DEC 2

UNIVERSITY OF QUEENSLAND
SEISMOLOGICAL STATION
BRISBANE

ϕ = 27° 28′ 41″ S., λ = 153° 1′ 52″ E., h = 15m. Bulletin No. 17

Foundation: Semi-consolidated alluvium of raised river terrace.

International Seismological Centre

INSTRUMENTS AND CONSTANTS

INSTRUMENT	RATE OF RECORDING	COMPONENT	FREE PERIOD	DAMPING	STATIC MAGNIFICATION
Milne-Shaw No. 58 (Modified) .	16 m.m. per minute	N.—S.	12 sec.	20 : 1	250
Milne-Shaw No. 60 (Modified) .	16 m.m. per minute	E.—W.	12 sec.	20 : 1	
Benioff No. 12	15 m.m. per minute	N.—S.	1.5 sec.		
Benioff No. 11	15 m.m. per minute	E.—W.	1.5 sec.		
Benioff No. 13	15 m.m. per minute	Vertical	1.5 sec.		
Sprengnether No. 374	50 m.m. per minute	E.—W.	7.2 sec.		

Time is correct to the nearest second and is checked daily against radio-signals giving Eastern Australian Standard Time.

The station is maintained and operated by the University of Queensland assisted by grants from the Commonwealth Council for Scientific and Industrial Research.

DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
1952 Jan. 1st	iN	11 - 08 - 34	B	
" 2nd	iN	15 - 13 - 32	M.Sp.	
	eN	13 - 34	B	
	eN	13 - 40	B	
" 3rd	eN	18 - 57 - 46	B	
	iPN	20 - 42 - 22	M.Sp.	
	eiPN	42 - 23	B	
	iN	42 - 24	B, M.Sp.	
	iN	42 - 51	M.Sp.	
	iN	45 - 50	M.Sp.	
	iN	47 - 31	M.Sp.	
	iN	47 - 56	M.Sp.	
" 4th	iPZ	05 - 51 - 21	B	Dilatation Δ_{S-P}=16.5°
	iPN	51 - 23	M.Sp.	U.S.C.G.S. - 22°S., 169½°E
	iPNE	51 - 24	M-S	Loyalty Islands
	iPPNE	51 - 36	M-S	H= 05.47.31
	iPPPN	51 - 43	M.Sp.	Δ = 15.9°
	iPPPN	51 - 44	M-S	
	iSNE	54 - 28	M-S, M.Sp.	
	iSSNE	54 - 39	M-S, M.Sp.	
	iL_QN	55 - 08	M-S, M.Sp.	
	iL_RE	56 - 21	M-S	
	iE^R	56 - 26	M-S	
	iPZ	21 -50 - 44	B	Compression
	iZ	50 - 49	B	
	iZ	50 - 58	B	
" 6th	iPNE	04 - 36 - 52	M.Sp.M-S	Δ_{S-P} =17.5°
	iPPN	37 - 06	M.Sp.	U.S.C.G.S. H=04.33.04
	iPPPN	37 - 16	M.Sp.	Loyalty Islands region.
	iSNE	40 - 05	M.Sp.	
	iSSN	40 - 23	M.Sp.	
	eLN	41 - 00	M.Sp.	
	iPN	03 - 18 - 52	M.Sp.	
	ePNE	18 - 52	M-S	

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
Jan. 6th cont.	iSN	26 - 43	M.Sp.	
	eSN	26 - 42	M-S	
	iPZ	15- 43 - 18	B	Compression
	iZ	43 - 26	B	
" 8th	iPZ	12 -32 - 25	B	Dilatation
	iPZ	13 -12 - 07	B	Compression
" 10th	iPZ	21 -28 - 54	B	Compression U.S.C.G.S. 18½°S., 180°E., Fiji Islands, h=about 600km. H = 21.24.03
	iPZ	23 -14 - 21	B	Compression
	iZ	14 - 43	B	U.S.C.G.S. 20°S., 169½°E. Loyalty Islands H=23.10.22.
" 11th	iPZ	00 - 11 - 04	B	Compression
	ePNE	11 - 06	M-S	U.S.C.G.S. about 400 mls.
	iZ	11 - 08	B	east of New Hebrides
	eSE	15 - 29	M-S	H = 00.05.45
	iN	15 - 39	M-S	
	iPZ	04 -05 - 27	B	Compression
	iPN	05 - 27	M-S	U.S.C.G.S. 7°S., 145½°E
	iN	05 - 55	M-S	Eastern New Guinea
	eE	05 - 55	M-S	H=04.00.35
	iSN	09 - 12	M-S	
	iSE	09 - 14	M-S	
	iN	09 - 39	M-S	
	iSSNE	09 - 54	M-S	
	$eL_R E$	12 - 57	M-S	
	$eL_R N$	12 - 59	M-S	
" 12th	iPZ	06 - 06 - 34	B	Compression
	ePZ	20 - 24 - 28	B	U.S.C.G.S. 53°N., 167°W.
	eSE	35 - 05	M-S	Fox Island Aleutian Is.
				H = 20.11.38.
" 13th	iZ	03 - 54 - 34	B	Compression
	iPZ	04 - 13 - 31	B	Compression
	iPN	13 - 32	M.Sp.	U.S.C.G.S. 22°N., 124½°E.
	eZ	13 - 39	B	(Off east coast of Formosa)
	eN	13 - 44	M-S	H = 04.03.37
	iPcPN	14 - 25	M.Sp.	
	eSE	21 - 25	M-S	
	eSN	21 - 27	M.Sp.M-S	
	iScSEN	23 - 27	M-S, M.Sp.	
	$iL_Q NE$	27 - 41	M-S, M.Sp.	
	iPZ	07 - 11 - 55	B	Compression U.S.C.G.S. New Britain Island Region
" 15th	iPZ	02 - 43 - 14	B	Compression U.S.C.G.S.
	iZ	43 - 42	B	Central Burma H=02.31.25.
	iPZ	05 - 08 - 21	B	Dilatation
	iPZ	13 - 43 - 19	B	Dilatation
" 17th	ePZ	04 - 37 - 51	B	
" 18th	iPZ	03 - 52 - 35	B	Compression ?
	iZ	52 - 44	B	

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	PHASE	U.T. h. m. s.	UNIT	REMARKS
Dec.18th cont.	iPZ	14 - 57 - 49	B	Dilatation
	iPZ	18 - 07 - 59	B	Dilatation
	iZ	08 - 09	B	
	iZ	08 - 35	B	
" 19th	iZ	06 - 25 - 06	B	Compression
	iZ	09 - 18 - 01	B	Compression
" 20th	eSNE	08 - 12 - 05	M.Sp.M-S	
	iPN	09 - 17 - 37	M.Sp.M-S	
	eSNE	22 - 00	M.Sp.M-S	
	eLE	23 - 45	M-S	
	eLN	25 - 06	M-S	
" 26th	eN	13 - 57 - 29	M.Sp.	
	eLN	59 - 43	M-S, M.Sp.	
" 28th	eN	13 - 19 - 54	M-S, M.Sp.	
	iE	21 - 34	M-S	
	eN	22 - 15	M.Sp.	
	iE	25 - 03	M-S	
	eN	25 - 07	M.Sp.	
" 30th	ePN	10 - 18 - 52	B	U.S.C.G.S. - New Hebrides Islands region. H=10.13.40.
" 31st	eLN	21 - 55 - 00	M-S	

O.A. JONES
Director, Univ. Q'ld. Seis. Stat.

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Foundation: Semi-consolidated alluvium of raised river terrace.

INSTRUMENTS AND CONSTANTS

INSTRUMENT	RATE OF RECORDING	COMPONENT	FREE PERIOD	DAMPING	STATIC MAGNIFICATION
Milne-Shaw No. 58 (Modified) .	16 m.m. per minute	N.—S.	12 sec.	20 : 1	250
Milne-Shaw No. 60 (Modified) .	16 m.m. per minute	E.—W.	12 sec.	20 : 1	
Benioff No. 12	15 m.m. per minute	N.—S.	1.5 sec.		
Benioff No. 11	15 m.m. per minute	E.—W.	1.5 sec.		
Benioff No. 13	15 m.m. per minute	Vertical	1.5 sec.		
Sprengnether No. 374	50 m.m. per minute	E.—W.	7.2 sec.		

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
1952 Feb. 2nd.	iPN	23 - 04 - 15		
	iPN	- 04 - 18	M-S	
	iPN	04 - 19	B	Dilatation Δ_{S-P} =21.2°
	ipPN.	04 - 31	M. Sp. M-S	h = about 100 km. U.S.C.G.S.
	ipPN	04 - 32	M. Sp. M-S	11°S., 165°E., Santa Cruz Is.
	isPNE	04 - 47	M. Sp. M-S	H = 22.59.45 h=about 100km.
	iN	06 - 55	B	
	iSN	08 - 01	B, M. Sp.	
	eSE	08 - 03	M-S	
	isSNE	08 - 26	M. Sp. M-S	
" 5th	iPN	16 - 59 - 07	M. Sp.	U.S.C.G.S. Near north
	ePN	59 - 07	M-S	coast of Mindanao, Phili-
	iSN	17 - 05 - 23	M. Sp.	ppine Islands H=16.15.44
	eSN	05 - 23	M-S	
	iN	05 - 46	M. Sp. M-S	
	iN	09 - 10	M. Sp.	
" 6th	ePE	00 - 55 - 35	M-S	
	eSE	01 - 00 - 02	M-S	
	eSN	07 - 04 - 28	M. Sp.	U.S.C.G.S. Kermadec Is.
	eLE	07 - 07 - 54	M-S	H = 06.54.45.
" 7th	ePE	14 - 46 - 48	B	
	iE	46 - 54	B.	
	iSN	52 - 29	M. Sp.	
	eSN	52 - 30	M-S	
" 8th	iPZN	18 - 27 - 27	B, M. Sp.	Compression Δ_{S-P} = about 29°.
	ePNE	27 - 28	M-S	
	iN	28 - 05	M. Sp. M-S	
	iSNE	32 - 16	M. Sp. M-S	
	iSN	32 - 17	M-S	
	eLN	18 - 34 - 52	M-S	
	eLN	34 - 57	M. Sp.	
	iPZ	10 - 40 - 00	B	Compression
" 9th	iPZ	07 - 09 - 24	B	Dilatation

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
Feb. 9th	iPZ	07 - 40 - 28	B	U.S.C.G.S. Kermadec Is. H = 07.35.01.
" 10th	iPZ	05 - 17 - 05	B	Dilatation U.S.C.G.S. - Tonga Islands H = 05.10.40
	iPZ	05 - 31 - 49	B	Compression
	iZ	32 - 00	B	
	iZ	32 - 07	B	
	ePZ	18 - 14 - 04	B	
" 11th	iPZ	07 - 08 - 39	B	Compression U.S.C.G.S.- 6°S., 110°E. H=07.01.04 h = about 700 km. (Java Sea).
	iZ	09 - 12	B	
	iZ	09 - 59	B	
	ipPzNE	10 - 29	B, M-S	
	iSzN	14 - 40	B, M-S	
	eSE	14 - 45	M-S	
	iNE	17 - 20	M-S	
	isSNE	18 - 10	M-S	
	iE	18 - 40	M-S	
	eNE	19 - 08	M-S	
	eN	21 - 28	M-S	
	iPZ	16 - 34 - 42	B	Compression
	iZ	35 - 08	B	
	iE	36 - 45	M-S	
	eE	37 - 20	M-S	
	eNE	40 - 50	M-S	
	i(S)NE	16 - 44 - 02	M-S	
	eN	44 - 35	M-S	
" 12th	iPZ	05 - 43 - 09	B	Compression U.S.C.G.S. - 8°S., 156½°E. Solomon Is. H=05.38.41
	ePNE	43 - 10	M-S	
	iN	43 - 18	M-S	
	iZ	43 - 19	B	
	iPPN	43 - 26	M-S	
	e(S)N	46 - 50	M-S.M.Sp.	
	iZ	09 - 03 - 06	B	
	iZ	09 - 04 - 09	B	
	ePNE	10 - 15 - 20	M-S.M.Sp.	U.S.C.G.S. - Solomon Is. H = 10.10.50
	ePZ	15 - 25	B	
	eSNE	19 - 00	M-S	
	iPZ	20 - 20 - 37	B, M.Sp.	Compression U.S.C.G.S. Bismark Sea. H=20.15.30 Note: Some of these phases may be part of the earthquake immediately following.
	ePN	20 - 37	M-S	
	iPPZ	21 - 14	B	
	iZ	21 - 54	B	
	iZ	22 - 14	B	
	iN	22 - 31	M-S.M.Sp.	
	iSN	24 - 15	B, M-S, M.Sp.	
	i(P)ZN	20 - 21 - 33	B, M-S, M.Sp.	
	i(S)N	25 - 21	M.Sp.	U.S.C.G.S. - Eastern New Guinea H=20.16.30
	e(S)N	25 - 21	M-S	
	iN	26 - 12	M.Sp.	
" 14th	iPNE	03 - 44 - 42	M.Sp.M-S	U.S.C.G.S. - 8°S., 125°E. (Flores Sea). H=03.38.06
	iSE	49 - 50	M-S	
	eSN	49 - 55	M-S	
	eN	08 - 46 - 55	M-S	
	eE	50 - 55	M-S	
	iPZN	12 - 27 - 54	B	Dilatation
	iN	28 - 24	M.Sp.	
	eN	34 - 40	M-S.M.Sp.	

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
Feb. 14th cont.	eE	34 - 45	M-S	
	eE	37 - 45	M-S	Possibly two earthquakes
	iN	37 - 50	M-S	
	eE	38 - 14	M-S	
	i(P)N	38 - 20	M-S, M.Sp.	
	iN	38 - 33	M-S	
" 16th	iPZN	12 -48 - 11	B	Dilatation
	iPN	48 - 12	M.Sp.	$\Delta_{S-P} = 22.4^{o}$
	iN	48 - 19	M.Sp.	
	iSE	52 - 12	M-S	
	eSN	52 - 12	M-S	
	iSN	52 - 13	M.Sp.	
	iPZ	13 -36 - 46	B	
	iZ	36 - 55	B	
	iZ	37 - 08	B	
	e(S)N	44 - 50	M.Sp.	
	eNE	47 - 36	M.Sp.M-S	
	iPZ	21 - 11 - 28	B	Compression
	ePN	11 - 29	M.Sp.	Possibly two shocks.
	iZ	11 - 32	B	
	iZ	11 - 37	B	
	iZ	11 - 58	B	
	iZ	12 - 16	B	
	iZ	13 - 25	B	
	i(S)N	18 - 19	M-S, M.Sp.	
	e(S)E	18 - 19	M-S	
	i(P)N	21 - 30	M.Sp.	
" 17th	eZ	07 - 02 - 19	B	
" 18th	iPZN	01 - 18 - 05	B, M.Sp.	Compression
	iPN	18 - 06	M-S	
	ePE	18 - 07	M-S	
	iPPN	18 - 39	M.Sp.	
	iPPN	18 - 40	M.Sp.	
	iPPPZ	18 - 50	B	
	iPPPN	18 - 53	M.Sp.	
	iN	19 - 26	M-S.M.Sp.	
	iSN	22 - 18	M.Sp.	
	eSNE	22 - 18	M-S	
	iSSN	23 - 10	M.Sp.	
	eSSE	23 - 10	M-S	
	iLNE	23 - 35	M-S, M.Sp.	
" 22nd	eZ	08 -56 - 22	B	
	iPZ	11 - 47 - 06	B	Dilatation
	ePE	47 - 06	B	U.S.C.G.S. - 11½°S.,
	iPNE	47 - 09	M.Sp.M-S	166°E Santa Cruz Isl.
	iNEZ	47 - 16	M.Sp.M-S, B	H = 11 - 42 - 28.
	eE	47 - 16	B	
	iPPZ	47 - 27	B	
	iSN	50 - 47	M.Sp.	
	eSN	50 - 50	M-S	
	eSE	50 - 55	M-S	
	eSZ	50 - 55	B	
	$eL_Q N$	52 - 47	M.Sp.	
	$iL_R N$	54 - 22	M.Sp.	
	$eL_R E$	54 - 25	M-S	
	iPZE	20 - 28 - 45	B	Dilatation
	eE	29 - 10	B	
" 24th	ePZ	14 - 14 - 30	B	

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
Feb. 24th cont.	iPZ	23 - 03 - 56	B	Compression U.S.C.G.S. 17½°N., 144½°E., Mariana Islands h = about 200 km. H=[illegible]2.55.52.
" 25th	iPZ	01 - 23 - 36	B	Compression
	ePNEZ	23 - 38	M.Sp.M-S,B	Δ_{S-P} = 33.1°
	iPPE	24 - 44	M-S	U.S.C.G.S. - 17°S., 173½°W,
	iPPPE	24 - 56	M-S	(Tonga Islands), H=01.17.06
	iPPPN	24 - 59	M.Sp.M-S	
	iP_CPZ	26 - 25	B	
	iSZE	28 - 48	B	
	iSN	28 - 49	M-S	
	iSSN	30 - 58	M.Sp.	
	iSSN	31 - 02	M-S	
	eLE	33 - 21	M-S	
	eLN	33 - 23	M.Sp.	
	iPZ	02 - 02 - 09	B	Dilatation Aftershock
	iZ	02 - 27	B	of Tonga Islands earth-quake U.S.C.G.S. - H = 01.55.33.
	iPZ	02 - 06 - 52	B	Compression
	iPN	06 - 53	M.Sp.	Δ_{S-P} = 20.7°
	ePNE	06 - 54	M-S	U.S.C.G.S. - 11°S., 165½°E.,
	iPPN	07 - 14	M-S	Santa Cruz Islands,
	iPPNE	07 - 17	M.Sp.M-S	H = 02.02.16.
	iSNE	10 - 39	M-S	
	iSN	10 - 40	M.Sp.	
	iSSE	11 - 11	M-S	
	eL_QE	12 - 50	M-S	
	iL_QN	12 - 56	M.Sp.	
	iL_QN	14 - 31	M.Sp.	
	eL_RNE	14 - 33	M-S	
	iPZ	04 - 17 - 51	B	Compression
" 26th	ePPN	11 - 51 - 35	M.Sp.	U.S.C.G.S. - 15°S., 69°W.
	iN	52 - 29	M.Sp.	(Peru-Bolivia border),
	iSKSN	56 - 08	M.Sp.	H - 11.30.54
	ePPSN	12 - 02 - 17	M.Sp.M-S	
	iPPSE	02 - 21	M-S	
	eSSNE	07 - 20	M.Sp.M-S	
	iN	08 - 52	M.Sp.M-S	
	eLE	16 - 41 - 10	M-S	U.S.C.G.S. - 11½°N., 86½°W. (near coast of Nicaragua) h = 100 km. H = 15.39.23
	iPNE	21 - 11 - 18	M.Sp.M-S	Δ_{S-P} = 19°
	iNE	11 - 29	M-S	U.S.C.G.S. - 12½°S.,
	iE	11 - 50	M-S	166°E. Santa Cruz Is.
	iN	11 - 52	M.Sp.	H = 21.06.49
	iSN	14 - 47	M.Sp.	
	eSE	14 - 47	M-S	
	eSN	14 - 49	M-S	
	eNE	15 - 08	M.Sp.M-S	
	eLE	16 - 25	M-S	
	iLN	16 - 30	M.Sp.	
" 27th	iZ	01 - 40 - 09	B	
	iZ	01 - 43 - 30	B	
	iZ	43 - 34	B	
	iPZ	06 - 30 - 36	B	Compression
	iZ	30 - 43	B	
	iZ	30 - 58	B	O.A. JONES
	iZ	31 - 09	B	Director, Univ. Q'ld. Seis. Stat.

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BRISBANE

ϕ = 27° 28′ 41″ S., λ = 153° 1′ 52″ E., h = 15m. Bulletin No. 175

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INSTRUMENTS AND CONSTANTS

INSTRUMENT	RATE OF RECORDING	COMPONENT	FREE PERIOD	DAMPING	STATIC MAGNIFICATION
Milne-Shaw No. 58 (Modified) .	16 m.m. per minute	N.—S.	12 sec.	20 : 1	250
Milne-Shaw No. 60 (Modified) .	16 m.m. per minute	E.—W.	12 sec.	20 : 1	
Benioff No. 12	15 m.m. per minute	N.—S.	1.5 sec.		
Benioff No. 11	15 m.m. per minute	E.—W.	1.5 sec.		
Benioff No. 13	15 m.m. per minute	Vertical	1.5 sec.		
Sprengnether No. 374	50 m.m. per minute	E.—W.	7.2 sec.		

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
1952				
March 1st	iPZ	06 - 11 - 42	B	Compression U.S.C.G.S. - near northern coast of Celebes Islands, H=06.04.05
	iPPZ	13 - 16	B	
" 3rd	ePZNE	07 - 18 - 51	B, M.Sp.M-S	U.S.C.G.S. - 21½°S.,
	iSN	23 - 50	M.Sp.	174½°W., Tonga Islands,
	eSE	23 - 52	M-S	H=07.12.39
	iPZ	13 - 24 - 37	B	Dilatation
	iZ	24 - 49	B	
" 4th	ePZ	01 - 34 - 07	B	Compression
	iPN	34 - 11	M.Sp.	Δ_{S-P} = 69°
	ePN	34 - 11	M-S	U.S.C.G.S. - 42½°N., 143½°E
	iPcPNE	34 - 45	M-S	(Near east coast of Hokkaido,
	iPPN	36 - 43	M-S	Japan), H=01-22-41.
	iPPE	36 - 44	M-S	
	iPPPN	38 - 25	M-S	
	iSN	43 - 07	M-S	
	iSE	43 - 10	M-S	
	eSN	07 - 18 - 53	M.Sp.	
	eSSNE	23 - 11	M-S	
	iSSN	23 - 18	M.Sp.	
	iPN	19 - 34 - 55	M-S	U.S.C.G.S. 10°S., 161½°E.
	iPNE	34 - 58	M.Sp.M-S	Solomon Is. H=19.30.28.
	iPPN	35 - 15	M-S	
	iPPPN	35 - 24	M-S.M.Sp.	
	iSN	38 - 35	M-S, M.Sp.	
	iSE	38 - 37	M-S	
	iSSN	39 - 05	M-S	
	iLN	40 - 20	M-S	
" 5th	iSN	04 - 09 - 31	M-S, M.Sp.	U.S.C.G.S. 42°N, 146°E
	iSE	09 - 33	M-S	off east coast of Hokkaido, Japan. H = 03.49.03.

DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
March 5th cont.	iZ	09 - 37 - 17	B	
	iPZ	16 - 05 - 30	B	U.S.C.G.S. 43°N., 145½°E.
	ePN	05 - 31	M.Sp.	Off east coast of Hokkaido
	iSN	14 - 58	M.Sp.	Japan H=15.54.18.
" 6th	iPZ	09 - 39 - 20	B	Compression
" 7th	iPZN	07 - 43 - 24	B,M.Sp.M-S	Dilatation
	iZ	43 - 31	B	Δ_{S-P} about 66°
	eN	45 - 31	M.Sp.M-S	
	iSE	52 - 11	M-S	
	iSN	52 - 12	M.Sp.M-S	
	iScSE	53 - 18	M-S	U.S.C.G.S. 36°N., 136½°E.,
	eSSE	56 - 24	M-S	Honshu, Japan
	iL_QN	08 - 02 - 45	M.Sp.	H = 07.32.38.
	eL_QN	02 - 45	M-S	
	eL_RN	07 - 47	M-S	
	iL_RN	07 - 50	M.Sp.	
" 8th	eZE	13 - 53 - 27	B,M.Sp.M-S	
	iN	55 - 51	M.Sp.	
	iPZ	18 - 47 - 57	B	Dilatation
" 9th	iPZ	17 - 15 - 10	B,M.Sp.	Compression
	ePE	15 - 10	M-S	Δ_{S-P} =68°Ca.
	eiPN	15 - 11	M-S	U.S.C.G.S. - 42°N, 143½°E.
	iPPN	17 - 35	M-S	(near south coast of
	iPPN	17 - 38	M.Sp.	Hokkaido, Japan).
	iSN	24 - 01	M.Sp.	H = 17.03.43.
	iSNE	24 - 02	M-S	
	ePSNE	24 - 41	M.Sp.M-S	
	iE	25 - 00	M-S	
	iSSN	28 - 35	M.Sp.M-S	
" 10th	iZ	17 - 34 - 20	B	Dilatation
	eLNE	18 - 42 - 50	M.Sp.M-S	
" 12th	ePZ	01 - 17 - 01	B	
	iPZ	08 - 03 - 13	B	Compression
" 13th	iPZ	00 - 23 - 38	B	Compression
	eZ	24 - 19	B	
	iPZ	14 - 07 - 23	B	Dilatation
	ePN	07 - 25	B	
	iPNE	07 - 26	M-S,M.Sp.B	
	iZ	07 - 34	B	U.S.C.G.S. 28½°N., 127°E.
	iZ	07 - 45	B	East China Sea
	ipPZ	08 - 07	B	h = about 200 km.
	iZ	08 - 30	B	H = 13.57.26.
	iSNE	15 - 20	M.Sp.M-S	
	eSE	15 - 20	B	
	iSZ	15 - 21	B	
	isSNE	16 - 54	M.Sp.M-S,B	
	eZ	16 - 54	B	
	iScSN	18 - 14	M.Sp.	
	iZ	19 - 10 - 34	B	
" 15th	iPN	01 - 20 - 17	M.Sp.	Dilatation
	iPZ	20 - 18	B	
	iZ	20 - 41	B	
	iN	27 - 14	M.Sp.	
	iN	29 - 22	M.Sp.	
	eN	29 - 22	M-S	

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DATE	PHASE	U.T. h.	m.	s.	UNIT	REMARKS
March 15th cont.	iPZ	05 -	13 -	03	B	Compression
	ePN		13 -	04	M.Sp.	
	eN		13 -	47	M.Sp.	
	iZ		13 -	49	B	
	iZ		21 -	05	B	
	iZ		21 -	35	B	Possibly more than one
	iN		22 -	32	M-S, M.Sp.	earthquake.
	iZ		22 -	56	B	
	iPZ	11 -	25 -	15	B	Dilatation
	ePN		25 -	17	M.Sp.	U.S.C.G.S. 5½°S., 100½°E.
	iPcS		30 -	12	M.Sp.	Off south west coast of
	eSN		32 -	51	M-S, M.Sp.	Sumatra H=11.15.46
	eN		41 -	18	M-S	
	eN		45 -	09	M-S, M.Sp.	
" 17th	eZ	20 -	43 -	51	B	
" 18th	ePE	11 -	01 -	12	M-S	
	iPZEN		01 -	13	B, M.Sp. M-S	Dilatation
	iZ		01 -	26	B	Appears deeper than
	iPPN		01 -	37	M.Sp. M-S	normal U.S.C.G.S -
	iPPZ		01 -	40	B	12°S., 168°E.,
	iPPPN		01 -	49	M.Sp.	Santa Cruz Islands
	iPPPZNE		01 -	50	B, M-S	H = 10.56.27.
	iZ		01 -	55	B	
	iN		02 -	07	M.Sp.	
	iSZN		04 -	45	B, M.Sp. M-S	
	eSE		04 -	46	B	
	iSE		04 -	47	M-S	
	iN		05 -	02	M-S	
	iNE		05 -	03	M.Sp. M-S	
	iZN		05 -	26	B, M.Sp.	
" 19th	ePZ	09 -	15 -	43	B	U.S.C.G.S. 41°N., 125°E., Near Korea-Manchuria border H = 09.04.18
	iPZN	11 -	05 -	25	B, M.Sp.	Dilatation Δ_{S-P} =44.5°
	ePE		05 -	25	M-S	U.S.C.G.S. - 9½°N., 127°E.,
	iPPE		07 -	05	M-S	(off east coast of Mindanao,
	iSN		11 -	57	M-S	Philippine Islands).
	iSE		12 -	02	M-S	H= 10.57.09.
	iPZ	16 -	34 -	31	B	Dilatation
" 20th	eZ	08 -	02 -	42	B	
	iPZ	15 -	02 -	16	B	Dilatation
	iPZ	21 -	04 -	46	B	Compression
	iPZNE	23 -	43 -	43	B, M.Sp. M-S	Dilatation
	iZN		43 -	52	B, M.Sp.	Δ_{S-P} =20.5° h=about 60km.
	i(pP)ZNE		43 -	57	B, M.Sp. M-S	U.S.C.G.S. - 11°S., 165°E.
	iPPNE		44 -	05	M.Sp. M-S	Santa Cruz Islands,
	iPPPNE		44 -	13	M-S	H = 23.39.08,
	iN		45 -	36	M.Sp.	h = about 60 km.
	eSNE		47 -	24	M.Sp, M-S	
	iN		47 -	41	M.Sp.	
	iE		47 -	42	M-S	
	iN		47 -	43	M-S	
	iLN		48 -	44	M-S	
	iLE		48 -	46	M-S	
	iN		50 -	55	M-S	
	iE		50 -	57	M-S	
	eZ	23 -	55 -	21	B	
" 21st	eZ	00 -	15 -	32	B	

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
March 21st cont.	iZ eN	01 - 10 - 12 10 - 13	B M.Sp.	Compression
	iPZ	03 - 54 - 54	B	Compression
	iPZ eN	14 - 12 - 01 17 - 07	B M.Sp.	Compression
	iPZN ePNE iZN eNE i(pP)Z iPPN iZ eSNE iN iE eN iN eN	15 - 12 - 20 12 - 20 12 - 29 12 - 29 12 - 36 12 - 42 13 - 21 16 - 09 16 - 27 16 - 29 16 - 29 17 - 09 17 - 09	B, M.Sp. M-S B, M.Sp. M-S B M.Sp. B M.Sp.M-S M.Sp. M-S M-S M.Sp. M-S	Compression Δ_{S-P}=20.5°, h=about 60km. U.S.C.G.S. - 11°S., 165°E., Santa Cruz Islands H = 15.07.44., h=about 60km.
	iPZ iZ iZ	15 - 16 - 19 16 - 25 16 - 36	B B B	Dilatation
	iPZ	15 - 20 - 23	B	Compression
	iPZ ePN iN iZ iSN	15 - 24 - 48 24 - 48 24 - 50 25 - 07 28 - 38	B M.Sp. M.Sp. B M.Sp.	Dilatation
	eZ eZ	15 - 37 - 37 38 - 03	B B	
	eiPZ iPN iZNE i(pP)Z iPPNE iZ iZN iZ iSNE iZ iE eLNE iNE	16 - 15 - 12 15 - 12 15 - 14 15 - 27 15 - 34 15 - 58 16 - 05 16 - 28 19 - 02 16 - 19 - 19 19 - 49 20 - 32 22 - 34	B M.Sp. B, M-S B M.Sp.M-S B B, M.Sp. B M.Sp.M-S M-S M-S M-S M.Sp., M-S	Dilatation Δ_{S-P}=20.5°. h=about 60km. U.S.C.G.S. - 11°S., 165°E., Santa Cruz Islands H = 16.10.38. h=about 60km.
	iPZ iZ	16 - 23 - 28 23 - 46	B B	Compression
" 22nd	iPZ iZ iZ iZ	14 - 31 - 58 32 - 10 32 - 30 32 - 49	B B B B	Compression
	iPZ iSN eSN iN eN	14 - 35 - 06 38 - 30 38 - 30 41 - 33 41 - 33	B M.Sp. M-S M.Sp. M-S	Dilatation
" 23rd	iPZ ePN iZ	07 - 23 - 36 23 - 36 23 - 40	B M.Sp. B	Dilatation

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
March 23rd	iPZ	07 - 27 - 08	B	Compression
	iZ	27 - 22	B	
	iZ	27 - 26	B	
	iZ	27 - 33	B	
	iZ	27 - 51	B	
	iPZ	07 - 29 - 22	B	Compression
	iZ	29 - 25	B	
	iZ	29 - 30	B	
	iZ	29 - 54	B	
	ePZ	08 -01 - 33	B	Dilatation
	ePZ	08 - 08 - 08	B	Dilatation
	eZ	08 - 31	B	
	iPZ	08 - 10 - 48	B	Dilatation
	iZ	10 - 54	B	
	iZ	11 - 21	B	
	iZ	09 - 01 - 49	B	Dilatation
	iPZ	13 - 16 - 49	B	Compression
	ePN	16 - 50	M.Sp.	
	iPZ	13 - 18 - 02	B	Compression
	ePN	18 - 02	M.Sp.	U.S.C.G.S. - 11°S., 165°E.
	iZ	18 - 05	B	
	iZ	18 - 09	B	Santa Cruz Islands
	i(pP)N	18 - 16	M.Sp.	H = 13.13.25
	iZ	18 - 19	B	h = about 60 km.
	iPPZN	18 - 24	B, M.Sp.	
	iSN	21 - 50	M.Sp.	
	iN	22 - 28	M.Sp.	
	iPZ	15 -28 - 56	B	Compression
	ePN	28 - 58	M.Sp.	
	iN	29 - 01	B	
	iZ	29 - 06	B	$\Delta_{S-P}=39.8°$
	iZ	29 - 15	B	
	iZ	29 - 21	B	
	iSN	34 - 57	M.Sp.	
	eSE	34 - 57	M-S	
	ePZ	15 - 30 - 32	B	U.S.C.G.S. Near Samar,
	iZ	30 - 50	B	Philippine Islands
	iZ	31 - 04	B	H = 15.21.50.
	eSN	37 - 39	M.Sp.	
	iPZ	20 -19 - 33	B	Dilatation
	iZ	19 - 35	B	U.S.C.G.S.
	iZ	19 - 39	B	Santa Cruz Islands
	iZ	19 - 43	B	H = 20.14.55
" 25th	iPZNE	04 - 14 - 11	B, M.Sp. M-S	Dilatation
	iZE	14 - 21	B, M-S	U.S.C.G.S. - 16½°S., 176°W.
	iZ	14 - 27	B	Tonga Islands region
	iN	14 - 31	M.Sp.	H=04.08.26
	ipPN	14 - 53	M.Sp.	h=about 250km.
	eE	15 - 10	M-S	
	iPPE	15 - 29	M-S	
	eNE	18 - 24	M-S	
	iSNEZ	18 - 55	M-S, H	
	iN	18 - 48	M-S	
	isSZ	20 - 23	B	
	eN	20 - 24	M-S	
	eN	21 - 19	M-S	

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DATE	PHASE	U.T. h.	m.	s.	UNIT	REMARKS
March 25th cont.	iPN	09 -	34 -	39	M-S	
	iPZNE		34 -	41	B, M. Sp. M-S	Compression
	iZN		34 -	49	B, M. Sp.	$\Delta_{S-P}=22^{o}$
	iPPN		35 -	08	M. Sp.	U.S.C.G.S. - 5½° S., 150½° E.
	iPPZ		35 -	09	B	New Britain
	iN		35 -	12	M. Sp.	H = 09.29.42
	iPPPZN		35 -	17	B, M. Sp.	
	iN		35 -	27	M. Sp.	
	iZ		35 -	28	B	
	iSN		38 -	39	M-S	
	iSZNE		38 -	41	B, M. Sp. M-S	
	iZE		39 -	11	B, M-S	
	iE		39 -	29	M-S	
	eLNE		40 -	23	M-S	
	iN		41 -	04	M-S	
	iPcSZ		42 -	18	B	
" 26th	iPZ	00 -	22 -	35	B	Compression
	iPN		22 -	36	M. Sp.	
	ePN		22 -	38	M-S	
	iN		22 -	39	M. Sp.	$\Delta_{S-P}=22^{o}$
	iZ		22 -	52	B	
	iPPN		23 -	05	M. Sp.	
	iPPPN		23 -	15	M. Sp.	
	iSNE		26 -	37	M. Sp., M-S	
	eSN		26 -	37	M-S	
	eNE		29 -	15	M-S	
	eN		29 -	34	M. Sp.	
	iPZ	11 -	01 -	06	B	Compression
	iZ		01 -	10	B	
	iZ		01 -	17	B	
	iZ		01 -	25	B	
	iZ		01 -	32	B	
	e(L)N	11 -	17 -	16	M. Sp. M-S	
" 28th	iPZ	05 -	53 -	28	B	Compression
" 29th	iPZN	13 -	56 -	21	B, M. Sp.	Dilatation
	iSN	14 -	00 -	41	M. Sp.	
	iPZN	13 -	57 -	32	B, M. Sp.	Dilatation
	eN		58 -	02	M-S	
	e(S)N	14 -	02 -	02	M. Sp.	
	iPZ	17 -	43 -	19	B	Dilatation
" 30th	iPZ	08 -	41 -	15	B	Dilatation
	iZ		41 -	18	B	U.S.C.G.S. New
	iZ		41 -	27	B	Hebrides Islands
						H = 08.37.04
" 31st	iPZ	16 -	07 -	00	B	Compression
	iZ		07 -	18	B	

International Seismological Centre

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UNIVERSITY OF QUEENSLAND
SEISMOLOGICAL STATION
BRISBANE

ϕ = 27° 28′ 41″ S., λ = 153° 1′ 52″ E., h = 15m. Bulletin No. 176

Foundation: Semi-consolidated alluvium of raised river terrace.

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INSTRUMENTS AND CONSTANTS

INSTRUMENT	RATE OF RECORDING	COMPONENT	FREE PERIOD	DAMPING	STATIC MAGNIFICATION
Milne-Shaw No. 58 (Modified) .	16 m.m. per minute	N.—S.	12 sec.	20 : 1	250
Milne-Shaw No. 60 (Modified) .	16 m.m. per minute	E.—W.	12 sec.	20 : 1	
Benioff No. 12	15 m.m. per minute	N.—S.	1.5 sec.		
Benioff No. 11	15 m.m. per minute	E.—W.	1.5 sec.		
Benioff No. 13	15 m.m. per minute	Vertical	1.5 sec.		
Sprengnether No. 374	50 m.m. per minute	E.—W.	7.2 sec.		

Time is correct to the nearest second and is checked daily against radio-signals giving Eastern Australian Standard Time.

The station is maintained and operated by the University of Queensland assisted by grants from the Commonwealth Council for Scientific and Industrial Research.

DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
1952				
April 1st	iPZN	01-06-51	B,M.Sp.	Compression
	iPPZN	07-07	B,M.Sp.	Δ_{S-P} = 17.8°
	iZ	07-18	B	U.S.C.G.S.-New Hebrides Is.
	iZ	07-24	B	region H=01.02.26
	iSN	10-06	M-S	
	iSN	10-07	M.Sp.	
	iPZ	14-15-16	B	Dilatation
	ePE	15-16	M-S	
	iE	15-26	M-S	Δ_{S-P} = 34°
	iZ	15-28	B	U.S.C.G.S. - 15°S., 175½°W.,
	iZ	15-57	B	Samoa Island region,
	iPPZE	16-32	B,M.S	H = 14.08.47
	iSZ	20-38	B	
	eSNE	20-39	M-S	
	iN	20-44	M.Sp.	
	eSSN	22-44	M-S	
	iN	22-50	M.Sp.	
	eL_RE	24-25	M-S	
	iPZ	15-15-54	B	Compression
	iPZ	17-51-57	B	Dilatation U.S.C.G.S. Kermadec Islands
April 2nd	eZ	06-55-17	B	
	iPZ	10-42-26	B	Compression
	iZ	42-31	B	Probably deeper than normal
	i(pP)Z	42-38	B	
	iPZ	20-55-45	B	
	iZ	55-49	B	
	iZ	55-57	B	
	iZ	56-16	B	
	iZ	56-30	B	

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
April 3rd	iPZ	15-52-04	B	Compression
	iZ	52-24	B	
	iZ	52-41	B	
	iZ	52-47	B	
" 4th	iPZ	03-05-16	B	Compression
	eLE	15-04	M-S	U.S.C.G.S. Near east coast of Kamchatka 52°N., 159½°E., H= 02.52.55
	eLNE	05-11-41	M-S	
	iPZ	07-59-28	B	Compression U.S.C.G.S. 23½°N., 121°E Near east coast of Formosa H=07.49.25
	eLE	16-16-09	M-S	
	eLN	16-19	M-S	
" 5th	iPZ	03-09-47	B	Compression
	eSE	14-01	M-S	U.S.C.G.S. 33°S., 180°.
	eN	14-[illegible]	M-S	Kermadec Islands region
	eE	14-20	M-S	H= 03.04.33
	iPZN	08-38-44	B, M-S, M.Sp.	Compression
	iN	39-01	M.Sp.	Δ_{S-P} = 26.4°
	iPPZ	39-28	B	U.S.C.G.S. 15½°S., 177½°E.,
	iPPN	39-29	M.Sp.	Fiji Islands
	eSE	43-13	M-S	H=08.33.12
	eSN	43-15	M-S	
	iSN	43-16	M.Sp.	
	iN	43-47	M.Sp.	
	eN	43-47	M-S	
" 6th	iPZ	15-50-44	B	Compression
" 7th	iPZ	12-29-51	Z	Dilatation
" 8th	iPN	10-08-40	M.Sp.	
	iPZ	08-41	B	Compression
	iPNE	08-42	M-S	Δ_{S-P} = 46.5
	iZ	08-54	B	U.S.C.G.S. Sulu Sea
	iN	09-03	M-S, M.Sp.	H= 10.00.06
	eE	09-04	M-S	
	iPPZNE	10-30	B, M-S	
	iPPN	10-31	M.Sp.	
	iSN	15-25	M-S, M.Sp.	
	eSE	15-25	M-S	
	iN	16-27	M.Sp	
	iN	16-55	M.Sp.	
	eNE	19-00	M-S	
	iN	19-04	M.Sp.	
	iPZ	20-53-50	B	Compression
" 9th	iPZ	20-46-28	B	Compression
	iZ	46-36	B	
" 10th	ePZ	04-48-36	B	
	eN	48-41	M.Sp.	
	iZ	48-41	B	Δ_{S-P} = 57° Ca.
	iZ	48-56	B	
	iZ	49-18	B	
	iSN	56-31	M.Sp.	
	eSN	56-31	M-S	
	ePZ	06-07-17	B	U.S.C.G.S. 25°N., 126°E.,
	eSN	15-07	M.Sp.	Ryukyu Islands
	eSNE	15-10	M-S	H = 05.57.20
	iPZ	07-04-09	B	U.S.C.G.S. About 200 miles

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
				south of Fiji H = 06.58.43
April 11th	ePZ iZ	15-29-09 29-16	B B	
" 12th	eLN	02-03-15	M-S	
	iPZ	23-25-03	B	
" 13th	iPZ iZ iZ iZ iZ	05-19-04 19-17 19-41 20-02 29-28	B B B B B	Compression
" 14th	iPZN iZ iPPZ iSN eSNE iN	01-10-18 10-42 10-49 14-13 14-14 20-04	B, M.Sp. B, M.Sp. B M.Sp. M-S M.Sp.	Δ_{S-P} = 22° Ca.
	ePZ iPN i(PP)N eSN iSN iSSE iL$_Q$NE iNE	07-23-18 23-20 24-08 28-12 28-14 29-52 31-50 33-46	B M.Sp. M.Sp. M-S M.Sp. M-S M.Sp., M-S M.Sp., M-S	
	iPZ	12-59-45	B	Compression
	iPZ	18-17-47	B	Compression
	iPZN ePE iN iZ iZN iZ iZN iZ i(PP)ZN e(PP)NE iN	23-57-26 57-26 57-31 57-36 57-40 57-59 58-06 58-32 59-08 59-08 59-42	B, M.Sp. M-S M.Sp. M-S B B, M.Sp. B, . B, M.Sp. B B, M.Sp. M-S M.Sp.	M-S Compression Δ_{S-P} = 39.3° U.S.C.G.S. - 3½°N., 126½°E Molucea Passage, H= 23.49.45
" 15th	iZ iSN iSNE iSZ iN eN iN iN eL$_Q$N iL$_R$N iN	00-00-09 03-24 03-26 03-29 03-53 03-53 05-02 05-44 06-25 08-15 11-02	B M.Sp. M-S B M.Sp. M-S M.Sp M.Sp. M-S M.Sp. M-S	
	iPZ iZ	00-16-50 16-53	B B	Compression
	iPZ iZ iZ	02-52-39 11-09 11-34	B B B	Dilatation U.S.C.G.S. - 43°N., 143½°E., Hokkaido, Ja H=05.59.53
	iPZN iZ iZ iPPZ	09-21-05 21-18 21-22 21-42	B, Sp. B B B	Compression U.S.C.G.S. - Fiji Is. region H =09.15.03

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DATE	PHASE	U.T. h. m. s.	UNIT	REMARKS
April 15th cont.	iZNE	22-15	B, Sp, M-S	
	iZN	22-22	B, Sp.	
	iSZNE	25-23	B, M-S	
	iZN	25-29	B, Sp.	
	iN	26-11	Sp.	
	i(L)N	26-26	Sp.	
	iN	27-35	Sp. &M-S	
	iE	27-40	M-S	
	iN	31-07	Sp., M-S	
	iPZ	09-27-14	B	Compression
	iPZ	13-27-43	B	Compression
	iZ	27-59	B	
	eZ	29-15	B	
	iPZ	14-47-38	B	Dilatation
	iPcPZ	19-15-46	B	Compression
	iZ	16-03	B	U.S.C.G.S. - 56°S., 24°W.,
	iZ	16-19	B	Sandwich Islands region
	eN	19-50	M-S	H=19.02.12
	iZ	19-55	B	
	iSKSN	26-26	M.Sp.	
	eSKSN	26-26	M-S	
" 16th	iPZ	08-35-50	B	Compression
	iZ	35-54	B	
	iZ	35-58	B	
	iZ	36-42	B	
	iZ	37-08	B	
	iZ	37-32	B	
	eZ	19-33-33	B	
	iZ	33-51	B	
" 17th	iPZ	04-03-20	B	Compression
	iZ	03-23	B	
	iZ	04-04	B	
" 18th	iPZ	02-20-35	B	Dilatation
	iPZ	03-41-19	B	Compression U.S.C.G.S.
	iZ	41-29	B	Tonga Islands region H=03.35.20
	iPZ	11-44-36	B	U.S.C.G.S. Kermadec Is.
	ePN	44-36	M.Sp.	H= 11.39.15
	iSNE	49-05	M-S, M.Sp.	
	eiPZ	16-06-56	B	Compression
	iPN	06-57	M.Sp.	$\Delta_{S-P} = 41°$
	iSN	13-02	M.Sp.	U.S.C.G.S. 12°N., 140°E.,
	eSNE	13-02	M-S	Mariana Islands regions
	eLRN	19-40	M.Sp.	H= 15.59.10
	iPZ	16-19-51	B	Dilatation
	iPZ	21-06-03	B	Compression
	iPZ	21-14-42	B	Compression
	iPZ	22-52-44	B	Compression
" 19th	eZ	09-47-17	B	
	iPKPZ	10-18-10	B	U.S.C.G.S. - 7°N., 71⅓W.,
	iZ	19-41	B	Columbia - Venezuela border
	iPPZ	20-38	B	H = 09.58.53

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DATE	PHASE	G.C.T. h.m.s.	UNIT	REMARKS
April 19 cont.	iSKSZ	21-36	B	U.S.C.G.S. - 7°N., 71½°W., Columbia-Venezuela border H = 09.58.53
	iSKSNE	21-42	M-S, Sp.	
	iSKSN	21-48	Sp.	
	iSKKSZ	22-13	B	
	eZ	10-22-13	B	
	iN	11-08-10	Sp.	
	ePN	11-17-08	Sp.	Δ S-P = 26.2°
	iPZ	17-09	B	Dilatation
	ePNE	17-99	M-S	
	i ZNE	17-15	B, Sp. M-S	
	iPPPN	17-59	Sp.	
	iSZ	21-37	B	
	iSNE	21-39	Sp. M-S.	
	eZ	21-40	B	
	iSSN	22-52	M-S	
	iLRN	24-25	M-S	
	iLRE	24-27	M-S	
	iPZ	13-06-30	B	Dilatation
" 20th	iPZ	07-13-37	B	Dilatation U.S.C.G.S. - 22°S., 175°W., Tonga Islands. H=07-07-36, h=about 100 km.
	ePZ	09- 44-45	B	
	eN	51-20	M-S	
	eZ	18- 05-47	B	
	iPN	21 - 01-06	Sp.	
	ePNE	01-06	M-S	
	e(S)NE	05-18	Sp., M-S	
	iL_RNE	07-11	Sp., M-S	
	iZ	21- 22-20	B	
	iZ	21- 35-24	B	
" 21st	iPZN	01- 20-29	B, Sp.	Compression to south Δ_{S-P} 20.3°, h=about 70 km.
	iPE	20-30	M-S	
	ipPZN	20-36	B, Sp.	
	eE	21-15	M-S	
	iSN	24-12	Sp.	
	iSE	24-15	M-S	
	isSN	24-32	Sp.	
	isSE	24-34	M-S	
	iZ	16- 08-07	B	
" 22nd	iPZ	04- 31-28	B	Dilatation Δ_{S-P} = 27.6° U.S.C.G.S. - 27°S., 176½°W., Kermadec Islands region, H = 04.25.42.
	ePN	31-28	Sp.	
	iZ	31-38	B	
	iZ	31-54	B	
	eSE	36-09	M-S	
	iPZ	20--45-41	B	Dilatation
" 24th	eLN	12-25.75	Sp. M-S	
	eLE	12-26.2	M-S	
" 25th	iPN	00-24-36	Sp.	Compression
	iPZ	24-37	B	
	ePNE	24-37	M-S	
	iZ	24-44	B	
	iZ	25-06	B	
	iPZ	08-06-35	B	Dilatation U.S.C.G.S. - Tonga Islands region.

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Date	PHASE	h. m. s.	UNIT	REMARKS
	iPZN	15-02-52	B, Sp.	Dilatation
	iZN	03-04	B, Sp.	
	iN	03-17	Sp.	
	iZ	15-06-38	B	
	iZ	16-23-17	B	
	iPZ	16-49-25	B	Compression
	iZ	51-17	B	
" 26th	iPZ	12-36-57	B	Compression
	i(P)Z	12-38-53	B	Compression
" 27th	iPZ	08-18-14	B	Dilatation
	iZ	18-46	B	U.S.C.G.S. - Kermadec Islands
	iZ	18-53	B	region. H=08.12.32.
	iPZ	12-46-30	B	Compression
	iZ	12-49-02	B	
	iZ	14-01-55	B	
	iPZ	15-01-35	B	Dilatation
	iPZN	19-46-10	B, Sp.	Dilatation
	iZ	46-29	B	U.S.C.G.S. - Santa Cruz
	iPPZ	46-39	B	Islands
	iZ	47-21	B	
	iPZ	23-23-21	B	Dilatation?
	iSN	30-32	Sp.	Δ_{S-P} = about 50°
	eSN	30-33	M-S	
" 28th	iPnZ	10-08-52.7	B	Dilatation
	iP*Z	08-58.6	B	Felt at Orange and Bathurst
	iZ	09-07	B	N.S.W.
	iPgZ	09-26.0	B	
	iN	09-50	B	
	iSnZ	10-16.6	B.	
	iS*Z	10-39.7	B	
	SgN	11-01	M.Sp. (in minute break)	
	ePZ	11-05-30	B	Δ_{S-P}= 69°
	iPcPN	05-48	Sp.	U.S.C.G.S. 92½°N , 143°E.
	iPcPZ	05-49	B	Hokkaido, Japan.
	eSNE	14-30	Sp., M-S	H=10.54.18
	iPSN	14-52	Sp.	
" 29th	iPZN	02-45-12	B, Sp.	Dilatation
	ePN	45-12	M-S	Δ_{S-P}= 57° U.S.C.G.S.
	iZ	45-34	B	
	iZ	45-26	B	26°N., 122½°E. Off north
	iPPZ	47-24	B	coast of Formosa
	eSNE	53-05	M-S	H = 02.35.00
	iScSNE	54-40	M-S	
" 30th	iPZ	10-31-46	B	Dilatation
	iZ	31-55	B	
	iZ	32-15	B	
	iPZ	11-29-36	B	Dilatation
	iPZ	18-46-48	B	Compression
	iZ	46-56	B	
	iZ	47-06	B	
	iZ	47-21	B	
	iZ	47-57	B	

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UNIVERSITY OF QUEENSLAND
SEISMOLOGICAL STATION
BRISBANE

ϕ = 27° 30' 02"., λ = 153° 00' 53" E., h = 24.2 m.

Foundation: Main Vault - Welded Tuff
Out-stations (Sprengnethers) High level semi-consolidated river alluvium.

SEISMOLOGICAL BULLETIN FOR MAY 1952 NO 177

INSTRUMENTS AND WORKING CONSTANTS

INSTRUMENT	D mm per min.	Com-ponent	T_o	ε	V_o	Displacement for 1" arc tilt	Date from which constants apply
Milne-Shaw No.58 (modified)	16	N	12	20:1	250	43.6 mm.	25/9/51
Milne-Shaw No.60 (modified)	16	E	12	20:1	250	43.7 mm.	24/8/51
				T_g	μ^2	V_s	
Benioff No. 12	15	N	1.5				
Benioff No. 11	15	E	1.5				
Benioff No. 13	15	Z	1.5	0.3			24/8/51
Sprengnether No.1122	30	N	7.01	7.13			8/10/51
Sprengnether No.1121	30	E					
Sprengnether No.1123	30	N	7.34	7.38			24/10/51

NOTE: The three Sprengnether seismometers, Series H, are used for microseismic work and from January to the end of June are all orientated to record the N-S component. From July to December No. 1121 is orientated to record the E-W component. None is housed in the main vault, but the maximum difference in either latitude or longitude is only *19". They are housed in the main vault from July to December but in outstations from January to June. The maximum difference in latitude or longitude of any outstation and that of the main vault is 19 seconds.

Time Service: Minute time marks are made electromagnetically by Standard or Synchronome contact clock.
Time comparisons are made daily with radio time signals from Mt. Stromlo Observatory.
Seismograph readings can be determined to the nearest second.

Tables used: Jeffreys & Bullen 1940. Deep focus chart, Brunner 1935.
The station is maintained and operated by the Department of Geology and Mineralogy, University of Queensland assisted by Commonwealth Government grant to the University for research purposes.

Abbreviations: M.S. - Milne Shaw; B - Benioff; Sp. - Sprengnether. c - compression; r-rarefaction

Amplitudes reported are single amplitudes as measured on the records, (not reduced to ground movement).

Date MAY	Phase	Time h. m. s.	Direction of ground movement	Per. s.	Amplitudes m.m.	Instrument	Remarks
1st	iPZ	01.31.32	r	0.3	-0.7	B	
	ePN	31-32				Sp.	
	iNE	31-42				Sp., M-S	
	?iPPN	31-59				Sp.	
	iSN	35-27		2.5	-6.3	Sp.	
	iSZ	35-29				B	
	eE	35-33				M-S	
	iN	35-55				Sp.	
	eL_RN	37-05				M-S	
	eL_RN	37-06				Sp.	
	MN				+1.5	M-S	
4th	eE	06-42-10				M-S	
	eE	43-20				M-S	
	eN	45-16				M-S	
	iN	45-18				Sp.	
	MN				-.6	M-S	
	iPZ	14-20-57	c	1.5	-.9	B	
	ePE	20-58				M-S	
	iZ	21-00				B	Δ_{S-P} = 27.8°
	iN	21-03				M-S	(U.S.C.G.S. - 24½°S.,
	iNZ	21-07				Sp., B	177½°W., Tonga Islands
	eE	21-38				M-S	region. H=14.15.16
	eE	24-46				M-S	Δ_{P-H} = 27°).
	iSN	25-35		10.5	+9	Sp.	
	iSE	25-36		10.5	+1	M-S	
	eSN	25-36		10.5	+1.25	M-S	
	iNE	26.18				Sp., M-S	
	iSSE	26-59		9	+2.3	M-S	
	iP_cSNE	27-37			-1.5	M-S	
	iL_cE	28-24			+2.7	M-S	
	iL_RN	28.31				Sp.	
	iS_RSN	31-36		14.5	+5.7	M-S	
	MN^c				-10	M-S	
	ME				+8	M-S	
5th	iPZ	01-21-02	r	1	+.7	B	MN +1.4 M.S.
	iN	30-48				Sp.	ME +1.7 M.S.
	iSNE	31-25		6.5	+6.4	Sp., M-S	MN -13.4 Sp.
	eSN	31-25				M-S	
	iPZ	04-55-49	r	1	+.8	B	(U.S.C.G.S. - Bonin Islands region, H=04.47.00, h=about 100km Δ_{P-H} = about 50°).
	iZ	18-17-42				B	
	iPZ	20-52-35	c		+..5	B	
	iZ	52-41		1	+.5	B	
6th	iPZ	18-48-03	r	.7	+.4	B	(U.S.C.G.S. - New Hebrides Islands
	iZ	48-09		.7	+.6	B	H=18.44.16 Δ_{P-H} = about
	iZ	48-15				B	16.5°)
	iN	53-23				Sp.	
	eN	53-23				M-S	
8th	iPZ	01-09-14	C?			B	(U.S.C.G.S. - 35½°N.,
	eSE	17-42				M-S	140°E., Honshu, Japan. H=00.58.40, h=about 60km. Δ_{P-H} = about 65°).

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. s.	Amplitudes m.m.	Instrument	Remarks
8th	iPZ	15.01.15	C	1	.8	B	
cont.	iZ	01.21				B	
	iZ	01-29				B	
	iZ	01-34				B	
	iZ	01-49				B	
	iPN	21-18- 08	S		+8.5	Sp.	Δ_{S-P} = about 39°
	iPZ	18-09	C	-1.5	+1.3	B	(U.S.C.G.S. - 2½°N.,
	iPN	18-09	S			M-S	127°E., Molucca Passage.
	iPE	18-09	E			M-S	H = 21.10.40
	iPPN	18-43	N		+2	M-S	Δ_{P-H} = 39°).
	iPPE	18-43	W		-3	M-S	
	iPPN	18-44	N		-4.5	Sp.	
	iPPPE	20-06		5	-123	Sp., M-S	
	iN	23-50				Sp., M-S	
	iSZNE	24-00		5	+9.5	B, Sp.	
					-2	M-S	
	iP_cSN	24-08				M-S	
	eN^c	24-23				M-S	
	iE	26-43			1.3	M-S	Amp.
	iL_QN	26-55		10	+24	Sp., M-S	MN 3.3 M.S.
	iN^Q	27-46		10	-15	Sp., M-S	ME 3.7 M.S.
	iN	29-34				M-S	MN -30 Sp.
	iPZ	21-54-31	C	1.3	-5	B	Δ_{S-P} = 24°, h=about 200km.
	iPN	54-31	S	3	-4.8	Sp.	(U.S.C.G.S. - 5½°S.,
	ePNE	54-31				M-S	145°E., Northern New
	ipPN	55-10				Sp.	Guinea, H=21.49.36,
	ipPZ	55-12		1.2	1.7	B	h = about 200 km.
	epPNE	55-12				M.S.	Δ_{P-H} = 24°).
	esPN	55-34			+3.6	Sp.	
	esPN	55-36				M-S	
	iSE	58-27		5	.7	M-S	
	eSN	58-27				M-S	
	eSN	58-28		4	7.2	Sp.	M.E. -3.1 M.S.
	isSE	59-33		10	-3.5	M-S	M.N. -1.2 M.S.
	iSSE	59-49				M-S	M.N. +12 Sp.
9th	iPZ	03-33-59	C	2	1.2	B	Δ_{S-P} = about 29.5°,
	iPN	33-59				Sp.	h=about 400 km.
	iPE	34-00				M-S	
	iZ	34-07		1.8	+3	B	(U.S.C.G.S. - Kermadec
	iN	34-18			+2.4	Sp.	Islands, H=03.29.00,
	iZN	34-22			-2.7	B, Sp.	H= about 400 km.
	iZ	34-38		1.5	-.7	B	Δ_{P-H} = 26°).
	iN	34-42		3	+4	Sp.	
	iZ	35-31			+.7	B	
	iN	36-10		6	-4.5	Sp.	
	iZ	36-21			+.5	B	
	iN	36-30			-3	Sp.	
	iSN	38-34		6	-8	Sp.	
	iSN	38-35				M-S	
	eSE	38-37				M-S	
	iN	39-00			+7.8	Sp.	
	iN	39-42		11	-1.7	M-S	
	iN	39-43				Sp.	
	iN	40-12		8	-13	Sp.	
	iN	41-39		12	+2.7	M-S	
	MN				+23	Sp.	
	ePZ	14-13-15				B	
	iZ	13-24				B	
	iPZ	17-52-23	r	1.5	+ .9	B	Δ_{S-P} = about 22°
	iPN	52-23	N		-5.5	Sp.	(U.S.C.G.S. - 6½°S.,

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. s.	Amplitudes m.m.	Instrument	Remarks
9th cont.	ePN	52-24				M-S	155°E., Solomon Islands H=17.47.40, h=about 60 km. Δ_{P-H} = 21.3°).
	ePE	52-27				M-S	
	iZ	52-34				B	
	ipPN	52-45			-10.8	M-S	
	ipPZ	52-45		.8		B	
	iPPN	52-55		10	+11.3	M-S	
	iE	53-45		6	+4.2	M-S	
	iSN	56-16		8	-8.7	M-S	
	iSE	56-1		10	+8	M-S	
	iN	56-24		6	-24	M-S	
	iE	56-43		6	-30	M-S	
	iN	56-15				M-S	
	MN				+135	Sp.	
	MN				+30	M-S	
	ME				-30	M-S	
	iPZ	22-44-07	C	1.2		B	
10th	iZ	04-40-57		.2		B	
	iZ	41-27				B	
	iPZ	08-58-09	r?	.8	+.6	B	
	iZ	58-23				B	
	iZ	58-42				B	
	iPZ	17-11-33	C	1.5?	-3.7	B	
	iPN	11-34	N?	2	+4.4	Sp.	
	iZ	11-55		1.5	-1.7	B	
	iZ	13-07		1.5	+2.2	B	
	iSN	17-20				M-S	
	iSN	17-20		5	+6.3	Sp.	
	iE	20-12				M-S	
13th	iPZ	04-41-25	r	.5		B	
	iZ	41-28		.5	+.7	B	
	iZ	41-34		.8	+.7	B	
	iZ	41-40			-.6	B	
	iZ	41.46				B	
	iZ	41-56				B	
15th	iPZ	10-08-32		.7	-.1	B	
	iZ	08-41		1	+.2	B	
	iPZ	10-35-02	C	.8	+.4	B	(U.S.C.G.S. - Off north coast of Luzon, Philippine Is., H=10.25.25 Δ_{P-H} = 56°).
	iZ	35-16		1	-.4	B	
	iZ	35-22				B	
	iZ	35-29				B	
	iZ	45-43				B	
	iZ	35-54				B	
	iZ	36-08				B	
	iPZ	17-59-10	C	.6	-.5	B	Possibly not seismic
	eZ	18-22-40				B	
	iPZ	23-39-13	r	.9	+.6	B	
	iZ	39-22				B	
	iZ	39-34		1	-.5	B	
16th	iPZ	02-48-24	C	1	-.4	B	
	iZ	48-29				B	
	eZ	48-41				B	
	iZ	20-02-11		1	-.5	B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. s	Amplitudes m.m.	Instrument	Remarks
16th cont.	iPZ	21.03.43	C	.8	-.5	B	
	iPZ	22-25-19	C	1.1	-1	B	(U.S.C.G.S. - Tonga Is.
	iZ	25-33		1	-.7	B	region, H=22.19.35
	iZ	25-55		1.5	-1	B	
	iZ	26-07		1	+ .9	B	
	e(PP)N	26.11				Sp.	
	i(S)N	31-48				Sp.	
	MN	31-48			-4	Sp.	
	eZ	23-00-11				B	
	iPZ	23-45-01	C	.7	-.8	B	
	iZ	45-06		1		B	
17th	iPN	06-01-44	N	4	-30	Sp,	Δ_{S-P} = 22°
	iPN	01-44	N	4	+2.5	M-S	
	iPZ	01-45	r	1.5	+8	B	(U.S.C.G.S. - 4½°S.,
	iPE	01-47	E	3.5	-1.2	M-S	155°E., Solomon Islands,
	eZ	02-13				B	H= 05.56.38
	iPPN	02-15		4	+11+1	Sp., M-S	Δ_{P-H} = about 23.3°).
	iPPPE	02-35		5	+1.2	M-S	
	iPPPN	02-36		3	-14	Sp.	
	iSZ	05-40		2	-1	B	
	iSE	05-40		5	-2.5	M-S	
	eSN	05-40			-4.5	M-S	
	iN	05-45		3	-4.6	Sp.	
	iE	05-45			-2.6	M-S	MN -4.5 M.S.
	iNE	06-09		4.56	-13.5	Sp.,	ME -3.5 M.S.
					+2.5	M-S	M.N. -4.6 M.Sp.
	iSSE	06-20		6	-3	M-S	
	iE	06-35		7	-3.4	M-S	
	iN	07-33		6	-12.7	Sp.	
	ePZ	09-59-24				B	(U.S.C.G.S. - 42½°N.,
	ePN	59-28				Sp.	144½°E - near east
	eSNE	10-08-30				M-S	coast of Hokkaido,
	eSN	08-30				Sp.	Japan. H=09.48.16).
19th	iPZ	05-22-15	C			B	
	Z	22-26			+.3	B	
	iZ	24-15		1.5	+.3	B	
	iZ	24-26		1.5	-.3	B	
	iPZ	11-14-45	C	.8	+.4	B	Δ_{S-P} = about 17°
	iZ	14-48		.6	-.8	B	
	ePPZ	15-00				B	Felt at Broken Hill,
	eZ	15-05				B	N.S.W. and Mildura
	iSN	17-54		4	-2.7	Sp.	Victoria.
	iZ	18-00		1.5	-8	B	
	iZ	18-02				B	
	iZ	18-11		1	+1.1	B	
	iSSZ	18-14		1.3	+2.2	B	
	iN	18-29		2	5.3	Sp.	
	iL_RN	18-44		1.5	+3	Sp.	
	iL_RZ	18-46		1	+3.0	B	
	iN^R	19-46		5	-5	Sp.	
	MN				+6	Sp.	
	ePZ	18-43-35	C			B	
	iZ	43-42		1.5	+.5	B	
	iN	43-44		3.5	+.2	Sp	
	iZ	43-47		1.4	+.7	B	
	iPcPz	43-55		2.8	-.4	B	
	iZ	44-16		1	+.3	B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. s.	Amplitudes m.m.	Instrument	Remarks
19th	iZ	44.32		1.2	+.6	B	Δ_{S-P} = about 70°
cont.	iZ	44.43		2	+.4	B	(U.S.C.G.S.) 43°N.,
	iN	45-06		4	-2.5	Sp.	144½°E., near east
	iN	45-46		5	+3	Sp.	coast of Hokkaido,
	iN	47-06		6	+1.7	Sp.	Japan. H=18.32.24.
	iN	48-30		6	+3	Sp.	
	iSN	52-38		8	-5.8	Sp.	Δ_{P-H} = 70°).
	eSN	52-38		10	+1.0	M-S	
	eSE	52-38		10	+1.0	M-S	
	iN	52-54		6	-5.2	Sp.	
	iN	53-24		7	+2	Sp.	
	eN	53-25			2	M-S	
	iScSN	53-38		8	-5.4	Sp.	
	eSSN	57-19		12	-1.0	M-S	
	iSSN	57-20			-5.2	Sp.	
	iN	19-02-04			+3.2	Sp.	
	eN	02-04		20	+ .5	M-S	
	MN				-5.8	Sp.	
	ePZ	22-31-14	C	1	+.4	B	Δ_{S-P} = about 22½°
	iZ	31-15		1	-3.0	B	h= about 100 km.
	iPN	31-16		1	-1.8	Sp.	(U.S.C.G.S. - Off north-
	iZ	31-16				D	east coast of New
	eN	31-16				M-S	Guinea. H=22.26.04,
	ipPN	31-34			-5	Sp.	h= about 100 km.).
	epPN	31-35				M-S	
	iZ	32-01		2	-1.2	D	
	iN	32-02		2	-2.5	Sp.	
	iN	32-30		1	-.4	B	
	iN	35-09				Sp.	
	iSN	35-10		11	+1.2	M-S	
	iSN	35-12		4	+10.4	Sp.	
	esSN	35-46		8	+.5	M-S	
	isSN	35-48		9	+5.8	Sp.	
	iN	38-54		8		Sp.	
	MN				+10.4	Sp.	MN +1.2 M.S.
20th	iPZ	13-37-13	r	1	+1.1	D	(U.S.C.G.S. - Fiji
	iZ	37-18		.7	-.5	B	Islands region.
	iZ	37-27		.8	+.3	D	H=13.31.45 Δ_{P-H}
							= about 25.4°).
21st	ePN	13-12-56				Sp.	
	ePZ	12-57	r?	1.5	+.4	B	Δ_{S-P} = about 31°
	iZ	13-04		1.5	+.4	B	
	iZ	13-32		1	.2	D	
	iSN	17-58			-3.5	Sp.	
	eSN	17-58				M-S	
22nd	iPZ	09-03-57	C	1	-1.4	D	
	iZ	04-02		1.5	+.2	D	
	iPZ	18-20-06	C?			B	
	iPZ	18-21-36	C	1	+.6	B	
	iPZ	23-18-28	r	1	-.5	B	Δ_{S-P} = about 61°,
	iZ	18-30		2	+1.6	D	h=about 60 km. (U.S.C.G.S.
	ipPZ	18-43		1.5	+1.0	D	-29½°N., 131½°E.,
	iZ	18-55				D	Ryukyu Is., H=23-08-21,
	iZ	18-59		1	¼.9	D	h=about 60 km.
	iZ	19-06		1.5	+.7		Δ_{P-H} = about 61°).
	iSE	26-48		5		M-S	
	isSE	27-04		5		M-S	
	esSE	27-06				M-S	

Date	Phase	Time h. m. s.	Direction of ground movement	Per. s.	Amplitudes m.m.	Instrument	Remarks
22nd	eN	28.44				M-S	
cont.	eN	29-29				M-S	
23rd	iPZ	04-31-12	r	1.5	+1.2	B	U.S.C.G.S. - 33°N., 136°E - near south coast of Honshu, Japan. H=04.20.52, h=about 60km.)
	iZ	31-19		1.3	-.5	B	
	eN	05-29-03			-1.0	M-S	Possibly not seismic.
	iE	29-14		5	-.6	M-S	
	eE	30-56		8	+1.0	M-S	
	iPZ	20-29-55	C	1	-.3	B	Δ_{S-P} = about 30°, h=about 250km. (U.S.C.G.S. - 18½°S. 176°W. Tonga Islands H=20.24.08, h=about 250km. Δ_{P-H} = 30°).
	iZ	29-56		1	-1.5	B	
	ipPZ	30-41		1.8	-.6	P	
	iZ	30-47				B	
	iSN	34-30				M-S	
	iSN	34-32		5	-3.8	Sp.	
	iSE	34-33				M-S	
	iN	40-15			+5.5	Sp.	
24th	iPZ	04-37-35	r	1	+1.4	B	
	iZ	37-39		1	+.6	B	
	iZ	37-51				B	
	iZ	38-17		1.5	-.7	B	
	ePNE	16-16-15				Sp. M-S	(U.S.C.G.S. - Off west coast of Sumatra, H=16.05.53).
	eSNE	23-57				M-S	
	iSN	23-58		7	-7	Sp.	
	MN			24	+18	Sp.	Large microseisms.
25th	iPZ	00-33-50	C	1	+.5	B	
	iZ	33-56		.8	+.4	B	
	iZ	34-04				B	
	iPZ	07-12-34	C	1.2	+.7	B	
	iZ	13-13		1.4	.6	B	
26th	iPZ	03-38-0[illegible]		1.1	-[illegible]	B	(U.S.C.G.S. - Tonga Is., region, H=03.26.14, h=about 100km.)
28th	iPZ	08-09-08	C?	1	-.4	B	Δ_{S-P} = about 65.3°, h=about 400 km. (U.S.C.G.S. - 35½°N., 136°E, Central Honshu, Japan. H=07.59.09, h=about 400km. Δ_{P-H} = about 65.3°).
	iPN	09-08				Sp.	
	ePNE	09-08				M-S	
	iZ	09-13		1.5	-1.6	D	
	epPN	10-24		6	+3.5	Sp.	
	iN	11-24		7	+3.8	Sp.	
	eN	11.25		7	+.5	M-S	
	iSN	17-19		9		Sp.	
	iSN	17-20		8	+2	M-S	
	iSE	17-20		8	-1	M-S	
	iN	18-29				Sp.	
	iN	18-30		10	-1	M-S	
	eE	18-39				M-S	
	iN	21-26				Sp.	
	eN	21-26		10	-.8	M-S	
	eZ	37-22				B	
	eZ	37-40				B	
29th	iPZ	02-17-42	C	1		D	
	iZ	17-44		1	+.7	B	
	eZ	07-46-21				B	
	eZ	54-54				B	
	eN	57-34				Sp.	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. s	Amplitudes m.m.	Instrument	Remarks
29th cont.	iPZ	14-55-29	r?	1.1	+.4	B	
	iZ	15-55-45		1	-.4	B	
	iZ	16-55-22				B	
30th	iPZ	01-26-58	C	1.4	-.6	B	(U.S.C.G.S. - Near east coast of Formosa. H=01-17-14, h=about 100km. Δ_{P-H} = about 57°).
	iZ	27-03		1	-.4	B	
	eZ	05-26-05				B	
	iZ	26-12				B	
	iPZ	09-51-56	C	.8	-1.4	B	
31st	ePZ	05-01-19		1.3	+.3	B	
	ePN	01-19		5	+.3	Sp.	
	iZ	01-29		1	+.4	D	
	iPPZ	02-27				B	
	eSN	06-35				Sp.	
	eSN	06-35				M-S	
	eN	06-51				M-S	
	eLE	08-33		15	-.7	M-S	
	MN			15	-7.3	M-S	
	ME			13	-8.5	M-S	
	MN			16	-37	Sp.	
	iPZ	11-55-00	C	1	-1.5	D	Δ_{S-P} = 18°
	ePE	55-01				M-S	No surface waves.
	iZ	55-07		1.1	-3.0	D	(U.S.C.G.S. - Loyalty
	iE	55-37		5	+1	M-S	Is. region, H=11-50-50.
	iZ	55-39		1.6	-1.1	D	Δ_{P-H} = 18°).
	eE	56-43				M-S	
	iSN	58-17		11	-3	M-S	
	iSZ	58-17		1	-.3	D	
	iSN	58-19		9	-30	Sp.	
	iE	58-21		10	+2	M-S	
	iPZ	17-14-20	C	1	+.4	B	
	iPZ	19-21-59	C	1	-.6	B	
	iZ	22-07				B	
	iZ	20-30-34	C			B	

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BRISBANE

ϕ = 27° 30' 02"., λ = 153° 00' 53" E., h = 24.2 m.

Foundation: Main Vault - Welded Tuff
Out-stations (Sprengnethers) High level semi-consolidated river alluvium.

SEISMOLOGICAL BULLETIN FOR JUNE 1952 NO 178

INSTRUMENTS AND WORKING CONSTANTS

INSTRUMENT	D mm per min.	Com-ponent	T_o	ε	V_o	Displacement for 1" arc tilt	Date from which constants apply
Milne-Shaw .58 (modified)	16	N	12	20:1	250	43.6 mm.	25/9/51
Milne-Shaw .60 (modified)	16	E	12	20:1	250	43.7 mm	24/8/51
				T_g	μ^2	V_s	
Benioff No. 12	15	N	1.5				
Benioff No. 11	15	E	1.5				
Benioff No. 13	15	Z	1.5	0.3			24/8/51
Sprengnether No.1122	30	N	7·01	7.13			8/10/51
Sprengnether No.1121	30	E					
Sprengnether No.1123	30	N	7.34	7.38			24/10/51

NOTE: The three Sprengnether seismometers, Series H, are used for microseismic work and from January to the end of June are all orientated to record the N-S component. From July to December No. 1121 is orientated to record the E-W component. None is housed in the main vault, but the maximum difference in either latitude or longitude is only *19". They are housed in the main vault from July to December but in outstations from January to June. The maximum difference in latitude or longitude of any outstation and that of the main vault is 19 seconds.

Time Service: Minute time marks are made electromagnetically by Standard or Synchronome contact clock.
Time comparisons are made daily with radio time signals from Mt. Stromlo Observatory.
Seismograph readings can be determined to the nearest second.

Tables used: Jeffreys & Bullen 1940. Deep focus chart, Brunner 1935.
The station is maintained and operated by the Department of Geology and Mineralogy, University of Queensland assisted by Commonwealth Government grant to the University for research purposes.

Abbreviations: M.S. - Milne Shaw; B - Benioff; Sp. - Sprengnether. C - compression; r-rarefaction

Amplitudes reported are single amplitudes as measured on the records, (not reduced to ground movements).

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
ıne st	iPZ	10-48-50	r	1	+1.7	B	(U.S.C.G.S. - about 500 miles south of Fiji Islands H=10.43.59, h = about 550 km. Δ_{P-H} = about 26°)
	iZ	12-49-10	r	.6	+.2	B	
	ePZ	17-00-10		1	+.2	B	(U.S.C.G.S. - 16°S., 173½°W., Samoa Islands. H=16.53.40, h= about 100 km.
nd	ePZ	03-06-30	r				
	iPZ	05-02-51	c	.7	-2.3	B	Δ_{S-P} = 21°
	iPN	02-52	n			Sp.	(U.S.C.G.S. - Solomon
	iZ	02-58		.7	-1.0	B	Islands, H=04.58.02
	iPPZ	03-14		.7	-.6	B	Δ_{P-H} =21.6°)
	iZ	03-40		1.1	+.5	B	
	iSN	06-38		6	-8.2	Sp.	
	eSN	06-39		7	±1	M-S	
	iPZ	16-09-13	r	1	+1.5	B	
	iZ	09-31		1	+ .6	B	
	iZ	10-25		1.3	+ .6	B	
	iPZ	18-14-41	c	.9	+.3	B	U.S.C.G.S. - Off east
	iZ	14-43		1	+.7	B	coast of Mindanao,
	iZ	14-49		1	+.4	B	Phillippine Islands,
	iZ	15-08		.8	-.3	B	H = 18.06.43, Δ_{P-H} = 43°
	iZ	17-11		1	-.3	B	
	iZ	17-35		1.2	-.4	B	
rd	iPZ	18-54-00	c	1	-5.0	B	Δ_{S-P} = 22.5° Ca.
	iPN	54-01		3	-1	M-S	h = 100 km. Ca.
	iPN	54-01		4	+11	Sp.	(U.S.C.G.S. 5°S., 153°E.,
	iPE	54-02		4	+1	M-S	Solomon Islands,
	iZ	54-05		1.1	-1.4	B	H = 18-49-10,
	iZ	54-14		1.2	-1.2	B	h = 100 km.)
	ipPN	54-19		4	+1.2	M-S	
	ipPN	54-19		5	-9.3	Sp.	
	iN	54-27		3	+ .7	M-S	
	iZ	54-31		1.3	-2	B	
	iN	54-31		5	+ .6	M-S	
	iPPN	54-45		5	-7	Sp.	
	iN	55-02		5	+5.5	Sp.	
	iZ	55-07		1.3	+1.5	B	
	iSN	57-55		11	+2.3	M-S	
	iSN	57-55		8	+30	Sp.	
	iSZ	18-57-57		2	+ .4	B	
	iSE	57-58		6	+1.2	M-S	
	iZ	58-23		1.2	+ .4	B	
	isSN	58-28		9	+1.8	M-S	
	isSN	58-28		8	+12.5	Sp.	
	isSZ	58-29		1	-.5	B	
	iE	58-33		9	+1.3	M-S	
	MN			11	+2.3	M-S	
	MN			8	+30	Sp.	
	ME			9	+1.3	M-S	
	iPZ	20-14-51	C?	.8	-.7	B	(U.S.C.G.S. 11°S.,
	iZ	15-03		.7	+.4	B	167°E., Santa Cruz Islands,

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iZ	15-30		1	+.7	B	H=20.10.07 Δ_{P-H} = 21.1°)
5th	iPZ	09-21-53	C	1	+.4	B	
	iZ	22-03		1	-.6	B	
	iZ	22-13		.9	-.6	B	
	eZ	22-37		1	-.3	B	
	eZ	23-38		1.5	+.4	B	
6th	iPZ	09-54-25	r	1.4	+.3	B	
7th	iPZ	06-20-10	C	.7	-1.0	B	(U.S.C.G.S. Santa Cruz Islands H=06.15.13 region Δ_{P-H} =22.4°)
8th	iPZ	16-07-17	r	1	+.5	B	(U.S.C.G.S. 300 miles south of Fiji Islands) H=16.01.53
	iPZ	22-24-40	C?	.9	+ 5	B	
	iZ	24-43		1	-.5	B	
9th	iPZ	10-32-04	r	1.1	+.2	B	
10th	iPZ	10-04-29	C	1.2	+1.1	B	Δ_{S-P} = 28.7° Ca.
	iPN	04-29	S	3	+4.5	Sp.	(U.S.C.G.S. 15½°S.,
	iPE	04-29	W	4	+.5	M-S	178½°W, Fiji Islands
	iE	05-03		3	+.8	M-S	Region H=09-58-27
	iPPE	05-18		5	+1.1	M-S	Δ_{P-H} = 29.3°)
	iN	08-18		6	+4.5	Sp.	
	iE	08.18		10	+1.5	M-S	
	iSN	09-21		7	-38	Sp.	
	iSE	09-22		10	+2.5	M-S	
	iN	10-05		9	-22.8	Sp.	
	iL_QE	11-00		11	-2	M-S	
	iN_Q	11-24		11	-46	Sp.	
	iE	11-24		9	+3.5	M-S	
	iE	14-55		14	+4	M-S	
	MN			14	-55	Sp.	
	ME			14	-5	M-S	
	iPZ	14-45-21	C	1	-1.1	B	(U.S.C.G.S. - 14°S.,
	iZ	45-27		1.1	-.6	B	167°E., New Hebrides
	iPPZ	45-33		1.4	-.6	B	Islands, H=14.40.58,
	iZ	45-50		1.5	+.4	B	Δ_{P-H} = 19.3°)
11th	eLE	01-23-30				M-S	
	eZ	17-58-29		1	+.1	B	Possibly not seismic
12th	iPZ	02-28-57	C	.7	-.5	B	
	iZ	29-01		.9	+.5	B	
	iZ	29-05		1.3	-.4	B	
	iZ	29-14		1	+.	B	
	iZ	29-21		1	+.3	B	
16th	iPZ	03-43-10	r	1.3	+3	B	Δ_{S-P} = about 25°,
	iPE	43-10	E	4	-.6	M-S	h= about 500 km.
	iZ	43-23		.9	+.8	B	(U.S.C.G.S. - 23°S.,
	i(pP)E	43-50	E	6	+.7	M-S	179½°W. Fiji Islands
	iZ	44-09		.8	+.6	B	Region. H=03.38.20
	iZ	44-35		1	+1.1	B	h= about 500 km).
	iSN	47-02		10	+1.4	M-S	
	iSE	47-02		10	+ .5	M-S	
	iE	47-49		8	+.6	M-S	
	iE	48-44		7	-.7	M-S	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iZ	49-20		1.5	-.5	B	
	e(sS)N	49-24		9	+.5	M-S	
	e(sS)E	49-24		10	-1	M-S	
	iN(MN)	49-34		10	-1.7	M-S	
	iN	50-01		8	-1.4	M-S	
	ME			8	+1.4	M-S	
	iPZ	03-49-24	C	.7	+.8	B	
	iZ	49-30		1.3	-.7	B	
	iPZ	12-24-03	r?	1	+.1	B	
	iPZ	16-33-21	C	.9	+.3	B	
	iZ	33-36		.7	-.6	B	
17th	iPZ	04-13-45	C	1	+.7	B	(U.S.C.G.S. - 21½°S.,
	iZ	14-39		1.3	+.35	B	176°W., Tonga Islands.
	iPPE	14-44	E	6	+1	M-S	H=04.07.42
	eE	21-41		9	-1	M-S	Δ_{P-H} = 29.5°).
	eE	23-07				M-S	
	iPZ	12-10-28	C	1	+.3	B	Δ_{S-P} = 53°
	iZ	10-33		.9	+.5	B	
	iZ	10-50		.5	+.2	B	
	iN	10-52		7	+4	Sp.	
	iZ	11-16		1.7	-.5	B	
	iPPZ	11-30		1	+.4	B	
	iN	11-39		7	+4.5	Sp.	
	iZ	11-45		1	-.3	B	
	iPcPZ	11-51		2	+.7	B	
	iZ	11.58		1	+.4	B	
	iZ	12-22		2.1	-.3	B	
	iZ	14-27		1.5	-.3	B	
	iSN	17-53		13	+8	Sp.	
	eSN	17-53		14	-1.1	M-S	
	iN	19-44		8	+2	M-S	
	iSSN	21-23		9	-1.5	M-S	
	eE	22-24		15	-3	M-S	
	MN			13	+4	M-S	
	ME			14	-3.2	M-S	
	MN			10	-24	Sp.	
18th	iPZ	01-19-08	C	1	+.5	B	
	iPZ	13-21-14	C	1	+.7	B	
	iZ	21-21		1	+.4	B	
	iZ	21-26		1.2	-.3	B	
	iZ	21-43		1.3	-.5	B	
	iZ	21-51		1.5	+.3	B	
	iPZ	13-22-29	C	.8	+.4	B	
	iZ	22-35		1.5	+.5	B	
	iZ	22-54		1.2	+.3	B	
	iZ	25-07		1.5	-.4	B	
	iZ	25-13		2	-.3	B	
19th	iPZ	12-08-54	r	1.5	+1.5	B	(U.S.C.G.S. - Fiji
	iZ	09-11		1.2	+.5	B	Islands region, H=12.02.53,
	iZ	09-32		1.5	-.3	B	Δ_{P-H} = about 29.3°)
	iZ	09-39		2	-.4	B	
	ePZ	12-24-20		1.5	+.5	B	(U.S.C.G.S. 23°N., 100°E.,
	iZ	24-33		1.5	+.2	B	Southern Yunnan province,
	iPcPZ	24-38		2	+.6	B	China H=12.12.56; Δ_{P-H} 72.1°)

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	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iZ	25-15		2	-.6	B	
	iZ	25-32		2	+.6	B	
	iZ	25-49		1.2	-.7	B	
	eSN	33-43		5	-5.2	Sp.	
	eSE	33-43				M-S	
	eL_Q	42.5				M-S	
	iL_R	46.9				Sp.	
	eL_R	47.0				M-S	
	MN			12	+11	Sp.	
	ME			17	+2	M-S	
	iPZ	12-56-27	C	1	+.5	B	
	iPN	56-30	N		+.8	Sp.	
	iZ	56-32		1	+.3	B	
	iZ	57-13		2	+.4	B	
	i(S)N	13-00-49		16	-16	Sp.	
	iPZ	13-49-09	C	1	-1.5	B	(U.S.C.G.S. - Bismark Sea H=13.44.04 Δ_{P-H} = about 23.2°)
	eZ	21-19-29				B-	
0th	eiPZ	05-56-23		2	-.9	B	U.S.C.G.S. - 25½°N.,
	ePN	56-23		5	+3.5	Sp.	122°E., near north
	iZ	56-24		3	+1.1	B	coast of Formosa
	iZ	56-26		2	+.5	B	H= 05.46.20
	iZ	56-32		1.5	-.8	B	Δ_{P-H} = 59.8°)
	iZ	56-55		1.5	-.9	B	
	iZ	57-17		1.5	+1	B	
	eE	06-04-15				M-S	
	eSE	04-35		10		M-S	
	iPZ	20-54-26	C	1	-.7	B	
1st	ePZ	06-40-41				B-	(U.S.C.G.S. - 46°N., 153½°E. Kurile Islands H=06.28.57 Foreshock.
	eZ	16--14-16				B-	Possibly not seismic
2nd	iPZ	03-38-18	r?	1	-.5	B	(U.S.C.G.S- 26°S.,
	iZ	38-30		1.1	-.9	B	177°W., Kermadec Islands
	iZ	38-36		1	+.6	B	region. H=03.32.41,
	iZ	38-46		1	-.6	B	h=about 60 km.)
	ePZ	10-19-59				B-	(U.S.C.G.S. - 46°N., 153½°E., Kurile Islands. H=10.08.14 Foreshock).
	iPN	10-23-36	N	3	+10.3	Sp.	Δ_{S-P} = 29.9°
	iPN	23-36	S	4	-2	M-S	Surface waves smaller
	iPZ	23-37	C	1.5	-3	B	than S.
	ePE	23-37		5	+1	M-S	(U.S.C.G.S. - 10°S.,
	iPPZ	23-51		1.2	+1.5	B	161°E., Solomon Is.,
	iPPN	23-52	N	3	+2.5	M-S	H=10.19.14)
	eN	24-05				M-S	
	iN	24-10		3	-1	M-S	
	iSN	27-13	N	10	-6.5	M-S	
	iSE	27-13	E	10	-4	M-S	
	iSN	27-13	S	17	+39	Sp.	
	iSZ	27-14		2	+.5	B	
	iE	27-32		10	+3.5	M-S	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iN	27-33		5	-3	M-S	
	iL_RN	28-33		6	+1.5	M-S	
	MN^R	27.3		10	-6	M-S	
	MN	27.5		8	+30	Sp.	
	ME	27.2		10	-4	M-S	
	iPZ	21-53-32	C	1	-.2	B	Δ_{S-P} = 74.8°
	ePN	53-32				Sp.-	
	iZ	53-36		1.5	+.6	B	(U.S.C.G.S. - 46°N.,
	eN	53-36				M-S-	153½°E., Kurile Islands.
	iZ	53-45		1	+.5	B	H= 21.41.53 Δ_{P-H}= 74.8°)
	iN	53-46		4	+4	Sp.	
	iZ	53-54		1.5	-.8	B	
	iSN	22-03-05		8	-2	M-S	
	iSE	03-05		15	4	M-S	
	eSN	03-05		10	+6.5	Sp.	
	iS_cSN	03-33			-3	M-S	
	iS_cSN	03-34		12	-14	Sp.	
	iP_cSE	03-45		10	+2.5	M-S	
	iE	07-30		10	-1.5	M-S	
	iSSN	07-50		8		Sp.	
	iSSN	07-51		11	-1.5	M-S	
	iSSE	07-50		12	-2	M-S	
	MN	27.1			+20	[illegible]	
	MN	27.1			+2.5	[illegible]	
	ME	27.1			+2.5	M-S	
23rd	iPZ	11-03-01	C	1	+.4	B	(U.S.C.G.S. - Tonga Islands region h=10.56.59)
	ePZ	12-13-12				B	(U.S.C.G.S. - 24½°N.,
	iZ	13-18		1	+0.5	B	122°E., Near east coast
	iZ	13-27		2	+.6	B	of Formosa H=12.03.09
	iZ	13-41		1	+.4	B	Δ_{P-H} 59.4°).
24th	iPZ	01-33-31	C	1	+.4	B	
	iPnZ	01-44-39	C		+2.3	B	Felt Maryborough,
	iPnN	44-39				Sp.	Queensland
	iSnZ	44-45				B-	
	iSnN	44-45				Sp.	
	eE	44-55				M-S	
	iN	45-03				Sp., M-S	in minute break
	iE	45-21				M-S	
	ME	45-34			-4.7	M-S	
	MN	46-03			-28.1	Sp.	
	ePZ	03-20-17	C?		-1.2	B	Δ_{S-P} = about 20°
	iPN	20-17	S	3	+4.5	Sp.	h = about 60 km.
	ePE	20-17				M-S-	
	iZ	20-23		.8	+.9	B	(U.S.C.G.S. 14½°S.,
	ipPE	20-26		6	+2	M-S	168½°E., New Hebrides Is.,
	epPN	20-26		6	+11	Sp.	H = 03.15.49)
	esPE	20-51				M-S-	
	iSN	24-01		7	+4.5	Sp.	
	iSE	24-01				M-S-	
	isSN	24-15		4	+6	Sp.	
	iSSN	24-31		6	+6	Sp.	
	iN	25-01			+4	Sp.	
	ME	20.5		6	+2	M-S	
	MN	20.5		6	+11	Sp.	
	iPZ	06-02-45	r			B-	
	iZ	02-51		1	+.2	B	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iPZ	13-01-35	r			B	
	iZ	01-37		.7	+.3	B	
	iZ	01-46				B	
	iPZ	13-51-37	r	1	+.2	B	
	iZ	51-41		.6	+.1	B	
	iZ	52-07		.8	+.2	B	
	iZ	52-16		1	-.3	B	
	iZ	52-19		.8	+.2	B	
25th	ePZ	16-35-10				B-	
26th	iPZ	11-55-58	C	.8	+.3	B	
27th	iPZ	15-03-13	r	1	-.5	B	
	iZ	03-16		1.2	+.4	B	
	iZ	03-28		1.5	-.4	B	
28th	iPZ	07-46-07	r	1	+.7	B	(U.S.C.G.S. - Solomon Is., region H=07-41-44)
	iZ	46-16		.7	-.4	B	
	ePPZ	46-30		.8	+.3	B	
	iZ	46-36		1.2	-.4	B	
	iZ	47-07		1	+.4	B	
	iPZ	16-39-41	C	1	+.2	B	
	iZ	39-46		1.4	-.2	B	
	ePZ	17-58-35				B-	
	iZ	58-39		.8	+.3	B	
	iZ	58-47		1	+.3	B	
	iPZ	18-41-20	r	1	+.4	B	
	ePE	41-20				M-S-	Δ_{S-P} = 31° ca.
	iZ	41-26		1.5	1.6	B	
	iZN	41-34		1.5	-.9	B, Sp.	
	iZ	41-39		4	-3.2	B	
	iZ	41-43		1	-.9	B	
	iZ	42-02		2	-.8	B	
	iZ	42-13		1.3	-.4	B	
	iPPZ	42-19		1.1	+.2	B	
	iSN	46-21		1	+.6	B	
	eSE	46-25				Sp.-	
	MN	48.3				M-S-	
				6	-5.4	Sp.	
	iPZ	18- 47-46	r	1	-.3	B	
	iZ	47-59		1	-.2	B	
	iZ	48-07		1.5	+.6	B	
	iZ	48-18		1	+.6	B	
	ePZ	19-13-19	C?	1	+.3	B	(U.S.C.G.S. - Molucca Passage. H=19.05.50).
	iPZ	13-20		1.9	+1.5	B	
	iZ	13-26		2	-1	B	
	iZ	13-31		.8	-.6	B	
	iZ	13-36		1	+.8	B	
	iZ	13-42		1	+.5	B	
	iZ	14-07		1	+.7	B	
	iZ	14-46		1	+.5	B	
	iPPZ	14-50		1	+.8	B	
	iPPN	14-51				Sp.	
	iZ	14-57		1.3	+1.5	B	
	iZ	15-12		1	-.7	B	
	eSZ	19-12				B-	
	eSE	19-13				M-S-	

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
29th	iPZ	07-20-28	C	.6	-.5	B	
	iPZ iZ	19-28-22 28-26	C	1 1	-.4 +.3	B B	
	iPZ iZ	20-46-13 46-28	C	1 1.5	+.2 +.3	B B	(U.S.C.G.S - 15½°S., 173°W., Tonga Is. region. H=20.39.36, h=about 60 km. Δ_{P-H} = 34°).

International Seismological Centre

C.A. JONES

Director, Univ. Q'ld. Seis. Stat.

CORRECTION: Please note the following correction to Bulletin No.177 for May 1952. The time of the shock on the 13th with iP given as 04.41.25 should be 03.41.25.

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UNIVERSITY OF QUEENSLAND
SEISMOLOGICAL STATION
BRISBANE

ϕ = 27° 30' 02"., λ = 153° 00' 53" E., h = 24.2 m.

Foundation: Main Vault - Welded Tuff
Out-stations (Sprengnethers) High level semi-consolidated river alluvium.

SEISMOLOGICAL BULLETIN FOR JULY 1952 NO 179

INSTRUMENTS AND WORKING CONSTANTS

INSTRUMENT	D mm per min.	Com-pon-ent	T_o	ε	V_o	Displacement for 1" arc tilt	Date from which constants apply
Milne-Shaw 0.58 (modified)	16	N	12	20:1	250	43.6 mm.	25/9/51
Milne-Shaw 0.60 (modified)	16	E	12	20:1	250	43.7 mm.	24/8/51
				T_g	μ^2	Ve	
Benioff No. 12	15	N	1.5				
Benioff No. 11	15	E	1.5				
Benioff No. 13	15	Z	1.5	0.3			24/8/51
Sprengnether No.1122	30	N	7.01	7.13			8/10/51
Sprengnether No.1121	30	E	7.34	7.38			24/10/51
Sprengnether No.1123	30	N					

NOTE: The three Sprengnether seismometers, Series H, are used for microseismic work and from January to the end of June are all orientated to record the N-S component. From July to December No. 1121 is orientated to record the E-W component. None is housed in the main vault, but the maximum difference in either latitude or longitude is only 19". They are housed in the main vault from July to December but in outstations from January to June. The maximum difference in latitude or longitude of any outstation and that of the main vault is 19 seconds.

Time Service: Minute time marks are made electromagnetically by Standard or Synchronome contact clock.
Time comparisons are made daily with radio time signals from Mt. Stromlo Observatory.
Seismograph readings can be determined to the nearest second.

Tables used: Jeffreys & Bullen 1940. Deep focus chart, Brunner 1935.
The station is maintained and operated by the Department of Geology and Mineralogy, University of Queensland assisted by Commonwealth Government grant to the University for research purposes.

Abbreviations: M.S. - Milne Shaw; B - Benioff; So. - Sprengnether. c - Compression; - r - Rarefaction;

Amplitudes reported are single amplitudes as measured on the records, (not reduced to ground movements).

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
2nd	iPZ	10-01-34	r	1"	-4.5	B	
4th	iPZ	04-50-55	r	1"	-3.5	B	U.S.C.G.S. - 20½°S, 178½°W,
	i Z	51-04		1"		B	Fiji Islands region.
	i Z	51-37		1"	-4.75	B	N= 04.46.01 h=about 600km).
	i Z	51-53		1"	+4.5	B	
	i Z	51-59		1.5"	+3.5	B	
	i Z	52-15		1"	-2.5	B	
	i Z	52-56		1.5"	-3.0	B	
	i Z	53-58		1"	-3.0	B	
	i Z	54-36		1.5"	+3.5	B	
	e(S)Z	54-48		1.5"	+2.75	B	
	iPZ	04-55-52	r	1.5	-3.8	B	
	iZ	56-06		1.5	-3.0	B	
	iZ	56-45		2.0	+4.0	B	
	iZ	56-55		1.0	+4.5	B	
	i(P)Z	05-14-20	r	1.5	-1.0	B	
	i Z	14-53		2.0	-3.5	B	
	i Z	15-00		1.5	-2.0	B	
5th	iPZ	03-01-13	r	1"	-3	B	U.S.C.G.S. - New Hebrides
	iPN	01-13				Sp.	Islands. H=02.56.55)
	iZ	01-15		1"	-4.5	B	
	iZ	01-24		1.5"	2.5	B	
	iZ	01-38		2"	2	B	
	eE	04-42		7"	.75	M-S	
	iPZ	12-46-06	r	1"	-3	B	U.S.C.G.S. - Fiji Islands
	iZ	46-12		1.5"	+2	B	region, H=12.41.12 h=about 600 km.)
6th	iPZ	13-54-16	c	1.5"	+1.5	B	
	iZ	54-24		1.0"	1.0	B	
	iZ	54-31		1"	2.0	B	
	iZ	54-32		1"	-1.75	B	
	iZ	54-35		1"	-2.0	B	
	iZ	54-37		1"	+2.0	B	
	iZ	54-48		1"	+2.0	B	
	iPZ	13-55-54	r	1.5"	-1.5	B	
	iZ	55-56		1"	-2.5	B	
7th	iPZ	12-54-14	c	1"	+5.0	B	U.S.C.G.S. - Bismarck Sea.
	iZ	54-27		1.5"	-2.5	B	H=12.49.07)
	iPPZ	54-44		1.0"	-2.5	B	
	iZ	54-55		1.5"	+4.5	B	
	iPZ	12-55-18	c	1"	+3.5	B	
	iZ	55-23		1.5"	-1.0	B	
8th	iPZ	01-09-54	r	1"	-3.5	B	U.S.C.G.S. - 42°N, 131°E,
	iZ	09-56				B	Sea of Japan, H=00.59.23,
	iZ	10-03				B	h=about 600 km.)
	ePZ	15-46-30	c	1"	1.75	B	U.S.C.G.S. - Tonga Islands
	iZ	46-31		1"	-2.5	B	region H=15.40.10).
	iZ	46-37		1.5"	+2.0	B	
	iZ	46-49		1"	+2.5	B	
0th	iPZ	15-50-18	r	1"	-20.0	B	
	iSN	54-07				Sp.	
	iSZ	54-09		2.0"	-4.5	B	
	iSN	54-09			-1.75	M-S	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	eSE	54-09				M-S	
	MN	54-07		7"	-13.5	Sp.	
	iPZ	15-55-58	r	1.5"	-8.0	B	
	iSN	59-52				Sp.	
	iSN	59-52			+1.5	M-S	
	iSE	59-52			+1.2	M-S	
	MN	59-52		7"	-6	Sp.	
	eLN	21-06-00				Sp.	
	eLN	08-00				M-S	
13th	iPZ	02-53-45	r	2.0"	+4.5	B	Δ_{S-P} = 17.5°
	iPE	53-45	E		+1.0	M-S	Epicentre approx. 22°S,
	iZ	53-48		1.5"	-6.0	B	171°S.E. H=02.49.42.
	iZ	54-00				B	(Based on data from
	iZ	54-05			-3.5	B	Riverview and Wellington).
	iZ	54-17		1	+3.0	B	
	iSN	56-57				Sp.	
	eSN	56-57				M-S	
	iL_RN	58.0				Sp.	
	MN^R	57-06		6	+7.5	Sp.	
	iPE	07-28-01	W		-1.5	M-S	Δ_{S-P} = 17.5°
	iN	28-07				Sp.	Epicentre approx. 22°S,
	iPPN	28-17	N			Sp.	171°E. H=07.23.58
	iN	28-37				Sp.	(Based on data from
	iSN	31.20				Sp.	Riverview and Wellington)
	iSSN	31-43				Sp.	
	MN	31-20		9	+10	Sp.	
	iPN	12-02-28	S			Sp.	Δ_{S-P} = about 16.5°
	iN	02-32			-2.5	M-S	h=about 300 km. (U.S.C.G.S.)
	iN	02-33				Sp.	- 18½°S., 169½°E., New
	iE	02-33		5"	-5.0	M-S	Hebrides Islands.
	ipPE	03-15		4"	-5.5	M-S	H=11.58.34, h=about 300km.)
	ipPN	03-15		4"	-2.0	M-S	
	iN	03-42		5'	+2.0	M-S	
	iE	03-42			+1.5	M-S	
	iE	03-52		5"	-3.0	M-S	
	iSN	05-35		5"	-4.25	M-S	
	iSE	05-37		7"	+10.25	M-S	
	iSN	05-37				Sp.	
	iE	06-16		7"	+5.0	M-S	
	iE	06-40		10"	-7.0	M-S	
	iN	06-44		7"	-4.0	M-S	
	MN	06.8				Sp.	
	iPN	17-41-19	S			Sp.	Δ_{S-P} = 34.8°
	iPE	41-19	E	3"	.5	M-S	(U.S.C.G.S. - 3°S.,
	iE	41-34		4"	-1.0	M-S	128°E., Ceram Sea.
	iN	41-56				Sp.	H=17.34.26)
	iE	42-10		4"	-1.0	M-S	
	iE	42-27				M-S	
	iPPN	42-36				Sp.	
	iE	43-06		5"	+1.5	M-S	
	iN	43-08		5"	-1.0	M-S	
	iN	43-36				M-S	
	iSE	46-38		7"	+1.0	M-S	
	eSN	46-39				Sp.	
	eSN	46-39		8"	-1.25	M-S	
	iE	49-05				M-S	
	iN	51-35		8"	+2.0	M-S	
	iN	51-47			+2.0	M-S	
	iN	52-39		10"	+5.0	M-S	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iN	52-55				M-S	
	MN	18-02.5			+4.5	Sp.	
	MN	17-53.1			+7.5	M-S	
	ME	18-00.5			+10.5	M-S	
15th	iPZ	21-27-57	e			B	
	iZ	28-04				B	
	iZ	28-50				B	
	iPZ	21-36-24	r			B	
	iZ	36-41				B	
	iN	41-40	i	10"	+5.5	Sp.	
16th	iPZ	06-07-56	c			B	
17th	iPZ	16-20-18	r?			B	$\Delta_{S-P} = 63.9^{o}$
	iPN	20-18	S			M-S	U.S.C.G.S. - $34\frac{1}{2}^{o}$N. 136^{o}E.
	iPN	20-18	S	4"	-6.0	Sp.	Southern Honshu, Japan.
	ePE	20-18	E			M-S	H=16-09-52).
	eN	20-25				M-S	
	iZ	20-31				B	
	ipPZ	20-42				B	
	epPN	20-43				M-S	
	iZ	21-11				B	
	iSZ	28-49				M-S	
	iSE	28-49		8"	-3.2	M-S	
	iSN	28-52			-3.0	Sp.	
	eN	29-18				M-S	
	eE	29-18				M-S	
	MN	37.0			+17	Sp.	
	MN	29.3			+1.25	M-S	
	ME	28.9			+3.5	M-S	
	iPZ	16-29-24	c			B	
	iPZ	16-30-59	c			B	
18th	eLN	05-34.2				M-S	
	eLE	34.7				M-S	
	eLN	34.9		9"	+5.5	Sp.	
	iPZ	09-09-51	c			B	
	iZ	09-56				B	
	i(P)Z	18-52-05				B	U.S.C.G.S. - 23^{o}S.$114\frac{1}{2}^{o}$W,
	eLN	19-18.7				Sp.	Easter Is.region, H=18.39.40)
19th	iPZ	03-45-49	r			B	
	iZ	45-53				B	
	iZ	46-28				B	
	iZ	22-09-07				B	
	iZ	09-32				B	
	iPZ	22-16-43	r			B	
	iZ	16-52				B	
20th	eLE	01-08.7				M-S	
	eLN	08.8				M-S	
	eLN	08.9				Sp.	
	iPZ	05-39-56	c			B	U.S.C.G.S. - Kermadec
	eLN	47.7				Sp.	Is. region H=05.34.20.
	eLN	47.7				M-S	
	eLE	47.7				M-S	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	eLN	19-23.6			+3.0	Sp.	
	eLN	23.6				M-S	
	eLE	23.6				M-S	
21st	iPZ	04-24-20	c			B	
	iZ	24-26				B	
	iPZ	06-27-49	r			B	
	ePN	12-06-24				Sp.	U.S.C.G.S. - 35.1°N.,
	ePZ	06-26				B	118.9°W, Tulare Valley,
	iZ	06-48				B	California. H=11.52.11.5.
	iZ	07-12				B	
	iZ	08-19				B	
	iN	08-36		6"	+4.2	Sp.	
	iZ	09-13				B	
	iN	09-59				Sp.	
	iZ	10-25				B	
	iZ	10-35				B	
	eN	10-36			+5.3	Sp.	
	i(PP)E	10-57		5"	-0.9	M-S	
	iZ	11-19				B	
	iZ	11-30				B	
	iN	11-46		10"	-6.1	Sp.	
	iZ	12-51				B	
	iZ	15-15				B	
	iSKSN	17-12			+8.8	Sp.	
	iSKSN	17-12		10"	-0.6	M-S	
	iE	17-16		8"	+0.7	M-S	
	iE	19-50		10"	+0.6	M-S	
	iE	20-56			-2.2	M-S	
	iE	24-50		9"	-1.5	M-S	
	iE	25-45		10"	+0.8	M-S	
	MN	12-49.1		18"	18	Sp.	
	MN	12-49.2		18"	2.0	M-S	
	ME	12-51.0		20"	2.7	M-S	
	ME	14-15.3		20"	+4.0	M-S	
	MN	14-17.5		20"	+3.5	M-S	
	MN	14-17.5		19"	32.0	Sp.	
	iZ	19-58-47	c			B	
22nd	iPZ	04-02-25	r			B	
	iPN	02-25	N	4"	+2.4	Sp.	Deep
	ePN	02-25				M-S	
	iZ	02-31				B	
	iN	02-32				Sp.	
	iZ	02-35				B	
	iN	02-42				Sp.	
	iN	02-53		4"	-1.7	Sp.	
	iZ	02-56				B	
	iPPZ	03-05				B	
	iPPN	03-05				Sp.	
	iN	03-16		1"	+1.1	Sp.	
	iZ	03-17				B	
	iZ	03-54				B	
	iZ	04-06				B	
	iSZ	06-15				B	
	iSN	06-17		6"	-13.2	Sp.	
	iSN	06-17		3"	+1.0	M-S	
	iSE	06-20				M-S	
	iN	10-43			+3.1	Sp.	
	iN	10-43				M-S	
	MN	13.9		12+	+6.2	Sp.	
	MN	11.5			+0.7	M-S	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iPZ	07-58-27	c			B	
	ePN	58-27				Sp.	
	iPZ	08-46-59	r			B	
	iZ	47-11				B	
	iZ	48-21				B	
	iZ	49-27				B	
	iZ	52-58				B	
	iPZ	18-17-54	c			B	
	iPE	17-54	E	2"	+0.6	M-S	
	ePN	17-54	S	3"	-0.6	Sp.	
	iZ	18-00				B	
	iN	18-05		6"	+4.1	Sp.	
	iZ	18-22				B	
	eSN	21-14		8"	-3.6	Sp.	
	eSE	21-14		7"	-0.3	M-S	
	iPZ	18-38-22	r			B	
	iPZ	19-47-50	c			B	
	iPZ	21-09-34	r			B	
	iZ	09-42				B	
23rd	iPZ	04-35-29	r?			B	U.S.C.G.S. Fiji Is. region H=04.30.09
24th	iPZ	10-35-16	c			B	Δabout 26°. About 100 km. deep. U.S.C.G.S. - 27°S, 178°W, Kermadec Islands. H=10.29.49
	iPE	35-16	W	2"	-0.5	M-S	
	iE	35-56		6"	+0.7	M-S	
	eSE	39-36				M-S	
	eN	40-10				M-S	
	eE	40-16			+0.4	M-S	
	eZ	40-28				B	
	eN	41-36				M-S	
	iE	41-36				M-S	
	ME	43.8		18"	+0.8	M-S	
	iZ	23-02-13				B	P lost while changing record
25th	iPZ	11-31-43	r			B	
	iZ	32-04				B	
	iZ	32-33				B	
	iZ	33-19				B	
	iPZ	14-23-52	r			B	
	iPN	23-52	N?			Sp.	
	ePN	23-52			+0.3	M-S	Δ_{S-P} = 33.6°
	iZ	24-21				B	
	iZ	24-26				B	
	iPPN	25-06	N			Sp.	
	iSN	29-10		8"	+9.0	Sp.	
	iSN	29-10		7"	+0.5	M-S	
	iSE	29-10		7"	+0.5	M-S	
	eN	30-26		8"	+7.8	Sp.	
	eN	30-26		8"	-0.4	M-S	
	eL_Q^N	30-40				M-S	
	eL_Q^E	30-40		8"	-0.6	M-S	
	eL_Q^E	32-31		9"	-1.6	M-S	
	eL_R^N	32-31		10"	+9.2	Sp.	
	MN	38.0		10"	36	Sp.	
	MN	38.0		12"	+2.4	M-S	
	ME	34.6		10"	+3.0	M-S	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
26th	iPZ	11-05-13	c			B	
	iZ	05-21				B	
	iPZ	12-54-53	r			B	
	iPZ	14-37-59	c			B	
	iZ	38-14				B	
	iZ	38-17				B	
	iZ	38-24				B	
	iZ	38-53				B	
	iZ	39-20				B	
27th	iPZ	02-17-49	r			B	U.S.C.G.S. = Samoa Is. region. H=02.11.08
	iZ	18-37				B	
	eL_QN	25.5				M-S	
	iPZ	08-28-32				B	U.S.C.G.S. - 20½°S, 179°W. - Fiji Islands. H=08.23.22 h=about 500 km
	iPE	28-32			+1.3	M-S	
	iZ	28-34				B	
	iPN	28-35	N?			Sp.	
	iN	29-02				Sp.	
	ipPE	29-49			-1.0	M-S	
	ipPZ	29-51				B	
	ipPN	29-52			+5.6	Sp.	
	isPE	30-16			-1.2	M-S	
	iZ	30-24				B	
	iE	30-52		10"	-2.1	M-S	
	iSN	32-37		6"	-4.7	M-S	
	iSE	32-37		9"	+6.4	M-S	
	iSZ	32-39				B	
	iSN	32-39		8"	-71.0	Sp.	
	iE	33-10		6"	+2.5	M-S	
	iE	33-33		5"	+1.8	M-S	
	iZ	33-34				B	
	iE	35-16		10"	-4.3	M-S	

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BRISBANE

ϕ = 27° 30' 02"., λ = 153° 00' 53" E., h = 24.2 m.

Foundation: Main Vault - Welded Tuff
Out-stations (Sprengnethers) High level semi-consolidated river alluvium.

SEISMOLOGICAL BULLETIN FOR AUGUST 1952 NO 180

INSTRUMENTS AND WORKING CONSTANTS

INSTRUMENT	D mm per min.	Com-ponent	T_o	ε	V_o	Displacement for 1" arc tilt	Date from which constants apply
Milne-Shaw No.58 (modified)	16	N	12	20:1	250	43.6 mm.	25/9/51
Milne-Shaw No.60 (modified)	16	E	12	20:1	250	43.7 mm.	24/8/51
				T_g	μ^2	Ve	
Benioff No. 12	15	N	1.5				
Benioff No. 11	15	E	1.5				
Benioff No. 13	15	Z	1.5	0.3			24/8/51
Sprengnether No.1122	30	N	7.01	7.13			8/10/51
Sprengnether No.1121	30	E	7.34	7.38			24/10/51
Sprengnether No.1123	30	N					

NOTE: The three Sprengnether seismometers, Series H, are used for microseismic work and from January to the end of June are all orientated to record the N-S component. From July to December No. 1121 is orientated to record the E-W component. None is housed in the main vault, but the maximum difference in either latitude or longitude is only 19". They are housed in the main vault from July to December but in outstations from January to June. The maximum difference in latitude or longitude of any outstation and that of the main vault is 19 seconds.

Time Service: Minute time marks are made electromagnetically by Standard or Synchronome contact clock.
Time comparisons are made daily with radio time signals from Mt. Stromlo Observatory.
Seismograph readings can be determined to the nearest second.

Tables used: Jeffreys & Bullen 1940. Deep focus chart, Brunner 1935.
The station is maintained and operated by the Department of Geology and Mineralogy, University of Queensland assisted by Commonwealth Government grant to the University for research purposes.

Abbreviations: M.S. - Milne Shaw; B - Benioff; Sp. - Sprengnether. c - Compression; - r - Rarefaction;

Amplitudes reported are single amplitudes as measured on the records, (not reduced to ground movements).

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec.	Amplitudes m.m.	Instrument	Remarks
1st	iPZ	02-40-45	C		+2.3	B	
	iPZ	15-11-55	C?			B	
	iZ	12-12				B	
2nd	iPZ	02-14-14	C		+1.0	B	
	iZ	14-24		1"	-4.5	B	
	iPZ	03-11-00	C	1"	+3.2	B	
	iZ	11-14			-3.8	B	
	iZ	03-39-26		1"	+1.8	B	
	iPZ	17-52-28	C			B	
	iZ	52-53		1.5"	-2.4	B	
3rd	iPZ	03-18-27	C	1.5"	+1.6	B	
	iPZ	09-47-25	C		+2.2	B	
	iZ	47-40		1"		B	
	iZ	48-31		1"	-3.6	B	
	iZ	11-35-15		0.75"	-1.8	B	
	iPZ	12-47-20	r	1.0"	-1.8	B	
5th	iPZ	19-27-42	C	0.8"	+3.1	B	S large, no surface waves
	iZ	27-59		1.5"	-2.2	B	
	iZ	28-27		1.5"	-1.6	B	
	eSE	31-36				M-S	
	iSN	31-37		5"	-5.2	Sp.	
	iSN	31-38				M-S	
	iPZ	21-52-40	r	0.9"	-1.4	B	
	iZ	52-58		1"	+6.8	B	
	iZ	53-15		1"	+5.4	B	
	iZ	53-20		1"	-6.3	B	
	iZ	53-35		1"	-5.3	B	
	iZ	54-27				B	
	i(S)E	57-32		6"		M-S	
	iZ	59-15		2"	-6.3	B	
	iZ	22-01-46		2"	+6.8	B	
	iZ	02-24		2"	+6.0	B	
	iN	02-38			-2.8	Sp.	
8th	iPZ	03-19-16	r	1.2"	-5.5	B	
	iZ	19-19		1.5"	-5.0	B	
	iZ	19-30		1.5"	-3.4	B	
9th	ePZ	06-09-39	C			B	
	eZ	12-23				B	
	eLN	14.2				M-S	
10th	iPZ	00-34-14	r		-1.4	B	U.S.C.G.S. - 52½°N., 173°W.
	ipPZ	34-39		1.7"	-2.6	B	Andreanof Islands
							H=00.21.48, h=about 100 km.
	iPZ	06-15-33	C	1.0"	+1.5	B	
11th	iPZ	20-38-56	r	1.2"	-2.6	B	
	iPN	38-57				Sp.	
	iN	39-00				B	
	iZ	39-08			+3.0	B	
	iZ	39-30			-2.2	B	
	eN	46-29			+5.5	Sp.	
	eN	46-30			+0.8	M-S	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	eE	46-30				M-S	
	eN	47-43		10"	-6.2	Sp.	
	eE	49-02		10"	+1.8	M-S	
	eN	49-08		12"	+1.0	M-S	
	eN	49-09		10"	-13.6	Sp.	
	MN	49.6		10"	-17.0	Sp.	
12th	iPZ	06-41-52	C		+2.6	B	U.S.C.G.S. - Off north-
	iZ	42-12		2"	-5.2	B	west coast of Sumatra H=06.31.03
13th	iPZ	09-41-28	r		-1.2	B	U.S.C.G.S. - Eastern
	iZ	41-55				B	Kamchatka H=09.29.40
14th	iPZ	06-35-19	C	1"	+1.8	B	
	iZ	35-26			-3.5	B	
	iZ	35-39		2.0"	-3.1	B	
	iPZ	07-22-02	C	1.0"		B	
	iPZ	16-11-21	C	1.5"	+4.5	B	U.S.C.G.S. - Near south
	iZ	11-33		2.0"	-7.6	B	coast of Indo-China.
	iN	14-00				Sp.	H=16.01.07
	iSN	19-41			-5.5	Sp.	
	iSE	19-41		5"	+0.3	M-S	
	eSN	19-41			+0.4	M-S	
	iPZ	23-21-31	C	1.5"	+11.8	B	Δ_{S-P} = 21.8°
	iPN	21-31	S		-0.4	M-S	U.S.C.G.S. - 6°S.,
	iPN	21-31	S	3"	-3.9	Sp.	155°E. Solomon Islands
	ePN	21-32	W			M-S	H= 23.16.42
	iN	21-35			+0.7	M-S	
	iPPN	21-52	S			M-S	
	iPPE	21-54	W	5"	-0.4	M-S	
	iSN	22-24	S		-50.0	Sp.	
	iSN	25-25	S	11"	-5.7	M-S	
	iSE	25-25	W		-0.8	M-S	
	eSZ	25-25				B	
	eL$_Q$N	25-49				M-S	
	MN$_Q$	25.5			+8.2	M-S	
	ME	25.8			-7.8	M-S	
16th	iPZ	13-56-21	C	2"	6.4	B	Δ_{S-P} = 21.3°
	ePNE	56-18				M-S	
	iPN	56-21			+4.5	Sp.	U.S.C.G.S. - 6°S., 155°E
	iN	56-35			+1.2	M-S	Solomon Islands region
	ePPN	56-43				M-S	H= 13.51.35
	iSN	14-00-08				M-S	In hour break.
	iSE	00-08				M-S	
17th	iPZ	10-53-44	C	1"	+2.5	B	
	ePN	53-44				Sp.	
	iN	53-56			-4.9	Sp.	Δ_{S-P} = 21.8°
	iN	54-18			+4.7	Sp.	
	iSN	57-37	S		-0.7	M-S	U.S.C.G.S. - 6°S., 155°E.
	iSN	57-37	E?			M-S	Solomon Islands H=10-48-53
	iSE	57-37		6"	-7.6	Sp.	Aftershock of quake of the
	MN	57.8		6"	-13.8	Sp.	14th.
	MN	57.8		10"	+1.4	M-S	
	ME	58.1			-1.0	M-S	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	eN	24-56			-5.7	M-S	
	MN	50.7		22"	+9.5	M-S	
	MN	50.7		23"	+46.0	Sp.	
	ME	51.0		22"	+7.3	M-S	
18th	iZ	01-13-13	C		3.5	B	
	iZ	02-44-26			-2.1	B	
	iZ	21-49-48		2"	+2.0	B	
	iZ	50-17			+3.5	B	
	eLNE	22-05.3				B	
19th	iPZ	10-09-58	r	1"	-2.5	B	Possibly two shocks
	iZ	10-06		1.5"	+1.5	B	
	iN	10-06				Sp.	
	i(pP)Z	11-31		1"	-10.7	B	
	i(pP)E	11-31				M-S	
	i(pP)N	11-32			+1.9	Sp.	
	iZ	11-41		1"	+7.2	B	
	iZ	11-49		2"	+13.0	B	
	iPZ	10-45-18	r			B	
	iPN	45-18	S	4"	-2.3	Sp.	
	ePN	45-15				M-S	
	iN	46-40		5"	-2.1	Sp.	
	eSN	50-49			+0.3	M-S	
	eSE	50-49				M-S	
	eSN	50-50		6"	+3.2	Sp.	
	iN	53-29		6"	+5.4	Sp.	
	MN	11-01.9		9"	+6.7	Sp.	
	iPKPZ	14-22-46		1.5"	-4.0	B	U.S.C.G.S. - 16°N., 60½°W,
	iPKPZ	22-54	r			B	Leeward Islands. H=14.03.00
	iPZ	21-23-33	C	1"	+7.8	B	
	iZ	25-01				B	
21st	iPZ	16-24-03	r		-2.0	B	U.S.C.G.S. - 20°S, 178½°W, Fiji Islands region, H 16-19-04, h=about 600 km.
	iPZ	18-07-08	r		-1.8	B	
	iPZ	20-14-51	r			B	
	iZ	15-47		1"	-2.1	B	
	iZ	16-02				B	
	iPZ	22-35-29	C	1.5"	+4.0	B	
	iZ	27-00			+2.0	B	
22nd	iZ	05-52-24				B	
	iPZ	08-10-21	r	1.0"	-2.6	B	
	iPZ	19-11-46	C	1.0"	+2.6	B	
23rd	iPZ	05-51-58	r	1.0"	-5.5	B	
24th	eZ	06-50-13				B	
	iPZ	12-54-39	r	1.2"	-3.2	B	U.S.C.G.S. - Bonin Islands,
	iZ	54-44			+2.6	B	H=12.45.40
	iZ	54-52		1.5"	+2.4	B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	eZ	16-03-07		1.5"	-1.2	B	
	iPZ	17-34-33	C	1.0"	+2.0	B	
25th	iPZ	01-57-04	r	2.0"	-3.4	B	U.S.C.G.S. = Assam, H=01.44.42
26th	iPZ iZ	18-28-43 28-56	C	1.0" 1.0"	5.2 -3.8	B B	U.S.C.G.S. - Tonga Islands region, H=18.22.46, h= about 250 km.
27th	iPZ iZ	11-41-06 41-11	C	1.0" 1.0"	+5.0 -4.5	B B	U.S.C.G.S. - 55½°N., 160°W, Alaska Peninsula, H=10.52.41, h= about 60 km.
28th	iPZ iPN iPN iPE iZ iN iE iN iZ iZ iN iZ eSE eN eN eE eL_QE eL_QN eL_QN iN^h MN ME MN	10-45-25 45-25 45-25 45-25 45-33 45-33 45-33 45-33 45-45 45-57 46-42 47-34 49-39 49-46 49-48 49-49 50-26 50-31 51-32 51-57 54.5 54.5 54.5	C N N W	2" 4" 2" 4" 4" 2" 2.5" 7" 2" 7" 7" 8" 8" 10" 16" 16" 16"	+6.8 +4.8 +0.5 -0.8 -5.9 -6.9 +0.8 +0.6 -9.5 +4.2 +3.2 +3.6 +0.5 +5.8 +1.1 +6.0 +2.8 -13.5 -2.3 -2.0	B Sp. M-S M-S B Sp. M-S M-S B B Sp. B M-S M-S Sp. M-S M-S M-S Sp. Sp. Sp. M-S M-S	Δ_{S-P} = about 24.3° Wellington reports the epicentre as off the coast south of Hawkes Bay North Island of New Zealand.
	iPZ iZ iZ	11-05-49 06-02 06-52	C	1.5" 2.0	+2.0 +3.0	B B B	U.S.C.G.S. - 55°N., 160°W, near south coast of Alaska Peninsula, H=10.52.41.
	iPZ iZ iZ iZ iZ	13-09-23 09-28 09-31 09-49 11-12	r	2.0" 1.5" 1.5" 1.0"	-7.0 +3.0 +6.4 +4.8 +2.8	B B B B B	U.S.C.G.S. - 34°S, 106°W, Easter Island region, H=12-57-04
	iPZ	14-34-35	r	2.0	-2.0	B	U.S.C.G.S. - Indian Ocean, about 1800 miles south of Capetown. H=14.21.49.
29th	iPZ iZ iZ iZ iZ i(S)N	05-38-40 38-44 39-08 39-16 41-07 48-13	C	1.5" 1.0" 7"	+2.5 +4.0 -3.6 +3.0 -2.6	B B B B B Sp.	
	iPZ iZ iZ	08-37-07 37-17 37-38	r	1.0" 1.5"	-8.5 +3.0	B B B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
30th	iZ	00-12-19		1.0"		B	
31st	iZ	05-51-59				B	
	iZ	52-09				B	
	iZ	52-15				B	
	iZ	53-03				B	
	iPZ	13-26-22	r			B	
	iPZ	18-24-18	C			B	
	iZ	24-39				B	

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International Seismological Centre

UNIVERSITY OF QUEENSLAND
SEISMOLOGICAL STATION
BRISBANE

ϕ = 27° 30' 02"., λ = 153° 00' 53" E., h = 24.2 m.

Foundation: Main Vault - Welded Tuff
Out-stations (Sprengnethers) High level semi-consolidated river alluvium.

SEISMOLOGICAL BULLETIN FOR SEPTEMBER, 1952 NO 181

INSTRUMENTS AND WORKING CONSTANTS

INSTRUMENT	D mm per min.	Com-pon-ent	T_o	ε	V_o	Displacement for 1" arc tilt	Date from which constants apply
Milne-Shaw No.58 (modified)	16	N	12	20:1	250	43.6 mm. 43.7 mm.	25/9/51 24/8/51
Milne-Shaw No.60 (modified)	16	E	12	20:1	250		
				T_g	μ^2	V_e	
Benioff No. 12	15	N	1.5				
Benioff No. 11	15	E	1.5	0.3			24/8/51
Benioff No. 13	15	Z	1.5				
Sprengnether No.1122	30	N	7.01	7.13			8/10/51
Sprengnether No.1121	30	E	7.34	7.38			24/10/51
Sprengnether No.1123	30	N					

NOTE: The three Sprengnether seismometers, Series H, are used for microseismic work and from January to the end of June are all orientated to record the N-S component. From July to December No. 1121 is orientated to record the E-W component. None is housed in the main vault, but the maximum difference in either latitude or longitude is only 19". They are housed in the main vault from July to December but in outstations from January to June. The maximum difference in latitude or longitude of any outstation and that of the main vault is 19 seconds.

Time Service: Minute time marks are made electromagnetically by Standard or Synchronome contact clock.
Time comparisons are made daily with radio time signals from Mt. Stromlo Observatory.
Seismograph readings can be determined to the nearest second.

Tables used: Jeffreys & Bullen 1940. Deep focus chart, Brunner 1935.
The station is maintained and operated by the Department of Geology and Mineralogy, University of Queensland assisted by Commonwealth Government grant to the University for research purposes.

Abbreviations: M.S. - Milne Shaw; B - Benioff; Sp. - Sprengnether. c - Compression; - r - Rarefaction;

Amplitudes reported are single amplitudes as measured on the records, (not reduced to ground movements).

Date	Phase	Time h. m. s.	Direction of ground movement	Per. S	Amplitudes m.m.	Instrument	Remarks
1st	iPZ	03-58-53	C	0.75	+3.0	B	Δ_{S-P} = 19.9°
	iZ	59-06		1.0	+3.2	B	U.S.C.G.S. - 13°S., 167°E, Santa Cruz Islands, H=07-24-11
2nd	iPZ	07-28-44	r	1.5	-3.6	B	
	iPN	28-46	N		+1.1	Sp.	
	iZ	28-47		2.0	+12	B	
	iN	28-55			-3.3	Sp.	
	iZ	28-58		2.0	+8.0	B	
	iPPZ	29-01				B	
	iPPPN	29-11		5.0	+3.1	Sp.	
	ePPPE	29-11		7.0	+0.4	M-S	
	iPPPZ	29-12			+3.0	B	
	iZ	29-53		1.0	+4.0	B	
	iSN	32-21		8"	+5.7	Sp.	
	eSZ	32-21				B	
	eSNE	32-23				MS	
	eL_QNE	32-34				MS	
	MN^Q	32.5			+10.5	Sp.	
	iPZ	08-03-18	r		-3.0	B	U.S.C.G.S. - Santa Cruz Islands region, H=07-58-37
	iPN	03-19	N	1.5'	+2.0	Sp.	
	iZ	03-27		1.5	+5.0	B	
	iN	03-29			+3.5	Sp.	
	iZ	04-06		1.5	+5.0	B	
	iZ	11-30-17				B	
	iZ	30-26				B	
3rd	iPZ	03-47-06	C		+3.5	B	
	eZ	48-35				B	
	iPZ	17-48-07	r		-6.0	B	
	iZ	49-37			+3.5	B	
	iZ	22-19-41	C			B	
5th	iPZ	05-23-14	r			B	Δ_{S-P} = 21.7°
	ePN	23-14				Sp.	U.S.C.G.S. - 6°S., 155°E, Solomon Islands, H= 05.18.25.
	iN	23-22		3.0"	-4.0	Sp.	
	iZ	23-25				B	
	iZ	23-28				B	
	iPPN	23-39		6.0"	+4.3	Sp.	
	iZ	24-06				B	
	iZ	24-29				B	
	iSN	27-07		6.0	-4.0	Sp.	
	eSN	27-07				MS	
	eSE	27-09				MS	
	iPZ	21-36-40	r	1.0	-3.4	B	
	iZ	36-50		1.0	-3.5	B	
	iZ	36-59		1.0	-2.3	B	
6th	iPZ	14-36-38	C	1.0	+6.5	B	
	iZ	36-45			+3.4	B	U.S.C.G.S. - Tonga Islands region, H=14-30-32
	iSN	41-18		6.0	-3.6	Sp.	
	iPZ	17-59-30	C	1.0	+1.6	B	
	iZ	59-33		1.0	+2.3	B	
7th	iZ	02-29-42		1.5	₹2.6	B	
	iPZ	02-45-04	r			B	Δ_{S-P} = 30°
	iZ	45-06		1.0	+11.3	B	U.S.C.G.S. - 16°S., 177°W., Fiji Islands, H = 02.38.58
	iSN	50-05		10"	-0.7	MS	
	eSE	50-05				MS	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. S	Amplitudes m.m.	Instrument	Remarks
	eI N	51-35				MS	
	MN	55.9		15"	1.2	MS	
	iZ	03-20-52				Sp.	
	ePZ	05-43-16				B	Δ_{S-P} = 7.7°
	iZ	43-56		1.0"	+4.2	B	
	iSZ	44-45		1.0"	+3.5	B	Felt at Gunning near
	iZ	45-25		1.0"	-9.5	B	Yass, N.S.W.
	iN	45-25				Sp.	
	iN	45-25				MS	
	iZ	46-52			+13.5	B	
	MZ	45.75			45.0	B	
	e(P)Z	05-49-18				B	
	iPZ	16-33-35	r	1.2"	-2.0	B	
	ePN	33-36				Sp.	
	iN	36-12		8.0"	+3.2	Sp.	
8th	iPZ	06-44-25	r	1.0	-3.4	B	
	iZ	45-22		1.0	-4.2	B	
	iZ	47-41		1.2	+4.5	B	
	i(S)Z	52-11		1.5	-3.0	B	
	iZ	52-32		1.0	-2.5	B	
	iZ	52-38			+2.4	B	
	iPZ	15-05-27	C	1.5	+2.5	B	
	ePE	05-27				MS	Deep
	iZ	05-54		1.5	+3.5	B	
	iZ	06-04				B	
	iZ	06-18		1.0	+15.0	B	
	iN	06-23		6.0	+4.1	Sp.	
	iZ	06-29		1.0	+15.2	B	
	iZ	06-36		1.5	+11.3	B	
	iZ	06-47		1.5	-5.0	B	
	iZ	07-00			-3.1	B	
	iZ	07-08		1.5	+7.5	B	
	iZ	11-21		1.2	+2.0	B	
	iSN	11-24		6.0	+2.6	Sp.	
	eSE	11-30			-0.3	MS	
	i(P)Z	13-01				B	Probably two shocks
	iN	13-09				Sp.	
	iZ	13-22		1.5	-5.1	B	
	iN	13-22		4.0	+3.1	Sp.	
	iN	13-37			+2.8	Sp.	
	iN	15-18			+2.9	Sp.	
	iZ	15-50		5.0	-2.1	Sp.	
	MN	15.9		7.0	-7.8	Sp.	
	iPZ	21-47-35	C	1.2	+2.8	B	
	iPN	47-35	S		-2.2	Sp.	
	iZ	47-41			+9.2	B	Δ_{S-P} = 19.5
	iZ	48-15		1.0	+5.4	B	U.S.C.G.S. - 10°S., 161°E.,
	iSN	51-13		7.0	+0.6	MS	Solomon Islands, H = 21-45-10
	iSE	51-14		7.0	-0.8	MS	
	iSN	51-17		7.0	+7.5	Sp.	
	iPZ	22-20-20	r?		-2.9	B	U.S.C.G.S. - Solomon Islands Aftershock, H=22-15-55
9th	iPZ	12-56-07	C			B	
	iZ	56-19				B	
	iZ	56-21				B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. S	Amplitudes m.m.	Instrument	Remarks
	iZ	56-34				B	
	iN	13-04-06		4.0'	+4.5	Sp.	
	iPZ	13-05-20				B	
	iPE	05-20	W	4.0	-0.5	MS	
10th	iPZ	02-26-25	C	1.0	+8.2	B	U.S.C.G.S. - 22°S., 179½°W,
	iZ	26-36		1.0	+3.4	B	Fiji Islands region,
	iZ	27-21		1.5	+2.9	B	H=02.20.57
	iZ	27-36		1.5	+4.8	B	
	iPZ	18-55-48	r	1.2	-1.9	B	
	iZ	56-01		2.0	+4.5	B	
	iZ	56-22		1.0	+5.4	B	
11th	iPZ	14-46-20	r		-1.5	B	
	iPZ	21-10-19	r		-2.1	B	
	iZ	10-36		1.0	-3.5	B	
	iPZ	22-11-55	C	2.0	+17.0	B	Deep. U.S.C.G.S. -
	iPN	11-56	S	4.0	-4.2	Sp.	Celebes Sea, H=22.03(04?)
	iPE	11-56	E			MS	44.
	iZ	13-27				B	
	iZ	16-27		1.2	+5.0	B	
	iSN	17-41		4.0	+8.0	Sp.	
	iSN	17-41		6.0	+0.6	MS	
	MN	17-44			-13.8	Sp.	
	iPZ	22-32-21	r?	1.0	-1.7	B	Δ_{S-P} = 27°
	iPE	32-21	W	4.0	-0.6	MS	U.S.C.G.S. - 29°S.,
	iZ	32-24		1.5	+18.0	B	177°W., Kermadec Islands
	eSE	36-55				MS	H= 22.26.41
	iE	37-06		8.0	+1.7	MS	
	iE	37-25		10.0	+2.6	MS	
	$iL_Q N$	37-52		9.0	+11.3	Sp.	
	$eL_Q E$	37-57				MS	
	$eL_Q N$	39-20		10.0		MS	
	ME^R	42.0		15.0	+10.5	MS	
	MN	42.5		14.0	+25.0	Sp.	
	MN	42.5		15.0	+ 4.6	MS	
	iPZ	23-05-20	r?			B	
	iZ	05-28				B	
	iZ	05-37				B	
	iZ	05-47				B	
	iPZ	23-28-51	r			B	U.S.C.G.S. - 29°S.,
	iZ	28-52		1.2	+17.3	B	177°W., Kermadec Islands.
12th	iPZ	06-13-26	C	1.0	+9.6	B	
	iZ	13-33			-3.6	B	
	e(S)E	23-19			-0.8	MS	
	e(S)Z	23-20		2.0	-1.7	B	
	iN	23-30		6.0	+0.5	MS	
	iE	23-32			+1.3	MS	
	iZ	23-36			-2.2	B	
	iPZ	13-09-07	C	1.5	+2.5	B	
13th	eZ	04-11-49		1.2	+1.6	B	
	iZ	12-07		1.2	-2.8	B	
	iZ	12-16		1.7	+3.5	B	
	iZ	12-30		2.0	-4.0	B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. S	Amplitudes m.m.	Instrument	Remarks
	iPZ	08-40-07	C?		+1.6	B	
	iZ	40-17			-2.5	B	
	eiPZ	16-55-26	r?	1.0	-1.5	B	
14th	eiPZ	04-49-41	C			B	
	iZ	49-42		0.8	+6.5	B	
	iPZ	05-55-58	r	1.5	-7.0	B	U.S.C.G.S. - 25°S., 179°E, South of Fiji Islands. H = 05.51.30, h=about 550 km.
15th	iPZ	06-02-49	C	1.5	+3.1	B	
	i(P)Z	12-14-19	C		+3.0	B	
	iZ	14-38		2.0	+2.0	B	
	i(P)Z	12-15-00	r	1.0	-3.5	B	
	iZ	15-14		1.0	-7.5	B	
	eZ	12-22-25		2.0	-1.5	B	
	iZ	23-14			-2.5	B	
	iN	24-28		3.0	+1.5	Sp.	
16th	iPZ	10-33-13	r		-0.5	B	
	iZ	33-18			+4.0	B	
	iZ	33-25		1.5	+6.0	B	
	eLE	12-52.3				MS	
17th	iPZ	01-22-00	r		38.0	B	U.S.C.G.S. - 17½°S., 179°W, Fiji Islands, H = 01-16-53, h = about 600 km.
	iSePZ	27-49			+8.0	B	
18th	iPZ	06-04-36	C	1.5	+6.0	B	
	eZ	05-47		1"	+4.0	B	
	e(S)Z	12-04		1.5	+4.0	B	
	iZ	14-58		1.5	+4.0	B	
	iZ	16-12		2.0	-2.6	B	
	iPZ	07-49-56	C	1.2	+7.0	B	
	eSNE	53-17		7.0		MS	
	eZ	12-20-53				B	
	eZ	27-16				B	
19th	iPZ	03-51-43	r	1.0	-1.7	B	
	iZ	51-50		1.0	-3.2	B	
	iPZ	14-35-54	C	1.5	+4.5	B	Δ_{S-P} = about 21.8°
	iZ	36-03		1.0	+6.4	B	No surface waves
	iPPN	36-19			+0.6	MS	U.S.C.G.S. - Solomon Is.
	eSN	39-48		6.0	-0.5	MS	H = 14-31-04.
	eSE	39-48			+0.4	MS	
	iN	40-15		8.0	+0.7	MS	
	iE	40-15		8.0	+1.0	MS	
	iPZ	14-42-08	C	1.0	+2.0	B	
	iZ	42-28			-2.9	B	
	iPZ	17-39-40	r	2.0	-3.8	B	
20th	iZ	09-08-05		1.5	-1.5	B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. S	Amplitudes m.m.	Instrument	Remarks
	eiPZ	13-03-36		1.7"		B	
	ePE	03-37				MS	
	iZ	03-41		1.5	+17.0	B	
	iZ	04-09		1.5	+7.0	B	
	iZ	04-14		1.5	+6.2	B	
	iZ	04-32		1.7	+6.4	B	
	iSE	08-25		9.0	+1.2	MS	
	iL_RE	11-15		9.0	+1.8	MS	
	ME^R	15.3		10.0	-10.5	MS	
	iPZ	15-09-14	C	1.5	+4.0	B	
	iZ	09-19		1.5	+4.5	B	
	iZ	09-35		1.5	+5.2	B	
	iZ	09-55		2.0	+3.2	B	
21st	eZ	01-26-30		1.0		B	
	iZ	26-37		1.0	+1.8	B	
	iZ	27-14		1.0	-1.7	B	
	iPZ	02-10-49	r		-2.3	B	
	iPN	10-49	N?		1.2	Sp.	
	iZ	10-51		1.0	+5.0	B	
	iZ	11-09		1.0	-5.0	B	
	iZ	11-16			+3.2	B	
	iZ	11-32		1.0	+2.8	B	
	iZ	12-12		1.5	+1.7	B	
	e(PKP)Z	02-48-57				B	U.S.C.G.S. - $22\frac{1}{2}^{o}$S., 65^{o}W. Argentina-Bolivia border, H=02-30-30, h = about 250 km. This and the succeeding two shocks overlap on all records and are extremely difficult to interpret.
	eZ	49-42				B	
	eZ	49-51				B	
	iPZ	02-50-12	r	3.0	-18.0	B	
	iPN	50-12	S	5.0	- 6.2	Sp.	
	ePE	50-12				MS	
	iZ	50-18		2.0	-9.9	B	
	i(S)N	55-25		8.0	-13.2	Sp.	
	i(S)E	55-27		8.0	+1.4	MS	
	iN	56-48		8.0	-12.3	Sp.	
	iE	56-50		10.0	+1.4	MS	
	iN	57-31		8.0	-10.0	Sp.	
	iE	57-31		9.0	-0.8	MS	
	iE	58-01				MS	
	iN	58-18		8.0	+8.7	Sp.	
	iE	58-50		9.0	+0.7	MS	
	iPZ	02-59-19	C	2.0	+3.9	B	
	iZ	59-22		1.5	+12.0	B	
	iZ	03-03-19		2.0	+6.5	B	
	i(S)Z	02-43		2.1	+3.5	B	
	iZ	03-20		2.0	+6.5	B	
	eZ	05-58-57				B	
	iZ	59-36		1.0	+2.1	B	
	iPZ	08-52-19	C	1.0	+4.0	B	U.S.C.G.S. - $20\frac{1}{2}^{o}$S., 180^{o} Fiji Islands, H=08.46.50
	iZ	52-22		1.0	+2.5	B	

Date	Phase	Time h. m. s.	Direction of ground movement	Per. S	Amplitudes m.m.	Instrument	Remarks
	iZ	09-27-51				B	
	iZ	28-04		1"	+2.5	B	
	iZ	28-46		1.5"	-3.8	B	
	iPZ	11-22-25	r			B	U.S.C.G.S. - 33½°N., 142°E., off south coast of Honshu, Japan. H = 11-12-09
	iPZ	22-52-34	r	1"	-7.5	B	U.S.C.G.S. - Celebes Sea. H = 22-44-33
22nd	eZ	07-59-21				B	
	iZ	59-31				B	
	iZ	59-43				B	
26th	iPZ	17-21-25	C	0.7	+4.0	B	
	ePZ	17-25-19				B	
	iPN	25-19	S	4.0	-3.5	Sp.	U.S.C.G.S. - New Hebrides
	iZ	25-27		2.0	-7.0	B	Islands, H = 17-21-00
	ePZ	17-28-12				B	U.S.C.G.S. - Solomon
	iZ	28-28		2.0	-5.0	B	Islands region
	eSN	32-01		8"	+2.5	Sp.	H = 17-23-26
	ePZ	17-37-22		1.0	-3.0	B	U.S.C.G.S. - Solomon
	iZ	37-41		2.0	+7.5	B	Islands region
	iSN	41-13		8"	-2.5	Sp.	H = 17-32-38
	iPZ	17-49-39	C	1.5"	+6.0	B	U.S.C.G.S. - Solomon
	iZ	50-17				B	Islands region
	iSN	53-29		8"	+4.3	Sp.	H = 17-44-55
	ePZ	23-30-08				B	
	iZ	30-10		1.8	+4.0	B	
	iZ	30-18		1.0	+12.0	B	
27th	iPZ	00-04-13	r	0.5	-3.0	B	
	iPZ	19-17-37	C			B	U.S.C.G.S. - 50½°N.,
	iPN	17-39	S	3.0	-4.7	Sp.	157°E., near coast of
	iZ	17-57		1.0	+5.0	B	Kamchatka, H=19-05-46,
	iZ	18-06		1.5	+4.0	B	h = about 100 km.
	eSN	27-30				Sp.	
	iN	27-57		8.0	+4.5	Sp.	
28th	iPZ	03-08-32	C	1.5	+3.5	B	U.S.C.G.S. - Tonga Islands region H=03-02-06
	iPZ	05-56-14	r?	2.0	-7.0	B	U.S.C.G.S. - Kermadec Islands. H=05-50-49
	iZ	06-45-30				B	
	iPZ	06-57-38	r	1.5	-3.5	B	
	iPZ	12-42-46	C	1.0	+3.0	B	
	iPZ	14-29-43	r		-5.0	B	
	iPZ	22-06-26	C	1.5	+4.0	B	U.S.C.G.S. - 2?°N., 142°E., Bonin Islands. H=21-56-36

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. S	Amplitudes m.m.	Instrument	Remarks
0th	iPZ	11-22-21	C	1.0	+7.0	B	$\Delta_{S-P} = 18^{o}$
	iZ	22-24		1.7	-4.0	B	
	iPPZ	22-33		1.5	+6.0	B	
	iZ	22-41		1.5	+10.0	B	
	iSN	25-38		4.2	-4.5	Sp.	
	eSN	25-38				MS	
	iL_QN	25-49		12.0		Sp.	
	iL_RN	26-42		14.0		Sp.	
	MN	28.0		12.0	+11	Sp.	
	iPZ	13-03-38	r	1.0	-3.5	B	$\Delta_{S-P} = 75^{o}$
	ePN	03-38				Sp.	U.S.C.G.S. - $28\frac{1}{2}^{o}$N.,
	iP_cPZ	03-56		2.0	+8.0	B	102^{o}E., Szechwan
	iZ^c	04-28		1.5	-11.5	B	province, China.
	iSN	13-08		7.0	+2.5	Sp.	H=12-52-00
	eSN	13-08				MS	
	eSE	13-08		10.0	-0.5	MS	
	MN	40.5			-21.5	Sp.	
	ME	41.5		20.0	+1.2	MS	
	MN	40.5		20.0	+2.0	MS	
	iPZ	14-27-22	C	1.5	+2.5	B	In coda of previous
	iZ	27-46		1.2	-3.0	B	shock. U.S.C.G.S. -
	iZ	28-12		1.0	+2.5	B	$29\frac{1}{2}^{o}$S., 178^{o}W.,
	eL_RN	34-02				Sp.	Kermadec Islands. H=14-21-52.
	ePZ	14-48-25	C			B	
	iZ	48-29		1.0	+4.5	B	
	iPZ	16-23-21	C			B	
	iZ	21-13-05		2.0	+3.0	B	
	iPZ	21-46-33	r	1.0	-9.0	B	
	iZ	47-03		1.5	+3.5	B	

Correction: In Bulletin No.178 for June, 1952, the time of the S. phase of the second earthquake on the 24th should read 01-45-03 instead of 01-44-45.

O.A. JONES

Director

International Seismological Centre

UNIVERSITY OF QUEENSLAND
SEISMOLOGICAL STATION
BRISBANE

ϕ = 27° 30' 02"., λ = 153° 00' 53" E., h = 24.2 m.

Foundations: Main Vault - Welded Tuff
Out-stations (Sprengnethers) High level semi-consolidated river alluvium.

SEISMOLOGICAL BULLETIN FOR OCTOBER 1952 NO182

INSTRUMENTS AND WORKING CONSTANTS

INSTRUMENT	D mm per min.	Com-ponent	T_o	ε	V_o	Displacement for 1" arc tilt	Date from which constants apply
Milne-Shaw 0.58 (modified)	16	N	12	20:1	250	43.6 mm. 43.7 mm.	25/9/51 24/8/51
Milne-Shaw 0.60 (modified)	16	E	12	20:1	250		
				T_g	μ^2	Vs	
Benioff No. 12	15	N	1.5				
Benioff No. 11	15	E	1.5	0.3			24/8/51
Benioff No. 13	15	Z	1.5				
Sprengnether No.1122	30	N	7.01	7.13			8/10/51
Sprengnether No.1121	30	E	7.34	7.38			24/10/51
Sprengnether No.1123	30	N					

NOTE: The three Sprengnether seismometers, Series H, are used for microseismic work and from January to the end of June are all orientated to record the N-S component. From July to December No. 1121 is orientated to record the E-W component. None is housed in the main vault, but the maximum difference in either latitude or longitude is only .19". They are housed in the main vault from July to December but in outstations from January to June. The maximum difference in latitude or longitude of any outstation and that of the main vault is 19 seconds.

Time Service: Minute time marks are made electromagnetically by Standard or Synchronome contact clock.
Time comparisons are made daily with radio time signals from Mt. Stromlo Observatory.
Seismograph readings can be determined to the nearest second.

Tables used: Jeffreys & Bullen 1940. Deep focus chart, Brunner 1935.
The station is maintained and operated by the Department of Geology and Mineralogy, University of Queensland assisted by Commonwealth Government grant to the University for research purposes.

Abbreviations: M.S. - Milne Shaw; B - Benioff; Sp. - Sprengnether.

Amplitudes reported are single amplitudes as measured on the records, (not reduced to ground movements).

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
1st	ePZ	09-02-10				B	
	ePN	02-13				Sp.	
	iSN	08-45		7.0	-2	Sp.	
	eSN	08-46				MS	
	eSE	08-49				MS	
	eSSE	12-06				MS	
	MN	18.7		20.0	+1.5	MS	
	ME	19.8		18.0	+2	MS	
	MN	22.6		7.0	+15	Sp.	
	iZ	09-28-52		2.0	-3.0	B	
	iPZ	12-24-43	C	2.0	+8.0	B	
2nd	iLN	13-15-27				Sp.	
	eLN	16-49				MS	
	MN	22.5		11.0	+9	Sp.	
3rd	iPZ	22-02-45	r?	1.0	-1.0	B	
4th	iPZ	04-47-39	r	0.75	-2.3	B	
	iZ	47-55		1.0	-3.5	B	
	iZ	48-05		1.0	+4.7	B	
	iPZ	07-13-08	r	1.5	-2.6	B	Possibly two shocks
	iZ	13-23		1.0	+2.5	B	
	iZ	13-31		2.0	+4.0	B	
	iZ	13-45		1.0	+2.5	B	
	iZ	14-04		1.5	+5.0	B	
	iZ	14-19		1.2	-4	B	
	iSN	22-56		4.0	-2.5	Sp.	
	iN	24-20		8.0	-2.5	Sp.	
	iZ	14-02-34	r			B	
	iPZ	16-41-21	r	1.0	-4.4	B	
5th	iPZ	22-17-12	r		-5.8	B	U.S.C.G.S. 37°N, 93°E, Chinghai
	iZ	17-26		1.5	+5	B	Province, China H=22-04-28
6th	iPZ	12-54-23	r	1.0	-1.5	B	
	iZ	54-29		1.0	+5.2	B	
	iZ	56-26		1.0	-7.5	B	
	iZ	56-57		1.0	-7.5	B	
7th	iPZ	10-23-00	r	1.0	-1.0	B	
	iZ	23-11		1.5	+5.0	B	
	iSN	26-47		8.0	-1.5	Sp.	
8th	iPZ	09-49-41	C?			B	
	iPZ	10-14-53	C	1.0	+8.0	B	
9th	iPZ	13-26-44	r	0.5	-2	B	
	iPZ	16-01-58	r	1.2	-3.0	B	$\Delta_{S-P} = 32.4°$
	ePPN	03-06				Sp.	U.S.C.G.S. - Samoa Islands.
	iN	03-22				Sp.	region. H=15-55-35
	iE	03*23			-0.5	MS	
	iN	06-14		8.0	+.4	Sp.	
	iSE	07-08				MS	
	iSN	07-09		12.0	-8	Sp.	
	iSN	07-09			+0.7	MS	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	ME	13.2		20	+2.2	MS	
	MN	13.9		15	-1.4	MS	
	MN	13.9		11.0	+16	Sp.	
	eLN	19-33-32				Sp.	U.S.C.G.S. - 30½°N, 69°E, Central Pakistan
	iPZ	21-19-00	C?	1.0		B	U.S.C.G.S. - near South-
	iZ	19-06		1.0	+5.5	B	west coast of Sumatra.
	iZ	19-22		1.0	+10	B	H = 21-09-38
	iZ	19-31		1.0	+6	B	
11th	iPN	00-18-5[illegible]	N	4.0	+[illegible]	Sp.	Δ_{S-P} = 23.1°
	iPZ	00-18-55	r	1.0	-2.3	B	U.S.C.G.S. - 6°S., 149°E,
	iPN	18-55				MS	New Britain H=00-13-59
	iZ	19-15		1.0	+45	B	
	iZ	19-36		1.0	+13.0	B	
	iSN	23-00				Sp.	
	iSE	23-00		6.0	+6.0	MS	
	iSZ	23-02		3.0	-14.5	B	
	iSN	23-02		6.0	+2.5	MS	
	eL_QN	23-20			+2.5	MS	
	eL_QE	23-20			+5.0	MS	
	eL_QN	24-21				MS	
	MN^R	26.6			+7.0	MS	
	MN	26.7		19.0	+75	Sp.	
	ME	26.7			-25.5	MS	
	iPZ	03-[illegible]-03	r	1.0	-8.2	B	
	iZ	32-07		0.75	+5.0	B	
	iZ	32-17		1.0	+3.5	B	
	ePZ	04-56-06				B	
	iPZ	05-17-58	C	1.0		B	
	ePZ	13-06-03	C			B	
13th	iPZ	23-29-38	C		+6	B	U.S.C.G.S. - 34°S., 178°W,
	iPPPZ	30-36		1.0	+9	B	South of Kermadec Islands
	eL_RN	36-35				MS	H = 23-24-10
14th	iPZ	08-04-34	C	1.0	+2.3	B	
	eZ	16-52-06				B	
	eZ	18-32-08				B	
	iPZ	20-48-49	C	1.5	+6.5	B	
	iZ	49-04		1.5	+3.5	B	
	iZ	21-01-11			+2.6	B	
	iZ	01-27		1.5	-2.0	B	
16th	iPZ	20-25-54	C		+3.0	B	Δ_{S-P} = 19.8°
	iSE	29-30		8.0	-1.2	MS	U.S.C.G.S. - Santa Cruz Islands region. H = 20-21-25
17th	iPZ	03-26-19	C	1.0	+3.0	B	
	iPZ	07-39-38	C	1.0	+4.2	B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.	Instrument	Remarks
18th	iPZ	05-26-44	r		-7.0	B	Δ_{S-P} = 18.2°
	iPN	26-44	N			Sp.	U.S.C.G.S. - 16°S.,
	iPN	26-46		6.0	-4.7	MS	168°E., New Hebrides
	iPE	26-46	E	6.0	+7.5	MS	H = 05-22-32
	iZ	29-34				B	
	iN	29-34				Sp.	
	iE	29-34				MS	
	iSE	30-04		10.0	+4.9	MS	
	iSN	30-08			-25	Sp.	
	iSN	30-09		10.0	+3.8	MS	
	iZ	30-15		1.5	-14.5	B	
	iL_RN	31-08			+2.2	MS	
	iL_RE	31-08			+4.9	MS	
	MN^R	32.4		16.0	+47.5	Sp.	
	MN	32.4		18.0	+8.0	MS	
	ME	32.8		18.0	-11	MS	
	iPZ	17-29-20	r	1.0	-6.2	B	
	iPZ	20-39-56	r	1.5	-4.5	B	U.S.C.G.S. - 16°S.,
	iZ	40-05			-5.2	B	173°W., Samoa Islands
	iZ	40-13		1.2	-3.0	B	H = 20-33-14
	eSN	45-16		5.0	+2.0	Sp.	
	MN	51.6		12.0	+4.5	Sp.	
20th	ePN	00-23-35	S?			Sp.	
	iPZ	23-36	C	1.0	+3.5	B	
	iN	24-24				Sp.	
	eSE	27-34				MS	
	eSN	27-34				Sp.	
	iPZ	15-14-35	C?	1.0	+2.5	B	U.S.C.G.S. = Mariana Islands, about 500 miles north of Guam. H= 15-05-45
21st	iPZ	17-29-23	C	1.2	+2.0	B	
	iZ	29-43			+3.0	B	
22nd	iPZ	03-51-00	C?			B	U.S.C.G.S. - 18°S., 174°W., Tonga Islands. H = 03-44-30
	iPZ	05-54-51	C	1.0	+3.7	B	
	iZ	55-01		1.2	+3.0	B	
	iPZ	09-24-03	r	1.0	-5.2	B	
	iZ	24-10		1.0	-3.8	B	
24th	iPZ	02-40-10	r	1.0	-1.6	B	
	iPZ	05-20-32	C	1.0	+6.5	B	
	iZ	21-14		0.5	+3.7	B	
	iZ	21-39			-4.5	B	
	e(S)N	26-49				MS	
	e(S)E	26-50				MS	
	e(P)Z	05-28-03	C?	1.0	+3	B	
	iZ	29-11		1.2	+3.5	B	
	iZ	29-53		1.5	+5.5	B	
	i(S)E	30-31		4.0	-1	MS	
25th	iPZ	17-06-04	C		+1.5	B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
25th	iPZ	17-07-30	C	1.5	+3.0	B	
	iN	07-32				Sp.	
	iZ	07-32		1.2	+9.0	B	
26th	iPZ	08-51-03	C		+25.0	B	U.S.C.G.S. - 34½°N.,
	iPN	51-04	S	4.0	-0.5	Sp.	137°E near coast of
	iPE	51-04	E	4.0	+0.5	MS	Honshu Japan.
	iPN	51-04	S	4.0	-1.0	MS	H = 08-41-03 h=about 300km.
	iN	51-30				Sp.	
	iP PZ	51-39		1.5	-11.8	B	
	i(PP)N	53-14		6.0	-6	Sp.	
	i(PP)N	53-14		6.0	-1.5	MS	
	i(PP)Z	53-16				B	
	iZ	53-21			-6.5	B	
	iN	53-32		4.0	+2	Sp.	
	iSN	59-10		9.0	+2	MS	
	iSE	59-10		6.0	-1.7	MS	
	iSN	59-11		6.0	+13	Sp.	
	iZ	59-20				B	
	iS SN	09-00-30		6.0	-6.7	Sp.	
	iS$_c$SN	00-30		10.0	-1	MS	
	ePZ	15-57-15	C			B	U.S.C.G.S. - 39°N., 143°E,
	iZ	16-00-06		1.2	+3.3	B	off east coast of Honshu Japan, H = 15-46-14
	iPZ	16-04-00	r	1.2	-1.5	B	Δ_{S-P} = 68.4° B.C.I.S.
	iSE	12-58			+1.0	MS	39.5°N., 143.7°E.
	iN	13-05		5.0	-2.0	Sp.	H = 15-53-03
							h = about 50 km.
	iPZ	18-12-59	C	1.2	+1.5	B	Δ_{S-P} = 68°
	iN	13-03		6.0	-3	Sp.	U.S.C.G.S. - 39½°N.,
	iZ	13-15			+2.2	B	143½°E., Off east coast
	eSN	21-54				MS	of Honshu, Janan
	eSE	21-54			-0.5	MS	H = 18-02-00
	iSN	21-55		8.0		Sp.	
	iN	23-05		10.0	-5.0	Sp.	
	ePZ	19-30-04		1.2	-2.0	B	Δ_{S-P} = 69°
	iN	30-19		5.0	-2.5	Sp.	U.S.C.G.S. - 38½°N.,
	iZ	30-23			+3.5	B	143½°E., Off east
	iZ	31-14		2.0	-2.2	B	coast of Honshu, Japan
	eSN	39-05		8.0	-3	MS	H = 19-19-12
	iSN	39-06		8.0	-2.5	Sp.	
	eSE	39-05		6.0	-1.3	MS	
27th	ePZ	03-28-11	r?			B	Δ_{S-P} = 67.6°
	iPN	28-12	S	5.0	-2.0	Sp.	U.S.C.G.S. - 39°N.,
	iN	28-45		4.0	+1.5	Sp.	143°E, Off east coast
	iSN	37-05		8.0	-4.5	Sp.	of Honshu, Japan
	iSN	37-05			-1.0	MS	H = 03-17-12
	iSE	37-06		8.0	-1.4	MS	
	iN	37-19		6.0	-2.7	Sp.	
	iPZ	19-31-50	C	1	+1.5	B	
	iZ	32-06		1	-3	B	
	iPZ	20-36-58	r	1.5	-3.5	B	U.S.C.G.S. - Fiji Islands H = 20-31-58 h = about 600 km.
	iPZ	22-59-19	C		+1	B	B.C.I.S. - Region of the New Hebrides H = 22-54-04

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
8th	ePZ	04-11-04	r?			B	
	iZ	11-31		0.75	+4	B	
	ePZ	06-41-59	r?	5	-2	B	U.S.C.G.S. - 40°N.,
	iZ	42-28				B	144°E., Off east coast
	iSN	50-52		8.0	-3.5	Sp.	of Honshu, Japan.
	eSNE	50-52				MS	H = 06-31-04
	iN	51-58		8.0	+3.5	Sp.	
	iL_QN	59-17			+3.0	Sp.	
	iPZ	09-24-59	r	1	-3.5	B	
	iZ	25-50		1.3	+2.5	B	
	iPZ	09-26-33	r	0.75	-3.5	B	
	iPZ	14-15-15	r	1"	-1.0	B	
	iPZ	16-56-22	C	1	+2.0	B	U.S.C.G.S. - 39°N., 143°E. Off east coast of Honshu, Japan H = 16-45-21
9th	iPZ	06-40-46	C	0.75	+1.5	B	
	ePZ	19-26-25	C?				U.S.C.G.S. - 16½°S., 173½°W., Tonga Islands region. H=19-19-48
	iPZ	19-40-36	C	1.5	+13.5	B	U.S.C.G.S. - 17°S.,
	iPN	40-36	S		-1.0	Sp.	174°W., Tonga Islands
	iPE	40-36	W	4	-1.0	MS	H = 19-34-14 h = about
	ipPE	41-05	E	3	+1.0	MS	150 km.
	ipPN	41-06		4.0	+3.0	Sp.	
	ipPZ	41-07	C	1.5	+11.0	B	
	iPPN	41-50	S	5	-0.4	MS	
	ePPZ	41-52				B	
	iE	41-55	E	6	+1.2	MS	
	iN	43-56		6.0	+3.0	Sp.	
	iSN	45-36		6.0	-3.7	Sp.	
	iN	46-12				Sp.	
	iE	46-12		5.0	-0.5	MS	
	isSN	46-38		7.0	-10.0	Sp.	
	iS_CPZ	46-59		2.5	-10.5	B	
	iN^C	50-23		12.0	-8.0	Sp.	
	iN	51-00		5.0	+8.0	Sp.	
	ME	46.4		8.0	-1.2	MS	
	MN	46.7		8.0	-10.0	Sp.	
	MN	49.3		12.0	+1.5	MS	
1st	iPZ	15-22-45	C	1.2	+7.0	B	
	iZ	22-58		1.0	+5.7	B	
	ePZ	16-48-12				B	U.S.C.G.S. - 39°N.,
	ePN	48-11	N?	6	+2.5	Sp.	143°E., off east coast
	iZ	48-30		1	+4.0	B	of Honshu, Japan
	iZ	48-45				B	H = 16-37-14
	eSN	57-01			-0.5	MS	
	eSE	57-01			-0.5	MS	
	iSN	57-02		6	-4.2	Sp.	
	eSZ	57-06				B	
	iS_CSN	58-05		9	-5.0	Sp.	
	MN^C	57.1			+5.5	Sp.	

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
28th	ePZ	04-11-04	r?			B	
	iZ	11-31		0.75	+4	B	
	ePZ	06-41-59	r?	5	-2	B	U.S.C.G.S. - 40°N.,
	iZ	42-28				B	144°E., Off east coast
	iSN	50-52		8.0	-3.5	Sp.	of Honshu, Japan.
	eSNE	50-52				MS	H = 06-31-04
	iN	51-58		8.0	+3.5	Sp.	
	iL_QN	59-17			+3.0	Sp.	
	iPZ	09-24-59	r	1	-3.5	B	
	iZ	25-50		1.3	+2.5	B	
	iPZ	09-26-33	r	0.75	-3.5	B	
	iPZ	14-15-15	r	1"	-1.0	B	
	iPZ	16-56-22	C	1	+2.0	B	U.S.C.G.S. - 39°N., 143°E. Off east coast of Honshu, Japan H = 16-45-21
29th	iPZ	06-40-46	C	0.75	+1.5	B	
	ePZ	19-26-25	C?				U.S.C.G.S. - 16½°S., 173½°W., Tonga Islands region. H=19-19-48
	iPZ	19-40-36	C	1.5	+13.5	B	U.S.C.G.S. - 17°S.,
	iPN	40-36	S		-1.0	Sp.	174°W., Tonga Islands
	iPE	40-36	W	4	-1.0	MS	H = 19-34-14 h = about
	ipPE	41-05	E	3	+1.0	MS	150 km.
	ipPN	41-06		4.0	+3.0	Sp.	
	ipPZ	41-07	C	1.5	+11.0	B	
	iPPN	41-50	S	5	-0.4	MS	
	ePPZ	41-52				B	
	iE	41-55	E	6	+1.2	MS	
	iN	43-56		6.0	+3.0	Sp.	
	iSN	45-36		6.0	-3.7	Sp.	
	iN	46-12				Sp.	
	iE	46-12		5.0	-0.5	MS	
	isSN	46-38		7.0	-10.0	Sp.	
	iS_CPZ	46-59		2.5	-10.5	B	
	iN^C	50-23		12.0	-8.0	Sp.	
	iN	51-00		5.0	+8.0	Sp.	
	ME	46.4		8.0	-1.2	MS	
	MN	46.7		8.0	-10.0	Sp.	
	MN	49.3		12.0	+1.5	MS	
1st	iPZ	15-22-45	C	1.2	+7.0	B	
	iZ	22-58		1.0	+5.7	B	
	ePZ	16-48-12				B	U.S.C.G.S. - 39°N.,
	ePN	48-11	N?	6	+2.5	Sp.	143°E., off east coast
	iZ	48-30		1	+4.0	B	of Honshu, Japan
	iZ	48-45				B	H = 16-37-14
	eSN	57-01			-0.5	MS	
	eSE	57-01			-0.5	MS	
	iSN	57-02		6	-4.2	Sp.	
	eSZ	57-06				B	
	iS_CSN	58-05		9	-5.0	Sp.	
	MN^C	57.1			+5.5	Sp.	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iPZ	17-01-25	C	1	+4.0	B.	
	ePN	01-25				Sp.	
	iZ	01-34		1.2	-5.5	B	
	iZ	03-09		1.2	-4.2	B	
	iPZ	17-03-13	r	1"	-3.0	B	
	iPZ	18-44-18	C	1	+2.0	B	
	iPN	44-18	N	5	+2.5	Sp.	$\Delta_{S-P} = 22.7°$
	iZ	44-28		1.2	-9.0	B	
	iZ	44-32		1	+4.5	B	
	iPPN	44-48				Sp.	
	iPPPN	45-07		5	+2.0	Sp.	
	iSN	48-20		6	-1.5	Sp.	
	eSN	48-28				MS	
	eSE	48-28				MS	
	iN	49-27		6	+2.0	Sp.	
	iN	50-16		6	+2.0	Sp.	
	iN	51-00				Sp.	
	iN	52-10				MS	
	iPZ	19-22-36	C	1	+13.0	B	
	eiPN	22-36	S	1.5	+2	Sp.	
	ePN	22-36				MS	
	iZ	22-41				B	
	iN	24-08		6	+2.3	Sp.	
	iZ	24-42		1	-6.7	B	

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O.A. JONES

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BRISBANE

ϕ = 27° 30' 02"., λ = 153° 00' 53" E., h = 24.2 m.

Foundation: Main Vault - Welded Tuff
Out-stations (Sprengnethers) High level semi-consolidated river alluvium.

SEISMOLOGICAL BULLETIN FOR NOVEMBER 1952 NO 183

INSTRUMENTS AND WORKING CONSTANTS

INSTRUMENT	D mm per min.	Com-ponent	T_o	ε	V_o	Displacement for 1" arc tilt	Date from which constants apply
Milne-Shaw 0.58 (modified)	16	N	12	20:1	250	43.6 mm.	25/9/51
Milne-Shaw 0.60 (modified)	16	E	12	20:1	250	43.7 mm.	24/8/51
				Tg	μ^2	Vs	
Benioff No. 12	15	N	1.5				
Benioff No. 11	15	E	1.5				
Benioff No. 13	15	Z	1.5	0.3			24/8/51
Sprengnether No.1122	30	N	7.01	7.13			8/10/51
Sprengnether No.1121	30	E	7.34	7.38			24/10/51
Sprengnether No.1123	30	N					

NOTE: The three Sprengnether seismometers, Series H, are used for microseismic work and from January to the end of June are all orientated to record the N-S component. From July to December No. 1121 is orientated to record the E-W component. None is housed in the main vault, but the maximum difference in either latitude or longitude is only 19". They are housed in the main vault from July to December but in outstations from January to June. The maximum difference in latitude or longitude of any outstation and that of the main vault is 19 seconds.

Time Service: Minute time marks are made electromagnetically by Standard or Synchronome contact clock.
Time comparisons are made daily with radio time signals from Mt. Stromlo Observatory.
Seismograph readings can be determined to the nearest second.

Tables used: Jeffreys & Bullen 1940. Deep focus chart, Brunner 1935.
The station is maintained and operated by the Department of Geology and Mineralogy, University of Queensland assisted by Commonwealth Government grant to the University for research purposes.

Abbreviations: M.S. - Milne Shaw; B - Benioff; Sp. - Sprengnether. c - Compression; - r - Rarefaction;

Amplitudes reported are single amplitudes as measured on the records, (not reduced to ground movements).

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
1st	iPZ	00-03-39	C	1	+3.5	B	
	iZ	04-04		1.2	+3.0	B	
	eSE	13-33				MS	
	eN	13-39				MS	
	iPZ	05-33-44	r	1	-8.0	B	U.S.C.G.S. - About 500 miles south of Fiji Islands. H = 05.29.06 h = about 500 km.
	iZ	33-58		1	-2.0	B	
	i(P)Z	05-35-53	C	1.2	+3.2	B	
	i(P)Z	05-39-05	C	1	+2.5	B	
	i(P)Z	05-40-03	r	1.2	-1.0	B	
	iN	06-08-03				Sp.	
	iPZ	16-54-44	r	2.0	-2.0	B	
	iPN	54-44	N	6.0	+3.4	Sp.	
	ePN	54-44				MS	
	iZ	54-49		2.0	-2.0	B	
	ipPZ	55-28	r	2.0	-1.0	B	
	ipPN	55-30	N		+0.7	MS	
	ipPN	55-30	N	7.0	+7	Sp.	
	iN	55-38				MS	
	iZ	56-03		1.5	+4.0	B	
	iSN	59-30		8.0	+5.5	Sp.	
	eSN	59-30				MS	
	i(sS)N	17-00-46		8.0	+3.5	Sp.	
	iL_QN	02-31		9.0	+3.5	Sp.	
	iN^Q	09-04		10.0	+2.5	Sp.	
	MN	09.6		10.0	+4.3	Sp.	
	iPZ	23-51-08	C	1.2	+13.2	B	U.S.C.G.S. - 23½°S., 178°W., Fiji Islands region. H=23-45-36, h = about 150 km.
	iPE	51-08	W	2.0	- 0.8	MS	
	iN	51-12		3.5	+3.0	Sp.	
	iN	51-12				MS	
	iE	51-36		4.0		MS	
	iZ	51-49		1.5	-17.0	B	
	iE	51-49				MS	
	iE	52-35		6.0	+1	MS	
	iN	56-35		8.0	+12.5	Sp.	
	iN	56-35		10.0	+1.7	MS	
	iE	56-44		10.0	-2.6	MS	
	iSSN	57-17			-3.4	MS	
	iSSN	57-18		10.0	-3 0	Sp.	
	ME	56.8			+3.2	MS	
	MN	57.4			+2.7	MS	
	MN	57.4			+30.5	Sp.	
	iS_cPZ	23-57-53		2.3	+2.5	B	
3rd	iPZ	06-55-35	r	1.2	-2.5	B	
	iPZ	12-18-37	C	0.75	+2.3	B	
4th	ePN	17-10-36				Sp.	U.S.C.G.S. - 52½°N., 159°E., near east coast of Kamchatka. H=16-58-20
	iP_cPN	10-43			-9.8	Sp.	
	eP^cPE	10-45			+0.7	MS	
	iN^c	10-56				Sp.	
	iE	19-30				MS	
	eSE	20-40				MS	
	iSE	21-10-42		10.0	+1.4	MS	U.S.C.G.S. - 50°N., 157½°E. H=20-48-53.
	iE	11-20		8.0	+1.0	MS	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iSE	22-35-20		10.0	-0.4	MS	U.S.C.G.S. - 52°N., 161°E. Kamchatka aftershock H = 22.12.54.
	iPZ	23-40-59	r	1.0	-3.9	B	U.S.C.G.S. - 50°N., 158°E., Off south coast of Kamchatka. H=23.28.58.
	iZ	41-07		1.5	+4.4	B	
	eE	50-55				MS	
	eZ	23-53-14				B	
	iZ	53-21		1.0	-3.0	B	
5th	eE	00-33-15		6.0	-0.3	MS	
	eE	33-47			0.6	MS	
	iZ	00-49-44		1.0	+2.7	B	
	iPZ	02-31-54	C	1.0	+4.5	B	U.S.C.G.S. - 50½°N., 157°E., near south coast of Kamchatka. H=02-19-58.
	iPN	31-54	S		-1.0	Sp.	
	iZ	32-11		1	-5	B	
	eSE	41-45		7.0	+0.3	MS	
	eE	42-11		8.0	+0.5	MS	
	ePZ	03-41-50				B	U.S.C.G.S. - 51°N., 159°E., near southeast coast of Kanchatka. H = 03-29-44
	eSE	51-43		3	-0.7	MS	
	iZ	04-28-17		1	+2.0	B	
	ePZ	06-09-37				B	U.S.C.G.S. - 49°N., 156°E., Kurile Islands. H = 05-57-43
	iZ	09-39		1.2	+5	B	
	iZ	09-47		1.2	+8.5	B	
	iSN	19-25		9	+3.5	Sp.	
	eSE	19-26			+0.7	MS	
	iPZ	07-18-44	r	1	+2.5	B	
	i	18-58		1.2	+3.5	B	
	ePZ	10-09-23		1	-1.7	B	
	iN	21-20		8	+3.7	Sp.	
	iPZ	10-27-44	C	1	+4	B	
	eZ	28-24				B	
	ePZ	11-29-47				B	
	ePZ	11-46-39			+1.5	B	U.S.C.G.S. - 51½°N., 159°E. Off south-east coast of Kamchatka. H = 11-34-37
	iZ	46-42		1.2	-2 3	B	
	iZ	46-53		1	±2	B	
	iPZ	11-58-26	C		+1.8	B	U.S.C.G.S. - 50°N., 157°E., Off south coast of Kamchatka H=11-46-34
	iZ	58-38		1.5	-2.3	B	
	iSN	12-08-14		8	+2	Sp.	
	eSE	08-14				MS	
	iPZ	13-18-35	r?	1	-3.1	B	U.S.C.G.S. - 52°N., 159½°E., Kamchatka aftershock. H=13-06-24
	iPN	18-35	N?	5	+3	Sp.	
	eN	28-23		8	+2	Sp.	
	iSN	28-37		12	-3	Sp.	
	iSE	28-37		11	-1	MS	
	iN	29-23		8	+3	Sp.	
	eZ	13-59-40				B	

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iPZ	15-00-35	r	1.5	-4.2	B	U.S.C.G.S. - 50°N.,
	iPN	00-35	N	4	+2	Sp.	156½° E., Off south coast
	iZ	02-23		1.5	-2	B	of Kamchatka. H=14-48-41
	iPZ	17-53-35	C	0.75	+6.5	B	
	iZ	53-38		0.75	+3.5	B	
	iSN	19-30-51		8	-2.5	Sp.	U.S.C.G.S. - 53½°,
	eSE	30-51			-1	MS	161½E. Off east coast of Kamchatka. H=19-08-26
	ePZ	19-51-39				B	
	iN	55-41		5	+3	Sp.	
	iPZ	20-42-22	C	1	+1.5	B	U.S.C.G.S. - 49°N, 159°E,
	iZ	42-33		1	-4	B	Off south coast of
	eSE	52-11				MS	Kamchatka H=20-30-22
	iPZ	21-57-52	C	1	+3.8	B	U.S.C.G.S. - 49½°N.,
	iSN	22-07-40		8	-2	Sp.	157°E. Off south coast
	eSE	07-40				MS	of Kamchatka. H=21-46-00
6th	iPZ	06-33-50	r	1	-2.5	B	
	iZ	33-58	.	0.75		B	
	iPN	19-52-37	N	7	+8	Sp.	Δ_{S-P} = 24.5°
	iPZ	52-38	r	1.5	-7.5	B	U.S.C.G.S. - 5°S.,145½°E.,
	iPN	52-39	N	7	+1	MS	Near north coast of New
	iPE	52-39	E	7	+1	MS	Guinea H=19-47-20.
	iPPN	53-11	S?	7	-6	MS	
	iPPPN	53-11	N	6	+3.5	MS	
	iN	53-26		5	+3	MS	
	iE	53-26		5	-2.5	MS	
	iSN	56-51		7	-6	MS	
	iSE	56-51				MS	
	iL_RN	58.6		10		MS	
	iS^RSN	20-03-41				MS	
	ME^c	02.5			+27	MS	
	MN	02.9		15	+38	MS	
	MN	03.2			+106	Sp.	
7th	iPZ	04-07-14	C	1	+6.2	B	
	iZ	07-27		1.2	-4	B	
	iPZ	05-57-45	r	0.5	-3.4	B	
	iZ	57-57		1	-4	B	
	iZ	58-11		1	-4	B	
	iZ	59-06		1.2	+2.5	B	
	iZ	08-23-45		0.75	-1.2	B	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iPZ	12-21-27	C	1.2	+5	B	U.S.C.G.S. - 52°N., 161°E., off south-east coast of Kamchatka H = 12-09-09
	iPZ	14-20-26	r	1.2	-3.5	B	Δ_{S-P} = 77.8°
	iPN	20-26	N	5	+2.5	Sp.	U.S.C.G.S. - 49°N., 157°E,
	iSN	30-14		10	-5.5	Sp.	Off south coast of
	eSN	30-15		10	-1	MS	Kamchatka H = 14-08-25.
	eSE	30-15		10	-0.75	MS	
	iN	30-38			-3	Sp.	
	eE	30-39				MS	
	eN	35-37				Sp.	
	eL_N	44-54				Sp.	
	MN^R	30.3			+6.5	Sp.	
	ePZ	22-17-03				B	U.S.C.G.S. - 47°N.,
	iZ	17-23		1.5	+3	B	155°E. Kurile Islands
	iN	25-52		8	+2	Sp.	H = 22-05-19
	eSN	26-41				MS	
	eSE	26-41		8	-0.5	MS	
	iSN	26-42		8	+2.5	Sp.	
	iSKSN	27-08		8	+4	Sp.	
	iPZ	23-17-43	C			B	Δ_{S-P} = 26.4° U.S.C.G.S.
	iPN	17-45	N	3	+2.7	Sp.	31°S., 177°W.
	iSE	22-12		10	+2	MS	Kermadec Islands.
	iE	22-30		10	+2.5	MS	H = 23-12-04.
	$iL_Q E$	23-07		10	-2.5	MS	
	$iL_R E$	24.4				MS	
	ME^R	26.5		17	+6	MS	
8th	iPZ	03-17-28	r	1.5	-2.5	B	
	iZ	17-34		1.5	-3.8	B	
	iPZ	10-15-16	r	1	-3.7	B	
	iZ	15-20		1	+2.5	B	
	iZ	15-26				B	
	eZ	17-16-39				B	
	iPZ	19-45-12	r		-3	B	Δ_{S-P} = 76.8°
	iZ	45-18			-4.7	B	U.S.C.G.S. - 48½°N.,
	iSN	54-56		10	5.8	Sp.	156°E., Kurile Islands
	iSE	4-56		10	-0.6	MS	H = 19-33-18.
	eSN	54-56				MS	
	iE	55-27		8	-0.4	MS	
9th	iPZ	00-34-12	C	1.2	+2.5	B	Δ_{S-P} = 77.2°
	iZ	34-18		1	+4.8	B	U.S.C.G.S. - 48½°N.,
	iZ	34-25		1.5	+6.8	B	155½°E., Kurile Islands,
	iZ	34-39		1.2	+4.5	B	H = 00-22-15.
	iZ	37-25		2	+1.9	B	
	iSN	43-57		7	-2.2	Sp.	
	iSE	43-58		7	-0.4	MS	
	eSN	43-58				MS	
	ePZ	01-29-50		1.5	-1.5	B	U.S.C.G.S. - 52½°N., 160°E. Near east coast of Kamchatka. H=01-17-39.

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	iZ	01-48-35	C	1		B	
	iPZ	04-47-01	C		2.5	B	U.S.C.G.S. - 49°N., 158°E., Off south coast of Kamchatka, H-04-35-05
	iPZ iZ	05-18-46 18-49	C	1.5 1	+2.5 -2.8	B B	U.S.C.G.S. - 53½°N., 159½°E., near east coast of Kamchatka, H=05-06-29.
	eZ	05-39-21				B	
	iPZ	05-44-16	C	1	+1.4	B	U.S.C.G.S. - 49½°N., 156½°E., Off south coast of Kamchatka, H=05-32-15
	iPZ iZ iZ	06-08-52 09-03 09-32	r	1.5 1.5 2	-3.8 -4.2 +3	B B B	U.S.C.G.S. - 49°N., 157°E., Off south coast of Kamchatka, H=05-56-54
	iZ	06-49-33	C	2.5	+3	B	
	iPZ iPN iZ iSN eSE ME	06-55-58 55-58 56-02 59-42 59-43 07-03.1	r N	1 1.2 6 	-2.5 -6 +6 +1	B B B Sp. MS MS	Δ_{S-P} = 20.7°
	iPZ iPN iPPZ eSE	08-00-06 00-06 00-26 03-52	r N r	1 1	+3.8 -1.8	B Sp. B MS	
	iPZ ePN iZ iZ iSN eSE	10-08-21 08-21 08-24 08-37 12-03 12-05	C N	0.75 4.0 1	+2 +1.5 -2 +2.6	B Sp. B B Sp. MS.	Δ_{S-P} = 20.4°
10th	iPZ	00-37-51	C	0.75	+2	B	
	iPZ eZ	01-07-00 07-13	C	0.8 1	+5 +4	B B	U.S.C.G.S. - 50°N., 158½°E - Off east coast of Kamchatka H=00-55-00
	iPZ iZ	20-39-03 39-09	C	1.2 1.2	+4.4 -3	B B	U.S.C.G.S. - 53½°N., 160°E, near east coast of Kamchatka, H=20-26-40
11th	iPZ	02-25-14	r			B	U.S.C.G.S. - about 200 miles south of the Fiji Islands. H=02-20-37, h = about 500 km.
	iPZ iZ	18-52-16 52-43	C		+3	B B	U.S.C.G.S. - About 400 miles south of the Tonga Islands, H=18-46-30.
12th	eZ	03-21-41				B	
	iPZ ipPZ? iZ	08-35-57 36-26 36-30	C C	 1.5 1.5	 +5.5 -7.7	B B B	U.S.C.G.S. - Tonga Islands region. H = 08-30-18.

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Date	Phase	Time h. m. s.	Direction of ground movement	Per. Sec. S	Amplitudes m.m.	Instrument	Remarks
	ePZ	14-27-14				B	
	iZ	27-20				B	
	iZ	27-43				B	
	i(P)Z	14-34-28		2	+3	B	
	e(P)Z	14-36-19		1.5	+4	B	
	e(P)N	36-19		6	+2	Sp.	
	iPZ	23-51-56	r?	1	-2	B	
	iZ	52-03		1	-1.5	B	
	iZ	52-52			+4	B	
13th	iPN	00-01-27	N	7	+3	Sp.	
	ePE	01-28				MS	
	eiPZ	02-58-24	r?	1	-4	B	U.S.C.G.S. - About 300 miles south of the Tonga Islands, H=02-52-41
	iZ	58-25		0.8	+10.3	B	
	iZ	58-40		1	+3.1	B	
	iPZ	08-10-47	C	1	+1.6	B	$\Delta_{S-P} = 78.2^{o}$
	iPN	10-47	S	8	+1.5	Sp.	
	iZ	10-50				B	U.S.C.G.S. - $50\frac{1}{2}^{o}$N.,
	iZ	10-59		1	+3.8	B	157°E, near south coast
	iZ	11-17		1.5	+1.5	B	of Kamchatka
	iZ	12-15		1.2	+2.3	B	H = 07-58-45.
	iSN	20-38		10	-4.5	Sp.	
	iSN	20-38		11	-1.5	MS	
	eSE	20-40				MS	
	iN	21-04		10	-6	Sp.	
	iN	21-04				MS	
	eE	21-04				MS	
	MN	20.8		10	+15.5	Sp.	
	MN	20.8		11	+1.75	MS	
	ME	20.8		10	+1.75	MS	
	iPZ	08-21-57	r	1	-5.8	B	U.S.C.G.S. - Fiji Islands, H = 08-15-59
	eZ	13-36-59				B	
	iPZ	14-33-42	C	1	+1	B	
	ePZ	22-37-33			+1.1	B	U.S.C.G.S. - 50°N.,
	iZ	37-45		1.5	-2.2	B	158°E. Off south coast of Kamchatka, H=22-25-34
14th	iPZ	01-43-29	r	1	-5	B	U.S.C.G.S. - Fiji Islands,
	iZ	43-32		1	+4.3	B	H = 01-38-32, h=about 600k
	ePZ	03-15-27				B	
	eE	24-42		8	+2	Sp.	
	iN	25-20				Sp.	
	eN	25-20				MS	
	iN	27-16		8	-4	Sp.	
	eN	27-17		10	+1	MS	
	MN	29.1		12	+8	Sp.	
	iPZ	15-12-05	C	0.8	+3	B	
15th	iPZ	05-10-07	C	1	+2	B	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of Ground Movement	Per Sec. S	Amplitudes m.m.	Instrument	Remarks
6th	iPZ	01-28-09	r	1.5"	-4.2	B	
	iZ	28-24		1.5"	-2.8	B	
	iPZ	01-00-01	r	1"	-3.4	B	U.S.C.G.S. - 50½°N., 157°E., near south coast of Kamchatka H=01-47-54.
	iPZ	07-43-20	r	1"?	-18.5	B	U.S.C.G.S. - Near northeast coast of New Guinea, H = 07-38-25
	iPN	43-20	N	6"	+3	MS	
	iPE	43-20	W	6"	-1	MS	
	iPN	43-21	N	6"	+19	Sp.	
	iPE	43-21	W	6	+19.5	Sp.	
	ePPN	43-43	N			MS	Appears deeper than normal.
	iZ	43-56				B	
	iE	43-56				Sp.	
	iN	43-58				MS	
	iZ	44-27		1"	+22.5	B	
	iSN	47-15		7	-10	MS	
	iSE	47-15		7"	+2	MS	
	iSZ	47-18			-7	B	
	iSN	47-16			-63	Sp.	
	iSE	47-17			+22	Sp.	
	iN	47-40		10"	+14	MS	
	iN	48-18				MS	
	eE	49-01				MS	
	iE	49-30				MS	
	iN	49-32				MS	
	iZ	51-19		2"	-5.5	B	
	ME	47.4		8"	-8	MS	
	MN	47.6			+83	Sp.	
	MN	47.7		10"	+14	MS	
8th	ePnZ	18-05-12				B	Felt at Gunning and Parramatta, N.S.W. and at Canberra A.C.T.
	e Z	18-05-19.5				B	
	iZ	05-45				B	
	iPgZ	05-51				B	
	eZ	07-03				B	
	iS*Z	07-11				B	
	iE	07-20				Sp.	
9th	ePnZ	02-01-16				B	Felt at Gunning, N.S.W.
	eP*Z	01-36				B	
	iSnZ	02-47.5				B	
	eZ	03-10				B	
	eS*Z	03-18				B	
	eE	03-26				Sp.	
	iZ	03-27				B	
	iN	03-30				MS	
	iN	03-30				Sp.	
	iPZ	06-01-04	C	1"	+6	B	Δ_{S-P} = 25.6° U.S.C.G.S. - Bismarck Sea, H = 05-55-40 Surface waves small
	iPN	06-01-04	S	2.5"	-3	Sp.	
	ePNE	06-01-04				MS	
	iNE	01-14				Sp.	
	iN	01-22				Sp.	
	iN	01-40		4"	+6	Sp.	
	iSN	05-28		5"	+0.75	MS	
	iSN	05-28			-7	S	
	eSE	05-28				MS	
	iPZ	07-34-04	r	1"	-7.8	B	U.S.C.G.S. - 19½°S., 177°W., Fiji Islands region, H = 07-28-57, h = about 600km.
	ePN	34-04				Sp.	
	ePE	34-04				Sp.	
	iZ	34-17		1"	-10	B	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per Sec. S	Amplitudes m.m.	Instrument	Remarks
	eZ	35-11				B	
	iSN	38-24		4"	-5	Sp.	
	eSN	38-24				MS	$\Delta_{P-H} = 28.2^{o}$
	iZ	38-28		2"	-3	B	
	ePZ	07-40-14	C?	1"	+3	B	
	iE	40-41		5"	+1	Sp.	
	iPZ	07-52-35	C?			B	
	iZ	52-41		1.5	-4.5	B	
	eSN	57-01				MS	
	iSE	57-01		6"	+2.5	Sp.	
	iPZ	10-17-05	r	1"	-2	B	
	eN	22-40				Sp.	
	iPZ	10-36-07	C	1.5	+3.4	B	
	iE	39-05		6"	-2	Sp.	
0th	iPZ	05-08-39	C	1"	+2	B	
	eZ	12-00-27				B	
	iZ	00-29				B	
	iZ	01-33		1"	+5.8	B	
1st	iPZ	07-44-55	r	1.5	-10.5	B	
	i(P)Z	46-25	r?			B	Two shocks?
	iZ	49-27		1.5	-4.5	B	
	iZ	50-16		1.5	+11	B	
	iSN	52-35				Sp.	
	iSE	52-35		10"	-1.5	MS	
	iSE	52-36		7"		Sp.	
nd	ePnZ	07-59-26				B	Felt at Gunning, N.S.W.
	eP*Z	59-43				B	
	eSnZ	08-00-545				B	
	eS*Z	01-25				B	
	iE	01-36		4"	-0.5	MS	
	iE	01-37		4"	+4.5	Sp.	
	ePZ	12-10-08				B	
	iPZ	12-28-56	C	1"	+3	B	
th	eZ	02-31-46		1.5"	+1.5	B	Probably not seismic
	iN	31-46		4	+4	Sp.	
	eN	08-19-39		6"	+2	Sp.	
	iN	22-41		5"	+3.5	Sp.	
	iZ	22-50		1.5	+2.5	B	
	iZNE	23-06				B& Sp.	
	iPZ	12-25-05	r	1	-2	B	
	ePNE	25-06				Sp.	Δ_{S-P} = about 20°
	iE	25-11		5	-2	Sp.	h = about 160 km.
	iN	25-12			+1	Sp.	
	ipPE	25-40	E	4"	-2.2	Sp.	
	ipPZ	25-41	r	1"	-2.2	B	
	ipPN	25-42				Sp.	
	isPN	25-55			+3	Sp.	
	iE	25-57				Sp.	
	iSN	28-25		9"	-3.5	Sp.	
	eSN	28-27		9"	-0.8	MS	
	iPZ	15-11-00	C?	0.8	+1.2	B	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per Sec. S	Amplitudes m.m.	Instrument	Remarks
	iPZ	20-20-11	r		-1	B	Δ_{S-P} = 17.4°
	iPN	20-11	N	4"	+0.6	MS	U.S.C.G.S. - 18°S., 168°E.,
	iPN	20-12	N	4"	+4.6	Sp.	New Hebrides Islands,
	iZ	20-13			+7	B	H = 20-16-14
	iE	20-13				Sp.	(No time marks on MS E-W,
	iZ	20-16		1.5"	+14	B	but initial motion is S.
	iZ	20-16		1.5	+14	B	PP is also strong about
	iZ	20-36		1"	+?	B	15 sec. after P).
	iSN	23-23			-2.7	Sp.	
	eSN	23-23		9"	+0.5	MS	
	eL_RN	24-10				Sp.	
	MN^R	23.8			+9	Sp.	
	i(P)Z	21-09-25	C	1"	+2.5	B	
	iZ	09-25				B	
	iPZ	21-47-35	r	1"	-1.3	B	
	iPE	23-30-29	W?	4"	+2	Sp.	
	ePZ	30-32	r?		-2	B	
25th	eZ	03-37-17				B	
	iPZ	06-36-57	C	0.6"	+2	B	
	ePE	36-57				Sp.	
	eSE	40-17		4"	-0.6	Sp.	
	eSE	40-17				MS	
	eZ	09-59-45				B	
	eiPZ	15-25-33	r		-1.5	B	
	iZ	25-34		0.8"	+6	B	
	iZ	26-05				B	
26th	eZ	13-14-51				B	
	eZ	14-59				B	
	iZ	15-10		0.7"	-1.5	B	
	iPZ	13-37-32	C	1"	+1.2	B	
	iZ	37-42		1.5	-2	B	
	iZ	37-53		1"	+3	B	
	ePZ	17-14-11	C?	1"		B	
	iPZ	21-10-29	r		-1.3	B	
	iZ	10-30		0.75	+3	B	
	iZ	12-03		1"	+2	B	
27th	iPZ	11-42-38	r	1"	-4	B	
	iZ	42-50		1.5	+3.8	B	
28th	i(P)Z	05-46-09	r?		-2	B	U.S.C.G.S. - Assam Burma
	iZ	46-37		1.5	+3	B	border, H = 05-34-21
	iPZ	14-45-55	r?	1"	-4	B	
	iZ	46-04			+3	B	
	iZ	46-38		1.5	-2	B	
	i(S)E	52-44			+2	Sp.	
	iE	53-36			-1.5	Sp.	
	i(ScS)E	55-38			+3	Sp.	
	ME	56.3			-3.5	Sp.	

International Seismological Centre

Date	Phase	Time h. m. s.	Direction of ground movement	Per Sec. S	Amplitudes m.m.	Instrument	Remarks
	iPZ	21-06-07	r	1.5	-23.8	B	Δ_{S-P} = about 22°
	iPN	06-07	N	4"	+12	Sp.	h = about 140 km.
	iPE	06-07	E		-2.5	Sp.	
	ePE	06-08				MS	
	iE	06-15		5"	+10	Sp.	U.S.C.G.S. - 6½°S., 155½°
	iN	06-23				MS	Solomon Islands,
	ip?Z	06-32	r		-42	B	H = 21-01-27, h = about 10
	isPZ	06-47			-11.5	B	km.
	iZ	07-05		1.2	-16.5	B	
	iSN	09-54				Sp.	
	iSE	09-54		7"	+8.5	MS	
	ME	10.0			+8.5	MS	
	ME	10.1			+65	Sp.	
	MN	10.4			+56	Sp.	
29th	iPZ	08-34-47	r	1.2	-2.3	B	Δ_{SKS-P} = about 80.5°
	iPN	34-47	N	7"	+2	Sp.	
	iZ	34-57		1.5	-6.2	B	U.S.C.G.S. - 53°N., 160°E.,
	iN	34-57				Sp.	near east coast of
	eE	35-07				MS	Kamchatka H = 08-22-34
	ePPE	37-54		6"	+1	MS	
	iSKSN	44-58				Sp.	
	eE	45-02				MS	
	eL_QE	56-10				MS	
	eL_RE	59-50				MS	
	iL_RN	59-52				Sp.	
	MN	45.8		12"	+11	Sp.	
	ME	09-02.4			+2	MS	
	eZ	10-33-19				B	
	iZ	33-39		1"	+1	B	
	iZ	34-07		1.2"	-2	B	
	i(P)Z	24-00-00	r?	2"	-3	B	U.S.C.G.S. - 56°N., 155
	iZ	00-~~0~~6		1"	+4	B	Off south coast of Alaska
	iZ	04-07		2	+3.2	B	Peninsula.
	eN	10-08				Sp.	H = 23-46-25
	eN	10-08				MS	
	i(SKS)N	10-29		10"	-4	Sp.	
	i(S)E	11-06				Sp.	
	i(S)E	11-06		14"	-1.5	MS	
	iE	11-10		8"	+4	Sp.	
	ME	11.1		8"	-14.5	Sp.	
	ME	11.3		14"	+4	MS	
	MN	11.4		8	+7	Sp.	
	MN	18.5		22"	+2	MS	
30th	iPZ	02-14-42	C	1"	+3.8	B	
	ePE	14-42				MS	
	iZ	14-51		1.5	-4	B	
	eZ	22-19-51				B	
	eZ	20-36		1.2	+2.3	B	
	iPZ.	24-03-02	C	0.8	+5.5	B	U.S.C.G.S. - Kermadec Islan
	ePE	03-02				Sp.	region H = 23-57-40
	ePE	03-04				MS	
	iN	07-47		6"	+4	Sp.	

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International Seismological Centre

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UNIVERSITY OF QUEENSLAND

SEISMOLOGICAL STATION

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International Seismological Centre

NOTICE

With this issue the University of Queensland Seismological Station institutes a new form of seismological bulletins. All future bulletins, beginning with that for January-March, 1953, will be issued quarterly.

Data concerning the station and instruments for December, 1952 may be found in Bulletin No. 183. Revised data will appear in the first of the quarterly bulletins.

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
1	i z	04 55 13	1.5	+2.0			
	i z	55 32	1.5	-3.5			
1	iPz	17 00 09	1.0	+3.0			
2	iPZNn	05 11 33	1.0	+7.0			U.S.C.G.S: Solomon Is.
	ipPNn	11 52	2.0		+8.0		H = 05.06.38.
	iSNn	15 30	6.0		+11.5		Δ = 21.6°
	eSEe	15 30					
	esSN	16 07					
	isSNe	16 08	8.0		-10.0		
2	iPZ	12 05 12	0.8	-5.5			U.S.C.G.S: Kermadec Is. region
3	e z	18 15 17					H = 11.59.40.
	i z	15 30	1.5	+6.0			
3	ePZ	19 48 55					
	i z	49 10	1.0	-6.5			
4	iPZ	04 03 51	1.0	+5.0			U.S.C.G.S: 52°N 178°E
	i z	04 00					h = 100 km.
	i z	04 26					H = 03.51.25
	iSN	14 10	8.5		-10.0		Aleutian Is.
	eSne	14 15					Δ = 85°
	isSNne	15 00	9.0		+11.0		
4	iPZ	07 16 55	1.0	-4.5			
4	ePZ	11 01 30					U.S.C.G.S: 49°N 157°E
							H = 10.49.35
							Δ = 75.8°
4	iPZ	12 59 33	1.0	+3			
	i z	59 42	1.0	+8			
	i z	59 57	1.5	+10			
4	iPZE	17 15 58	1.0	+8	-4		
	i(S)N	26 03	6.0		+7		

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
5	e N	08 55 23					
	e N	56 15					
	e Z	56 20					
	i N	56 38	4.0		+5		
	i E	56 40	4.0			-4	
5	e N	13 21 31					
5	iPZ	15 31 10	1.0	+7			
	i Z	31 25	1.0	-6			
	i Z	31 56	1.5	+10			
6	eLn	03 47.0					
	eLe	50.0					
6	e N	08 13 48					
	i N	14 26	8.0		+7		
	i N	18 28	8.0		-9		
	e N	28 30					
6	iPZNn	10 45 47	1.0	-9	+6		U.S.C.G.S. 8°S., 157°E
	ePe	45 50					H= 10.41.14.
	iPPZ	46 02	1.0	+9			Solomon Is.
	i Z	46 33	1.5	-11			Δ = 19.7°
	iSne	49 19					
	eSZ	49 19					
6	iPZ	12 42 43	1.0	+9			
6	iPZNn	20 55 09	1.0	-7	+4		U.S.C.G.S. Solomon Is.
	ePE	55 11					Aftershock of above
	iPe	55 12					H = 20.50.35.
	iSNne	58 57	8.0		+7		Δ = 19.7°

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
7	ePZne	01 02 35					U.S.C.G.S: 53°N., 172½°E
	i N	02 45	6.0		-9		H = 00.50.12
	i Z	02 57	1.0	+14			Aleutian Is.
	iPPNn	05 34	6.0		-13		Δ = 81.9°
	iSNEe	12 47	8.0		+17	+11	
	iSn	12 49					
7	e e	11 08 37					
7	iPZ	20 24 41	1.0	+23			U.S.C.G.S: Solomon Is.
	iPNn	24 43	6.0		-8		H = 20.20.02
	iPe	24 44					
	i Z	24 48	1.0	+19			
	i Z	25 16	1.0	-10			
	i N	26 17	8.0		+12		
	iSN	28 25	8.0		+18		
	eSne	28 25					
8	iPZ	03 48 34	0.5	-15			
8	iPZ	08 20 28	1.0	-13			
	i Z	20 49	1.0	+11			
8	i Z	15 20 29					
8	eLn	15 49 0					U.S.C.G.S: 23°N., 99½°E
							H = 15.09.30
							China-Burma border
							Δ = 72.9°
9	iPZNEn	09 19 34	1.0	-15	-8		U.S.C.G.S: 15½°S., 168°E
	ipPZ	19 51	1.0	+17			H = 09.15.12.
	isPN	20 02	6.0		+7		New Hebrides Is.
	iSNEn	22 52	8.0		-10	-8	Δ = 18.5°
	iSe	22 53					
	e Z	23 02					
	i(SS)n	23 15					

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
9	iPZ	09 26 19	2.0	-3			
9	iPZ	18 26 11	1.0	+5			
	i Z	26 14	1.0	-11			
	iSNn	31 08	6.0		+2		
	eSe	31 08					
9	iPZ	22 59 25	1.0	+3			
	i Z	59 34	2.0	+4			
	i Z	59 41	2.0	-2			
	eSn	23 03 23					
	iSE	03 27	8.0			+3	
9	iPZ	23 40 05	1.0	+4			
	ePN	40 05					
	i Z	40 20	1.0	-9			
10	iPZ	08 12 42	0.5	-11			U.S.C.G.S. 15½°S., 173½°W.
	i Z	12 56	1.0	+7			H = 08.06.03
	iPPZE	14 04	1.0	-11		+5	Samoa Is.
	i ne	14 08					Δ = 33°
	e e	14 08					
	eSN	18 25					
	i Nn	20 44	8.0		+7		
10	ePZ	22 48 55					
	i Z	48 56	1.0	+7			
	i Z	49 03	1.0	-12			
11	iPZN	09 10 02	1.0	+14	-6		U.S.C.G.S. 49°N., 155°E.
	ipPZ	10 26	1.0	-11			H= 08.58.18.
	epPe	10 26					h = 60 km.
	e Ze	10 36					Kurile Is.
	iSNEe	19 44	6.0		+10	+5	Δ = 75.6°
	i Ee	20 08	8.0			+7	
12	iPZ	13 40 54	0.5	+13			
	i Z	40 58	1.0	-9			

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
12	iPZ	17 27 20	1.0	+7			
	i Z	28 29	1.0	+5			
	e e	34 10					
	iSNn	37 39	6.0		-11		
	eSe	37 39					
13	iPZ	13 24 17	1.0	-11			
14	iPZ	04 56 26	0.5	+7			
	i Z	56 37	1.0	-9			
14	iPZ	12 52 37	1.0	+17			U.S.C.G.S: 11°S., 167°E H = 12.47.52 Santa Cruz Is. Δ = 21°
14	iPZ	13 34 04	1.0	+14			
	i Z	34 43	1.0	-9			
14	iPZ	20 51 12	0.8	+10			
15	iPZ	16 43 29	1.0	+8			U.S.C.G.S: 6°S., 156°E H = 16.38,35 Δ = 21.5°
17	iPZ	19 40 58	1.0	+14			B.C.I.S: Kermadec Is. region Deep
18	iPZ	05 21 23	0.5	+9			U.S.C.G.S: 18°S., 178°W H ≅ 05.16.12 h = 600 km. Fiji Is. Δ = 28.2°
	i Z	21 42	1.0	+10			
18	iPZN	08 39 16	1.0	+13			U.S.C.G.S: Solomon Is. H = 08.34.50
	i N	40 21	4.0		+4		
	eSe	43 53					
	i e	44 18					
	e e	45 59					

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
18	ePZ	17 00 25					
	i Z	00 39	1.0	-7			
	iSN	04 20	6.0		+13		
	eSn	04 20					
	i Nn	04 40	8.0		+11		
19	ePZ	19 12 28					U.S.C.G.S: 15°S., 175°W
	iPN	12 28					H = 19.06.20
	i Z	12 40					h = 250 km.
	ipPZN	13 22					Samoa Is.
	epPe	13 22					Δ = 31.3°
	i e	13 47					
	i N	13 49					
	eSn	17 23					
	iSN	17 23					
	iSSN	19 57					
	eSSn	19 57					
20	iPZ	16 10 04	1.0	+7			
	eSe	20 28					
	eLe	31.7					
20	iPZ	21 49 52	1.0	+10			U.S.C.G.S: Marianas Is. region
							H = 21.42.10
21	iPZN	01 17 01	0.8	-27			U.S.C.G.S: Bismarck Sea.
	iPPZ	17 29	1.0	+21			H = 01.11.56
	ePPn	17 31					
	i Z	17 44	1.0	-18			
	i Z	18 12	1.5	-11			
	iSNE	20 56	6.0		-10	-8	
21	iPZ	05 57 27	1.0	+12			B.C.I.S: 6½°S., 128°E
	iPPZ	58 34	1.0	+17			H = 05.51.08
	iSne	06 02 46					Banda Sea
							Δ = 31.6°
22	ePZ	04 21 37					

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
22	iPZ	20 21 45	0.8	-14			
	eSn	25 50					
	eSn	25 52					
22	iPZ	22 37 01					U.S.C.G.S: 54°N., 160½°E
	i Z	37 32					H = 22.24.42
	eSKSN	47 12					Near E. coast of Kamchatka
							Δ = 80.7°
23	iPZ	07 25 04	1.0	+7			B.C.I.S: 44°S., 168°E
	i Z	25 33	1.5	+11			Near W. coast of South Island of New Zealand.
							H = 07.20.5
23	iPZ	18 22 19	1.0	-13			B.C.I.S: Kermadec Is. region
	i Z	22 28	1.0	+8			
24	iPZ	01 12 42	0.8	-10			
	i Z	12 56	1.0	+9			
24	iPZ	03 40 14	1.0	+16			B.C.I.S: Tonga Is. region
	i Z	45 33	1.5	-11			
24	iPZNn	08 38 22	1.0	+19			U.S.C.G.S: 5½°S., 151½°E
	ipPz	38 31	1.0	+28			H = 08.33.25
	epPe	38 32					Foreshock of New Britain shock.
	iPPe	38 46	1.5	-30			Δ = 21.9°
	e Z	42 15					
	iSZne	42 24					
24	iPZ	14 37 33	1.5	+7			U.S.C.G.S: 29°N., 130°E
	i Z	37 46	1.0	-11			H = 14.27.21
	i Z	38 43	1.5	+12			Ryukyu Is.

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
24	ePZN	18 05 12					U.S.C.G.S: 5½°S., 151°E
	i Z	05 14	1.0	-13			H = 18.00.13
	i Z	05 20	1.0	-20			New Britain foreshock
	iPPe	05 35					Δ = 21.9°
	iSNEn	09 15	6.5		-9	-7	
	eSZ	09 15					
	eSe	09 17					
24	iPZ	18 20 21	1.0	+17			U.S.C.G.S: 5½°S., 152°E
	i ZN	20 30	1.0	+11	-8		H = 18.15.25
	iPPZ	20 48	1.0	-14			New Britain foreshock
	iSNn	24 24	7.0		+9		Δ = 22.0°
24	ePZN	18 44 32					U.S.C.G.S: 5½°S., 151½°E
	i Z	44 33	1.0	-29			H = 18.39.33
	i Ze	44 35	1.0	-35			New Britain
	iPPZ	44 52	1.5	+27			Δ = 21.9°
	iSNEne	48 35	8.0		+14	+12	
24	iPZN	21 26 07	1.0	+23	+14		U.S.C.G.S: 5½°S., 150½°E
	ePe	26 08					H = 21.21.07
	i Z	26 13	1.5	-20			New Britain aftershock
	iSZNEn	30 10	7.0				Δ = 22.0°
24	iPZ	21 42 03	1.0	+13			U.S.C.G.S: 5½°S., 151½°E
	i Z	42 08					H = 21.37.05
	iSNn	45 56	6.5		+13		New Britain aftershock
	eSZ	45 56					Δ = 21.9°
	eSe	45 58					
25	ePZ	02 33 36					U.S.C.G.S: 5½°S., 151½°E
	iPNn	33 36	2.5		-12		H = 02.28.39
	i Z	33 38	1.0	+17			New Britain aftershock
	iPPne	33 56					Δ = 21.9°
	e Z	34 06					
	i NEne	37 03	7.0		+11	+7	
	iSNEne	37 36	7.5		+13	+12	
	iSZ	37 39	5.0	-8			

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
25	ePZ	02 42 10					
	iPN	42 10	4.0		-10		
	i Z	42 16	1.0	+17			
	i Z	42 19	1.5	-15			
25	iPZ	02 44 34					U.S.C.G.S. 5½°S., 152°E
	i Z	44 39					H = 02.39.40
							New Britain aftershock
							Δ = 22°
25	iPN	03 24 46	3.5		+12		
	ePZ	24 47					
	iPn	24 47					
	i Z	24 51	1.5	+14			
	i n	25 06					
	e e	25 06					
	iSNEe	28 49	6.5		-13	-12	
25	ePZ	03 32 35					
25	iPZNn	03 56 00	1.0	+9	-6	-5	U.S.C.G.S. 5½°S., 151½°E
	i e	56 15					H = 03 51.01
	iPPe	56 30					New Britain aftershock
	i Z	57 05	1.5	+14			Δ = 21.9°
	iSNEne	59 57	6.5		-10	-9	
	iSZ	04 00 03	4.0	+6			
25	iPZ	04 05 19	1.0	-15			
25	e Z	04 32 23					
25	ePZ	06 04 40					
	iSN	08 44	6.5		+11		
25	ePZN	08 52 50					U.S.C.G.S. 5½°S., 151½°E
	i ZN	52 59	1.5	+12	-11		H = 08.47.51
	iPPZ	53 07	1.0	-17			New Britain aftershock
	iSN	56 55	6.0		-11		Δ = 21.9°
	eSn	56 55					
25	i Z	10 05 19					
25	e Z	12 07 41					

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
25	ePZ	12 16 58					U.S.C.G.S. 5½°S., 153°E
	ePN	17 02					H = 12.12.04
	e Z	17 04					New Britain
	iSN	21 02	6.0		+9		Δ = 21.7°
	eSZn	21 02					
25	e Z	14 46 06					
25	iPZN	15 01 38	1.0	-14			U.S.C.G.S. 5½°S., 153°E
	iSN	05 44	7.0		+12		H = 14.56.42
							New Britain
							Δ = 21.7°
26	iPZ	04 12 15	0.5	-21			
	ePN	12 15					
	e Z	12 25					
	e Z	12 35					
	i Z	12 51	1.5	-17			
	iSNEne	19 20	6.0		+9	+10	
26	iPZN	11 19 55	1.0	+20			B.C.I.S. 22½°S., 178½°W
	ePe	19 55					H = 11.15.09
	i Z	20 36	1.0	+23			h = 600 km.
	i Ze	22 38	1.5	-14			Fiji Is.
	e N	22 39					Δ = 25.7°
	i Z	23 34	1.5	-11			
	iSZNn	23 43	3.5	+7	-9	-10	
26	iPZ	11 25 51	1.0	-15			
26	ePZ	20 17 28	1.0	-22			
	i Z	17 32	1.5	+17			
	iSN	21 29	6.5		+5		
26	iPZ	21 41 15	0.5	-11			
	ePN	41 15					
	i Z	42 01	1.0	+16			
	iSN	50 27	7.0		-8		
	eSn	50 27					

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
26	iPZ	23 23 24	1.0	+15			
	i Z	23 26	1.0	-12			
27	iPZNn	04 12 34	0.5	+17	-7		
	i Nn	12 52	4.5		+8		
	i Z	14 24	1.0	-13			
	iSN	16 29	6.0		+11		
	eSe	16 29					
	eSn	16 31					
27	iPZ	12 36 59	1.0	-23			B.C.I.S: Kermadec Is. region
	i Z	37 12	1.0	-19			H = 12.31.30
27	i Z	12 39 48	1.0	+17			
27	i Z	14 46 02	0.5	-13			
27	iPZ	16 32 59	1.0	+11			U.S.C.G.S: 16°S., 173°W
	ePN	32 59					H = 16.28.04
	i Z	33 01	1.0	+20			Fiji Is.
	i N	33 10	3.5		+10		Δ = 21.6°
	iPPZ	33 16	1.5	+12			
	i Z	34 09	1.0	+14			
	i Z	34 45	1.5	-17			
	iSNn	37 02	6.5		+9		
27	ePZ	18 22 37					
27	iPZ	18 35 03	1.0	-8			
28	iPZ	05 00 10	1.0	-17			
	e Z	00 14					
	i Z	00 33	1.0	+9			

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
28	iPZ	14 57 10	1.0	+11			U.S.C.G.S: 6°N., 127°E
	e Z	57 30					H = 14.49.14
	i Z	57 35	1.0	-12			Off E. coast of
	i Z	58 20	1.5	+10			Mindanao
	eSe	15 03 21					Δ = 41.4°
	iSNn	03 23	6.5		+7		
28	iPZ	15 09 14	1.0	-14			U.S.C.G.S: 6°N., 127°E
	ePN	09 14					H = 15.01.19
	i Z	09 19	1.0	+12			Off E. coast of
	i Z	09 26	1.0	-17			Mindanao
	iSNn	15 27	7.0		+8		Δ = 41.4°
28	iPZ	15 23 16	1.0	+12			
	e Z	23 37					
	i Z	24 15	1.0	+14			
28	i Z	15 28 34	1.5	-9			
28	iPZ	17 43 05	1.0	-17			
29	iPN	02 21 05	3.0		+11		U.S.C.G.S: 49°N., 158°W
	ePZn	21 05					H = 02.09.13
	i Z	21 07	1.0	+15			Kamchatka
	iPPZN	23 52	1.0	-14	-12		Δ = 75.8°
	eSNn	30 46					
	eL_Qne	41.0					
29	iPZ	09 29 15	1.0	-13			
29	iPZ	12 11 59	1.0	+21			U.S.C.G.S: 19°S., 178°W
	epPNn	13 35					H = 12.06.52
	iSne	15 58	8.0		-11		h = 600 km.
							Δ = 27.6°
29	iPZ	18 33 08	0.5	-15			U.S.C.G.S: New Britain
	ePNn	33 08					aftershock
	i Z	33 12	1.0	+17			H = 18.28.14
	i Nn	33 14	4.0		+9		Δ = 21.9°
	ePPN	33 35					
	iPPn	33 37					
	iSNn	37 09	8.0		-8		
	i N	37 36	8.0		-10		
	eL_RN	38.9					

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
29	iPN	23 26 20	1.0	+10			U.S.C.G.S: 21°S., 178½°W
	i Z	28 30	1.0	+11			H = 23.21.20
	iSN	30 15	6.5		+10		h = 500 km.
							Fiji Is.
							Δ = 26.4°
29	iPZN	23 32 24	1.0	-7	+8		
	i n	32 45					
	iSN	36 17	7.0		+5		
30	e Z	06 27 33					
30	ePZ	07 45 10					U.S.C.G.S: 5½°S., 152°E
	i Z	45 13	1.0	+11			H = 07.40.11
	iPPZ	45 35	1.0	+14			New Britain aftershock
	eSNEn	49 10					Δ = 21.9°
30	e Z	08 16 16					
30	iPZ	09 08 25	1.0	+17			
30	ePZNn	12 53 33					
	i ZN	53 36	1.5	-11	+7		
	e ZN	53 51					
	i N	55 30	6.0		-5		
	iSNEe	57 59	7.0		+7	+9	
30	e Z	13 03 56					
30	ePZ	13 45 46					
30	ePZ	16 26 58					
	i Z	27 06	1.5	-11			

International Seismological Centre

Date	Phase	Time h. m. s.	Per sec.	A_z	A_n	A_e	Remarks
Dec.							
30	ePZNE	17 44 20					
	i ZN	44 28	1.0	+15	+3		
	iPPZ	44 35	1.5	-14			
	i Z	44 50	1.5	+12			
	e N	47 27					
	iSNn	47 50	8.0		+7		
30	ePZe	17 51 05					
	ePN	51 06					
	i ZN	51 10	1.0	+9			
	iPPZ	51 18	1.5	-11			
	iSNn	54 24	7.5		-9		
30	iPZ	18 33 51	1.0	-23			U.S.C.G.S: 19°S., 178°W
	ipPZ	35 13	1.0	-30			H = 18.28.42
	iSZ	37 57	6.5	+8			h = 500 km.
							Fiji Is.
30	e Z	18 39 43					Δ = 27.7°
30	iPZN	19 42 46	1.0	-15	+7		
	i Z	42 55	1.5	-10			
	iSN	47 36	7.0		+6		
	eSn	47 36					
30	e Z	22 43 36					