THE PENNSYLVANIA STATE COLLEGE

MINERAL INDUSTRIES EXPERIMENT STATION

GEOPHYSICAL LABORATORY

Seismograph Report XVII

1 January to 30 June 1952

School of Mineral Industries
State College, Penna., U.S.A.

Locality: The station is located in a vault under the central wing of the School of Mineral Industries Building. The instruments are mounted on a concrete pillar separated from the foundations and anchored to bedrock (dolomite). The geographic coordinates are:

ϕ - 40° 48' N - 77° 52' W H - 354 m

The geocentric coordinates are (according to Gutenberg and Rickter):

A - 40° 36' N - 77° 52' W H - + 3 km.

Please address all communication to:

Geophysical Laboratory
Mineral Sciences Bldg.
State College, Pennsylvania.

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From 1 January to 30 June 1952 three seismographs were in intermittent operation as indicated in the following table:

Vertical: 1 Jan. - 30 June

North-South: 1 Jan. - 11 Feb., 16 Feb. - 18 Feb., 8 Mar. - 28 May

East-West: 1 Jan. - 13 May, 28 May - 30 June.

All three seismometers are of the Galitzin type. The vertical and east-west components were recorded photographically, the north-south motion was recorded by a pen - galvanometer. The recording rate is 1.5 cm per minute on the photographic recorder, 1.7 cm per minute on the pen recorder.

The instruments have free periods as follows:

North-South	16.8 sec.,	1 Jan. - 30 June
East-West	17.1 sec.,	1 Jan. - 30 June
Vertical	3.0 sec.,	1 Jan - 28 Jan.
	1.86 sec.,	28 Jan. - 30 June

Damping and sensitivity were changed several times and no record kept of the changes.

The time is controlled by a Stromberg clock, which is compared daily with signals from radio station WWV. The time accuracy of the instruments was about $\pm$ 1 sec.

Date	Phase and Component	G.M.C.T.	Remarks
1 Jan. 1952	e s	N 07: 21: 03	Epicenter: 3.5° S , 105°W West of Galadagos Islands O = 07: 04: 36 Δ = 5650 km courtesy: U.S.C.G.S.
3 Jan. 1952	i P i	Z, N 10: 11: 27 Z 10:11:37	Epicenter: 16° N, 99°W Off S. Coast of Mexico (felt) O = 10: 05: 05 Δ = 3400 km. courtesy: U.S.C.G.S.
4 Jan. 1952	E 06: 52: __		Seismic Activity Lasting about 30 minutes Epicenter: 22°S, 169.5° E Loyalty Islands O = 05: 47: 31 Δ = 13,450 km. courtesy: U.S.C.G.S.
6 Jan. 1952	E 16:03: __		Seismic activity lasting about 2 minutes Epicenter: 19°N, 72°W Haiti (felt) O = 15: 48: 01 G.C.T. Δ = 2400 km. courtesy: U.S.C.G.S.
11 Jan. 1952	E 01:04: __		Seismic Activity lasting about 25 minutes Epicenter: _____ about 400 mi. E. of New Hebri O = 00: 05: 45** Δ = _____ courtesy: U.S.C.G.S.
12 Jan. 1952	i P e i e PcP? e e S i ScS ? M	N, Z 20: 21:37 Z 20: 21:48 Z 20: 22:14 Z 20:22:25 Z 20: 23:10 N, E 20: 29:38 N 20: 31:28 E 20:48:30	Epicenter 53°N, 167° W Fox Islands, Aleutian Islands O = 20: 11:38 Δ = 6500 km. courtesy: U.S.C.G.S.

Date	Phase and component	G.M.C.T.	Remarks
13 Jan. 1952	e PP	N, Z 04:23:21	Epicenter: 22°N, 124.5°E
	i	Z 04:23:46	off east coast of Formosa
	i	Z 04:24:11	O = 04:03:37
	i P S	N 04:32:52	Δ = 12, 650 km
	e	N 04:38:02	courtesy: U.S.C.G.S.
	e SS ?	N 04:39:00	
15 Jan. 1952		E 07:22: __	Seismic activity lasting about 4 minutes Epicenter: 4°S, 81°W Near coast of Peru O = 07:00:53 Δ = 4900 km courtesy: U.S.C.G.S.
16 Jan. 1952		E 14:43: ___	Seismic activity lasting about 12 minutes.
19 Jan. 1952		N,Z 07:40 ___	Seismic activity lasting about 40 minutes Epicenter: 52 1/2°N 166°W Fox Islands, Aleutian Islands O = 07:15:38* Δ = about 6400 km U.S.C.G.S
19 Jan. 1952	e	E 23:23:41	
		N,E 23:27: ___	Seismic activity lasting about 7 minutes. Epicenter: 31 1/2°N, 41°W North Atlantic Ocean O = 23:12:12* Δ = about 3400 km U.S.C.G.S.
21 Jan. 1952	i P	N,Z 03:52:55	Epicenter: 53°N, 166 1/2°W
	i p P	Z 03:53:18	Fox Islands, Aleutian Islands
	i s P	Z 03:53:29	O = 03:43:04 G.C.T.
	i PcP	Z 03:53:53	Δ = 6450 km
	i S	N 04:00:47	h = about 60 km.
	i	N 04:02:43	courtesy: U.S.C.G.S.
	e SS	E 04:04:45	
	e	N 04:10:39	

Date	Phase and Component	G.M.C.T.	Remarks
24 Jan. 1952		E 08:47:___	Seismic activity lasting about 25 minutes. Epicenter: 53°N, 166 1/2° W Fox Islands, Aleutian Islands O = 09:14:08 G.C.T. Δ = 6500 km courtesy: U.S.C.G.S.
26 Jan. 1952		N 03:29:___	Seismic activity lasting about 10 minutes
31 Jan. 1952	i P	Z 20:22:40	Epicenter: 15 1/2°N, 93 1/2°W Near coast of Chiapas, Mexico O = 20:16:43* G.C.T. h = about 60 km. courtesy: U.S.C.G.S. Δ = 3200 km
	i pP	N,Z 20:23:00	
	i s P	E,Z 20:23:07	
	i	Z 20:23:15	
	r PP	Z 20:23:37	
	e s PP	N, Z 20:24:11	
	e	N 20:25:21	
	e PcP	Z 20:25:51	
	e p PcP	Z 20:26:11	
	e	N,Z 20:26:35	
	e S(?)	N 20:27:42	
	e s S(?)	E 20:28:18	
	i	Z 20:28:41	
	i	Z 20:28:51	
	e ScP	Z 20:29:15	
	e PcS	Z 20:29:30	
	i	Z 20:29:39	
	e	E,Z 20:30:00	
	i	Z 20:30:08	
	e	Z 20:30:23	
	e	N,Z 20:30:36	
	e ScS?	Z 20:33:25	
	e	Z 20:35:38	
	e	Z 20:36:23	
	e	Z 20:38:05	
2 February '52	i P	Z 10:30:44	Epicenter: 51 1/2°N, 179° W Andreanof Islands, Aleutian Islands O = 10:20:06* G.C.T. Δ = 7300 km. h = about 100 km. courtesy: U.S.C.G.S.
	i PcP	Z 10:31:15	
	e S	N 10:39:25	
4 February '52	e	N 19:25:38	Epicenter: ~~~~~ Southern Gulf of California O = 19:09:30** G.C.T. Δ = ~~~~~ courtesy; U.S.C.G.S.
	e	Z 19:26:31	

Date	Phase and component		G.M.C.T.	Remarks
6 February '52		E	01:54:___	Seismic activity lasting about 6 minutes
6 February '52		E	07:51:___	Seismic activity lasting about 15 minutes.
8 February '52	i	Z	18:41:32	Seismic phase observed
9 February '52		E	07:18:___	Seismic activity lasting about 7 minutes Epicenter: _____ Kermadec Islands Region O = 07:35:01** G.C.T. Δ = _____ courtesy: U.S.C.G.S.
11 February '52	i P'	E,Z	07:19:32	Epicenter: 6°S, 110°E Java Sea O = 07:01:04* G.C.T. Δ = 16,100 km. h = about 700 km courtesy: U.S.C.G.S.
	e	Z	07:20:12	
	e	Z	07:20:24	
	i p P'	Z	07:21:59	
	e	Z	07:22:25	
	e	Z	07:22:32	
	e	Z	07:22:44	
	e	Z	07:23:23	
	e	Z	07:23:35	
	e	Z	07:23:44	
	e SS	E	07:40:38	
14 February '52	e P'	Z	03:57:44	Epicenter: 8°S, 125°E Flores Sea, North of Timor Islands O = 03:38:06* G.C.T. Δ = 15,700 km. courtesy: U.S.C.G.S.
	e	Z	03:58:13	
	e PP	E,Z	04:00:42	
	i	Z	04:01:07	
	i	Z	04:01:17	
	i	E,Z	04:01:36	
	e PKS	E	04:02:00	
	e	E	04:02:13	
14 February '52	i P	Z	21:09:18	Epicenter: 7 1/2°N, 76 1/2°W Northweatern Colombia O = 21:02:35 G.C.T. Δ = 3650 km. courtesy: U.S.C.G.S.
	e	Z	21:09:24	
	e PP	Z	21:10:31	
	e S	E	21:14:40	
17 February '52	e	Z	17:52:53	Epicenter: _____ Southern Gulf of California O = 17:35:45** G.C.T. Δ = _____ courtesy: U.S.C.G.S.

Date	Phase and component		G.M.C.T.	Remarks
22 February '52		E	01:01:__	Seismic activity lasting about 15 minutes.
22 February '52		E	13:43:__	Seismic activity lasting about 25 minutes.
23 February '52		E	01:26:__	Seismic activity lasting about 12 minutes.
25 February '52	e PP ?	E	01:36:03	Epicenter: 17°S, 173 1/2°W
	i SKS	E	01:41:51	Tonga Islands
	e	E	01:42:33	0 = 01:17:00 G.C.T.
	e PS	E	01:44:41	Δ = 11,700 km.
				courtesy: U.S.C.G.S.
26 February '52	i P	Z	11:40:11	Epicenter: 15°S, 69°W
	e	Z	11:40:35	Peru - Bolivia Border
	e p P	Z	11:40:55	0 = 11:30:54* G.C.T.
	i PcP	Z	11:41:08	Δ = 6200 km.
	e s P	Z	11:41:14	h = about 250 km.
	i	Z	11:41:40	courtesy: U.S.C.G.S.
	i	Z	11:42:13	
	i PP	Z	11:42:22	
	i p PP	Z	11:43:13	
	e s PP	Z	11:43:46	
	i ScP ?	Z	11:44:46	
	e S	E,Z	11:47:37	
	e p S	E	11:40:58	
	e ScS	Z	11:49:31	
	e	E	11:51:23	
26 February '52	i P	Z	15:45:32	Epicenter: 11 1/2°N, 86 1/2°W
	i p P	Z	15:45:43	near coast of Nicaragua
	i SP	Z	15:46:08	0 = 15:39:26* G.C.T.
	i PP	Z	15:46:40	Δ = 3300 km.
	i SPP	Z	15:47:10	h = about 100 km.
	e SS	E	15:50:59	courtesy: U.S.C.G.S.
	e	E	15:52:35	

Date	Phase and component	G.M.C.T.	Remarks
26 February '52		E 22:06:___	Seismic activity lasting about 33 minutes. Epicenter: 12 1/2°S, 166°E Santa Cruz Islands Θ = 21:06:49* G.C.T. Δ = about 13,100 km U.S.C.G.S.
2 March '52	i P	Z 18:59:07	Epicenter: 11°N, 86 1/2° W Near coast of Nicaragua O = 18:52:56* G.C.T. Δ = 3350 km h = about 100 km courtesy; U.S.C.G.S.
3 March '52		E 08:09:___	Seismic activity lasting about 47 minutes Epicenter: 21 1/2°S, 174 1/2°W Tonga Islands O = 07:12:39* G.C.T. Δ = 12,100 km. courtesy: U.S.C.G.S.
5 March '52	e P e e S	Z 04:02:02 Z 04:02:13 E 04:12:42	Epicenter: 42°N, 146°E Off coast of Hokkaidd, Japan. (after shock) O = 03:49:03* G.C.T. Δ = 9800 km. courtesy: U.S.C.G.S.
5 March '52	e S	E 09:40:49	Epicenter: 43°N, 145 1/2°E Off east coast of Hokkaido, Japan. O = 09:17:08* G.C.T. Δ = about 9900 km. courtesy: U.S.C.G.S.
5 March '52	e S e	E 15:57:25 E 16:01:07	Epicenter: 24 1/2°N, 108 1/2°W Gulf of California O = 15:46:08* G.C.T. Δ = 3350 km. courtesy: U.S.C.G.S.
7 March '52		E 07:57:___	Seismic activity observed lasting about 2 hr. 19 min. Epicenter: 36°N, 136 1/2°E Honshu, Japan O = 07:32:38* G.C.T. Δ = 10,750 km. courtesy: U.S.C.G.S.

Date	Phase and component	G. M. C. T.		Remarks
7 March '52		E	18:59:__	Seismic Activity observed lasting about 30 minutes. Epicenter: 43°N, 146°E Off east coast of Hokkaido, Japan. O = 18:16:02* G.C.T. Δ = about 9950 km. U. S. C. G. S.
9 March '52		E	06:08:__	Seismic activity observed lasting about 5 minutes. Epicenter: 70 1/2°N, 15°W Jan Mayen Island Region O = 05:44:29* G.C.T. Δ = about 4800 km. U.S.C.G.S.
9 March '52	e P	N,Z	17:16:46	Epicenter: 42°N, 143 1/2°E Near south coast of Hokkaido, Japan O = 17:03:43* G.C.T. Δ = 9900 km. courtesy: U.S.C.G.S.
	e	Z	17:17:11	
	i	N,Z	17:17:39	
	e	N,Z	17:18:10	
	e PP	Z	17:20:15	
	e S	N,E	17:27:11	
	e	N,E	17:27:31	
	e PPS	N	17:29:04	
9 March '52	i P	N,Z	20:08:00	Epicenter: 59 1/2°N, 136°W Alaska - Canada Border O = 20:00:17* G.C.T. Δ = 4500 km. courtesy: U.S.C.G.S.
	e	Z	20:08:23	
	e PP	Z	20:09:36	
	e	Z	20:09:45	
	e PPP	Z	20:09:59	
	i S	N	20:14:10	
15 March '52		E	12:20:__	Seismic activity observed lasting 60 minutes. Epicenter: 5 1/2°S, 100 1/2°E Off southwest coast of Sumatra. O = 11:15:46* G.C.T. Δ = about 16,100 km. U. S. C. G. S.
19 March '52		E	09:55:__	Seismic activity observed lasting about 12 minutes. Epicenter: 41°N, 125°E Near Korea-Manchuria Border O = 09:04:18* G.C.T. Δ = about 10,700 km. U.S.C.G.S.

Date	Phase and component	G.M.C.T.	Remarks
19 March '52	i P'	N,Z 11:16:12	Epicenter: 9 1/2°N, 127°E
	i	Z 11:16:43	Off east coast of
	i PP(?)	N,E,Z 11:18:03	Mindanao, Philippine Islands
	e SKS (?)	E 11:23:12	O = 10:57:09* G.C.T.
	i PS (?)	Z 11:30:07	Δ = 13,850 km.
			courtesy: U.S.C.G.S.
21 March '52		E 00:37:__	Seismic activity observed lasting about 53 minutes. Epicenter: 11°S, 165°E Santa Cruz Islands O = 23:39:08* G.C.T. Δ = about 13,250 km. h = about 60 km. U.S.C.G.S.
21 March '52		E 17:09:__	Seismic activity observed lasting about 54 minutes. Epicenter: 11°S, 165°E Santa Cruz Islands O = 16:10:38* G.C.T. Δ = about 13,250 km. h = about 60 km. U.S.C.G.S.

Date	Phase and component	G.M.C.T.	Remarks
22 March '52	i P	Z 18:26:10	Epicenter: 52°N, 173°W
	e	Z 18:26:22	Andreanof Islands,
	e	N,Z 18:26:33	Aleutian Islands
	e S	N,E 18:34:35	O = 18:15:43* G.C.T.
	e ScS (?)	N 18:36:16	Δ = 6900 km.
	e	N 18:37:20	courtesy: U.S.C.G.S.
23 March '52		E 14:19:___	Seismic activity observed lasting about 8 minutes. Epicenter: 11°S, 165°E Santa Cruz Islands O = 13:13:25* G.C.T. Δ = about 13,250 km. h = about 60 km. U.S.C.G.S.
23 March '52		E 16:31:___	Seismic activity observed lasting about 37 minutes. Epicenter: Near Samar, Philippine Islands O = 15:21:50** G.C.T. Δ = courtesy: U.S.C.G.S.
25 March '52		E 10:32:___	Seismic activity observed lasting about 28 minutes. Epicenter: 5 1/2°S, 150°E New Britian O = 09:29:42* G.C.T. Δ = 13,950 km. courtesy: U.S.C.G.S.
27 March '52		E 16:47:___	Seismic activity observed lasting about 5 minutes. Epicenter: Ascension Island Region O = 16:09:50** G.C.T. Δ = courtesy: U.S.C.G.S.
1 April '52		E 15:01:___	Seismic activity observed lasting about 17 minutes. Epicenter: 15°S, 175 1/2°W Samoa Islands Region O = 14:08:47* G.C.T. Δ = 11,800 km. courtesy: U.S.C.G.S.

Date	Phase and component	G.M.C.T.	Remarks
2 April '52	i P	Z 18:41:08	Epicenter: 16 1/2°N, 99 1/2°W
	i	Z 18:41:17	Near coast of Guerrero,
	e	N 18:41:22	Mexico
	e	Z 18:41:25	O = 18:34:50* G.C.T.
	e	N 18:47:11	Δ = about 3400 km.
	e	N 18:47:31	U.S.C.G.S.
	e	N 18:47:58	
	e	Z 18:48:58	
	e	Z 18:49:20	
4 April '52	i P	N,Z 03:04:38	Epicenter: 52°N, 159 1/2°E
	e	Z 03:05:17	Near East Coast of
	e	Z 03:05:28	Kamchatka
			O = 02:52:55* G.C.T.
			Δ = 8350 km.
			courtesy: U.S.C.G.S.
8 April '52		E 11:05:__	Seismic activity observed lasting about 55 minutes.
			Epicenter: _____
			Sulu Sea
			O = 10:00:06** G.C.T.
			Δ = _____
			courtesy: U.S.C.G.S.
9 April '52		E 08:24:__	Seismic activity observed lasting about 15 minutes.
			Epicenter: _____
			About 1000 Miles S. W.
			of Galapagos Islands
			O = 07:57:10**
			Δ = _____
			courtesy: U.S.C.G.S.
9 April '52	i P	Z 16:33:15	Epicenter 34.5°N., 97.8°W
	e	Z 16:33:17	Central Oklahoma
	e S	N 16:36:12	Depth ~ 125 km.
	e	Z 16:36:33	Courtesy: U.S.C.G.S.
	e	N,Z 16:37:06	Δ = 1850 km.
	i	N,E,Z 16:37:55	
12 April '52		E 02:39:__	Seismic activity observed lasting about 24 minutes.

Date	Phase and component	G.M.C.T.	Remarks
14 April '52	e p P	N,Z 23:48:16	Epicenter: 25°S, 69 1/2°W
	e S P (?)	Z 23:48:26	Northern Chile
	e S	N 23:56:32	O = 23:37:20* G.C.T.
	e s S	N 23:57:12	h = about 100 km.
			U.S.C.G.S.
			Δ = about 7250 km.
14 April '52	i P'	Z 00:09:03	Epicenter: 3 1/2°N, 126 1/2°E
	e PP	N,Z 00:12:25	Molucca Passage
	e	Z 00:12:43	O = 23:49:45* G.C.T.
			U.S.C.G.S,
			Δ = about 14,600 km.
15 April '52	i P	Z 06:12:50	Epicenter: 43°N, 143 1/2°E
	e	Z 06:13:16	Hokkaido, Japan
			O = 05:59:53* G.C.T.
			Δ = 9800 km.
			courtesy: U.S.C.G.S.
15 April '52	e PP	N 19:21:11	Epicenter: 56°S, 24°W
	e S	N 19:27:08	Sandwich Islands
	e PS	N 19:30:11	Region
	e SS	N 19:35:33	O = 19:02:12* G.C.T.
			Δ = 11,850 km.
			courtesy: U.S.C.G.S.
17 April '52		E 15:15:___	Seismic activity observed lasting about 22 minutes.
18 April '52		E 16:51:___	Seismic activity observed lasting about 54 minutes. Epicenter: 12°N, 140°E Mariana Islands Region O = 15:59:10* G.C.T. Δ = 13,200 km U.S.C.G.S.
18 April '52		E 18:24:___	Seismic activity observed lasting about 19 minutes. Epicenter _____ Kurile Islands (?) O = 16:59:28** G.C.T. Δ = _____ courtesy: U.S.C.G.S.

Date	Phase and component		G.M.C.T.	Remarks
19 April '52	i	P	N,Z 10:05:38	Epicenter: 7°N, 71 1/2°W
	e		Z 10:06:17	Colombia - Venezuela
	e	PP (?)	Z 10:06:38	Border
	e	PcP	z 10:08:09	O = 09:58:53* G.C.T.
	e		Z 10:08:30	Δ = 3750 km.
	e		Z 10:09:23	h = about 60 km.
	e	S	N,E 10:11:01	courtesy: U.S.C.G.S.
21 April '52			N,E 21:13:__	Seismic activity observed lasting about 18 minutes.
21 April '52			N,E 23:31:__	Seismic activity observed lasting about 9 minutes. Epicenter: 7 1/2°N, 83°W off coast of Panama O = 23:15:07* G.C.T. Δ = about 3750 km. U.S.C.G.S.
22 April '52	e		Z 17:07:36	Seismic activity observed
	e		Z 17:07:53	Epicenter: 46°N, 111 1/2°W
	e		Z 17:08:07	Western Montana
	e		N 17:09:57 (?)	O = 16:54:42 1/2 G.C.T.
	e		N 17:10:21	Δ = about 2500 km. U.S.C.G.S. ?
24 April '52			E 12:09:__	Seismic activity observed lasting about 11 minutes.
24 April '52			E,N 18:47:__	Seismic activity observed lasting about 20 minutes.
25 April '52			E,N 06:18:__	Seismic activity observed lasting about 15 minutes. Epicenter: 8°N, 83°W Near coast of Costa Rica O = 06:02:00* G.C.T. Δ = 3650 km. courtesy: U.S.C.G.S.
27 April '52			E,N 13:39:__	Seismic activity observed lasting about 23 minutes.

Date	Phase and component		G.M.C,T.	Remarks
28 April '52	i P	Z	11:07:18	Epicenter: 42 1/2°N, 143°E
	i	Z	11:07:33	Hokkaido, Japan
	e	N	11:17:36	O = 10:54:18* G.C.T.
	e S	N	11:18:24	Δ = 10,000 km.
				courtesy: U.S.C.G.S.
29 April '52		E,N	03:03:__	Seismic activity observed lasting about 36 minutes.
				Epicenter: 25 1/2°N, 122 1/2°E
				Off north coast of Formosa
				O = 02:35:25* G.C.T.
				Δ = 12,350 km
				h = 250 km.
				courtesy: U.S.C.G.S.
30 April '52		E,N	02:27:__	Seismic activity observed lasting about 10 minutes.
1 May '52	e P (?)	Z	15:15:19	Epicenter: _____
	e	Z	15:15:33	Near islands, Aleutian Islands.
				O = 15:04:07** G.C.T.
				Δ = _____
				courtesy: U.S.C.G.S.
1 May '52		E,N	16:25:__	Seismic activity observed lasting about 20 minutes.
4 May '52		E,N	14:44:__	Seismic activity observed lasting about 1 hr. 14 min.
				Epicenter: 24 1/2°S, 177 1/2°W
				Tonga Islands Region
				O = 14:15:16* G.C.T.
				Δ = 12,450 km.
				courtesy: U.S.C.G.S.
6 May '52	i	Z	17:28:00	Epicenter: 41 1/2°N, 125°W
	i	N	17:40:08	Off coast of Northern Californ
				O = 17:21:02* G.C.T.
				Δ = about 3750 km.
				U.S.C.G.S.
6 May '52	i	Z	22:33:17	Epicenter: _____
	e (?)	N	22:45:02	Off coast of Colima, Mexico
				O = 22:26:40** G.C.T.
				Δ = _____
				courtesy: U.S.C.G.S.

Date	Phase and component		G.M.C.T.	Remarks
7 May '52		E,N	16:34:__	Seismic activity observed lasting about 8 minutes. Epicenter: 51°N, 131°W Near Queen Charlotte Islands O = 16:14:36* G.C.T. Δ = about 4100 km. U.S.C.G.S.
8 May '52		N,E	18:51:__	Seismic activity observed lasting about 8 minutes.
8 May '52	e P'	Z	21:30:00	Epicenter: 2 1/2°N, 127°E
	e	Z	21:30:17	Molucca Passage
	e PP	N,E	21:33:16	O = 21:10:40* G.C.T.
	e	Z	21:33:35	Δ = 14,600 km.
	e PPP (?)	N	21:34:25	courtesy: U.S.C.G.S.
9 May '52		E,N	04:21:__	Seismic activity observed lasting about 49 minutes. Epicenter: Kermadec Islands Region O = 03:29:00** G.C.T. Δ = h = about 400 km. courtesy: U.S.C.G.S.
9 May '52		N	15:48:__	Seismic activity observed lasting about 7 minutes. Epicenter: 39 1/2°N, 119 3/4°W California - Nevada Border O = 15:31:31 G.C.T. Δ = about 3,500 km U.S.C.G.S.
9 May '52	e P'	Z	18:06:34	Epicenter: 6 1/2°S, 155°E
	e	Z	18:06:53	Solomon Islands
	e PP	N	18:08:23	O = 17:47:40* G.C.T.
	e	Z	18:08:27	Δ = 13,500 km.
	e PS (?)	N	18:18:02	h = about 60 km. courtesy: U.S.C.G.S.
10 May '52		E,N	09:41:__	Seismic activity observed lasting about 7 minutes.
10 May '52		E,N	19:54:__	Seismic activity observed lasting about 11 minutes.

Date	Phase and component		G.M.C.T.	Remarks
13 May '52	e P	N,Z	19:37:59	Epicenter: 10 1/2°N, 85°W
	i p P	Z	19:38:17	Costa Rica
	i S P	Z	19:38:32	O = 19:31:45* G.C.T,
	e PP (?)	N,Z	19:38:52	Δ = 3350 km
	e S PP	Z	19:39:30	h = 100 km
	e	Z	19:40:06	courtesy: U.S.C.G.S.
	e	Z	19:40:40	
	e	N	19:42:12	
	e S	N	19:42:53	
	e S S	N	19:43:35	
	e	N	19:44:57	
14 May '52	e P	N,Z	00:49:53	Epicenter: 43° N, 145 1/2°E
	e	Z	00:50:09	Near east coast of
	e	N	00:51:20	Hokkaido, Japan
	e PP	N	00:53:18	O = 00:36:59* G.C.T.
	e S	N	01:00:17	Δ = 9750 km
	e	N	01:00:35	courtesy: U.S.C.G.S.
14 May '52	e P	N,Z	21:17:03	Epicenter: 16 1/2°N, 86 1/2°W
	e	Z	21:17:19	Off north coast of Honduras
	e PP (?)	Z	21:17:34	O = 21:11:36* G.C.T.
	e S	N	21:21:23	Δ = 2750 km.
	e	N	21:21:42	courtesy: U.S.C.G.S.
	e	N	21:22:37	
15 May '52		N,Z	18:50:__	Seismic activity observed Lasting about 50 minutes. Foreshock: Epicenter: 14°N, 92 1/2°W Near coast of Guatemala O = 18:43:52* G.C.T. Δ = 3250 km. courtesy: U.S.C.G.S.
16 May '52		N,Z	05:48:__	Seismic activity observed lasting about 47 minutes. Epicenter 14°N, 92 1/2°W Near coast of Guatemala O = 05:42:09* G.C.T. Δ = 3250 km courtesy: U.S.C.G.S.
16 May '52	i P	N,Z	20:52:30	Epicenter: 6 1/2°N, 79°W
	e	Z	20:52:48	Off coast of Panama
	e	N	20:52:58	O = 20:45:40* G.C.T.
	e PP	N	20:53:41	Δ = 3800 km.
	e PPP (?)	Z	20:53:50	courtesy: U.S.C.G.S.

Date	Phase and component		G.M.C.T.	Remarks
	e PcP	Z	20:55:02	
	e S	N,Z	20:57:56	
	e	N	20:58:25	
	e	N	20;59:02	
17 May '52		N	10:36:__	Seismic activity observed lasting about 44 minutes. Epicenter: 42 1/2°N, 144 1/2°E Near east coast of Hokkaido, Japan O = 09:48:16* G.C.T. Δ = 9900 km. courtesy: U.S.C.G.S.
19 May '52	e P	N,Z	18:45:17	Epicenter:43°N, 144 1/2°E Near east coast of Hokkaido, Japan O = 18:32:24* G.C.T. Δ = 9750 km. courtesy: U.S.C.G.S.
	i	N,Z	18:45:31	
	e	Z	18:46:01	
	i	Z	18:46:27	
	i	Z	18:47:02	
	e PPP(?)	N	18:50:25	
	e S	N	18:55:43	
	e	N	18:56:01	
	e	N	18:56:21	
	e PPS	N	18:57:23	
	e SS	N	19:01:33	
23 May '52		N	00:06:__	Seismic activity observed lasting about 35 minutes. Epicenter: 29 1/2°N, 131 1/2°E Ryukyu Islands O = 23:08:21* G.C.T. Δ = 11,550 km. courtesy: U.S.C.G.S.
23 May '52		N	05:19:__	Seismic activity observed lasting about 17 minutes. Epicenter: 33°N, 136°E Near South Coast of Honshu, Japan O = 04:20:52* G.C.T. Δ = 11,100 km. h = about 60 km. courtesy: U.S.C.G.S.
23 May '52	e P	Z	22:23:31	Epicenter: 20°N, 156°W Near west coast of Hawaii O = 22:12:26* G.C.T. Δ = 7600 km. courtesy: U.S.C.G.S.
	e S	N	22:32:42	
	e	Z	22:33:11	

Date	Phase and component	G.M.C.T.		Remarks
24 May '52	e P	N,Z	02:09:29	Epicenter: 21 1/2°S, 71°W
	i	Z	02:09:39	Near coast of Northern Chile
	e PcP (?)	Z	02:10:18	O = 01:59:05* G.C.T.
	e S	N	02:17:45	Δ = 6800 km.
	e	N	02:18:41	courtesy: U.S.C.G.S.
24 May '52	e (?) P' (?)	Z	16:25:29	Epicenter:_____
	e PP (?)	N,Z	16:28:19	Off west coast of Sumatra
	e	Z	16:29:19	O = 16:05:53** G.C.T.
	e	N	16:30:29	Δ = _____
	e	N	16:38:27	
	e	N	16:41:29	courtesy: U.S.C.G.S.
26 May '52		N	03:51:__	Seismic activity observed lasting about 22 minutes. Epicenter:_____ Tonga Islands Region O = 03:26:14** G.C.T. Δ = _____ h = about 100 km. courtesy: U.S.C.G.S.
26 May '52		N	17:26:__	Seismic activity observed lasting about 21 minutes.
2 June '52		E	17:47:__	Seismic activity observed lasting about 13 minutes.
5 June '52	e P	Z	06:03:29	Epicenter: 6°N, 77 1/2°W
	e	Z	06:03:48	Near west coast of Colombia
	e	Z	06:04:20	O = 05:56:35* G.C.T. Δ = 3800 km. h = about 60 km. courtesy: U.S.C.G.S.
10 June '52		E	10:17:__	Seismic activity observed lasting about 2 hr. 27 min. Epicenter: 15 1/2°S, 178 1/2°W Fiji Islands Region O = 09:58:27* G.C.T. Δ = 11,900 km. courtesy: U.S.C.G.S.

Date	Phase and component	G.M.C.T.	Remarks
11 June '52	i P	Z 00:43:07	Epicenter: 32°S, 67 1/2°W
	i	Z 00:43:11	San Juan Province,
	e	Z 00:43:26	Argentina
	e	Z 00:43:51	O = 00:31:32* G.C.T.
	e	Z 00:44:10	Δ = 8150 km.
	e	Z 00:44:21	courtesy: U.S.C.G.S.
	e	Z 00:44:36	
	e PP	Z 00:45:58	
	e	Z 00:47:02	
	e PPP	Z 00:47:40	
	e S	N 00:52:29	
	e	Z 00:52:35	
11 June '52	e P	Z 03:12:04	Aftershock:
	e	Z 03:12:10	Epicenter: 32°S, 67 1/2°W
			San Juan Province, Argentina
			O = 03:00:28* G.C.T.
			Δ = 8150 km.
			courtesy: U.S.C.G.S.
15 June '52	e (?)	Z 15:31:06	Note:
	e	Z 15:33:11	Records changed while
	e	Z 15:33:24	quake was coming in.
	e	N 15:33:47	
	e	Z 15:34:20	
	e	Z 15:35:24	
17 June '53		E 05:05:__	Seismic activity observed
			lasting about 35 minutes.
			Epicenter: 21 1/2°S, 176°W
			Tonga Islands
			O = 04:07:42* G.C.T.
			Δ = 12,100 km.
			courtesy: U.S.C.G.S.
19 June '52		E 12:45:__	Seismic activity observed
			lasting about 1 hr. 38 min.
			Epicenter: 23°N, 100°E
			Southern Yunnan Province,
			China.
			O = 12:12:56* G.C.T.
			Δ = 12,950 km.
			courtesy: U.S.C.G.S.

21 June '52	e P	Z 06:41:17	Foreshock:
	e	Z 06:41:25	Epicenter: 46°N, 153 1/2°E
	e S	E 06:51:27	Kurile Islands
			O = 06:28:57* G.C.T.
			Δ = 9100 km.
			courtesy: U.S.C.G.S.
22 June '52	e P	Z 10:20:33	Foreshock:
	e	Z 10:21:08	Epicenter: 46°N, 153 1/2°E
	e S	E 10:30:44	Kurile Islands
			O = 10:08:14* G.C.T.
			Δ = 9100 km.
			courtesy: U.S.C.G.S.
22 June '52	i P	Z 21:54:16	Epicenter: 46°N, 153 1/2°E
	e	Z 21:54:25	Kurile Islands
	e	Z 21:54:40	O = 21:41:53* G.C.T.
	e	Z 21:54:53	Δ = 9100 km.
	e PP (?)	Z 21:57:13	courtesy: U.S.C.G.S.
	e S	E 22:04:27	
	e	E 22:08:51	
	i	Z 22:12:38	
23 June '52		E 13:00:__	Seismic activity observed
			lasting about 33 min.
			Epicenter: 24 1/2°N, 122°E
			Near east coast of Formosa
			O = 12:03:09* G.C.T.
			Δ = 12,450 km.
			courtesy: U.S.C.G.S.
24 June '52		E 17:17:__	Seismic activity observed
			lasting about 24 minutes.
			Epicenter: 46 1/2°N, 154°E
			Kurile Islands
			O = 16:29:02* G.C.T.
			Δ = 9100 km.
			courtesy: U.S.C.G.S.
26 June '52		E 00:16:__	Seismic activity observed
			lasting about 28 minutes.
28 June '52		E 16:48:__	Seismic activity observed
			lasting about 10 minutes.
			Epicenter: 16 1/2°N, 97 1/2°W
			Oaxaca, Mexico
			O = 16:27:47* G.C.T.
			Δ = 3200 km.
			courtesy: U.S.C.G.S.

We acknowledge with thanks receipt of the following bulletins and other publications between 9 November 1952 and 10 July 1953.

Bulletin	Date
Arkansas University - Seis. Bull. - Vol. I, No. 4,	
Vol. II, No. 1.	Oct. '52-Mar.'53
Apia - Seis. Bull.	Oct. - Dec. '52
California Institute of Techology - Seis. Bull.	Oct.'51-Dec.'52
California University - Bulletin Seismic Station	
Vol. 20, No. 2-4, Vol. 21, No.1-2, Vol. 15, No. 3-4	1951
Cartuja, Monthly Bulletin	
Provisional Bulletin	Sept.-Dec. '52
	Jan.-May '53
Cheb, Preliminary Seis. Bull.	Aug.'52-Apr.'53
Cleveland, Seis. Bull.	Jan. '53
Coimbra, Seis. Bull.	Mar.-Sept.'52
Columbia University, Seis. Bull.	June '51-May' 52
Djakarta, Seis. Bull.	1950-51
	Apr.-June '52
Dublin Seismological Observatory, Seis. Bull.	July '52-Mar. '53
Helwan, Seismological and Magnetic Report	Year 1943
Seis. Bull.	May '52-Mar. '53
Hurbanovo Preliminary Seis. Bull.	July '52-Apr. '53
Japan Central Meteorological Observatory - Seis. Bull.	1950 + Mar. '52
Geophysical Magazine - Vol. 24, No. 2-3	Nov. '52-Jan.'53
Papers in Meteorology and Geophysics - Vol. III, No.4	Mar. '53
Kobe Marine Observatory - Japan	June '52
Jesuit Seismological Association - Preliminary Bull.	July '52
Kandilli Observatory - Seis. Bull.	May - Aug. '52
Ksara - Seis. Bull.	Apr.-Dec. '52
Manila, Seis. Bull.	Sept.'52-Feb.'53
Melborne, Seis. Bull. - No. 53 - 4 - 1	
Mexico Nacional Universidad, Instituto De Geofisica	Sept.'52-May '53
Ottawa Seis. Bull.	May-Dec. '52
Perth, Seis. Bull.	Apr. - June '52
	Oct. - Dec. '52
Pittsburgh University - Seis. Bull.	Jan. - Dec. '52
Praha Seis. Bull.	Sept.'52-Apr.'53
Reykjavid - Seis. Bull.	Year 1952
Riverview College Observatory	Jan.'50-Dec.'51
Rome, Instituto Nazionale di Geofisica	Sept.'52-Mar.'53
Saint Louis University - Seis. Bull.	June '47
Santa Clara (California)	Oct.'52-Feb.'53
Schweizerisches Erdbebenbulletin	Aug.'52-Mar.'53
Skolnate Pleso - Preliminary Seis. Bull.	July'52-Apr.'53
Strasbough Institute of Physics of the Earth pp. 80-85;	
2-11; 54-89	
Bulletin d'echange - Earthquake	Nov. '52-Mar.'53
Bureau Central Seismologique - Bulletin Mensuel	Apr. - Nov. '52

Stuttgart- Seis. Bull. - - - - - - - - - - - - - - - - - -	July-Sept.'51
Switzerland Central Observatory - Jahresbericht - - - -	Year 1951
Tanarive, Seis. Bull. - - - - - - - - - - - - - - - - - -	1951-Jan.-June'52
U.S. Coast and Geodetic Survey - Seis. Bull. - - - - - -	July - Dec.'46
	Apr.-June'50
Preliminary det. epicenter 149 -52 to 53-52, 155-52 to 179-52 1-53 to 67-53, 69-53 to 72-53 S45-52 to S54 - 52, S1-53 to S22-53	
Washington University - Seis. Bull. - - - - - - - - - - -	Jan.-Apr.'52
Wellington Seismological Observatory - Prov. Bull. - - -	Apr.-Nov. '52
Seismological Report - - - - - - - - - - - - - - - - - -	Jan. - June '50
West Virginia University - Seismograph Report - - - - - -	July to Dec.'52

The Geophysical Laboratory
Mineral Sciences Building
State College, Pennsylvania
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THE PENNSYLVANIA STATE UNIVERSITY

MINERAL INDUSTRIES EXPERIMENT STATION

GEOPHYSICAL LABORATORY

Seismograph Report XVIII

1 July to 31 December 1952

School of Mineral Industries
State College, Penna., U. S. A.

Locality: The station is located in a vault under the central wing of the School of Mineral Industries Building. The instruments are mounted on a concrete pillar separated from the foundations and anchored to bedrock (dolomite). The geographic coordinates are:

ϕ - 40° 48' N λ - 77° 52' W H - 354 m

The geocentric coordinates are (according to Gutenberg and Richter):

A - 40° 36' N λ - 77° 52' W H - + 3 km.

Please address all communications to:

Geophysical Laboratory
Mineral Sciences Bldg.
State College, Pennsylvania.

From 1 July to 28 October 1952 three seismographs were in operation. The vertical and north - south components were recorded photographically, the east - west motion was recorded by a pengalvanometer. The recording rate was 1.5 cm. per minute on the photographic recorder, 1.7 cm. per minute on the pen recorder. The free periods of the instruments were:

North - South	16.8 sec.
East - West	17.1 sec.
Vertical	1.86 sec.

No checks of damping and sensitivity of the instruments as adjusted during this period have been made.

On 28 October 1952 a new photographic recording drum which runs at a rate of 1.55 cm. per minute was installed to record the north-south and vertical motions. Frequent stoppages for adjustment of the new recorder occurred until 19 November. On December 10 a new galvanometer was installed in the north - south recorder. On 16 December it was shifted to the vertical instrument. During all this period there were frequent stoppages of all instruments. Although the free periods of the seismometers were unchanged, the damping and sensitivity of the recorders underwent frequent adjustment.

The time is controlled by a Stromberg clock, which is compared daily with signals from r dio station WWV. The time accuracy of the records is estimated to be about ± 1 second.

Note error in report XVII: During the first six months of 1952 it was the east-west seismometer, not the north-south, which was recorded using the pen-galvanometer.

Date	Phase and component	G.M.C.T.	Remarks
13 July '52		E	Seismic activity starting at 17:56:__
17 July '52		E,Z	Seismic activity recognizable at 16:33:__
21 July '52	iP	E,Z 11:58:56	Epicenter: 35.1°N, 118.9°W
	iPP	Z 12:00:02	O = 11:52:11.5
	i	Z 12:00:43	Δ = 3650 km.
	i	Z 12:01:09	Tulare Valley, Southern
	i	Z 12:01:26	California.
	i	Z 12:01:32	Courtesy U.S.C.G.S.
	i PcP (?)	Z 12:01:44	
	i S	E 12:04:10	
	e L	E 12:05:4_	
21 July '52	i P	Z 19:58:40	Epicenter: 35.5°N, 118.5°W
	i	Z 19:59:00	O = 17:42:47
	e	E 20:00:12	Southern California
	e PcP (?)	E 20:00:50	aftershock
	e	E 20:01:16	Courtesy U.S.C.G.S.
			Δ = 3640 km
23 July '52	i P	Z 00:45:01	Epicenter: 35.1°N, 118.9°W
	e S	E 00:50:22	O = 00:38:33
			Δ = 3650 km
			Tulare Valley, Southern
			California
			Courtesy U.S.C.G.S.
23 July '52	i P	Z 13:23:43	Epicenter: 35°N, 11°W
	e S	E 13:29:07	O = 13:17:02
	e	Z 13:34:29	Southern California
			aftershock.
			Courtesy: U.S.C.G.S.
			Δ = 3650 km
24 July '52	i P	Z 22:22:10	Epicenter: 42.5°N, 145.5°E
	e	Z 22:22:24	O = 22:09:20
	e	Z 22:22:33	Depth about 60km.
	e	Z 22:23:12	Δ = 9750 km
	e S	E 22:32:35	Off east coast of
			Hokkaido, Japan
			Courtesy U.S.C.G.S.
25 July '52	e P	Z 19:16:20	Epicenter: 35°N, 119°W
	e S	Z 19:21:18	O = 19:09:42
	e	Z 19:27:17	Southern California
			aftershock
			Courtesy U.S.C.G.S.
			Δ = 3600 km.

25 July '52	eP	Z	19:49:49	Epicenter: 35°N, 118.5°W
	e	Z	19:51:10	O=19:43:20
				Southern California
				aftershock
				Courtesy U.S.C.G.S.
				Δ=3,600 km.
27 July '52	iPP	E,Z	08:41:48	Epicenter: 20.5°S,179°W
	eSKS	E	08:46:58	O=08:23:22
	e	E,Z	08:48:00	Δ=12,400 km
	e	E	08:50:34	Depth about 500 km
	eSP	Z	08:50:40	Fiji Islands
	ePS	Z	08:51:42	Courtesy U.S.C.G.S.
29 July '52	iP	Z	07:10:21	Epicenter: 35°N, 119°W
	e	Z	07:10:24	O=07:03:45
	eS	E	07:15:30	Southern California
	eScS(?)	Z	07:20:52	Courtesy U.S.C.G.S.
	e	E	07:21:22	Δ=3,550 km
31 July '52		E.		Seismic activity between 1200 and 1300
15 Aug '52		E		Seismic activity between hours of 0000 and 0200
16 Aug '52		E		Seismic activity between hours of 1400 and 1600
17 Aug '52	eP(?)	Z	16:20:10	Epicenter: 30.5°N, 91.5°E
	ePP	Z	16:21:04	O=16:02:05
	eS	E	16:28:34	Δ=12,000 km
				Eastern Tibet
				Courtesy U.S.C.G.S.
18 Aug '52	iP	Z	13:16:16	Epicenter: Central Chile
	e	Z	13:16:34	Argentina border region
	e	Z	13:16:39	O=13:04:50
	e	Z	13:17:20	Courtesy U.S.C.G.S.
	es	E	13:25:20	Δ=8,000 km
20 Aug '52	iP	E,Z	15:32:06	Epicenter: 43°N, 127°W
	ePP	Z	15:33:31	O=15:24:59
	e	E,Z	15:34:04	Δ=4000 km
	e	E	15:37:34	Off Coast of Oregon
	eS	E,Z	15:37:55	Courtesy U.S.C.G.S.
22 Aug '52		N,E		Seismic activity recognizable about 2300

9 Sept '52	iP	Z	13:07:12	Epicenter: 9°N, 84.5°W O=12:54:42 Δ=3550 km Near Coast of Costa Rica Courtesy U.S.C.G.S.
11 Sept '52		E		Seismic activity observed between 2300 and 0100
21 Sept '52	iP	E,Z	02:40:44	Epicenter: 22.5°S, 65°W O=02:30:30 Argentina - Boliva border. Courtesy U.S.C.G.S. Δ=7,100 km Depth = 300 km
	i	Z	02:40:54	
	iPcP	Z	02:41:17	
	ipP	Z	02:41:47	
	i	Z	02:42:02	
	isP	Z	02:42:22	
	iS	E	02:48:54	
	i	E	02:48:58	
	i	E	02:49:02	
	isS	E	02:50:43	
22 Sept '52		E		Seismic activity recognizable at 12:00 -
24 Sept '52	eSS	E	20:49:34	Epicenter:56.5°N, 157°W O=20:29:30 Depth=about 100 km Δ=5750 km Near South Coast of Alaska Peninsula Courtesy U.S.C.G.S.
30 Sept '52	M		12:52:00	Epicenter:28 1/2N, 102E O=12:52:00 Δ=12,300 km Szechwan Province, China Courtesy U.S.C.G.S.
1 Oct '52		E		Seismic Activity between 1000 and 1200
3 Oct '52	iP	Z	07:43:41	Epicenter: 6.5°N, 83°W O=07:36:45 Off South Coast of Panama Courtesy U.S.C.G.S. Δ=3,800 km
	i	Z	07:43:48	
	e	Z	07:44:14	
	e	Z	07:45:03	
	eS	E	07:49:22	
6 Oct '52		E		Seismic activity recognizable at 00:06:-

10 Oct '52	M	E	16:52:49	Epicenter:Samoa Islands region O=15:55:35 Courtesy U.S.C.G.S. Δ=11, 400 km
10 Oct '52	M	E	19:46:20	Epicenter:30.5°N, 69°E O=18:47:37 Δ=11,400 km Central Pakistan Courtesy U.S.C.G.S.
14 Oct '52		E		Seismic activity recognizable at 00:30:-
14 Oct '52	eS	Z	22:07:33	Epicenter: 48°N, 70°W O=22:03:41 Southeastern Quebec, Canada Courtesy U.S.C.G.S. Δ=1000 km
	i	Z	22:08:03	
	i	Z	22:08:28	
	i	Z	22:08:45	
	i	Z	22:09:27	
	i	Z	22:09:54	
	i	Z	22:10:06	
	i	Z	22:10:50	
14 Oct '52	eP	Z	00:02:43	Epicenter: 8.5°N, 83°W O=23:56:03 Δ=3550 km Near South Coast of Costa Rica Courtesty U.S.C.G.S.
18 Oct '52	e(S?)	E	05:49:00	Epicenter: 16°S , 168°E O=05:22:32 Δ=13,150 km New Hebribes Courtesy U.S.C.G.S.
18 Oct '52	iP	Z	12:05:04	Epicenter: 13°N, 46°W O=11:57:36 Δ=4250 km Atlantic Ocean Courtesy U.S.C.G.S.
	i	Z	12:05:24	
	i	Z	12:06:08	
	ePP	Z	12:06:34	
	iS	E	12:11:11	
18 Oct '52		E		Seismic activity recognizable at 21:29:12
20 Oct '52	iP	Z	01:09:24	Epicenter: 57°N, 57°W O=01:04:35 Off Coast of Labrador Courtesy U.S.C.G.S. Δ=2400 km
	eS	E	01:13:24	
21 Oct '52		E		Surface waves recognizable at 02:29:-

21 Oct '52	M	E	02:50:19	Epicenter: 9.5°N, 84.5°W O=02:30:46 Δ=3500 km Near Coast of Costa Rica Courtesy U.S.C.G.S.
21 Oct '52		E		Surface waves recognizable at 06:53:-
22 Oct '52		E		Seismic activity recognizable at 20:02:-
25 Oct '52		E,Z		Seismic activity recognizable at 14:47:-
26 Oct '52	eSS	E	15:00:10	Epicenter: 40°N, 143.5°E O=14:30:04 Off Northeast Coast of Honshu, Japan Courtesy U.S.C.G.S. Δ=10,200 km
	eSSS	E	15:04:01	
	e	E	15:40:15	
26 Oct '52	eS	E	18:26:11	Epicenter: 39°N, 143°E O=18:02:00 Δ=10,200 km Off East Coast of Honshu, Japan Courtesy U.S.C.G.S.
27 Oct '52	e	E	03:23:03	(Seismic ?)
	e	E	03:41:23	
28 Oct '52	iP	E,Z	04:34:57	Epicenter: 18.5°N, 73.5°W O=04:29:51 Haiti Courtesy U.S.C.G.S. Δ=2550 km
	eS	E	04:39:00	
28 Oct '52	eS	E	06:55:12	Epicenter: 40°N, 144°E O=06:31:04 Δ=10,050 km Off East Coast Honshu, Japan Courtesy of U.S.C.G.S.
29 Oct '52	eS	E	19:59:43	Epicenter: 17°S, 174°W O=19:34:14 Δ=11,700 km Depth=about 150 km Tonga Islands Courtesy U.S.C.G.S.

31 Oct '52	eS	E	17:01:31	Epicenter 39°N, 143°E O=16:37:14 Δ= 10,200 km Off East Coast Honshu, Japan Courtesy U.S.C.G.S.
4 Nov '52	iP	N,E,Z,	17:10:03	Epicenter: 52.5N,159E O=16:58:20 Δ=8300 km Near east coast of Kamchatka. Courtesy U.S.C.G.S.
	i	E	17:10:10	
	i	N	17:10:18	
	i	E	17:12:32	
	iPP	E	17:12:57	
	i	E	17:13:14	
	iPPP	E	17:14:40	
	i	E	17:15:46	
	i	E	17:17:10	
	iS	N,E	17:19:30	
	iSS	E	17:24:19	
	i	E	17:25:21	
	eL	E	17:28:52	
4 Nov '52	iP	Z	18:40:30	Near east coast of Kamchatka O=18:28:52 Courtesy U.S.C.G.S. Δ=8,300 km Pulses obscured by surface waves of previous quake.
4 Nov '52	iP	Z	19:53:24	Near east coast of Kamchatka O=19:40:41 Courtesy U.S.C.G.S. Δ=8,300 km Pulses obscured by surface waves of previous quake.
	e	Z	19:52:37	
	i	Z	19:53:02	
4 Nov '52	iP	Z	21:00:42	Epicenter 50°N, 157°E O=20:48:53 Near South Coast of Kamchatka Δ=8,500 km Courtesy U.S.C.G.S.
	i	Z	21:00:47	
	i	Z	21:01:13	
	i	Z	21:01:26	
	i	Z	21:02:14	
4 Nov '52	iP	Z	21:12:34	Epicenter: 52:5°N, 159.5°F O=21:00:53 Kamchatka aftershock Courtesy U.S.C.G.S. Δ=8350 km
	i	Z	21:12:46	
	iS	N	21:22:06	

4 Nov '52	iP	Z 22:04:43	Epicenter: 50 N, 158.5°E
	e	Z 22:05:01	O=21:52:50 South Coast of Kamchatka Courtesy U.S.C.G.S. Δ=8,600 km EW and NS components obscured by surface waves of earlier quake.
4 Nov '52	iP	Z 22:24:35	Epicenter: 52°N, 161°E
	i	Z 22:24:38	O=22:12:54
	i	Z 22:24:46	Kamchatka aftershock
	e	Z 22:25:06	Courtesy U.S.C.G.S. Δ=8,300 km
4 Nov '52	iP	Z 23:40:55	Epicenter: 50°N, 158°E
	i	Z 23:41:02	O=23:28:58 Off South Coast of Kamchatka. Courtesy U.S.C.G.S. Δ=8,600 km EW and NS components obscured by surface waves of other quake
5 Nov '52	iP	N,Z 02:31:55	Epicenter: 50.5°N, 157°E
	i	N,Z 02:32:11	O=02:19:58
	i	Z 02:32:21	Near South Coast
	i	Z 02:32:32	of Kamchatka
	ePP	Z 02:34:54	Courtesy U.S.C.G.S.
	iS	N,E 02:41:41	Δ=8,600 km
	e	N,E 02:42:13	
	ePPS	N,E 02:42:45	
5 Nov '52	iP	Z 03:41:36	Epicenter: 51°N, 159°E
	i	Z 03:41:44	O=03:29:44
	i	Z 03:42:04	Near Southeast Coast
	eS	N,E 03:51:19	of Kamchatka
	e	N 03:51:52	Courtesy U.S.C.G.S. Δ=8,500 km
5 Nov '52	iP	Z 06:09:51	Epicenter: 49°N, 156°E
	i	Z 06:10:03	O=05:57:43
	i	Z 06:10:33	Kurile Islands
	iS	N,E 06:19:45	Courtesy U.S.C.G.S.
	e	N 06:20:08	Δ=8,900 km
	i(ScS?)	N 06:20:30	

5 Nov '52	iP	Z	11:46:24	Epicenter: 51.5°N, 159°E
	i	Z	11:46:36	O=11:34:37 Off Southeast Coast of Kamchatko Δ=8,500 km
5 Nov '52	iP	Z	11:58:32	Epicenter: 50°N, 157°E O=11:46:34 Off South Coast of Kamchatka Courtesy U.S.C.G.S. Δ=8,700 km
5 Nov '52	iP	N,Z	13:18:08	Epicenter: 52°N, 159.5°E
	i	Z	13:18:14	O=13:06:24
	i	Z	13:18:42	Kamchatka
	i	Z	13:19:12	after shock
	iS	N,E	13:27:40	Courtesy U.S.C.G.S.
	i	N	13:28:16	Δ=8,400 km
5 Nov '52	iP	Z	15:00:41	Epicenter: 50°N, 156.5°E O=14:48:41 Off South Coast of Kamchatka Courtesy U.S.C.G.S. Δ=8700 km
5 Nov '52	iP	Z	19:20:16	Epicenter: 53.5°N, 161.5°E
	e	Z	19:21:06	O=19:08:26
	eS	N,E	19:30:00	Off East coast of
	e	N,E	19:30:16	Kamchatka Courtesy U.S.C.G.S. Δ=8,600 km
5 Nov '52	eP	Z	20:42:26	Epicenter: 49°N, 159°E
	i	Z	20:42:34	O=20:30:22 Off South Coast of Kamchatka. Courtesy U.S.C.G.S. Δ=8,700 km
5 Nov '52		Z		Seismic activity recog- nizable at 22:57: -
6 Nov '52	-	N,E		Seismic activity recog- nizable at 06:20:-
6 Nov '52	iP	Z	19:57:48	Epicenter: 51.5°N,
	e	Z	19:58:13	159.5°E
	eS	N,E	20:07:22	O=19:45:57
	eL	N	20:16:56	Off Southeast Coast of Kamchatka Courtesy U.S.C.G.S. Δ=8,500 km

6 Nov '52	eP'	Z	20:06:37	Epicenter: 5°S, 145.5°E
	e	N,E	20:07:35	O=19:47:20
	ePP	Z	20:08:31	Δ=14,100 km
	iPKS	N,Z	20:10:11	Near North Coast of New
	e(PFS?)	N	20:20:05	Courtesy U.S.C.G.S. Guin
	eSS?	N	20:25:47	
7 Nov '52		E		Seismic Activity recog-nizable at 03:03:-
7 Nov '52	iP	Z	12:20:52	Epicenter: 52°N, 161°E
	i	Z	12:21:00	O=12:09:09
	i	Z	12:21:17	Off Southeast Coast
	i	Z	12:21:27	of Kamchatka
	iS	N	12:30:17	Courtesy U.S.C.G.S.
				Δ=8,350 km
7 Nov '52	iP	Z	14:20:29	Epicenter: 49°N, 157°E
	i	Z	14:20:43	O=14:08:25
	i	Z	14:20:51	Off South Coast of
	i	Z	14:21:04	Kamchatka.
	iS	N,E	14:30:13	Courtesy U.S.C.G.S.
	i	N,E	14:30:41	Δ=8,700 km
7 Nov '52	iS	N	21:06:26	Epicenter: 26°N, 110.5°W O=20:54:58 Lower Gulf of California Courtesy U.S.C.G.S. Δ=3,400 km
7 Nov '52		N,E		Seismic activity between 2200 and 2400.
8 Nov '52		E		Seismic activity recog-nizable at 00:15:-
8 Nov '52	eP	Z	19:45:26	Epicenter: 48 1/2°N,
	iS	N,E	19:55:25	156°E O=19:33:18 Kurile Islands Courtesy U.S.C.G.S. Δ=8,900 km
8 Nov '52	e	Z	22:29:14	(Seismic?)
	i	Z	22:29:30	
	e	E	22:29:38	
	i	Z	22:29:53	
	i	Z	22:30:20	
9 Nov '52	iP	Z	00:34:39	Epicenter: 48 1/2°N,
	i	Z	00:34:53	155 1/2°E O=00:22:15 Kurile Islands Courtesy U.S.C.G.S. Δ=9,300 km

9 Nov '52	iP	Z	01:29:20	Epicenter: 52 1/2°N, 160°E 0=01:17:39 Near E. Coast Kamchatka Courtesy U.S.C.G.S. Δ=8,400 km
9 Nov '52	iP	E,Z	05:18:01	Epicenter: 53 1/2°N, 159 1/2°E 0=05:06:29 Near East Coast Kamchatka Courtesy U.S.C.G.S. Δ=8,200 km
9 Nov '52	eP	Z	05:44:16	Epicenter: 49 1/2°N, 156 1/2°E 0=05:32:15 Off South Coast of Kamchatka Courtesy U.S.C.G.S. Δ=8,800 km
9 Nov '52	iP	Z	06:08:56	Epicenter: 49°N, 157°E 0=05:56:54 Off South Coast Kamchatka Courtesy U.S.C.G.S. Δ=8,800 km
9 Nov '52		N,Z		Seismic activity recognizable between 1500 and 1600
9 Nov '52		N,E		Seismic activity recognizable at 21:22:-
10 Nov '52	iP e i eS	N,Z Z Z N,Z	01:06:56 01:07:08 01:07:45 01;16:40	Epicenter: 50°N, 158.5°E 0=00:55:00 Off South Coast of Kamchatka. Courtesy U.S.C.G.S. Δ=8,600 km
10 Nov '52		N,Z		Seismic activity recognizable at 06:18:-
10 Nov '52		N,E		Seismic activity recognizable at 10:30:-
10 Nov '52	iP i	N,Z Z	20:38:15 20:38:23	Epicenter: 53.5°N, 160°E 0=20:26:40 Near East Coast of Kamchatka. Courtesy U.S.C.G.S. Δ=8,200 km

11 N ov '52		N,E		Seismic activity recognizable between 0100 and 0200.
11 Nov '52		N,E		Seismic activity recognizable between 2000 and 2100
13 Nov '52	iP	Z	08:10:39	Δ=8,600 km
	i	Z	08:10:50	
	i	Z	08:11:25	
	eS	N,E	08:20:23	
	e	E	08:20:50	
	e	N	08:21:28	
13 Nov '52		E		Seismic activity recognizable at 16:01:-
13 Nov '52		E		Seismic activity recognizable at 22:10:-
15 Nov '52	i	Z	05:11:33	(Seismic?)
	i	Z	05:11:55	
	i	Z	05:12:17	
16 Nov '52		E		Seismic activity recognizable between 04:50:- and 05:11:-
16 Nov '52		E		Seismic activity recognizable between 08:48:- and 09:25:-
18 Nov '52	iP	Z	08:25:26	Epicenter: 49.5°N,
	i	Z	08:25:36	156.5°E
	i	Z	08:25:55	Off South Coast
	i	Z	08:26:39	of Kamchatka
				Courtesy U.S.C.G.S.
				Δ=8,800 km
19 Nov '52		N,Z		Seismic activity recognizable between 18:55:- and 19:15:-
20 Nov '52		Z		Seismic activity observed from 04:03:- to 04:19:-
20 Nov '52		Z		Seismic activity observed from 13:50:- to 14:00:-

20 Nov '52	iP	N,Z	15:43:24	Epicenter: 12.5°N, 88°W
	epP	Z	15:43:36	O=15:37:17
	esP	Z	15:43:50	Depth=60 km
	ePP	N,Z	15:44:16	Off Coast of Nicaragua
	e	Z	15:44:26	Courtesy U.S.C.G.S.
	i	N	15:44:34	Δ=3,300 km
	ePcP	Z	15:46:28	
	iS	N	15:48:16	
	esS	N	15:48:43	
	i	N	15:49:24	
	iScP	N	15:49:49	
22 Nov '52	ePP	Z	07:54:44	Epicenter: 35.8°N, 121.1°W O=07:46:37 Δ=3,850 km San Luis Obispo County, California Courtesy U.S.C.G.S.
26 Nov '52	iP	Z	13:36:56	Epicenter: 53°N, 160°E
	i	Z	13:37:04	O=13:25:18
	i	Z	13:37:15	Δ=8,300 km Near East Coast of Kamchatka.
29 Nov '52	iP	N,Z	08:34:22	Epicenter: 53°N, 160°E
	ePP	N	08:37:14	O=08:22:34
	ePPP	E	08:39:04	Near East Coast of Kamchatka.
	eS	N,E	08:43:51	Courtesy U.S.C.G.S. Δ=8,400 km
29 Nov '52	eP	Z	23:55:24	Epicenter: 56°N, 155°W
	i	Z	23:55:52	O=23:46:25
	i	Z	23:56:11	Off South Coast of Alaska Peninsula
	e	Z	23:56:22	Courtesy U.S.C.G.S.
	iPP	Z	23:57:24	Δ=5,600 km
	eS	N,E	00:02:27	
	eScS	N	00:05:11	
30 Nov '52	iP	Z	19:40:30	Epicenter: 52.5°N,159°E
	eS	N,E	19:50:00	O=19:28:44 Near East Coast of Kamchatka. Courtesy U.S.C.G.S. Δ=8,400 km
1 Dec '52		E		Weak seismic activity observed from 00:59:- to 01:18:-

2 Dec '52		E		Seismic activity observed from 09:17:- to 09:37:-
3 Dec '52		E		Seismic activity observed from 01:03:- to 01:25:-
4 Dec '52	iP	Z	04:02:22	Epicenter: 52°N, 178°E
	isP	Z	04:03:02	0=03:51:25
	iPP	Z	04:04:45	Depth=about 100 km
	eS	N,E,Z	04:10:56	Δ=7,350 km
	esS	N,E	04:11:39	Rat Islands, Aleutian Islands. Courtesy U.S.C.G.S.
4 Dec '52		E		Seismic activity recognizable from 11:31:- to 12:07:-
5 Dec '52		E		Seismic activity recognizable at 07:19:-
6 Dec '52	eP'	Z	11:00:28	Epicenter: 8°S, 157°E
	iPP	Z	11:02:11	0=10:41:14
	e	Z	11:04:14	Solomon Islands
	e(SKS?)	N,E	11:07:19	Courtesy U.S.C.G.S.
	ePS	N,E	11:11:53	Δ=13,700 km
	e	E	11:14:08	
	i	N	11:14:10	
	iSS	N,E	11:18:47	
6 Dec '52		N,E		Seismic activity recognizable at 21:55:-
7 Dec '52	iP	Z	01:01:18	Epicenter: 53°N, 172.5°E
	iS	N,E	01:10:19	0=00:50:12 Near Islands, Aleutian Islands Courtesy U.S.C.G.S. Δ=7,600 km
7 Dec '52		E		Seismic activity observed from 17:12:- to 17:33:-
7 Dec '52		E		Seismic activity observed from 21:36:- to 21:53:-
8 Dec '52		E		Seismic activity observed from 16:13:- to 16:30:-

10 Dec '52	iP	N,Z	06:06:32	Epicenter: 71°N, 7°W
	i	Z	06:07:03	0=05:58:06
	i	Z	06:07:08	Δ=5,050 km
	ePP	Z	06:08:17	Jan Mayen Island
	i	Z	06:08:26	region
	ePPP (late)	N	06:09:11	Courtesy U.S.C.G.S.
	eS	E	06:13:02	
	i	N	06:13:32	
10 Dec '52		N,E		Seismic activity observed from 09:00:- to 09:18:-
11 Dec '52	iP	Z	09:10:21	Epicenter: 49°N, 155°E
	i	N	09:10:22	0=08:58:18
	i	Z	09:10:24	Depth = about 60 km
	e	Z	09:11:18	Δ=8,700 km
	iPP	N	09:13:24	Kurile Islands
	e	Z	09:13:39	Courtesy U.S.C.G.S.
	i	N	09:17:28	
	iS	N	09:20:06	
	i,e	N,E	09:20:13	
	e	N	09:22:34	
	i	N	09:25:56	
12 Dec '52		E		Seismic activity recognizable between 01:08:- and 01:48:-
14 Dec '52	i	Z	10:43:59	Epicenter: 19°N, 69°W
	e	Z	10:44:55	0=10:38:39
				Δ=2,500 km
				Courtesy U.S.C.G.S.
				Pulses on other records obscured by microseisms
17 Dec '52	iP	N,Z	23:15:49	Epicenter: 34.5°N, 24°E
	e	Z	23:17:15	0=23:03:58
	iS	N,E	23:25:27	Δ=8,400 km
	i	N	23:27:11	Near South Coast of
	eSS	N	23:30:18	Crete
				Courtesy U.S.C.G.S.
18 Dec '52	e(P?)	Z	09:32:01	Epicenter: 53.5°N, 162°E
				0=09:20:28
				Off East Coast of Kamchatka
				Courtesy U.S.C.G.S.
				(Δ=8,200 km?)

22 Dec '52	iP	Z	23:36:16	Epicenter: 54°N, 160.5°E
	eS	E	23:45:38	O=22:24:42
	e	E	23:46:16	Δ=8,100 km
				Near East Coast of Kamchatka
				Courtesy U.S.C.G.S.
24 Dec '52		E		Seismic activity recognizable at 09:45:-
24 Dec '52	iP	Z	18:58:41	Epicenter: 5.5°S, 151.5°E
	i	Z	19:01:20	O=18:39:33
	e(PS?)	E	19:10:03	Δ=13,650 km
				New Britain
				Courtesy U.S.C.G.S.
24 Dec '52		E		Seismic activity recognizable from 22:40:- to 23:15:-
25 Dec '52		E		Seismic activity recognizable at 03:30:-
25 Dec '52		E		Seismic activity recognizable at 23:20:-
27 Dec '52	iP	Z	01:37:34	Epicenter: 53°N, 160°E
	i	E	01:38:35	O=01:25:54
	eS	E	01:47:12	Near East Coast of Kamchatka
				Courtesy U.S.C.G.S.
				Δ=8,300 km
28 Dec '52	iP	Z	05:04:29	Epicenter: 65.5°N,167.5°W
	iSS	Z	05:15:36	O=04:55:06
				Δ=5,900 km
				Near West Coast of Seward Peninsula, Alaska
				Courtesy U.S.C.G.S.
28 Dec '52		E		Seismic activity recognizable from 16:05:- to 16:55:-
29 Dec '52	iP	Z	02:21:15	Epicenter: 49°N, 158°W
	i	Z	02:21:32	O=02:09:13
	i	Z	02:21:39	Off South Coast of Kamchatka
	eS	E	02:31:14	Courtesy U.S.C.G.S.
				Δ=8,700 km
30 Dec '52	iP	Z	12:13:25	Epicenter: 10.5°N, 84°W
	eS	E	12:18:32	O=12:07:02
	e	E	12:24:00	Δ=3,460 km
				Costa Rico
				Courtesy U.S.C.G.S.

We acknowledge with thanks receipt of the following bulletins and other publications between 11 July and 4 November 1953:

Bulletin	Date
Apia Observatory - Seis. Bull.	Apr.-June '53
Arkansas University - Seis. Bull. Vol. 2, Nos. 2-3	Apr.-Sept. '53
Bergen Seis. Bull.	1942-44
California University - Bulletin Seismic Station	
Vol. 21, Nos. 3-4	July-Dec. '51
Cartuja, Provisional Bulletin	June-July '53
Cheb. Preliminary Seis. Bull.	June '53
Cleveland, Seis. Bull.	Feb.-Mar. '52
	Feb.-Aug. '53
Coimbia Obsevacues Meteorologicas	'46, 47, 48
Columbia University, Seis. Bull.	June '52-May '53
Djakarta, Seis. Bull.	Jan.-Apr. '53
Dublin Seismological Observatory - Seis. Bull.	Apr.-June '53
Jesuit Seismological Association - Preliminary Bull.	Aug. '51
	July-Aug. '52
Kandilli Observatory - Seis. Bull. No. 80	Mar. '53
Kobenhavn, - Seis. Bull. - Nos. 58, 62	Dec. '48
	Jan.-Dec. '52
Manila, Seis. Bull.	Mar.-June '53
Melborne, Seis. Bull - Nos. 52/1-8/1; 53/5/1; 53/5/1;	
53/6/1; 53/7/1	
Mexico, Nacional Universidad, Instituto De Geofisica	June-Sept. '53
Observatory Helwan, Egypt	Apr.-May '53
Perth, Seis. Bull.	Jan.-Mar. '53
Praha, Seis. Bull.	May-July '53
Rome, Instituto Nazionale di Geofisica Seis. Bull.	May-June '53
Santa Clara (California), Seis. Bull.	Mar. '53
Santo Domingo University - Bull. Trimestral	Apr. '52-Mar. '53
Schweizerisches Erdbebenbulletin	May - Aug. '53
Skalnate Pleso - Preliminary Seis. Bull.	June '53
Strasbourg, Institute of Physics of the Earth Bull.	May-Aug. '53
Annales, Physics of the Earth	1947-48
Bureau Central Seismologique, Bull.	Feb.-June '53
Bulletin Mensuel	Dec. '52
	Jan.-Apr. '53
Tananarive, Seis. Bull.	1952
U.S. Coast and Geodetic Survey	
Preliminary determination of epicenter	76-53 to 78-53
	81-53 to 141-53
	S25-53 to S42-53
Washington Seismological Observatory-Seis. Bull.	May-Aug. '52
Wellington Seismological Observatory-Prov. Bull.	Dec. '52
	Feb.-Mar. '53
Seismological Report	July-Sept '50
West Virginia University - Seismograph Report	Jan.-June '53