

# EARTHQUAKE REPORTS.—NEW ZEALAND AND FIJI.

## Register from Dominion Observatory, Wellington, for January, February, and March, 1928.

LATITUDE: 41° 17' S.      LONGITUDE: 174° 46' E.      HEIGHT: 401.5 ft.

### INSTRUMENTS.

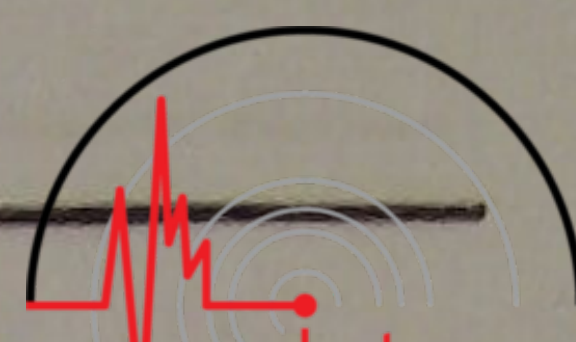
- (a) Milne Horizontal Seismograph No. 20: E-W component; magnification, 5.6; period, T = 27 seconds; undamped.
- (b) Milne-Shaw Horizontal Seismograph No. 13: N-S component; magnification, 150; period, T = 10.3 seconds; magnetic damping, 20:1.
- (c) Milne-Shaw Horizontal Seismograph No. 36: E-W component; magnification, 150; period, T = 9.3 seconds; magnetic damping, 20:1.

Time is Greenwich Mean Time—0 h. or 24 h. = Greenwich midnight.

Director: C. E. ADAMS.

Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		Δ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	s.	s.	μ	μ		
Jan. 3	E-W	..	00	30	..	..	..	..	..	Tremors.
	N-S	i	00	26	50					
Jan. 3	E-W	i M	22 23	59 05	49 35	.. 10	.. 12	..	..	Suva Δ = 30°.
	N-S	e M <sub>1</sub> M <sub>2</sub>	23	00 03 15	17 14 46	.. 14 12	..	27 16		
Jan. 4	E-W	eL M	21	42 47	17 ..	.. 20	.. 45	..	..	Beginning of record lost while changing paper.
	N-S	i i M <sub>1</sub> M <sub>2</sub>	21	34 39 49 51	05 46 22 45	.. .. 20 17	.. .. .. ..	.. .. 28 31	..	Rather confused.
Jan. 6	E-W	i e M	19 20	58 10 34	08 27 19	.. .. 21	.. .. 36	..	..	Keyna, East Africa, reported as destructive quake.
	N-S	e i i eL M	19 20	52 58 09 25 40	50 07 49 08 28	.. .. 30 17	.. .. .. ..	.. .. .. s 41	..	
Jan. 7	E-W	i	00	26	58	..	..	..	..	
	N-S	..	00	30	..	..	..	..	..	Tremors.





Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_{\text{E.}}$	$A_{\text{N.}}$		
1928.			h.	m.	s.	s.	$\mu$	$\mu$		
Jan. 12	E-W	e	13	29	47					
	N-S	e	13	29	51					
Jan. 12	E-W	eL	13	46	39	18	s			
	N-S	eL	13	47	31	14	..	s		
Jan. 15	E-W	O iP iS	00	38 39 40	28 30 17	..	..	..	4.0	Near shock. Felt at Gis- borne. R.-F. 4.
	N-S	O iP iS	00	38 39 40	29 30 18	..	..	..	3.9	
Jan. 18	E-W	iL	13	07	53	14	s	..	..	Shock felt at Danne- virke about this time. R.-F. 4.
	N-S	eL	13	08	..	13	..	s		
Jan. 18	E-W	i	17	51	33	..	..	..	..	Small local shock.
	N-S	i	17	51	35					
Jan. 19	N-S	i	03	06	33	..	..	..	..	Small local shock.
Jan. 19	E-W	O iP iS M iL M	22	45 50 54 55 56 58	49 45 38 54 11 07	.. 11 16 10	.. 70 40	..	21.2	
	N-S	O iP iS iL M	22	46 50 54 55 59	05 46 28 57 45	.. 11 12	.. 17 52	20.2		
Jan. 20	E-W	iP i	07	47 48	03 25	..	..	..	..	Near shock.
	N-S	iP i	07	47 48	05 24					
Jan. 20	E-W	e	10	40	17	11	s			
	N-S	i M	10	40 43	22 58	10	..	s		
Jan. 20	E-W	e	12	19	37	..	..	..	..	Shocks felt in Tasmania about this time.
	N-S	e	12	20	37					
Jan. 21	E-W	..	10	..	..	11	..	..	..	Slight tremors.
	N-S	i	09	52	57	9				
Jan. 26	E-W	i M	22	14 44	16 42	16	20			
	N-S	i M	22	13 34	18 03	12	..	s		



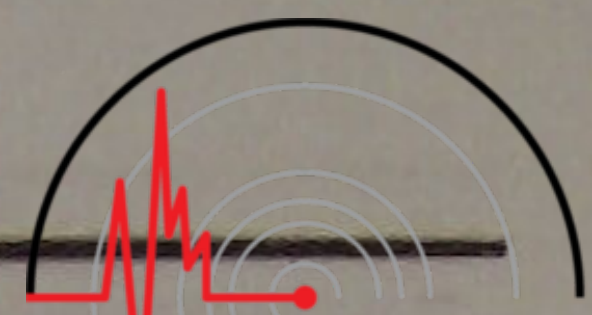
Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
			h.	m.	s.		$A_E$	$A_N$		
1928. Jan. 27	E-W	i	08	15	16	13	$\mu$ s	$\mu$ ..	..	Near shock. Felt at Cheviot, North Canterbury. R.-F. 5. Time-marks failed.
	N-S	i	08	15	+	12	..	s		
Jan. 27	E-W	eL	10	18						
	N-S	eL	10	18	30±					
Jan. 29	E-W	i	13	28	27	..	..	..	..	Local shock. Felt in Wairarapa district, North Island. R.-F. 4.
	N-S	i	13	58	20					
Jan. 30	E-W	O iP iS eL M	03	15 28 38 55	22 00 23 02	.. 5 7	.. 7	..	83.4	
	N-S	O iP iS eL M	03	15 28 38 54 58	29 02 21 58 59	.. 8 18	.. 8 ..	..	82.5	
Jan. 31	E-W	i	22	29	15	..	..	..	..	Small local shock.
	N-S	i	22	29	11					
Jan. 31	E-W	e	23	17	..	15	s			
	N-S	e	23	17	..	12	..	s		
Feb. 1	E-W N-S	} ..	03	05	..	15	s s	s s	..	Tremors.
Feb. 2	E-W	e	09	15	44					
	N-S	e	09	18	56					
Feb. 3	E-W	i	02	45	56	..	..	..	..	Small local shock.
	N-S	i	02	45	56					
Feb. 4	E-W	O P iPR <sub>1</sub> iS SR L M	06	08 16 19 23 27 29 35	35 55 15 27 06 17 17	.. 7 15	.. s	..	43.3	
	N-S	O iP iPR <sub>1</sub> S eL M	06	08 16 19 23 29 37	26 50 17 25 20 59	.. 15	.. ..	..	43.8	
Feb. 4	E-W	e	11	57	58	..	..	..	..	Apia $\Delta = 1^{\circ}2$ .
	N-S	e	11	58						





Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		Δ Degrees.	Remarks.
			h.	m.	s.		A <sub>E.</sub> μ	A <sub>N.</sub> μ		
1928. Feb. 4	E-W	e	23	06	27	11	s	μ		
	N-S	e	23	05	35	9	..	s		
Feb. 5	E-W	e	04	24	43	10	s	..	.. Suva Δ = 11°.	
	N-S	i	04	24	48	10	..	s		
Feb. 5	E-W	i	22	49	17	..	..	..	.. Small local shock.	
	N-S	i	22	49	17	..	..	..		
Feb. 5	E-W	i iL M	22	51 53 57	56 56 04	.. .. 18	.. .. 50	..	.. Suva Δ = 10°.	
	N-S	eL M	22	53 57	21 36	.. 20	..	78		
Feb. 6	E-W	i eL	04	12 22	11 36	.. 25	.. s	..		
	N-S	i	04	11	45	7	..	s		
Feb. 7	E-W	i	00	07	05	..	..	..	.. Local shock.	
	N-S	i	00	07	05	..	..	..		
Feb. 7	E-W	O iP iS iSR <sub>1</sub> eL M	00	04 15 24 30 37 50	11 28 37 16 16 42	.. .. 10 .. .. 18	.. .. 9 .. .. 35	..	70.0	
	N-S	O iP iS eL M	00	14 15 24 36 37	25 35 37 38 56	.. .. 10 .. 20	.. .. .. .. ..	..	68.8	
Feb. 7	E-W N-S	} ..	15	45	..	..	..	..	.. Slight tremors.	
Feb. 8	E-W N-S	} i	00	42	12	..	..	..	.. Small local shock.	
Feb. 8	E-W N-S	} i	05	51	42	..	..	..	.. Small local shock.	
Feb. 9	E-W	i	01	01	31	..	..	..	.. Small local shock.	
	N-S	i	01	01	30	..	..	..		
Feb. 9	E-W N-S	} i	01	54	17	..	..	..	.. Small local shock.	
Feb. 9	N-S	O iP iS	21	25 25 26	49 55 01	..	..	..	0.5	





Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		Δ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	s.	s.	μ	μ		
1928. Feb. 9	E-W	O iP iS	23	11	40 49 57	..	..	..	0.8	Local shock.
	N-S	O iP iS	23	11	44 50 56	..	..	..	0.5	
Feb. 10	E-W	O eP iS eL	04	37	38 51 21	..	..	..	95.0	Mexico.
			05	02	46 21	9 25	s			
	N-S	iS eL	05	02	47 06	9 ..	..	s		
Feb. 11	E-W	i	02	06	34	..	..	..	..	Small local shock.
	N-S	i	02	06	37					
Feb. 12	E-W	i	15	27	..	17	s	..	..	Tremors.
	N-S	i	15	28	13	..	..	s		
Feb. 13	E-W	i	05	51	42					
	N-S	i	05	51	43					
Feb. 13	E-W	eL	11	02	41	12	s			
	N-S	eL M	11	05	07 55	13	..	13		
Feb. 13	E-W	iL	17	01	54	14	s			
	N-S	L	17	+	..	13	..	s		
Feb. 13	N-S	i	21	09	38	..	..	..	..	} Small local shocks.
Feb. 13	N-S	i	21	17	51	..	..	..	..	
Feb. 13	E-W	i	22	41	32	..	..	..	..	
	N-S	i	22	41	36	..	..	..	..	
Feb. 15	E-W	i i	14	44	52 36	.. 7	.. 7	..	..	Felt in East Cape district, North Island. R.-F. 5.
	N-S	i	14	45	11	7	..	s		
Feb. 16	E-W	i	03	52	31					
	N-S	i	03	55	21					
Feb. 16	E-W	i	04	23	02	..	s	..	..	Small local shock.
	N-S	i	04	23	02	12	..	s		
Feb. 17	E-W	i	03	54	54	..	..	..	..	} Small local shocks.
Feb. 17	N-S	i	05	29	43	..	..	..	..	
Feb. 17	N-S	i	05	32	01	..	..	..	..	



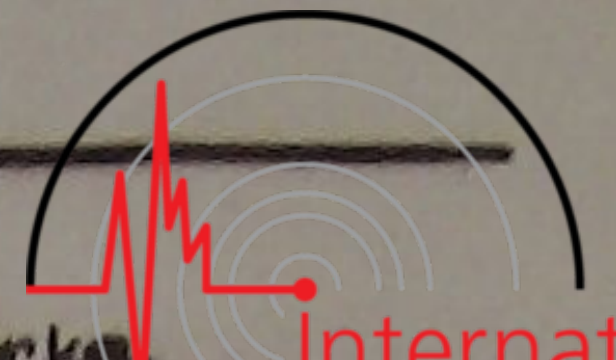


Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928. Feb. 17	E-W	O iP iS L	h. 12	m. 39 46 51 55	s. 41 26 46 56	s. .. .. 12	$\mu$ .. .. s	$\mu$ .. .. ..	31.8	
	N-S	i eL	12	47 57	44 06	13	..	s		
Feb. 19	E-W	..	06	50	+	11	s	..	..	Slight tremors.
	N-S	..	06	49	..	..	..	..	..	Slight tremors.
Feb. 20	E-W N-S	} i	04	22	32	..	..	..	..	Small local shock.
Feb. 21	E-W N-S	} ..	20	30	+	{ 20 19	s ..	.. s	..	L waves.
Feb. 21	E-W	i	23	59	22	..	..	..	..	Interrupted by edge of paper.
	N-S	O iP iS	23	57 58 59	45 41 24	..	..	..	3.6	Near shock.
Feb. 22	E-W	eL M	13	06 15	51 06	.. 10	.. 11	..	..	Sava $\Delta = 18^\circ$ .
	N-S	e M	13	07 11	36 32	11	..	10		
Feb. 22	E-W	e	19	30	09					
	N-S	..	19	30	+	..	..	..	..	Tremors.
Feb. 24	N-S	eL	15	09	47	18	..	s		
Feb. 25	E-W	i eL	11	13 16	11 41	18	s			
	N-S	i eL M	11	09 16 22	49 44 40	14	..	14		
Feb. 25	E-W	eL	20	52	28	16	s			
Feb. 26	E-W	..	02	+	..	17	s	..	..	L waves.
	N-S	eL	02	10	02	18	..	s		
Feb. 26	E-W	..	06	+	..	10	s	..	..	Tremors.
	N-S	..	06	+						
Feb. 28	E-W	O iP iS iL M	08	36 41 46 50 50	05 49 19 09 44	.. 11 16 15	.. 16 40 45	.. ..	25.6 ..	Time-marks failed on N-S component.



Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E.$	$A_N.$		
1928. Feb. 20	E-W	O	h.	m.	s.	s.	$\mu$	$\mu$	24.4	
		iP	21	56	42	..	..	..		
		iS	22	02	19					
		M		06	39	10	65			
		iL		07	14					
		M <sub>1</sub>		08	14					
		M <sub>2</sub>		09	54	16	163			
		M <sub>3</sub>		11	24	13	166			
				12	47	11	82			
	N-S	O	21	56	52	..	..	..	23.9	
		iP	23	02	19					
		iS		06	34					
		M		06	51	7	..	21		
		iL		07	59					
		M		10	52	16	..	140		
Mar. 2	E-W	O	15	01	37	..	..	..	3.4	Near shock. Felt in N.E. portion of North Island. Max. force R.-F. 5.
		iP		02	30					
		iS		03	10					
	N-S	O	15	01	27	..	..	..	3.8	
		iP		02	25					
		iS		03	10					
Mar. 3	E-W	e	05	52	33					
	N-S	e	05	52	40					
Mar. 3	E-W	O	18	49	19	..	..	..	11.2	
		iP		52	06					
		iS		54	18					
		iL		55	23					
		M	19	03	39	7	14			
	N-S	O	18	49	06	..	..	..	11.7	
		iP		52	01					
		S		54	18					
		eL		55	18					
		M	19	03	40	7	..	14		
Mar. 4	N-S	..	03	+	..	..	..	..	Slight tremors. Suva $\Delta = 1^{\circ}5$ .	
Mar. 5	E-W	i	08	36	06					
	N-S	i	08	36	04					
Mar. 6	E-W	O	19	20	32	..	..	..	2.7	Near shock. Felt in North Island. Force 8 at New Plymouth.
		iP		22	14					
		iS			36					
	N-S	O	19	20	43	..	..	..	2.2	Minute marks failed ; time uncertain.
		iP		22	17					
		iS			34					
Mar. 9	E-W N-S	} i	00	17	53	..	..	..	..	Felt at Wellington. R.-F. 4.
Mar. 9	E-W	..	11	30	..	..	..	..	Tremors.	
Mar. 9	E-W	O	18	05	49	..	..	..	80.0	Origin reported to be in or near Sumatra. Suva $\Delta = 84^{\circ}$ .
		iP		18	08	7				
		iPR <sub>1</sub>		21	27	9				
		iS		28	12	12	37			





Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		△ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	s.	s.	μ	μ		
1928. Mar. 9	E-W	M		30	25	20	266			
		SR <sub>1</sub>		34	08					
		M		34	38	20	200			
		L		44	50					
		M <sub>1</sub>		49	08	23	333			
		M <sub>2</sub>		52	56	20	388			
		M <sub>3</sub>		54	31	20	354			
		M <sub>4</sub>		55	58	17	304			
		M <sub>5</sub>		57	18	17	220			
	N-S	O	18	05	51	..	..	..	80.9	
		iP		18	15					
		iS		28	25					
		M		28	40	10	..	55		
		iL		40	16					
		M		41	34	20	..	229		
Mar. 9	E-W	O	23	17	06	..	..	..	1.3	Felt in Nelson and Marlborough districts, South Island. Max. force, 6.
		iP			26					
		iS			42					
	N-S	O	23	17	05	..	..	..	1.2	
		iP			23					
		iS			38					
Mar. 10	E-W N-S	} ..	21	30	..	11	..	..	..	Tremors.
Mar. 12	E-W	i	07	16	10	..	..	..	..	Small local shock.
	N-S	i	07	16	07					
Mar. 13	E-W	O	18	31	16	..	..	..	41.8	Suva Δ = 29°.
		iP		39	25	4	..	..	..	Apia Δ = 38°.
		iS		45	48	..	..	..	..	Epicentre 5° S., 150° E., near New Guinea.
		iSR		48	56	10				
		L		51	26					
		M		54	40	27	167			
Mar. 13	N-S	O	18	31	05	..	..	..	43.3	
		iP	39	25	7					
		iS		45	57	7	..	19		
		iSR		49	54					
		L		51	49					
		M		52	48	17	..	40		
Mar. 15	E-W	O	19	54	39	..	..	..	3.5	Near shock. Felt in southern portion of North Island. Max. force R.-F. 4.
		iP		55	34					
		iS		56	16					
	N-S	O	19	55	32	..	..	..	3.8	
		iP		56	31					
		iS		57	16					
Mar. 16	E-W	O	05	00	48	..	..	..	20.1	Suva Δ = 9°. Apia Δ = 19°. Epicentre 21° S., 170° E., near New Caledonia.
		iP		05	30					
		M		06	33					
		iS		09	12					
		M <sub>1</sub>		13	10	11	869			
		M <sub>2</sub>		14	..	12	880			
		M <sub>3</sub>		14	57	13	900			
		M <sub>4</sub>		24	23	11	691			
		M <sub>5</sub>		31	25	14	574			





Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E$	$A_N$		
1928. Mar. 16	N-S	O iP M iS M <sub>1</sub> M <sub>2</sub> M <sub>3</sub>	h. 05	m. 00 05 06 09 12 18 24	s. 43 29 05 15 . 15 20	s. .. .. 11 20 12 12	$\mu$ .. .. .. .. .. ..	$\mu$ .. .. 352 2072 708 348	20.4	
Mar. 16	E-W	e	10	36	04	14				
	N-S	e	10	33	50	14				
Mar. 16	E-W	..	15	50	..	..	..	..	..	Tremors.
	N-S	e	15	47	33					
Mar. 16	E-W	..	17	30	..	..	..	..	..	Tremors.
Mar. 17	E-W N-S	} ..	00	33	..	..	..	..	..	Tremors.
Mar. 17	E-W	O iP iS L M	02 03	59 03 07 08 10	10 40 14 55 30	.. .. .. .. 14	.. .. .. .. 21	.. .. .. .. ..	19.1	Suva $\Delta = 11^\circ$ . Probably from same origin as quake on previous day (near New Caledonia).
	N-S	O iP S L M	02 03	59 03 07 08 11	09 32 00 08 09	.. .. .. .. 15	.. .. .. .. ..	.. .. .. .. 33	18.5	
Mar. 18	E-W	O P i(S)? L M	03	02 06 10 11 13	24 46 13 33 15	.. .. .. .. 14	.. .. .. .. 88	.. .. .. .. ..	18.4?	Suva $\Delta = 12^\circ.8$ .
	N-S	iP i L? M	03	06 10 11 14	41 35 28 11	.. 11 .. 16	.. .. .. ..	.. 30 .. 120	..	S and L waves not distinct.
Mar. 18	E-W	O iP S L M <sub>1</sub> M <sub>2</sub>	11 12	59 03 07 09 11 16	12 42 16 37 18 50	.. .. 9 .. 14 15	.. .. .. .. 55 57	.. .. .. .. .. ..	19.1	Suva $\Delta = 10^\circ$ . Origin probably near New Caledonia.
	N-S	O iP S L M <sub>1</sub> M <sub>2</sub>	11 12	58 03 07 09 12 17	55 35 16 00 13 39	.. .. 12 .. 16 15	.. .. .. .. .. ..	.. .. .. .. 102 67	19.9	
Mar. 18	W	O P S L	20 21	56 00 02 04	25 00 50 13	.. .. .. 13	.. .. .. 15	.. .. .. ..	14.7	

Earthquake Inset.





Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	s.	s.	$\mu$	$\mu$		
Mar. 18	N-S	iP L	20 21	59 03	17 25	14	..	14		
Mar. 19	E-W	e	23	39	24					
	N-S	..	23	40	+	..	..	..		Tremors.
Mar. 22	E-W	O P PR <sub>1</sub> iS SR <sub>1</sub> SR <sub>2</sub> L M <sub>1</sub> M <sub>2</sub>	04	18 31 35 41 48 53 04 04 10	13 04 06 38 .. 05 07 43 53	.. .. .. 14 17 17 25 18	.. .. .. 100 .. .. 314 151	.. .. .. .. .. .. .. .. ..	85.5	Suva $\Delta = 83^{\circ}5$ . Origin in Mexico.
	N-S	P PR <sub>1</sub> S L M	04	31 35 41 03 07	32 + + 02 +	.. .. 12 18	.. .. .. .. ..	.. .. 31 57		Time-marks failed ; times uncertain.
Mar. 23	E-W	O iP iS	20	02 04 06	07 23 10	..	..	..	9.0	Near shock.
	N-S	O iP iS	20	02 04 06	23 24 00	..	..	..	8.0	
Mar. 24	E-W	..	09	20	..	..	..	..	..	Slight tremors.
Mar. 24	E-W	O iP iS	21	34 36 37	56 21 27	..	..	..	5.5	Near shock. Felt in West- land and Otago, South Island. Max. force, R.-F. 4.
	N-S	O iP iS	21	35 36 37	20 36 34	..	..	..	4.9	
Mar. 25	E-W	O iP iS L M	18	29 31 33 34 35	29 29 03 01 46	.. .. .. 12	.. .. .. 25	.. .. .. ..	7.9	
	N-S	O iP iS L M	18	29 31 33 33 37	26 26 00 53 10	.. .. .. 13	.. .. .. .. 25	.. .. .. .. ..	7.9	
Mar. 26	E-W	O M	05 06	44 01	+ 58	20				
	N-S	i	05	44	45	16				
Mar. 27	E-W	e M	19	46 52	18 +	16	20			



Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928. Mar. 27	N-S	.. e M	h. 19	m. 30 46 52	s. .. 21 38	s. .. 16	$\mu$ .. ..	$\mu$ .. ..	..	Slight tremors.
Mar. 28	E-W N-S	} ..	16	..	..	..	..	..	..	Tremors.
Mar. 29	E-W	i	05	26	59	6	30	..	..	..
	N-S	i	05	26	58	6	..	35	..	..
Mar. 29	E-W	O iP iS L	19	19 23 27 29	23 56 31 16	.. .. .. 18	.. .. .. ..	.. .. .. ..	19.3	..
	N-S	O iP iS L	19	19 24 27 29	00 00 57 34	.. .. .. 17	.. .. .. ..	.. .. .. ..	21.6	..
Mar. 31	E-W N-S	} ..	02	+	..	..	..	..	..	Tremors.



## Register from Suva, Fiji, for January, February, and March, 1928.

LATITUDE : 18° 9' S.      LONGITUDE : 178° 26' E.      HEIGHT ABOVE SEA-LEVEL : 10 ft.

INSTRUMENT : Milne Twin Boom Horizontal Seismograph.      E-W and N-S component.      Magnification, 6; undamped.      Periods, T = 7.5 secs. for E-W; T = 10.0 secs. for N-S.

Time is Greenwich Mean Time—0 h. or 24 h. = Greenwich midnight.

Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		Δ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	mm.	mm.		
Jan. 2	E-W	iS iL	21	33.5 42.2	s			
	N-S	iS iL	21	33.4 42.1	..	s		
Jan. 3	E-W	O eP eS iL M	22	43.6 50.1 55.2 58.5	..	..	30	
	N-S	iL M	22 23	58.4 00+	..	.. 5.0+	..	Interrupted by time-mark. Confused by numerous tremors.
Jan. 4	E-W	..	..	..	..	..	..	Tremors increasing in intensity.
Jan. 4	N-S	O eP iS eL M	15	49.3 54.8 59.1	..	..	24	
			16	01.0 03.9	..	s		
Jan. 5	E-W	..	..	..	..	..	..	Tremors all day.
	N-S	..	02	+	..	..	..	Tremors.
Jan. 5	E-W	L	22	55.6				
	N-S	eL	22	56.1				
Jan. 6	E-W	..	19	..	..	..	.	Tremors.
Jan. 6	E-W	e iL	23 24	40.0 29.9				
	N-S	e iL	23 24	39.8 29.7				
Jan. 8	E-W	i	21	25.5				
	N-S	i	21	25.6				



Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		△ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	mm.	mm.		
Jan. 10	E-W	i	00	52.7				
		i	01	00.4				
Jan. 10	„	i	02	14.8				
Jan. 10	„	i	03	28.1				
Jan. 10	„	i	04	10.8				
		i		31.5				
Jan. 10	„	e	05	05.4				
Jan. 10	„	O	05	09.3	..	..	4	
		iP		10.5				
		iS		11.4				
		M	..	..	4.0+			
	N-S	O	05	09.7	..	..	4	
		iP		10.7				
		iS		11.5				
		M	..	..	..	4.0+		
Jan. 10	E-W	i	05	43.5				
Jan. 10	„	i	06	11.1				
		i		35.7				
Jan. 10	N-S	i	07	14.1				
		M		14.6	..	s		
Jan. 10	E-W	e	07	32.0				
Jan. 10	N-S	i	09	49.5				
Jan. 10	E-W	..	20	14.3	..	..	..	Tremors.
Jan. 11	E-W	e	19	58.5	..	..	..	Irregular disturbance.
Jan. 13	E-W	e	23	51.2				
	N-S	e	23	51.4				
Jan. 14	E-W	e	01	28.6				
		e	01	28.6				
Jan. 16	E-W	O	21	27.7	..	..	5	
		iP		29.0				
		eS		30.0				
		eL		30.5	s			
	N-S	O	21	27.7	..	..	5	
		iP		29.0				
		eS		30.0				
		eL		30.5	..	s		
Jan. 17	E-W	i	20	57.0				
	N-S	i	20	57.2				
Jan. 18	E-W	e	00	51.8				
	N-S	e	00	52.4				





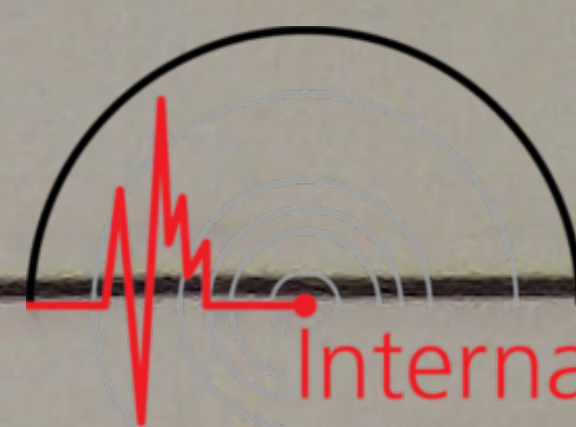
Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E</sub> .	A <sub>N</sub> .		
1928. Jan. 18	E-W	O iP iS iL M	h. 18	m. 26.8 27.6 28.2 28.8 29.5	mm. .. .. .. .. 2.4	mm. .. .. .. .. ..	3	
	N-S	O iP iS iL M	18	25.8 27.2 28.3 28.7 29.3	.. .. .. .. ..	.. .. .. .. 0.7	5	
Jan. 18	E-W	i	20	58.2	1.0			
	N-S	i iL	20	58.0 58.3	..	s		
Jan. 18	E-W	i iL	21	04.0 04.8	2.0			
	N-S	i	21	04.6	..	1.1		
Jan. 19	E-W	i	13	47.4				
	N-S	e	13	46.4				
Jan. 19	E-W	e	22	21.9	..	..	..	Wellington $\Delta = 21^\circ$ .
	N-S	e	22	20.4				
Jan. 19	E-W	i M	22	48.3 50+	.. 5.0+	..	..	Records faint at max.
	N-S	e M	22	48.1 49+	..	7.0+		
Jan. 20	E-W	e i M	10	36.7 37.9 40.2	4.5			
	N-S	e M	10	36.4 38.5	..	4.3		
Jan. 20	E-W	e M	12	16.9 19.0	0.9			
	N-S	e M	12	15.7 17.7	..	1.1		
Jan. 21	E-W	e	04	34.3				
	N-S	e	04	32.6				
Jan. 23	E-W	e	06	58.0				
	N-S	e	06	55.5				
Jan. 26	E-W	e	13	32.5				
	N-S	e	13	33.6				





Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		Δ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	mm.	mm.		
1928. Jan. 27	E-W	i	20	42.0				
	N-S	i	20	42.2				
Jan. 28	E-W	e M	10	11.5 17.7	s			
	N-S	e i M	10	11.3 14.2 16.1	..	1.3		
Jan. 29	N-S	..	00	+	..	..	..	Tremors.
Jan. 30	E-W	i	21	36.6				
	N-S	i	21	36.6				
Jan. 31	E-W	i M	15	04+ 06.1	1.1			
	N-S	i	15	04+	..	s		
Jan. 31	E-W	i M	23	11.5 17.1	0.9			
	N-S	e i M	23	11.5 14.4 15.9	..	1.9		
Feb. 1	N-S	e	02	11.3				
Feb. 1	E-W	e i M	02 03	58.0 00.6 04.4	0.6			
	N-S	i M	02 03	59.0 00.6	..	1.0		
Feb. 1	E-W	i	20	46.4				
	N-S	i i M	20	46.2 51.1 52.4	..	0.9		
Feb. 2	E-W	i	21	41.4				
	N-S	i M	21	41.2 42.3	..	0.5		
Feb. 2	E-W	..	22	45	..	..	..	Tremors.
	N-S	e	22	41.5				
Feb. 3	E-W	i	06	36.0				
	N-S	..	06	30 +	..	..	..	Tremors.
Feb. 4	N-S	..	03	30	..	..	..	Tremors.
Feb. 4	E-W	..	06	30	..	..	..	Tremors.



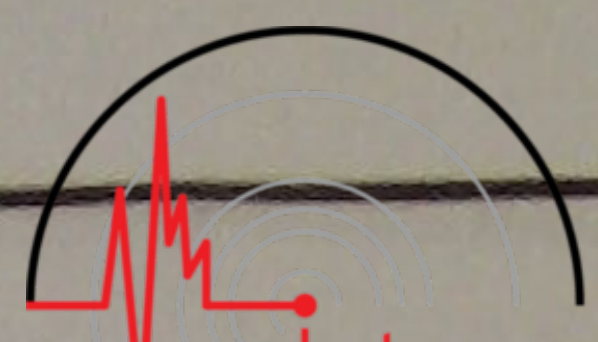


Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		Δ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928. Feb. 4	N-S	e i M	h. 06	m. 19.5 24.7 27.7	mm. ..	mm. 1.0		
Feb. 4	E-W	..	10	..	..	..	..	Tremors.
	N-S	e	10	01.2				
Feb. 4	E-W	i	11	46.3				
	N-S	i i M	11	46.1 48.6 49.9	..	1.0		
Feb. 5	E-W	e M	04	17.7 20.3	3.5			
	N-S	O eP iS M L M	04	13.8 16.6 18.8 19.4 20.0 21.8	..	1.0 1.1	11	
Feb. 5	E-W	O iP iS iL M	22	44.9 47.4 49.4 50.3 53.2	..	2.5	10	
	N-S	O iP iS iL M	22	44.8 47.3 49.3 50.2 52.3	..	4.0	10	
Feb. 6	N-S	..	..	..	..	..	..	Tremors at intervals.
Feb. 7	E-W	e	15	..	..	..	..	Tremors at intervals all day.
	N-S	i M	15	35.0 40.6	..	0.7		
Feb. 8	E-W	i	21	08.4				
	N-S	i M	21	08.0 11.3	..	0.6		
Feb. 10	E-W	i	20	19.7				
	N-S	i	20	20.1				
Feb. 13	E-W	i	22	55.8				
	N-S	e i	22	52.8 54.7	..	..	..	Tremors at intervals during day.
Feb. 15	N-S	i	14	49.9				
Feb. 17	E-W	i M	10 11	49.1 04	1.0+			



Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	mm.	mm.		
Feb. 18	E-W	e	13	10.3	..	..	..	$\Delta T$ not known.
Feb. 19	E-W	i i M	06	16.0 19.0 20.0	.. .. 0.9	..	..	Time unreliable—time marks failed on both components. $\Delta T$ not known.
	N-S	i i M	06	14.3 17.0 18.5	..	1.0		
Feb. 22	E-W	O iP iS iL M	12 13	57.4 01.7 05.1 05.7 07.3	.. .. .. .. 0.9	..	18	
	N-S	O eP iS iL M	12 13	57.4 01.6 04.9 05.4 06.0	.. .. .. .. ..	..	17.5	
Feb. 22	E-W	i M	14	14.9 22.4	.. 2.2	..		
	N-S	..	14+	..	..	..	..	Tremors.
Feb. 22	E-W	i i i M	19	24.0 28.4 47.8 48.4	.. .. .. 0.9	..		
Feb. 24	N-S	i	05	54.4	..	..		
Feb. 24	E-W	i	14	00.6	..	..		
	N-S	e	14	00.0	..	..		
Feb. 24	N-S	i	19	01.4	..	..		
Feb. 24	N-S	i	19	56.3	..	..		
Feb. 24	N-S	i	20	50.0	..	..		
Feb. 24	E-W	i	21	11.3	..	..		
	N-S	i	21	08.2	..	..		
Feb. 26	E-W	i	05	56.0	..	..		
	N-S	e i	05 06	56.5 00.0	.. ..	..		
Feb. 28	E-W N-S	} ..	..	..	..	..	..	Tremors.
Mar. 1	E-W	..	..	..	..	..	..	Tremors all day.
Mar. 1	N-S	i	02	54.0	..	..		
Mar. 1	..	i	03	49.9	..	..		
Mar. 1	..	i	04	57.0	..	..		





Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					$A_E$	$A_N$		
1928.			h.	m.	mm.	mm.		
Mar. 3	E-W	e	05	54.4	..	..	..	$\Delta T$ not known on this day.
Mar. 3	..	i M	14	27.9 28.6	3.1	..	..	
Mar. 3	..	e M	18	50.9 57.1	.. 1.0	..	..	Wellington $\Delta = 11^\circ.5$ .
Mar. 4	E-W	O iP iS M	03	13.0 13.4 13.7	..	..	1.5	$\Delta T$ uncertain.
			..	..	<3.0	..	..	Record invisible owing to rapid movement of boom.
Mar. 8	E-W	e M	19	49.2 56.9	0.8	..	..	
	N-S	e	19	52.4	..	..	..	
Mar. 8	E-W	i	23	17.0	..	..	..	
	N-S	i	23	17.0	..	..	..	
Mar. 9	E-W	O P PR <sub>1</sub> iS M L	18	04.7 17.7 21.5 28.4 36.5 44.8	.. .. 0.8 1.0 0.9 s	..	87	Wellington $\Delta = 80^\circ.5$ .
Mar. 9	N-S	O P PRM iS iSR <sub>1</sub> iSR <sub>2</sub> L M	18	05.3 17.8 21.5 28.0 34.0 39.0 49.5 ..	.. .. .. 0.9 0.7 1.0 .. .. 0.7	..	81	
Mar. 10	E-W	..	..	..	..	..	..	Heavy tremors all day.
Mar. 10	N-S	..	..	..	..	..	..	Slight tremors all day.
Mar. 13	E-W	O P iS L M	18	30.9 37.1 42.0 43.9 47.4	.. .. .. .. 1.4	..	28	Wellington $\Delta = 42^\circ.6$ .
	N-S	O iP iS SR L M <sub>1</sub> M <sub>2</sub> M <sub>3</sub>	18	30.6 37.1 42.2 44.3 46.3 46.8 49.6 57.3	.. .. .. .. .. .. .. .. 1.0 1.0 1.3	..	30	
Mar. 15	E-W	e M	17	44.0 45.5	.. 1.0	..	..	
	N-S	e	17	43.0	..	..	..	



Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	mm.	mm.		
1928. Mar. 16	E-W	..	04	..	..	..	..	Slight tremors.
	N-S	..	04	..	..	..	..	Slight tremors.
Mar. 16	E-W	O iP iS M	05	00.3 02.6 04.4 ..	.. .. .. <5.0	.. .. .. ..	9 ..	Wellington $\Delta = 20^{\circ}.2$ . Record invisible owing to rapid movement of boom.
Mar. 16	N-S	O iP iS M	05	00.3 02.6 04.4 ..	.. .. .. ..	.. .. .. <5.0	9 ..	Record invisible owing to rapid movement of boom.
Mar. 16	E-W	M	07	57.7	0.7	..	..	
	N-S	M	07	55.9	..	1.3	..	
Mar. 16	E-W	i M	10	28.6 36.0	0.5	..	..	
	N-S	i M M	10	31.1 36.0 47.8	.. ..	0.5 s	..	
Mar. 17	E-W	..	00	30	..	..	..	Tremors.
	N-S	..	00	30	..	..	..	Tremors.
Mar. 17	E-W	O iP iS M	02 03	58.9 01.7 03.9 07.3	.. .. .. 1.0	.. ..	11	$\Delta T$ not known ; times uncertain.
	N-S	O iP iS M	02 03	58.9 01.7 03.9 05.0	.. .. .. ..	.. .. 1.1	11	
Mar. 17	E-W N-S	} ..	21	..	..	..	..	Tremors.
Mar. 18	E-W	O iP iS M	03	01.5 04.8 07.4 ..	.. .. .. <3.0	.. ..	13.5 ..	Wellington $\Delta = 18^{\circ}.4?$ . Record faint.
Mar. 18	N-S	O iP iS M	03	01.9 04.8 07.1 08.0	.. .. .. ..	.. .. 4.0	12	
Mar. 18	E-W	O iP iS iL M <sub>1</sub> M <sub>2</sub>	11 12	59.3 01.8 03.8 04.9 07.0 12.3	.. .. .. .. 2.0 3.6	.. ..	10	Wellington $\Delta = 19^{\circ}.5$ .
Mar. 18	E-W	i	20	59.6	..	..	..	Wellington $\Delta = 14^{\circ}.7$ .





Date.	Direction	Phase.	Time, G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928. Mar. 21	E-W N-S	} ..	h. 03	m. 40	mm. ..	mm. ..	..	Tremors.
Mar. 22	E-W	..	04	30	..	..	..	Tremors.
	N-S	O P iS iSR <sub>1</sub> SR <sub>2</sub> iL	04	17.7 30.3 40.7 47.0 51.6 58.6	..	..	83.5	Wellington $\Delta = 85^{\circ}.5$ .
Mar. 23	E-W	i i	20	05.8 06.5	..	..	..	Wellington $\Delta = 8^{\circ}.5$ .
	N-S	e	20	06.3				
Mar. 24	E-W	e i M	09	12.4 13.9 14.6	..	..	..	$\Delta T$ not known; times uncertain.
	N-S	i	09	11.5	..	s		
Mar. 25	E-W	..	18	45	..	..	..	Tremors. Wellington $\Delta = 7^{\circ}.9$ .
Mar. 26	E-W	..	05	45	..	..	..	Tremors.
Mar. 28	E-W N-S	} ..	16	..	..	..	..	Tremors.
Mar. 29	E-W	..	05+	..	..	..	..	Tremors.
	N-S	i i	05	16.4 24.0				

C. E. ADAMS,  
New Zealand Government Seismologist.

By Authority: W. A. G. SKINNER, Government Printer, Wellington.

[200/2/29—16096



# EARTHQUAKE REPORTS.—NEW ZEALAND AND FIJI.



## Register from Dominion Observatory, Wellington, New Zealand, for 1928, April, May, and June.

LATITUDE: 41° 17' S.      LONGITUDE: 174° 46' E.      HEIGHT ABOVE SEA-LEVEL: 401.5 ft.

### INSTRUMENTS.

- (a) Milne Horizontal Seismograph No. 20: E-W component; magnification, 5.6; period, T = 30.0 seconds; undamped.
- (b) Milne-Shaw Horizontal Seismograph No. 13: N-S component; magnification, 150; period, T = 9.6 seconds; magnetic damping, 20:1.
- (c) Milne-Shaw Horizontal Seismograph No. 36: E-W component; magnification, 150; period T = 10.0 seconds; magnetic damping, 20:1.

Time is Greenwich Mean Time—0 h. or 24 h. = Greenwich midnight.

Director: C. E. ADAMS.

Date.	Direction	Phase.	Time. G.M.T.			Period.	AMPLITUDE.		△ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928. April 2	E-W	i eL M	h. 22	m. 32 35 36	s. 14 54 04	s. 14	μ 35	μ		
	N-S	i L M	22	31 34 36	44 39 04	12	..	19		
April 3	E-W N-S	} ..	17	50	..	..	..	..	Tremors.	
April 5	E-W	i	08	55	28	..	..	..	Small local shock.	
	N-S	i	08	55	30					
April 5	E-W	i	20	03	33	..	..	..	Small local shock. Shock felt at Tarawera and Napier about this time.	
	N-S	i	20	03	33				R.-F. 3.	
April 7	E-W	i	23	01	18	..	..	..	Small local shock.	
	N-S	i	23	01	20					
April 9	E-W N-S	} ..	00	30	..	..	..	..	Tremors.	
April 9	E-W	iS eL M	17 18	58 19 22	33 29 38	.. 21	.. 36	..	Peru.	
	N-S	..	..	..	..	..	..	..	Time marks failed.	
April 10	E-W N-S	} ..	23	15	..	..	..	..	L waves.	
April 14	E-W	e	10	20	28	..	..	..	Records masked by microseisms.	
	N-S	e	10	28	11	18	..	s		



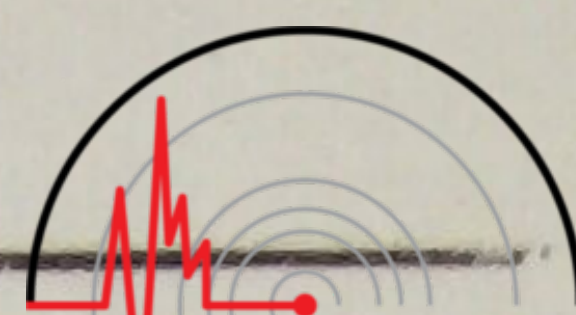


Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
			h.	m.	s.		$A_E$	$A_N$		
1928. April 14	E-W	e M	15	16	16	..	$\mu$	$\mu$		
	N-S	e M	15	16	11	9	..	11		
April 17	E-W	iS eL	03	49	13	..	..	..	Mexico.	
			04	11	48	25	s			
	N-S	e	03	50	21	..	..	..	Masked by microseisms.	
April 18	E-W	O iP iS	04	14	29	..	..	..	1.3	
				14	49					
				15	05					
	N-S	O iP iS	04	14	21	..	..	..	1.3	
				14	51					
				15	07					
April 18	E-W N-S	} ..	20	45	..	{ 19 17	s ..	.. s	..	L waves. Shocks in Southern Europe.
April 21	E-W	O iP iS	02	25	54	..	..	..	1.7	Felt at Tarawera, North Island. R.-F. 3.
				26	20					
				26	42					
	N-S	O iP iS	02	25	57	..	..	..	1.7	
				26	23					
				26	45					
April 21	E-W	i	07	06	46					
	N-S	i	07	06	22	10	..	s		
April 27	E-W	i	19	21	06					
	N-S	e	19	21	40					
	E-W N-S	} ..	21	30	..	18	s	s	..	L waves.
April 28	E-W	i	14	11	38	..	..	..	..	Small local shock.
	N-S	i	14	11	37					
May 2	E-W	e	11	33	49	..	..	..	..	Tremors.
	N-S	..	11	35	+	..	..	..	..	Tremors.
May 8	E-W	i	05	07	46	..	s			
	N-S	i	05	08	46	8	..	s		
May 11	E-W	O iP iS	16	36	24	..	..	..	1.0	Felt throughout southern portion of North Island. R.-F. 4.
				36	39					
				36	52					
	N-S	O iP iS	16	36	26	..	..	..	1.0	
				36	41					
				36	54					



Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928. May 14	E-W	e M	h. 02	m. 54 57	s. 31 52	s. 13	$\mu$ 17	$\mu$		
	N-S	i	02	54	52	11	..	s		
May 14	E-W	O P iPR <sub>1</sub> iS SR <sub>2</sub> L M <sub>1</sub> M <sub>2</sub> M <sub>3</sub>	22	14 28 32 39 50 00 06 09 12	54 32 31 50 24 42 42 22 39	.. 10	.. 14	..	94.0	Peru. Disastrous shocks reported.
	N-S	O P S iSR <sub>1</sub> L M	22	15 28 39 47 56 06	37 57 57 09 17 45	.. 11 18	.. 20	.. 200	91.0	
May 15	E-W	eL	03	22	35	22	..	..		
	N-S	eL	03	+	..	..	..	..	..	Time-marks failed.
May 16	E-W	eL	08	42	58	20	s	..		
	N-S	eL	08	44	18	..	..	s		
May 19	E-W	e	03	55	57	..	..	..	..	Tremors.
	N-S	..	04	..	..	..	..	..	..	
May 22	E-W	O iP iS	01	39 39 39	46 52 57	..	..	..	0.4	
	N-S	i	01	39	52	..	..	..	..	
May 23	E-W	..	21	30	..	..	..	..	..	Tremors.
May 26	E-W	e	14	51	28	..	..	..	..	
	N-S	e	14	53	22	..	..	..	..	
May 27	E-W N-S	} ..	05	+	..	14	s	s	..	Tremors.
May 27	E-W	O P iS iSR <sub>1</sub> iSR <sub>2</sub> eL M	09 10	51 03 13 19 23 30 34	09 23 23 11 24 27 38	.. 9	.. 14	..	79.2	Japan. Apia $\Delta = 65^\circ$ . Suva $\Delta = 65^\circ$ .
	N-S	O P iS iSR <sub>1</sub> eL M	09 10	51 03 13 19 30 35	29 32 22 07 28 46	.. 23	.. ..	.. 111	77.4	





Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E$ .	$A_N$ .		
1928. May 28	E-W N-S	} ..	h. 02	m. +	s. ..	s. ..	$\mu$ ..	$\mu$ ..	..	Tremors.
May 28	E-W	S L M	06	51 54 52	16 31 57	.. .. 12	.. .. 51	..	..	Record interrupted by edge of paper.
	N-S	O P S L M	06	43 47 51 55 58	07 42 20 01 01	.. .. 11 .. 13	.. .. .. .. ..	..	19.5	Suva $\Delta = 4.5^\circ$ .
May 30	E-W	i	05	32	02					
May 31	E-W	i M	17	33 34	31 06	.. 11	.. 18			
	N-S	i i M	17	30 33 36	05 30 22	.. .. 10	.. .. 10			
June 1	E-W N-S	} ..	00	..	..	..	..	..	..	Tremors.
June 1	E-W	i e	13	34 53	21 21	.. 23	..	..	..	L waves.
	N-S	i e	13	34 47	28 41	.. 23	..	..	..	
June 3	E-W	eL	02	07	46	18				
	N-S	eL	02	09	51	18				
June 3	E-W	..	08	20	+	..	..	..	..	Tremors.
June 5	E-W N-S	} ..	15	20	..	..	..	..	..	Tremors. Suva $\Delta = 8^\circ$ .
June 6	E-W	e	15	56	34	13				
	N-S	e	15	55	41	12				
June 6	E-W	e M	19	22 26	07 46	.. 13	.. 18	..	..	Apia $\Delta = 10^\circ$ ; Suva $\Delta = 12^\circ$ . Origin pro- bably in Tonga Deep.
	N-S	e M	19	22 28	14 44	.. 11	..	11		
June 7	E-W N-S	} ..	02	50	..	..	..	..	..	Tremors.
June 8	E-W	O iP S M	14	43 47 50 52	58 45 44 09	.. .. .. 17	.. .. .. 60	..	15.6	Suva $\Delta = 10^\circ$ .
	N-S	O iP iS M	14	44 48 51 57	21 08 06 04	.. .. .. 12	.. .. .. ..	..	15.5	

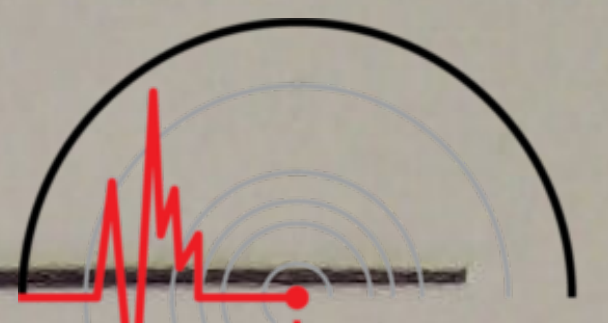




Date.	Direction	Phase	Time. G.M.T.				Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
								A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	s.	s.	$\mu$	$\mu$			
June 10	E-W	..	17	50	..	..	..	..	..	Tremors.	
June 11	E-W	O iP iS	18	25 25 25	13 34 52	..	..	..	1.4	Felt in central parts of North Island. Max. force R.-F. 5.	
	N-S	O iP iS	18	25 25 25	11 32 50	..	..	..	1.4		
June 15	E-W	O iP iS iSR <sub>2</sub> L M	06	12 24 33 42 48 52	28 05 32 00 43 ..	.. 7 17	.. 7 39	..	73.2		
	N-S	O P iS iSR <sub>2</sub> L M	06	12 24 33 42 49 49	33 05 27 32 37 43	.. 13 16	.. 24 33	..	72.3		
June 15	E-W N-S	} ..	17	45	..	..	..	..	..	Tremors.	
June 16	E-W N-S	} ..	18	45	..	..	..	..	..	Tremors; also rather heavy microseisms all day.	
June 17	E-W	O P iS iSR <sub>1</sub> M SR <sub>2</sub> iL M <sub>1</sub> M <sub>2</sub> M <sub>3</sub>	03	19 32 43 50 51 55	45 55 48 44 59 +	.. 13 20	.. 117 113	..	89.0	Felt in State of Oaxaco, Mexico. Suva $\Delta = 83^\circ$ .	
June 17	N-S	O P iS L M <sub>1</sub> M <sub>2</sub> M <sub>3</sub>	03	19 32 43	34 55 59	.. 10	.. 29	..	91.0		
			04	04 06 11 15	00 28 35 42	20 16 17	.. 118 255 304	..			
June 17	E-W	i i i	06	45 48 56	50 27 00	..	..	..	..	Suva $\Delta = 6^\circ$ .	
	N-S	i i i	06	45 48 56	45 20 02						
June 18	E-W	i M	00	28 32	54 33	13	14				
	N-S	i M	00	32 33	35 47	11	..	13			

Earthquake Inset.





Date.	Direction	Phase.	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	s.	s.	$\mu$	$\mu$		
June 21	E-W	e M	03 04	56 02	35 37	.. 13	.. 14	..		
	N-S	..	03	..	..	..	..	..		Record interrupted by period test.
June 21	E-W	O iP iPR iS iL M	10	40 45 46 49 51 56	27 43 25 50 05 +	.. 4 10 13	.. 7 63 875	..	22.9	Apia $\Delta = 9^\circ$ . Suva $\Delta = 2^\circ$ . Epicentre: lat. $18^\circ$ S., long. $180^\circ$ . Felt severely on the island of Taviuni, Fiji Group. Also felt at Suva.
	N-S	O iP iS iL M	10	40 45 49 51 56	09 35 49 50 +	.. 4 8 11	.. .. .. .. 530	..	23.8	
June 21	E-W	i e M	16 17	53 04 25	34 .. 10	.. .. 21	.. .. 41	..	..	Suva $\Delta = 83^\circ$ .
	N-S	i eL M	16 17	52 04 21	07 43 20	.. .. 22	.. .. 70	..	..	
June 22	E-W N-S	} ..	07	40	..	..	..	..	..	Tremors.
June 22	E-W N-S	} ..	08	40	..	..	..	..	..	Tremors.
June 23	E-W	i	11	57	44	..	..	..	..	
	N-S	i	11	57	39	..	..	..	..	
June 29	E-W	O iP M iS M iL M	22	50 55 56 59	08 36 21 52	.. .. 5 7	.. .. 18 102	..	24.0	Apia (S-P) = 2m. 59s.; $\Delta = 16^\circ$ . Suva $\Delta = 6^\circ$ . Epicentre: lat. $18^\circ$ S., long. $173^\circ$ E. Felt at Suva as a tremor.
	N-S	O iP M iS M iL M	22	50 55 56 59	16 15 06 11	.. .. 8 8	.. .. .. ..	..	21.5	
			23	00 00 04	00 36 ..	8 .. 19	.. .. ..	..	..	88 614



## Register from Suva, Fiji, for 1928, April, May, and June.

LATITUDE: 18° 9' S.      LONGITUDE: 178° 26' E.      HEIGHT ABOVE SEA-LEVEL: 10 ft.

INSTRUMENT: Milne Twin Boom Horizontal Seismograph.      E-W and N-S components.      Magnification, 6.      Periods, T = 7.5 secs. for E-W; T = 10.0 secs. for N-S undamped.

Time is Greenwich Mean Time—0 h. or 24 h. = Greenwich midnight.

Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		Δ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	mm.	mm.		
April 1	E-W	i	10	40.0	..	..	..	Tremors all day.
		i		41.4	..	..	..	Δ T not known.
	N-S	i	10	39.0				
April 3	E-W	i	20	17.5				
	N-S	i	20	17.5				
April 9	E-W	O	00	23.8	..	..	5.5	
		iP		25.2				
		iS		26.3	..	..		
		M		26.7	2.9			
	N-S	O	00	23.8				
		iP		25.2				
		iS		26.3				
		M		26.8	..	1.4	5.5	
April 9	..	..	16	..	..	..	..	Tremors.
April 9	E-W N-S	} ..	23	..	..	..	..	Tremors.
April 10	E-W	i	21	30.5	..	..	..	Δ T not known.
	N-S	i	21	30.3				
April 10	E-W	i	23	01.2				
		M		09.2				
	N-S	..	23	+	..	..	..	Tremors.
April 14	E-W; N-S	} ..	..	..	..	..	..	Tremors at intervals.
April 16	E-W	i	20	53.1				
	N-S	i	20	53.0				
April 17	E-W N-S	} ..	02	..	..	..	..	Tremors
April 18	E-W N-S	} ..	20	..	..	..	..	Tremors.





Date.	Direction	Phase.	Time, G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928. April 22	E-W	e M	h. 12	m. 11+ 14.7	mm. 2.0	mm.		
	N-S	i M	12	11.7 13.5		1.0		
May 2	E-W	O P iS M	11	22.3 23.8 25.0 26.0	.. .. 4.5	..	6	$\Delta T$ not known ; time uncertain.
	N-S	O P S M	11	21.3 23.1 24.5 25.8	.. .. ..	0.7	7	
May 6	E-W N-S	} ..	07	..	..	..	..	Tremors.
May 7	E-W	e M	09	17.8 19.8	0.8			
	N-S	e	09	17.3				
May 7	N-S	i	21	18.0				
May 15	E-W	i M	21	17.5 18.2	..	0.6		
	N-S	i e M	21	16.2 17.0 17.6	..	0.9		
May 19	E-W	e i M	03	47.6 52.0 53.0	.. .. 0.6	..	..	$\Delta T$ not known ; time uncertain. Reported felt at Haapai, Tonga Islands ; origin pro- bably in Tonga Deep.
	N-S	O P iS M	03	44.8 47.4 49.5 51.3	.. .. ..	0.7	10	
May 22	E-W	i	21	53.6				
	N-S	i	21	53.5				
May 23	E-W	..	..	..	..	..	..	Tremors all day.
May 26	E-W	e	09	32.0	..	..	..	$\Delta T$ not known ; time uncertain.
	N-S	e	09	33.6				
May 26	E-W	e	14	42.6				
	N-S	e	14	43.7				
May 27	E-W	e	05	58.1				
		i	06	00.6				
	N-S	e	05	58.7				
		M	06	00.8	..	0.6		





Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928. May 27	E-W	O P iPR <sub>1</sub> iS SR <sub>1</sub> eL	h. 09 10	m. 52.1 02.7 07.7 10.3 15.7 22.1	mm. .. .. .. .. .. s	mm. .. .. .. .. .. ..	64	Japan.
	N-S	O P S SR <sub>2</sub> eL	09 10	52.1 03.0 11.8 19.5 23.5	.. .. .. .. ..	.. .. .. s ..	66	
May 28	E-W	e i M	01	49.8 51.1 51.7	.. .. 2.0	.. .. ..	..	$\Delta T$ not known ; time uncertain,
	N-S	e i M	01	49.7 50.8 40.4	.. .. ..	.. 2.1 ..	..	
May 28	E-W	O eP iS M	06	40.4 41.5 42.4 ..	.. .. .. 5.0+	.. .. .. ..	4.5 ..	Faint record.
May 28	N-S	O P S M	06	40.3 41.4 42.3 ..	.. .. .. ..	.. .. 5.0+ ..	4.5	
May 30	E-W	e M	06	26.7 28.3	.. 0.7	.. ..	..	Felt at Apia. R.-F. 3.
	N-S	O P S M	06	20.6 23.2 25.4 27.0	.. .. .. ..	.. .. 0.5 ..	11	
May 31	E-W	i M	17	27.6 29	.. 5.0+	.. ..	..	
	N-S	O iP iS M	17	24.0 26.0 27.6 28.2	.. .. .. ..	.. .. 2.5 ..	8	
June 1	E-W N-S	} ..	13	+	.. ..	.. ..	..	Tremors.
June 1	N-S	..	19	30	..	..	..	Tremors.
June 3	E-W	i	03	00.5	..	..	..	
	N-S	i	03	00.8	..	..	..	
June 4	E-W	i M	08	50.4 55.0	.. 0.8	.. ..	..	
	N-S	i M	08	46.0 54.5	.. ..	.. s	..	



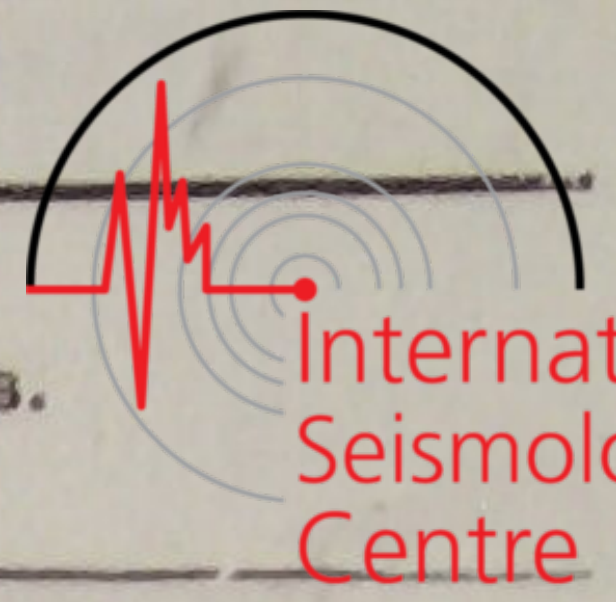


Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928. June 6	E-W	i iS M	h. 15	m. 46.3 47.5 48.9	mm.	mm.		
	N-S	O iP iS M	15	43.7 45.7 47.3 48.4	..	..	8	
June 6	E-W	O iP iS iL M	19	09.3 12.2 14.5 14.9 15.8	..	..	12	Apia $\Delta = 10^\circ$ . Origin probably in Tonga Deep.
	N-S	O iP iS M	19	09.5 12.4 14.7 15.7	..	..	12	
June 8	E-W	O iP iS M	14	44.3 46.8 48.8 50	..	..	10	
	N-S	O iP iS M	14	44.0 46.6 48.7 ..	..	..	10.5	
June 8	E-W	e M	21	30.0 31.6	2.0	..		
	N-S	e M	21	26.7 29.3	..	0.6		
June 11	E-W	i	09	03.0	s	..		
	N-S	i M	09	02.5 03.7	..	s		
June 14	E-W	..	20	+	..	..	..	Tremors.
	N-S	i	20	14.2	..	..		
June 15	E-W	i M	06	18.2 38.4	0.6	..		
	N-S	i M	06	23.4 26.5	..	0.9		
June 15	E-W	i	17	28.0	..	..		
	N-S	i	17	26.9	..	..		
June 16	E-W N-S	} ..	21	+	..	..	..	Tremors.
June 17	E-W	O iP PR S SR <sub>1</sub> L	03 04	19.3 31.9 36.7 42.3 48.1 00	.. .. .. 0.6 .. +	.. .. .. .. .. ..	83	



Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		Δ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928. June 17	N-S	O	h.	m.	mm.	mm.	82	
		iP	03	19.4	..	..		
		iPR		31.9				
		iS		36.3				
		M		42.2	..	1.3		
		iSR <sub>1</sub>		43.5	..	1.0		
		M		48.7	..	1.0		
		iSR <sub>2</sub>		49.9	..	1.0		
	L	04	53.0					
	M		00					
			12.4	..	2.0			
June 17	E-W	iP	06	42.4			3.0	
		M		45.1				
	N-S	O	06	40.9	..	..	6	
		iP		42.4				
		iS		43.6				
		M		45.0	..	6.0		
June 19	E-W	i	03	47.6				
	N-S	i	03	47.6				
		e		48.4				
June 21	E-W	i	03	47.6			0.9	
		i		53.4				
		M		54.2				
	N-S	i	03	45.0			..	0.6
		i		53.0				
		M		59.7				
June 21	E-W	O	10	42.1	..	..	2	Felt severely on the island of Taviuni : also felt at Suva.
		iP		42.6				
		iS		43.0				
		M		..	6.0+			
	N-S	O	10	42.2	..	..	2	
		iP		42.9				
		iS		43.1				
		M		..	..	6.0+		
June 21	E-W	iP	16	38.8				
		L	17	05				
	N-S	O	16	25.9	..	..	83	
		eP		38.5				
		iS		48.9				
		SR <sub>1</sub>		54.2				
		L	17	07.7				
June 21	E-W	e	22	15.9				
June 22	E-W	e	05	50.1				
	N-S	i	05	49.0				
June 26	E-W	} ..	..	..	..	..	..	Tremors at intervals.
	N-S							





Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E</sub> .	A <sub>N</sub> .		
1928. June 27	E-W	O	07	09.7	..	..	4.5	
		iP		10.9				
		iS		11.8				
		M		12.0	0.9			
	N-S	O	07	09.4	..	..	5.0	
		iP		10.7				
		iS		11.7				
June 29	E-W	O	22	50.5	..	..	5.5	Felt at Suva as a tremor.
		iP		52.2	1.3			
		iS		53.3				
		M		..	6.0+			
	N-S	O	22	50.4	..	..	6.0	
		iP		51.9	..	2.1		
		iS		53.1				
		M		..	..	6.0+		
June 30	E-W	} ..	..	..	..	..	..	Tremors.
	N-S							

C. E. ADAMS,  
New Zealand Government Seismologist.

By Authority: W. A. G. SKINNER, Government Printer, Wellington.

[200/3/29—16805



# EARTHQUAKE REPORTS.—NEW ZEALAND AND FIJI.

Register from Dominion Observatory, Wellington, New Zealand, for 1928, July, August, and September.

LATITUDE: 41° 17' S.      LONGITUDE: 174° 46' E.      HEIGHT ABOVE SEA-LEVEL: 401.5 ft.

## INSTRUMENTS.

- (a) Milne Horizontal Seismograph No. 20: E-W component; magnification, 5.6; period, T = 28.2 seconds; undamped.
- (b) Milne-Shaw Horizontal Seismograph No. 13: N-S component; magnification, 150; period, T = 9.6 seconds; magnetic damping, 20:1.
- (c) Milne-Shaw Horizontal Seismograph No. 36: E-W component; magnification, 150; period, T = 10.0 seconds; magnetic damping, 20:1.

Time is Greenwich Mean Time—0 h. or 24 h. = Greenwich midnight.

Director: C. E. ADAMS.

Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E.$	$A_N.$		
1928. July 1	E-W	i	h.	m.	s.	s.	$\mu$	$\mu$	..	Local shock.
	N-S	i	15	13	50	..	..	..	..	
July 4	E-W	i	15	13	51	..	..	..	..	Small local shock.
	N-S	i	13	32	23	..	..	..	..	
July 4	E-W	i	13	32	27	..	..	..	..	Small local shock.
	N-S	i	16	24	54	..	..	..	..	
July 8	E-W	i	16	24	52	..	..	..	..	Small local shock.
	N-S	i	20	09	46	..	..	..	..	Tremors.
July 8	E-W	i	20	11	08	..	..	..	..	Tremors.
	N-S	i	20	11	08	..	..	..	..	
July 9	E-W	O	21	22	44	..	..	..	42.2	Melbourne $\Delta = 30^\circ.3$ .
		iP		30	57	..	..	..	..	Suva $\Delta = 29^\circ$ . Epi-
		iS		37	27	..	..	..	..	centre: $4^\circ$ S, $150^\circ$ E.
		L	..	..	..	..	..	..	..	L waves interrupted by
		M		40	42	18	104	..	..	changing paper.
	N-S	O	21	22	45	..	..	..	42.5	
		iP		30	43	6	..	..	..	
		iS		37	23	..	..	..	..	
		iL		41	47	17	..	..	..	
		M <sub>1</sub>		43	25	15	..	181	..	
		M <sub>2</sub>		46	02	12	..	164	..	
July 10	N-S	..	11	45	..	..	..	..	..	Slight tremors.









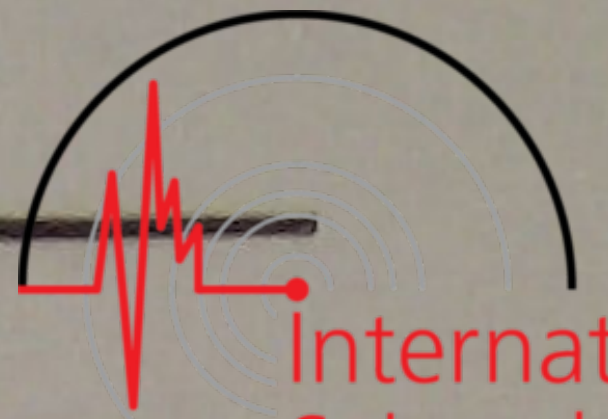
Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		△ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928. July 26	E-W	e	h.	m.	s.	s.	μ	μ		
	N-S	e	12	47	+	15	s			
July 28	E-W	i	00	15	08	..	..	..	..	Tremors.
	N-S	i	00	15	+	14	..	s	..	Tremors.
July 29	E-W	i	19	56	33					
	N-S	i	19	56	38					
July 30	E-W	i	17	44	53	..	..	..	..	Local shock; confused record.
	N-S	O iP iS	17	44	47	..	..	..	0.6	Felt extensively in districts surrounding Cook Strait. Max. force, 5 R.-F.
			44	56						
			45	04						
Aug. 3	E-W	i	13	20	46	..	..	..	..	Small local shock.
	N-S	i	13	20	46					
Aug. 4	E-W	O P PR iS iSR <sub>1</sub> iSR <sub>2</sub> L M <sub>1</sub> M <sub>2</sub>	18	26	08	..	..	..	91.0	Off coast of Mexico.
				39	28					
				44	06					
				50	36	13	62			
				58	34	20	54			
			19	02	16	15	15			
				11	36					
				13	27	22	129			
				16	13	17	50			
	N-S	P (?) iS iL M <sub>1</sub> M <sub>2</sub>	18	38	42	..	..	..	101 (?)	
				50	31	10	..	22		
			19	10	44					
				11	50	22	..	39		
				17	02	20	..	67		
Aug. 7	E-W	e	18	07	12					
Aug. 8	E-W	eL	02	57	54	18	s			
	N-S	eL	02	56	06	19	..	s		
Aug. 9	E-W	e	05	27	40	13	s			
	N-S	e	05	27	49	15	..	s		
Aug. 10	E-W	O iP iS	02	58	43	..	..	..	0.8	Local shock.
				58	55					
				59	05					
	N-S	O iP iS	02	58	46	..	..	..	0.6	
				58	55					
				59	03					
Aug. 11	E-W	} ..	07	..	..	..	..	..	..	Slight tremors.
	N-S									
Aug. 12	E-W	O iP	08	07	46	..	..	..	67.8	Philippine Islands.
				18	49					





Date.	Direction	Phase.	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928. Aug. 12	E-W	PR <sub>2</sub> S L M	h. 08	m. 23 27 41 49	s. 06 46 06 ..	s.   15	$\mu$   15	$\mu$		
	N-S	O iP iS eL M	08	07 18 27 39 49	49 51 46 16 11	..   16	..   s	67.6		
Aug. 12	E-W	i	13	30	19	10	s			
	N-S	e	13	30	24	10	.. s			
Aug. 13	E-W	e	05	12	12	12	s			
Aug. 18	E-W N-S	} ..	05	40	..	..	..	..	Slight tremors.	
Aug. 23	E-W	i	00	45	16					
	N-S	i	00	45	21					
Aug. 23	E-W	i	12	14	51	..	..	..	Small local shock.	
	N-S	i	12	14	50					
Aug. 24	E-W	i	09	14	35					
	N-S	i	09	15	36					
Aug. 24	E-W	iPR S (?) M	21	50 53 55	02 34 54	..  10	..  27	..	Confused.	
	N-S	O iP iPR iS M L M	21	42 49 49 54 55 56 22	26 05 54 19 00 .. 26	.. 8  15 11	.. ..  .. 54 13	31.1		
Aug. 24	E-W	eL	23	35	39	18	s			
	N-S	L	23	40	..	20	.. s	..	L waves.	
Aug. 26	E-W	e M	04	10 18	.. 06	15	17			
	N-S	i iL M	04	07 17 17	29 04 34	18	.. .. 40			
Aug. 26	E-W	i	17	59	12	..	..	..	Felt in Hawke's Bay district. Max. force, 5 R.-F.	
	N-S	i	17	59	10					
Aug. 28	E-W	i	08	38	20					
	N-S	..	08	40	..	..	..	..	Tremors.	





Date.	Direction	Phase.	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928. Aug. 29	E-W	e eL	h. m. s. 02 33 52 40 39	s. 20	$\mu$ s	$\mu$	*			
	N-S	i eL	02 34 10 42 32	15	..	s				
Sept. 2	E-W	eL	00 38 29	20	s					
Sept. 2	E-W	i	09 56 10	..	..	..	..	..	Felt on west coast of South Island. Max. force, 5 R.-F.	
	N-S	i	09 56 08							
Sept. 2	E-W	eL	17 08 04	18	s					
	N-S	eL	17 07 +	14	..	s				
Sept. 6	E-W	i	05 19 46	..	..	..	..	..	Small local shock.	
	N-S	i	05 19 45	..	..	..	..	..	Tilt to north.	
Sept. 6	E-W	e	07 41 58							
	N-S	e	07 40 38							
Sept. 6	E-W	eL	09 04 00							
	N-S	i	09 04 48							
Sept. 6	E-W	e	12 44 12							
	N-S	e	12 44 28							
Sept. 7	E-W	i iL M	03 03 18 06 46 17 03	16	19					
	N-S	i L M	03 03 28 07 38 13 38	13	..	15				
Sept. 11	E-W	i i i eL	00 47 02 51 02 53 32 56 38	22	s					
	N-S	i i L	00 42 58 47 01 52 18	20	..	s				
Sept. 11	E-W	i eL	13 21 58 24 18	20	s					
	N-S	eL	13 17 35							
Sept. 12	E-W	O iP iS M	01 20 03 22 25 24 16 25 03	..	..	..	9.4		Felt in Hawke's Bay and Bay of Plenty districts, North Island. Max. force, 4 R.-F.	
	N-S	O iP iS M	01 20 03 22 25 24 16 24 59	..	..	..	9.4			

Inset Earthquakes.





Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E$	$A_N$		
1928. Sept. 13	E-W	i	h. m. s.	s.	$\mu$	$\mu$	..	..	Small local shock.	
	N-S	i	02 59 47	..	..	..	..	..		
Sept. 13	E-W	O	03 26 45	..	..	..	60.7			
		iP	36 42							
		iS	44 57							
		eL	54 27							
		M <sub>1</sub>	04 02 32	23	36					
		M <sub>2</sub>	07 01	17	40					
	N-S	e	03 44 52							
		L	53 22							
		M	04 05 51	15	..	19				
Sept. 13	E-W	i	04 39 57	..	..	..	..	..	Small local shock.	
	N-S	i	04 39 57							
Sept. 14	E-W	e	02 32 27	11	s					
	N-S	e	02 32 23							
Sept. 18	E-W	i	06 49 45							
	N-S	i	06 49 42							
Sept. 18	E-W	..	18 .. ..	..	..	..	..	..	Tremors.	
	N-S	eL	18 40 03							
Sept. 18	E-W	} ..	21 .. ..	..	..	..	..	..	Tremors.	
	N-S									
Sept. 19	E-W	iL	13 13 37	16	s					
	N-S	i	13 11 07							
Sept. 22	E-W	eL	06 09 06	24	s					
	N-S	eL	06 09 17							
Sept. 22	E-W	O	07 31 38	..	..	..	26.9			
		P	37 35							
		eS	42 17	16						
		iL	45 37							
		M <sub>1</sub>	46 20	20	132					
		M <sub>2</sub>	48 05	20	168					
	N-S	O	07 31 18	..	..	..	28.1			
		iP	37 27							
		iS	42 19							
		iL	45 57							
		M <sub>1</sub>	46 21	24	..	150				
		M <sub>2</sub>	48 59	18	..	250				
Sept. 24	E-W	O	09 33 04	..	..	..	0.8		Felt extensively in	
		iP	33 16						southern portion of	
		iS	33 10						North Island. Max.	
	N-S	O	09 33 02	..	..	..	0.9		force, 4 R.-F.	
		iP	33 16							
		iS	33 27							



# Register from Suva, Fiji, for 1928, July, August, and September.



LATITUDE : 18° 9' S.      LONGITUDE : 178° 26' E.      HEIGHT ABOVE SEA-LEVEL : 10 ft.

INSTRUMENT : Milne Twin-boom Horizontal Seismograph.      E-W and N-S components.      Magnification, 6.      Period, E-W, T = 8.4; N-S, T = 10.8.      Undamped.

Time is Greenwich Mean Time—0 h. or 24 h. = Greenwich midnight.

Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		Δ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	mm.	mm.		
1928. July 4	E-W N-S	} ..	..	..	..	..	..	Tremors at intervals.
July 8	E-W	..	20	..	..	..	..	Tremors.
	N-S	e	20	09.1				
July 9	E-W	O iP PR iS M	21	22.1 28.4 29.2 33.4 37.1	.. .. .. .. 2.8	.. .. .. .. ..	29	
	N-S	P M i M	21	28.4 30.5 35.5 41.3	.. .. .. ..	.. 3.9 .. 6.0	..	Phases indistinct.
July 10	E-W N-S	} ..	03	..	..	..	..	Tremors.
July 10	E-W	..	10	..	..	..	..	Tremors.
	N-S	e	09	43.4				
July 11	E-W	O eP iS L M	02	51.5 55.3 58.3 00+ 07.4	.. .. .. .. 1.9	.. .. .. .. ..	16	
	N-S	O iP iS L M	02	51.3 55.5 58.8 00+ 02.8	.. .. .. .. ..	.. .. .. .. 2.3	17.5	
July 18	E-W	..	19	..	..	..	..	Faint record.
	N-S	O iP PR <sub>2</sub> S L	19	03.4 16.7 23.6 27.9 51.4	.. .. .. .. ..	.. .. .. .. s	91	
July 22	E-W	..	08	..	..	..	..	Boom off paper ; no record.
	N-S	..	08	..	..	..	..	Tremors.

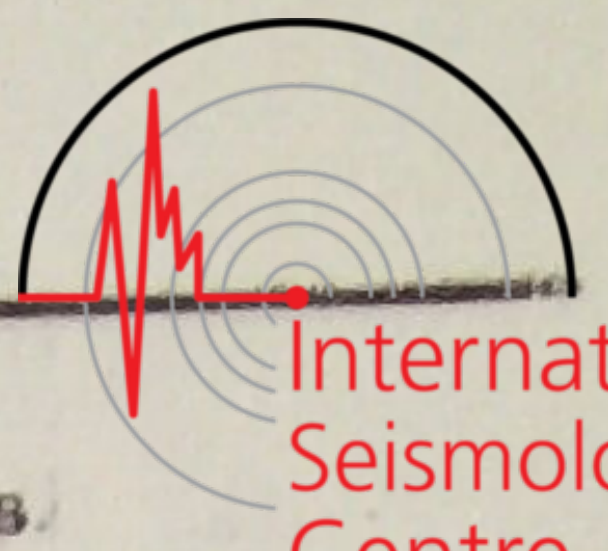


Date.	Direction	Phase.	Time, G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	mm.	mm.		
1928. July 28	E-W	..	06	..	..	..	..	Tremors.
	N-S	i M	06	27.1 33.0	..	0.5		
July 29	E-W	i M	22	15.9 ..	..	..	..	Very faint record.
	N-S	O iP iS M	22	15.1 15.6 16.0 17.4	..	1.0	2	
Aug. 2	E-W	e	22	27.4	..	..	..	
	N-S	..	22	+	..	..	..	Tremors.
Aug. 4	E-W	iS	18	50.0	..	..	..	Tremors most of day.
	N-S	O eP iS iSR <sub>1</sub> L	18	26.7 39.5 50.0 56.5	..	..	85	Tremors most of day.
Aug. 4	E-W	e i	22	50.5 53.5	..	..	..	
	N-S	e i	22	49.5 53.1	..	..	..	
Aug. 6	E-W	e	14	18.9	..	..	..	
	N-S	e	14	18.5	..	..	..	
Aug. 7	E-W	i	01	57.8	..	..	..	Tremors at intervals.
	N-S	i	01	57.7	..	..	..	Tremors at intervals.
Aug. 9	E-W	i	05	20.0	..	..	..	
	N-S	e M	05	21.8 23.4	..	0.9	..	
Aug. 13	E-W	e	02	35.2	..	..	..	
	N-S	i i	02	35.6 36.2	..	..	..	
Aug. 18	E-W	i	00	51.0	..	..	..	
	N-S	i	00	51.0	..	..	..	
Aug. 18	E-W	e	05	29.2	..	..	..	
	N-S	e	05	26.5	..	..	..	
Aug. 19	E-W	i	18	56.0	..	..	..	
	N-S	i	18	56.5	..	..	..	



Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928. Aug. 23	E-W N-S	} ..	h. 03	m. +	mm. ..	mm. ..	..	Tremors.
Aug. 24	E-W	i M	09	14.8 20.5	0.7			
	N-S	e i M	09	12.2 16.2 18.2	..	2.0		
Aug. 24	E-W	O iP iS M	21	42.9 45.7 47.8 48.7	..	..	11	
	N-S	O iP M iS iL M	21	42.9 45.7 46.8 47.9 49.4 52.4	..	..	11	
Aug. 26	E-W	O iP iS M	04	05.0 06.3 07.3	..	..	5	Times uncertain.
	N-S	P S M	04	..	..	..	..	Time marks failed.
Aug. 26	E-W N-S	} ..	05	+	..	1.2	..	Tremors.
Aug. 27	E-W	i	04	20.0				
	N-S	i	04	18.7				
Aug. 29	E-W	i i M	02	38.3 42.4 44.1				
	N-S	e i M	02	36.0 40.3 42.0				
Sept. 6	E-W	e i i M	08	53.2 54.0 56.0 58.7	1.0			
	N-S	i i M	08	52.2 54.8 57.5	..	1.4		
Sept. 6	E-W	e M	12	34.7 39.3	1.9			
	N-S	e i M	12	33.0 35.9 39.0	..	4.0		





Date.	Direction	Phase.	Time, G.M.T.		AMPLITUDE.		Δ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	mm.	mm.		
1928. Sept. 7	E-W N-S	}..	03	..	..	..	..	Tremors.
Sept. 11	E-W N-S	}..	..	..	..	..	..	Tremors all day.
Sept. 12	E-W	iP(?) M	01	23.1	4.0+			
	N-S	eP(?) i M	01	23.1 25.9 30.6	..	1.8		
Sept. 14	E-W	e	18	41.4				
Sept. 19	E-W N-S	}..	13	..	..	..	..	Tremors.
	E-W N-S	}..	21	..	..	..	..	Tremors.
Sept. 20	E-W	e	12	07.0	..	..	..	Minute marks failed ; times un- certain.
		M <sub>1</sub>		09.0	2.0			
		M <sub>2</sub>		13.0	1.7			
	N-S	i M	12	07.0 08.6	..	0.7		
		E-W N-S	}..	..	..	..	..	Tremors at intervals.
Sept. 26	E-W N-S	}..	21	..	..	..	..	Tremors.
Sept. 27	E-W N-S	}..	..	..	..	..	..	Tremors all day.
	N-S	e	06	42.3				
Sept. 30	E-W	i	10	44.9				
	N-S	i	10	44.9				

NOTE.—September 1-5 (inclusive), clock under repair ; no records. September 8, light failed.

C. E. ADAMS,  
New Zealand Government Seismologist.

By Authority : W. A. G. SKINNER, Government Printer, Wellington.—1929.

[200/5/29—1175



# EARTHQUAKE REPORTS.—NEW ZEALAND AND FIJI.

Register from Dominion Observatory, Wellington, New Zealand, for 1928, October, November, and December.

LATITUDE: 41° 17' S.      LONGITUDE: 174° 46' E.      HEIGHT ABOVE SEA-LEVEL: 401.5 ft.

INSTRUMENTS.

- (a) Milne Horizontal Seismograph No. 20: E-W component; magnification, 5.6; period, T = 28.4 seconds; undamped.
- (b) Milne-Shaw Horizontal Seismograph No. 13: N-S component; magnification, 150; period, T = 9.6 seconds; magnetic damping, 20:1.
- (c) Milne-Shaw Horizontal Seismograph No. 36: E-W component; magnification, 150; period, T = 10.0 seconds; magnetic damping, 20:1.

Time is Greenwich Mean Time—0 h. or 24 h. = Greenwich midnight.

Director: C. E. ADAMS.

Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		Δ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	s.	s.	μ	μ		
Oct. 7	E-W	e	11	10	36					
	N-S	e	11	11	06					
Oct. 7	E-W	e	11	49	08					
	N-S	e	11	48	48					
Oct. 9	E-W	O	03	01	11	..	..	..	89.6	Off coast of Mexico. Apia
		iP		14	25					Δ = 84°; Suva Δ = 88°.
		iPR <sub>1</sub>		19	00	5				
		[s]		24	42					
		iS		25	21					
		M		25	43	13	111			
		SR <sub>2</sub>		36	18					
		M		37	20	17	48			
		eL		46	51	22				
		M <sub>1</sub>		51	51	19	220			
		M <sub>2</sub>		58	01	16	125			
	N-S	O	03	01	03	..	..	..	90.5	
		iP		14	21					
		[s]		24	38					
		iS		25	21					
		M		25	41	13	..	60		
		L		45	56					
		M <sub>1</sub>		47	16	21	..	94		
		M <sub>2</sub>		53	26	19	..	158		





Date.	Direction	Phase.	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E$ .	$A_N$ .		
1928.			h.	m.	s.	s.	$\mu$	$\mu$		
Oct. 9	E-W	i eL M	14 46 26 49 21 51 01			17	22			
	N-S	e M	14 45 48 52 24			13	..	15		
Oct. 12	E-W	O iP iS	02 02 35 02 40 02 43			..	..	..	0.3	Tilt to west. Felt at Wellington. R.-F. 4.
	N-S	O iP iS	02 02 35 02 40 02 43			..	..	..	0.3	
Oct. 12	E-W	e	08 19 02							
	N-S	..	08 20 ..			..	..	..	..	L waves.
Oct. 13	E-W	i eL	15 35 37 44 34							
	N-S	i	15 42 25							
Oct. 14	E-W	i	11 12 25			..	..	..	..	Small local shock.
	N-S	i	11 12 25							
Oct. 15	E-W	e i iL M	08 39 02 40 20 45 54 54 35			10 19	11 34			
	N-S	i i M	08 41 05 45 25 59 26			17	..	44		
Oct. 15	E-W	e eL M	14 55 54 15 17 44 25 07			23	s			
	N-S	i i M	14 56 03 15 10 24 25 22			22	..	s		
	E-W	O iP iS L M	06 15 27 19 06 21 59 22 24 28 06			18	30		15.0	
Oct. 17	N-S	iS eL M	06 22 02 22 54 25 38			22	43		..	P wave lost on edge of paper.
Oct. 17	E-W	i eL	15 40 58 45 14			26				
	N-S	eL M	15 40 54 54 26			26	..	50		





Date.	Direction	Phase.	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	s.	s.	$\mu$	$\mu$		
1928. Oct. 19	E-W	i	03	18	21					
	E-W	i	07	06	19	15	s			
	N-S	iL	07	06	33					
Oct. 19	E-W	O	10	18	25	..	..	..	16.4	Suva $\Delta = 11^\circ$ ; Melbourne $\Delta = 35.5^\circ$ ? Epicentre $17^\circ$ S., $174^\circ$ W. Apia $\Delta = 9^\circ$ , which does not agree with the epicentre as determined from Melbourne, Wellington, and Suva.
		iP		22	22					
		iS		25	29					
		M		26	11	16	264			
		iL		26	43					
		M		30	03	13	191			
	N-S	O	10	18	16	..	..	..	17.2	
		iP		22	23					
		iS		25	38					
		M		26	03	17	..	100		
		iL		26	46					
		M		28	03	16	..	304		
Oct. 20	E-W	e	08	18	30					
	N-S	e	08	17	22					
Oct. 21	E-W	i	15	30	35					
	N-S	e	15	29	36					
Oct. 21	E-W	O	16	23	50	..	..	..	40.2	Melbourne $\Delta = 22.7^\circ$ .
		iP		31	47	..	..	..	..	
		iS		38	00					
		eL		42	45	23	s			
		M		50	47	13	13			
	N-S	e	16	35	08					
		eL		40	38					
		M		42	40	18	..	24		
Oct. 22	E-W	i	05	50	50					
		i		52	31					
		M		54	50					
Oct. 23	E-W	} ..	..	..	..	..	..	..	..	Slight tremors at intervals.
	N-S									
Oct. 23	E-W	i	18	15	42					
		eL		35	—	21	s			
	N-S	i	18	15	40					
		eL		35	12	18	..	s		
Oct. 24	E-W	} ..	..	..	..	..	..	..	..	Tremors.
	N-S									
Oct. 25	E-W	i	12	57	51					
		eL	13	22	01					
	N-S		13	—	—	..	..	..	..	L waves.
Oct. 30	E-W	} ..	05	—	—	..	..	..	..	L waves.
	N-S									



Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	s.	s.	$\mu$	$\mu$		
Nov. 3	E-W	i	16	59	16	..	..	..	..	Small local shock.
Nov. 4	E-W	i	14	43	08					
	N-S	i	14	43	10	8	..	s		
Nov. 5	E-W		00	—	—	..	..	..	..	Tremors.
Nov. 5	E-W		14	30	—	..	..	..	..	Tremors.
	N-S		14	30	—	..	..	..	..	Slight tremors.
Nov. 6	E-W	O	04	04	41	..	..	..	21.9	Apia $\Delta = 23^\circ$ ; Suva $\Delta = 11^\circ$ ; Melbourne $\Delta = 28^\circ$ . Epicentre 20° S., 167° E.
		iP		09	45					
		iPR		09	57					
		M		11	33	6	34			
		iS		13	44					
		M		15	03	6	42			
		iSR		14	32					
		M		14	49	8	69			
		iL		16	07					
		M		22	37	10	95			
	N-S	O	04	04	37	..	..	..	22.0	
		iP		09	42					
		iPR		10	11					
		M		10	41	6	..	77		
		iS		13	42					
		M		14	30	8	..	55		
		iL		15	42					
		M		21	52	12	..	115		
Nov. 9	E-W	} ..	03	+	..	11	s	s	..	Tremors.
	N-S									
Nov. 9	E-W	} L	11	30	—	..	..	..	..	L waves.
	N-S									
Nov. 10	E-W	O?	12	28	32	..	..	..	18.7?	
		iP		32	57					
		iS?		36	27	..	..	..	..	Interrupted on edge of paper.
		M		—	—					
		iL		37	23					
		M <sub>1</sub>		39	29	19	97			
		M <sub>2</sub>		43	37	13	64			
	N-S	O	12	27	27	..	..	..	21.6	Suva $\Delta = 12^\circ$ . Probably from same region as quake of Nov. 6 (near New Caledonia).
		iP		32	27					
		iS		36	24					
		M		36	43	11	..	22		
		L		38	—					
		M <sub>1</sub>		40	11	16	..	41		
		M <sub>2</sub>		41	44	10	..	38		
Nov. 10	E-W	i	21	44	14	12	s			
	N-S	i	21	44	14					
		L		47	32	14	..	s		
Nov. 11	E-W	i	23	14	46					
		eL		24	46					
		M		28	14	16	s			
	N-S	i	23	13	56					
		L		21	16					
		M		27	06					



Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	s.	s.	$\mu$	$\mu$		
Nov. 12	E-W	..	11	—	—	..	..	..	..	Tremors.
	N-S	i	10	56	41	15	..	22		
Nov. 13	E-W	e	07	44	49					
	N-S	e	07	45	14					
Nov. 15	E-W N-S	} ..	03	—	—	..	..	..	..	Tremors.
Nov. 17	N-S	e	10	34	24					
Nov. 19	E-W	O iP iS iL M	15	27	27 32 21 36 13 38 07 59 54	..   13	..   18	..   	21.1	Suva $\Delta = 11^\circ$ ; Mel- bourne $\Delta = 30^\circ$ . Ap- proximate epicentre $20^\circ$ S., $168^\circ$ E.
	N-S	O iP iS L M	15	27	43 32 28 36 13 37 13 39 46	..   13	..   	..   27	20.3	
	E-W	O iP iS	05	53	37 53 52 54 05	..	..  	..  	1.0	
Nov. 20	N-S	O iP iS	05	53	36 53 53 54 07	..	..  	..  	1.1	Felt in central parts of North Island, and in Taranaki. Max. force R.-F. 4.
	E-W	O iP [S] iS L M	20	35	59 48 29 58 03 58 44 21 17 14 18 23	..   10 26	..   27 136	..   	81.9	
Nov. 20	N-S	O iP [S] S L M	20	36	02 48 33 58 29 58 52 21 17 24 19 32	..    20	..    	..    97	82.2	Off Chilean coast.
Nov. 21	E-W	i	11	04	44	..	..	..	..	Small local shock.
	N-S	i	11	04	36					
Nov. 22	E-W	i	06	07	25	11	s			
	N-S	i	06	10	43	10	..	s		
Nov. 22	E-W	P (?) iS SR <sub>2</sub> L M	08	43	27 53 55 09 06 07 12 57 21 28	..   18	..   33	..   	84.4(?)	
	N-S	P (?) iS eL M	08	43	24 54 59 09 09 20 21 45	..   17	..   	..   45	85.6(?)	



Date.	Direction	Phase	Time. G. M. T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E.$	$A_N.$		
1928.			h.	m.	s.	s.	$\mu$	$\mu$		
Nov. 22	N-S	i	23	18	23	..	..	..	..	Clock stopped on E-W component.
Nov. 25	E-W	..	21	-	-	..	..	..	..	Slight tremors.
Nov. 28	E-W	O	10	43	07	..	..	..	57.7	Apia $\Delta = 36^\circ$ (?); Suva $\Delta = 55^\circ$ ; Melbourne $\Delta = 34.5^\circ$ ; Batavia $\Delta = 7^\circ$ . Approximate epicentre (omitting Apia $\Delta$ ) $8^\circ$ S., $118^\circ$ E.
		iP		53	04					
		PR		56	26					
		iS	11	01	02	10	15			
		SR <sub>1</sub>		05	04					
		SR <sub>2</sub>		05	17	15	30			
		L		10	42					
		M <sub>1</sub>		15	52	20	172			
		M <sub>2</sub>		18	32	17	80			
		M <sub>3</sub>		27	43	17	100			
	N-S	O	10	43	04	..	..	..	58.3	
		iP		53	05					
		iPR		55	32					
		iS	11	01	07	10	..	19		
		iSR <sub>2</sub>		08	07	20	..	61		
		L		12	24					
		M <sub>1</sub>		15	57	17	..	104		
		M <sub>2</sub>		17	37	20	..	176		
		M <sub>3</sub>		20	14	21	..	290		
Nov. 29	E-W	e	13	05	52	..	..	..	..	Apia $\Delta = 3^\circ$ .
	N-S	..	13	+	..	14	..	s	..	Tremors.
Nov. 29	E-W	i	14	05	07					
		i		09	07					
	N-S	i	14	04	55					
Nov. 29	E-W	O	15	42	21	..	..	..	19.4	Suva $\Delta = 12^\circ$ ; Melbourne $\Delta = 37.0^\circ$ . Epicentre $24^\circ$ S., $172^\circ$ W.
		iP		46	55					
		iS		50	31					
		M		50	58	17	38			
		iL		51	54					
		M		53	01	16	56			
	N-S	iP (?)	15	46	-					
		S		50	29					
		M		52	30	14	..	44		
Nov. 29	E-W	O	17	59	28	..	..	..	18.4	Suva $\Delta = 13^\circ$ ; Melbourne $\Delta = 36.8^\circ$ . Epicentre $25^\circ$ S., $171^\circ$ W.
		iP	18	03	48					
		iS		07	13					
		M		08	12	15	147			
		iL		08	55					
		M		12	37	14	149			
	N-S	O	17	59	07	..	..	..	19.4	
		P	18	03	41					
		iS		07	17					
		M		08	06	15	..	95		
		iL		08	55					
		M		09	34	13	..	169		



Date.	Direction	Phase.	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E$ .	$A_N$ .		
1928. Nov. 29	E-W	O	h.	m.	s.	s.	$\mu$	$\mu$	21.2	
		iP	23	07	56	..	..	..		
		iS		12	51					
		M		16	44	17	38			
		iL		17	38	12	24			
			M		18	17				
			M		20	59	12	24		
	N-S	O	23	08	53	..	..	..	20.2	
		iP		13	36					
		iS		17	20					
iL			18	57	16					
M			22	52	16	..	57			
Dec. 1	E-W	O	04	06	06	..	..	..	81.2	Chile.
		iP		18	32					
		iS		28	43					
		M		29	43	13	73			
		SR <sub>1</sub>		34	12					
		SR <sub>2</sub>		40	17					
		M		41	21	42	650			
	L		43	47						
			M		44	50	27	478		
	N-S	O	04	06	18	..	..	..	79.7	
		iP		18	35					
		iS		28	38					
		M		29	22	12	..	88		
SR <sub>2</sub>			40	37						
M			41	39	42	..	957			
		L		44	09					
		M		44	53	31	..	785		
Dec. 2	E-W	O	04	20	42	..	..	..	78.9	Chile.
		iP		32	54					
		iS		42	52	22	100			
		SR <sub>1</sub>		48	22					
		iL		58	42					
			M	05	00	38				
	N-S	O	04	20	41	..	..	..	79.5	
		P		32	57					
		iS		42	59	19	..	81		
		L		58	02					
M			05	00	27					
Dec. 3	E-W	} ..	7	—	..	..	..	..	Slight tremors.	
	N-S									
Dec. 3	E-W	} ..	13	—	..	..	..	..	Slight tremors.	
	N-S									
Dec. 3	E-W	i	23	04	28					
		L (?)		05	15					
Dec. 3	N-S	i	23	04	23					
		L		05	10					
Dec. 5	E-W	e	03	21	31	15				
	N-S	..	03	30	—	13	..	..		Tremors.



Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							A <sub>E.</sub>	A <sub>N.</sub>		
1928. Dec. 7	E-W	O P eS L (?) M	h. m. s.	s.	$\mu$	$\mu$	51.3	Melbourne $\Delta = 32.7^\circ$ ; Suva $\Delta = 45^\circ$ ; Batavia $\Delta = 29^\circ$ . Epicentre $3^\circ$ S., $126^\circ$ E.		
	N-S	O P S L (?) M	09 14 13 23 30 30 51 37 23 46 50	.. .. .. .. 15	.. .. .. .. ..	.. .. .. .. 76	51.5			
Dec. 8	E-W N-S	} ..	.. .. .	..	..	..	..	Tremors at intervals.		
Dec. 8	E-W	iP iPR <sub>1</sub> iS L M	24 04 25 05 42 — 15 19 22 02	.. .. .. .. 12	.. .. .. .. 26	.. .. .. .. ..	..	Lost on edge of paper.		
	N-S	O iP PR S L M	23 58 38 24 04 29 05 59 10 06 15 24 19 22	.. .. .. .. .. 15	.. .. .. .. .. ..	.. .. .. .. .. 56	26.3			
Dec. 9	E-W	O iP S	03 51 09 51 29 51 45	.. .. ..	.. .. ..	.. .. ..	1.3	Felt extensively in both Islands of New Zea- land. Max. force R.-F. 6. Melbourne $\Delta = 22.6^\circ$ . Epicentre $40^\circ$ S., $174^\circ$ E.		
	N-S	O iP iS	03 51 11 51 29 51 44	.. .. ..	.. .. ..	.. .. ..	1.2			
Dec. 9	E-W	i S SR <sub>2</sub> L M	05 14 04 17 54 20 24 22 25 30 27	.. .. .. .. 12	.. .. .. .. 45	.. .. .. .. ..				
	N-S	iPR(?) iS L M	05 13 59 17 49 21 44 27 33	.. .. .. 15	.. .. .. ..	.. .. .. 91				
Dec. 9	E-W	O P PR iS L M	18 10 33 17 33 18 26 23 03 26 49 31 46	.. .. .. .. .. 15	.. .. .. .. .. 32	.. .. .. .. .. ..	33.4	Melbourne $\Delta = 31.3^\circ$ ; Suva $\Delta = 23^\circ$ . Ap- proximate epicentre $10^\circ$ S., $157^\circ$ E.		
	N-S	O iP (?) PR <sub>1</sub> iS SR <sub>2</sub> L M	18 10 17 17 25 18 45 23 03 25 19 27 24 33 34	.. .. .. .. .. .. 14	.. .. .. .. .. .. ..	.. .. .. .. .. .. ..	34.4(?)			



Date.	Direction	Phase.	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E$	$A_N$		
			h.	m.	s.	s.	$\mu$	$\mu$		
1928. Dec. 10	E-W	eL	05	16	44	23				
Dec. 12	E-W	e	18	19	33					
	N-S	e	18	20	18					
Dec. 12	E-W	O iP iS	19	06 07 07	40 24 57	..	..	..	2.8	
	N-S	i	19	07	21					
Dec. 12	E-W	O iP iS M iL M <sub>1</sub> M <sub>2</sub> M <sub>3</sub>	20	19 23 26 27 28 28 31 35	08 25 48 52 58 48 23 23	..   17  16 14 15	..   264  303 235 238	..	18.0	Melbourne $\Delta = 35.5^\circ$ ; Apia $\Delta = 15^\circ$ ; Suva $\Delta = 15^\circ$ . Approximate epicentre $27^\circ$ S., $172^\circ$ W.
	N-S	O iP iS M iL M <sub>1</sub> M <sub>2</sub> M <sub>3</sub>	20	19 23 26 27 28 29 31 34	02 25 53 48 43 21 47 24	..   18  16 19 13	..   ..  .. .. ..	155 326 417 216	18.5	
Dec. 14	E-W	O iP iS L	14	16 17 18 19	03 38 53 —	..	..	..	6.2	
	N-S	iP iS L	14	17 18 —	— 51 —					
Dec. 14	E-W	eL	23	25	03	21				
	N-S	eL	23	25	28	18				
Dec. 17	E-W	i	04	01	27					
	N-S	i	04	01	47					
Dec. 19	E-W	O P S L M	11	38 48 56 12 25	09 31 51 43 13	..   15	..   67	..	61.5	Melbourne $\Delta = 46.3^\circ$ ; Apia $\Delta = 53^\circ$ (?); Ba- tavia $\Delta = 22^\circ$ ; Suva $\Delta = 52^\circ$ . Epicentre $5^\circ$ N., $128^\circ$ E.
Dec. 19	N-S	O P S M SR <sub>2</sub> L M	11	38 48 56 58 12 06 07	10 30 48 28 13 13 48	..   10  33	..   ..  ..	23	61.2	

Inset—Earthquake Reports.



Date.	Direction	Phase	Time. G.M.T.			Period.	AMPLITUDE.		$\Delta$ Degrees.	Remarks.
							$A_E$	$A_N$		
1928.			h.	m.	s.	s.	$\mu$	$\mu$		
Dec. 25	E-W	i	01	46	42	..	..	..	..	Small local shock.
	N-S	i	01	46	37					
Dec. 25	E-W	e	02	20	51					
	N-S	e	02	18	57					
Dec. 27	E-W N-S	} ..	05	30	..	..	..	..	..	Slight tremors.
Dec. 27	E-W	i	19	10	42	..	..	..	..	Small local shock.
	N-S	i	19	10	44					
Dec. 28	E-W	O P iS SR L (?) M	14	19	14 30 27 39 33 44 32 50 18 59 22	..    20	..    49	..    	69.4	Melbourne $\Delta = 49.5^\circ$ ; Batavia $\Delta = 29^\circ$ ; Suva $\Delta = 61^\circ$ . Ap- proximate epicentre 13° N., 127° E.
	N-S	O iP iS L (?) M	14	19	41 30 36 39 25 48 48 50 43	..   21	..   49	..   	66.5	
Dec. 31	E-W	O iP iS	06	56	11 57 15 58 04	..	..  	..  	4.1	Felt in South Island of New Zealand. Max. force R.-F. 6.
	N-S	O iP iS	06	56	21 57 14 57 55	..	..  	..  	3.4	



# Register from Suva, Fiji, for 1928, October, November, and December.



LATITUDE : 18° 9' S.      LONGITUDE : 178° 26' E.      HEIGHT ABOVE SEA-LEVEL : 10 ft.

INSTRUMENT : Milne Twin-boom Horizontal Seismograph.    E-W and N-S components.    Magnification, 6.    Periods, E-W, T = 8.4 secs.; N-S, T = 10.5 secs.    Undamped.

Time is Greenwich Mean Time—0 h. or 24 h. = Greenwich midnight.

Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		Δ Degrees	Remarks.	
					A <sub>E.</sub>	A <sub>N.</sub>			
1928.			h.	m.	mm.	mm.			
Oct. 4	N-S	..	19	—	..	..	..	Tremors.	
Oct. 5	E-W	i	09	50.2	1.2				
		M		51.7					
	N-S	e	09	49.9					
Oct. 5	E-W N-S	} ..	14	—	..	..	..	Tremors.	
Oct. 6	E-W N-S	} ..	06	30	..	..	..	Tremors.	
Oct. 7	E-W	e	12	04.4					
	N-S	e	12	07.6					
		M		10.2	..	0.6			
Oct. 9	N-S	O	03	01.4	..	..	88	Times uncertain; Δ T not known; no minute marks.	
		iP		14.5					
		PR <sub>1</sub>		18.1					
		iS		25.3	..	1.1			
		iSR <sub>1</sub>		31.5					
		SR <sub>2</sub>		35.4					
		iL		42.5					
		M		47.6	..	0.7			
Oct. 9	E-W	..	14	+	..	..	..	Tremors.	
		N-S	O	14	37.2	..	..		13
			iP		40.4				
		iS		42.9					
		M		44.5	..	1.1			
Oct. 10	E-W	e	10	12.0	..	..	..	No minute marks.	
	N-S	i	10	11.5					
Oct. 11	E-W N-S	} ..	..	..	..	..	..	Tremors.	
Oct. 13	E-W N-S	} ..	..	..	..	..	..	Tremors at intervals.	
Oct. 15	E-W	..	08	—	..	..	..	Tremors.	
		N-S	e	07	+	..	..	..	No minute marks.
			M	07	+	..	1.0		
			i	07	+				
	M	07	+	..	1.2				





Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E</sub> .	A <sub>N</sub> .		
			h.	m.	mm.	mm.		
1928. Oct. 17	E-W	..	..	..	..	..	..	Tremors.
	N-S	O iP iS L M	06	15.2 18.0 20.2 20.7 23.9	..	..	11	
Oct. 18	E-W	i	07	04.7				
	N-S	e	07	03.1				
Oct. 19	E-W	i M	07	00.0 02.5	.. 3.1	..	..	Beginning interrupted by minute mark.
	N-S	i M	06 07	59.5 02.9	..	1.8		
Oct. 19	E-W	O iP iS iL M	10	18.1 21.2 23.6 25.0 31.3	..	..	12	
	N-S	O iP iS iL M	10	18.5 21.1 23.0 24.0 26.5	..	..	10	
Oct. 20	E-W	..	08	+	..	..	..	Tremors.
	N-S	e M	08	17.5 21.8	.. ..	.. 1.1	..	$\Delta T$ not known.
Oct. 21	E-W	e iS M	15	21.0 22.3 23.8	..	..	..	
	N-S	O iP iS M	15	17.1 19.9 22.1 23.1	..	..	11	
Oct. 22	E-W	O P S L M	05	42.9 48.5 52.9 55.6 57.5	..	..	25	
	N-S	O P iS M	05	44.0 48.9 52.7 55.0	..	..	21	
Oct. 23	N-S	e	08	15.9				
Oct. 25	E-W N-S	} ..	13	—	..	..	..	Tremors.
Oct. 27	E-W N-S	} ..	..	..	..	..	..	Tremors all day.



Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	mm.	mm.		
1928. Oct. 30	E-W	e	20	16.0				
	N-S	i	20	17.4				
Nov. 2	E-W	i	21	00+				
	N-S	i	21	01.0				
Nov. 2	E-W	i	23	28.5				
	N-S	e	23	28.2				
Nov. 4	E-W	i	04	32.7				
	N-S	i	04	32.7				
Nov. 6	E-W	O	04	04.4	..	..	11	
		iP		07.2				
		M		09.0	3.0			
		iS		09.4				
		M		—	5+			
	N-S	O	04	04.2	..	..	11	
		iP		07.0				
		M		08.5	..	6.0		
		iS		09.2				
		M		—	..	6+		
Nov. 6	E-W	i	20	09.8				
	N-S	i	20	10.0				
Nov. 9	E-W	..	..	..	..	..	..	Tremors at intervals.
	N-S	i	03	27.2	..	..	..	Tremors at intervals all day.
		M		28.9	..	1.0		
Nov. 10	N-S	e	09	31.4				
Nov. 10	E-W	O	12	27.5	..	..	11	
		iP		30.3				
		iS		32.5				
		M		34.9	2.1			
Nov. 10	N-S	O	12	27.2	...	..	12	
		iP		30.3				
		iS		32.7				
		M		35.0	..	7.0		
Nov. 10	E-W	i	21	40.3				
	N-S	e	21	38.0				
		e		40.0				
		M		43—	..	1.2		
Nov. 11	E-W	i	23	04.0				
		e		07.0				
		M		09.0	0.9			
	N-S	e	23	03.8				
		e		06.0				
		M		07.9	..	0.8		



Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928.			h.	m.	mm.	mm.		
Nov. 12	E-W	e	10	48.6				
	N-S	e	10	48.5				
Nov. 13	E-W	i e M	07	34.9 37.8 39.5	0.7			
	N-S	i e M	07	34.7 36.7 38.6	..	0.8		
Nov. 14	E-W	..	09	30—	..	..	..	Tremors.
Nov. 15	E-W N-S	} ..	..	..	..	..	..	Tremors at intervals.
Nov. 17	N-S	i M	10	26.0 30.0	..	0.9	..	$\Delta$ T not known.
Nov. 19	E-W	i iS M	15	31.0 32.5 34.0	3.0			
	N-S	O iP iS M	15	27.2 30.0 32.2 33.0	..	1.9	11	
Nov. 19	E-W	e M	22	56.5 58.0	0.9			
	N-S	e	22	56.1				
Nov. 20	E-W	e M	03	44.7 46.4	0.8			
	N-S	e	03	44.7				
Nov. 20	E-W	i M	04	10.5 13.9	0.8			
	N-S	e	04	09.5				
Nov. 22	E-W	i	23	20.5				
	N-S	e M	23	15.6 22.0	..	1.0		
Nov. 28	N-S	O iP iPR <sub>1</sub> iPR <sub>2</sub> iS SR <sub>2</sub> M L (?)	10	43.3 53.0 55.4 56.7	..	..	55	Not recorded on E-W component.
			11	00.7 06.9 07.8 11.2	..	0.8 1.8		
Nov. 29	E-W	i M	13 14	58.0 00.5	4.7			
	N-S	i M	13	55.9 59.4	..	1.9		



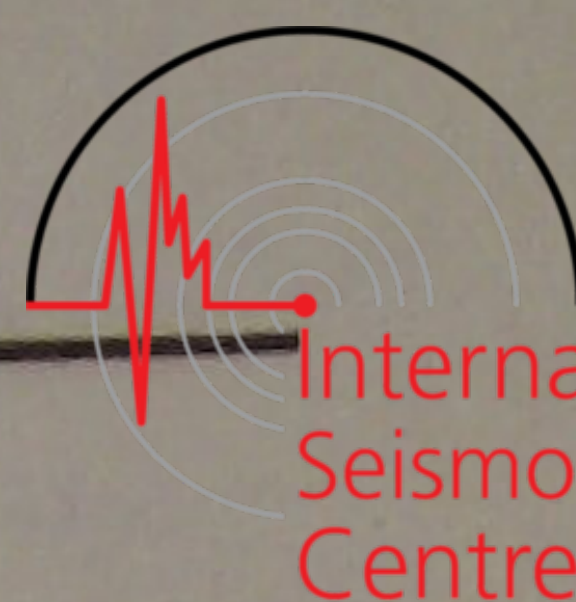
Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928. Nov. 29	E-W	O	h.	m.	mm.	mm.	13.5	
15		42.2	..	..				
iP		45.5						
iS		48.1						
L		49.5						
M <sub>1</sub>		52.5	1.9					
M <sub>2</sub>	55+	2.0						
Nov. 29	N-S	O	15	42.5	..	..	11	
		iP	45.3					
		iS	47.5					
		iL	48.4					
		M	50.0	..	2.4			
Nov. 29	E-W	O	17	59.7	..	..	13.5	
		iP	18	03.0				
		iS	05.6					
		L	07.0					
		M	13.2	4.3				
Nov. 29	N-S	O	17	59.9	..	..	13	
		iP	18	03.1				
		iS	05.6					
		L	06.5					
		M	07.3	..	6+			
Nov. 29	E-W	e	22	48.5				
		M <sub>1</sub>	52.5	1.0				
		M <sub>2</sub>	56.5	1.1				
Nov. 29	N-S	e	22	42.9				
		e	47.9					
		M <sub>1</sub>	51.5	..	1.3			
		M <sub>2</sub>	53.5	..	1.6			
Nov. 29	E-W	S	23	14.8	..	..	..	Beginning of shock lost in time signal.
		iL	16.7					
		M	22.0	1.3				
Nov. 29	N-S	iS	23	14.9				
		iL	16.5					
		M	18.0	..	5.0			
Dec. 1	E-W	O	04	05.7	..	..	87 (?)	Chile. $\Delta$ T not known.
		P (?)	18.7					
		PR <sub>1</sub>	22.5					
		iS	29.4					
		L	49.0					
		M	59.5	0.7				
	N-S	O	04	06.2	..	..	84	
		iP	18.8					
		iPR <sub>1</sub>	23.6					
		iS	29.4					
		M	31.0	..	1.5			
		SR <sub>1</sub>	35.3					
		SR <sub>2</sub>	40.2					
L	49.0							
M	05	02.0	..	2.1				





Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	mm.	mm.		
1928. Dec. 2	E-W	i L (?)	04 05	47.9 05—	..	..	..	Record interrupted by artificial disturbance.
	N-S	iS iSR <sub>1</sub> (?) L	04 05	41.1 49.0 03—				
Dec. 3	E-W	e	16	56.0				
	N-S	e	16	56.0				
Dec. 5	E-W N-S	} ..	16—	..	..	..	..	Slight tremors.
Dec. 7	E-W	O iP S SR <sub>2</sub> L	09	13.4 21.7 28.2 32.1 34.8	..	..	43	
	N-S	O P iS L	09	12.3 21.1 28.0 35.7	..	s		
Dec. 8	E-W	i	18	05.6				
	N-S	e M	18	05.8 08.9	..	1.0		
Dec. 8	E-W	e	20	02.0				
	N-S	..	20	01.0				
Dec. 9	E-W	S (?) M	00	01.6 14.0	0.7	..	..	$\Delta$ T not known.
	N-S	S L M	00	01.3 02.5 13.0	..	1.1		
Dec. 9	E-W	O P S M L M <sub>1</sub> M <sub>2</sub>	05	02.6 08.7 13.5 15.8 17.0 19.5 29.0	.. 1.0 2.6 2.2	..	28	$\Delta$ T not known.
	N-S	O iP iS M L M <sub>1</sub> M <sub>2</sub>	05	02.6 08.8 13.7 14.6 17.9 25.0 34.0	.. .. .. ..	.. 1.5 4.0 3.0	28	
Dec. 9	E-W	i S M L M	18	15.5 18.1 19.4 20— 23.4	.. 1.5 1.0	..	..	$\Delta$ T not known.





Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		Δ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
1928. Dec. 9	N-S	O iP iS M iL M	h. 18	m. 08.7 13.9 18.0 19.0 20.5 26.0	mm. ..	mm. ..	23	Δ T not known.
Dec. 12	E-W	e M	18	18.3 22.9	1.0			
Dec. 12	E-W	O iP M iS M iL M	20	19.0 22.7 23.6 25.6 26.2 27.0 33.0	..	..	15	Not recorded on N-S component.
Dec. 14	E-W	e i M	23	17.2 20.1 24.3	1.3			
	N-S	e e M	23	11.7 19.6 23.2	..	0.9		
Dec. 17	E-W	i i M	03 04	57.5 02.0 07.5	..	..	..	Δ T not known.
	N-S	e M	03 04	56.5 03.1	..	1.9		
Dec. 17	E-W N-S	} i	08	18.6	0.9	1.0		
Dec. 18	E-W N-S	} ..	15-	..	..	..	..	Tremors.
Dec. 19	E-W	PR S (?) SR M L	11	49.4 54.7 56- 58.2	0.9			
	N-S	O P PR eS iSR <sub>1</sub> M L M	11	38.2 47.5 49.7 54.9 57.9 58.7	..	..	52	
			12	01- 04.4	..	0.9		
Dec. 21	E-W N-S	} ..	18	-	..	..	..	Tremors.
Dec. 22	E-W	e M	00	07.6 09.7	..	..	..	Δ T not known. Quake interrupted by change of paper.
	N-S	M	00	10.5	..	1.0		





Date.	Direction	Phase.	Time. G.M.T.		AMPLITUDE.		$\Delta$ Degrees	Remarks.
					A <sub>E.</sub>	A <sub>N.</sub>		
			h.	m.	mm.	mm.		
1928. Dec. 22	N-S	..	10	—	..	..	..	Tremors.
Dec. 23	E-W	e	06	43.4	..	..	..	$\Delta$ T not known.
	N-S	e	06	43.0				
Dec. 25	N-S	..	03	30	..	..	..	Tremors.
Dec. 28	E-W	i	04	41.3	..	..	..	$\Delta$ T not known.
	N-S	e	04	39.5				
		e		41.7				
Dec. 28	E-W	i	14	07.4	..	..	..	$\Delta$ T not known.
	N-S	e	14	07.3				
Dec. 28	E-W	i	14	30.3	..	..	..	$\Delta$ T not known.
		S		37.6				
		SR		42.5				
	N-S	O	14	18.9	..	..	61	
		P		29.2				
		S		37.5				
		SR <sub>2</sub>		44.5				
		L		50.3	..	s		

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