SEISMOLOGICAL OBSERVATORY BULLETIN

UNIVERSITY OF PITTSBURGH

1947

PITTSBURGH, PENNSYLVANIA

Seismological Observatory Bulletin

University of Pittsburgh

VOLUME I
NO. 7

JANUARY - DECEMBER, 1947

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PITTSBURGH, PENNSYLVANIA

(This Bulletin is issued yearly)

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 – 17	Slightly above normal
	17 – 22	Above normal
	22 – 24	Slightly above normal
	24 – 30	Normal
	30 – 31	Slightly above normal
February	1 – 4	Normal
	4 – 14	Above normal
	14 – 20	Slightly above normal
	20 – 24	Considerably above normal
	24 – 28	Above normal
March	1 – 2	Above normal
	2 – 3	Considerably above normal
	3 – 8	Above normal
	8 – 9	Considerably above normal
	9 – 29	Above normal
	29 – 31	Considerably above normal
April	1 – 2	Above normal
	2 – 11	Slightly above normal
	11 – 17	Normal
	17 – 23	Slightly above normal
	23 – 24	Normal
	24 – 29	Slightly above normal
	29 – 30	Normal

	DATE	EVALUATION
May	1 – 3	Slightly above normal
	3 – 6	Normal
	6 – 8	Slightly below normal
	8 – 17	Normal
	17 – 20	Slightly below normal
	20 – 22	Above normal
	22 – 23	Slightly above normal
	23 – 29	Normal
	29 – 31	Slightly above normal
June	1 – 9	Normal
	9 – 19	Above normal
	19 – 24	Normal
	24 – 30	Slightly below normal
July	1 – 3	Below normal
	3 – 5	Slightly above normal
	5 – 6	Normal
	6 – 9	Below normal
	9 – 13	Normal
	13 – 15	Below normal
	15 – 16	Normal
	16 – 31	Below normal
August	1 – 6	Below normal
	6 – 7	Normal
	7 – 15	Below normal
	15 – 17	Normal
	17 – 19	Below normal
	19 – 21	Normal
	21 – 30	Below normal
	30 – 31	Normal

	DATE	EVALUATION
September	1 – 4	Above normal
	4 – 7	Normal
	7 – 12	Below normal
	12 – 17	Normal
	17 – 22	Slightly above normal
	22 – 24	Above normal
	24 – 26	Considerably above normal
	26 – 27	Above normal
	27 – 30	Slightly above normal
October	1 – 4	Above normal
	4 – 8	Normal
	8 – 15	Slightly above normal
	15 – 16	Considably above normal
	16 – 17	Normal
	17 – 19	Above normal
	19 – 22	Normal
	22 – 25	Considerably above normal
	25 – 28	Slightly above normal
	28 – 31	Above normal
November	1 – 6	Slightly above normal
	6 – 9	Above normal
	9 – 10	Considerably above normal
	10 – 12	Above normal
	12 – 20	Considerably above normal
	20 – 23	Above normal
	23 – 24	Slightly above normal
	24 – 28	Above normal
	28 – 30	Slightly above normal
December	1 – 2	Slightly above normal
	2 – 4	Normal
	4 – 6	Slightly above normal
	6 – 7	Above normal
	7 – 8	Considerably above normal
	8 – 31	Above normal

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	
	Jan. 3	Z	e	02-29-41	U.S.C.G.S. gives H = 2h
		Z	i	02-29-43	17.1m (GMT)
		Z	i	02-33-06	Lat. 44° North
		NW	e	02-40-06	Long. 144° East
					Δ = 9750 km
	Jan. 15	Seismic activity centering about 18h 45m (GMT)			
					U.S.C.G.S. gives
					H = 18h 28.0m (GMT)
					Lat. 27° North
					Long. 111° West
		Seismic activity centering about 18h 50m (GMT)			
263	Jan. 25	Z	iP	03-58-33	Δ(S-P) = 31.3° = 3,480 km
		H	iS	04-03-48	H = 03-52-09 (GMT)
					U.S.C.G.S. gives
					H = 3h 52.6m (GMT)
					Lat. 13.° North
					Long. 88° West
264	Jan. 26	Z	iP	10-12-33	Δ (S-P) = 26.3° = 2920 km
		Z	i	10-12-36	H=10-06-55 (GMT)
		Z	iPP	10-13-10	U.S.C.G.S. gives
		H	iS	10-17-11	Lat. 13° North
		H	iSS	10-18-21	Long. 86.5° South
265	Jan. 29	Z	iP	08-27-51	Δ (S-P) = 59.8° = 6645 km
		Z	i	08-28-11	H = 08-17-50 (GMT)
		H	iS	08-36-09	U.S.C.G.S. gives
					H = 8h 17.8m (GMT)
					Lat. 27° South
					Long. 63° West
	Feb. 2	Seismic activity centering about 04h 30m (GMT)			
	Feb. 7	Seismic activity centering about 10h 46m (GMT)			
	Mar. 2	Seismic activity centering about 19h 50m (GMT)			
	Mar. 14	Station inoperative (motor failure)			

	GNWCH DATE	COMPNT.	PHASE	GMT	
266	Apr. 2	Z	iP	05-58-28	Δ = 130° = 14,445 km
		H	iPP	06-00-21	H = 05-39-17 (GMT)
		H	iSKP	06-01-21	
		H	iSKS	06-05-26	
		H	iSKKS	06-07-22	
		H	iPS	06-10-10	
		H	iPPS	06-11-26	
		H	iSS	06-16-08	
		H	L	06-38-18	
267	Apr. 10	Z	iP	16-04-03	Δ(S-P) = 29.8° = 3,310 km
		H	iS	16-09-07	H = 15-57-52 (GMT)
		H	L	16-15-13	U.S.C.G.S. gives
					H = 15h-58m 04s (GMT)
					Lat. 35° North
					Long 116.4° West
268	Apr. 14	Z	iP	07-28-09	Δ (S-P) = 84.7° = 9,410 km
		Z	i	07-28-14	H = 07-15-38 (GMT)
		Z	i	07-28-19	U.S.C.G.S. gives
		H	eS	07-38-38	H = 7h 15.5m (GMT)
		H	i	07-38-44	Lat. 45.0° North
					Long. 146.5° East
269	Apr. 24	Z	iP	19-43-59	Δ(S-P) = 48.2° = 5,355 km
		H	ePP	19-45-26	H = 19-35-20
		H	ePPP	19-46-39	U.S.C.G.S. gives
		H	iS	19-51-04	H = 19h 35.1m (GMT)
		H	eSS	19-53-46	Lat. 8° North
					Long. 37.5° West
	Apr. 27	Seismic activity centering about 8h 15m (GMT)			
	Apr. 30	Seismic activity centering about 5h 15m (GMT)			
	May 2	Seismic activity centering about 02h 40m (GMT)			
	May 6	Z	i	20-50-08	
		H	e	20-51-54	
		H	i	21-01-59	
		H	e	21-04-37	

	GNWCH DATE	COMPNT.	PHASE	GMT	
	May 17	Seismic activity centering about 08h 30m (GMT)			
	May 26	Seismic activity centering about 20h 15m (GMT)			
	May 28	Z	e	06-17-41	U.S.C.G.S. gives
		H	e	06-20-21	H = 5h 59.2m (GMT)
		H	i	06-20-41	Lat. 2° South
		H	e	06-32-25	Long. 141° East
	June 5	H	iP	23-04-06	U.S.C.G.S. gives
					H = 22h 58.2m (GMT)
					Lat. 14° North
					Long. 90° West
		Seismic activity centering about 19h 30m (GMT)			
					U.S.C.G.S. gives
					H = 18h 47.9m (GMT)
					Lat. 11.° North
					Long. 127° East
270	June 12	Z	iP	09-21-36	Δ(S-P) = 132.3° = 14,700 km
		Z	i	09-21-46	H = 09-02-21 (GMT)
		Z	iPP	09-23-63	U.S.C.G.S. gives
		H	PKS	09-25-08	H = 9h 02.4m (GMT)
		H	e	09-34-05	Lat. 1° North
		H	iSS	09-41-30	Long. 127° East
	June 13	Z	e	20-40-36	U.S.C.G.S. gives
		H	e	20-43-33	H = 20h 24.7m (GMT)
		H	i	20-49-51	Lat. 19° North
		H	i	20-52-37	Long. 146° East
	June 14	Seismic activity centering about 00h 45m (GMT)			
	June 19	H	e	07-53-10	U.S.C.G.S. gives
		H	i	07-59-23	H = 7h 84.6m (GMT)
					Lat. 22° North
					Long. 146° East
	July 10	Z	e	10-55-32	U.S.C.G.S. gives
		H	i	11-05-38	H = 10h 48.8m (GMT)
					Lat. 73° North
					Long. 70° West

	GNWCH DATE	COMPNT.	PHASE	GMT	
	July 12	Z	eP	02-11-21	U.S.C.G.S.
		H	i	02-21-42	H = 1h 58.8m (GMT)
					Lat. 45° North
					Long. 149° East
		Seismic activity centering about 13h 05m (GMT)			
	July 17	Seismic activity centering about 15h 40m (GMT)			
	July 23	Seismic activity centering about 17h 45m (GMT)			
	July 24	H	e	12-36-52	U.S.C.G.S. gives
		H	i	12-39-19	H= 12h 16.9m (GMT)
		H	e	12-42-40	Lat. 18.5° South
		H	iL	22-26-48	Long. 170° East
	July 25	Seismic activity centering about 07h 40m (GMT)			
	July 28	Seismic activity centering about 14h 20m (GMT)			
	July 29	Seismic activity centering about 07h 36m (GMT)			
		(Phases indiscernible due to overlapping trace.)			
	Aug. 1	Seismic activity centering about 15h 40m (GMT)			
	Aug. 5	H	e	14-42-52	U.S.C.G.S. gives
		H	e	14-49-06	H = 14h 24.2 (GMT)
		H	e	14-52-14	Lat. 25° North
		H	e	14-58-56	Long. 62° East
271	Aug. 6	Z	iP	05-55-03	Δ(S-P) = 41.8° = 4,645 km
		H	e	05-56-13	H = 05-47-13 (GMT)
		H	e	05-56-51	U.S.C.G.S. gives
		H	i	06-00-10	H = 5h 46.9m (GMT)
		H	iS	06-01-28	Lat. 95° South
		H	e	06-03-47	Long. 72° West
272	Aug. 7	Z	iP	00-45-06	Δ(S-P) = 21.2° = 2,355 km
		Z	i	00-45-09	H = 00-40-19 (GMT)
		H	iS	00-49-00	U.S.C.G.S. gives
		H	e	22-20-49	H = 0h 40.3m (GMT)
					Lat. 19.8° North
					Long. 75.8° West
273	Aug. 8	H	eP	06-44-20	Δ(S-P) = 22.5° = 2,500 km
		H	eS	06-48-26	H = 06-39-20 (GMT)

	GNWCH DATE	COMPNT.	PHASE	GMT	
	Aug. 9	H	e	03-06-57	U.S.C.G.S. gives
					H = 2h 48.3m (GMT)
					Lat. 1° North
					Long. 28° West
	Aug. 18	H	e	06-25-07	
	Aug. 24	Seismic activity centering about 12h 30m (GMT)			
	Aug. 27	Seismic activity centering about 14h 40m (GMT)			
					U.S.C.G.S. gives
					H =13h 37.6m (GMT)
					Lat. 42° South
					Long. 179° East
274	Aug. 28	Z	iP	07-02-37	Δ(S-P) = 76.5° = 8,500 km
					H = 06-50-50 (GMT)
		H	iS	07-12-26	U.S.C.G.S. gives
		H	i	07-12-50	H = 6h 50.3m (GMT)
					Lat. 49° North
					Long. 155° East
275		Z	iP	14-41-06	Δ(S-P) = 72.4°= 8,045 km
		H	iS	14-50-34	H = 14-29-43 (GMT)
		H	iPS	14-50-55	U.S.C.G.S. gives
		H	eSS	14-55-33	H = 14h 29.4m (GMT)
					Lat. 52° North
					Long. 159° East
		Seismic activity centering about 20h 20m (GMT)			
216	Aug. 30	Z	iP	22-33-32	Δ (S-P) =76.0 =8,485 km
		H	iS	22-43-19	H = 22-21-48 (GMT)
	Sept. 3	Seismic activity centering about 19h 40m (GMT)			
					U.S.C.G.S. gives
					H = 18h 56.4m (GMT)
					Lat. 11° South
					Long. 162° East
277	Sept. 26	Seismic activity centering about 3h 55m (GMT)			
		H	iPP	16-21-08	Δ = 119°=13,220 km
		H	iSKS	16-26-53	H = 16-01-05 (GMT)
		H	iPS	16-30-16	
		H	iPPS	16-32-07	

	GNWCH DATE	COMPNT.	PHASE	GMT	
278	Oct. 3	Z	iP	23-38-11	Δ(S-P) = 29.6° = 3,290 km
		H	iPP	23-38-57	H = 23-32-02 (GMT)
		H	iPPP	23-40-02	U.S.C.G.S. gives
		H	iS	23-43-14	H = 23h 32.2 m (GMT)
		H	i	23-43-56	Lat. 19° North
		H	i	23-44-11	Long. 102° West
	Oct. 5	Z	i	19-02-47	U.S.C.G.S. gives
		H	e	19-03-48	H = 18h 41.0m (GMT)
					Lat. 3° South
					Long. 140° East
279	Oct. 6	Z	iP	20-24-07	Δ(S-P) = 73.9° = 8,210 km
		H	ePP	20-10-16	H = 20-55-52
		H	iS	20-17-00	U.S.C.G.S. gives
		H	eSS	20-21-56	H = 19h 55.6m (G.M.T.)
					Lat. 37° North
					Long. 21° East
280	Oct. 7	Z	iP	02-01-45	Δ(S-P) = 44.5° = 4,945 km
		H	iS	02-08-26	H = 01-53-34
		H	i	02-11-44	U.S.C.G.S. gives
					H = 1h 53.4m (GMT)
					Lat. 64.5° North
					Long. 146° West
281	Oct. 10	Z	iP	07-44-54	Δ(S-P) = 82°.6 = 9,180 km
		H	eS	07-55-12	H = 07-32-33
					U.S.C.G.S. gives
					H = 7h 32.8m (GMT)
					Lat. 40° North
					Long. 144° East
	Oct. 14	Seismic activity centering about 02h 30m (GMT)			
282	Oct. 16	Z	iP	02-18-00	Δ(S-P) = 43.1° = 4,790 km
		H	iPPP	02-20-09	H = 02-10-00
		H	iS	02-24-33	U.S.C.G.S. gives
		H	iSSS	02-28-19	H = 2h 09m 45S (GMT)
					Lat. 64.5° North
					Long. 148.8° West

	GNWCH DATE	COMPNT.	PHASE	GMT	
283	Oct. 20	Z	iP	01-51-38	Δ(S-P) = 43.2° = 4,800 km
		H	iPP	01-53-32	H = 01-43-37
		H	iS	01-58-12	U.S.C.G.S. gives
		H	iSS	02-01-02	(Aftershock of Oct. 16 quake)
284	Nov. 1	H	iP	15-07-59	Δ(S-P) = 50.8° = 5,645 km
		H	iS	15-15-20	H = 14-59-00
		H	iSSS	15-21-07	U.S.C.G.S. gives
					H = 14h 58.9m (GMT)
					Lat. 11° South
					Long. 75° West
285	Nov. 2	H	eP	07-07-22	Δ(S-P) = 35.3° = 3,920 km
		H	ePP	07-08-40	H = 07-00-45
		H	eS	07-13-05	U.S.C.G.S. gives
		H	e	07-16-26	H = 7h 00.3m (GMT)
					Lat. 40° North
					Long. 127° West
	Nov. 9	Seismic activity centering about 5h 50m (GMT)			
		Phases indiscernible due to strong microseisms			
					U.S.C.G.S. gives
					H = 4h 57.8m (GMT)
					Lat. 23° South
					Long. 171° East
	Nov. 12	Seismic activity centering about 2h 02m (GMT)			
					U.S.C.G.S. gives
					H = 1h 39.8m (GMT)
					2h 44.0m (GMT)
					Lat. 29° North
					Long. 114° West
	Nov. 20		i	08-32-07	U.S.C.G.S. gives
					H = 8h 19.3m (GMT)
					Lat. 47° North
					Long. 153° East

	GNWCH DATE	COMPNT.	PHASE	GMT	
	Nov. 21	Z	e	04-01-10	
		H	i	04-02-08	
		H	i	04-06-24	
		H	i	04-08-23	
		H	i	04-11-47	
286	Nov. 23	Z	iP	09-51-52	Δ(S-P) = 23.5° = 2,610 km
		Z	i	09-51-56	H = 09-46-09
		H	iS	09-56-07	U.S.C.G.S. gives
					H = 9h 46m 05.5S (GMT)
					Lat. 44° 47' North
					Long. 112° 02' West