May be micro. Few rather irregu- lar waves.
		e		30 13					
		Mn		32.6					
		Me		34.2					
		F	6	47					

ADELAIDE OBSERVATORY.
Seismological Bulletin OCTOBER 1931.

No	Date Oct.	Phase	Time (Green ⁿ) H. M. S.	Recorded Period of Waves N-S	A		△ in kms.	Remarks.
					N mm.	E mm.		
192	23	i	11 56 35	14	1.4	0.4) Record confused here.
		i	12 00 26					
		L	01.97					
		Mn	03 25					
		Me	04.5					
193	23	i	13 02 00					Very small
		L	04 15					
194	23	F	13 18					
		eP	20 13 09			3630		
		i	14 26					
		iS	18 29					
		i	18 45					
		L	21 46					
		Me ₁	23 40	15	2.7	0.5		
		Mn ₁	24 40	12	3.9			
		Mn ₂	26 15					
		Me ₂	27 35			1.6		
195	24	F	21 30					Very small. No Milne-Shaw record.
		e	11 38.07					
		e	42 18					
		L	45 20					
		Me	51 00			0.5		
196	26	F	12 20					Shallow waves, No definite maximum.
		e	12 11 29					
		e	19 28					
197	27	F	12 48					Long period waves.
		e(S)	18 16 21					
		e	20.0					
		L	24 25					
		Mn	31 40	12	0.6			
		Me	34 20					
		F	19 08			0.7		

CONSTANTS.

Milne-Shaw(N-S Component) Period 16 seconds.
Damping ratio 20 : 1. Magnification 150.
Milne(E-W Component) period 17^s.8 Sensibility 0".40.

ADELAIDE OBSERVATORY.
Seismological Bulletin NOVEMBER 1931. Bulletin No 11.

No.	Date	Phase	Time (Green ^h) H. M. S.	Recorded Period of Waves N-S	A		△ in kms.	Remarks.
					N mm.	E mm.		
198	2	e L Mn Me F	1 17 33 31.3 37.5 43.5 2 10	19	0.7	0.7		Small, long period waves.
199	3	iP iS i iSR ₁ iSR ₂ iL Me ₁ Mn ₁ Me ₂ Mn ₂ Mn ₃ Me ₃ Me ₄ Me ₅ F	10 14 00 23 42 33 46 39 25 39 35 33 36 38 00 38 35 41 10 41 40 43 25 47 00 52 50 57 00 13 40	22 21 19	7.0 4.7 5.9 3.8	1.3 1.0 1.5 1.5 1.4	7220	Error in preliminary bulletin, 19 ^m recorded for P.
200	3	iP i iS iL Mn Me i i Me Mn Mn F	17 03 41 09 43 13 24 14 45 15 30 15 50 18 07 19 25 20 00 23 10 23 50 19 15	14 13 13	3.5 3.7 29 18.9	1.8 3.6	3050	May be another shock. Very sharp on Milne.
201	3	e(S) e L Mn Me F	22 40 00 42 40 44 10 46 30 46.7 23 33	14	0.8	0.5		
202	4	eP i(S) L Mn	17 41 44? 45 15 45 55 47 05	11	0.9			Very small, masked by micros.
203	5	e L Mn Me F	7 31 30 37 40 40 40 43 45 8 05	16	0.8	0.3		
204	6	e L Mn Me F	4 04 36 07 33 09.4 09.5 4 25	16	1.2	0.6		
205	11	i i? F	4 02 33 07 00 4 32					Small movement, masked by micros—no definite max.
20x3	12	i i L Mn F	16 27 50 29 03 35 25 39 50 16 50	15	1.6			in micros.

SK 27 10

Adelaide Observatory
 Seismological Bulletin NOVEMBER 1931 Continued.

No.	Date	Phase	Time (Greenh.) H. M. S.	Recorded Period of Waves N-S	A		△ in kms.	Remarks.
					N mm.	E mm.		
207	18	e	3 44 54	10 12	2.0 1.9	0.7		
		i	50 12					
		L	52 34.7					
		Mn ₁	56 00					
		Mn ₂	4 01 25					
		Me	03.6					
F	4 55							
208	20	eP	14 23 55	18 15	4.0 25.1 20.1	10.0 8.2 9.4	3500'	P.masked by micros.
		iS	28 08					
		iL	30 29					
		Mn ₁	33 55					
		Me ₁	34.6					
		Me ₂	25.7					
		Mn ₂	35 55					
		Me ₃	36.7					
F	16 05							
209	21	e	6 52 04	13	1.3	0.3		
		e	54 06					
		L	56 54					
		Mn	7 00 55					
		Me	01.7					
F	7 20							
210	21	e(L)	12 57 15	15	1.5	0.2	Preceding movement very small, scarcely perceptible from micro micros.	
		Mn	40 40					
		Me	41.4					
		F	13 10					
211	21	e(S)	17 18 33	12	2.6	0.5	Movement before L very small.	
		iL	21 20					
		Mn	24 55					
		Me	25 40					
		F	18 14					
212	21	e	23 47 45	12	0.6	0.2	Very small.	
		Mn	51 40					
		Me	52.4					
F	00 10							
213	26	e(P)	12 00 32	10	0.6			
		L	06 54					
		Mn	10 35					
214	26	e(P)	12 35 45	11	1.7		3300'	No Milne record.
		iS	41 15					
		i(SR)	43 18					
		L	44 45					
		M	45 50					
		F	13 35					

CONSTANTS.

Milne-Shaw(N-S-COMPONENT)
 Period 15^s.8. Damping ratio 20:1. Magnification 150.
 Milne(E-E COMPONENT)
 Period 17^s.8. Sensibility 0".40.

ADELAIDE OBSERVATORY.
SEISMOLOGICAL BULLETIN DECEMBER 1931.

No.	Date	Phase	Time (Green ^h) H. M. S.	Recorded Period of Waves N-S	A		Remarks.
					N mm	E mm	
215	1	eP iS L Mn Me F	3 22 51 28 44 32 30 34 20 34 20 4 17	10	0.9		
216	1	eP e(S) i L Mn F	18 16.1 21 29 22 11 23 43 27 25 19 05	10	1.2		Very small.
217	3	e L Mn Me	4 14 20 17 37 22 25 24 10	17	2.0		
218	7	eP eS L Me Mn ₁ Mn ₂	18 57 23 19 01 49 03 06 03 30 04 10 07 45	11 10	1.6 1.9		2810
219	16	e i L Mn F	4 25 21 28 13 29 03 30 25 4 45	15	1.3		
220	18	e(P) eS iL Mn Me F	9 57 46 10 04 10 09 35 12 30 13.2 11 45	19	2.9		4800 Milne-Shaw rec. very confused.
221	25	e i Mn	2 50 33 52 14 52 50	7	1.1		
222	25	iP i iS iL Mo Mn ₁ Mn ₂ Mn ₃ Mn ₄ F	3 08 35 11 32.9 12 00 12 26 12 40 13 20 14 12 14 45 15 30 4 35	9 9 9 10	13.8 9.3 9.0 8.8		4.6

CONSTANTS

Milne-Shaw(N-S Component) period 15^s.5. Damping ratio 20:1
Magnification 150.
Milne(E-W-Component) Period 17^s.7 Sensibility 0".43.

ADELAIDE OBSERVATORY.

Addendum to Seismological Bulletin 1931.

Seismograph Records at Adelaide Observatory during 1931.

1931 was a record year for the number of earthquakes recorded at Adelaide, the total being 232 and the previous highest number since the Milne-Shaw seismograph was installed at the end of 1925 being 198 in 1929. Average number for 6 years 1926-1931 was 159.

Another notable feature shown by the 1931 records was a remarkable level change during the winter months, see note to July Bulletin.

The Milne-Shaw Seismograph at Adelaide is often subject to pronounced diurnal changes in level, particularly on clear sunny days, which causes the lines of the record to close up during the afternoon, and to open out again during the night. Also there is usually a slow change caused by rain during the winter months and a corresponding change in opposite direction at the beginning of the hot weather. But during the winter months of 1931, this effect was intensified remarkably.

Appreciable tilt was shown from about the middle of June being in the sense of north side rising, and the maximum effect in this direction was noted on the 27th June to be $1''.75$ arc.

From the beginning of July, tilt was shown in the opposite direction, (S. side rising), and increased in magnitude up to $21''$ arc in one day, noted on 29th July. Continual use of the levelling screw lengthened the free period of the seismograph, and thus the effect of tilt on the records was intensified.

Difficulty was experienced for some time in obtaining complete records as the trace would move right off the paper in a few hours. The seismograph period was reduced on July 22nd, August 1st and September 4th to render it less sensitive to tilt.

The total tilt found for the period July 1st to September 30th, when the effect became small, was nearly 3 minutes of arc.

The Milne/seismograph (E-W Component) showed a tilt of $4\frac{3}{4}$ minutes of arc, W. side rising during the period May to October.