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**SEISMOLOGICAL  
OBSERVATORY BULLETIN  
UNIVERSITY OF PITTSBURGH**

1959



**PITTSBURGH, PENNSYLVANIA**

# Seismological Observatory Bulletin

University of Pittsburgh

VOLUME 3

No. 1

JANUARY- DECEMBER, 1959

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(This Bulletin is issued yearly)

## STATION CONSTANTS AND INSTRUMENTS

Latitude—40° 26.7' North

Longitude—79° 46.2' West

Lithological foundation—Birmingham Shale—Pennsylvania Age.

Elevation—273 meters above sea level.

### Instruments

Two Wenner horizontal seismographs (Oriented 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.

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

### Instruments Constants

Magnification curves for the Wenner Seismographs were given in No. 1, Vol. 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 pedula. Included in this vault will be an interferometer-type tiltmeter and a well-gage recorder.

### Visual Recorder

A visual recorder, adapted to the Wenner Seismometer, is being used currently on an experimental basis.

## MICROSEISMS — 1959

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 — 13	Considerably above normal	
	13 — 16	Above normal	
	16 — 19	Considerably above normal	
	19 — 24	Above normal	
	24 — 29	Slightly above normal	
	29 — 31	Above normal	
	31 — February 1	Considerably above normal	
February	1 — 2	Considerably above normal	
	2 — 7	Above normal	
	7 — 9	Considerably above normal	
	9 — 11	Above normal	
	11 — 15	Slightly above normal	
	15 — 16	Above normal	
	16 — 18	Considerably above normal	
	18 — 26	Above normal	
	26 — March 1	Slightly above normal	
March	1 — 2	Above normal	
	3 — 5	Considerably above normal	
	5 — 10	Above normal	
	10 — 12	Slightly above normal	
	12 — 16	Above normal	
	16 — 23	Slightly above normal	
	23 — 25	Above normal	
	25 — 26	Slightly above normal	
	26 — 27	Above normal	
	27 — 30	Considerably above normal	
	30 — April 1	Above normal	
	April	1 — 2	Above normal
		2 — 11	Slightly above normal
11 — 12		Normal	
12 — 14		Slightly above normal	
14 — 16		Above normal	
16 — 18		Considerably above normal	
18 — 19		Above normal	
19 — 23		Slightly above normal	
23 — 28		Normal	
28 — May 1		Slightly above normal	

## MICROSEISMS — 1959

	DATE	EVALUATION
May	1 — 3	Normal
	3 — 5	Slightly below normal
	5 — 11	Normal
	11 — 12	Slightly above normal
	12 — 18	Normal
	18 — 21	Below normal
	21 — 23	Normal
	23 — 25	Slightly above normal
	25 — 28	Normal
	28 — 30	Slightly above normal
	30 — 31	Normal
June	1 — 4	Below normal
	4 — 9	Normal
	9 — 13	Below normal
	13 — 23	Normal
	23 — 30	Below normal
July	1 — 3	Below normal
	3 — 4	Normal
	4 — 6	Below normal
	6 — 9	Normal
	9 — 10	Below normal
	10 — 11	Normal
	11 — 24	Below normal
	24 — 25	Normal
	25 — 27	Below normal
	27 — 29	Normal
	29 — August 1	Below normal
August	1 — 2	Below normal
	2 — 7	Normal
	7 — 16	Below normal
	16 — 21	Normal
	21 — 23	Above normal
	23 — 24	Normal
	24 — September 1	
September	1 — 5	Normal
	5 — 8	Above normal
	8 — 11	Slightly above normal
	11 — 12	Above normal
	12 — 13	Normal
	13 — 14	Above normal
	14 — 16	Considerably above normal
	16 — 22	Above normal

	DATE	EVALUATION
	22 — 25	Normal
	25 — 28	Above normal
	28 — 39	Considerably above normal
	30 — October 1	Above normal
October	1 — 2	Above normal
	2 — 6	Slightly above normal
	6 — 8	Normal
	8 — 10	Above normal
	10 — 12	Slightly above normal
	12 — 19	Above normal
	19 — 22	Considerably above normal
	22 — 30	Above normal
	30 — November 1	
November	1 — 3	Slightly above normal
	3 — 4	Above normal
	4 — 9	Slightly above normal
	9 — 10	Normal
	10 — 11	Slightly above normal
	11 — 14	Normal
	14 — 15	Above normal
	15 — 22	Considerably above normal
	22 — 26	Above normal
	26 — 27	Considerably above normal
	27 — December 1	Above normal
December	1 — 4	Above normal
	4 — 6	Slightly above normal
	6 — 13	Above normal
	13 — 15	Considerably above normal
	15 — 17	Above normal
	17 — 21	Considerably above normal
	21 — 22	Above normal
	22 — January 1	Station closed for repairs

### 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.

## SEISMIC DATA

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GNWCH DATE	COMPNT.	PHASE	GMT	
Jan. 8	Z	i	01-39-55	C
	Z	i	01-46-20	
11	Z	iP?	07-28-10	C
22	Seismic activity centering about 06h 58m G.C.T.			
29	Z	i	23-33-38	D
30	Z	e	05-28-02?	
	Z	i?	22-29-19	
Feb.	Z	iP?	09-43-00	C
	Z	i	09-46-53	
Overlapping trace				
15	Seismic activity centering about 05h 50m G.C.T.			
Mar.	Seismic activity centering about 17h 05m G.C.T.			
10	Seismic activity centering about 22h 15m G.C.T.			
475	Z	iP	08-32-27	$\Delta(S-P) = 34.6^\circ = 3845\text{Km}$ H = 08-25-45?
	H	iS?	08-38-65	
23	H	i	07-22-50	
Apr.	Seismic activity centering about 17h 55m G.C.T.			
476	Z	iP	10-00-23	$\Delta(S-P) = 26.2^\circ = 2910\text{Km}$ H = 09-54-46
	Z	iPP	10-00-57	
	H	iS	10-04-00	
	H	iSS	10-06-07	
14	Seismic activity centering about 03h 17m G.C.T.			
20	Seismic activity centering about 04h 20m G.C.T.			
23	Z	e?	20-59-31	
	Z	i	21-00-14	
24	Seismic activity centering about 19h 02m G.C.T.			
26	H	e	20-59-43	
	H	i	22-07-23	
477	Z	eP?	11-15-20	$\Delta(S-P) = 29.8^\circ = 3310\text{Km}$ H = 11-09-09
	H	iPP	11-16-13	
	H	iS?	11-20-24	

GNWCH DATE	COMPNT.	PHASE	GMT	
May 4	H	eP?	07-27-13?	Record unreadable
5	Seismic activity centering about 19h 50m G.C.T.			
12	Seismic activity centering about 05h 32m G.C.T.			
	H	eP?	09-56-25	
	H	i	09-56-28	
	H	e	22-10-33	
	H	i	22-19-07	
14	H	e	06-33-02	
	H	i	06-58-46	
16	Seismic activity centering about 07h 20m G.C.T.			
21	Seismic activity centering about 12h 02m G.C.T.			
24	Z	i	00-15-23	D
	Z	e	00-19-29	
	Z	iP	19-23-15	C
	Z	iS?	19-27-57	
	Other phases not discernible			
31	Seismic activity centering about 05h 48m G.C.T.			
	Seismic activity centering about 10h 35m G.C.T.			
June	Seismic activity centering about 05h 30m G.C.T.			
4	Seismic activity centering about 13h 52m G.C.T.			
478	14	Z	iP	00-22-10 C $\Delta(S-P) = 58.8^\circ = 6535\text{Km}$
		Z	i	00-22-40 H = 00-12-15
		H	iS	00-30-21
	18	Z	e	16-42-05
		Z	e	16-10-03
	19	Seismic activity centering about 02h 10m G.C.T.		
		Seismic activity centering about 21h 24m G.C.T.		
	25	Seismic activity centering about 10h 16m G.C.T.		
	27	Z	e	19-23-10?
		H	i	19-29-48?
		H	i	19-31-07?
		H	i	19-34-10?
	28	Seismic activity centering about 08h 22m G.C.T.		

GNWCH DATE	COMPNT.	PHASE	GMT	
July	Seismic activity centering about 05h 49m G.C.T.			
	Seismic activity centering about 19h 02m G.C.T.			
6	Z	iP?	09-20-27	C
	H	i	09-22-34	
	H	i	09-28-43	
	Z	iP?	09-33-36	C
	H	i	09-41-53	
	Z	i	09-35-42	
9	Z	eP?	16-15-11	
	Z	i	16-16-01	
	H	i	16-23-43	
	H	i	16-24-28	
	H	i	16-26-07	
18	Seismic activity centering about 00h 12m G.C.T.			
	H	i	20-21-54	
19	Z	i	04-01-48	C
	Seismic activity centering about 16h 18m G.C.T.			
20	Z	iP?	02-59-48	
21	H	i	09-27-22	
	H	e	12-35-13	
	Seismic activity centering about 17h 56m G.C.T.			
22	Seismic activity centering about 05h 20m G.C.T.			
	H	iS?	19-35-06	
	Z	i?	19-37-19	
	H	e	19-43-00	
23	Seismic activity centering about 00h 10m G.C.T.			
24	H	e	01-29-56	
Aug. 4	Z	e	06-10-26?	
	Z	i	06-10-48	
	Z	i	06-12-29	
7	Seismic activity centering about 11h 25m G.C.T.			
	Seismic activity centering about 22h 20m G.C.T.			
8	Seismic activity centering about 01h 25m G.C.T.			
12	Seismic activity centering about 11h 40m G.C.T.			

GNWCH DATE	COMPNT.	PHASE	GMT	
Aug. 15	Z	e	09-16-43	
	NW	i	09-26-20	
16	Seismic activity centering about 01h 50m G.C.T.			
17	H	e	21-25-03	
	H	i	21-34-03	
18	H	iP	06-41-24	D
	Overlapping trace			
	Z	i	06-46-52	
	Z	i	08-01-24	D
	Z	i	08-46-54	C
479 19	Z	iP	05-09-16	C $\Delta(S-P) = 23.4^\circ = 2600\text{Km}$
	H	iS	04-13-30	H = 04-04-07?
25	Seismic activity centering about 23h 10m G.C.T.			
26	Seismic activity centering about 09h 15m G.C.T.			
29	Z	i	00-16-01	C
	H	e	17-16-04	
	H	e	17-26-26	
Sept. 1	H	e	10-55-30	
	H	i	10-59-30	
13	Seismic activity centering about 20h 06m G.C.T.			
14	Seismic activity centering about 09h 51m G.C.T.			
480 26	Z	iP	08-27-56?	$\Delta(S-P) = 34.1^\circ = 3790\text{Km}$
	H	iS	08-33-30	H = 08-21-07?
Seismic activity centering about 08h 55m G.C.T.				
27	Z	iP?	07-04-27	C
Nov. 8	H	i	14-18-38	
26	Z	i	07-55-49	C
	Z	i	07-56-02	C
	Z	e	23-28-53	
	Z	i	23-32-06	C
Dec. 1-22	Microseisms			
22 to 31	Station closed for repairs.			