

SEISMOLOGICAL BULLETIN

MARCH 1959.

MAGNETIC OBSERVATORY, HERMANUS

LOCATION

Lat. $34^{\circ} 25.5' S.$, Long. $19^{\circ} 13.5' E.$

85 feet above mean sea-level, 700 yards from coast.

INSTRUMENTS

Two Milne-shaw seismographs, recording N-S and E-W horizontal ground movements. Nominal magnification 250; damping ratio 20:1; recording speed 8mm/min. Free periods: E-W, 12 secs; N-S, 10 secs.

The time is recorded in the form of a 2-3 sec. break in the record every minute excepting on the hour and half-hour. The clock correction is determined daily to an accuracy of 0.2 sec.

Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ meas	Remarks.
✓ Mar. 1	e(PP) e(SKS ₂) i F	17 08(30) 14(40) 15 36 20 00	USCGS: $\frac{1}{2}$ S, $134\frac{1}{2}$ E (Near north coast of New Guinea) H = 16h 49m 13s h about 100 km.	$110\frac{1}{2}^{\circ}$	
Mar. 2	e F	10 04 10 19			Traces
Mar. 2	e F	12 00 12 08			Traces
Mar. 3	eL i i F	03 47.9 50 09 51 06 04 25			Near earthquake, weak phases.
Mar. 14	e F	04 57 05 09			Traces
Mar. 17	F	10 24			Initial phases lost.
✓ Mar. 17	e i eL F	13 12 06 15 26 16.8 13 25	USCGS: 57 S, 25 W (Sandwich Islands) H = 12h 58m 57s	$36\frac{1}{2}^{\circ}$	
Mar. 17	eL F	15 20.5 15 32			Sandwich Islands aftershock?

Complete ~~1959~~ 1ST QRT
 453

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Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{meas}	Remarks.
Jan. 3 ✓	X eS X F	11 40 54 12 36	USCGS: $14\frac{1}{2}$ S, $75\frac{1}{2}$ W (Near coast of Peru) H = 11h 17m 38s	$85\frac{1}{2}^{\circ}$	Weak.
Jan. 4	X e X e X F	04 00 04 16 18 05 16			Very weak.
Jan. 5	X e X F	08 47 08 57			Traces.
Jan. 6	X e X F	15 28 15 47			Traces.
Jan. 8	X i X i X i X F	00 57 05 57 31 58 36 01 42			Deep earth-quake. Weak.
Jan. 9	X e X F	02 34 02 40			Traces.
Jan. 13	X e X F	10 00 10 14			Traces.
Jan. 20	X e X F	17 34 17 56			Traces.
Jan. 22 ✓	✓ i PP ✓ i PKS ₁ ✓ i PKS ₂ ✓ e(SS) ² X F	05 32 19 33 13 33 24 50 17 09 00	USCGS: 34 N, 142 E (Near coast of Honshu, Japan) H = 05h 10m 25s	$133\frac{1}{2}^{\circ}$	

Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{meas}	Remarks.
Jan. 23	x e x e L x F	08 01 15 04.6 08 25			$\Delta < 40?$
Jan. 24	✓ e(ScS) ✓ e(SS) x F	20 18 24 23 32 21 25	USCGS: $37\frac{1}{2}^{\circ}$ N, $24\frac{1}{2}^{\circ}$ W (Azores Islands) H = 19h 55m 14s	82°	Very weak.
Jan. 29 " 30	x e x F	21 55 01 46			Traces.
Jan. 30	✓ i S ✓ eScS x F	16 37 05 37 35 17 08	USCGS: $26\frac{1}{2}^{\circ}$ S, 71° W (Near coast of Chile) H = 16h 15m 58s h about 100 km.	$75\frac{1}{2}^{\circ}$	
Jan. 30	x e x F	21 47 22 36			Weak
Jan. 30	✓ e(weak) x F	23 03 41 00 24	USCGS: 44° N, 144° E (Hokkaido, Japan) H = 22h 16m 47s	137°	

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Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{meas}	Remarks.
Feb. 6	X e X F	13 19 13 21			Traces.
Feb. 6	X eL X F	16 00 16 27			Traces.
Feb. 7	✓ iP ✓ PP ^e _i ✓ i ✓ ePPP ✓ i(SKS) ✓ ePS ✓ eSS X F	09 50 25 54 16 54 23 55 09 56(36) 10 01 11 03 07 08 20 14 ca.	USCGS: 4 S, $81\frac{1}{2}$ W (Near coast of northern Peru) H = 09h 36m 51s.	96°	At 10h 35m, $T_G = 16\frac{1}{2}$ secs; $A_N = 28 \mu$ $A_E = 74 \mu$
Feb. 8	X e X F	01 50 02 24			Traces.
Feb. 15	✓ i X e X e X e	04 06 55 07 20 12.8 15.5			At 04h 20 $\frac{1}{2}$ m, $T_G = 16$ secs; $A_N = 32 \mu$ $A_E = 32 \mu$
Feb. 15	X i X e X F	04 56 02 58(39) 07 00 ..			At 05h 04m, $T_G = 15$ secs; $A_N = 38 \mu$ $A_E = 21 \mu$
Feb. 16	✓ e(SKKS) X F	01 04 00 02 10	USCGS: 1 S, $81\frac{1}{2}$ W (Near Coast of Equador) H = 00h 39m 32s.	$97\frac{1}{2}^{\circ}$	Very weak
Feb. 17	X e X F	13 42 14 02			Traces.
Feb. 24	X eL X F	07 39.0 07 45			$\Delta < 40^{\circ}?$

45-3

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APRIL 1959.

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INSTRUMENTS

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Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{meas}	Remarks.
April 1	<input checked="" type="checkbox"/> e <input checked="" type="checkbox"/> F	01 11 01 49			Traces
April 6	<input checked="" type="checkbox"/> e <input checked="" type="checkbox"/> F	00 30 00 40	USCGS: 5 S, 146 E (Near New Guinea) H = 5d 23h 29m 25s		Traces
April 6	<input checked="" type="checkbox"/> e SKS <input checked="" type="checkbox"/> e SKKS <input checked="" type="checkbox"/> e S <input checked="" type="checkbox"/> i <input checked="" type="checkbox"/> F	14 36 35 36 48 37 05 37 24 14 50	USCGS: 10 S, $120\frac{1}{2}$ E (Sumba Island) H = 14h 12m 36s	94°	Measured phases very weak.
April 8	<input checked="" type="checkbox"/> e <input checked="" type="checkbox"/> F	12 14 12 26			Traces
April 9	<input checked="" type="checkbox"/> e PPP <input checked="" type="checkbox"/> i S <input checked="" type="checkbox"/> e SS <input checked="" type="checkbox"/> F	06 29 31 33 55 37.1 07 09	USCGS: 36 S, 76 E. (Indian Ocean) H = 06h 18m 30s	46°	
April 9	<input checked="" type="checkbox"/> e <input checked="" type="checkbox"/> F	18 31 18 50			Traces
April 12	<input checked="" type="checkbox"/> e <input checked="" type="checkbox"/> F	10 55 11 04			Traces
April 12	<input checked="" type="checkbox"/> e <input checked="" type="checkbox"/> F	16 14 16 39			Traces
April 12	<input checked="" type="checkbox"/> e <input checked="" type="checkbox"/> F	21 58 22 17			Traces
April 14	<input checked="" type="checkbox"/> e _E <input checked="" type="checkbox"/> i _N (L) <input checked="" type="checkbox"/> e _E <input checked="" type="checkbox"/> i _N (L)	09 47 27 09 49 09 09 49 51 09 51 37			Twin earthquakes (Central Africa?)
April 20	<input checked="" type="checkbox"/> e <input checked="" type="checkbox"/> F	04 29 05 30			Traces

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JUNE 1959.

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Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ meas	Remarks.
June 2	X e X F	03 36 05 27			Traces
June 2	X i X F	05 32 02 07 04			Very weak
June 7	✓ e S ✓ e ✓ F	13 55 31 13 59.1 15 04	USCGS: $\frac{1}{2}$ N, 18 W (Atlantic Ocean) H = 13h 39m 38s	49°	Weak
June 9	✓ e S X e L X i X F	23 22.0 23.1 25 11 23 41	USCGS: 59 S, $7\frac{1}{2}$ W (About 500 miles SW of Bourvet Island) H = 23h 10m 46s	$30\frac{1}{2}^{\circ}$	
June 14	✓ i (P) ✓ i (pP) X i ✓ i (S) X i X F	00 23 51 24 22 24 34 33 34 44 10 03 10	USCGS: $20\frac{1}{2}$ S, 68 W (Southwestern Bolivia) H = 00h 11m 57s h about 100 km.	$76\frac{1}{2}^{\circ}$	
June 16	✓ e PKP X F	15 53.5 19 08	USCGS: 54 N, 160 E (Near coast of Kamchatka) H = 15h 31m 25s	$146\frac{1}{2}^{\circ}$	No sharp arrivals
June 27	X e X F	03 53.1 04 01			Weak earthquake Δ probably $< 30^{\circ}$
June 27	✓ e (S) ✓ e (SS) X F	19 30 53 38 40 20 32	USCGS: 33 S, 179 W (South of Kermadec Islands) H = 19h 04m 27s h about 100 km.	111°	Weak
June 28	✓ i SKS ✓ e (SKKS) X F	20 07 26 08.0 20 51	USCGS: $9\frac{1}{2}$ S, $122\frac{1}{2}$ E (Sawoe Sea) H = 19h 43m 22s	96°	
June 29	X e X F	08 18 08 49			Traces

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453

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Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Λ_{meas}	Remarks
July 3	e PKS x e x i x F	18 17 35 26 29 34 07 20 22	USCGS: $16^{\circ} S$, $172^{\circ} E$ (New Hebrides Islands region) H = 17h 55m 29s h about 200 km	124°	
July 6	i!(S) i (SKS) i (SS)	09 28 48 29 29 33 17	USCGS: $26^{\frac{1}{2}} S$, $61^{\frac{1}{2}} W$ (Chaco Province, Argentina) H = 09h 10m 17s h about 600 km	68°	
July 6	i!(S) i (SKS) i (SS) x F	09 42 00 42 41 46 23 10 40	Aftershock of above H = 09h 23m 27s h about 600 km.	68°	
July 9	i!(S) e (SKS) e L x F	16 26 52 27 15 37.4 17 23	USCGS: $20^{\frac{1}{2}} S$, $68 W$ (Chile - Bolivia border) H = 16h 05m 18s h about 100 km	$76^{\frac{1}{2}}^{\circ}$	
July 11	e P i!S x i x F	12 10 26 17 23 20 30 13 40	USCGS: $36 S$, $78 E$ (Indian Ocean) H = 12h 01m 36s	$47^{\frac{1}{2}}^{\circ}$	
July 13	x e x F	13 59 14 14			Traces
July 18	e PP i!SKS i!(S) x i x e x F	20 13 43 19 40 21 02 23 11 28.5 21 35	USCGS: $15^{\frac{1}{2}} N$, $120^{\frac{1}{2}} E$ (Luzon) H = 19h 54m 45s	108°	
July 19	x e x F	04 22 04 32			Traces

Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ meas	Remarks.
July 19	<input checked="" type="checkbox"/> i P	15 18 13	USCGS: 15 S, 70 $\frac{1}{2}$ W (Peru) H = 15h 06m 10s h about 200 km	81°	Phase 28:01 could be SKS
	<input checked="" type="checkbox"/> i	19 02			
	<input checked="" type="checkbox"/> i S	28 01			
	<input checked="" type="checkbox"/> i (PS)	29 26			
	<input checked="" type="checkbox"/> i PPS	29 37			
	<input checked="" type="checkbox"/> i SS	33 22			
	<input checked="" type="checkbox"/> e	40.7			
<input checked="" type="checkbox"/> F	17 02				
July 22	<input checked="" type="checkbox"/> i SKS	23 28 22	USCGS: 5 S, 152 $\frac{1}{2}$ E (New Britain) H = 23h 02m 27s h about 60 km	121°	Very weak Phase 32.4 could be ScSP
	<input checked="" type="checkbox"/> e (PS)	32.4			
	<input checked="" type="checkbox"/> e	39.0			
	<input checked="" type="checkbox"/> F	24 30 ca			
July 24	<input checked="" type="checkbox"/> e	02 35			Traces
	<input checked="" type="checkbox"/> F	03 31			
July 24	<input checked="" type="checkbox"/> e (S)	23 16.9	USCGS: 56 $\frac{1}{2}$ S, 28 $\frac{1}{2}$ W (Sandwich Islands) H = 23h 03m 08s	39°	
	<input checked="" type="checkbox"/> F	23 28			
July 25	<input checked="" type="checkbox"/> e	12 14.0			
	<input checked="" type="checkbox"/> F	12 20			

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AUGUST 1959.

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Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{meas}	Remarks.
Aug. 8	e F	02 08.0 02 23			Weak
Aug. 12	i P e S i PoS F	04 10 06 13 48 17 43 05 07	USCGS: 15 S., 28 E (Northern Rhodesia) H = 04h 05m 20s	21°	
Aug 12	e PS e(SS) e L F	10 29 33 36(24) 51(30) 12 29	USCGS: $16\frac{1}{2}$ S, $177\frac{1}{2}$ W (Fyi Islands region) H = 09h 58m 22s	127°	
Aug. 15	e PP e(S) i PS F	09 16 29 24 07 26 00 11 50	USCGS: 23 N, 121 E (Formosa) H = 08h 57m 04s	$112\frac{1}{2}^{\circ}$	Disturbed by microseisms.
Aug. 17	e F	02 14 02 32			Traces
Aug. 17	e PP i SKS₂ e SKKS e(SKKKS) e i SKSP (or PS) e i_N e(SS) i F	21 25.3 30 50 32 07 32 21 34(06) 35 07 36 35 40 14 41.8 47 05 24 20	USCGS: $7\frac{1}{2}$ S, 156 E. (Solomon Islands) H = 21h 04m 40s	121°	At 22h 07m, $T_G = 26$ secs; $A_N = 10 \mu$ $A_E = 21 \mu$
Aug. 18	e PKP i PKS₁ i PKS₂ i_N i PKKP eSKKKS e! F	06 56(57) 07 00 21 00 35 02 15 06(14) 07.0 23.9 10 circa	USCGS: $44\frac{1}{2}$ N, 111 W (Yellowstone Park, U.S.A.) H = 06h 37m 13s	$140\frac{1}{2}^{\circ}$	At 08h 01m, $T_G = 18$ secs; $A_N = 31 \mu$ $A_E = 66 \mu$

Date 1959	Phase	G.M.T. h m s	Epicentre and Time of shock.	Δ _{mess}	Remarks
Aug. 18	e F	16 36 17 20			Disturbed by microseisms
Aug. 20	e(S) e(SCS)	12 35 43 39 01	USCGS: 29 S, 78 E (Indian Ocean) H = 12h 20m 08s	49 $\frac{1}{2}$ ^o	
Aug. 21	e S e(PS) F	08 25(41) 26(22) 09 43	USCGS: 50 $\frac{1}{2}$ S, 139 $\frac{1}{2}$ E (In Indian Ocean south of Australia) H = 08h 03m 15s	81 ^o	Very weak phases
Aug. 21	e S	10 00(21) 08(09)	ditto 50 $\frac{1}{2}$ S, 140 E H = 09h 37m 49s	81 $\frac{1}{2}$ ^o	
Aug. 23	e F	23 01 23 20			Traces
Aug. 24	i PP e PPP i PKKP i(PS) i PPS i SS e(PKPPKP) F	21 51 30 54 08 59 33 22 01 15 02 45 08 10 08 38 01 02	USCGS: 10 $\frac{1}{2}$ S, 161 E (Solomon Islands) H = 21h 30m 46s	123 ^o	Initialphases very weak
Aug. 26	e SKS e(SKKS) e(PS) e(PKKS) e(SS) F	08 51 25 52(49) 55 36 58 03 09 02.0 11 circa	USCGS: 18 N, 94 $\frac{1}{2}$ W (Vera Cruz, Mexico) H = 08h 25m 30s	119 ^o	Weak phases
Aug. 26	e L F	11 08 13 00			Traces
Aug. 29	e L	18 06 18 40			Disturbed by microseisms
Aug. 30	i S(?) F	22 00 48 22 23	USCGS: 36 $\frac{1}{2}$ S, 78 $\frac{1}{2}$ E (Indian Ocean) H = 21h 45m 07s	47 $\frac{1}{2}$ ^o	Disturbed by microseisms
Aug. 26	e PPS	57 01			

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Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{mess}	Remarks.
Sept. 1 ✓	e S x F	11 59 08 13 00	USCGS: $41\frac{1}{2}^{\circ} N$, $20^{\circ} E$ (Albania) H = 11h 37m 42s	$75\frac{1}{2}^{\circ}$	
Sept. 3 ✓	e x F	07 15 07 30			Traces
Sept. 4 ✓	e x F	18 52 19 02			Traces
Sept. 5 ✓	e x F	07 02 08 00			Traces
Sept. 8 ✓	e } P i } S i } PcS	13 16 40 16 43 20 14 24 37	South Atlantic Ocean, about 700 miles east of Bouvet Island(USCGS) H = 13h 12m 04s	$19\frac{3}{4}^{\circ}$ (Assuming H correct)	
Sept. 8 ✓	i P e S F	19 27 41 31 21 19 40	Aftershock of above? H = 19h 23m 08s(?)	$19\frac{3}{4}^{\circ} (?)$	
Sept. 12 ✓	e x F	02 50 03 10			Traces
Sept. 12 ✓	e x F	12 25 12 45			Traces
Sept. 14 ✓	e L (from earlier earth- quake.) x i _{N,E} PP e _N x i _N e _N PKS x e _{N,E} PKS i (PKKP) e PPS i! SS x F	14 20 14 29 48 30 38 31 19 32 23 37 35 39 12 40 38 45 44 ?	USCGS: $28\frac{1}{2}^{\circ} S$, $177^{\circ} W$ (Kermadec Islands) H = 14h 09m 39s	$115\frac{1}{2}^{\circ}$	
Sept. 14 ✓	i SS x F	17 42 03 19 43	USCGS: $29^{\circ} S$, $176\frac{1}{2}^{\circ} W$ (Kermadec aftershock) H = 17h 06m 15s	115°	

Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{meas}	Remarks.
Sept. 15	✓ i PP ✓ e ✓ i (PKKP) ✓ i (PS) ✓ e SS ✓ e ✓ F	06 19 37 27 15 29 12 29 33 35.5 41 41 09 30	USCGS: $28\frac{1}{2}$ S, 177 W (Kermadec aftershock) H = 05h 59m 42s	$115\frac{1}{2}^{\circ}$	Record changed 0642-0652
Sept. 16	✓ e ✓ e PKKP ✓ e ✓ i SS ✓ F	16 24(38) 26(42) 32(27) 32 59 18 30	USCGS: $28\frac{1}{2}$ S, 176 W (Kermadec Islands) H = 15h 57m 03s	116°	Initial phases very weak
Sept. 17	✓ e SS ✓ F	15 12 04 16 11	USCGS: $28\frac{1}{2}$ S, 176 W (Kermadec Islands) H = 14h 36m 11s	116°	
Sept. 18	✓ i PP ✓ i ✓ i PoS	12 10 07 14 19 14 31	USCGS: $57\frac{1}{2}$ S, 24 W (Sandwich Islands) H = 12h 01m 11s	$36\frac{1}{2}^{\circ}$	No N-S record; instrument under test.
Sept. 20	✓ e SS ✓ F	06 43.2 07 46	USCGS: $13\frac{1}{2}$ S, $111\frac{1}{2}$ W (North of Easter Islands) H = 06h 07m 59s	113°	Very weak
Sept. 25	✓ e ✓ F	03 05.9 04 30	USCGS: 22 N, 122 E (Near east coast of Formosa) H = 02h 36m 48s	$112\frac{1}{2}^{\circ}$	Confused by microseisms
Sept. 26	✓ e ✓ F	09 36 10 02			Traces
Sept. 29	✓ e PP ✓ e ✓ e (PKKP) ✓ e SS ✓ F	15 51 52 59 37 16 01 26 07 47 18 36	USCGS: 29 S, $176\frac{1}{2}$ W (Kermadec Islands) H = 15h 31m 57s	115°	

453

OCTOBER
+ NOV

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Oct. 7	x e x F	09 08 09 37			Traces
Oct. 12	x i x F	03 44 39 04 19			Weak
Oct. 15	✓ i PP ✓ i PPP ✓ e PKS ✓ i SKS x F	06 33 22 34 57 36 48 40 00 09 15	USCGS: $\frac{1}{2}^{\circ} N$, $120^{\circ} E$ (Celebes) H = 06:15:32	100°	
Oct. 19	✓ e x F	09 25 10(15)			Traces
Oct. 19	✓ i P x i x i ✓ i(!) S ✓ i(!) SS x F	16 02 58 03 15 04 43 08 46 11 33 18 00	USCGS: $54^{\circ} S$, $29^{\circ} W$ (Sandwich Islands region) H = 15:55:30	38°	
Oct. 26	✓ e(SKS) x e x F	07 58 16 58 34 09 30	USCGS: $37^{\circ} N$, $142^{\circ} E$ (Near east coast of Honshu, Japan.) H = 07:35:12 h about 60km	135°	Very weak
Oct. 27	✓ i PKP x e PP x e x F	07 12 15 15 28 25 51 09 07	USCGS: $45^{\circ} N$, $151^{\circ} E$ (Kurile Islands) H = 06:52:50 h about 100 km.	142°	
Oct. 30	x e x e ? x F	14 35 30 37(37) 15 25	USCGS: $23^{\circ} S$, $175^{\circ} W$ (Tonga Islands region) H = 13:58:25	121°	
Nov. 2	✓ e x F	19 22 22 08			Traces
Nov. 3	✓ i P x e S x i x F	09 52 47 10 03 17 06 33 11 11	USCGS: $10^{\circ} S$, $111^{\circ} E$ (South of Java) H = 09:40:05	86°	
Nov. 8	x e x F	14 30 15 50			Traces

Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{meas}	Remarks
Nov. 10	e H	21 49 21 57			Traces
Nov. 15	e P i N i N PP i N PPP i N, E S i N, E (PPS) e SS F	17 20 09 20 14 22 54 24 39 29 30 30 26 34(00) 20 30	USCGS: $37\frac{1}{2}$ N, $20\frac{1}{2}$ E (Near west coast of Greece) H = 17:08:41	$71\frac{1}{2}^{\circ}$	At 17h 54m, $T_G = 20$ secs; $A_N = 265 \mu$ $A_E = 115 \mu$
Nov. 16	e F	10 38 40 11 44	USCGS: 1° N, $26\frac{1}{2}$ W (Mid-Atlantic Ocean) H = 10:21:17	55°	Very weak
Nov. 17	e F	02 48 28 03 29			Weak
Nov. 19	e F	11 36(18) 12 45	USCGS: $5\frac{1}{2}$ S, 146 E (Near north coast of New Guinea) H = 11:08:32	116°	Very weak phases.
Nov. 22	e PS e SS F	16 51.3 56.2 17 42	USCGS: 54 S, 136 W (South Pacific Ocean) H = 16:26:34	$89\frac{1}{2}^{\circ}$	
Nov. 26	e ScS(?) e SS F	07 29 07 07 33.9 09 05	USCGS: $5\frac{1}{2}$ S, $102\frac{1}{2}$ E (Near coast of Sumatra) H = 07:06:19	$81\frac{1}{2}^{\circ}$	
Nov. 26	e P(PcP ?) i S(SKS ?) i PS e SS F	23 22 00 32 00 32 51 36.9 2 00 ca.	USCGS: $5\frac{1}{2}$ S, 103 E (Near coast of Sumatra) H = 23:09:23	32°	
Nov. 28	i S(PS?) F	12 56 29 14 30	USCGS: $28\frac{1}{2}$ S, 71 W (Chile) H = 12:34:53	$74\frac{1}{2}^{\circ}$	
Nov. 29	e F	19 41 11 20 22			Very weak

NOV ?? When

SEISMOLOGICAL BULLETIN

DECEMBER 1959

MAGNETIC OBSERVATORY, HERMANUS.

LOCATION

Lat. $34^{\circ} 25.5' S.$, Long. $19^{\circ} 13.5' E.$

85 feet above mean sea-level, 700 yards from coast.

INSTRUMENTS

Two Milne-Shaw seismographs, recording N-S and E-W horizontal ground movements. Nominal magnification 250; damping ratio 20:1; recording speed 8mm/min. Free periods: E-W, 12 secs; N-S, 10 secs.

The time is recorded in the form of a 2-3 sec. break in the record every minute excepting on the hour and half-hour. The clock correction is determined daily to an accuracy of 0.2 sec.

Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{meas}	Remarks.
Dec. 1	X e X F	13 13 13 39			Traces
Dec. 1	X e ? X e ScS X e X F	15 13(47) 21 48 29(45) 16 18	USCGS: 63 S., 154 E. (Balleny Islands region) H = 14:59:40	$76\frac{1}{2}^{\circ}$	Very weak phases
Dec. 2	X e X F	08 09 08 43	USCGS: 5 S., 104 E. (Near coast of Sumatra) H = 07:30:05 h about 150 km.	83°	Very weak
Dec. 2	X e P X i SKS X e X F	09 48 10 58 39 10 01 06 11 26	USCGS: 1 S., 123 E. (Celebes) H = 09:34:00	101°	
Dec. 3	X e X F	02 13 02 20			Traces.
Dec. 8	X e X F	13 31 13 40			Traces.
Dec. 8	X e X F	14 14 14 41			Traces
Dec. 14	X i P X i PP X i PcP X i PcS X e X e SS X F	23 29 30 29 42 31 12 31 23 31 35 35 22 38 11 38(31) 03 28	USCGS: $59\frac{1}{2}$ S., 31 W (Sandwich Islands) H = 23:21:56 Mag. 7 (Pasadena)	$40\frac{1}{2}^{\circ}$	Double shock ?
Dec. 15	X e X F	12 29(42) 13 04	USCGS: 59 S., 24 W. (Sandwich Islands) H = 12:15:45.	37°	

Date 1959	Phase	G.M.T. h m s	Epicentre and Time of Shock	Δ_{meas}	Remarks.
Dec. 15	X e X F	19 50.0 20 00			Very weak
Dec. 18	X e X F	17 10 19 35			Weak
Dec. 21	X e X F	10 56.7 14 30			Confused record.
Dec. 22	X e X F	00 36 01 08			Traces
Dec. 24	X e X F	07 32 03 08 03			
Dec. 25	X e X F	04 53 05 07			Traces
Dec. 25	X e ^E (S) X e ^E (PPS) X F ^N	10 39 51 40 43 11 24	USCGS: 25 $\frac{1}{2}$ S., 67 W (Chile - Argentine border region) H = 10:18:35	72 $\frac{1}{2}$ ^o	Weak
Dec. 26	X e X F	12 41 12 53			Traces
Dec. 26	X e X F	23 26 23 50			Traces
Dec. 27	X e X F	06 01 06 47			Traces
Dec. 27	X i PKP X e PP X e SKSP X F	16 12 40 16(04) 26(29) 18 50	USCGS: 56 N., 162 $\frac{1}{2}$ E (Kamchatka) H = 15:52:55.	147 ^o	
Dec. 28	X e PKP X F	07 40 25 10 02	USCGS: 52 $\frac{1}{2}$ N., 160 E (Near east coast of Kamchatka) H = 07:20:32	147 ^o	
Dec. 31	X e X e X F	15 38 05 40 22 15 50			