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PITTSBURGH, PENNSYLVANIA

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STATION CONSTANTS AND INSTRUMENTS

Latitude—40° 26.7′ North.

Longitude—79° 57.2′ West.

Lithological foundation—Birmingham Shale—Pennsylvania age.

Elevation—273 meters above sea level.

Instruments

Two Wenner horizontal seismographs (Orientation N 30° W and N 60° E)

One Benioff vertical seismograph (long-period recording only)

(The above instruments operate with photographic recording.)

Time Service and Control

Time marks are given by two Observatory master clocks. One is a special astronomical type (used as stand-by), while the other is a Frodsham astronomical clock (used for routine work).

Time signals are recorded automatically (or manually, depending on weather conditions) several times daily. These signals are transmitted from Washington, D. C. via Stations NSS and WWV, and from Ottawa via Station CHU.

The average clock drift is one-half second per day.

Instrument Constants

Magnification curves for the Wenner seismographs were given in No. 1 of this Bulletin. The magnification curve for the Benioff is not yet completed. The "nominal" magnification for this instrument is approximately 24,000.

New Instrument Vault

A new instrument vault has been built in the Cathedral of Learning to house the mechanically recording pendula. Included in this vault will be an interferometer-type tiltmeter and a well-gage recorder.

Visual Recorder

A visual recorder for adaptation to the Wenner seismometer is under development at the time of publication of this Bulletin.

MICROSEISMIC ACTIVITY

These data have been evaluated according to the following scale:

HORIZONTAL AMPLITUDE	DESIGNATION
Less than 2 microns	Below normal
Between 2 and 3 microns	Normal
More than 3 microns	Above normal

	DATE	EVALUATION
January	1 – 4	Considerably above normal
	4 – 17	Above normal
	17 – 18	Slightly above normal
	18 – 24	Above normal
	24 – 26	Considerably above normal
	26 – 31	Above normal
February	1 – 7	Above normal
	7 – 8	Slightly above normal
	8 – 10	Above normal
	10 – 11	Considerably above normal
	11 – 15	Above normal
	15 – 18	Considerably above normal
	18 – 21	Above normal
	21 – 22	Slightly above normal
	22 – 25	Above normal
	25 – 27	Slightly above normal
	27 – 29	Above normal
March	1 – 7	Above normal
	7 – 9	Considerably above normal
	9 – 10	Above normal
	10 – 11	Considerably above normal
	11 – 14	Above normal
	14 – 16	Normal
	16 – 25	Slightly above normal
	25 – 26	Above normal
	26 – 27	Considerably above
	27 – 30	Above normal
	30 – 31	Slightly above normal

	DATE	EVALUATION
April	1 – 4	Slightly above normal
	4 – 6	Above normal
	6 – 13	Slightly above normal
	13 – 18	Normal
	18 – 20	Slightly above normal
	20 – 21	Normal
	21 – 25	Below normal
	25 – 26	Normal
	26 – 29	Above normal
	29 – 30	Normal
May	1 – 3	Slightly above normal
	3 – 10	Normal
	10 – 11	Slightly above normal
	11 – 15	Normal
	15 – 19	Slightly above normal
	19 – 20	Normal
	20 – 31	Below normal
June	1 – 4	Slightly below normal
	4 – 7	Normal
	7 – 12	Above normal
	12 – 13	Normal
	13 – 19	Below normal
	19 – 21	Above normal
	21 – 26	Normal
	26 – 27	Above normal
	27 – 30	Below normal
July	1 – 5	Below normal
	5 – 9	Normal
	9 – 15	Below normal
	15 – 17	Normal
	17 – 30	Below normal
August	1 – 18	Below normal
	18 – 19	Normal
	19 – 20	Slightly above normal
	20 – 21	Normal
	21 – 25	Below normal
	25 – 31	Normal

DATE		EVALUATION
September	8 – 11	Below normal
	11 – 14	Normal
	14 – 22	Above normal
	22 – 24	Considerably above normal
	24 – 29	Above normal
	29 – 30	Normal
October	1 – 4	Slightly below normal
	4 – 6	Normal
	6 – 8	Slightly above normal
	8 – 11	Above normal
	11 – 12	Slightly above normal
	12 – 14	Above normal
	14 – 18	Normal
	18 – 20	Above normal
	20 – 23	Normal
	23 – 27	Above normal
	27 – 31	Normal
November	1 – 2	Slightly above normal
	2 – 4	Considerably above normal
	4 – 6	Above normal
	6 – 9	Slightly above normal
	9 – 12	Above normal
	12 – 13	Slightly above normal
	13 – 15	Considerably above normal
	15 – 17	Above normal
	17 – 21	Slightly above normal
	21 – 23	Considerably above normal
	23 – 30	Above normal
December	1 – 5	Above normal
	5 – 8	Slightly above normal
	8 – 9	Above normal
	9 – 11	Considerably above normal
	11 – 18	Above normal
	18 – 22	Considerably above normal
	22 – 23	Above normal
	23 – 31	Station closed for adjustment and repair

SECTION ON SEISMIC DATA

Earthquakes for which preliminary phases have been identified or for which preliminary epicenters have been worked out, are numbered in the left-hand column as of No. 1, September 8, 1939. It was on this date that our new station was placed in operation.

	GNWCH DATE	COMPNT.	PHASE	GMT	
287	Jan. 6	Z	iZ	17-29-22	Δ(S-P) = 29.2° = 3,245 km
					H = 17-23-17
		H	iPPP	17-30-25	U.S.C.G.S. gives
		H	iS	17-34-22	H = 17h 23.4m (GCT)
		H	iSS	17-35-54	Lat. 16.5° North
					Long. 98° West
	Jan. 16	Seismic activity centering about 11h 30m (GCT)			
288	Jan. 17	H	e	07-09-30	U.S.C.G.S. gives
		H	e	07-10-30	H = 7h 11.3m (GCT)
					Lat. 15° North
					Long. 147° East
	Jan. 24	Seismic activity centering about 18h 20m (GCT)			
		Phases indiscernible due to strong microseisms			
					U.S.C.G.S. gives
					H = 17h 46.6m (GCT)
					Lat. 10.° North
					Long. 122° East
	Jan. 27	H	i	12-21-39	
		H	i	12-23-21	
		H	i	12-27-27	
	Feb. 4	H	i	01-42-59	
	Feb. 6	Z	i	21-35-26	
		Z	i	21-35-39	
289	Feb. 9	Z	iP	13-10-23	Δ (S-P) = 78.4° = 8710 km
		H	iPPP?	13-15-13	H=12-58-25 (GCT)
		H	iS	13-20-22	U.S.C.G.S. gives
					H = 12h 58.4m (GCT)
					Lat. 37° North
					Long. 26° East
	Feb. 11	Seismic activity centering about 16h 20m (GCT)			
					U.S.C.G.S. gives
					H = 15h 41.9 m (GCT)
					Lat. 64° North
					Long. 147° West
	Feb. 14	Seismic activity centering about 22h 28m (GCT)			

	GNWCH DATE	COMPNT.	PHASE	GMT	
290	Feb. 18	Z	iP	20-39-15	Δ (S-P) = 43.4° = 4280 km
		H	eS	20-45-50	H = 20-31-12
		H	iS	20-45-53	U.S.C.G.S. gives
					H = 20h 29.8 m (GCT)
					Lat. 82° North
					Long. 43° East
	Feb. 28	H	e	02-13-51	U.S.C.G.S. gives
					H = 2h 58.1m (GCT)
					Lat. 53 1/2° North
					Long. 133° West
	Mar. 3	H	i	09-29-58	
		H	i	09-35-40	
	Mar. 9	Seismic activity centering about 19h 30m (GCT)			
					U.S.C.G.S. gives
					H = 18h 48.0m (GCT)
					Lat. 3.° South
					Long. 147° East
	Mar. 13	Z	i	20-24-31	U.S.C.G.S. gives
		Z	i	20-25-05	H = 20h 02.5m (GCT)
		H	i	20-30-55	Lat. 1° North
					Long. 126° East
	Mar. 22	Seismic activity centering about 22h 10m (GCT)			
					U.S.C.G.S. gives
					H = 21h 34.5m (GCT)
					Lat. 11 1/2° North
					Long. 86 1/2° West
	Mar. 23	Seismic activity centering about 18h 55m (GCT)			
	Mar. 24	Z	iP	05-39-14	U.S.C.G.S. gives
			i	11-05-38	H = 5h 19.5m (GCT)
					Lat. 6° South
					Long. 104° East
291	Apr. 17	H	eP	16-25-20	Δ(S-P) = 101.7° = 11,300 km
		H	iPP	16-29-26	H = 16-11-26 (GCT)
		H	i	16-33-19	U.S.C.G.S. gives
		H	iS	16-36-54	H = 16h 11.5m (GCT)
		H	iPS	16-38-20	Lat. 33° North
					Long. 135.5° East

	GNWCH DATE	COMPNT.	PHASE	GMT	
	Apr. 18	Seismic activity centering about 12h 45m (GCT)			
					U.S.C.G.S. gives
					H = 12h 19.8m (GCT)
					Lat. 3° South
					Long. 137° East
292	Apr. 21	H	eP	20-27-11	Δ (S-P) = 23.3° = 2,590 km
		H	iS	20-31-24	H = 20-22-03 (GCT)
					U.S.C.G.S. gives
					H = 20h 22.0m (GCT)
					Lat. 19° North
					Long. 69.5° West
		Z	iP	21-04-41	
293	Apr. 22	Z	iP	00-33-26	Δ(S-P) = 23.1° = 2,565 km
		H	iS	00-37-37	H = 00-28-20 (GCT)
					(Aftershock)
294	Apr. 22	H	i	11-03-47	
		H	eP	13-14-05	Δ(S-P) = 23.1° = 2,565 km
		H	iS	13-18-16	H = 13-08-59 (GCT)
					(Aftershock)
295	Apr. 23	Z	iP	11-55-23	Δ (S-P) = 23.1° = 2565 km
		H	iS	11-59-34	H = 11-50-17 (GCT)
					(Aftershock)
	Apr. 28	Z	iP	12-08-12	U.S.C.G.S. gives
		H	e	12-13-29	H = 12h 01.8m (GCT)
		H	i	12-18-25	Lat. 11° North
					Long. 63° West
	May 9	H	i	02-33-55	
296	May 11	Z	iP	09-05-31	Δ(S-P) = 56° = 6,220 km
		Z	i	09-05-47	H = 08-55-56
		H	iS	09-13-24	U.S.C.G.S. gives
					H = 08h 55.7m (GCT)
					Lat. 17° South
					Long. 71° West
	May 12	Seismic activity centering about 01h 50m (GCT)			

	GNWCH DATE	COMPNT.	PHASE	GMT	
297	May 14	Z	iP	22-40-17	Δ(S-P) = 51.8° = 5,755 km
		H	iS	22-48-33	H = 22-32-00
					U.S.C.G.S. gives
					H = 22h 31.7m (GCT)
					Lat. 54 1/2° North
					Long. 161° West
	May 17	Seismic activity centering about 18h 25m (GCT)			
	May 25	Seismic activity centering about 08h 10m (GCT)			
					U.S.C.G.S. gives
					H = 7h 11.3m (GCT)
					Lat. 30° North
					Long. 99 1/2° East
	June 15	H	e	12-02-34	U.S.C.G.S.
		H	i	12-09-57	H = 11h 48.7m (GCT)
					Lat. 33 1/2° North
					Long. 136° East
	June 18	Seismic activity centering about 01h 40m (GCT)			
298	June 27	Z	iP	12-53-33	Δ(S-P) = 24.9° = 2,765 km
		H	iS	12-58-00	H = 12-48-09
					U.S.C.G.S. gives
					H = 12h 48.3m (GCT)
					Lat. 17° North
					Long. 85° West
		Seismic activity centering about 22h 15m (GCT)			
299	June 28	Z	eP	07-27-13	Δ(Calc) = 97° = 10,780 km
		Z	i	07-31-08	H = 07-13-41
		H	iSKPKS	07-37-41	U.S.C.G.S. gives
		H	iPPS	07-40-29	H = 7h 13.5m (GCT)
					Lat. 36° North
					Long. 136 1/2° East
	June 29	H	i	10-53-08	
	June 30	Seismic activity centering about 13h 05m (GCT)			
	July 4	Seismic activity centering about 14h 50m (GCT)			
	July 7	Seismic activity centering about 07h 40m (GCT)			

	GNWCH DATE	COMPNT.	PHASE	GMT	
	July 8	NW	i	12-50-24	U.S.C.G.S. gives
					H = 12h 34.6m (GCT)
					Lat. 71° North
					Long. 6° West
	July 14	Seismic activity centering about 23h 40m (GCT)			
300	July 15	H	eP	11-09-20	Δ(S-P) = 36.5° = 4,055 km
		H	iPP	11-10-34	H = 11-02-13 U.S.C.G.S. gives
		H	iS	11-15-11	H = 11h 02.0m (GCT)
					Lat. 10° North
					Long. 104° West
	July 16	Seismic activity centering about 07h 40m (GCT)			
301	July 20	Z	iP	11-12-03	Δ(S-P) = 65.3° = 7,255 km
		H	i	11-12-23	H = 11-01-26
		H	iPP	11-14-31	U.S.C.G.S. gives
		H	iPPP	11-15-52	H = 11h 02.4m (GCT)
					Lat. 17° South
		H	iS	11-20-54	Long. 74 1/2° West
	July 22	Seismic activity centering about 20h 30m (GCT)			
302	July 24	Z	iP	06-15-09	Δ(S-P) = 78.8° = 8,755 km
		H	iS	06-25-10	H = 06-03-09
					U.S.C.G.S. gives
					H = 06h 03.2m (GCT)
					Lat. 35° North
					Long. 24° East
	Aug. 7	Seismic activity centering about 15h 50m (GCT)			
					U.S.C.G.S. gives
					H = 14h 40.2m (GCT)
					Lat. 34° North
					Long. 142° East
303	Aug. 11	Z	iP	10-41-51	Δ(S-P) = 26.1° = 2,900 km
		H	iPP	10-42-27	H = 10-36-15
		H	iS	10-46-27	U.S.C.G.S. gives
					H = 10h 36.2m (GCT)
					Lat. 17 1/2° North
					Long. 95 1/2° West

	GNWCH DATE	COMPNT.	PHASE	GMT	
	Aug. 19	H	i	14-05-52	U.S.C.G.S. gives
		H	i	14-06-30	H = 13h 50.8m (GCT)
		H	i	14-03-38	Lat. 62° North
					Long. 151° West
		Seismic activity centering about 20h 20m (GCT)			
304	Aug. 25	Z	iP	06-20-18	Δ(S-P) = 64.9° = 7,210 km
		H	iS	06-29-04	H = 06-09-30
					U.S.C.G.S. gives
					H = 06h 09m (GCT)
					Lat. 24° South
					Long. 63° West
	Sept. 8	H	e	15-23-35	U.S.C.G.S. gives
		H	i	15-34-05	H = 15h 09.2m (GCT)
		H	i	15-35-35	Lat. 21° South
		H	i	15-43-13	Long. 174° West
	Sept. 10	Z	i	14-01-39	U.S.C.G.S. gives
		H	e	14-11-38	H = 13h 48.5m (GCT)
		H	i	14-11-40	Lat. 44° North
					Long. 146 1/2° East
	Sept. 13	Seismic activity centering about 21h 30m (GCT)			
305	Oct. 1	Z	iP	11-39-50	Δ(S-P) = 29.8° = 2,055 km
		H	iS	11-44-55	H = 11-33-39
					U.S.C.G.S. gives
					H = 11h 33.1m (GCT)
					Lat. 17° North
					Long. 99° West
306	Oct. 5	Z	iP	20-25-27	Δ = 93.6° = 10,400 km
		H	iSKPS	20-35-53	H = 20h 12m 12s
		H	iPS	20-37-45	U.S.C.G.S. gives
					H = 20h 12.1m (GCT)
					Lat. 38° North
					Long. 58° East
	Oct. 15	Seismic activity centering about 23h 30m (GCT)			
	Oot. 21	Seismic activity centering about 06h 10m (GCT)			

	GNWCH DATE	COMPNT.	PHASE	GMT	
307	Nov. 19	Z	iP	01-10-48	Δ = 34°.1 = 3,790 km
		Z	iPP	01-11-51	H = 01h 04m 00s
		H	iSS	01-17-08	U.S.C.G.S. gives
					H = 01h 04.3m (GCT)
					Lat. 9° North
					Long. 84° West
	Nov. 22	Seismic activity centering about 09h 56m (GCT)			
308	Dec. 4	Z	eP	00-28-49	Δ(S-P) = 29.3° = 3,255 km
		H	iS	00-33-50	H = 00h 22m-43s
		H	iSS	00-35-19	U.S.C.G.S. gives
					H = 00h 22.8m (GCT)
					Lat. 21 1/2° North
					Long. 106 1/2° West
	Dec. 4	Z	iP	23-49-25	U.S.C.G.S. gives
					H = 23h 43m 15s (GCT)
					Lat. 33.9° North
					Long. 116.4° West
	Dec. 5	Seismic activity centering about 06h 36m (GCT)			
309	Dec. 23	Z	iP	08-52-15	Δ(S-P) = 68.4° = 7,600 km
		H	iS	09-01-21	H = 08h 41m 17s
					U.S.C.G.S. gives
					H = 08h 41.3m (GCT)
					Lat. 56° North
					Long. 166° East

Station closed from Dec. 24 - Dec. 31 for adjustment and repair.