



EARTHQUAKE REPORTS.—NEW ZEALAND AND FIJI.

Register from Dominion Observatory, Wellington, New Zealand, for 1929, January, February and March.

(Tables used : British Association Tables (Turner) for all waves, except S_cP_cS or [S], which is from Tables in I.S.S. 1923, January, February, March.)

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.			Period.	A. ¹	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Jan. 2	E-W	i	12	34	25		μ		
	N-S	e	12	34	28	10	s ²		
Jan. 3	E-W	i	8	56	3	..	..	..	Small local shock.
	N-S	i	8	56	2				
Jan. 4	E-W	i	2	53	2	..	..	..	Small local shock.
	N-S	i	2	53	0				
Jan. 4	E-W	O	20	43	29	..	..	1.1	Local shock ; felt in Cook Strait region. R.-F. 4.
		iP		43	46				
		iS		44	0				
	N-S	O	20	43	27	..	..	1.2	
		iP		43	45				
		iS		44	0				
Jan. 4	E-W	i	22	11	39	..	..	..	Small local shock.
Jan. 7	E-W	i	7	19	25				
		eL		28	20	20	s		
	N-S	i	7	19	25				
		e		28	46				

(¹) A = Amplitude. (²) s = Small.



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Jan. 7	E-W	i	16	37	59	..	μ ..	..	Near shock.
	N-S	i	16	37	59				
Jan. 8	E-W	i	7	29	35	..	..	..	Small local shock.
	N-S	i	7	29	39				
Jan. 8	E-W	i eL	7 8	46 5	30 55	15	<i>s</i>		
	N-S	i eL	7 8	46 6	29 19	15	<i>s</i>		
Jan. 8	E-W	i	10	31	23	..	..	..	Felt in northern portion of South Island, N.Z. R.-F. 5.
	N-S	i	10	31	26				
Jan. 11	E-W } N-S }	..	13	—	—	..	..	..	Tremors.
Jan. 13	E-W	O iP PR ₁ [S] iS L M	0	2	51 16 4 20 8 26 25 27 0 47 52 48 8	.. 7 28	.. 52 206	89.6	Okhotsk Sea.
	N-S	P PR ₁ [S] iS SR ₁ L M	0	—	— 19 51 26 24 27 4 33 21 46 34 47 8	.. 8 30	.. 41 158	..	P waves on edge of paper.
Jan. 15	E-W	O iP iS	15	22	39 22 57 23 12	..	..	1.2	Felt in northern portion of South Island, N.Z. R.-F. 4.
	N-S	O iP iS	15	22	35 22 55 23 12	..	..	1.4	
Jan. 16	E-W	i e	8	17	52 27 16				
	N-S	i	8	17	31				
Jan. 17	E-W } N-S }	..	12	+	—	17	<i>s</i>	..	Tremors and L waves.
Jan. 17	E-W	i	19	0	52	11	<i>s</i>		
	N-S	—	19	—	—	..	..	..	Tremors.
Jan. 17	E-W	e	22	47	2	17	<i>s</i>		
Jan. 19	E-W	..	6	40	—	7	<i>s</i>	..	Slight tremors.
Jan. 20	E-W	..	15	+	..	..	..	..	Tremors.

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Jan. 21	E-W	O iP(?) iS	4 5	56 1 5	37 41 40	.. 10	.. 30	21.0(?)	Heavy microseisms.
	N-S	O iP(?) iS	4 5	56 1 5	35 40 40	.. 5	.. 9	22.0(?)	Heavy microseisms.
Jan. 23	E-W	i	14	29	30	..	..	..	Small local shock; sharp tilt to east.
	N-S	i	14	29	30				
Jan. 24	E-W	i	10	50	46	..	..	..	Small local shock.
	N-S	i	10	50	43				
Jan. 24	E-W	i	21	1	20	15	25		
Jan. 25	E-W } N-S }	..	2	—	—	..	..	..	Tremors.
Jan. 27	E-W	..	17	—	—	..	..	..	L waves.
Jan. 29	N-S	i	3	24	36	..	..	..	Small local shock.
Jan. 29	E-W	i	14	24	22				
	N-S	..	14	30	—	..	..	..	Tremors.
Jan. 30	E-W	..	0	—	—	..	..	..	Tremors.
Jan. 30	E-W	..	14	35	—	11	s	..	Tremors.
	N-S	i	14	32	30				
Jan. 30	E-W	i L	17	12 21	29 +	22	s		
Jan. 31	E-W	—	0	—	—	..	..	..	Slight tremors.
Jan. 31	E-W	e	15	42	34				
Jan. 31	E-W	e	18	52	33	20	s		
Feb. 2	E-W	e i(S)? L M	0 1	23 40 3 18	43 43 9 59	19	84		
	N-S	e e(S)? L M	0 1	22 40 2 23	25 45 25 32	17	24		
Feb. 2	E-W	L	15	9	+	20	s		
	N-S	L	15	9	35	25	s		
Feb. 6	E-W	i	2	43	33				
Feb. 7	E-W	..	11	40	—	..	..	..	Slight tremors.
Feb. 8	E-W } N-S }	..	3	—	—	..	..	..	Slight tremors.



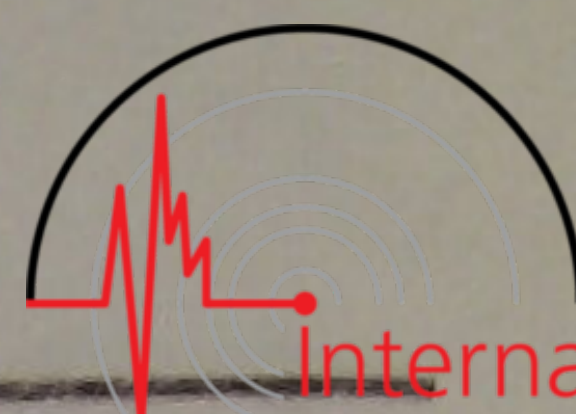
Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Feb. 9	E-W	i	6	37	56	11	μ s		
	N-S	..	6	35	—	..	..	..	Tremors.
Feb. 10	E-W	eS i eL M	16	3	57 12 17 25 57 29 12	.. 17 20	.. 29	..	Off coast of Mexico.
	N-S	L	16	30	—	20	s		
Feb. 10	E-W	..	22	20	—	..	..	..	Tremors.
Feb. 12	E-W } N-S }	..	7	30	—	12	s	..	Tremors.
Feb. 12	E-W	i	18	11	54				
	N-S	i	18	11	58				
Feb. 13	E-W } N-S }	..	17	20	—	..	..	..	Slight tremors.
Feb. 13	E-W	L	23	—	—	17	s		
Feb. 15	E-W	L	8	—	—	..	..	..	Tremors and L waves.
Feb. 16	E-W	i iL M	19	36	26 41 56 50 57	13	30		
	N-S	eL	19	41	38	22	s		
Feb. 16	E-W	O iP iS	21	40	59 41 7 41 13	..	..	0.5	
	N-S	O iP iS	21	40	58 41 6 41 13	..	..	0.5	
Feb. 17	E-W	O iP iS	22	24	53 26 29 27 45	..	..	6.3	
	N-S	O iP iS	22	24	57 26 29 27 40	..	..	6.0	
Feb. 18	E-W	O iP iS	0	41	27 41 39 41 49	..	..	0.8	
	N-S	O iP iS	0	41	29 41 40 41 49	..	..	0.7	
Feb. 19	E-W	O iP iS	14	51	43 52 32 53 2	..	..	2.5	Felt at Dannevirke, North Is- land. R.-F. 5.

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Feb. 19	N-S	O iP iS	14	51 52 53	44 28 1	..	..	2.8	
Feb. 20	E-W	O iP iS	21	1 7 12	13 25 19	..	..	28.4	Suva Δ = 9°; Melbourne Δ = 41°. Epicentre 14° S., 174° W.
	N-S	iS	21	12	24	..	..	..	Disturbed by changing paper.
Feb. 22	E-W	i LM	21	22 54	28 33	20	38		
	N-S	L	21	54	42	16	s		
Feb. 24	E-W	O iP iS	23	47 48 49	53 34 5	..	..	2.6	Felt at Dannevirke, North Island. R.-F. 2.
	N-S	O iP iS	23	47 48 49	50 34 7	..	..	2.8	
Feb. 26	E-W	O iP iS L M	3	29 34 38 39 41	55 42 29 47 26	.. .. 18	.. .. 27	20.5 ..	Melbourne Δ = 27°·5.
	N-S	O iP iS L	3	29 34 38 40	56 43 30 14	..	..	20.5	
Feb. 26	E-W	eL	9	45	—	25	s		
	N-S	eL	9	45	—	21	s		
Feb. 27	E-W	..	6	20	—	..	..	..	Slight tremors.
Feb. 28	E W } N-S }	..	0	6	—	..	..	..	Tremors.
Feb. 28	E-W	..	1	0	—	..	..	..	Tremors.
Mar. 1	E-W	i	1	14	38	..	..	..	Small local shock.
	N-S	i	1	14	37				
Mar. 1	E-W	..	8	20	—	19	s	..	L waves.
	N-S	..	8	—	—	..	..	..	Tremors.
Mar. 3	E-W	i	0	26	11+	..	..	..	Small near shock; felt at Opotiki, North Island. R.-F. 3.
	N-S	i	0	26	11+				
Mar. 4	E-W	..	15	+	—	..	..	..	Slight tremors.
Mar. 4	E-W	i	23	10	51				
	N-S	i	23	10	49				



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Mar. 6	E-W	i	15	42	47	Small local shock.
	N-S	i	15	42	45				
Mar. 7	E-W	O	1	34	22	88.7	
		eP		47	31				
		[S]		57	39				
		iS		58	22				
		M	2	0	56	12	47		
		iSR ₁		4	28				
		M		15	48	22	186		
		iL		17	53				
		M ₁		20	4	24	275		
		M ₂		22	31	21	312		
		M ₃		27	51	18	167		
		M ₄		34	58	16	139		
		M ₅		41	21	17	106		
	N-S	O	1	34	19	..	..	88.7
		eP		47	28	6			
		iPR ₁		52	5				
		iS	1	58	19	13			
		iSR ₁	2	5	9				
		M		9	1	15	48		
		iL		18	13				
		M ₁		19	47	26	272		
		M ₂		21	23	22	484		
		M ₃		28	41	18	251		
Mar. 9	E-W	e	2	32	25				
		L		47	+				
	N-S	i	2	32	30				
		L		—	—				
Mar. 9	E-W	O	10	50	29	2.6	Arthur's Pass. Felt throughout the greater part of New Zealand, exceeding R.-F. 8 in parts of the South Island. Both Milne - Shaw seismographs thrown out of action. Suva $\Delta = 25^{\circ}.5$. Epicentre $42^{\circ}\frac{1}{2}$ S., 172° E.
		iP		51	10				
		iS		51	41				
	N-S	iP	10	51	12				
Mar. 9	E-W	O	22	11	49	3.9	
		P		12	50				
		iS		13	26				
	N-S	O	22	11	46	3.9	
		P		12	48				
		iS		13	35				
Mar. 9	E-W	O	23	22	32	3.4	
		P		23	25				
		iS		24	6				
	N-S	O	23	22	33	3.4	
		P		23	25				
		iS		24	5				
Mar. 10	E-W	O	1	51	11	3.8	
		iP		52	10				
		iS		52	55				
		M		54	10	5	39		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Mar. 10	N-S	O iP iS M	1	51 52 53 54	11 13 0 3	.. 6	.. 82	3.9	
Mar. 10	E-W	O P iS	10	3 3 4	43 55 5	..	..	0.8	
	N-S	iS	10	4	5				
Mar. 10	E-W	O iP iS L	14	34 45 53 15	42 11 37 +	..	..	62.5	
	N-S	O P iS L	14	34 45 53 15	38 8 35 +	..	..	62.7	
Mar. 12	E-W	O iP iS	7	14 14 15	12 53 24	..	..	2.6	Felt at Westport. R.-F. 3.
	N-S	O P iS	7	14 14 15	7 51 25	..	..	2.8	
Mar. 14	E-W	i i M	22	6 9 17	13 26 35	10	10		
	N-S	e e i	22	5 9 14	56 29 39	10	s		
Mar. 15	E-W	i	3	14	14	..	..	..	Near shock.
	N-S	i	3	14	15				
Mar. 15	E-W } N-S }	..	12	20	—	..	..	..	Tremors.
Mar. 15	E-W	O iP iS	12	42 42 42	18 35 49	..	..	1.1	Felt at Blenheim. R.-F. 4.
Mar. 15	E-W	e M	12	43 47	41 42	10	8		
	N-S	i e M	12	38 44 51	56 13 11	9	10		
Mar. 15	E-W	i	14	34	6	9	s		
	N-S	i	14	34	56	8	s		
Mar. 16	E-W	O iP iS L	5 6	59 5 10 12	42 32 8 25	.. 12	.. s	26.2	Suva $\Delta = 12^\circ$; not recorded at Apia. Probable Epicentre 15° S., 166° E.



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Mar. 16	N-S	O iP iS L	5 6	59 5	21 8	..	..	27.9	
				10	18	18	s		
Mar. 18	E-W	..	2	20	—	..	..	..	Tremors.
	N-S	e	2	10	16				
Mar. 19	E-W	..	21	—	—	20	s	..	L waves.
	N-S	eL	21	41	58	20	s		
Mar. 20	E-W	..	21	10	—	..	..	..	Tremors.
Mar. 21	E-W	iS eL M	3	1	38				
				24	3	19	32		
				27	51				
	N-S	iS L	3	1	39				
				25	+	20	s		
Mar. 21	E-W	O iP iS iL	20	54	8	..	..	2.9	
				54	53				
				55	28				
				55	41				
	N-S	O iP iS iL	20	54	11	..	..	2.8	
				54	55				
				55	28				
				55	41				
Mar. 22	E-W	O iP iS	7	13	49	..	..	3.5	
				14	44				
				15	26				
	N-S	O iP iS	7	13	53	..	..	3.5	
				14	48				
				15	30				
Mar. 22	E-W	i	17	21	31				
	N-S	i	17	21	26				
Mar. 23	E-W	..	0	40	—	..	..	..	Slight tremors.
Mar. 23	E-W N-S	i	12	20	+	..	..	..	Local shock.
Mar. 23	E-W	e L	20	9	40				
				26	53	15	s		
	N-S	i eL	20	17	35				
				25	53	16	s		
Mar. 24	E-W	O iP iS L M	5	32	45	..	..	19.4	Suva $\Delta = 10^\circ$; Melbourne $\Delta = 24^\circ$? Epicentre 22° S., 167° E.
				37	19				
				40	55	14	31		
				42	26				
				45	1	15	38		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Mar. 24	N-S	O iP iS iL M	5	32	44	..	..	19.4	
				37	18				
				40	54	5	s		
				43	8				
				45	11	12	17		
Mar. 24	E-W	..	20	30	—	..	..	..	Tremors.
	N-S	e	20	35	28				
Mar. 26	E-W	i e	10	49	32				
				56	57	14	s		
	N-S	i e	10	48	29				
				53	29	13	s		
Mar. 27	E-W	i	20	51	9				
	N-S	i	20	40	47				
Mar. 30	E-W	O iP iS	3	31	55	..	..	0.4	
				32	1				
				32	6				
	N-S	O P iS	3	31	55				
				32	1				
				32	6				
Mar. 31	E-W	i eL	5	40	0				
				51	50	18	s		
	N-S	i eL	5	40	17				
				52	6	13	s		



Register from Suva, Fiji, for 1929, January, February and March.

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

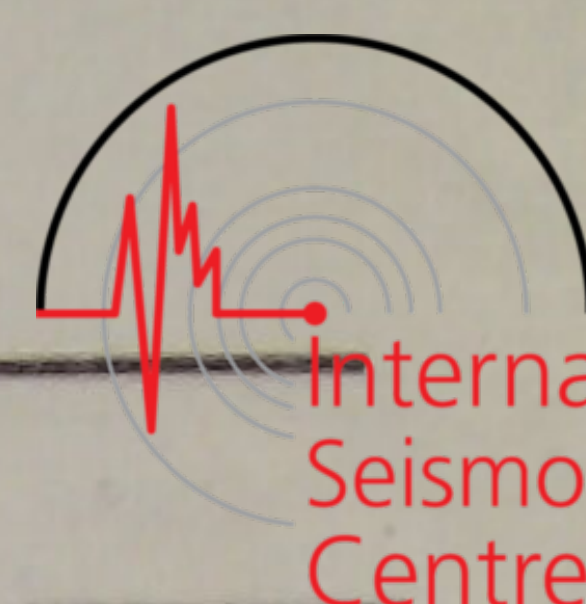
INSTRUMENT : Milne Twin-boom Horizontal Seismograph. E-W and N-S components. Magnification, 6. Periods, E-W, T = 8.4 secs.; N-S, T = 10.5 secs. Undamped.

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

Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929.					mm.		
Jan. 9	E-W	..	2	34	..	..	Temors.
	N-S	i	2	33.7			
Jan. 9	E-W	i	19	30.5			
	N-S	e	19	25.8			
		e		30.2			
Jan. 9	E-W	i	20	4.7			
	N-S	i	20	4.7			
Jan. 13	E-W	O	0	3.5	..	63	
		iP		14.1			
		iPR ₁		16.7			
		iS		22.6			
		M		—	2.0		
		L		34.1			
	N-S	O	0	3.9			
		iP		14.3	..	62	
		PR ₁		17.0			
		iS		22.7			
		M		24.3	3.5		
		L		36.1			
Jan. 15	N-S	i	2	52.7			
Jan. 17	E-W	e	19	0.2			
		i		3.7			
	N-S	e	18	56.5			
		i	19	0.7			
		M		3.5	1.1		
Jan. 17	E-W } N-S }	..	23	—	..	..	Tremors.
Jan. 21	..	..	..	..	..	..	Increasing microseisms.
Jan. 22	..	..	..	..	..	..	Heavy microseisms all day, especially on E-W component.
Jan. 23	..	..	..	..	..	..	Decreasing microseisms.
Jan. 24	E-W	..	..	..	..	..	Persistent microseisms.
Jan. 25	E-W	O	2	4.6	..	3	Distinct microseisms.
		iP		5.4			
		iS		6.0			
		M		7.7	2.0		

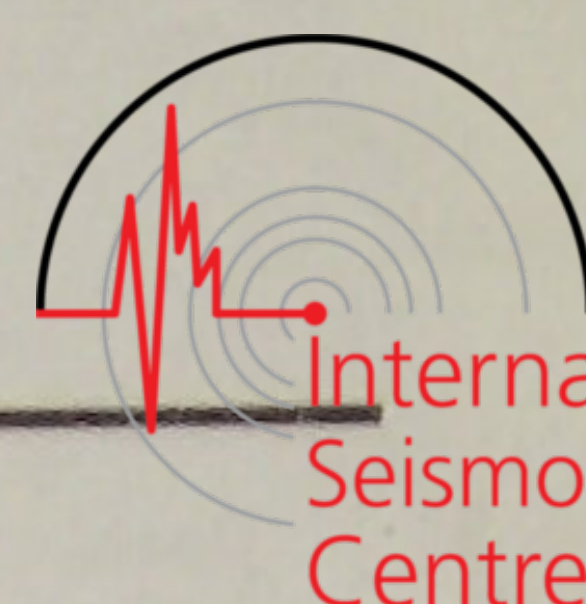


Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929.							
Jan. 26	N-S	..	2	—	..	..	Tremors.
Jan. 26	E-W	e	4	11.7			
	N-S	e	4	11.5			
Jan. 26	E-W } N-S }	..	19	20—	..	..	Tremors.
Jan. 30	E-W } N-S }	..	17	—	..	..	Tremors.
Jan. 30	E-W } N-S }	..	20	—	..	..	Tremors.
Jan. 31	E-W	e S M	15	32+ 34.2 35.5	4.0+		
	N-S	e S M	15	32+ 34.2 36.0	1.0		
Jan. 31	E-W	i	15	50.9			
Feb. 2	E-W	e L	0 1	20.0 3—	..	..	ΔT not known.
	N-S	e M L	0 1	16.9 33.7 15—	1.0		
Feb. 3	E-W	i(P)? iS M	13	24.8 28.9 30.0	.. 0.6	22.7(?)	
	N-S	iS M	13	28.8 30.4	1.0		
Feb. 4	E-W	..	16	—	..	..	Tremors. Heavy microseisms on E-W component.
	N-S	i	16	12.7			
Feb. 14	E-W } N-S }	..	20	—	..	..	Tremors.
Feb. 4	E-W	..	20	38	..	..	Tremors.
	N-S	i	20	38.7			
Feb. 5	N-S	..	..	..	..	..	Tremors at intervals.
Feb. 7	E-W } N-S }	..	20	—	..	..	Tremors.
Feb. 8	N-S	..	7	—	..	..	Tremors.
Feb. 10	E-W	i	12	33.8			
	N-S	..	12	30	..	..	Tremors.



Date.	Direction.	Phase.	Time.	Amplitude.	Δ Degrees.	Remarks.
1929.			h. m.	mm.		
Feb. 10	E-W	..	16 —	..	..	Tremors.
	N-S	..	16 —	..	..	Traces of L waves.
Feb. 13	E-W	..	17 —	..	..	Tremors.
	N-S	i	17 7.1			
Feb. 14	E-W	i	13 40.6			
	N-S	e	13 38.5			
Feb. 16	E-W } N-S }	..	15 —	..	..	Slight tremors.
Feb. 16	E-W } N-S }	..	20 —	..	..	Earthquake record interrupted by change of paper. Heavy microseisms on E-W component.
Feb. 20	E-W	O iP i iS M	21 3.0 5.3 6.3 7.1 —	.. 4+	9	Time doubtful. Pronounced microseisms.
	N-S	iP i M	21 5.3 6.3 ..	 5+		
Feb. 22	E-W } N-S }	..	18 —	..	..	Tremors.
Feb. 22	E-W } N-S }	..	21 —	..	..	Tremors.
Feb. 25	N-S	i	0 56.9			
Feb. 27	E-W	O P iS M	6 6.2 7.0 7.7 —	.. 4.0	3.5	
Feb. 27	N-S	O eP iS M	6 6.2 7.1 7.7 —	.. 4+	3.0	
Feb. 28	E-W	i	10 38.3			
	N-S	i	10 38.3			
Mar. 1	E-W } N-S }	..	22 —	..	..	Tremors.
Mar. 2	E-W	O P iS M	18 21.9 22.8 23.5 24.0	.. 3.0	3.5	ΔT not known.
	N-S	O eP iS M	18 21.8 22.7 23.4 23.9	.. 2.1	3.5	

Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929. Mar. 2	E-W	O iP iS M	18	51.4 52.2 52.8 53.4	.. 2.9	3	ΔT not known.
	N-S	O eP iS M	18	51.1 52.0 52.7 53.9	.. 2.8	3.5	
Mar. 2	E-W	O P iS M	21	55.7 56.5 57.1 —	.. 4+	3	
	N-S	O eP iS M	21	55.7 56.5 57.1 58.0	.. 2.5	3	
Mar. 4	E-W	i	23	6.1			
	N-S	i	23	6.2			
Mar. 7	E-W	O iP [S] iS M iSR ₂ iL M	1	35.6 46.6 54.9 55.5 56.6 3.5 7.2 17.0	.. 2.5	67	
	N-S	O iP iS M SR ₁ M iL M	1	35.0 46.3 55.5 58.0 0— 2.0 9.0 —	.. 2.0 4.0 4+	70	
Mar. 9	E-W	i(P)? iS M iL M	10	56.3 1.2 2.6 3.8 4.6	2.1 2.6		
	N-S	O iP iS M iL M	10	50.6 56.3 11 0.8 2.0 3.0 8.6	.. 1.3 5.0	25.5	
Mar. 10	E-W } N-S }	..	15	—	..	..	Tremors.
Mar. 14	E-W } N-S }	..	22	—	..	..	Tremors.
Mar. 16	E-W	i(P)? iS M	6	3.3 5.7 6.3	..	..	ΔT not known.



Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929. Mar. 16	N-S	O eP S L M	6	1.4 3.3 5.6 6.9 11.5	.. 0.7	12	ΔT not known.
Mar. 17	E-W	O iP iS M	20	54.7 55.6 56.3 56.8	.. 3.6	3.5	
	N-S	O eP iS M	20	54.7 55.6 56.3 57.6	.. 1.0	3.5	
Mar. 19	E-W } N-S }	..	4	—	..	..	Tremors.
Mar. 19	E-W	e	19	59.0			
	N-S	e i	19 20	59.0 18.2			
Mar. 20	E-W } N-S }	..	21	—	..	..	Tremors.
	N-S	e e	21	0.8 9.6			
Mar. 22	E-W } N-S }	..	..	..	..	..	Strong microseisms.
Mar. 23	E-W	e M	0	25.3 27.2	.. 1.0	..	ΔT not known,
	N-S	e	0	25.5	s		
Mar. 24	E-W	O P S M	5	32.2 34.6 36.5 37.3	.. 3+	10	
Mar. 24	N-S	O P S M	5	32.1 34.6 36.6 38.0	.. 4.5	10	
Mar. 24	E-W } N-S }	..	10	20	..	..	Tremors.
Mar. 29	E-W } N-S }	..	6	10	..	..	Tremors.
Mar. 30	E-W } N-S }	..	..	..	..	..	Microseisms.
Mar. 31	N-S	..	5	—	Tremors ; strong microseisms.

C. E. ADAMS,
New Zealand Government Seismologist.

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[200/9/29—9289

EARTHQUAKE REPORTS.—NEW ZEALAND AND FIJI.

Register from Dominion Observatory, Wellington, New Zealand, for 1929, April, May, and June.

(Tables used : Zöppritz-Turner Tables for all waves, except S_cP_cS or [S], which is from Gutenberg's Table in I.S.S. 1923, January, February, March.)

LATITUDE : $41^{\circ} 17' S$. LONGITUDE : $174^{\circ} 46' E$. HEIGHT ABOVE SEA-LEVEL : 401.5 ft.

INSTRUMENTS.

- (a) Milne Horizontal Seismograph No. 20 : E-W component ; magnification, 5.6 ; period, $T = 29.2$ seconds ; undamped.
- (b) Milne-Shaw Horizontal Seismograph No. 13 : N-S component ; magnification, 150 ; period, $T = 10.0$ seconds ; magnetic damping, 20 : 1. Constants determined, 1929, May 31st.
- (c) Milne-Shaw Horizontal Seismograph No. 36 : E-W component ; magnification, 150 ; period, $T = 9.5$ seconds ; magnetic damping, 20 : 1. Constants determined, 1929, May 30th.

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

Director : C. E. ADAMS.

NOTE.—After June 16th nearly all earthquakes in this report are after-shocks of the destructive earthquake which occurred in the South Island of New Zealand on that date. All tremors or shocks from more distant origins are referred to in the "Remarks" column.

Amplitudes of the most important local shocks are given in millimetres, measured directly from the seismograms. Other amplitudes are in microns.

On some of the seismograms of the after-shocks there is evidence of the three compressional waves P, P^* , and P_g , and of the three distortional waves S, S^* , and S_g . Hence the origin must have been near the surface.

This report is a preliminary one, and the detailed study of the seismograms will probably show that some of the waves recorded as P are P^* or P_g , and similarly for the S waves.

Date.	Direction.	Phase.	Time.			Period.	A ¹ .	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. April 1	E-W	eL	5	51	49	17	μ s^2		
	N-S	..	5	50	—	..	..	..	L waves.
April 7	E-W	eL	20	18	45	17	s		
April 8	E-W	i	10	35	5				
	N-S	i	10	35	1				
April 8	E-W } N-S }	..	18	—	—	17	s	..	Tremors.
April 9	E-W	L	4	30	+	17	s		
	N-S	eL	4	32	39	17	s		

¹A = Amplitude. ²s = Small.



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. April 10	E-W	O iP iS	9	41	36 42 7 42 31	..	..	2.0	
	N-S	O iP iS	9	41	33 42 7 42 33	..	..	2.2	
April 11	E-W	e	17	2	33				
	N-S	e	17	5	20				
April 13	E-W	..	7	30	—	..	..	..	Tremors.
	N-S	..	7	30	—	18	s	..	L waves.
April 13	E-W	i	12	7	34	..	..	..	Small local shock.
	N-S	i	12	7	37				
April 13	E-W	e	13	15	33	17	s		
	N-S	e	13	16	17				
April 13	E-W	i	21	27	40				
	N-S	..	21	—	—	..	..	..	Tremors.
April 14	E-W	i	20	34	11	..	..	..	Strong microseisms.
	N-S	i	20	34	29				
April 15	E-W } N-S }	..	16	30	—	11	s	..	Tremors.
April 17	E-W	i	18	19	19				
	N-S	..	18	20	—	..	..	..	Slight tremors.
April 19	E-W	e	12	34	11				
	N-S	..	12	30	—	..	..	..	Tremors.
April 22	E-W	O iP iS	1	18	45 18 51 18 56	..	..	0.4	Local shock; felt at Wellington. R.-F. 1-2.
	N-S	O iP iS	1	18	42 18 48 18 53	..	..	0.4	
April 22	E-W	i	21	0	30	..	..	..	Near shock; felt in Hawke's Bay District, North Island. R.-F. 4.
	N-S	i	21	0	29				
April 23	E-W } N-S }	..	3	—	—	..	..	..	Slight tremors.
April 24	E-W	e	7	6	51	17	s		
	N-S	e	7	8	+	17	s		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. April 24	E-W	i	15	48	5	s.	μ		
	N-S	i	15	47	26				
April 26	E-W	O iP iS	5	5	16 31 43	..	..	1.0	Local shock.
	N-S	O iP iS	5	5	16 31 43	..	..	1.0	
April 27	E-W } N-S }	..	21	30	—	..	..	..	L waves.
April 28	E-W	i eL	15	1	53 23	..	..	..	Heavy microseisms.
	N-S	eL	15	1	10				
April 30	E-W	e iL	12	36	10 11				
	N-S	i	12	38	24				
May 1	E-W } N-S }	..	8	—	—	..	..	..	Tremors.
May 1	E-W	i S(?) LM	15 16	59 12	46 40 22	.. .. 28	.. .. 178	..	Persia.
	N-S	i S(?) L M	16	0	11 21 59 12	.. .. .. 32	.. .. .. 140	..	
May 3	E-W } N-S }	i	7	4	18	..	..	..	Small local shock; felt at Napier. R.-F. 3.
May 3	E-W } N-S }	i	7	5	5	..	..	..	Small local shock.
May 3	E-W } N-S }	..	9	—	—	..	..	..	Tremors.
May 4	E-W	i	3	13	55	..	..	..	Small local shock.
	N-S	i	3	14	3				
May 6	E-W	O iP(?) iS SR ₁ SR ₂ L M	5	9	8 6 10 7 8 11 38	.. .. .. .. .. .. 20	.. .. .. .. .. .. 62	48.7	Manila $\Delta = 22^\circ.9$; Melbourne $\Delta = 32^\circ.6$. Approximate epicentre 7° S., 135° E.
	N-S	P(?) iS SR L	5	18	2 5 43 0				

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. May 6	N-S	M	5	36	25	19	μ 42		
May 7	E-W	O	16	14	0	..	..	1.3	Severely felt in southern portion of North Island, New Zealand; reaching R.-F. 8 in Rangitikei District.
		iP		14	20				
		iS		14	36				
	N-S	O	16	14	0	..	..	1.3	Epicentre 40° S., 176° E.
		iP		14	20				
		iS		14	36				
May 7	E-W	i	16	59	31	..	..	..	Felt in southern portion of North Island. Max. force, R.-F. 4.
	N-S	i	16	59	30				
May 7	E-W	L	17	2	26	..	..	..	Beginning confused by previous disturbance.
		M		10	22	14	48		
	N-S	LM	17	8	33	16	52		
May 8	E-W	O	2	7	36	..	..	1.3	Felt in Rangitikei and Manawatu Districts, North Island. Max. force, R.-F. 4.
		iP		7	57				
		iS		8	14				
	N-S	O	2	7	36	..	..	1.4	
		iP		7	56				
		iS		8	15				
May 8	E-W	e	12	59	50	14	s	..	Tremors.
	N-S	..	13	—	—	13	s		
May 9	E-W	i	17	25	6	..	..	..	Local shock; felt at Hunterville and Wanganui, North Island. R.-F. 3.
	N-S	i	17	25	9				
May 10	E-W	O	17	18	10	..	..	5.5	Felt extensively in North Island, N.Z. Max. force, R.-F. 6. Suva $\Delta = 20^\circ$.
		iP		19	35				
		iS		20	41				
	N-S	O	17	18	5	..	..	5.7	Probable epicentre 37° S., 180°.
		iP		19	33				
		iS		20	41				
May 11	E-W	i	2	12	27	..	..	..	Small local shock.
	N-S	i	2	12	28				
May 16	N-S	..	13	—	—	..	..	..	Slight tremors.
May 18	E-W	eL	7	45	20	22	s		
	N-S	eL	7	41	49	50	s		
May 19	E-W	eL	5	45	52			..	Slight tremors.
	N-S	..	5	30	—	..	..
May 20	E-W	iS	5	16	35				
		eL		36	26				
		M		41	35	21	32		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. May 20	N-S	iS eL M	5	16	36 36 24 43 38	s. 19	μ 29		
May 20	E-W	O iP iS	22	25	49 26 13 26 34	..	..	1.6 Felt at Westport, South Island. R.-F. 3.
	N-S	O iP iS	22	25	40 26 14 26 40	..	..	2.2
May 21	E-W	O P iS SR ₁ eL	16	35	45 48 5 58 10 17 3 45 18 35	.. 18	.. s	80.2 Near Japan.	
	N-S	O P iS SR ₁ eL	16	35	26 47 53 58 5 17 3 29 15 55	.. 17	.. s	81.4	
May 22	E-W	e	0	33	34				
	N-S	i	0	32	25				
May 22	E-W	..	1	—	—	..	..	.. Tremors.
May 22	E-W	O iP PR iS M iL M	20	5	55 11 32 12 13 15 56 16 36 18 20 21 1	.. 7 9 12	.. s 58 348	24.9 Melbourne $\Delta = 24^\circ.4$. Probable epicentre 19° S., 163° E.	
	N-S	O iP iS M iL M	20	6	2 11 36 15 57 16 36 18 6 20 16	.. 6 9 11	.. s 38 181	24.6	
May 22	E-W	e	22	58	5	10	s		
	N-S	..	23	—	—	11	s	.. Tremors.	
May 26	N-S	..	3	35	—	..	..	.. Slight tremors. Records dis- turbed by heavy microseisms all day.
May 26	E-W } N-S }	..	9	—	—	20	s	.. Tremors.	
May 26	E-W } N-S }	..	12	—	—	..	..	.. Tremors.
May 26	E-W	eL M	23	21	— 33 —	.. 20	.. 59	.. Record disturbed by heavy microseisms.	
	N-S	eL M	23	22	29 56 53	.. 19	.. 63	.. Record disturbed by heavy microseisms.	

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. May 28	E-W } N-S }	..	5	20	—	s. ..	μ ..	..	Tremors.
May 29	E-W	O	3	55	40	..	..	1.0	Felt extensively in North Island, N.Z. Max. force, R.-F. 7. Epicentre $40^{\circ}\frac{1}{2}$ S.; 176° E. on edge of record.
		iP		55	55				
		iS		56	8				On edge of record.
	N-S	..	4	—	—	..	..	..
May 30	E-W	O	9	43	9	..	..	84.8	
		P		55	56				
		iS	10	6	26				
		iSR ₁		12	26				
	SR ₂		17	48					
	N-S	PR ₁	9	59	41				
		iS	10	6	26				
		SR ₂		18	51				
June 1	E-W	e	8	14	10	16	s		
	N-S	..	8	15	—	..	..	..	Tremors.
June 2	E-W	O	21	38	22	..	..	76.2	
		P		50	18				
		PR ₂		55	9				
		iS	22	0	1	8	8		
	iSR ₁		5	25					
N-S	O	21	38	25	..	..	76.2		
		iP		50	21				
		iS	22	0	4	7	10		
		SR ₂		8	51				
		eL		14	56				
June 4	E-W	iS(?)	15	34	19				
	N-S	iS(?)	15	34	20	..	..	..	Record disturbed by high wind.
June 5	E-W	O	3	28	37	..	..	1.3	Felt in parts of North Island, N.Z. Max. intensity, R.-F. 5, at Dannevirke.
		iP		28	57				
		iS		29	13				
	N-S	iS	3	29	18				
June 6	E-W } N-S }	..	15	+	..	15	s	..	Tremors and L waves. Micro- seisms.
	E-W } N-S }	..	16	+	..	15	s	..	Tremors and L waves.
June 8	E-W	i	5	36	23				
		L		43	58	11	s		
	N-S	i	5	36	23				
		L		43	48	10	s		
June 9	E-W	i	7	21	58	..	..	..	Small local shock.
	N-S	i	7	22	0				

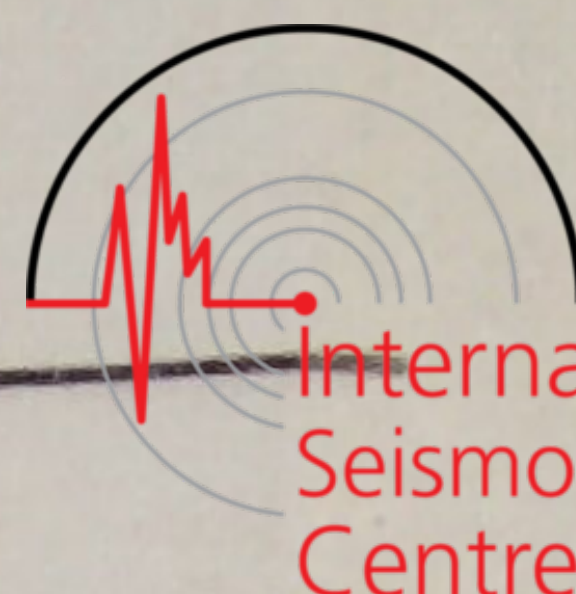
Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.	s.	μ		
1929. June 9	E-W	iS eL	9	31	6	27	<i>s</i>		
	N-S	O P iS SR ₁ L	9	8	34	..	..	80.8
				20	58				
				31	7				
				37	23	25	<i>s</i>		
				49	51				
June 12	E-W	iS iL M	11	57	55	15	19		
			12	1	40				
				16	45				
	N-S	iS L M	11	58	6	15	19		
			12	2	2				
				10	43				
June 13	E-W	i i L M	0	35	54	19	37		
				49	8				
				54	59				
			1	12	25				
	N-S	i i L M	0	35	30	20	45		
				49	10				
				56	30				
			1	18	41				
June 13	E-W	O P PR ₁ iS M SR ₂ iL M ₁ M ₂ M ₃	9	24	42	66.2	Philippine Islands.
				35	35				
				38	33				
				44	22				
				46	53	33	286		
				51	57				
				56	32				
				59	34	29	306		
			10	2	12	20	159		
				8	13	16	125		
June 13	N-S	O P iS M iSR ₁ SR ₂ M L M	9	24	40	66.3	
				35	34				
				44	20				
				45	—	35	182		
				49	20				
				51	55				
				54	28	22	168		
				58	50				
			10	6	58	13	59		
June 13	E-W	i L	23	21	23	16	19		
				40	—				
	N-S	i L	23	20	8	19	25		
				41	8				
June 15	E-W N-S	..	1	50	—	Tremors.
June 16	E-W	O iP iS	16	21	10	..	..	1.5
				21	33	..	mm.		
				21	52	..	1.0		
	N-S	O	16	21	13	..	..	1.5



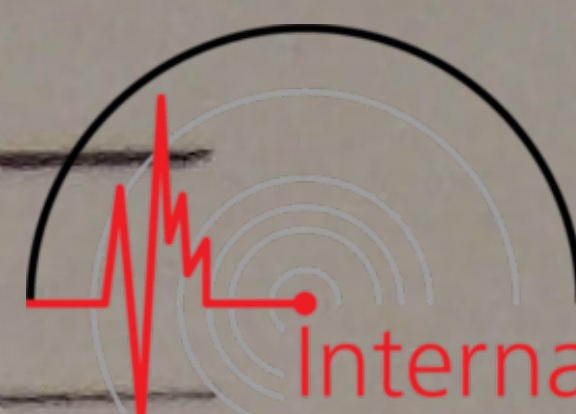
Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 16	N-S	iP	16	21	36	s.	mm.		
		iS		21	55	..	1.4		
June 16	E-W	i	18	45	32	..	0.3		
	N-S	i	18	45	30	..	0.4		
June 16	E-W	O	19	54	45	..	..	1.95	Max. intensity R.-F. 6 at Murchison and Kahurangi Point.
		iP		55	15	..	..	..
		iS		55	39	..	6.7	..	
June 16	N-S	O	19	54	50	..	..	1.7	
		iP		55	16	..	..	..
		iS		55	38	..	7.8	..	
June 16	E-W	iP	22	47	59	Destructive shock in NW portion of South Island. Felt over whole of New Zealand, reaching R.-F. 10 at the intersection of the Buller River with White's Creek (near Murchison), where an uplift of approximately 15 ft. has been discovered. Approx. epicentre $41^{\circ}.75$ S., $172^{\circ}.2$ E. O = 22h. 47m. 33s. G.M.T. Both Milne-Shaw seismographs thrown out of action.			
	E-W (Milne)	iP	22	48	0				
	N-S	iP	22	47	58				
June 16	E-W	i	23	12	42	..	..	..	} From Milne seismograph. Very confused record.
June 16	E-W	i	23	14	42	..	..	..
June 16	E-W	i	23	33	24	..	..	..
June 16	E-W	i	23	43	0	..	..	..
June 16	E-W	i	23	59	48	..	..	..
June 17	E-W	i	0	0	+	..	..	..	Very confused records.
June 17	E-W	i	0	2	+				
June 17	N-S	i	0	6	32				
June 17	N-S	i	0	7	51				
June 17	N-S	i	0	8	39				
June 17	N-S	i	0	9	30				
June 17	N-S	i	0	10	41				
June 17	N-S	i	0	20	1				
June 17	N-S	i	0	28	51				
June 17	N-S	i	0	34	51				
June 17	N-S	i	0	35	46				
June 17	E-W	O	0	40	58	..	..	1.95	Faint record.
		iP		41	28	..	mm.	..	
		iS		41	52	..	20.5	..	
June 17	N-S	O	0	40	53	..	..	2.1	
		iP		41	26	..	..	..



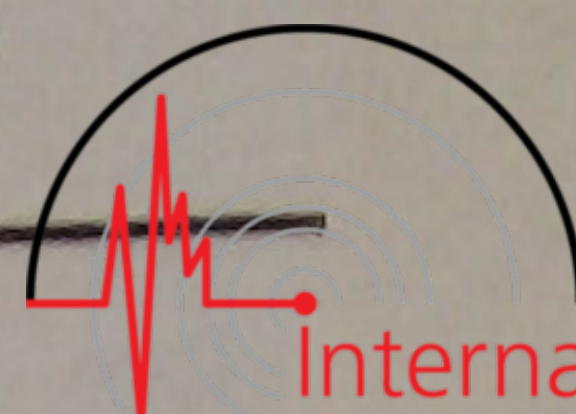
Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	N-S	iS	0	41	51	..	mm. 17.9		
June 17	E-W	O	0	44	18	..	..	1.5
		iP		44	41	..			
		iS		45	0	..	51.5		
June 17	N-S	O	0	44	17	..	..	1.6
		iP		44	41	..			
		iS		45	2	..	43.5		
June 17	N-S	i	0	48	21				
June 17	E-W	i	0	49	43	..	11.5		
		i	0	49	53	..	7.0		
June 17	E-W	i	0	51	49				
		i	0	51	46				
June 17	E-W	i	0	58	1				
		i	0	57	47	Confused record.
		O	1	2	38	..	..	1.55
June 17	E-W	iP		3	1	..			
		iS		3	21	..	8.0		
		iS	1	3	21	..	3.4		
June 17	E-W	i	1	9	21	..	5+		
		i	1	9	21				
June 17	E-W	O	1	13	13	..	..	2.1
		iP		13	46	..			
		iS		14	11	..	3.5		
June 17	E-W	iS	1	14	9	..	3.0		
		O	1	21	7	..	..	1.95
		iP		21	37	..			
June 17	E-W	iS		22	1	..	22.0		
		O	1	21	8	..	..	1.95
		iP		21	38	..			
June 17	E-W	iS		22	2	..	16.0		
		i	1	24	51	..	18.0	..	Confused.
		O	1	24	17	..	..	1.6
June 17	E-W	iP		24	41	..			
		iS		25	2	..	21.0		
		O	1	30	50	..	..	1.55
June 17	E-W	iP		31	13	..			
		iS		31	33	..	2.0		
		iS	1	31	36	..	2.4		
June 17	E-W	O	1	33	42	..	..	1.95
		iP		34	12	..			
		iS		34	36	..	3+		



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929, June 17	N-S	O iP iS	1	33	45 11 33	..	..	1.7	
June 17	E-W	i	1	37	21	..	..	1.6	
	N-S	i	1	37	21	..	..	1.8	
June 17	E-W	O iP iS	1	39	47 10 30	..	..	1.55	
	N-S	O iP iS	1	39	38 8 32	..	..	1.95	
June 17	E-W	i	1	43	21	..	..	1.0	
	N-S	i	1	43	21	..	..	0.3	
June 17	E-W	i	1	45	11	..	..	1.6	
	N-S	i	1	45	15	..	..	1.1	
June 17	N-S	i	1	46	13	..	..
June 17	E-W	i	1	48	40	..	..
	N-S	i	1	48	43	..	..
June 17	E-W	O iP iS	1	48	44 10 33	..	..	1.7	
	N-S	iS	1	49	32	..	..	2.0	
June 17	E-W	i	1	51	21	..	..	1.0	
	N-S	i	1	51	21	..	..	0.7	
June 17	E-W	i	1	53	11	..	..	0.4	
	N-S	i	1	53	16	..	..	0.2	
June 17	E-W	i	1	56	6	..	..	1.5	
	N-S	i	1	56	10	..	..	1.0	
June 17	N-S	i	1	59	31	..	..
June 17	E-W	i	2	1	15	..	..
	N-S	i	2	1	12	..	..
June 17	E-W	O iP iS	2	18	2 26 47	..	..	1.6	
	N-S	O iP iS	2	17	54 22 45	..	..	1.8	
						..	..	2.0	



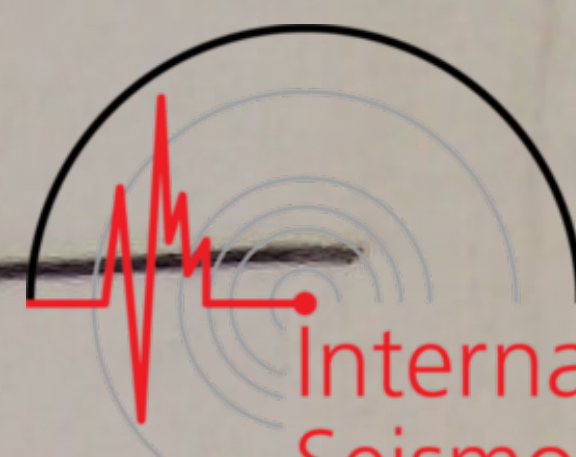
Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	E-W	i	2	25	16	..	..	..
June 17	E-W	O	2	25	50	..	..	1.7	
		iP		26	16	..	..	..
		iS		26	38	..	..	1.6	
June 17	E-W	iS	2	26	38	..	..	1.4	
		O	2	33	40	..	..	1.8	
		iP		34	8	..	..	..
June 17	E-W	iS		34	31	..	..	4.0	
		O	2	33	39	..	..	1.8	
		iP		34	7	..	..	..
June 17	E-W	iS		34	30	..	..	..
		i	2	37	26	..	..	1.0	
		N-S	2	37	28	..	..	1.0	
June 17	E-W	O	2	37	41	..	..	1.4	
		iP		38	2	..	..	..
		iS		38	20	..	..	1.8	
June 17	E-W	iS	2	38	17	..	..	1.0	Near edge of paper.
		i	2	39	15	..	..	1.0	
		N-S	2	39	15	..	..	1.0	
June 17	E-W	i	2	40	17	..	..	0.6	
		N-S	2	40	16	..	..	0.7	
June 17	E-W	i	2	41	39	..	..	0.8	
		N-S	2	41	39	..	..	1.0	
June 17	E-W	O	2	45	0	..	..	2.1	
		iP		45	33	..	..	..
		iS		45	58	..	..	2.0	
June 17	E-W	iS	2	45	59	..	..	1.3	
		i	2	47	41	..	..	..
		N-S	2	48	35	..	..	..
June 17	E-W	i	2	49	21	..	..	..
		N-S	2	49	19	..	..	..
June 17	E-W	i	2	49	47	..	..	1.3	
		N-S	2	49	46	..	..	3.5	
June 17	E-W	i	2	51	1	..	..	..
		N-S	2	51	2	..	..	..
June 17	E-W	O	2	50	58	..	..	1.8	



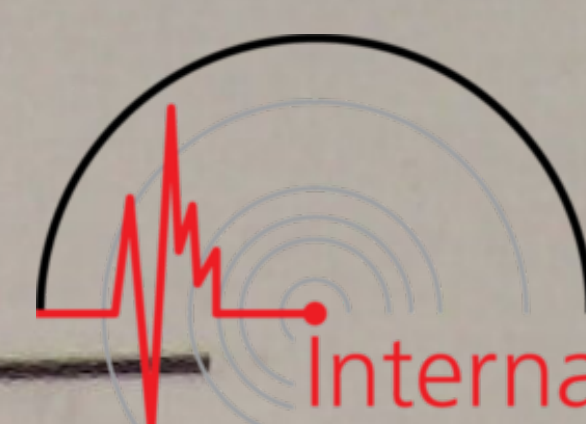
Date.	Direction.	Phase.	Time.			Period.	A.		Δ Degrees.	Remarks.
			h.	m.	s.		s.	mm.		
1929. July 17	E-W	iP iS	2	51	26 49	..	..	12	
	N-S	O iP iS	2	51	4 30 52	..	..	10.8	1.7
June 17	E-W	i	2	56	26	..	..	1.3	
	N-S	i	2	56	22	..	..	1.3	
June 17	E-W	i	2	57	49	..	..	0.6	
	N-S	i	2	57	50	..	..	0.9	
June 17	E-W	i	2	58	21	..	..	0.4	
	N-S	i	2	58	21	..	..	0.7	
June 17	E-W	O iP iS	3	0	57 27 51	..	..	1.0	1.95
	N-S	O iP iS	3	1	5 28 47	..	..	1.1	1.5
June 17	E-W	O iP iS	3	7	35 11 39	..	..	0.4	2.35
	N-S	iS	3	8	38	..	..	0.5	
June 17	E-W	i	3	11	1	..	..	0.3	
	N-S	i	3	10	57	..	..	0.3	
June 17	E-W	i	3	15	15	..	..	0.2	
	N-S	i	3	15	15	..	..	0.6	
June 17	E-W	O iP iS	3	16	4 37 2	..	..	1.4	2.1
	N-S	iS	3	17	3	..	..	1.1	
June 17	E-W	O iP iS	3	17	29 2 27	..	..	0.8	2.1
	N-S	iS	3	18	27	..	..	1.1	
June 17	E-W	i	3	19	28	..	..	1.3	
	N-S	i	3	19	27	..	..	1.3	
June 17	E-W	O iP iS	3	19	34 0 22	..	..	2.3	1.7



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	N-S	O	3	19	25	..	..	2.0	
		iP		19	56	..	..
		iS		20	20	..	2.5		
June 17	E-W	O	3	21	34	..	..	2.2	
		iP		22	8	..	..
		iS		22	34	..	3.0		
	N-S	O	3	21	33	..	..	2.2	
		iP		22	7	..	..
		iS		22	33	..	6.0		
June 17	E-W	O	3	23	5	..	..	2.2	
		iP		23	39	..	..
		iS		24	5	..	7.0		
June 17	N-S	i	3	24	2	..	4.5		
		E-W	i	3	28	9			
		N-S	i	3	28	10			
June 17	E-W	O	3	28	8	..	..	1.95	
		iP		28	38	..	..
		iS		29	2	..	5+		
	N-S	O	3	28	12	..	..	1.7	
		iP		28	38	..	..
		iS		29	0	..	6.0		
June 17	E-W	O	3	30	8	..	..	1.95	
		iP		30	38	..	..
		iS		31	2	..	3.0		
June 17	N-S	iS	3	31	0	..	3.9		
June 17	E-W	O	3	31	52	..	..	1.6	
		iP		32	16	..	..
		iS		32	37	..	2.1		
June 17	N-S	iS	3	32	39	..	1.2		
		E-W	i	3	34	7	..	0.4	
		N-S	i	3	34	10	..	1.0	
June 17	E-W	i	3	43	9	..	0.4		
		N-S	i	3	43	9	..	0.4	
		E-W	i	3	46	12	..	0.5	
June 17	N-S	i	3	46	10	..	0.5		
		E-W	O	3	46	29	..	..	2.1
		iP		47	2	..	..
	iS		47	27	..	4.0			
June 17	N-S	O	3	46	37	..	..	1.8	
		iP		47	5	..	..



Date.	Direction.	Phase.	Time.			Period.	A.		Remarks.	
			h.	m.	s.		s.	mm.		Δ Degrees.
1929. June 17	N-S	iS	3	47	28	..	..	5.4	
June 17	E-W	O	3	52	22	..	..	1.95	
		iP		52	52	..	..	
		iS		53	16	..	..	1.0	
June 17	N-S	iS	3	53	16	..	..	1.4	
		E-W	O	3	54	24	1.7	
			iP		54	50		
June 17	N-S	iS		55	12	..	..	2.1	
		O	3	54	22	..	..	1.8	
		iP		54	50	..	..	
June 17	E-W	iS		55	13	..	..	1.9	
		i	4	2	7	..	..	
		i	4	3	20	..	..	0.4	
June 17	E-W	i	4	3	20	..	..	0.6	
		i	4	10	29	..	..	
June 17	N-S	i	4	10	29	..	..	
		i	4	12	59	..	..	
June 17	E-W	i	4	12	58	..	..	
		i	4	15	10	..	..	0.9	
June 17	N-S	i	4	15	11	..	..	0.7	
		O	4	18	38	..	..	2.2	
June 17	E-W	iP		19	12	..	..	
		iS		19	38	..	..	7.5	
		O	4	18	54	..	..	1.5	
June 17	N-S	iP		19	17	..	..	
		iS		19	36	..	..	7.0	
		iS	4	25	40	..	..	0.6	
June 17	E-W	iS	4	25	40	..	..	1.0	
		iS	4	27	4	..	..	2.2	
June 17	E-W	O	4	27	38	..	..	
		iP		27	38	..	..	
		iS		28	4	..	..	2.6	
June 17	N-S	O	4	27	7	..	..	2.2	
		iP		27	41	..	..	
		iS		28	7	..	..	2.6	
June 17	E-W	iS	4	40	10	..	..	0.4	
		i	4	40	29	..	..	0.4	
June 17	N-S	i	4	45	7	..	..	0.6	



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	E-W	i	4	51	12	s.	mm.		
	N-S	i	4	51	14				
June 17	E-W	O iP iS	5	0	4	..	..	1.8
				0	32				
				0	35	..	10+		
	N-S	O iP iS	5	0	8	..	..	1.55
				0	31				
				0	51	..	15.0		
June 17	E-W	i	5	7	11	..	0.8		
	N-S	i	5	7	10	..	0.9		
June 17	E-W	i	5	9	5				
June 17	E-W	i	5	10	17				
June 17	E-W	i	5	10	47	..	0.4		
June 17	N-S	i	5	10	48	..	0.8		
June 17	E-W	O iP iS	5	19	44	..	..	1.7
				20	0				
				20	22				
	N-S	O iP iS	5	19	44	..	..	1.7
				20	0				
				20	22				
June 17	E-W	i	5	27	15				
June 17	E-W	i	5	30	17				
June 17	E-W	i	5	35	0				
June 17	E-W	i	5	37	15				
June 17	E-W	i	5	40	3				
	N-S	i	5	40	9				
June 17	E-W	i	5	44	11				
June 17	E-W	i	5	47	0				
	N-S	i	5	47	0				
June 17	E-W	i	5	49	57				
	N-S	i	5	50	3				
June 17	E-W	O iP iS	5	56	5	..	..	2.1
				56	38				
				57	3	..	2.4		
	N-S	O	5	56	8	..	..	1.95



Date.	Direction.	Phase.	Time.			Period.	A.	△ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	N-S	iP iS	5	56	38 2	..	mm. 1.8		
June 17	E-W	i	6	0	35				
	N-S	i	6	0	32				
June 17	E-W	O iP iS	6	12	24 50 12	..	.. 3.0	1.7
	N-S	O iP iS	6	12	21 49 12	..	.. 3.0	1.8
June 17	E-W	i	6	16	22				
	N-S	i	6	16	23				
June 17	E-W	i	6	18	17				
June 17	E-W	i	6	24	8				
	N-S	i	6	24	9				
June 17	E-W	i	6	27	19				
	N-S	i	6	27	18				
June 17	E-W	O iP iS	6	32	31 54 19	..	.. 3+	2.1
	N-S	O iP iS	6	32	29 52 17	..	.. 3.8	2.1
June 17	E-W	i	6	37	15				
June 17	E-W	i	6	38	52				
	N-S	i	6	38	52				
June 17	E-W	O iP iS	6	42	34 7 32	..	.. 2.9	2.1
	N-S	O iP iS	6	42	36 9 34	..	.. 2.1	2.1
June 17	E-W	iP	6	45	2	..	..	..
	N-S	O iP iS	6	44	43 7 28	..	..	1.6
June 17	E-W	i	6	49	37				
	N-S	i	6	49	37				

On edge of record.



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	E-W	i	6	49	37				
	N-S	i	6	49	37				
June 17	E-W	i	7	9	54				
	N-S	i	7	9	55				
June 17	E-W	i	7	13	5				
	N-S	i	7	13	5				
June 17	E-W	i	7	16	30				
June 17	E-W	O	7	17	58	..	..	1.8	
		iP		18	26				
		iS		18	49	..	3.3		
	N-S	iS	7	18	50	..	2.2		
June 17	E-W	O	7	22	7	..	..	2.1	
		iP		22	40				
		iS		23	5	..	3.7		
	N-S	O	7	22	15	..	..	1.6	
		iP		22	39				
		iS		23	0	..	3.4		
June 17	E-W	i	7	26	12				
	N-S	i	7	26	13				
June 17	E-W	i	7	30	32				
June 17	E-W	i	7	34	54				
June 17	E-W	iS	7	51	1				
	N-S	iS	7	51	3				
June 17	E-W	i	7	53	7				
	N-S	i	7	53	3				
June 17	E-W	O	8	5	2	..	..	1.7	
		iP		5	28				
		iS		5	50	..	1.0		
	N-S	iS	8	5	5	..	0.8		
June 17	E-W	iS	8	16	15				
	N-S	iS	8	16	15				
June 17	E-W	i	8	30	—	..	1.0	..	In minute mark.
	N-S	i	8	30	—	..	0.6		
June 17	E-W	i	8	34	2				



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	N-S	i	8	33	58	s.	mm.		
June 17	E-W	i	8	44	39	..	..	..	Hokitika. R.-F. 4-5.
	N-S	i	8	44	42				
June 17	E-W	i	8	49	37				
	N-S	i	8	49	37				
June 17	E-W	i	8	50	17				
	N-S	i	8	50	20				
June 17	E-W	i	8	51	59				
June 17	E-W	O	8	52	21	..	..	1.8	
		iP		52	49				
		iS		53	12	..	1.4		
June 17	N-S	iS	8	53	13	..	0.9		
June 17	E-W	i	8	56	2				
June 17	E-W	iS	8	56	36				
	N-S	iS	8	56	38				
June 17	E-W	O	8	57	11	..	..	1.8	
		iP		57	39				
		iS		58	2	..	1.8		
	N-S	iS	8	58	2	..	1.1		
June 17	E-W	O	9	0	8	..	..	1.8	
		iP		0	36				
		iS		0	59	..	4.2		
	N-S	O	9	0	11	..	..	1.6	
		iP		0	35				
		iS		0	56	..	3.0		
June 17	E-W	O	9	3	19	..	..	2.1	
		iP		3	52				
		iS		4	17	..	1.1		
	N-S	iS	9	4	16	..	1.2		
June 17	E-W	i	9	6	37				
	N-S	i	9	6	40				
June 17	E-W	iS	9	12	14	..	0.3		
	N-S	iS	9	12	15	..	0.9		
June 17	E-W	O	9	13	4	..	..	2.1	
		iP		13	37				
		iS		14	2	..	1.8		
	N-S	iS	9	13	58	..	1.2		



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	E-W	i	9	21	59	s.	mm.		
June 17	E-W	O	9	39	16	..	..	2.2
		iP		39	50				
		iS		40	16	..	4 +		
	N-S	O	9	39	15	..	..	2.2
		iP		39	49				
		iS		40	15	..	7.0		
June 17	E-W	i	10	2	43				
June 17	E-W	i	10	27	37				
	N-S	i	10	27	30				
June 17	E-W	i	10	32	31				
June 17	E-W	i	10	38	7	..	..	.. Distant earthquake.
		eL		52	12	17	s		
	N-S	i	10	38	33				
		eL		53	—	17	s		
June 17	E-W	i	10	42	22				
June 17	E-W	i	10	45	50				
	N-S	i	10	45	52				
June 17	E-W	O	11	18	24	..	..	1.7
		iP		19	0				
		iS		19	22	..	3.0		
	N-S	O	11	18	24	..	..	1.7
		iP		19	0				
		iS		19	22	..	2.7		
June 17	E-W	O	11	20	10	..	..	1.95
		iP		20	40				
		iS		21	4	..	8.6		
	N-S	O	11	20	14	..	..	1.7
		iP		20	40				
		iS		21	2	..	5.5		
June 17	E-W	i	11	26	20				
June 17	E-W	i	11	31	0				
June 17	E-W	i	11	39	22				
June 17	E-W	i	11	46	37				
June 17	E-W	i	12	3	35				
	N-S	i	12	3	34				
June 17	E-W	i	12	32	2				
June 17	E-W	i	12	37	45				



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	N-S	i	12	37	47	s.	mm.		
June 17	E-W	O iP iS	12	40	29	..	..	2.3	
				41	5	..	1.4		
	N-S	iS	12	41	30	..	1.0		
June 17	E-W	i	12	47	47				
June 17	E-W	i	12	58	57				
	N-S	i	12	59	0				
June 17	E-W	i	13	4	33				
	N-S	i	13	4	42				
June 17	E-W	i	13	6	42				
	N-S	i	13	6	41				
June 17	E-W	i	13	22	42				
	N-S	i	13	22	41				
June 17	E-W	i	13	42	2				
June 17	E-W	i	13	45	28				
	N-S	i	13	45	30				
June 17	E-W	O iP iS	13	50	41	..	..	2.1	
				51	14	..	3.5		
				51	39	..	3.0		
	N-S	O iP iS	13	50	42	..	..	2.3	
				51	18	..	3.0		
				51	45	..	3.0		
June 17	E-W	iS	13	53	52	..	1.9		
	N-S	iS	13	53	55	..	1.0		
June 17	E-W	O iP iS	13	54	52	..	..	1.6	
				55	16	..	4.0		
				55	37	..	4.0		
	N-S	O iP iS	13	54	54	..	..	1.55	
				55	17	..	5.0		
				55	37	..	5.0		
June 17	E-W	O iP iS	14	16	29	..	..	1.8	
				16	57	..	0.9		
				17	20	..	0.9		
	N-S	iS	14	17	20	..	0.5		
June 17	E-W	i	14	19	0				

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	E-W	i	14	23	2				
	N-S	i	14	23	2				
June 17	E-W	i	14	24	41				
June 17	E-W	i	14	38	46				
June 17	E-W	i	14	50	10				
June 17	E-W	O iP iS	14	54	9	..	..	1.8	
				54	37				
				55	0				
	N-S	iS	14	55	2				
June 17	E-W	i	15	5	20				
	N-S	i	15	5	20				
June 17	E-W	i	15	10	31				
June 17	E-W	i	15	12	31				
June 17	E-W	i	15	18	37				
June 17	E-W	i	15	36	37				
June 17	E-W	i	15	40	47				
June 17	E-W	i	15	43	0				
June 17	E-W	i	15	47	37				
	N-S	i	15	47	42				
June 17	E-W	i	15	59	29				
	N-S	i	15	59	30				
June 17	E-W	iS	16	3	7	..	0.9		
	N-S	iS	16	3	8	..	0.8		
June 17	E-W	O iP iS	16	30	34	..	..	1.8	
				31	2				
				31	25	..	0.5		
	N-S	iS	16	31	22	..	0.8		
June 17	E-W	i	16	44	22				
June 17	E-W	i	16	45	41				
June 17	E-W	i	16	58	10				
	N-S	i	16	58	2				
June 17	E-W	i	17	10	29				
June 17	E-W	O	17	18	29	..	..	1.8	

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	E-W	iP	17	18	57	..	mm.	1.2	
		iS		19	20	..			
	N-S	iS	17	19	20	..		1.1	
June 17	E-W	O	17	35	41	..	..	1.8	
		iP		36	9	..			
		iS		36	32	..	1.0		
	N-S	i	17	36	+	..	..	..	On edge of record.
June 17	E-W	O	17	42	19	..	..	1.9	
		iP		42	48	..			
		iS		43	12	..	5.3		
	N-S	O	17	42	20	..	..	1.8	
		iP		42	48	..			
		iS		43	10	..	5.0		
June 17	E-W	i	17	53	3				
June 17	E-W	iS	17	57	59				
		N-S	iS	17	58	2			
June 17	E-W	O	18	36	15	..	..	1.7	
		iP		36	51	..			
		iS		37	3	..	1.8		
	N-S	iS	18	37	14	..	1.3		
June 17	E-W	O	18	39	4	..	..	1.8	
		iP		39	32	..			
		iS		39	55	..	3.0		
	N-S	O	18	38	57	..	..	2.1	
		iP		39	30	..			
		iS		39	55	..	3.6		
June 17	E-W	i	18	47	57				
June 17	E-W	i	18	53	51				
June 17	E-W	O	19	9	2	..	..	1.95	
		iP		9	32	..			
		iS		9	56	..			
	N-S	iS	19	9	57				
June 17	E-W	i	19	18	30				
		N-S	i	19	18	30			
June 17	E-W	iS	19	23	8				
		N-S	iS	19	23	9			
June 17	E-W	i	19	25	40				
June 17	E-W	O	19	26	43	..	..	1.95	

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 17	E-W	iP iS	19	27	13 37	s.	mm.		
	N-S	iS	19	27	36				
June 17	E-W	O iP iS	19	27	42 28 12 28 36	..	..	1.95	Felt at Greymouth. R.-F. 5.
	N-S	O iP iS	19	27	26 28 10 28 36	..	..	2.2	
June 17	E-W	i	19	37	39				
June 17	E-W	i	19	43	37				
June 17	E-W	O iP iS	19	47	1 47 27 47 49	..	..	1.7	
	N-S	O iP iS	19	47	1 47 27 47 49	..	..	1.7	
June 17	E-W	i	20	22	11				
June 17	E-W	i	20	24	+				
June 17	E-W	i	20	31	28				
June 17	E-W	i	20	32	36				
June 17	E-W	O iP iS	20	37	47 38 15 38 38	..	..	1.8	
	N-S	iS	20	38	45	..		1.8	
June 17	E-W	i	20	48	10				
June 17	E-W	i	20	52	+				
June 17	E-W	i	20	57	47				
June 17	E-W	i	21	0	51	..		1.9	
	N-S	i	21	0	50	..		1.5	
June 17	N-S	i	21	14	51				
June 17	N-S	iS	21	18	57	..		2.2	
June 17	E-W	O iP iS	21	23	3 23 36 24 1	..	..	2.1	Felt at Picton. R.-F. 3-4.
	N-S	O iP iS	21	23	2 23 35 24 0	..	..	2.1	



Date.	Direction.	Phase.	Time.			Period.	A.		Δ Degrees.	Remarks.
			h.	m.	s.		s.	mm.		
1929. June 17	E-W	i	21	35	43					
	N-S	i	21	35	44					
June 17	E-W	iS	21	47	53					
	N-S	iS	21	46	55					
June 17	E-W	i	21	53	3					
June 17	E-W	i	22	4	40					
	N-S	i	22	4	40					
June 17	E-W	O iP iS	22	22	10 36 58	.. ..	.. 2.8	1.7	
	N-S	iS	22	22	54	..	2.1			
June 17	N-S	i	22	31	3					
June 17	E-W	i	22	50	1					
	N-S	i	22	50	3					
June 17	E-W	i	22	56	21					
	N-S	i	22	56	21					
June 17	E-W	i	23	17	16					
	N-S	i	23	17	18					
June 17	E-W	i	23	20	20					
June 17	E-W	O iP iS	23	32	8 36 59	.. ..	.. 2.0	1.8	
	N-S	O iP iS	23	32	8 34 56	.. ..	.. 2.2	1.7	
June 17	E-W	i	23	43	3					
	N-S	i	23	43	0					
June 17	E-W	O iP iS	23	49	30 3 28	.. ..	.. 3.0	2.1	
	N-S	iS	23	50	28	..	2.0			
June 17	E-W	i	23	54	15					
	N-S	i	23	54	14					
June 18	E-W	i	0	13	58					
June 18	E-W	i	0	22	47	..	0.9			

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 18	N-S	i	0	22	45	..	mm. 0.7		
June 18	E-W	i	0	33	33				
	N-S	i	0	33	31				
June 18	E-W	O	0	45	26	..	..	1.95
		iP		45	56				
		iS		46	20	..	9.0		
	N-S	O	0	45	29	..	..	1.95
		iP		45	59				
		iS		46	23	..	13.0		
June 18	E-W	i	1	22	42	"			
	N-S	i	1	22	40				
June 18	E-W	—	1	25	—	..	..	..
June 18	E-W	O	1	50	17	..	..	1.55
		iP		50	40				
		iS		51	0	..	7.0		
	N-S	O	1	50	15	..	..	1.55
		iP		50	42				
		iS		51	2	..	3.8		
June 18	E-W	O	2	6	3	..	..	1.6
		iP		6	27				
		iS		6	48	..	15.0		
	N-S	O	2	6	3	..	..	1.6
		iP		6	27				
		iS		6	48	..	10.0		
June 18	E-W	i	2	11	5	..	1.0		
	N-S	i	2	11	5	..	1.0		
June 18	E-W	i	2	29	50				
	N-S	i	2	29	49				
June 18	E-W	i	2	36	0				
	N-S	i	2	36	2				
June 18	E-W	i	2	41	+				
	N-S	i	2	41	+				
June 18	E-W	iS	2	52	38				
	N-S	iS	2	52	40				
June 18	E-W	O	3	5	37	..	..	1.5
		iP		6	0				
		iS		6	19	..	2.0		
	N-S	iS	3	6	19	..	1.7		

Slight tremors from distant origin.
Felt at Reefton. R.-F. 4.

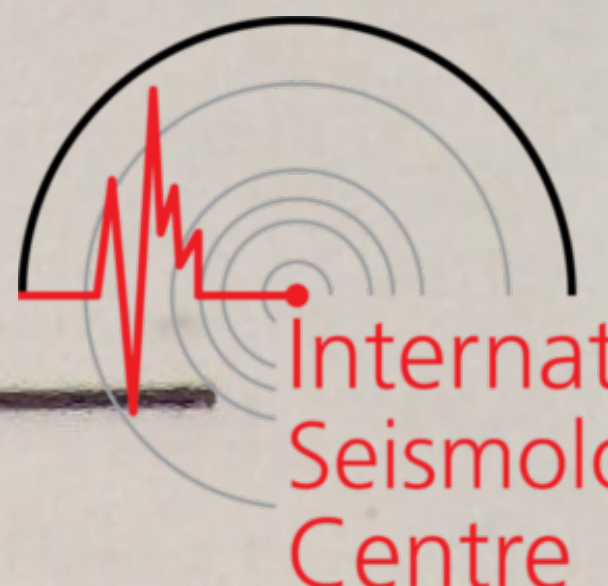


Date.	Direction.	Phase.	Time.	Period.	A.	Δ Degrees.	Remarks.
1929.			h. m. s.	s.	mm.		
June 18	E-W	iS	3 41 59	..	1.1		
	N-S	iS	3 42 3	..	1.0		
June 18	E-W	i	3 46 13				
	N-S	i	3 46 10				
June 18	E-W	i	4 14 0				
June 18	E-W	i	4 29 25				
June 18	E-W	i	4 54 10				
	N-S	i	4 54 9				
June 18	E-W	i	5 6 39				
	N-S	i	5 6 40				
June 18	E-W	iS	5 15 40	..	1.4	..	Felt at Reefton. R.-F. 4.
	N-S	iS	5 15 36	..	1.0		
June 18	E-W	i	5 54 59				
	N-S	i	5 54 57				
June 18	E-W	O	6 9 7	..	..	2.3	
		iP	9 43				
		iS	10 10	..	2.0		
	N-S	O	6 9 9	..	..	2.2	
		iP	9 43				
		iS	10 9	..	2.3		
June 18	E-W	O	6 17 11	..	..	2.3	Felt at Reefton. R.-F. 4.
		iP	17 47				
		iS	18 14	..	2.0		
	N-S	O	6 17 11	..	..	2.3	
		iP	17 47				
		iS	18 14	..	2.6		
June 18	E-W	i	6 32 40				
	N-S	i	6 32 40				
June 18	E-W	i	6 35 0	..	1.0		
	N-S	i	6 35 0	..	1.1		
June 18	E-W	i	7 13 10				
June 18	E-W	O	7 29 52	..	..	2.3	
		iP	30 28				
		iS	30 55	..	0.7		
	N-S	iS	7 30 55	..	0.8		
June 18	E-W	i	7 44 10				



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 18	N-S	i	7	44	8	s.	mm.		
June 18	E-W	i	7	52	0				
	N-S	i	7	52	3				
June 18	E-W	i	8	9	35	..	1.0		
	N-S	i	8	9	32	..	1.0		
June 18	E-W	O iP iS	9	18	40	..	..	2.1	
				19	13	..	..	..
				19	38	..	..	2.6	
	N-S	iS	9	19	36	..	..	1.6	
June 18	E-W	i	9	49	55				
June 18	E-W	O iP iS	10	57	7	..	..	1.8	
				57	35				
				57	58				
	N-S	iS	10	57	54				
June 18	E-W	i	11	2	14				
	N-S	i	11	2	14				
June 18	E-W	O iP iS	11	29	2	..	..	2.3	
				29	38	..	..	..
				30	5	..	..	4+	
	N-S	O iP iS	11	29	5	..	..	2.2	
				29	39	..	..	..
				30	5	..	..	2.7	
June 18	E-W	i	11	50	14	..	1.3	..	Felt at New Plymouth. R.-F. 2.
	N-S	i	11	50	13	..	1.1		
June 18	E-W	i	12	49	+				
	N-S	i	12	49	+				
June 18	E-W	i	12	57	39	..	1.6		
	N-S	i	12	57	40	..	1.3		
June 18	E-W	i	12	58	25				
	N-S	i	12	58	26				
June 18	E-W	O iP iS	13	54	47	..	..	1.55	Felt in both Islands; at Grey- mouth R.-F. 6.
				55	10	..	..	..
				55	30	..	..	24.5	
	N-S	O iP iS	13	54	47	..	..	1.55	
				55	10	..	..	..
				55	30	..	..	17.0	
June 18	E-W	O iP	14	25	11	..	..	1.7	Felt at Westport. R.-F. 7-8.
				25	37				

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 18	E-W	iS	14	25	59	..	mm. 5.2		
	N-S	O iP iS	14	25	10 34 55	.. .. ..	.. .. 6.5	1.6
June 18	E-W	O iP iS	14	31	17 47 11 22.0	1.95	Felt in both Islands; at West- port R.-F. 7-8.
	N-S	O iP iS	14	31	23 53 17 20.2	1.95	
June 18	E-W	i	15	21	38				
	N-S	i	15	21	—				
June 18	E-W	iS	15	36	16	..	1.4		
	N-S	iS	15	36	17	..	2.0		
June 18	E-W	i	15	53	47				
June 18	E-W	O iP iS	16	11	22 45 5	.. .. ..	.. .. 2.5	1.55
	N-S	iS	16	12	2	..	2.2		
June 18	E-W	i	16	15	44				
June 18	E-W	O iP iS	17	38	3 26 45	.. .. ..	.. .. 1.0	1.5
	N-S	O iP iS	17	38	0 23 42	.. .. ..	.. .. 1.6	1.5
June 18	E-W	i	18	4	0				
June 18	E-W	i	18	41	25				
June 18	E-W	i	18	57	56				
	N-S	i	18	58	—				
June 18	E-W	i	19	5	18				
	N-S	i	19	5	17				
June 18	E-W	O iP iS	19	36	37 10 35	.. .. ..	.. .. 2.6	2.1
	N-S	O iP iS	19	36	34 10 32	.. .. ..	.. .. 3.6	1.7

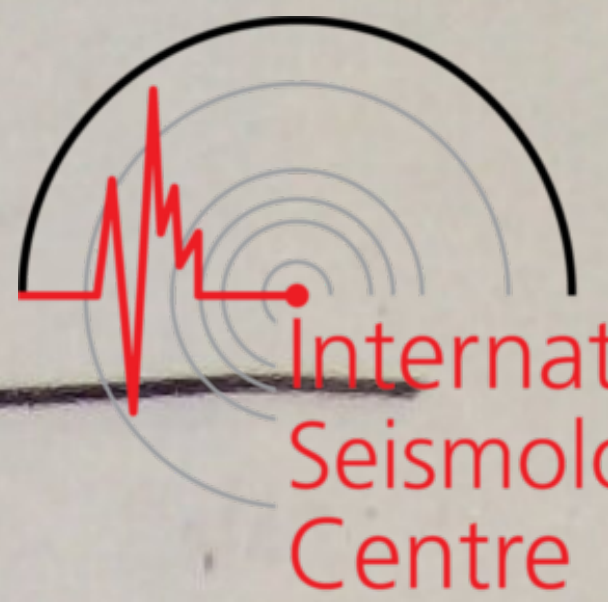


Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 18	E-W	iS	20	25	55	..	mm. 1.4		
	N-S	iS	20	26	0	..	1.8		
June 18	E-W	O iP iS	21	27	2 25 45	..	.. 6.9	1.55	Felt at Greymouth.
	N-S	iS	21	27	41	..	7.3		
June 18	E-W	i	21	55	49				
	N-S	i	21	55	46				
June 18	E-W	O iP iS	21	58	56 26 50	..	.. 1.3	1.95	Felt in South Island ; at West- port R.-F. 7-8.
	N-S	O iP iS	21	59	2 28 50	..	.. 1.9	1.7	
June 18	E-W	O iP iS	22	17	22 52 16	..	.. 30.0	1.95	Felt at Greymouth. R.-F. 5-6.
	N-S	O iP iS	22	17	21 49 12	..	.. 28.5	1.8	
June 19	N-S	i	0	1	10				
June 19	E-W	i	0	28	20				
June 19	E-W	iS	0	55	34	..	0.8	..	Felt at Nelson.
	N-S	i	0	55	34	..	1.1		
June 19	E-W	O iP iS	1	20	4 32 55	..	.. 13.5	1.8	Felt at Nelson.
	N-S	O iP iS	1	20	6 32 54	..	.. 8.7	1.7	
June 19	N-S	i	2	56	43				
June 19	E-W	O iP iS	3	25	32 5 30	..	.. 30 +	2.1	Felt extensively in South Island ; at Reefton and Greymouth R.-F. 6-7.
	N-S	O iP iS	3	25	32 5 30	..	.. 20 +	2.1	
June 19	E-W	O iP iS	3	33	36 6 30	..	.. 3.1	1.95	

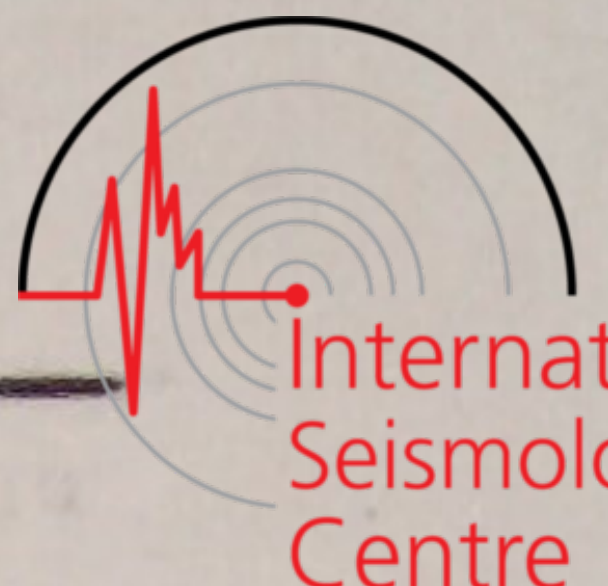


Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 19	N-S	iS	3	34	25	..	mm. 6.1		
June 19	E-W	i	4	26	43				
June 19	E-W	iS	5	6	20	..	4.0		
	N-S	iS	5	6	18	..	2.1		
June 19	E-W } N-S }	..	8	—	—	..	..	.. L waves from origin near Philip- pine Islands.
June 19	N-S	i	8	16	58				
June 19	E-W	i	8	36	40				
	N-S	i	8	36	46				
June 19	E-W		9	5	20				
	N-S	i	9	5	20				
June 19	E-W	O iP iS	9	17	14 17 40 18 2 86.7	1.7	Felt extensively in both Islands ; at Greymouth R.-F. 6-7.
	N-S	O iP iS	9	17	15 17 41 18 3 40 +	1.7	
June 19	E-W	O iP iS	10	30	4 30 30 30 52 34.0	1.7	Felt in both Islands ; at Reefton R.-F. 6.
	N-S	O iP iS	10	30	6 30 30 30 50 52.5	1.55	
June 19	E-W	i	10	53	0				
	N-S	i	10	53	0				
June 19	E-W	i	11	28	+				
	N-S	i	11	28	13				
June 19	N-S	i	13	28	40				
June 19	E-W	iS	16	19	51	..	2.0		
	N-S	iS	16	19	52	..	2.0		
June 19	N-S	i	17	36	25				
June 19	E-W	i	20	9	6				
	N-S	i	20	9	9				
June 19	E-W	iS	21	16	25	..	3.5		
June 19	E-W	O	22	8	11	..	..	1.6

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.	
			h.	m.	s.					
1929. June 19	E-W	iP	22	8	35	s.	mm.			
		iS		8	56	..	6.0			
		N-S	O	22	8	11	1.7	
		iP		8	37					
		iS		8	59	..	7 +			
June 19	E-W	i	22	20	30					
June 19	E-W	O	22	34	1	..	..	2.1	Felt in both Islands ; at Reefton R.-F. 4-5.
		iP		34	34					
		iS		34	59	..	28.0			
	N-S	O	22	34	6	..	..	1.8	
		iP		34	34					
		iS		34	57	..	30.0			
June 20	E-W	i	0	21	57					
June 20	E-W	i	1	33	39					
June 20	E-W	i	1	55	1					
	N-S	i	1	55	3					
June 20	E-W	..	2	—	—	..	..	..	Slight tremors from distant origin.
June 20	E-W	i	6	16	19					
June 20	E-W	i	6	42	37					
June 20	E-W	i	9	0	20					
	N-S	i	9	0	20					
June 20	E-W	i	10	2	48					
	N-S	i	10	2	45					
June 20	E-W	i	10	23	52					
June 20	E-W	i	10	56	47	..	1.0			
	N-S	i	10	56	52	..	1.2			
June 20	E-W	O	11	58	7	..	..	2.1	
		iP			58	40				
		iS			59	5	..	4.0		
	N-S	O(?)	11	58	17	..	..	1.7(?)	
		iP			58	43				
		iS			59	5	..	3.0		
June 20	E-W	O	14	47	7	..	..	2.1	Felt in both Islands ; at West- port R.-F. 7-8.
		iP			47	40				
		iS			48	5	..	23.0		
	N-S	O	14	47	7	..	..	2.1	
		iP			47	40				
		iS			48	5	..	15.0		
June 20	E-W	i	14	58	15	..	..	..	Felt at Nelson.



Date.	Direction.	Phase.	Time.			Period.	A.		Remarks.
			h.	m.	s.		s.	mm.		Δ Degrees.
1929. June 20	E-W	i	16	48	10	..	..	1.0	
	N-S	i	16	48	10	..	..	1.0	
June 20	E-W	iS	19	15	35	..	..	1.2	
	N-S	iS	19	15	33	..	..	1.2	
June 20	E-W	iS	19	17	20	..	..	4.0	
	N-S	iS	19	17	20	..	..	2.8	
June 20	E-W	i	19	54	30	..	..
	N-S	i	19	54	28	..	..
June 21	E-W	i	0	34	53	..	..
June 21	E-W	O iP iS	7	51	50 52 14 52 35	..	..	1.6 18.1	Felt in both Islands : at Eltham R.-F. 4.
	N-S	O iP iS	7	51	50 52 14 52 35	..	..	1.6 28.0	
June 21	E-W	i	11	19	7	..	..	1.0	
	N-S	i	11	19	6	..	..	1.5	
June 21	E-W	i	14	1	50	..	..
	N-S	i	14	1	51	..	..
June 21	E-W	O iP iS	14	30	17 30 40 31 0	..	..	1.55 2.2	
	N-S	iS	14	31	0	..	..	2.0	
June 21	E-W	i	14	57	9	..	..	1.1	
	N-S	i	14	57	9	..	..	1.0	
June 21	E-W	O iP iS	16	6	14 6 38 6 59	..	..	1.6 4.9	
	N-S	O iP iS	16	6	15 6 39 6 59	..	..	1.55 3.6	
June 21	E-W	i	22	43	0	..	..	1.0	
	N-S	i	22	43	3	..	..	0.5	
June 21	E-W	i	23	31	59	..	..
June 22	E-W	O iP iS	0	10	31 11 1 11 25	..	..	1.95 5.0	



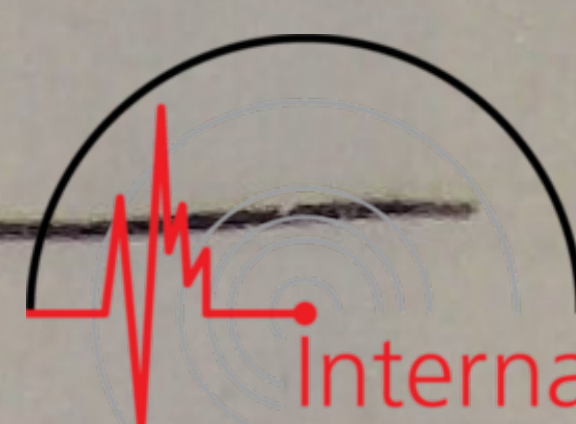
Date.	Direction.	Phase.	Time.			Period.	A.		Δ Degrees.	Remarks.
			h.	m.	s.		s.	mm.		
1929. June 22	N-S	O iP iS	0	10	33	..	..	1.8	
				11	1					
				11	24	..	4.0			
June 22	E-W	i	2	31	43	..	1.0			
	N-S	i	2	31	44	..	0.5			
June 22	E-W	O iP iS	5	12	57	..	..	2.1	
				13	30					
				13	55	..	1.0			
	N-S	iS	5	13	55	..	1.0			
June 22	E-W	i	5	41	43					
	N-S	i	5	41	40					
June 22	E-W	i	6	8	29	..	1.0			
	N-S	i	6	8	30	..	0.5			
June 22	E-W	O iP iS	6	35	22	..	..	2.1	
				35	55					
				36	20	..	2.5			
	N-S	iS	6	36	19	..	1.3			
June 22	E-W	iS	8	32	3	..	0.9			
	N-S	iS	8	32	1	..	1.0			
June 22	E-W	i	9	58	25	..	0.8			
	N-S	i	9	58	25	..	1.0			
June 22	E-W	i	13	48	56	..	..	..	Felt at Westport. R.-F. 5.
	N-S	i	13	49	0					
June 22	E-W	O iP iS	14	58	2	..	..	2.1	Felt at Greymouth.
				58	35					
				59	0	..	3.8			
	N-S	O iP iS	14	58	1	..	..	2.2	
				58	35					
				59	1	..	4.0			
June 22	E-W	O iP iS	15	17	49	..	..	1.8	
				18	17					
				18	40	..	10.1			
	N-S	O iP iS	15	17	41	..	..	1.6	
				18	15					
				18	36	..	17.0			
June 22	E-W	iP	15	30	44	..	110+	..	Felt over practically the whole of New Zealand; at Murchison and Greymouth R.-F. 8.	
	E-W (Milne)	O iP iS	15	30	15	..	..	1.95	
				30	45					
				31	9					



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 22	N-S	O iP iS	15	30	14 42 5	..	..	1.8	
June 22	E-W	i	16	13	36				
	N-S	i	16	13	38				
June 22	N-S	O iP iS	16	34	2 25 45	..	..	1.55	Felt in both Islands ; at Te Kuiti R.-F. 4-5.
June 22	E-W	O iP iS	16	38	49 19 43	..	..	1.95	
	N-S	iP	16	39	17	..	..	4+	
June 22	E-W	i	16	55	5				
	N-S	i	16	55	5				
June 22	E-W	i	18	8	24				
	N-S	i	18	8	23				
June 22	E-W	iP	18	39	40	..	76+	..	Felt over practically the whole of New Zealand ; at Murchison R.-F. 8.
	E-W (Milne)	O iP iS	18	39	14 40 2	..	..	1.7	
	N-S	iP	18	39	40	..	53+		
June 22	E-W	i	19	0	35				
	N-S	i	19	0	37				
June 22	E-W	i	20	29	5				
	N-S	i	20	29	4				
June 22	N-S	iS	21	13	0	..	1.0		
June 22	E-W	iS	21	14	40	..	2.0		
	N-S	iS	21	14	42	..	2.1		
June 22	E-W	O iP iS	21	17	33 1 24	..	..	1.8	
	N-S	O iP iS	21	7	30 0 24	..	..	1.95	
June 22	E-W	O iP	21	31	27 55	..	..	1.8	Felt at Hokitika. R.-F. 5.

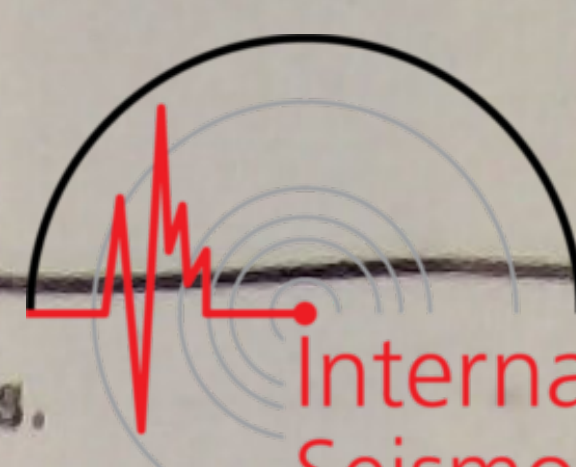


Date.	Direction.	Phase.	Time.			Period.	A.		Δ Degrees.	Remarks.
			h.	m.	s.		s.	mm.		
1929. June 22	E-W	iS	21	32	18	..	..	3.2	
	N-S	O	21	31	24	..	..	1.6	
		iP		31	58	..	..	2.0	
		iS		32	29	..	..	2.0	
June 22	E-W	i	23	1	0	..	..	0.7	
	N-S	i	23	1	0	..	..	0.4	
June 23	E-W	O	0	1	26	..	..	1.6	
		iP		1	50	..	..	1.0	
		iS		2	11	..	..	1.0	
	N-S	iS	0	2	11	..	..	1.0	
June 23	E-W	i	1	13	55	..	..	
June 23	E-W	i	1	45	4	..	..	0.9	
	N-S	i	1	45	2	..	..	0.6	
June 23	E-W	O	2	12	37	..	..	1.95	
		iP		13	7	..	..	2.4	
		iS		13	31	..	..	2.4	
	N-S	iS	2	13	29	..	..	3.4	
June 23	E-W	i	3	12	28	..	..	
	N-S	i	3	12	30	..	..	
June 23	E-W	i	4	17	2	..	..	
	N-S	i	4	17	0	..	..	
June 23	E-W	i	4	57	24	..	..	
	N-S	i	4	57	24	..	..	
June 23	E-W	O	9	26	45	..	..	2.1	
		iP		27	18	..	..	2.5	
		iS		27	43	..	..	2.5	
	N-S	O	9	26	46	..	..	2.1	
		iP		27	19	..	..	2.5	
		iS		27	44	..	..	2.5	
June 23	E-W	i	10	8	8	..	..	1.0	
	N-S	i	10	8	5	..	..	0.6	
June 23	E-W	i	10	35	19	..	..	
	N-S	i	10	35	20	..	..	
June 23	E-W	i	10	35	49	..	..	
	N-S	i	10	35	50	..	..	
June 23	E-W	iS	11	1	55	..	..	1.5	



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929.									
June 23	N-S	iS	11	1	55	..	mm. 1.8		
June 23	E-W	i	11	50	58				
	N-S	i	11	50	57				
June 23	E-W	iS	12	59	55	..	2.0		
	N-S	iS	12	59	54	..	1.1		
June 23	E-W	O iP iS	16	38	54	..	..	2.2	
				39	28				
				39	54	..	0.8		
	N-S	iS	16	39	52	..	0.9		
June 23	E-W	i	19	3	16	..	0.8		
	N-S	i	19	3	19	..	1.1		
June 23	E-W	O iP iS	19	15	39	..	..	1.6	
				16	3				
				16	24	..	2.2		
	N-S	O iP iS	19	15	35	..	..	1.7	
				16	1				
				16	23	..	3.6		
June 23	E-W	O iP iS	20	18	28	..	..	1.8	
				18	56				
				19	19	..	1.3		
	N-S	iS	20	19	19	..	1.0		
June 23	E-W	L	22	20	—	..	..	..	} L waves from distant origin.
	N-S	L	22	—	—	..	..	..
June 24	E-W	i	3	33	9				
June 24	E-W	i	7	47	2				
June 24	E-W	i	11	49	7				
	N-S	i	11	49	5				
June 24	E-W	O iP iS	11	53	11	..	..	2.1	Felt at New Plymouth, R.-F. 3; also at Nelson.
				53	44				
				54	9	..	13.0		
	N-S	O iP iS	11	53	18	..	..	1.8	
				53	42				
				54	5	..	16.0		
June 24	E-W	i	14	11	25	..	1.0		
	N-S	i	14	11	24	..	1.6		
June 24	E-W	i	15	39	34	..	1.6		
	N-S	i	15	39	34	..	1.0		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 24	E-W	i	15	43	4	..	mm. 0.8		
	N-S	i	15	43	4				
June 24	E-W	O iP iS	19	37	1 29 52 4.0	1.8	Felt at Nelson.
	N-S	O iP iS	19	36	59 29 53 2.0	1.95	
June 24	E-W	iS	21	20	52	..	2.0		
	N-S	iS	21	20	44	..	1.1		
June 24	E-W	i	21	46	18	..	1.0		
	N-S	i	21	46	21	..	0.9		
June 24	E-W	i	22	16	43	..	1.0		
	N-S	i	22	16	41	..	1.0		
June 25	E-W	iP iS	2	11	+ + 8.0	1.6	Time signals failed. (S-P) = 21s. Felt at Hokitika. R.-F. 3-4.
	N-S	iP iS	2	11	+ +	..	8.0	1.6	(S-P) = 21s.
June 25	E-W	i	5	28	0				
	N-S	i	5	28	4				
June 25	E-W	i	5	48	9				
	N-S	i	5	48	9				
June 25	E-W } N-S }	..	6	40	—	Tremors from distant earthquake.
June 25	E-W	i	6	41	32				
June 25	E-W	i	8	4	19	Felt at Karamea. R.-F. 5.
	N-S	i	8	4	31				
June 25	E-W	O iP iS	9	36	58 21 41 18.0	1.55	Felt at Takaka. R.-F. 5-6.
	N-S	O iP iS	9	36	57 20 40 19.0	1.55	
June 25	E-W	i	19	51	6	..	0.8		
	N-S	i	19	51	5	..	0.6		
June 25	E-W	i	20	14	3				



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.		
			h.	m.	s.						
1929. June 26	E-W	O	0	44	37	2.1			
		iP		45	10						
		iS		45	35		4.5				
	N-S	O	0	44	44	1.8			
		iP		45	12						
		iS		45	35		8.5				
June 26	E-W	O	2	2	10	1.6	Felt at Karamea. R.-F. 3.		
		iP		2	34						
		iS		2	55		2.0				
	N-S	O	2	2	11	1.5			
		iP		2	34						
		iS		2	53		2.7				
June 26	E-W	O	3	46	26	2.1			
		iP		46	59						
		iS		47	24		3.2				
	N-S	iS	3	47	23	..	2.0				
	June 26	E-W	O	5	0	2		2.1	
			iP		0	35					
iS				1	0		1.7				
N-S		O	5	0	6	1.95			
		iP		0	36						
		iS		1	0		1.0				
June 26	E-W	O	8	16	33	0.7	Sharp tilt to west, recovering after 9 secs. Felt in Wellington and Wairarapa districts. R.-F. 4.		
		iP		16	44						
		iS		16	53						
	N-S	O	8	16	31	0.8			
		iP		16	43						
		iS		16	53						
June 26	E-W	O	9	15	44	1.7	Felt at Karamea. R.-F. 3.		
		iP		16	10						
		iS		16	32		1.6				
	N-S	iS	9	16	33	..	1.0				
	June 26	E-W	O	11	10	6		2.2	Felt in both Islands ; at Reefton, Hokitika, and Christchurch R.-F. 5.
			iP		10	40					
iS				11	6		6.0				
N-S		O	11	10	7	2.1			
		iP		10	40						
		iS		11	5		5.0				
June 26	E-W	i	15	7	36						
	N-S	i	15	7	38						
June 26	E-W	i	17	17	49	..	0.8				
	N-S	i	17	17	—						



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. June 26	E-W	O	20	5	24	1.8	
		iP		5	52				
		iS		6	15	..	3.0		
	N-S	O	20	5	20	1.95	
		iP		5	50				
		iS		6	14	..	3.1		
June 27	E-W	iS	5	14	50	..	2.4		
	N-S	iS	5	14	51	..	1.2		
June 27	E-W	O	9	5	56	2.2	Felt in both Islands ; at Kara- mea R.-F. 5-6.
		iP		6	30				
		iS		6	56	..	14.5		
	N-S	O	9	5	59	2.3	
		iP		6	35				
		iS		6	52	..	15.0		
June 27	E-W	O	12	47	8	80.7	Distant earthquake.
		iP		59	31				
		iPR ₁	13	3	13				
		iPR ₂		4	48				
		iS		9	39	7	29		
		iSR ₁		15	38	24	173		
		SR ₂		19	53				
		M		22	58	43	1,500		
		L		27	3				
		M ₁		28	7	25	330		
		M ₂		31	7	21	235		
	M ₃		35	42	20	211			
	M ₄		39	32	18	178			
	M ₅		43	37	17	200			
	M ₆		48	9	17	148			
	N-S	O	12	47	2	81.5	
		iP		59	30				
		M	13	1	3	9	34		
		iPR ₁		2	44	12	69		
		iPR ₂		4	43				
		iS		9	43	10	55		
		iSR ₁		15	48	15	97		
iL			26	39					
M ₁			27	19	25	230			
M ₂			36	41	19	300			
M ₃			41	58	17	280			
M ₄		45	54	18	249				
June 27	E-W	i	15	36	24	..	2.0	..	Felt at Karamea. R.-F. 4.
	N-S	i	15	36	23	..	2.2		
June 27	E-W	iS	16	42	53	..	2.1	..	Felt at Karamea. R.-F. 4.
	N-S	O	16	42	6	1.7	
		iP		42	32				
		iS		42	54	..	2.1		
June 27	E-W	i	18	32	20	..	1.0	..	Felt at Karamea. R.-F. 3.



Date.	Direction.	Phase.	Time.	Period.	A.	△ Degrees.	Remarks.
			h. m. s.	s.	mm.		
1929. June 27	N-S	i	18 32 35	..	0.6		
June 28	E-W	i	1 25 18	..	..	..	} Tremors from distant origin.
	N-S	i	1 25 —	..	..	..
June 28	E-W	i	4 53 48				
June 28	E-W	O iP iS	7 11 9 11 43 12 9	.. ..	.. 7.0	2.2	Felt at Westport. R.-F. 5.
	N-S	O iP iS	7 11 7 11 43 12 10	.. ..	.. 5.0	2.3	
June 28	E-W	i	9 43 20				
	N-S	i	9 43 17				
June 28	E-W	O iP iS	10 3 36 4 6 4 30	.. ..	.. 4.1	1.95	Felt at Westport. R.-F. 5.
	N-S	O iP iS	10 3 41 4 5 4 26	.. ..	.. 3.6	1.6	
June 28	E-W	i	13 29 35				
June 28	E-W	i	16 39 3	..	1.0		
	N-S	i	16 39 —				
June 28	N-S	—	18 — —	..	..	..	Tremors from distant origin.
June 29	E-W	i	1 21 13	..	1.0		
	N-S	i	1 21 16	..	1.2		
June 29	E-W	iS	5 6 18	..	4.2		
	N-S	iS	5 6 16	..	2.0		
June 29	E-W	O iP iS	15 45 38 46 12 46 38	.. ..	.. 11.0	2.2	Felt in both Islands; at Grey- mouth R.-F. 5-6.
	N-S	O iP iS	15 45 49 46 15 46 37	.. ..	.. 18.0	1.7	
June 29	E-W	iS	17 7 7	..	2.0	..	Felt in both Islands.
	N-S	iS	17 7 7	..	1.8		
June 29	E-W	i	19 45 49				
	N-S	i	19 45 49				

Date.	Direction.	Phase.	Time.			Period.	A.	△ Degrees.	Remarks.
			h.	m.	s.				
1929. June 30	E-W	i	1	49	9	..	mm. 1.4		
	N-S	i	1	49	9	..	1.0		
June 30	E-W	i	2	52	43	..	1.1		
	N-S	i	2	52	47	..	1.0		
June 30	E-W	i LM	3	4	25 36 55	.. 15	μ 18	..	Distant earthquake.
	N-S	i L	3	4	24 25 —	19	25		
June 30	E-W	i	3	6	+				
	N-S	i	3	6	+				
June 30	E-W	i	4	49	27	..	mm. 1.1		
	N-S	i	4	49	29	..	1.1		
June 30	E-W	O iP iS	7	27	2 27 16 27 27	.. ..	.. 10.0	0.9	Felt extensively in North Island ; also at Nelson. R.-F. 4.
	N-S	O iP iS	7	27	1 27 15 27 26	.. ..	.. 12	0.9	
June 30	E-W	i	13	7	26				
	N-S	i	13	7	24				

Register from Suva, Fiji, for 1929, 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, E-W, T = 7.5 secs.; N-S, T = 10.2 secs. Undamped.

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

Date.	Direction.	Phase.	Time.	Amplitude.	Δ Degrees.	Remarks.
1929.			h. m.	mm.		
April 2	E-W	i	20 20.5			
	N-S	e	20 20.9			
April 7	E-W	e	20 13.9			
	N-S	e	20 14.2			
April 8	E-W } N-S }	..	18 —	..	..	Tremors.
April 11	E-W	O P iS M	16 50.8 51.8 52.6 54.4	.. 1.6	4	
	N-S	O P iS M	16 50.7 51.9 52.8 53.1	.. 1.3	4.5	
April 11	E-W	e	22 8.9			
	N-S	e	22 8.8			
April 14	E-W	i	19 29.6			
	N-S	e i	19 28.0 31.0			
April 14	E-W } N-S }	..	20 +	..	..	Tremors.
April 15	E-W	i M	16 20.0 25.8	1.0		
	N-S	e i M	16 19.0 24.9 28.5	1.3		
April 16	E-W	e	22 52.3			
	N-S	e	22 52.5			
April 17	E-W	e	1 15.3			
	N-S	e	1 15.1			
April 19	E-W	e i M	12 26.7 27.9 29.9	1.4		
	N-S	e i	12 22.4 27.6			

Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929. April 19	N-S	M	12	29.3	1.3		
April 19	E-W } N-S }	..	20	—	..	..	Tremors
April 24	E-W	e	6	59.5			
	N-S	e	6	59.3			
		i	7	2.2			
		M		3.4	1.0		
April 25	E-W } N-S }	..	3	—	..	..	Tremors.
April 28	E-W	O	6	55.3	..	4.5	
		iP		56.5			
		eS		57.4			
		M		58.0	1.2		
	N-S	O	6	55.3	..	4	
		eP		56.3			
		iS		57.1			
		M		57.2	2.4		
April 28	E-W	e	16	36.1			
		M		39.8	0.8		
	N-S	..	16	30	..	..	Tremors.
April 29	E-W	..	..	..	..	..	Heavy microseisms all day.
April 30	E-W } N-S }	..	8	+	..	..	Tremors. Microseisms all day.
May 1	N-S	..	10	—	..	..	Tremors.
May 1	E-W	i	16	42.1			
		M		43.1	2.5		
	N-S	..	16	—	..	...	Tremors.
May 1	E-W	i	17	21.1	..	..	Confused record. Apparently several
		M		22.1	1.7		local shocks in rapid succession.
		M		25.5	1.6		
		M		28.2	1.1		
May 2	E-W	..	1	30	..	..	Tremors.
	N-S	i	1	32.7			
May 4	E-W } N-S }	..	..	..	..	..	Tremors at intervals.
May 7	E-W	..	16	+	..	..	Tremors.
	N-S	O	16	14.0	..	22½	
		eP		19.2			
		eS		23.3			
May 8	E-W	e	12	52.5			
		M		59.6	1.1		
	N-S	e	12	52.0			
		M	13	0.5	1 +		

Date.	Direction.	Phase.	Time.	Amplitude.	Δ Degrees.	Remarks.
1929. May 10	E-W	O P iS M	h. m. 17 17.7 22.4 26.1 27.2	mm. .. 1.0	20	
May 10	N-S	O P iS M	17 17.9 22.3 26.2 28.0	1.9	19	
May 15	E-W } N-S }	..	20 —	..	..	Tremors.
May 16	E-W	..	12 30	..	..	Tremors.
	N-S	e	12 28.2	..	..	Δ T not known.
May 19	N-S	e	20 11.6			
May 20	E-W } N-S }	..	5 —	..	..	Tremors.
May 21	E-W } N-S }	..	16 —	..	..	Tremors and L waves.
May 22	E-W	i i M	0 28.3 29.6 30.6	0.8		
	N-S	i i i M	0 29.4 31.5 32.9 34.2	0.9		
May 22	E-W	..	20 —	..	..	Slight tremors.
	N-S	e M	20 14.5 36.2	1.0		
May 26	E-W	e i M	13 13.2 16.0 18.0	1.0		
	N-S	e M	13 8.4 15.3	2.1		
May 27	E-W	i	14 59.9			
	N-S	e	14 58.9			
May 27	E-W	i	15 48.9			
	N-S	..	15 50	..	..	Tremors.
May 27	E-W	e	16 17.0			
	N-S	e	16 16.8			
May 28	E-W } N-S }	..	6 —	..	..	Tremors.
May 30	E-W } N-S }	..	..	..	..	Tremors at intervals.
June 4	E-W	i	15 31.1	..	..	Tremors.

Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929, June 4	N-S	i	15	30.8	..	..	Tremors.
June 12	E-W	e	2	14.9			
	N-S	e M	2	15.1 16.4	1.8		
June 12	E-W } N-S }	..	12	--	..	..	Tremors.
June 13	E-W } N-S }	..	1	---	..	..	Tremors and L waves.
June 13	E-W	PR iS SR iL	9	37.4 41.7 47.3 52.1	1.0 s		
	N-S	O P PR iS M iSR ₁ iL M	9	24.2 34.0 37.4 41.8 43.4 45.5 53.7 56.9	.. 2.1 1.0	56	
June 13	E-W } N-S }	—	23	—	..	..	Tremors.
June 15	E-W } N-S }	—	15	—	..	..	Tremors. Faint records.
June 16	N-S	i	1	1.8			
June 16	E-W	i i M	1	38.0 42.5 46.4	3.0		
	N-S	e i M	1	36.4 42.8 43.6	1.7		
June 16	E-W	iP	22	53.05	..	..	New Zealand earthquake. Records invisible for about 2 hours after arrival of P wave.
	N-S	iP	22	53.05			
June 17	E-W } N-S }	—	—	—	..	..	Indefinite tremors all day, probably from New Zealand.
June 18	E-W } N-S }	..	3	—	..	..	Heavy tremors. Slight tremors all day.
June 18	N-S	i	19	36.0	..	..	New Zealand.
	N-S	..	21	10	..	..	Irregular disturbance, probably from New Zealand.
June 19	N-S	..	3	40	..	..	Tremors.
June 19	N-S	O eP S L	7	31.3 41.6 49.9 59.4	.. s	61	Philippine Islands.

Date.	Direction.	Phase.	Time.	Amplitude.	Δ Degrees.	Remarks.
1929.			h. m.	mm.		
June 19	N-S	..	9 30	..	..	Irregular disturbance from New Zealand. Near edge of record.
June 19	N-S	i	19 23.7			
June 19	N-S	i	20 8.9			
June 19	N-S	..	22 45	..	..	Slight tremors from New Zealand.
June 21	E-W	e	7 21.1			
	N-S	e	7 18.3			
		e	20.9			
June 22	E-W	iP S(?)	15 36.2 41.0	.. s	..	New Zealand.
	N-S	O eP iS iL M	15 30.2 36.2 41.0 44.1 50.6	.. 2.1	27	
June 22	E-W	O iP S	18 39.1 45.1 49.9	.. s	27	New Zealand.
	N-S	O eP S iL M	18 39.7 45.3 49.7 52.9 19 0	.. 1.0	25	
June 25	E-W	i	15 56.6			
	N-S	i	15 58.1			
June 27	E-W } N-S }	—	4 —	..	..	Tremors.
June 27	E-W } N-S }	—	9 —	..	..	Tremors from New Zealand.
June 27	E-W	i S(?) L	13 2.2 6.2 16.7			
	N-S	e S(?) M L	13 2.7 6.7 16.9 23.2	.. 1.2	..	Confused records of distant earthquake.
June 29	E-W } N-S }	—	1 —	..	..	Tremors.

C. E. ADAMS,
New Zealand Government Seismologist.



EARTHQUAKE REPORTS.—NEW ZEALAND AND FIJI.

Register from Dominion Observatory, Wellington, New Zealand, for 1929, July, August, and September.

(Tables used: British Association Tables (Turner) for all waves, except S_cP_cS or [S], which is from Tables in I.S.S. 1923, January, February, March.)

LATITUDE: $41^{\circ} 17' S$. LONGITUDE: $174^{\circ} 46' E$. HEIGHT ABOVE SEA-LEVEL: 401.5 ft.

INSTRUMENTS.

- (a) Milne Horizontal Seismograph No. 20: E-W component; magnification, 5.6; period, $T = 19.0$ seconds; undamped.
- (b) Milne-Shaw Horizontal Seismograph No. 13: N-S component; magnification, 150; period, $T = 10.0$ seconds; magnetic damping, 20:1; sensitivity, 20.4 mm. Constants determined, 1929, October 1st.
- (c) Milne-Shaw Horizontal Seismograph No. 36: E-W component; magnification, 150; period, $T = 9.5$ seconds; magnetic damping, 20:1; sensitivity, 23.7 mm. Constants determined, 1929, September 30th.

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

Director: C. E. ADAMS.

NOTE.—In this report the amplitudes of the most important local shocks are expressed in millimetres, measured directly from the seismograms. Other amplitudes are in microns.

Date.	Direction.	Phase.	Time.	Period.	A. ¹	Δ Degrees.	Remarks.
			h. m. s.	s.	mm.		
1929. July 1	E-W	i	4 2 26				
	N-S	i	4 2 54				
July 1	E-W	O iP iS	17 10 20 10 44 11 5	.. ..	.. 2.0	1.6	Felt at Takaka.
	N-S	O iP iS	17 10 24 10 47 11 7	.. ..	.. 2.1	1.55	
July 1	E-W	i	22 29 58	..	1.0		
	N-S	i	22 30 0	..	1.0		
July 1	E-W	O iP iS	23 28 30 28 54 29 15	.. ..	.. 7.0	1.6	Max. R.-F. 5, at Takaka and Westport.
	N-S	O iP iS	23 28 29 28 53 29 14	.. ..	.. 9.4	1.6	

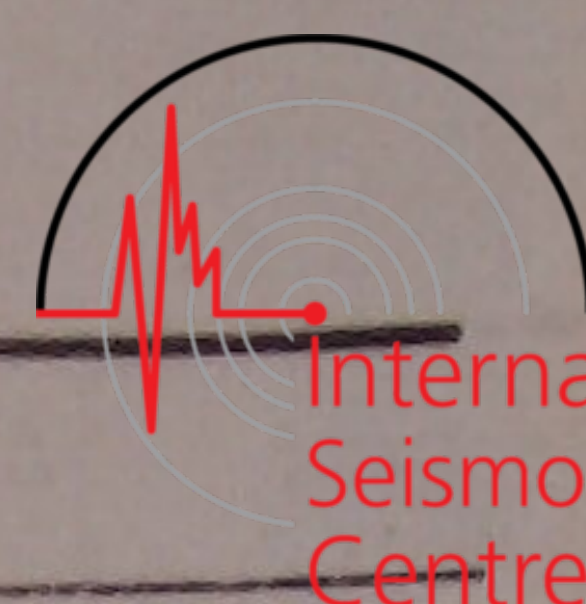
¹A = Amplitude.

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. July 2	N-S	..	0	30	—	..	..	..	Irregular tremors from distant origin.
July 2	E-W	i	9	3	55	..	1.0	..	R.-F. 5 at Westport.
	N-S	i	9	3	54	..	1.1		
July 2	E-W	O iP iS	14	53	25 53 58 54 23	..	.. 2.0	2.1	R.-F. 4 at Takaka.
	N-S	O iP iS	14	53	24 53 57 54 22	..	.. 1.1	2.1	
July 2	E-W	O iP iS	20	41	15 41 45 42 9	..	.. 13.5	1.95	R.-F. 3, at Nelson and Grey-mouth.
	N-S	O iP iS	20	41	20 41 26 42 8	..	.. 5 +	1.7	
July 3	E-W	O iP iS	6	18	56 19 19 42	..	.. 6.5	1.8	R.-F. 5, at Westport and Grey-mouth.
	N-S	O iP iS	6	18	53 19 17 19 38	..	.. 6.0	1.6	
July 3	E-W	O iP iS	11	14	46 15 19 44	..	.. 8.0	2.1	R.-F. 7, at Takaka.
	N-S	O iP iS	11	14	54 15 20 15 42	..	.. 6 +	1.7	
July 3	E-W } N-S }	..	18	+	..	..	..	..	Tremors and L waves.
July 3	E-W	i	23	27	56				
	N-S	i	23	28	3				
July 4	E-W	i	1	26	44				
	N-S	i	1	26	44				
July 4	E-W	i	2	44	1	..	0.9		
	N-S	i	2	44	1	..	1.0		
July 4	E-W	i	6	38	41				
	N-S	i	6	38	40				
July 4	E-W	i	7	9	24	..	0.7		
	N-S	i	7	9	21	..	0.6		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.	
			h.	m.	s.					
1929. July 4	E-W	i	7	22	1	..	1.0	..	R.-F. 4, at Wanganui and Nelson.	
	N-S	i	7	22	2	..	0.9			
July 4	E-W	i	18	22	14	..	0.7			
	N-S	i	18	22	14	..	0.8			
July 4	E-W	i	19	8	18	..	0.7	..	R.-F. 4, at Wanganui and Nelson.	
	N-S	i	19	8	15	..	0.5			
July 4	E-W	O iP iS	22	45	43 46 41 4.6	2.1		
	N-S	O iP iS	22	45	50 46 41	.. .. ..	.. .. 2.5	1.8
July 4	E-W	O iP iS	22	52	25 52 16 12.0	1.8		R.-F. 7, at Glenhope.
	N-S	O iP iS	22	52	32 52 17	.. .. ..	.. .. 14.0	1.6
July 4	E-W	O iP iS	22	58	57 59 42 2.1	1.6		
	N-S	O iP iS	22	59	0 59 43	.. .. ..	.. .. 2.7	1.55
July 5	E-W	i	4	19	38	..	0.9			
	N-S	i	4	19	36					
July 5	E-W	iS	5	5	33	..	2.0			
	N-S	iS	5	5	32	..	1.5			
July 5	E-W	i	8	14	18					
	N-S	i	8	14	18					
July 5	E-W	O iP iS	13	2	26 2 20 2.0	1.95	R.-F. 5, at Westport.	
	N-S	O iP iS	13	2	37 3 20	.. .. ..	.. .. 2.0	1.55
July 5	E-W	iS L M	14	42	40 0 23 19	μ .. 53	..		Aleutian Islands.
	N-S	O eP(?)	14	18	12 31 35					

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. July 5	N-S	iS	14	42	40	s.	μ		
		iSR ₁		48	45				
		SR ₂		53	20				
		L	15	4	36				
		M		25	40	19	52		
July 5	E-W	S	23	0	—	..	..	..	Distant shock.
		LM		24	42				
July 5	N-S	iS	22	59	55				
		L	23	21	44				
		M		26	24	20	36		
July 6	E-W } N-S }	..	1	—	—	..	..	..	Tremors from distant origin.
July 6	E-W } N-S }	..	3	—	—	..	..	..	Tremors from distant origin.
July 6	E-W	O	6	38	42	..	mm. ..	1.95	Felt in both Islands ; R.-F. 7 at Murchison.
		iP		39	12				
		iS		39	36	..	52 +		
July 6	N-S	O	6	38	42	..	..	1.95	
		iP		39	12				
		iS		39	36				
July 6	E-W	O	6	44	36	..	..	1.7	Felt at Murchison.
		iP		45	2				
		iS		45	24	..	3.0		
July 6	N-S	iS	6	45	24	..	..	2.0	
		i	7	0	2				
		i	7	0	5				
July 6	E-W	O	7	21	0	..	..	1.95	Felt at Murchison.
		iP		21	30				
		iS		21	54	..	1.3		
July 6	N-S	O	7	20	54	..	..	1.1	
		iP		21	27				
		iS		21	52	..	1.1		
July 6	E-W	O	10	29	2	..	..	1.95	
		iP		29	32				
		iS		29	56	..	6.0		
July 6	N-S	O	10	28	58	..	..	2.2	
		iP		29	32				
		iS		29	58	..	5 +		
July 6	E-W } N-S }	..	11	—	—	..	..	..	Tremors from distant origin.
July 6	E-W	O	12	15	36	..	..	1.7	R.-F. 5, at Greymouth.
		iP		16	2				
		iS		16	24	..	1.6		
July 6	N-S	O	12	15	32	..	..	1.95	

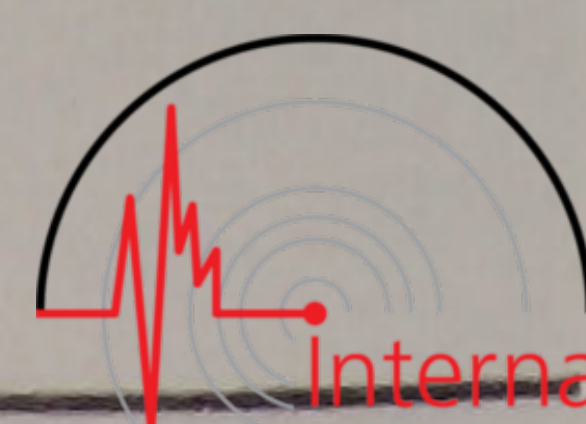
Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. July 6	N-S	iP iS	12	16	2 26	s. ..	mm. 1.0		
July 6	E-W	O iP iS	14	1	37 2 10 2 35	.. ..	.. 3.0	2.1	
	N-S	iS	14	2	32	..	1.5		
July 6	E-W	O iP iS	14	13	10 13 38 14 1	.. ..	.. 1.1	1.8	
	N-S	O iP iS	14	13	11 13 37 13 59	.. ..	.. 1.1	1.7	
July 7	E-W	iS	0	17	10	..	2.0	..	R.-F. 5, at Westport and Grey- mouth.
	N-S	iS	0	17	10	..	2.0		
July 7	E-W	O iP iS	5	1	47 2 17 2 41	.. ..	.. 1.2	1.95	Felt at Nelson.
	N-S	iS	5	2	42	..	1.1		
July 7	E-W	i	7	35	26	..	1.2	..	R.-F. 2, at Wellington.
	N-S	i	7	35	24	..	1.2		
July 7	E-W	i	13	9	54	..	1.1	..	R.-F. 5, at Greymouth and Hoki- tika.
	N-S	i	13	9	54	..	1.1		
July 7	E-W	iS	19	19	54	..	2.0	..	R.-F. 4, at Nelson.
	N-S	iS	19	19	50	..	2.0		
July 7	E-W	P PR ₁ iS SR ₂ M L M ₁ M ₂	21	36	— 40 5 46 50 56 54	45	1400	μ	
	N-S	O P iS iSR ₁ L M ₁ M ₂	21	22	51 35 58 46 47 53 54	.. 15	.. 85	88.4	Aleutian Islands.
July 7	N-S	i	23	27	30	..			
July 7	E-W	L M	23	30	— 52 46	.. 20	.. 167	..	Distant shock.
	N-S	L	23	30	—				



Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. July 7	N-S	M	23	56	34	20	μ 200 mm.		
July 8	E-W	O	0	42	42	1.95	Felt in both Islands; R.-F. 6 at Reefton.
		iP		43	12				
		iS		43	36		..	45.0	
July 8	N-S	O	0	42	42	2.1	
		iP		43	15				
		iS		43	40		..	40+	
July 8	E-W	i	1	27	36	..	2.1		
	N-S	i	1	27	34	..	2.4		
July 8	E-W	O	18	58	32	2.1	R.-F. 6, at Murchison; also felt at Wellington.
		iP		59	5				
		iS		59	30		..	24.0	
July 8	N-S	O	18	58	33	2.1	
		iP		59	6				
		iS		59	31		..	20+	
July 8	E-W	O	19	35	6	1.7	
		iP		35	29				
		iS		35	51		..	2.0	
July 8	N-S	iS	19	35	54	..	1.4		
		E-W	i	22	10	21			
		N-S	i	22	10	20			
July 9	E-W	i	5	0	50				
	N-S	i	5	0	51				
July 10	E-W	i	2	12	45	..	0.7		
	N-S	i	2	12	47	..	0.6		
July 10	E-W	O	3	50	58	1.95	
		iP		51	28				
		iS		51	52		..	4.4	
July 10	N-S	O	3	51	3	1.7	
		iP		51	29				
		iS		51	51		..	5.7	
July 10	E-W	i	13	22	19	R.-F. 3, at Nelson.
	N-S	i	13	22	19				
July 10	E-W	O	22	1	12	1.55	
		iP		1	35				
		iS		1	55		..	2.8	
July 10	N-S	O	22	1	9	1.6	
		iP		1	33				
		iS		1	54		..	1.4	
July 11	E-W	O	0	22	38	1.55	R.-F. 5, at Nelson.
		iP		23	1				
		iS		23	21				

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. July 11	N-S	O	0	22	45	1.35	
		iP		23	5				
		iS		23	22	..	5.0		
July 11	N-S	i	9	42	34				
July 11	E-W	eL	9	43	46	Distant shock.
	N-S	i	9	43	6				
July 11	E-W	e	16	48	27	Distant shock
	N-S	e	16	47	35				
July 11	E-W	L	21	40	—	Distant shock.
	N-S								
July 12	E-W	O	2	14	20	1.95	
		iP		14	50				
		iS		15	14	..	0.9		
	N-S	iS	2	15	14	..	1.0		
July 12	E-W	O	14	14	48	2.1	R.-F. 4, at Murchison.
		iP		15	21				
		iS		15	46	..	1.0		
	N-S	O	14	14	48	2.1	
		iP		15	21				
		iS		15	46	..	1.0		
July 12	E-W	O	17	45	18	2.2	
		iP		45	52				
		iS		46	18	..	1.0		
	N-S	iS	17	46	20	..	0.6		
July 12	E-W	iS	23	39	44	..	1.2	..	R.-F. 4, at Murchison.
	N-S	iS	23	39	40	..	1.0		
July 13	E-W	O	14	50	58	38.0	Suva $\Delta = 30^\circ$; Hong Kong (P) = 14 h. 58 m. 44 s. Probable epicentre 10° S., 148° E.
		P		58	36				
		iS	15	4	36				
		SR ₂		8	0				
	N-S	O	14	50	47	38.8	
		P		58	31				
		iS	15	4	36				
		SR ₂		8	3				
		L		10	—				
July 13	E-W	iS	18	25	26	..	3.6		
	N-S	iS	18	25	22	..	2.0		
July 13	E-W	O	18	26	9	1.8	R.-F. 5, at Murchison.
		iP		26	37				
		iS		27	0	..	0.8		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. July 15	N-S	i	20	59	10	..	mm. 1.0		
July 16	E-W	e	1	2	—	..	..	Confused tremors from distant origin.	
	N-S	e	1	3	—	..	..
July 16	E-W	O	14	58	42	..	..	1.7	R.-F. 4, at Murchison.
		iP		59	8	..	1.8		
		iS		59	30	..	1.8		
July 16	N-S	O	14	58	44	..	..	1.7	
		iP		59	10	..	1.7		
		iS		59	32	..	1.7		
July 16	E-W	i	22	32	57	..	..	R.-F. 5, at Waimate, South Island.	
	N-S	i	22	32	55	..	..
July 17	E-W	iS	2	15	41	..	..	..	R.-F. 6, at Murchison.
		O	2	14	48	..	..	1.7	
		iP		15	14	..	1.0		
July 17	E-W	L	9	22	—	20	s	..	Distant shock.
		N-S	i(S)?	9	2	41	
July 17	E-W	L		23	—	22	s	..	R.-F. 4, at Murchison.
		i	16	2	0	..	..	..
July 17	N-S	i	16	2	0	..	..	..	Distant shock.
		e	20	6	—	..	..	..
July 17	N-S	e	20	6	49	..	..	..	Distant shock.
		e	20	6	49	..	..	..
July 18	E-W	O	5	21	14	..	..	2.1	R.-F. 5, at Murchison.
		iP		21	47	..	23.0		
		iS		22	12	..	23.0		
July 18	N-S	O	5	21	12	..	..	2.1	R.-F. 5, at Murchison.
		iP		21	45	..	8+		
		iS		22	10	..	8+		
July 18	E-W	i	10	45	12	..	1.0	..	R.-F. 5, at Murchison.
	N-S	i	10	45	12	..	1.0	..	
July 19	E-W	i	18	36	+	..	..	..	R.-F. 4, at Westport.
		N-S	i	18	36	58	
July 20	E-W	i	6	8	47	..	1.1	..	R.-F. 4, at Westport.
		N-S	i	6	8	40	..	0.7	
July 20	E-W	O	7	25	16	..	..	1.8	Felt at Murchison.
		iP		25	44	..	3.1		
		iS		26	7	..	3.1		



Date.	Direction.	Phase.	Time.			Period.	A.		Δ Degrees.	Remarks.
			h.	m.	s.		s.	mm.		
1929. July 20	N-S	O iP iS	7	25	17 45 8	..	..	1.8	
July 21	E-W	i	2	55	46	..	1.2	..	Felt at Murchison.	
	N-S	i	2	55	51	..	0.8			
July 21	E-W	e	6	9	—	..	..	..	Tremors from distant origin.
	N-S	e	6	10	—					
July 21	E-W	L	10	19	—	20	s	..	Distant shock.	
	N-S	i	10	19	57	12	s			
July 21	E-W	O iP iS	22	43	25 55 19	..	9.0	1.95	R.-F. 5, at Karamea and Westport.	
	N-S	O iP iS	22	43	20 53 18	..	12+			
July 22	E-W	i	5	55	43	..	..	..	R.-F. 4, at Karamea.
	N-S	i	5	55	40					
July 22	E-W	i	6	35	4	..	0.7	..	R.-F. 4, at Karamea.	
	N-S	i	6	35	7	..	0.9			
July 22	E-W	i	10	47	43	..	1.0	..	R.-F. 4, at Karamea.	
	N-S	i	10	47	47	..	0.7			
July 22	E-W	O iP iS	16	45	24 57 22	..	..	2.1	R.-F. 3, at Takaka and Westport.
	N-S	iS	16	46	22	..	1.0			
July 22	E-W	O iP iS	19	20	49 17 40	..	..	1.8	R.-F. 5, at Karamea.
	N-S	iS	19	21	39	..	1.4			
July 22	E-W	O iP iS	19	23	10 34 55	..	..	1.6	R.-F. 4, at Nelson and Karamea.
	N-S	O iP iS	19	23	13 36 56	..	..	1.55	
July 23	E-W	i	5	43	3	..	1.0	..	R.-F. 5, at Westport.	
	N-S	i	5	43	2	..	0.4			
July 23	E-W	L	20	2	—	..	..	..	Distant shock.
	N-S	L	20	0	—					

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. July 23	E-W	O iP iS	21	51	24 48 9	..	..	1.6	R.-F. 4, at Karamea.
	N-S	O iP iS	21	51	22 48 10	..	..	1.7	
July 24	E-W } N-S }	..	3	30	—	..	..	..	Tremors from distant origin.
July 24	E-W	i	14	17	18				
	N-S	i	14	17	18				
July 24	E-W	i	14	29	11	..	0.8	..	R.-F. 4, at Greymouth.
	N-S	i	14	29	14	..	0.7		
July 24	E-W	O iP iS	16	31	51 19 42	..	..	1.8	R.-F. 5, at Takaka.
	N-S	iS	16	32	42	..	1.3		
July 25	E-W	i	17	36	10				
	N-S	i	17	36	12				
July 26	E-W	e M	11	53	28 48	.. 14	μ .. 56	..	Distant shock.
	N-S	i e	11	47	53 13	10	s		
July 27	E-W	i	0	4	30				
	N-S	i	0	4	35				
July 27	E-W	O iP iS	5	17	59 32 57	..	..	2.1	R.-F. 5, at Karamea.
	N-S	O iP iS	5	17	57 30 55	..	..	2.1	
July 27	E-W	O iP iS	14	20	16 49 14	..	..	2.1	R.-F. 5, at Reefton.
	N-S	O iP iS	14	20	12 46 12	..	..	2.2	
July 27	E-W	iS	14	56	50	..	1.2		R.-F. 7, at Takaka.
	N-S	O iP iS	14	56	5 29 50	..	1.2		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. July 28	E-W	i	7	47	49	..	mm. 1.0		
	N-S	i	7	47	46	..	0.9		
July 28	E-W	i	12	50	13	..	1.1	.. Felt at Takaka.	
	N-S	i	12	50	14	..	1.0		
July 28	E-W	O iP iS	12	59	0 30 55	..	.. 1.7	1.95 R.-F. 4, at Takaka.
	N-S	O iP iS	12	58	55 29 55	..	.. 1.2	2.2
July 28	E-W	i	19	32	13	..	1.0	.. R.-F. 3, at Nelson and Westport.	
	N-S	i	19	32	15	..	0.8		
July 29	E-W	i	1	30	25	..	1.0		
	N-S	i	1	30	28	..	0.9		
July 29	E-W	i	11	3	8	..	1.0		
	N-S	i	11	3	11	..	1.0		
July 29	E-W	L	11	16	—	..	..	.. Tremors from distant origin.
	N-S	..	11	20	—	..	..
July 30	N-S	..	8	30	—	..	..	.. Slight tremors from distant origin.
July 30	E-W	i	14	7	6	..	1.1	.. R.-F. 4, at Westport.	
	N-S	iS	14	7	10	..	1.1		
July 31	E-W	i	6	6	50	..	..	.. R.-F. 4, at Takaka.
	N-S	i	6	6	40	..	..
July 31	E-W	i	12	16	40	..	..	.. R.-F. 3, at Westport.
	N-S	i	12	16	44	..	..
Aug. 1	E-W	iS(?)	5	25	37	..	..
	N-S	S(?)	5	25	—	..	..
Aug. 1	E-W	eL	8	22	—	11	s		
	N-S	L	8	23	—	10	s		
Aug. 1	E-W	i	15	2	59	..	1.0	.. R.-F. 3, at Wanganui and Westport.	
	N-S	i	15	2	29	..	0.8		
Aug. 2	E-W	iS	4	0	35	..	1.0		
	N-S	iS	4	0	35	..	1.0		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Aug. 2	E-W	..	9	30	—	..	..	..	Tremors from distant origin.
	N-S	L	9	29	—	12	s		
Aug. 2	E-W	i	11	16	8	..	1.0	..	R.-F. 3, at Westport.
	N-S	i	11	16	7	..	1.0		
Aug. 2	E-W	i	13	13	49	..	1.0		
	N-S	i	13	13	49	..	1.1		
Aug. 3	E-W	O iP iS	6	56	58 57 41	.. .. ..	.. 3.4	1.55	R.-F. 5, at Greymouth.
	N-S	O iP iS	6	56	57 57 45	.. .. ..	.. 2.7	1.7	
Aug. 3	E-W	e	13	0	15				
	N-S	e	12	59	51				
Aug. 3	E-W	O iP iS	14	56	49 57 17	.. .. ..	.. 3.0	1.0	
	N-S	O iP iS	14	56	52 57 18	.. .. ..	.. 2.8	0.95	
Aug. 3	E-W	e eL	15	8	9 14 39	12	s		
	N-S	e L	15	5	20 14 13	13	s		
Aug. 3	E-W	i	17	17	45	..	1.0		
	N-S	i	17	17	45	..	1.0		
Aug. 3	E-W	i	19	13	1	..	0.8		
	N-S	i	19	13	0				
Aug. 4	E-W	O iP iS	8	2	13 2 36 2 56	.. .. ..	.. 1.9	1.55	
	N-S	iS	8	2	54	..	2.0		
Aug. 4	E-W	O iP iS	13	33	12 33 46 34 12	.. .. ..	.. 1.0	2.2	
	N-S	iS	13	34	+	..	1.2		
Aug. 4	N-S	L	22	35	—	..	..	..	Record disturbed by high wind.
Aug. 5	E-W	O	20	16	20	..	..	1.8	R.-F. 3, at Westport.

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Aug. 5	E-W	iP iS	20	16	48 17 11	..	mm. 1.0		
	N-S	O iP iS	20	16	13 16 46 17 11	..	.. 1.0	2.1	
Aug. 6	E-W	i	6	31	39	..	..	..	R.-F. 4, at Takaka.
	N-S	i	6	31	41				
Aug. 6	E-W	O iP iS	22	12	44 13 5 13 23	..	.. 3.2	1.4	R.-F. 6, at Takaka.
	N-S	O iP iS	22	12	45 13 5 13 21	..	.. 3.7	1.3	
Aug. 7	E-W	O iP iS	12	40	27 40 57 41 21	..	.. 8.3	1.95	R.-F. 4, at Takaka, Blenheim, Westport, Reefton.
	N-S	O iP iS	12	40	37 41 1 41 22	..	.. 8.0	1.6	
Aug. 8	E-W	O iP iS	9	50	18 50 48 51 12	..	.. 5.0	1.95	R.-F. 6, at Westport.
	N-S	O iP iS	9	50	22 50 48 51 10	..	.. 2+	1.7	
Aug. 8	E-W	i	10	27	17				
	N-S	i	10	27	18				
Aug. 8	E-W	O iP iS	12	50	21 50 45 51 6	..	.. 1.9	1.6	R.-F. 5, at Westport.
	N-S	O iP iS	12	50	15 50 43 51 3	..	.. 1+	1.7	
Aug. 8	E-W	iS(?) LM	13	21	48 57 22	.. 20	.. s	..	Near Japan.
	N-S	iS(?) eL	13	21	54 40 2				
Aug. 9	E-W	iS	8	13	33	..	2.1	..	R.-F. 2, at Westport.
	N-S	O iP iS	8	12	43 13 7 13 28	..	.. 1.7	1.6	
Aug. 11	E-W	i L	18	12	8 15 —				

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Aug. 11	N-S	i L	18	10	49 17 38	s.	mm.		
Aug. 13	E-W	O	9	23	2	1.55	R.-F. 5, at Takaka.
		iP		23	25	..	..
		iS		23	45	..	2.2		
	N-S	O	9	23	1	1.6	
		iP		23	25	..	..
		iS		23	46	..	2.4		
Aug. 14	E-W	i	2	22	48				
		eS		26	43				
	N-S	O	2	15	56	..	..	28.9
		iP		22	13				
		iPR ₁		23	2				
iS			27	11					
Aug. 15	E-W	i	16	13	0	R.-F. 4, at Nelson.
		L		16	13	0			
Aug. 15	E-W	L	20	45	—	Distant shock.
Aug. 16	E-W	i	21	51	8	Felt at Broome, Western Aus- tralia. Records disturbed by wind.
		L		58	—	20	s		
	N-S	i	21	50	23				
Aug. 17	E-W	O	23	40	20	93	Central America.
		eP		53	46				
		iS	24	5	6				
		eL		25	—	15	s		
Aug. 18	N-S	L	0	30	—	15	s		
Aug. 18	E-W	i	8	20	8				
				8	20	6			
Aug. 18	E-W	iS	8	47	56	Suva $\Delta = 21^\circ$; Manila $\Delta =$ 43°·5; Solomon Islands (?)
		L(?)		49	46				
		M ₁		53	20	19	33		
		M ₂	9	0	6	15	26		
				8	47	—			
Aug. 19	E-W	S	8	47	—				
		iL		53	25				
		M		54	43	14	24		
	E-W	iS	3	5	28				
		SR ₁		11	—				
		L		26	—	18	s		
	N-S	iS	3	5	29				
		iSR ₁		10	40				
		L		25	—	18	s		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Aug. 21	E-W } N-S }	..	1	—	—	..	..	..	Tremors from distant origin.
Aug. 21	E-W	..	5	10	—	..	..	..	Tremors.
Aug. 21	E-W } N-S }	..	8	20	—	..	..	..	Tremors.
Aug. 21	N-S	i	18	16	35	..	..	..	R.-F. 4-5, at Takaka.
Aug. 22	E-W	..	2	—	—	..	..	..	Tremors.
Aug. 22	E-W	PR iS SR ₁ M iL M	7	39	38	.. 6	..	35±	Suva $\Delta = 13^{\circ}.5$; Solomon Islands (?)
	N-S	iPR iS SR ₁ iL M	7	39	12	.. 7	..	..
Aug. 22	E-W	eL	17	2	—	..	..	..	Slight tremors.
	N-S	..	17	—	—	..	..	..
Aug. 22	E-W	O iP iS	17	24	25	..	..	2.2	R.-F. 4, Takaka and Westport.
	N-S	iS	17	25	25	..	..	1.3	
Aug. 24	E-W	i	2	55	54	..	..	0.5	
	N-S	i	2	55	55	..	..	0.9	
Aug. 24	E-W	i	2	58	28	..	..	..	Confused with previous shock.
	N-S	i	2	58	19	..	..	..
Aug. 24	E-W	i	4	47	+	..	..	..
	N-S	i	4	47	39	..	..	..
Aug. 24	E-W	O iP iS	15	55	13	..	..	1.95	R.-F. 4, at Westport and Grey-mouth.
	N-S	O iP iS	15	55	13	..	..	1.95	
Aug. 25	E-W	i	3	40	—	..	..	..
	N-S	..	3	40	—	..	..	..	Tremors.
Aug. 25	E-W	i	11	50	4	..	..	..

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929.									
Aug. 25	N-S	i	11	50	0	s.	mm.		
Aug. 25	E-W	O iP iS	12	20	18 20 21	..	..	1.8	R.-F. 4, at Takaka.
	N-S	O iP iS	12	20	17 20 21	..	..	1.7	
Aug. 26	E-W	i	2	9	55				
	N-S	i	2	9	56				
Aug. 26	E-W	i	5	4	52				
	N-S	i	5	4	52				
Aug. 27	E-W	O iP iS	19	50	31 50 51	..	..	1.55	R.-F. 5, at Takaka.
	N-S	iP iS	19	50	49 51	..	..	0.6	
Aug. 28	E-W	e L	19	14	35 37	16	s		
	N-S	i L	19	14	38 34	17	s		
Aug. 29	E-W	e	5	36	14				
	N-S	e	5	37	58				
Aug. 29	E-W	i	9	54	43				
	N-S	i	9	54	43				
Aug. 29	E-W	i i	10	18	4 25	..	..	..	Confused record. Possibly two shocks superimposed.
	N-S	i	10	18	6				
Aug. 29	E-W	O iP iS	19	8	23 8 9	..	..	2.1	R.-F. 5-6, at Takaka.
	N-S	O iP iS	19	8	28 8 9	..	..	1.95	
Aug. 31	E-W	O iP iS	0	48	12 36 57	..	..	1.55	R.-F. 6, at Takaka.
	N-S	O iP iS	0	48	12 35 55	..	..	1.6	
Sept. 1	E-W	O iP iS	12	9	26 0 26	..	..	2.2	R.-F. 4, at Takaka and Grey-mouth.

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Sept. 1	N-S	O iP iS	12	9	41	..	..	1.6	
				10	5	..	1.4		
Sept. 1	E-W	i S(?) M LM	15	59	15	..	..	..	Confused record of distant earthquake.
			16	0	41	14	μ 34		
	N-S	i S(?) M	15	59	—	..	..	..
			16	0	40	16	50		
Sept. 2	E-W	i	5	50	33				
	N-S	i	5	50	25				
Sept. 2	E-W	S(?) L	11	33	22	17	s.		
	N-S	iS L	11	33	25	15-20	s.		
Sept. 4	E-W } N-S }	..	8	48	—	13	..	..	Tremors.
Sept. 5	E-W } N-S }	i	21	39	12	..	..	..	Felt at Waipawa, North Island.
Sept. 7	E-W	i	17	43	41				
	N-S	i	17	43	38				
Sept. 8	E-W	O iP iS	19	10	40	..	..	3.1	R.-F. 6, at Arthur's Pass.
	N-S	i	19	12	21				
Sept. 9	E-W	O iP iS	5	15	57	..	..	0.5	Felt in southern portion of North Island.
	N-S	O iP iS	5	15	58				
				16	6				
				16	14				
Sept. 9	E-W	O iP iS	13	2	31	..	..	1.6	Felt generally in northern portion of South Island; R.-F. 6 at Westport. Also felt at Wellington.
				2	55	..	5.0		
				3	16	..	6.0		
	N-S	O iP iS	13	2	33	..	..	1.55	
				2	56	..	..
				3	16	..	6.0		
Sept. 10	E-W	L	21	6	—	14	s		
	N-S	L	21	3	—	17	s		
Sept. 13	E-W	O iP iS	6	7	22	..	..	1.7	R.-F. 5, at Westport; also felt at Wellington.
				7	48	..	..
				8	10	..	6.0		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Sept. 13	N-S	O	6	7	27	1.55	
		iP		7	50	..	..
		iS		8	10	..	9.8		
Sept. 14	E-W	O	1	24	2	2.1	Felt at Reefton.
		iP		24	35	..	..
		iS		25	0	..	1.5		
	N-S	O	1	23	59	2.1	
		iP		24	32	..	..
		iS		24	57	..	1.7		
Sept. 14	E-W } N-S }	..	2	30	—	Tremors.
Sept. 15	E-W	O	16	43	59	1.8	R.-F. 6, at Takaka.
		iP		44	27	..	..
		iS		44	50	..	5.8		
	N-S	O	16	43	59	1.8	
		iP		44	27	..	..
		iS		44	50	..	4 +		
Sept. 16	E-W	O	1	31	7	0.8	Felt at Westport.
		iP		31	19	..	..
		iS		31	29	..	2.0		
	N-S	O	1	31	8	0.8	
		iP		31	20	..	..
		iS		31	30	..	1.7		
Sept. 16	E-W	iS	16	17	10	..	0.8	..	R.-F. 5, at Westport.
	N-S	iS	16	17	11	..	1.0	..	
Sept. 17	E-W	i	19	46	35	
		L	20	—	—	..	..
		M		15	10	16	s		
	N-S	S	19	42	50	
		SR ₂		53	40	..	..
		LM		20	11	15	19			s
Sept. 19	N-S	i	19	50	+	R.-F. 2, at Westport.
Sept. 20	E-W	i	4	41	50	..	0.9	..	R.-F. 2, at Takaka.
	N-S	i	4	41	50	..	0.7	..	
Sept. 21	E-W	iS	10	26	1	..	0.9	..	R.-F. 5, at Westport.
		O	10	25	16	1.55	
		iP		25	39	..	..
		iS		25	59	..	1.3	..	
Sept. 21	E-W	O	21	1	47	1.8	R.-F. 3, at Takaka and Westport.
		iP		2	15	..	..
		iS		2	38	..	1.0		
	N-S	O	21	1	49	1.7	
		iP		2	15	..	..
		iS		2	38	..	1.0		

Date.	Direction.	Phase.	Time.			Period.	A.	Δ Degrees.	Remarks.
			h.	m.	s.				
1929. Sept. 23	E-W	iS	14	42	+	Felt at places surrounding Cook Strait; R.-F. 6 at Havelock.
	N-S	O	14	42	13	..	..	0.7
		iP		42	24				
		iS		42	33				
Sept. 24	E-W	e	1	40	—	Confused record of distant earthquake.
	N-S	i	1	38	57	10-15	..		
Sept. 25	E-W	i	23	59	20				
	N-S	i	23	59	28				
Sept. 26	E-W	O	7	46	59	7.5	Apia $\Delta = 23^\circ$; Suva $\Delta = 19^\circ$. Epicentre 36 S, 177 W.
		iP		48	53				
		i		49	31				
		iS		50	23				
		iL		50	59				
		M		52	51	11	μ 59		
	N-S	O	7	47	8	..	..	7.5
		iP		49	2				
		i		49	21				
		iS		50	32				
Sept. 27	E-W	O	7	24	10	1.0	Felt in Hawke's Bay District, North Island. R.-F. 4.
		iP		24	25				
		iS		24	37				
N-S	O	7	24	13	..	..	1.0	
	iP		24	28					
	iS		24	40					
Sept. 28	E-W	i	15	59	22	..	mm. 1.0	..	R.-F. 5, at Takaka and Westport.
	N-S	i	15	59	18	..	0.9		
Sept. 30	E-W	i	3	33	40	..	1.0		
	N-S	i	3	33	38	..	0.8		
Sept. 30	E-W	..	4	25	—	Tremors.
	N-S	..	4	30	—	Tremors.

Register from Suva, Fiji, for 1929, July, August, and September.



International
Seismological
Centre

LATITUDE: 18° 9' S.

LONGITUDE: 178° 26' E.

HEIGHT ABOVE SEA-LEVEL: 10 ft.

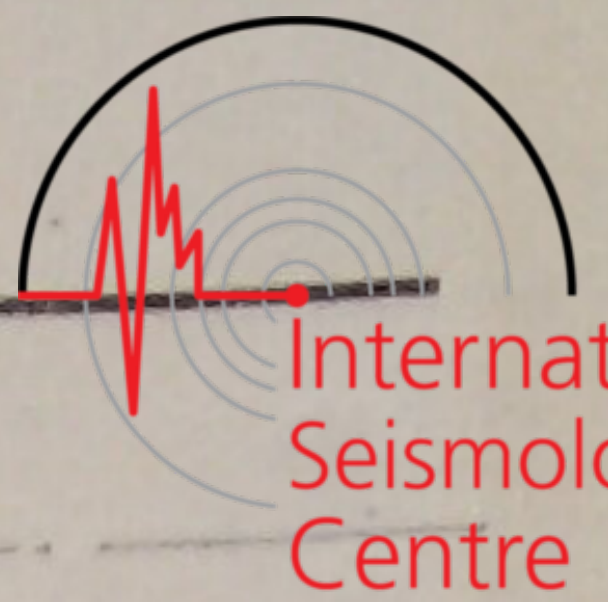
INSTRUMENT: Milne Twin-boom Horizontal Seismograph. E-W and N-S components. Magnification, 6. Periods, E-W, T = 8.1 secs.: N-S, T = 11.1 secs. Undamped.

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

Date.	Direction.	Phase.	Time.	Amplitude.	Δ Degrees.	Remarks.
			h. m.	mm.		
1929. July 1	E-W	..	..	..	..	Tremors at intervals all day.
	N-S	..	23 —	..	..	Tremors.
July 3	E-W	..	..	..	..	Tremors at intervals.
	N-S	e	3 50.1			
July 3	N-S	..	18 —	..	..	Tremors.
July 4	N-S	e	17 8.6			
July 5	E-W	..	14 —	..	..	Tremors.
	N-S	i S L	14 38.4 40.9 54	..	..	ΔT not known.
July 5	E-W } N-S }	..	23 —	..	..	Tremors and L waves.
July 6	E-W } N-S }	..	2 30	..	..	Tremors.
July 6	E-W } N-S }	..	7 —	..	..	Tremors, from New Zealand.
July 7	E-W	P(?) iPR ₁ PR ₂ iS L	21 34 36.9 39.0 43.2 55.2			
	N-S	O eP iS SR ₁ M L M ₁ M ₂	21 23.2 34.3 43.3 48.4 50.3 56.0 57.1 22 1.4	.. 1.1 1.2 1.9	68	
July 9	N-S	..	4 —	..	..	Tremors.
July 10	N-S	e	11 30			
July 11	E-W	i	17 19.8			
	N-S	..	17 30	..	..	Tremors.
July 13	E-W	eP S(?)	14 57.4 15 2.9			

Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929. July 13	N-S	O eP iS	14	50.9 57.4 2.5	..	30	
July 14	E-W	..	9	—	..	..	Tremors and L waves.
	N-S	..	9	30	..	..	L waves.
July 14	N-S	i	9	58			
July 15	E-W	i	9	3.6	..	..	Tremors, from New Zealand. ΔT not known.
	N-S	e	9	4.9			
July 16	E-W	i i	0	53.4 56.1	..	..	ΔT not known.
	N-S	i M	0	53.0 57.3		1.0	
July 17	N-S	..	9	—	..	..	Tremors.
July 17	E-W	iP S(?) M	19	57.0 0.8 4	..	21(?)	
	N-S	iP S(?) M	19	57.0 0.4 1.4	..	18(?)	
July 18	E-W } N-S }	..	2	10	..	..	Tremors.
July 18	N-S	..	5	40	..	..	Slight tremors ; New Zealand.
July 18	N-S	e	21	57.5			
July 19	E-W } N-S }	..	15	40	..	..	Tremors.
July 19	E-W	e i M	21	15.2 15.9 17.8	..	..	ΔT not known.
	N-S	i i	21	13.2 18.1			
July 20	E-W	i	22	9.7	..	..	ΔT not known.
	N-S	..	22	—	..	..	Tremors.
July 21	E-W	e i M	6	0.4 0.9 3		2.0	
	N-S	O iP S M	5	55.7 58.5	..	11	
			6	0.7 2		2.0	

Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929. July 21	E-W } N-S }	..	8	30	..	..	Tremors.
July 21	E-W	O P iS L(?) M	10	5.6 9.5 12.5 14.9 16	.. 2.5	16	
	N-S	O iP iS L M	10	5.8 9.5 12.4 13 14	.. 2.2	15	
July 25	E-W	e	2	3.2			
	N-S	e	2	3.5			
July 29	E-W	i L M	11	8.1 8.7 10	3.0		
	N-S	e i	11	6.5 8.9			
July 29	E-W } N-S }	..	22	—	..	..	Tremors.
Aug. 1	E-W	P iS(?) M	8	15.2 18 21.0	1.5		
	N-S	O P iS L M	8	12.1 15.2 17.6 18.4 19.2	.. 2.6	12	
Aug. 3	E-W	e i M	12	51.4 54.4 57.0	1.1		
Aug. 3	E-W	..	15	—	..	..	Slight tremors.
Aug. 7	E-W } N-S }	e	6	—	..	..	Tremors.
Aug. 10	E-W	i	1	2.6			
	N-S	..	1	—	..	..	Tremors.
Aug. 11	E-W	e i	18	8.7 11.3			
	N-S	e i i	18	8.4 10.9 11.6	1.0		
Aug. 18	E-W	i S	8	40 44.3			



Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929. Aug. 18	N-S	O iP eS L M	8	35.3 40.3 44.2 47 50.4	.. 1.2	21	
Aug. 21	E-W	e M	15	11.3 13.0	0.9		
Aug. 22	E-W	O P iS L M	7	33.5 36.8 39.4 40.1 40.9	..	13.5	
Aug. 29	E-W	i M i M	5	27.5 .. 40.4 41.5	.. 2+	.. ..	Confused. Edge of record.
	N-S	i M i	5	26.0 28.6 29.6	1.7		
Aug. 29	E-W	i	6	39.3			
Aug. 29	E-W	e i M	7	18.3 18.8 19.6	1.8		
	N-S	e	7	17.5			
Aug. 29	E-W	O iP iS iL M	10	9.7 11.2 12.3 12.8 13.3	.. 1.0	6	
	N-S	O iP iS M	10	9.7 11.2 12.4 13.0	.. 1.0	6	
Aug. 31	E-W } N-S }	..	12	—	..	..	Tremors.
Sept. 1	E-W	i	12	18.9			
	N-S	e	12	19			
Sept. 1	E-W	P S L	15 16	56.6 0+ 1.0	.. ..	15± ..	In hour mark.
	N-S	P S L M	15 16	56.8 0+ 0.7 2.8	.. .. 3.7	..	In hour mark.
Sept. 2	N-S	e	4	7.9			
Sept. 2	N-S	..	..	..	..	..	Tremors.

Date.	Direction.	Phase.	Time.	Amplitude.	Δ Degrees.	Remarks.
1929. Sept. 4	E-W	..	h. m. 8 45	mm. ..	..	Tremors.
	N-S	e	8 42.1			
Sept. 5	E-W	i M	23 0.8 2.5	1.6		
	N-S	e M	23 0.7 1.5	1.2		
Sept. 7	E-W	e M	19 0.7 3.4	0.9	..	ΔT not known.
	N-S	i	19 1.1			
Sept. 11	E-W } N-S }	..	22 —	..	..	Tremors.
Sept. 14	N-S	..	2 20	..	..	Tremors.
Sept. 14	E-W	i	20 16.7	..	..	ΔT not known.
	N-S	e	20 16.8			
Sept. 16	N-S	e	3 46.9			
Sept. 16	E-W	..	8 6	..	..	Tremors.
	N-S	i	8 6.1			
Sept. 16	N-S	e i	9 12.8 25.8			
	E-W	i M	9 24.8 27.6	1.0		
Sept. 16	E-W } N-S }	..	19 40	..	..	Tremors.
Sept. 17	E-W	..	19 +	..	..	Tremors.
	N-S	eP(?) eS L M	19 30.4 39.8 55 58	0.9	73 (?)	
Sept. 18	E-W	i	19 55.9	..	..	Irregular tremors.
	N-S	e	19 55.9			
Sept. 19	E-W	..	..	..	..	Rather heavy microseisms all day.
Sept. 20	E-W	e i M	20 53.3 54.2 56.5	1.1		
	N-S	e e M	20 50.4 53.7 55.7	0.8		
Sept. 21	E-W	..	12 25	..	..	Tremors.

Date.	Direction.	Phase.	Time.		Amplitude.	Δ Degrees.	Remarks.
			h.	m.			
1929. Sept. 21	N-S	e	12	25.6	mm.		
Sept. 23	E-W	e	23	14.5	1.6		
		M		17.7			
	N-S	eP(?)	23	12.9	1.1		
	iS		15.2				
	M		16.2				
Sept. 26	E-W	O	7	47.0	..	19	
		iP		51.6			
		eS		55.2			
	N-S	P	7	51			
		eS		55.3			
Sept. 27	E-W	O	14	33.9	..	10	ΔT uncertain. Apia $\Delta = 23^\circ$. Origin probably near New Caledonia.
		P		35.4			
		S(?)		37.4			
		M		39.2	1.0		
	N-S	iS(?)	14	37.0			
		M		40.0				0.8
Sept. 28	E-W	..	..	..	..	..	Increasing microseisms.
Sept. 29	E-W	Microseisms most of day.
Sept. 30	N-S	..	4	30	Tremors.

C. E. ADAMS,
New Zealand Government Seismologist.

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