

Geological Survey Office,
Department of Mines,
Union of South Africa.

SEISMOLOGICAL BULLETIN.

JAN 1961

The data herewith give the results from a network of seismographs intended particularly for the study of earthquakes occurring in or near South Africa. This bulletin, however, is prepared regularly and will be sent to interested organisations on request.

<u>Stations</u>	<u>Pretoria (Pret)</u>	<u>Grahamstown (Gram)</u>	<u>Pietermaritzburg (Piet)</u>	<u>Kimberley (Kim)</u>	<u>Windhoek (Wind)</u>
Lat:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long.:	28°11.4'E	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series)	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument:	Willmore S.P. vertical and horizontal	Benioff S.P. vertical with short and long period recorders.	Benioff S.P. vertical	Benioff S.P. vertical	Benioff S.P. vertical.
Seismo. Officer:	The Director	Professor of Physics	Professor of Physics	Rev. Br. T.N. Purcell	Officer in Charge.
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlen	Mr. M.J.R. Hoch	Rev. Br. A.E. Long	Mr. J.A. Meyer.
Institution:	Geological Survey Office	Rhodes University	Natal University	Christian Brothers College	Weather Office.

Notes: "Earth tremors" originating in the mining district of the Witwatersrand are recorded several times daily by the Pretoria station, and less frequently by others. These are not dealt with in this bulletin.

Data are occasionally reported herein by courtesy of the Union Observatory, Johannesburg, which operates a 200 kg. Wiechert Horizontal seismograph. This station is called J, and is at 26°10.9'S., 28°04.5'E., height 1806 metres.

All times given are G.M.T.

The supervision of this network and bulletin is at present in the hands of the undersigned, to whom all inquiries should be addressed.

Address:

Bernard Price Institute of Geophysical Research,
University of the Witwatersrand,
Johannesburg,
South Africa.

H.O. Oliver
H.O. Oliver.
Seismological Officer.

JANUARY, 1961.

Date	Station	Phase	G. M. T.		Arc (°) Distance	C/ R	Remarks.
			h.	m. s.			
1	Wind	eP	19 39 55		34°		USCGS H=19 33 20.1 Bouvet Is h = 91 km.
		i	44 16				
	Pret	i	43 35				
		i	44 40				
	Kim	i	44 22				
		i	46 35				
	Piet	i	46 44				
	Gram	(e)i	47 29				
1	Wind	iP	20 34 47		85	R	USCGS H = 20 22 14.6 49.5 S 125.5°E South of Australia h=59 km.
2	Kim	e	03 29 29				
2	Piet	iPKP	10 30 34		123	R	USCGS H = 10 11 57 12.4°S 166.4°E Santa Cruz Is. region h=161 km. Mag 6 $\frac{3}{4}$.
	Pret	iPKP	42		126		
	Wind	ePKP	48		137		
		i	31 03				
	Kim	iPKP	30(54)		128		
3	Pret	e	02 32 04				
3	Wind	iP	05 38 46		77	R	USCGS H = 05 26 54.8 44.7°S 76.6°W Off South Coast of Chile h=25 km. USCGS H = 08 10 40.4 1.1°N, 29.2°W Mid-Atlantic Ocean h=25 km.
3	Wind	eP	08 19 46		52		
3	Wind	(e)i	17 53 44			C	
	Kim	i	56(08)				
4	Pret	i	06 57 03				
4	Wind	e	15 39 13				
5	Gram	i	02 53 46				
5	Gram	i	14 26 09			C	
	Wind	i	12				
	Pret	i	13				
	Piet	i	19			R	
	Kim	i	(26)				
5	Wind	e	15 13 58				
5	Pret	ePKP	16 12 22		111		USCGS H = 15 53 56 4.1°S 143.0°E New Guinea Mag 7 h=108 km.
	Kim	iPKP	(22)		114		
	Wind	iPKP	43		122		
5	Kim	i	16 23(35)				
5	Kim	i	18 16(59)				
	Wind	i	17 00				
	Pret	i	17 00				
5	Wind	ePKP	18 33 44		129		USCGS H = 18 14 43 21.0°S, 169.1°E Loyalty Is Mag. 6 $\frac{3}{4}$
		i	48				
5	Pret	e	18 34(01)				
5	Pret	iPKP ₁	18 57 37		151		USCGS H = 18 37 48.3 51.3°N 176.6°W Andreanof Is. h=30 km.
	Wind	iPKP ₁	42		153	R	
	Kim	iPKP ₁	(50)		156		
6	Wind	iPKP ₂	06 41 25		153	R	USCGS H = 06 21 38.6 51.8°N 176.2°W Andreanof Is. h=48 km.
	Piet	iPKP ₁	28		154	R	
	Kim	iPKP ₁	(35)		156	C	
	Pret	iPKP ₁	52		151		
7	Pret	(e)i ₂	08 36 21				
7	Wind	eP	10 40 40		60		USCGS H = 10 30 58 35.9°N 27.0°E Dodecanese Is. h=127 km.
7	Piet	e	13 10 05				
		i	57				
7	Wind	e	13 14 28				
7	Pret	e	16 35 40				
		i	36 17				
7	Wind	iP	18 25 21		48		USCGS H = 18 16 51 57.2°S 25.3°W Sandwich Is. h=94 km.
	Piet	iP	30		49		
	Pre t	(e)iP	42		50		
8	Pret	e	12 44 00				
		i	45 01				

Jan. 1961 (Contd.)

Date	Station	Phase	G. M. T. h. m. s.	Are (°) Distance	c/ R	Remarks
8	Pret	e	14.50.34			
8	Pret	e	15.22.(09)			
		i	23.34			
	Wind	e	05			
8	Gram	i	15.34.41			
		i	35.11			
9	Wind	e	12.58.13			
10	Pret	e	14.41.11			
		i	44.35			
	Wind	e	41.34			
		i	35			
	Gram	i	39			
11	Kim	i	10.06.32			
11	Wind	ePKP ₁	12.18.09	152		USCGS. H=11.58.23.8. 52.3°N. 170.7°W. Fox Island. h=42Km.
		i	19.46			
	Kim	i	44			
	Pret	i	47			
	Piet	(e) i	52			
	Gram		(54)			
11	Gram	i	19.41.41			
	Kim	i	42			
12	Wind	e	11.57.36			
		i	58.16			
12	Wind	i	12.48.34			
12	Kim	iPKP ₁	14.33.20	155	R	USCGS. H=14.13.27.7. 57.4°N. 155.9°W. Alaska Peninsula h=40km.
13	Pret	e	16.36.57			
13	Kim	(e)iP	19.23.04	21	C	USCGS. H=19.18.44.7. 46.5°S, 34.1E. Near Prince Edward Is. h=60km.
	Pret	iP	28	23		
13	Pret	e	19.40.20			
14	Pret	e	23.49.36			
		i	50.(08)			
15	Wind	eP	08.31.47	79		USCGS. H=08.19.45.0 30.3°S. 70.5°W. Near coast of Northern Chile. h=25km.
	Kim	iP	32.20	82	C	
15	Wind	iPKP	17.03.39	130		USCGS. H=16.44.44.8. 20.4°S. 169.5°E. Loyalty Island region. h=182 km.
15	Pret	e	19.35.31			
16	Pret	ePKP	07.39.00	124		USCGS. H=07.20.18.6. 36.0N, 141.1E. Near east coast of Honshu. Mag. 7. h=131 km
	Wind	iPKP	24	131		
16	Kim	iPKP	12.31.20	128		USCGS. H=12.12.34.4. 36.2°N. 141.7°E. Honshu h=105km.
	Wind	ePKP	38	132		
	Pret	e	32.24			
16	Kim	i	14.59.11			
16	Kim	i	16.00.15		C	
	Wind	e	24			
16	Wind	e	17.18.40			
17	Wind	e	08.27.38			
19	Kim	i	17.41(12)			
20	Wind	i	17.28.52			
	Kim	i	29.01			
20	Kim	i	17.33.27			
20	Kim	i	18.39(37)			
		i	(48)			
			40(16)			
			(36)			
22	Kim	(e)iPKP03	03.43.03	126		USCGS. H=03.24.04.5. 11.9°S. 166.2°E. Santa Cruz Island region. Mag. 7. h=25km
23	Kim	i	14.42.56			
23	Kim	i	01.43(29)			
24	Kim	iPKP	07.43(35)	124		USCGS. H=07.25.03.5. 15.6°S. 167.6°E. New Hébrides Is. region. h=198 km.

JANUARY, 1961 cont'd.

DATE	STATION	PHASE	G. M. T.			ARC (°)	C/ R	REMARKS
			h.	m.	s.			
24	Wind	e	08.14.35					
	Kim	iP	(43)			83		USCGS. H=08.02.28.7. 61.1° S. 152.1° E. Antarctic Ocean, South of Australia. h= 125 km.
24	Wind	e	12.46(05)					
25	Wind	i	16.01.12					
25	Kim	iPKP	19.23(17)			138		USCGS. H=19.04.22.8, 49.8° N. 156.0° E. Kurile Is. h= 98 km.
26	Kim	iPPP	01.58(59)			83		USCGS. H=01.41.01.4.15.3° N. 93.7° E. Southern Burma h= 67km.
26	Wind	e	10.54.07					
26	Kim	i	14.09(18)					
26	Pret	e	15.06.03					
		i	28					
	Wind	e	07.28					
		i	09.14					
	Kim	i	08.42					
26	Kim	iPKP	19.07(28)			122		USCGS H=18.48.56.9. 20.7° S, 169.5° E. Loyalty Is. region. h=106 km.
27	Kim	iPKP	01.11.15			122		USCGS. H=00.52.15. 6.4° S. 154.7° E. Solomon Is. h= 23
27	Pret.	e(i)	18.37.50					
	Wind	e	42.07					
	Kim	(e) i	(11)					
	Piet	e	44(13)					
27	Pret	e(i)	19.45.06					
	Wind	e	47.22					
		i	51.02					
	Kim	e	48.26					
		i	49.58					
	Piet	e	49.13					
28	Kim	iP	03.37.44			94		USCGS. H=03.24.39.2, 13.6° S. 76.6° W. Near Coast of Peru. h=35km. Mag=5
28	Kim	iP	14.19.23			95		USCGS. H=14.06.21. 45.0° S. 105.8° W. South Pacific Ocean about 1000 miles south of Easter Is. h= 144 km.
29	Pret	i	13.42.40					
	Wind	(e)iPKP ₁	43.31			152		USCGS. H=13.23.54.7 51.8° N. 175.9° W. Andreanof Is. h=41 km.
	Kim	iPKP ₁	48			155		
30	Kim	iPKP ₁	12.32.10			147		USCGS. H=12.12.39.7. 65.2° N. 149.9° W. Central Alaska. Mag 5½ h=34km.
31	Wind	iPKP ₁	01.08.17			149	R	USCGS. H=00.48.36.5. 55.8° N. 153.9° W. Near Kodiak Is., Alaska. h=26km Mag 6½
	Pret	iPKP ₁	27			152		
	Kim	iPKP ₁	32			155		
31	Kim	iPKP ₁	18.51.46			155	R	USCGS. H=18.32.19.5
	Wind	iPKP ₁	52.05			152	R	51.4° N. 178.4° W.
	Piet	iPKP ₁	08			153	R	Andreanof Is. h=53km.
31	Piet	i	22.39.37					
		i	40.01					

A. A. ATTRIDGE.

20.4.1961.

Kew

FEB 1961

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Geological Survey Office,
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Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
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**REW
OBSERVATORY**
-7 JUN 1961
RICE
SUN

H.O. Oliver

H.O. Oliver.
Seismological Officer.

FEBRUARY, 1961.						- 336 -			
Date	Station	Phase	G. M. T. h. m. s.	Arc (°) Distance	C/ R	Remarks			
1	Pret	i	15 11 11						
2	Piet	e	14 36 33						
3	Pret	i	07 48 37						
	Wind	e	07 49 20						
3	Kim	iP	14 47 11	75	C	USCGS H= 14.25.42 34.4°S 9°W Jujuy province, Argentine h=181 km.			
4	Kim	i	01 25 42		C				
	Pret	e	49						
4	Pret	i	09 03 56						
	Piet	i	59						
	Wind	i	04 22		R				
	Gram	i	22		C				
4	Pret	i	09 13 58						
4	Wind	e	15 29 02						
	Wind	i	36 25		R				
	Gram	i	31 43						
	Kim	i	36 35		R				
4	Kim	iS	18 35 05						
		iS	18						
5	Pret	e	01 07 08						
	Pret	i	35						
6	Kim	e	01 02 59						
	Kim	i	10 25						
	Wind	e	09 38						
	Wind	i	12 03						
6	Wind	eP	10 41 58	78		USCGS H= 10.30.07 11.2°S 68.6°W Chile-Bolivia Border L=181 km.			
6	Wind	iPKP ₁	12 32 12	152	R	USCGS H= 12.12.26 51.6°N 174.8°W			
	Pret	ePKP ₂	41	151°		Andreanof Is. h=77km Mag 5½			
6	Wind	ePKP	18 34 33	136		USCGS H= 18.15.22. 44.8°N, 149.1°E. Kurile Is. h=25km.			
6	Wind	i	19 50 42		C				
6	Wind	e	22 03 46						
	Wind	i	04 21						
	Gram	i	00 56		C				
	Pret	(e)i	04 01						
7	Pret	i	03 06 22						
7	Gram	(e)i	05 24 42						
7	Kim	i	05 38 (14)						
7	Wind	e	15 06 26						
	Kim	i	(41)						
7	Wind	i	23 00 03		C				
7	Pret	ePKP ₁	23 47 00	150		USCGS H= 23.27.11 51.4°N., 177.2°W			
	Kim	iPKP ₁	(07)	154	R	Andreanof Is. h=15km.			
8	Wind	e	02 48 56						
		i	49 00						
8	Pret	ePKP	02 55 23	124°		USCGS H= 02.36.41 15.3°S, 167.5°E			
	Kim	iPKP	(23)	123°	R	New Hebrides Is. region. h=162km.			
8	Wind	i	02 05 43						
		e	07 49						
		i	56						
8	Kim	iP	08 16 10	90°	C	USCGS H= 08.04.14 19.6°S 71.0W Brazil-Peru border h=669 km. Mag 5¾			

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FEBRUARY, 1961 (cont'd)

Date	Station	Phase	G. h.	M. m.	T. s.	Arc(°) Distance	G/ R	Remarks
9	Kim	iPKP	02	26	(59)	120	R	USCGS H= 02.08.16 28.2°S, 177.4°W.
9	Pret Wind	iPKP eP		27	11	121		Kermadec Is. Mag 6 $\frac{3}{4}$
			13	26	36	77		USCGS H= 13.14.46. 38.9°S, 72.6°W. Near Coast of Chile. h=25km.
9	Pret	e	14	12	(37)			
		iS		13	45			
9	Wind	(e)i	14	17	22			
10	Wind	e	18	27	26			
11	Wind	i	06	23	25		R	
		i		24	34		C	
11	Wind	iP	11	39	29	75	R	USCGS H= 11.27.59. 23.3°S, 65.9°W
	Prot	eP		40	00	83		Jujuy Prov, Argentine. h=195 km.
	Pret	i			13			
11	Piet	iPKP	21	19	25	118	C	USCGS H=21-01-06.4. 28.2°S, 177.5°W.
	Gram	iPKP			45	117	R	Kermadec Is.
	Kim	iPKP			(49)	120	R	h=41 km.
	Pret.	iPKP			58	121		Mag 6 $\frac{3}{4}$
	Wind	iPKP	21	20	11	128	C	
11	Kim	iP	22	56	(00)	80	C	USCGS H=22.44.05 24.2°S, 66.6°W
								Salta Province, Argentine. h=176km.
12	Kim	i	12	19	35		C	
12	Kim	iPP	13	17	26	127		USCGS H= 12.57.15 13.1°S
								171.8°E
	Wind	iPP		18	12	136°		New Hebrides Is. region. h=598 km.
12	Piet	e	22	12	15		C	
	Piet	i			21			
	Pret	i			52			
	Kim	i			58		C	
	Wind	e		13	02			
12	Kim	(e) i	23	45	55			
13	Pret	(e) i	05	55	59			
13	Kim	i	16	46	38			
13	Kim	iPKP	18	09	41	133°	R	USCGS H= 1750.17 44.1°N. 147.4°E
								Kurile Is. h=42 km.
14	Kim	(e)iP	05	56	15	77°	C	USCGS H= 05.44.24 42.3°S, 73.1°W
								Near Coast of South Chile h=58 km.
15	Pret	i	11	04	22			
	Piet	i			23			
	Kim	(e)i			27			
15	Piet	iP	11	40	27	82		USCGS H=11.28.55 30.8°N. 84.4°E
								Tibet h=66 km.
15	Pret	iP	12	57	35.9	200km		Local South African Earthquake.
		iS			55.9	from stn.		
16	Pret	i	02	38	42			
16	Kim	i	17	35	21		R	
17	Pret	iP	12	43	53	260 km		Local South African Earthquake .
		iS		44	19	from stn.		
18	Kim	(e)i	09	25	27		C	
18	Kim	ePKP	12	24	31	120		USCGS H= 12.05.36 22.6°S, 171.3°E
								Loyalty Is. region. h=38 km.
18	Wind	eP	17	09	33	38		USCGS H=17.02.10 1.3°S, 15.7°W.
	Kim	iP		10	46	47		Atlantic Ocean, North of Ascension Is. h= 25 km.
19	Wind	ePKP ₂	12	30	54	147		USCGS H= 12.11.16. 56.1°N, 153.5°W.
								Kodiak Is. h=39 km.
19	Pret	eP	12	41	51	41		USCGS H = 1233.42 14.1°S, 13.9°W
								South Atlantic Ocean. h=100 km.
19	Wind	i	13	28	23		R	
20	Wind	e	14	39	51			
20	Wind	i	18	37	13			
	kim	i			30			
	Pret	(e)i			52			
20	Pret	i	18	47	54			
21	Pret	iP	03	12	15	62		USCGS H=30.01.55 36.5°N, 23.3°E
								Near South Coast of Greece h=49 km

FEBRUARY 1961

Date	Station	Phase	G. M. T.			Arc (°) Distance	C/ R	Remarks
			h.	m.	s.			
22	Pret	e	00	37	11			
22	Kim	iPKP	22	12	18	120		USCGS H= 21.53.35 28.4°S, 177.2° W Kermadec Is. region h= 78 km. Mag 5 $\frac{3}{4}$
22	Wind	i	22	13	35			
25	Kim	i	11	35	52			
		i		36	07			
26	Pret	i	18	02	28			
26	Kim	iPKP	18	29	34	118	C	USCGS H= 18.10.49 31.4°N 131.2°E Near Coast of Kyushu, Japan. h=54 km. Mag 7 $\frac{1}{4}$.
	Gram	ePP	30	31	119			
27	Wind	iP	10	41	36	76		
	Kim	iP			45	78	C	USCGS H= 10.29.48 38.7°S. 72.4°W South Chile. h=57 km.
	Pret	eP			58	82 ^c		
27	Wind	e	11	43	12			
27	Wind	ePKF ₁	13	26	22	152		USCGS H= 13.06.36 52.5°N, 168.8° W. Fox Is. h=56 km.
	Kim	(e)iPKP ₁			31	155		
27	Wind	i	21	50	06			
28	Wind	iP	21	30	07	75		USCGS H=21.18.11 24.1°S 66.6° W. Salta Province, Argentine. h=30 km.
	Pret	eP	31	(27)	83			

A.A. ATTRIDGE

21.5.1961

Johannesburg.

KEW 39

MAR 1961

Geological Survey Office,
Department of Mines,
Union of South Africa.

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Long.:	28° 11.4'E	26° 34.5'E.	30° 23.8'E.	24° 46.8'E.	17° 06'E.
Lithologic foundation:	Weathered Shale (Pretoria series)	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument:	Willmore S.P. vertical and horizontal	Benioff S.P. vertical with short and long period recorders.	Benioff S.P. vertical	Benioff S.P. vertical	Benioff S.P. vertical.
Seismo. Officer:	The Director	Professor of Physics	Professor of Physics	Rev. Br. T.N. Purcell	Officer in Charge.
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlen	Mr. M.J.R. Hoch	Rev. Br. A.E. Long.	Mr. J.A. Meyer.
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Data are occasionally reported herein by courtesy of the Union Observatory, Johannesburg, which operates a 200 kg. Wiechert Horizontal seismograph. This station is called J, and is at 26° 10.9'S., 28° 04.5'E., height 1806 metres.

All times given are G.M.T.

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Address:

Bernard Price Institute of Geophysical Research,
University of the Witwatersrand,
Johannesburg.
South Africa.

**KEW
OBSERVATORY
- 1 AUG 1961
RICHMOND,
SURREY.**

H.O. Oliver
H.O. Oliver.
Seismological Officer.

MARCH 1961

DATE	STATION	PHASE	G. h.	M. m.	T. s.	App. Distance	C/ R	Remarks
1	Kim	i	10.	06.	46			
1	Kim	(e)i	11.	17.	29			
1	Wind	e	12.	30.	31			
1	Pret	i	13.	41.	55			
1	Wind	e	14.	25.	41			18.9S
1	Wind	eP	14.	37.	14	26		USCGS H= 14-31-29.9, /11.6W
	Kim	iP		38.	19	34	R	South Atlantic h= 68 km.
3	Kim	iP	23.	03.	05	78	R	USCGS H= 22-51-15.6 44.1S
	Wind	iP			08	75	C	74.8W Near Coast of Southern Chile h= 95 km.
4	Kim	iP	10.	31.	54	83	C	USCGS H= 10-19-33.7 20.4S, 67.6W Near Chile-Bolivia Border h= 109 km
5	Pret	iP	11.	42.	27	220km from station		South African local Earth-quake
		iS			49			
5	Kim	i	20.	26.	17			
	Pret	i			21			
7	Wind	eP	06.	55.	06	80		USCGS H=06-43-10.6 43.3S
		iP			08	82		80.4W off Coast of Chile h= 60 km
	Kim	i			13			
7	Kim	iPKP	10.	29.	28	120	C	USCGS H= 10-10-38.9 28.2S, 175.7W h= 43km
	Pret	i PKP			32	122		Kermadec Is. region
	Wind	i PKP			43	128	C	Mag 7½.
	Gram	i PKP			50	116	C	
7	Wind	e	19.	16.	(26)			USCGS H=19-08-36.1
		i			11		C	38.2S, 78.1E. Indian Ocean. Mag 6 h=30 km.
	Kim	iP			16.	53	R	
7	Wind	(e)i	23.	34.	23	46		
8	Kim	iPcP	04.	10.	48	69	R	USCGS H=03-59-08.7 10.9N
9	Pret	e	04.	11.	03			41.7W Atlantic Ocean
		i			11			h=27 km.
9	Kim	i	06.	26.	31			
9	Pret	i	08.	21.	(29)			
11	Pret	i	01.	23.	(48)			
11	Pret	iP	08.	48.	31	40		USCGS H= 08-41-00 11.2N
	Kim	iP			49.	44		43.3E Near Coast of Br. Somaliland h= 18 km.
11	Wind	e	09.	00.	34			
		i			03.	26		
	Kim	i			02.	(02)		
12	Pret	iP	10.	33.	46	100km from station		South African local Earth-quake
		iS			56			
13	Pret	i	10.	42.	09			
13	Wind	eP	19.	27.	04	58		USCGS H= 19-17-16.1 34.4N 26.5E Crete.
		i			06			
	Kim	iP			41	63		
13	Gram	iP	20.	43.	13	42		USCGS H= 20-35-15-4
	Kim	iP			32	45	R	56.2S 27.2W Sandwich Is. h= 56 km.
	Pret	iP			44.	49		
15	Wind	e	10.	34.	07			
	Kim	i	13.	19.	43			
15	Wind	i	13.	23.	20			
15	Kim	i	22.	05.	13			
16	Gram	iP	13.	58.	09	91		USCGS H=13-45-35.6 8.2S
	Pret	iP			30	90		122E Flores Is. h=74 km.
	kim	i			41	92	C	Mag 6½
16	Kim	i	14.	13.	59			
16	Kim	iP	18.	34.	30	92	C	USCGS H= 18-21-12.2 8.1S, 122 E. Flores Is. h= 43 km.
18	Wind	eP	14.	06.	07	78		USCGS H= 13-55-34.7 30.5S, 71.1.W Near Coast of Central Chile 53 km.
18	Piet	iP	15.	08.	01	92		USCGS. H= 14-54-59.3
	Kim	iP				94		49.9S, 163.3E South of
	Wind	eP			58	96		New Zealand, Mag.7.h=38km.

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MARCH 1961

DATE	Station	PHASE	G. h.	M. m.	T. s.	Arc(°) Distance	C/ R	Remarks
20	Pret	iP	03.	41.	57	74		USCGS H=03-30-27.4 36.6N
	Kim	iP		42.	20	78		71.1E. Hindu Kush h=121
20	Gram	i PKP	16.	11.	56	127	C	USCGS H= 15-53-09.9 18.4S
	Pret	i PKP			59	132		175.2W Tonga Is. h=175km.
	Kim	i PKP		12.	04	130	R	Mag 6 $\frac{3}{4}$
	Wind	e PKP			10	140		
		i			20			
21	Kim	i	00.	07.	32			
22	Wind	e	11.	08.	07			
		i			39			
	Kim	(e) i			(30)			
	Pret	i		09.	13			
	Gram	i			(28)			
24	Kim	i	17.	41.	00			
25	Kim	i	14.	32.	31			
25	Kim	(e)i	15.	49.	26			
25	Gram	iP	21.	03.	17	22		USCGS H= 20.58.42 37.1S,
	Pret	eP			28	24		51.6E Indian Ocean h= 800
								mls. South of Malagasy
								Republic h=137 km
28	Piet	i	09.	49.	04			USCGS H= 09.35 - 55.4
	Gram	i			18		C	0.2N, 123.6E
	Pret	i			13			h=83
	Kim	iP			26	95		Northern Celebes
	Wind	eP			57	105		Mag 7.
		i		50.	03			
28	Gram	i	12.	48.	01		R	USCGS H= 12-29-13 51.7N
	Kim	iPKP ₁			28	154	R	176.2W Andeanof Is.
	Pret	iPKP ₁			53	150		h= 60 km. Mag 6 $\frac{1}{4}$
	Wind	iPKP ₁			54	153	R	
	Piet	iPKP ₁		49.	04	152		
28	Kim	iPKP ₁	14.	18.	17	154		USCGS. H= 13-59-03.7
	Wind	ePKP ₁			46	153		52.0W, 176.3W Andeanef
								Is. h=89 km.
28	Pret	i	17.	19.	03			
28	Kim	i	18.	21.	27			
28	Pret	iP _n	18.	40.	32	930		B.P.I. H=18.38.32. 19.0 ¹ 20 ³ S
	Wind	iP _n	18.	42.	14	1750		33.40E Mozambique
28	Wind	eP _n	21.	13.	49	77		USCGS H= 21-01-56-2,
		i			50		C	22.0S, 68.0W Chile-
								Bolivia Border h= 125
	Gram	iP		14.	11	83		Mag 6
	Kim	iP			12	82		
	Pret	iP			38	77		
28	Kim	i	21.	24.	20			
29	Pret	eP _n	21.	55.	45	860		B.P.I. H= 21.53.53
		iS _n		57.	03			19.15S. 33.10' E
								Mozambique. Rhodesia
								Border.
30	Kim	iPP	12.	17.	19	97		USCGS. H= 12-00-12-8
								81km. 32.4N, 103.8E
								Szechwan Prov. China.
30	Pret	iP	16.	30.	13	200km		South African local
		iS			33	from		Earthquake.
						Station.		
30	Pret	eP ₁	19.	26.	37	740 km		B.P.I. H= 19.24.32
		iS _n		27.	23			21.20'S 33.10'E
	Kim	(e)i		29	(17)			Mozambique.

A.A. ATTRIDGE

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Geological Survey Office,
Department of Mines,
Union of South Africa.

SEISMOLOGICAL BULLETIN. - MAY 1961

The data herewith give the results from a network of seismographs intended particularly for the study of earthquakes occurring in or near South Africa. This bulletin, however, is prepared regularly and will be sent to interested organisations on request.

<u>Stations</u>	<u>Pretoria (Pret)</u>	<u>Grahamstown (Gram)</u>	<u>Pietermaritzburg (Piet)</u>	<u>Kimberley (Kim)</u>	<u>Windhoek (Wind)</u>
Lat:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long.:	28°11.4'E	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series)	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument:	Willmore S.P. vertical and horizontal	Benioff S.P. vertical with short and long period recorders.	Benioff S.P. vertical	Benioff S.P. vertical	Benioff S.P. vertical.
Seismo. Officer:	The Director	Professor of Physics	Professor of Physics	Rev. Br. T.N. Purcell	Officer in Charge.
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlan	Mr. M.J.R. Hoch	Rev. Br. A.E. Long	Mr. J.A. Meyer
Institution:	Geological Survey Office	Rhodes University	Natal University	Christian Brothers College	Weather Office.

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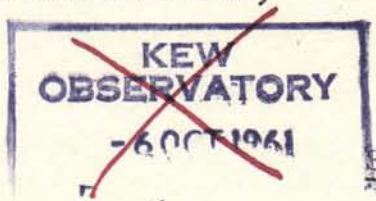
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All times given are G.M.T.

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Address:

Bernard Price Institute of Geophysical Research,
University of the Witwatersrand,
Johannesburg.
South Africa.



H.O. Oliver
H.O. Oliver.
Seismological Officer.

MAY, 1961.

- 343 -

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance	C/R	Remarks
1	Pret	e	12 54 (15)			
		i	20			
2	Kim	e	00 47 24			
		i	48 04			
2	Kim	iPKP	23 03 32	120		USCGS H= 22 44 44.3
	Wind	ePKP	45	128		h=47 km
		i	59			27.8S 176.5W
						Kermadec Is. Mag. 6 $\frac{1}{2}$
3	Wind	eP	00 34 57	48		USCGS H = 00 26 17
	Kim	iP	36 05	56	C	1.0N 26.4W
						Mid Atlantic h=25 km
3	Pret	i	18 39 34			
3	Kim	e	18 42 19			
3	Pret	iP _n	20 48 30	220 km		S.A. local earthquake
		iS _n	52	from stn.		
6	Pret	iP _n	08 57 14 $\frac{1}{2}$	105 km		S.A. local earthquake
		iS _n	24	from stn.		
6	Wind	iP	19 45 24	40°		USCGS H = 19 38 04.6
	Kim	iP	46 36	49°	C	h=24 km. 1.2S 15.5W
						Atlantic Ocean N. of Ascension Is.
7	Pret	e	00 44 21			
	Kim	i	24			
	Wind	e	42			
		i	47 31			
7	Pret	iP	04 44 18	84		USCGS H = 04 32 14.5
	Kim	iP	32	86	R	8.6S 114.4E Near
	Wind	iP	45 11	94	R	coast of Java h=113 km
7	Kim	i	10 36 39			
7	Pret	eS	13 31 07	23		USCGS H = 13 22 04.8
		e	22			16.0N 46.9W h=39km
		i	55			Atlantic Ocean.
		i	52 16			
	Kim	eP _c S	33 57	21		
		i	34 52			
8	Wind	iP	19 35 40	79		USCGS H = 19 23 35.4
	Kim	iP	59	84		24.3S 69.7W N. Chile
						h=48 km. Mag. 5 $\frac{1}{2}$
10	Kim	i	15 02 10			
10	Pret	e(i)	21 01 22			
11	Kim	iP	01 03 54	83	C	USCGS H = 00 51 24.2
						h=30km. 8.4S 112.5E
						Near coast of Java
11	Wind	i	08 10 20		R	
11	Gram	(e)iP	08 50 30	78		USCGS H = 08 38 27.1
	Kim	iP	30	80	R	h=47 km. 37.2S 73.6W
	Pret	(e)iP	56	84		Near coast of S. Chile
11	Pret	e	14 21 56			
11	Wind	e	14 27 (22)			
		i	28 55			
		(e)i	30 09			
12	Pret	e	13 38 13			
	Wind	e	39 54			
		i	40 07			
	Kim	(e)i	41 21			
13	Gram	i	14 10 31			
13	Kim	iPKP	14 37 35	119		USCGS H = 14 18 42.4
						h=25 km. 27.9S 176W
						Kermadec Is. Region

Contd.

May, 1961 (Contd.)

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance	C/R	Remarks.
13	Kim	iPKP	15 11 05	130		USCGS H = 14.52 55.3 h=556 km. 17.5S 178.8W Fiji Is region
14	Kim	i	01 57 55			
15	Kim	iPKP	19 31 04	123		USCGS H = 19 12 10.8 h=58 km 15.3S 166.6E Santa Cruz Is.
15	Wind	e	21 14 57			
17	Wind	i	14 22 55			
	Pret	i	23 17			
	Kim	i	54			
	Piet	i	24 16			
17	Wind	iPKP ₁	19 49 00	153	R	USCGS H = 19 29 19.3 h=21 km. 52N 173.9E Near Is. Aleutian Is. Mag 6 $\frac{1}{2}$
	Kim	iPKP ₁	04	155		
	Gram	ePKP ₂	42	157		
		i	47			
17	Piet	i	20 48 58		C	
18	Kim	i	03 22 23			
19	Kim	e	18 11 32			
		i	53			
20	Pret	e	15 59 00			
		i	16 02 43			
	Kim	i	15 59 46			
20	Piet	e	16 04 26			
	Wind	e(i)	48			
20	Pret	iP	17 56 25	19 $\frac{1}{2}$		USCGS H = 17 52 04.6 h=58 km 6.5S 31.7E Tanganyika
	Wind	iP	44	21 $\frac{1}{2}$		
	Kim	iP	57 03	23 $\frac{1}{2}$		
	Piet	iP	06	23		
	Gram	iP	56	27 $\frac{1}{2}$		
22	Kim	i	14 03 35		C	
22	Gram	ePKP	17 51 09	127		USCGS H = 17 32 21.6 h=35 km 22.8S 176.1W Tonga Is. Region Mag. 6 $\frac{3}{4}$.
	Gram	i	12			
22	Kim	i	17 55 23		R	
23	Wind	iP	02 55 23	60	R	USCGS H = 02 45 16 h=49 km. 36.4N 28.3E Dodecanese Is. Mag. 6 $\frac{1}{4}$
	Pret	iP	30	62		
	Piet	eP	55	66		
		i	56 04			
	Kim	iP	55 58	65	R	
	Gram	iP	56 30	70	C	
23	Pret	iP _n	18 09 01	220km		S.A. Local earthwquake
		iS _n	23	from stn.		
24	Kim	i	12 21 53			
25	Kim	e	05 06 (54)			
		i	10 (54)			
	Pret	e	07 14			
		(i)	08 (54)			
25	Kim	i	21 26 00		C	
26	Kim	(e)i	20 49 32			
26	Kim	e	21 09 38			
		i	10 11			
26	Pret	e	23 07 14			
		i	49			
27	Kim	i	02 16 42		C	
29	Kim	i	07 10 14		R	

Contd./.....

May, 1961, (Contd)

<u>Date</u>	<u>Station</u>	<u>Phase</u>	<u>G. M. T.</u> <u>h. m. s.</u>	<u>Arc</u> <u>Distance</u>	<u>C/R</u>	<u>Remarks.</u>
29	Kim	i	10 59 51			
29	Kim	i	19 31 53		C	
31	Kim	iPKP	14 58 39	138		USCGS H = 14 39 20.4 h=50 km. 48.9N 154.5E Kurile Is.
31	Kim	i	16 42 48			

A.A. Attridge

14th August, 1961.

KEW OBSERVATORY
SEISMOLOGICAL BULLETIN.
 RICHMOND, SURREY.

sup.

June?
JUL 1961.

Geological Survey Office,
 Department of Mines,
 Union of South Africa.

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Lat:	25°45.2'S.	35°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long.:	28°11.4'E	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series)	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
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H.O. Oliver

H.O. Oliver.
Seismological Officer.

JUNE, 1961

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance degrees.	C/R	Remarks.
1	Kim	(e)i	14 27 21			
1	Pret	eP	23 36 38	41		USCGS H=23 29 21.1
		i	45			10.6 N, 39.3 E, Ethiopia
	Piet	eP	37 04	43		h=51 km. Mag.=6 $\frac{3}{4}$
		i	07			
	Kim	iP	08	45		
	Gram	i	43			
1	Pret	(e)i	23 48 50		C	
	Kim	e	50 02			
		i	(46)			
	Wind	e	18			
2	Kim	eP	00 09 34	44		USCGS H=00 01 45.4
						10.5 N, 39.5 E, Ethiopia
						h = 29 km.
2	Pret	iP	00 16 14	40		
	Kim	iP	44	44	C	USCGS H= 00 08 59.8
						10.3 N, 39.6 E, Ethiopia
						h= 64 Km.
2	Kim	iP	04 58 00	42	C	USCGS H = 04 51 10.4
	Pret	iP	29	39		9.8 N, 40 E, Ethiopia
	Wind	iP	46	41		
	Piet	eP	56	41 $\frac{1}{2}$		h = 41 km. Mag = 6 $\frac{1}{2}$
		i	58			
	Gram	iP	05 00 01	46 $\frac{1}{2}$		
2	Pret	e	05 14 (02)			
		i	16 09			
2	Wind	i	05 30 03			
	Piet	i	13			
2	Pret	iP	05 52 09	41		USCGS H = 05 44 52.4
	Kim	iP	41	45		10.3 n, 39.8 E, Ethiopia
	Piet	eP	45	43		h = 31 km.
		i	53 12			
	Gram	iP	43	49		
2	Pret	i	06 04 (29)			
	Kim	i	05 33			
2	Wind	e	06 23 25			USCGS H = 06 17 13.3
	Kim	iP	25 03	45		10.5 N, 39.7 E, Ethiopia
						h = 36 km.
2	Pret	i	10 09 34			
	Kim	e	10 29			
			13 32			
4	Pret	iP	07 45 09	81		USCGS H = 07 33 05.4
	Kim	iP	27	85		33.8 N, 81.8 E, Tibet
	Wind	iP	33	86		h. = 46 km. Mag = 6 $\frac{1}{2}$
	Gram	eP	41	88		
		i	44			
4	Kim	iP	07 56 06	86		USCGS H = 07 43 43.6
	Wind	iP	18	87		34.2 N, 82.2 E, Tibet
						h = 30 km.
4	Wind	e	08 50 (38)			
4	Wind	i	10 22 58			Traces
4	Kim	iP	14 03 54	86		USCGS H = 13 51 26.6
						33.6 N, 82.4 E, Tibet
						h = 40 km.
6	Kim	i	17 34 45			
7	Piet	i	11 23 48			
7	Wind	e	14 11 51			
		i	53			
7	Kim	i	14 16 50			
7	Kim	iP	14 23 07	42		USCGS H = 14 15 18.9
						5.4 S, 11.6 W, Ascension
						Island Region. h = 17 km.
						Mag = 5 $\frac{1}{2}$
8.	Kim	e	09 36 30			
		i	50			

JUNE, 1961 (continued)

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance degrees	C/R	Remarks
8	Wind	(e) i	12 46 17			
8	Kim	iP	15 57 13	94	R	USCGS H = 15 44 01 8.1 S, 121.7 E, Flores Sea, h = 25 km.
9	Pret	e	03 28 31			
9	Pret	i	09 20 26			
9	Wind	iP	09 48 03	71	C	USCGS H = 09 36 49.2
	Kim	iP	20	75	C	40.8 N, 50.7 E, Caspian Sea, h = 17 km.
9	Kim	iP	15 29 29	78	C	USCGS H = 15 17 50.7 5.5 N, 95.8 E, Near coast of Sumatra. h = 110 km.
10	Pret	e	06 17 36			
10	Pret	i	09 15 42			
10	Kim	iP	11 57 00	79	C	USCGS H = 11 44 49.8 32. S, 70.3 W, San Juan Province, Argentina. h = 83 km.
11	Pret	eP	05 20 25	60		USCGS H = 05 10 26
		i	28			28.9N, 54.6E, Southern
	Wind	eP	44	63		Iran. h = 38 km. Mag 6 $\frac{3}{4}$
		i	47			
	Pret	iP	47	62		
	Kim	iP	51	64	C	
	Gram	iP	21 14	67		
11	Pret	eP	05 40 11	61		USCGS H = 05 30 05.9, 27.3N, 54.5E, Southern Iran. h = 25 km.
		i	15			
	Wind	iP	31	64		
	Gram	iP	41 00	65	C	
11	Pret	eP	12 40 23	61		USCGS H = 12 31 26.8, 28.0N, 54.6E, Iran. h = 36 km.
		i	41 27			
	Wind	eP	40 43	64		
		i	41 48			
	Kim	iP	40 49	65		
		i	41 55			
	Pret	i PcP	41 22	63		
	Gram		42 15			
11	Pret	(e) i	14 06 59			USCGS H = 13 57 58.6, 27.6N, 54.6E, Southern Iran. h = 63 km.
	Wind	eP	08 19	64		
	Kim	iP	26	65		
	Gram	iP	48	69	C	
12	Wind	(e) i	02 44 13			
12	Kim	e	09 03 07			
12	Kim	i	10 11 28		C	
13	Wind	iP	07 21 44	28	C	USCGS H = 07 15 58.2 22.6S, 12.5W, South Atlantic Ocean. h = 37 km.
13	Kim	iPKP	21 56 55	127	R	USCGS H = 21 37 55 21.4S, 176.4W, Tonga Islands Region. h = 146 km
14	Kim	i	20 30 08		R	
14	Pret	iP	20 39 38	40		USCGS H = 20 32 24, 10.8N, 40.1E, Ethiopia, h = 56 km.
	Wind	eP	54	42		
14	Pret	e	20 51 -			
15	Wind	iPKP ₁	00 10 11	153	R	USCGS H = 23 50 44 52.0N, 172.2W, Fox Islands h = 100 km.
15	Kim	i	03 42 37		R	
15	Pret	e	06 31 35			
15	Wind	e	23 43 52			
16	Wind	e	02 36 31			
16	Wind	e	03 42 48			

JUNE, 1961 (continued)

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance degrees	C/R	Remarks
16	Kim	(e)iPKP ₁	06 51 34	154	C	USCGS H = 06 31 43.4 51.4N, 173.2W, Andreanof Islands, h = 25 km.
16	Kim	iP	07 20 (21)	80		USCGS H = 07 08 16.5, 41.1S, 74.5W, Off South Coast of Chile, h = 17 km.
16	Wind	i	08 20 13			
16	Wind	eP	10 45 05	95		USCGS H = 10 31 56.2 8.8N, 73.4W, North Colombia h = 120 km. Mag = 6.
16	Wind	e	14 08 (55)			
16	Kim	iP	15 58 16	83		USCGS H = 15 46 00.1, 21.8S, 67.6W, Southern Bolivia. h = 112 km.
16	Kim	e	19 12 08			
16	Pret	e	20 41 (48)			
17	Pret	e	07 48 53			
17	Kim	eP	11 10 03	94		USCGS - H = 10 53 30.3, 11.9S, 75.3W, Peru. h = 29 km, Mag = 5.
17	Kim	i	12 33 49			
17	Kim	i	12 37 (33)			
17	Kim	iPKP	15 26 17	123		
	Gram	i	20		R	USCGS H = 15 07 36.1, 14.2N, 92.2W, Mexico- Guatemala border. h=147 km. Mag. = 6.
17	Pret	(e)i	17 10 15			
	Wind	e	11 20			
	Kim	i	28			
17	Kim	i	17 52 14			
18	Kim	iP	03 24 13	88	R	USCGS H = 03 12 35.7 5.9S, 113.0E, Java Sea, h = 641 km.
18	Pret	i	07 40 05			
	Kim	e	21			
		i	43			
18	Wind	e	08 09 10			
18	Kim	iP	10 20 35	66		USCGS H = 10 10 13.8, 29.0N, 55.0E, Iran. h = 21 km.
18	Kim	i	14 13 12			
	Wind	i	29			
18	Kim	i	14 23 45			
19	Wind	e	09 16 13			
19	Wind	i	12 41 13			
19	Pret	iP	17 15 51	75		
	Piet	iP	16 04	77		
	Kim	iP	13	79	R	USCGS H = 17 04 30, 36.6N, 71.0E, Hindu Kush, h = 151 km.
	Wind	iP	13	79	R	
20	Pret	(e)iP	03 29 14	42		
	Wind	eP	38	45 $\frac{1}{2}$		
	Kim	(e)iP	45	47	R	USCGS H = 03 21 26.5, 11.5N, 44.5E, Gulf of Aden h = 30 km.
	Gram	iP	30 16	50	C	
20	Pret	e	03 42 (43)			
20	Gram	i	17 16 29			
21	Wind	iP	06 48, 43	64	C	
	Kim	iP	49 49		R	USCGS H = 06 39 22.8, 27.9N, 55.0E, Iran. h = 48 km.
21	Wind	e	14 15 12			
21	Wind	e	16 15 02			
21	Kim	i	18 25 02			
21	Gram	i	20 28 28		C	
21	Piet	i	20 36 43			
	Kim	i	37 08		R	
	Wind		47		R	
	Pret	e	39 11			

JUNE 1961 (Continued)

Date	Station	Phase	G.M.T. h. m. s.	Arc Distance degrees	C/R	Remarks
22	Pret	eP	06 49 22	122		USCGS H = 05 33 35.4, 21.2S, 170.3E, Loyalty Islands. h = 55 km.
22	Kim	eP	07 56 31	88		USCGS H = 07 43 54.5 19.2S, 70.6W, Near Coast of Northern Chile. h = 162 km
23	Wind	e	08 46 15			
		i	48 32			
	Kim	e	20			
23	Pret	ePKP ₁	09 15 30	157		USCGS H = 08 55 55.2, 43.9N, 128.9W, Off coast of Oregon. U.S.A., Mag = 6.
		i	32			
	Kim	ePKP ₁	46	155		h = 56 km.
		i	50			
23	Kim	e	13 33 47			
23	Wind	eP	16 46 44	63		USCGS H = 16 36 28, 28.5N, 55.5E, Iran. h=54km.
	Kim	i	50			
24	Wind	i	07 30 53			
	Pret	e	31 04			
		i	33 18			
	Kim	e	34 05			
		i	07			
24	Kim	iP	09 47 44	75		USCGS H = 09 36 08.8, 4.1N, 97.5E, Sumatra. h = 188 km.
25	Kim	iPKP	09 28 17	129		U.S.C.G.S. H = 09 10 04. 19.4S, 177.9W, Fiji Islands h = 489 km.
25	Kim	iP	12 50 46	66		USCGS H = 12 40 31.9 29.0N, 54.2E, Iran. h=90km.
25	Kim	i	19 46 06			
26	Piet	iPKP ₁	15 07 01	148		USCGS H = 14 47 26.1, 52.4N, 174.5E, Near Islands Aleutian Is. h = 60 Km, Mag = 5 $\frac{3}{4}$.
	Kim	iPKP ₁	08	151		
26	Kim	e	15 58 29			
		i	59			
27	Pret	iP	07 16 32	87		USCGS H = 07 03 42.2
	Kim	iP	45	89		27.8N, 99.4E, Yunan Province
	Wind	iP	17 01	92		China. h= 33km. Mag <u>6</u> .
27	Pret	i	07 27 08			
27	Kim	i	08 14 45			
28	Kim	i	17 33 33			
28	Kim	i	18 44 44			
29	Wind	e	02 35 18			
29	Kim	iPKP	09 42 00	125	C	USCGS H = 09 22 55.8, 13.8S, 166E, New Hebrides Islands. h=37km. Mag= 6 $\frac{1}{2}$
29	Kim	iPKP ₁	14 22 26	154		USCGS H = 14 02 42.5, 52.2N, 173.4W, Andreanof Islands. h = 76 km.
	Piet	iPKP ₁	30	152		
29	Kim	i	16 35 37			
29	Kim	i	20 40 10			
30	Kim	i	02 30 33			South African Local Earth- quake, Approximately 280km from Pretoria.
	Pret	iP _n	43			
		iS _n	31 28			
30	Kim	i _n	11 59 44			
	Wind	(e)i	12 00 08			
	Pret	i	01 54			

A. A. Attridge.

7th September, 1961.

John ...
 SEISMOLOGICAL BULLETIN
 16 FEB 1961
 RICHMOND SURVEY

Sup. ISS
1/2

July 1961

The data herewith give the results from a network of seismographs intended particularly for the study of earthquakes occurring in or near South Africa. This bulletin, however, is prepared regularly and will be sent to interested organisations on request.

Stations	Pretoria (Pret)	Grahamstown (Gram)	Pietermaritz- burg (Piet)	Kimberley (Kin)	Windhoek (Wind)
Lat:	25°45.2'S	35°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long:	28°11.4'E	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series)	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument	Willmore S.P. vert- ical and horizontal	Benioff S.P. vertical with short and long period recorders.	Benioff S.P. vertical	Benioff S.P. vertical	Benioff S.P. vertical
Seismo. Officer:	The Director	Professor of Physics	Professor of Physics	Rev. Br. T.M. Purcell	Officer in Charge
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlon	Mr. M.J.R. Hoch	Rev. Br. A.E. Long.	Mr. J.A. Meyer
Institution:	Geological Survey Office	Rhodes University	Natal University	Christian Brothers College	Weather Office

Notes: "Earth tremors" originating in the mining district of the Witwatersrand are recorded several times daily by the Pretoria station, and less frequently by others. These are not dealt with in this bulletin.

Data are occasionally reported herein by courtesy of the Union Observatory, Johannesburg, which operates a 200 kg. Wiechert Horizontal seismograph. This station is called J, and is at 26°10.9'S., 28°04.5'E., height 1806 metres.

All times given are G.M.T.

The supervision of this network and bulletin is at present in the hands of the undersigned, to whom all inquiries should be addressed.

Address:

Bernard Price Institute of Geophysical Research,
 University of the Witwatersrand,
 Johannesburg,
 South Africa.

H.O. Oliver.

Seismological Officer.

JULY, 1961

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance Degrees	C/R	Remarks
1	Kim	iP	13 23 41	92	R	USCGS H = 13 10 46.6, 15.3S 75.0W, Near Coast of Peru. H=46
1	Pret	e	15 24 07			
1	Gram	i	21 12 41		C	
2	Kim	i	00 03 42			
2	Gram	e	21 32 59			
		i	33 33			
3	Pret	i	21 28 15			
	Wind	i	29 00			
	Kim	i	03			
4	Kim	(e)i	14 42 32			
5	Kim	i	10 06 59			
6	Wind	iP	16 14 58	33	R	USCGS H=16 08 2018, 7.0S, 13.1W, Ascension Is. region. h=19 km.
6	Gram	e	22 19(08)			
		i	15			
6	Kim	iPKP	22 28 19	122	R	USCGS H = 22 09 31.4
	Wind	(e)iPKP	38	133		20.0S, 169.0E, New Hebrides Islands. h=47 km., Mag=6½.
6	Kim	e	22 38 25			
7	Kim	i	13 29 28			
7	Wind	i	15 43 34		R	
	Kim	i	49			
7	Kim	iPKP	22 38 19	122		USCGS H = 22 19 34.2; 20.1S, 169.2E, Loyalty Islands region. h = 89 km., Mag = 5¼.
9	Wind	e	07 16 07			
9	Gram	iP	08 16 30	69		USCGS H = 08 05 45.9; 28.8N, 54.7E, Iran. h=25km.
9	Kim	ePKP ₁	17 05 39	150		USCGS H = 16 46 02, 51.7N, 176.2E, Rat Islands. h = 33km.
10	Wind	i	03 01 56		C	
10	Kim	iP	04 02 19	85	C	USCGS H = 03 49 56.4, 19.2S, 68.4W, Chile-Bolivia Border. h = 117 km.
13	Wind	eP	09 39 16	63		USCGS H = 09 28 50, 28.8S, 54.3E, Iran. h = 60 km.
18	Pret	(e)iPKP	14 22 16	115		USCGS H = 14 03 36.5, 29.4N, 131.6E, Northern Ryukyu Islands. h = 21 km.
	Gram	(e)iPP	23 23	121		
20	Kim	e	00 28 36			
	Kim	i	30 02			
21	Pret	e	00 27 15			
		i	28 13			
22	Pret	e	02 01 27			
23	Kim	i	14 49 08			
23	Wind	e	14 57 13			
	Kim	i	25			
	Piet	e	31			
		i	36			
	Pret	i	42			
23	Kim	iP	22 10 00	124		USCGS H = 21 51 07.5, 18.3S, 168.3E, New Hebrides Islands. h = 44km.
26	Kim	i	10 37 17			
27	Kim	eP	18 46 10	65		USCGS H = 18 35 48.5, h=65km. 35.2N, 25.4E, Aegean Sea.
28	Kim	e	01 18 57			
		i	19 00			
29	Kim	i	16 46 17			
30	Gram	i	20 30 32			
	Piet	e	34 11			
	Kim	i	11			
31	Kim	i	00 46 03			
	Pret	e	52			

A. A. ATTRIDGE.
25th Sept., 1961.

AUGUST, 1961

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance Degrees	C/R	Remarks
1	Kim	iP	07 29 22	46	R	USCGS H = 07.21. 12-3 58.8S, 25.1W h=44km. Sandwich Is. region.
	Wind	eP	32	48		
	Pret	eP	35	50		
1	Kim	lP	09 32 34	45	C	USCGS H = 09-24-22.4 56.6S, 24.0W. Sandwich Is. region h=61km.
1	Wind	i	09 43 01			
	Kim	e	19			
		i	21		R	
	Pret	i	24			
2	Kim	iP	02 39 38	46	C	USCGS H = 02-31-24.8 56.7S, 24.8W. Sandwich Is. h = 25km.
2	Pret	i	13 23 06			
	Wind	e	24 01			
2	Kim	i	13 27 36		C	
	Wind	e	28 24			
2	Kim	i	20 35 40			
3	Kim	i	00 50 31			
3	Kim	i PKP	14 44 41	150		USCGS H = 14-24-58.2 52.2N 174.0 E Near Is., Aleutian Is. h = 41km.
4	Kim	i	10 56 22			
5	Kim	i PKP	02 45 28	152		USCGS H = 02-26-22.4 60.5N 148.6 W Kenai Peninsula, Alaska. h = 105km.
5	Kim	iP	09 40 19	85		USCGS H = 09-27-45.5 18.8S 68.2W Near Chile - Bolivia border h = 113km.
5	Kim	i	11 39 (53)			
8	G ram	e PKP	12 37 43	160		USCGS H = 12-18-18.9 50.9N, 170.7W
	Wind	e PKP	38 08	154		Fox Is. h = 24km. Mag. 6
		i	14			
	Piet	i PKP	13	155		
	Kim	i PKP	14	156	C	
	Pret	i PKP ₂	42	153		
9	Pret	e	02 59 53			
		i	03 00 09			
9	Kim	i	10 05 10			
9	Kim	ei	14 02 03			
9	Kim	i	17 21 26		R	
11	Kim	i	10 49 01			
11	Kim	i	14 37 59			
11	Gram	i	16 10 29			
	Piet	i	32		R	
	Pret	i	34			
	Wind	e	35			
11	Kim	i	16 15 29			
11	Kim	i	23 50 58			
15	Kim	i	19 22 56			
15	Pret	i	21 11 53			
16	Kim	i	01 12 39		C	
16	Piet	e	01 15 55			
	Wind	e	16 17			
16	Gram	i	01 18 42			
17	Kim	i PKP	21 35 15	135		USCGS H = 21-16-30.0 46.3N 149.3E Kurile Is. Mag 6 $\frac{5}{4}$ h=186km.

Date	Station	Phase	G. M. T. H. m. s.	Arc Distance	C/R	Remarks
19	Wind	iP	05 21 19	86	R	USCGS H = 05-09-49.5 10.7S, 71.0W Peru - Brazil border Mag 6. h = 649 km.
	Kim	iP	45	92	C	
	Gram	iP	50	92		
	Pret	iP	22 02	95		
		i	31 41			
19	Kim	iPKP	05 52 30	124		USCGS H = 05-33-30.6 36.0N, 136.5E Off west coast of Honshu. Mag 7½. h = 17km.
19	Kim	i	06 03 47			
19	Kim	iP	20 38 04	75	R	USCGS H = 20-26-18 2.IN 96.9E Off west coast of Sumatra h = 25 km.
20	Kim	i	05 22 21		C	USCG S H = 05-04-14.3
20	Pret	(e)i	05 24 52			
21	Kim	i	21 12 31			
		i	13 18			
22	Kim	e(i)	00 59 14			
23	Kim	i	04 24 36		C	
24	Kim	i	18 27 18			
25	Pret	e	01 51 46			
25	Kim	i	01 56 34		C	
25	Kim	i	05 55 51			
27	Kim	iP	01 59 03	38		USCGS H = 01-51-51.8 15.3S 13.1W
	Pret	eP	26	40		South of Ascension Is. h = 49km.
27	Kim	i	16 06 46		C	
28	Kim	iP	06 40 51	87	C	USCGS H = 06-28-19.4 15.1S 70.2W Peru - Bolivia border h = 185km.
28	Kim	i	07 59 19		R	
28	Kim	i	10 02 20		R	
28	Kim	iP	21 40 09	92		USCGS H = 21-27-12.1 14.0S 74.4W Near coast of Peru. h = 73km.
29	Kim	i	06 36 14			
29	Kim	iPKP ₂	15 11 12	155		USCGS H = 14-51-14.2 52.2N 170.8W Fox Is. Mag 5 h = 41km.
29	Pret	e	15 44 02			
31	Wind	eP	02 00 08	85		USCGS H = 01-48-37.5 10.6S, 70.9W h = 626km. Mag 7½
		i	12			
	Kim	iP	00 34	91	C	Peru - Brazil border
	Gram	iP	00 36	92		
31	Kim	i	02 51 10			
31	Wind	iP	02 08 39	85		USCGS H = 01-57-08 10.4S, 70.7W h = 629km.
	Gram	iP	09 06	91		
	Kim	iP	10 03	90		Peru - Brazil border
	Pret		11 26			Mag 7½

A.A. ATERIDGE.
31st Oct., 1961.

Handed to ISS. *[Signature]*

SEISMOLOGICAL BULLETIN.

E-SEP 1961

The data herewith give the results from a network of seismographs intended particularly for the study of earthquakes occurring in or near South Africa. This bulletin, however, is prepared regularly and will be sent to interested organisations on request.

Stations	Pretoria (Pret)	Grahamstown (Gran)	Pietermaritz- burg (Piet)	Kimberley (Kim)	Windhoek (Wind)
Lat:	25°45.2'S	33°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long:	28°11.4'E	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series)	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument	:Willmore S.P. vert- ical and horizontal	Benioff S.P. vertical with short and long period recorders.	Benioff S.P. vertical	Benioff S.P. vertical	Benioff S.P. vertical
Seismo. Officer:	The Director	Professor of Physics	Professor of Physics	Rev. Br. T.W. Purcell	Officer in Charge
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlen	Mr. W.J.R. Hoch	Rev. Br. A.E. Long.	Mr. J.A. Meyer
Institution:	Geological Survey Office	Rhodes University	Natal University	Christian Brothers College	Weather Office

Notes: "Earth tremors" originating in the mining district of the Witwatersrand are recorded several times daily by the Pretoria station, and less frequently by others. These are not dealt with in this bulletin.

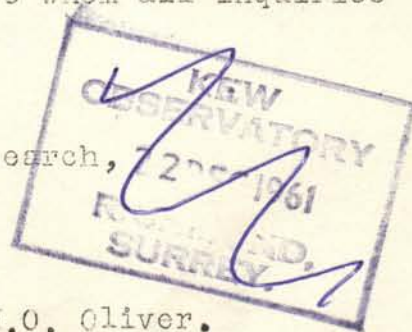
Data are occasionally reported herein by courtesy of the Union Observatory, Johannesburg, which operates a 200 kg. Wiechert Horizontal seismograph. This station is called J, and is at 26°10.9'S., 28°04.5'E., height 1806 metres.

All times given are G.M.T.

The supervision of this network and bulletin is at present in the hands of the undersigned, to whom all inquiries should be addressed.

Address:

Bernard Price Institute of Geophysical Research,
University of the Witwatersrand,
Johannesburg,
South Africa.



H.O. Oliver.

Seismological Officer.

SEPTEMBER, 1961.

Date	Station	Phase	G. M. T.			Arc Distance degrees	C/R	Remarks	
			h.	m.	s.				
1	Wind	iP	00	17	37	49	R	USCGS H = 00 09 34.5 59.3S 27.3W Sandwich Is. h=131 km. Mag. 7 $\frac{1}{2}$	
	Piet	iP			38	50			
	Kim	iP			51	48			
	Pret	iP		18	21	52			
1	Gram	i	00	41	29		C		
1	Pret	i	00	45	57				
1	Wind	i	06	45	53		C		
1	Kim	i	14	29	02				
1	Kim	i	14	09	24				
2	Kim	iPKP ₁	00	45	57	156		USCGS H = 00 26 06 52.0N 170.9W Fox Is. h=39 km.	
	Piet	iPKP ₁		46	03	155			
2	Kim	iP	10	59	19	50	R	USCGS H = 10 50 36.7 2.0S 67.5E South-west of Maldiva Is. h=132	
2	Pret	i	11	58	38				
3	Kim	i	01	12	07				
4	Wind	iPKP ₁	10	08	55	151	C	USCGS H = 09 49 10.7 51.4N 178.1W Andreanof Is. h=35 km Mag 6 $\frac{1}{4}$.	
	Piet	iPKP ₁			(45)	152	R		
	Pret	iPKP ₁			55	150			
	Kim	iPKP ₁			58	154	C		
4	Wind	e	23	06	28				
		i			31				
5	Kim	eP	06	25	20	82		USCGS H = 06 12 54.8 38.6N 73.3E Tadzhik, U.S.S.R. h=50 km.	
		i			40				
5	Gram	ePKP ₁	11	53	59	155		USCGS H = 11 34 37.3 59.8N 150.6W Kenai Peninsula h=44 km Mag. 6 $\frac{1}{4}$	
		i			54(16)				
	Wind	ePKP ₁			54 60	145			
		i			16				
	Pret	iPKP ₁			13	148			
	Kim	iPKP ₁			20	152			
	Piet	ePKP ₁			24	151			
		i			39				
6	Kim	i	10	12	33				
8	Kim	i	00	21	40				
8	Wind	i	07	23	50		C		
8	Gram	i	11	52	(48)		R	USCGS H = 11 26 32.8 56.1S 27.3W Sandwich Is. h=125 km Mag. 7 $\frac{3}{4}$.	
	Kim	iP			34 41	46	R		
	Piet	iP			35 12	49			
	Pret	i			36 14				
8	Kim	i	12	04	47				
	Pret	e			05 43				
8	Kim	i	13	04	51		C		
9	Kim	iPKP ₂	12	08	07	155		USCGS H = 11 47 12.4 51.7N 174.9W Andreanof Is. h=50 km.	
10	Kim	iP	04	56	33	79		USCGS H = 04 45 27.1 22.7S 63.1W Salta Province Argentine h=519 km.	
10	Pret	i	06	06	52				
10	Kim	e	12	04	40				
		i			05 39				
10	Pret	i	15	38	24				
	Kim	e			40 34				
11	Kim	iPKP ₁	03	06	38	153	R	USCGS H = 02 46 43.4 51.3N 179.7W Andreanof Is h=15 km.	
11	Kim	i	04	03	54				

(Contd.)

SEPT. 1961 (Contd)

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance degrees	C/R	Remarks
11	Wind	iP	14 59 05	73	R	USCGS H = 14 47 30.5 36.6S 69.0W Mendoza Prov. Argentina. h=226 km.
	Kim	iP		75	R	
12	Kim	iP	19 37 48	48		USCGS H = 19 29 05.2 59.4S 29.2W Sandwich Is. h=25 km.
	Pret	eP	38 20	52		
13	Wind	i	18 09 56		R	
13	Pret	i	19 22 23			
		i	23 53			
	Wind	e		02		
		i		05		
	Kim	i		07		
	Piet	e		17		
		i	25 35			
	Gram	e	24 (04)			
		i	24			
13	Kim	iP	21 30 47	78		USCGS H = 21 19 26.2 41.6S 75.2W Southern Chile h=154 km. Mag.7
	Gram	iP	31 08	76		
	Wind	iP		77	C	
	Pret	iP		82		
14	Pret	iP	08 13 22	63		USCGS H = 08 03 09 33.6N 48.8E Iran h=30 km.
15	Pret	iP	01 56 20	62		
	Kim	iP		65	R	USCGS H = 01 46 08.4 35.1N 33.9E Cyprus h=25 km.
	Wind	iP		61	R	
	Gram	iP	57 10	69	C	
16	Gram	e	05 13 (31)			
		i	17 38			
	Kim	i	16 (54)			
16	Kim	i	12 04 11			
16	Pret	e	13 50 05			
16	Kim	iP	21 23 20	44	C	USCGS H = 21 15 26.9 12.8S 66.3E Indian Ocean h=900 km. SW of Chaco Is.
17	Kim	i	23 40 45			
	Wind	i		59		
18	Pret	iP	11 12 10	70		USCGS H = 11 01 10.8 40.8N 50.1E Caspian Sea h=31 km
	Wind	iP		71	C	
	Kim	iP		74	C	
	Gram	iP		78	R	
18	Kim	i	23 36 52			
18	Wind	i	02 36 26		C	
	Gram	i		59	R	
	Piet	i	37 16			
18	Pret	(e)i	02 41 41			
19	Kim	iPKP	18 42 54	127		USCGS H = 18 25 29.0 21.6S 179.4W Fiji Is. region h=639
19	Kim	iP	21 42 52	49	C	
	Gram	eP		46		USCGS H = 21 34 43.3 60.1S 22.9W Sandwich Is. region h=56 km.
	Pret	(e)iP	43 00	53		
24	Gram	iP	17 00 42	43	C	USCGS H = 16 52 40.8 56.5S 26.2W Sandwich Is. h=25 km.
	Kim	iP	01 03	46	R	
	Pret	iP	02 05	50		
24	Pret	iP	20 47 46 $\frac{1}{3}$			South African Local Earthquake. 147 Kilometres from station.
		iS	48 07 $\frac{2}{3}$			
25	Piet	i	02 46 00		R	USCGS H = 02 27 13.4 60.3N 153.0W Southern Alaska Mag.6 h=125 km.
	Kim	ePKP ₁		42	153	
		i		46	R	
25	Pret	(e)i	12 30 42			
25	Pret	e	13 26 34			
26	Pret	iP	17 53 49			South African Local Earthquake. 147 Kilometres from station.
		iS	54 10			
	Kim		39			

SEPT. 1961 (Contd)

<u>Date</u>	<u>Station</u>	<u>Phase</u>	<u>h. m. s.</u>	<u>Arc Distance degrees</u>	<u>C/R</u>	<u>Remarks.</u>
27.	Kim	iP	06 52 13	130		USCGS H = 06 34 03.7 17.4S 178.7W Fiji Is. h=576 km.
27	Kim	iP	12 15 45	42	C	USCGS H = 12 07 39.2
	Wind	iP	16 00	46	R	59.4S 24.2W Sandwich Is. h=110 km.
27	Kim	iPKP ₁	19 46 49	157		USCGS H = 19 27 00.7
	Wind	iPKP ₁	53	152	R	52.2N 168.7W Fox Is. h=22 km.
28	Kim	iP	01 35 49	79	R	USCGS H = 01 23 59.6 3.9S 102.0E Sumatra h=78 km.
28	Kim	i	06 08 52		C	
28	Kim	iP	22 46 56	65		USCGS H = 22 36 27.5 27.6N 57.1E Southern Iran h=56 km.
29	Kim	iP	08 57 17	80		USCGS H = 08 45 26.9 13.8N 94.0E Andaman Is. h=133 km.
30	Gram	e	19 19(26)			
30	Kim	i	19 27 52			

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