

# SEISMOLOGICAL BULLETIN

KING'S COLLEGE OBSERVATORY, ABERDEEN

JANUARY - MARCH, 1963

Lat. 57°10' N. Long. 2°6' W. Height above M.S.L. 12M. Lithologic Foundation: Glacial deposit over boulder clay.

Instruments: Milne-Shaw Seismographs, Photographic Registrations, Two Components.

Compt.		Mass	To	Damping Ratio	Magnification	1" Tilt	Date from which constants apply	
N	E	1 lb.	10 sec.	20 : 1	150	19.1mm	E-W	1.2.62
E	N	1 lb.	10 sec.	20 : 1	150	18.1 mm.	N-S	1.2.62

No.	Date	Compt.	Phase	Time G.M.T.			Period sec.	Ampl. $\mu$	$\Delta^\circ$ km.	Dir <sup>n</sup> of Motion	Remarks Time of origin
				h.	m.	s.					
1	Jan. 1	E N E	i M M F	15	26	42	15	3		N E + U.S.C.G.S.: 3.4°N, 122.9°E	
2	1	E E N	e M M F	20	46	09	15	1.5		- U.S.C.G.S.: 40.2°S, 81.3°E	
3	1	N N N E E N N	iS iPS eSS eSSS M L M F	23	58	23	15	2.5		- + U.S.C.G.S.: 56.6°N, 157.7°W - + iE 58m 18s + iE 59m 24s	
4	2	NE	Traces	03	45	-				U.S.C.G.S.: 5.8°S, 150°E	
5	3	N E	M F	03	53	04	15			U.S.C.G.S.: 29.7°N, 130.1°E	
6	15	N E E N	e i M M F	01	39	18	10	7		- + U.S.C.G.S.: 68.9°N, 17.1°W	
7	15	N E E N E E N	eP e eS eSS L M M F	05	26	19	14	13.6	13.4° 1490 Km	+ + U.S.C.G.S.: 69.0°N, 16.6°W	
8	24	E E N	e M M F	23	32	06	17	3		- U.S.C.G.S.: 8.0°N, 126.8°E	



KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. μ	Δ° km.	Directic of Motion		Remarks Time of Origin	
				h.	m.	s.				N	E		
9	Jan. 27	N	eS	19	48	00				N	E	U.S.C.G.S: 41.2°N, 49.8°E	
		N	i		50	10				+			
		N	i		52	28				-			
		E	L		53	35				+			
		E	M		59	41	20	5.5					
		E	M	20	00	13	15	2.5					
		N	F		04	-							
10	28	NE	e, i	12	44	48				-	+	U.S.C.G.S: 2.6°S, 149.9°E	
		NE	e		48	12				-	-		
		E	e	13	04	14					-		
		E	L		10	14							
Lost in following shock													
11	28	N	iP	13	12	03				-		U.S.C.G.S: 54.7° , 161.6°W	
		N	e		13	38				+			
		N	eS		20	39				-			
		E	iS		20	45					-		
		E	e		24	40					+		
		E	eSS		25	08					+		
		E	M		29	40	22	23					
		E	L		33	00							
		E	M		38	13	21	21					
		E	F		41	11	20	24.5					
				14	42	-							
12	30	N	iSKS	10	35	33			116°	+		U.S.C.G.S: 55.6°S, 28.3°W iN 39m 35s eE 45m 38s	
		E	iS		37	38					+		
		E	iPS		39	28			12890Km	-	+		
		E	eSS		45	48				-	-		
		E	i		49	30					+		
		E	L		11	02	13						
		E	M			08	57	20	25				
		E	M			12	33	22	33				
13	31	NE	e, iPP	05	22	41				-	-	U.S.C.G.S: 27.9°N, 126.3°E eN 39m 08s	
		E	iPPP		24	38					+		
		NE	e, S		29	46					+		
		N	ePS		30	45					-		
		E	eSS		35	38					+		
		E	eSSS		39	01					+		
		NE	L		51	-							
		E	M		06	02	56	16	17				
		E	M		03	00	15	14.5					
		E	F		39	-							
14	February 5	N	i	21	35	20				+		U.S.C.G.S: 38.4°S, 73.2°W	
		E	i		39	56					-		
		E	L		47	56	20	15.5					
		N	M		48	04	20	19					
		E	F	22	05	-							
15	10	N	e	05	32	05				+		U.S.C.G.S: 54.1°N, 166.5°W Very slight: No effect on E-W	
		N	M		46	40	20	1					
			F		47	-							
16	13	NE	iP	09	02	42				-	-	U.S.C.G.S: 24.5°N, 121.8°E	
		E	i		05	00					+		
		NE	iPP		06	02					-		
		NE	i		09	37					-		
		NE	iS		13	12							+

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. " "	$\Delta^{\circ}$ km.	Directions of Motion		Remarks Time of Origin				
				h.	m.	s.										
16	Feb. 13	(contd.) NE E N E N N E N	iPS iSS i iSSS L M <sub>1</sub> M <sub>1</sub> M <sub>2</sub> F	09	14	32				N	E					
										+	+					
										-	-					
										+	-		iN 22m 57s			
17	13	N N N	e L M F	19	21	25						U.S.C.G.S: 9.9°S, 160.8°E				
													-	-		
18	21	N E E N	e e M M F	17	34	47										
													+	+		
19	26	N NE E NE NE NE N E	iSKS iSKKS iPS iSS iSSS L M M F	20	41	06							U.S.C.G.S: 7.5°S, 146.2°E			
														+	-	
														-	-	
														+	-	iN 45m 26s
														+	+	iE 51m 21s
														+	-	
20	27	NE N E E N	L e e M M F	05	29	25							U.S.C.G.S: 6.0°S, 149.4°E			
21	27	N E N N E	e e L M M F	06	01	16							U.S.C.G.S: 14.5°S, 173.1°W			
														+	+	
22	March 4	N E E N	L L M M F	14	20	45							U.S.C.G.S: 24.2°N, 121.7°E			
23	7	N NE N E	eSS L M M F	06	00	30							U.S.C.G.S: 27.0°S, 113.5°W			
														-	-	
24	10	E N E	e M M F	03	39	30										

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. μ	Δ° km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.				N	E	
25	March 11	N E N	e i M F	07	44 45 45 50	35 36 49 -	17	6		N +	E -	U.S.C.G.S: 38.1°N, 29.3°E
26	16	NE E N NE NE E E N N N E	iP i iPP iS iPS iSS iSSS L M <sub>1</sub> M <sub>1</sub> M <sub>2</sub> M <sub>2</sub> F	08 09	56 57 59 06 06 10 14 17 19 22 30 31 35	30 30 30 05 45 47 05 - 44 21 14 33 -			74.6° 8290Km	+	+	U.S.C.G.S: 46.5°N, 154.7°E eE 09h 00m 25s T <sub>o</sub> = 08.44.52 eN 10m 50s eN 14m 39s
27	24	N E E E N	e e L M M F	03	09 11 13 18 18 34	28 13 48 43 58 -				-	+	U.S.C.G.S: 9.7°S, 120.4°E
28	24	NE N NE E N E	e i e M <sub>1</sub> M <sub>1</sub> M <sub>2</sub> F	13	04 05 08 11 12 13 34	42 33 18 13 32 48 -				-	+	U.S.C.G.S: 34.4°N, 47.9°E
29	26	NE E N NE N NE E N E N	i, eSKS ePSKS ePPS iSS iSSS L M <sub>1</sub> M <sub>1</sub> M <sub>2</sub> M <sub>2</sub> F	10 11 12	14 21 25 31 37 05 13 21 25 39 31	39 34 25 40 00 20 26 29 57 29 -				+	-	U.S.C.G.S: 29.7°S, 177.8°W iN 21m 16s
30	26	NE E N N NE	iS ePS eSS eL M F	21 22	57 57 02 15 21 55	03 49 41 24 59 -				+	+	U.S.C.G.S: 36.0°N, 135.7°E iN 28m 00s
31	28	N N N N	iP i iS M F	00 01	18 19 20 24 55	39 29 59 - -	10	420	12.5° 1389 Km	+	+	U.S.C.G.S: 66.3°N, 19.6°W No E-W record obtained T <sub>o</sub> = 00.15.45

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No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. μ	Δ° km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.				N	E	
32	March									N	E	
	31 ✓	N	e	05	53	45				-		U.S.C.G.S: 29.9°S, 177.7°W
		N	e	06	10	35				+		
		N	e		24	34						
		N	L		47	40				-		
	N	F		58	40	20	2.5					
				08	29	-						
<p>A.E.M. Geddes</p> <p>Natural Philosophy Department, The University, Aberdeen.</p>												





# SEISMOLOGICAL BULLETIN

KING'S COLLEGE OBSERVATORY, ABERDEEN

Lat.  $57^{\circ}10'N$  Long.  $2^{\circ}6'W$  Height above M.S.L. 12M. Lithologic Foundation: Glacial deposit over boulder clay.

APRIL - JUNE, 1963

Instruments: Milne-Shaw Seismographs, Photographic Registrations, Two Components.

Compt.	Mass	To	Damping Ratio	Magnification	1" Tilt	Date from which constants apply	
N	1 lb.	10 sec.	20 : 1	150	19.1mm.	E-W	1.2.62
E	1 lb.	10 sec.	20 : 1	150	18.1 mm.	N-S	1.2.62

No.	Date	Compt.	Phase	Time G.M.T.			Period sec.	Ampl. $\mu$	$\Delta^{\circ}$ km.	Dir <sup>n</sup> of Motion	Remarks Time of origin
				h.	m.	s.					
1	7	E	e	11	20	15			N E		
		N	i		21	56			+ -		
		E	iS		22	42			+ -	U.S.C.G.S.: $71.5^{\circ}N, 13.0^{\circ}W$	
		E	M		24	35	15	1.5	- -		
		N	M		25	20	12	1	- -	U.S.C.G.S.: $4.9^{\circ}S, 103.2^{\circ}E$	
			F		31	-					
2	7	E	eP	22	49	55					
		E	ePP		54	05			+ -		
		E	ePPP		56	20			- -		
		E	eSKS	23	00	46			+ -		
		N	eSKKS		01	36			+ -		
		E	i		03	25			- -	eN 03m 30s	
		N	eSS		08	58			- -		
		E	L		24	49					
		NE	e		34	-					
		N	M		39	35	20	4			
		E	M		44	44	20	4			
			F		53	-					
3	16	NE	ePP	01	49	00			- +	U.S.C.G.S.: $0.8^{\circ}S, 128.0^{\circ}E$	
		NE	i, ePPP		51	02			+ +		
		E	iSKS		53	29			+ +		
		N	iS		57	09			+ -		
		N	iPS		58	07			+ -		
		E	i	02	07	02			+ -		
		N	iSSS		08	32			+ +		
		NE	i		20	33			+ +		
		N	M		31	39	20	101			
		E	M		34	01	19	94			
			F	lost in succeeding shock							
4	16	N	iP	01	51	44			- -	U.S.C.G.S.: $1.2^{\circ}S, 128.4^{\circ}E$	
		E	iPP		56	04			- -		
		E	iPPP		58	42			- -		
		N	eSKS	02	02	11			+ -		
		E	iPS		05	23			+ +		
		E	M <sub>1</sub>		38	39	18	89			
		N	M <sub>1</sub>		43	06	20	112			
		NE	L <sub>1</sub>		47	-					
		E	M <sub>2</sub>		55	13	20	134			
		N	M <sub>2</sub>		57	00	25	126			
			F <sub>2</sub>	04	45	-					
5	17	NE	Traces	18	04	-				U.S.C.G.S.: $58.3^{\circ}N, 32.4^{\circ}W$	
					10	-					

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No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. μ	Δ° km.	Directions of Motion		Remarks Time of Origin		
				h.	m.	s.				N	E			
6	April 19	E	eP	07	46	02			65.0° 7220 Km	N	E	U.S.C.G.S.: 35.8°N, 96.9°E		
		E	ePPP		50	08								
		E	iS		54	51					+		-	iN 54m 54s
		N	ePS		55	29					+		-	iE 55m 56s
		NE	iSS		58	30					-		-	
		N	iSSS	08	01	51					-		+	iE 01m 56s
		N	L		09	26								
		E	L		10	26								
		E	M <sub>1</sub>		18	48	10	20						
		N	M <sub>1</sub>		21	56	14	31						
		E	M <sub>2</sub>		23	02	14	31						
		F <sup>2</sup>	09	45	-									
7	21	N	e	05	25	15				-		U.S.C.G.S.: 24.1°N, 122.1°E		
		NE	e		26	00					+			
		E	M		33	42	20	6.5						
		N	M		33	55	15	3						
			F		39	-								
8	29	N	eP	21	55	40			71.9° 7990 Km	+		U.S.C.G.S.: 51.4°N, 178.6°E		
		E	eS	22	05	00							-	
		N	i		05	43							+	
		NE	eSS		10	01							+	
		E	i		13	50							+	
		NE	L		22	30								
		E	M		27	32	17	3						
N	N		28	50	17	4								
		F		58										
9	30	N	eSKKS	01	24	53			113.6° 12620Km	+		U.S.C.G.S.: 0.7°S, 129.0°E		
		E	e		25	08							+	
		E	iS		25	38							+	
		NE	iPS		27	18							-	
		NE	iPPS		28	26							+	
		E	iSS		33	30							+	
		NE	e		36	13							-	
		N	L		52	53								
		NE	M <sub>1</sub>		56	33	25	15E) 8N)						
		E	M		59	33	25	12						
		N	M <sub>2</sub>	02	10	38	20	10						
		F <sup>2</sup>	03	04	-					E 02h 10m 53s: 20s, 10μ				
10	MAY 1	N	iPKP	10	22	53			141.4° 15710Km	-		U.S.C.G.S.: 19.0°S, 169.0°E		
		NE	eSKP		26	13							+	
		E	ePPP		29	00							+	
		N	iPPS		37	29							+	
		E	eSS		43	55							+	
		N	SSS		50	38							+	
		E	L	11	09	13								
		E	M		35	18	19	2						
	F		45	-										
11	8	E	ePS	09	11	20				+	U.S.C.G.S.: 54.9°N, 163.9°W			
		N	M		28	15)	20	2						
		E	M		28	50)								
		F		10	05	-								
										Building shaking				
12	8	E	e	10	40	45				-	U.S.C.G.S.: 36.6°N, 141.0°E			
		E	iS		44	40								
		E	eSS		49	40								

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No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. μ	Δ° km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.				N	E	
12	May 8 (contd.)									N	E	
		NE	L <sub>1</sub>	11	00	45						Very disturbed
		NE	L <sub>2</sub>		08	25						
		E	M		14	50	18	11				
		N	M		15	20	20	8				
			F		45	-						
13	10	E	e	22	36	36			84°		+	U.S.C.G.S: 2.2°S, 77.6°W
		E	ePP		38	25			9335°		+	
		E	iS		45	35				+	+	iN 45m 30s
		NE	iPS		42	26				+	+	
		N	iSS		51	17				+		
		E	iSSS		54	44					-	
		N	L	23	04	-						
		N	M		09	10	20	5.5				
		E	M		09	22	20	8				
			F		50	-						
14	11	NE	e	18	37	20				+	+	U.S.C.G.S: 24.2°N, 122.5°E
		E	L		40	20						
		E	M		45	20	18	9				
		N	M		45	28	15	4				
			F		58	-						
15	15	N	e	12	16	13				-	-	U.S.C.G.S: 38.0°N, 26.4°W
		E	i		18	05						
		NE	LM		21	-						
					24	-						
			F		29	-						
16	19	N	ePP	01	23	16				-		U.S.C.G.S: 46.5°S, 75.1°N
		N	i		29	03				+		
		N	iSP		33	16				-		
		N	e		40	01				+		Light failed on E-W
		N	L	02	00	11						
		N	M <sub>1</sub>		06	13	22	3				
		N	M <sub>2</sub>		12	16	20	4				
			F		58	-						
17	19	E	iP	10	03	33			14.7°		-	U.S.C.G.S: 46.0°N, 14.7°E
		E	iS		16	16			1635Km		-	
		E	e		07	50					+	T <sub>0</sub> = 10h 00m 09s
		E	e		09	30					-	
			F		15	-						
18	19	E	eP	21	44	01			47.7°		+	U.S.C.G.S: 23.8°N, 45.9°W
		N	i		44	16			5300Km		-	
		NE	iPPP		46	21					+	N 46m 17s
		NE	iS		50	56					-	
		N	iSS		54	16					+	eE 54m 06s
		NE	iSSS		55	31					-	
		E	L		57	46					+	
		E	M		58	06	22	100				
		N	M	22	01	36	15	20				
			F	23	08	-						
9	22	E	eP	22	52	35					-	U.S.C.G.S: 8.2°S, 115.7°E
		NE	e		56	15					+	
		N	e	23	01	05					-	
		N	M		03	37	20	1.5				
		E	M		08	30	20	4				
			F		15	-						



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No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. "	$\Delta^\circ$ km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.						
20	May 25	E N E N E N E	e e e i e M M F	16	36	06	20 20	8 5.5		N E	+	U.S.C.G.S:20.7°N,120.9°E
				39	10							
				41	07							
				51	23							
				50	10							
				17	11	20						
21	26	E N N E	e e M M F	23	46	44	17 15	3 3		-	+	U.S.C.G.S:55.2°N,159.9°E
				47	30							
				54	34							
				56	34							
				24	18	-						
				22								
22	J U N E	E E E E E	e e e L M F	21	32	08	20	5.5			+	U.S.C.G.S:58.5°S,15.6°W
				40	00							
				43	58							
				51	10							
				59	18							
				35	-							
23	4	E E E E N N E E E N E	ePP ePPP eSKS ePS eSS e e L M <sub>1</sub> M <sub>1</sub> M <sub>2</sub> F <sub>2</sub>	21	23	42	22 16 19	3 3 3.5	111.3 12365 Km		+	U.S.C.G.S:1.2°S,127.3°E
				26	22							
				29	42							
				33	22							
				39	32							
				43	32							
				52	27							
				22	01	32						
				09	22							
				14	07							
				14	14							
24	6	E E E N E	i iPP e e M F	05	34	32	9	1.5		-	+	Very slight on N-S
				35	23							
				39	06							
				42	28							
				43	02							
				59	-							
25	6	E N N E	e e M M F	06	03	22	20 20	4 5.5		+	+	U.S.C.G.S:19.9°N,120.2°E
				05	27							
				10	18							
				10	37							
				40	-							
				26								
26	7	E N E N E NE	eSKS e ePPS eSSS L M F	16	13	27	20	2.5		+	+	U.S.C.G.S:19.0°N,121.8°E
				13	42							
				15	07							
				23	12							
				36	12							
				40	27							
				17	00	-						
				27								
27	7	NE E E N E	i,eS eSS L LM M F	19	54	22	22	5		-	+	U.S.C.G.S:8.5°N,103.1°W
				20	00	25						
				13	12							
				16	02							
				18	00							
				43	12							



## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. μ	Δ° km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.				N	E	
28	June 7	E	eSS	23	17	47				N	E	U.S.C.G.S: 15.3°S, 173.2°W
		N	e		46	22				-		
		E	L		53	12						
		E	M		59	17	20	1.5				
		N	M		24	09	16	17	1			
			F		27	-						
29	10	E	ePP	04	41	07						U.S.C.G.S: 55.4°S, 146.4°E
		E	eSKS		43	32				+		
		E	e		46	37				-		
		E	eSKKS		47	42				+		
		E	e		50	44				+		
		E	eSS	05	02	26				-		
		E	eL		35	12						
		N	eL		37	27						
		E	M		48	27	20	5.5				
		N	M		49	07	20	2.5				
			F	06	27	-						
30	10	E	ePKP	06	59	52						U.S.C.G.S: 55.3°S, 146.1°E
		E	ePP	07	03	37				+		
		E	eSKS		06	07				+		
		E	e		08	37				-		
		E	iSKKS		10	27				+		
		N	e		13	02				-		
		E	iPSKS		14	42				-		
		E	ePPS		17	07				-		
		NE	eSS		23	52				+		
		E	eSSS		30	32				+		
		E	L		58	22				+		
		N	M	08	06	22	25	6.5				
		E	M		10	28	22	10				
			F		58	-						
31	11	E	e	03	46	00						U.S.C.G.S: 37.1°N, 70.3°E
		E	LM		56	40				+		
			F	04	01	-						
					08	-						
32	17	E	e	19	01	30						U.S.C.G.S: 60.4°N, 140.8°W
		E	e		03	34				+		
		N	e		03	55				-		
		E	M		08	00	18	3.5		-		
		N	M		15	09	15	1.5				
			F		20	-						
33	17	NE	e	19	44	25						
		E	L		57	30				+		
		E	M	20	08	34	21	4.5				
		N	M		14	04	18	4.5				
			F		41	-						
34	19	NE	i	09	35	04						U.S.C.G.S: 4.7°N, 126.5°E
		E	L	10	09	55				-		
		N	M		12	02	17	2				
		E	M		12	42	22	3.5				
			F		29	-						
35	19	E	iSKKS	23	25	09						U.S.C.G.S: 31.5°N, 140.3°E
		N	e		25	00				+		
		E	i		31	04				-		
		NE	L		50	10						
		E	M		57	37	16	2				
		N	M	24	00	05	17	2				
			F		05	-						

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. μ	Δ° km.	Directions of Motion		Remarks Time of Origin		
				h.	m.	s.				N	E			
36	June 20	E	e	19	52	30				N	E	U.S.C.G.S: 35.8°N, 3.6°W		
		E	e		56	33				-	-			
		E	e		58	58					+			
		E	M		20	01	00	10	2					
		N	M		02	13		10	1					
		F		09	-									
37	21	E	e	14	22	28					+	U.S.C.G.S: 15.1°S, 173.3°W		
		N	M		23	22	20	2.5						
		E	M		26	22	20	2.5						
		F			34	-								
38	24	NE	iP	04	36	58			60°	+	+	U.S.C.G.S: 59.5°N, 151.7°W		
		E	i		37	12			6665Km		-			
		N	iPP		39	09					+		eE 39m 03s	
		NE	iS		45	10					+			
		NE	i		46	39					+		-	To = 04h 26m 54s
		E	iSS		49	12							+	
		E	L		54	-								
		E	M <sub>1</sub>		56	22	32	79						
		N	M <sub>1</sub>		05	02	47	20	49					
		E	M <sub>2</sub>		05	32	16	20						
		F <sub>2</sub>		06	22	-								
39	26	E	e	17	56	58					+	U.S.C.G.S: 7.1°N, 82.3°W		
		N	e		57	06					+			
		N	e	18	00	03					-			
		E	i		02	27							-	
		NE	eS		04	41					+		+	
		NE	e		09	36					+		-	
		N	e		16	11							-	
		E	eL		20	06							-	
		E	M		31	16	17	3						
		F		59	-									
40	23	NE	iP	22	07	20			73.9	-	+	U.S.C.G.S: 46.5°N, 153.2°W		
		E	i		07	59			8210Km		-			
		N	iPP		10	06					+		iN 08m 02s	
		N	i		11	21					+		-	eE 10m 12s
		NE	iS		16	51					-		+	
		N	iPS		17	33					+			
		N	eSS		21	50					-			
		N	eSSS		24	55					-		-	eE 25m 08s
		NE	L		38	05								
		N	M		44	32	17	26						
		E	M		48	32	19	40						
		F	25	35	-									

A.E.M. Geddes

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Library



# SEISMOLOGICAL BULLETIN

## KING'S COLLEGE OBSERVATORY, ABERDEEN

Lat. 57°10' N. Long. 2°6' W. Height above M.S.L. 12M. Lithologic Foundation: Glacial deposit over boulder clay.

JULY - SEPTEMBER, 1963

Instruments: Milne-Shaw Seismographs, Photographic Registrations, Two Components.

Compt.	Mass	To	Damping Ratio	Magnification	1" Tilt	Date from which constants apply	
N	1 lb.	10 sec.	20 : 1	150	18.1 mm.	E-W	1.2.62
E	1 lb.	10 sec.	20 : 1	150	18.1 mm.	N-S	1.2.62

No.	Date	Compt.	Phase	Time G.M.T. h. m. s.	Period sec.	Ampl. μ	Δ° km.	Dir <sup>n</sup> of Motion	Remarks Time of origin
1	July 2	E N E	e e M F	00 43 54 44 04 48 09 50 -	15	1.5		N E + +	U.S.C.G.S: 43.9°N, 85.2°E
2	2	E N N E	e e L M F	14 26 28 27 03 34 13 38 25 50 -	18	2		- + -	U.S.C.G.S: 14.7°S, 70.5°W
3	4	NE N NE N N N N	i, eP i, ePP i iS i L M F	10 17 48 18 53 21 08 21 58 27 48 31 23 42 - 53 33 12 04 -	20	2.5	79.3° 8810 Km	- + + + - + +	
4	4	NE N E N E N	e eSSS e L M M F	22 17 45 23 03 31 13 36 15 39 18 44 18 56 -	18 15	2 1.5		+ + +	U.S.C.G.S: 0.5°N, 120.6°E
5	5	E e	e LM	13 31 00 35 10) 41 40)				-	U.S.C.G.S: 37.2°N, 73.0°W No N-S record
6	8	E E E	eS e M F	11 23 00 29 02 34 22 55 -	15	1.5		+ -	U.S.C.G.S: 0.3°N, 17.8°W
7	9	N E NE E E	e e i L M F	09 44 55 45 20 53 30 10 01 20 09 20 35 -	20	4		- + - +	U.S.C.G.S: 8.5°N, 83.0°W No definite max. on N-



## SEISMOLOGICAL BULLETIN

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. " "	$\Delta^\circ$ km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.						
8	10	N	eP	05	34	40				N	E	U.S.C.G.S:46.3°N,152.9°E
		E	i		36	35				-	-	
		N	ePP		37	10				+	-	
		NE	iS		44	14				-	-	
		E	L		57	00						
		E	M <sub>1</sub>	06	07	30	17	4				
		E	M <sub>2</sub>		11	50	15	6.5				
9	10	NE	eS	07	28	15				+	+	U.S.C.G.S:39.8°N,23.9°E
		NE	M		35	05	15	1.5				
		F		42								
10	13	E	e	14	56	00						
		N	M	15	02	05	15	3				
		E	M		02	20	15	2				
		F		13	-							
11	14	NE	eP	05	52	31				-	+	U.S.C.G.S:10.4°N,62.6°W iE 01m 25s
		N	iS	06	01	10				-	+	
		E	iPS		01	52					-	
		E	eSS		05	50					+	
		N	eSSS		08	15				+		
		E	L		16	05						
		E	M		20	15	17	2				
		N	M		23	30	16	2				
12	16	E	iP	18	33	30			30.6°		+	U.S.C.G.S:43.1°N,41.5°E eN 35m 11s iN 39m 00s
		E	iPP		34	20					-	
		E	iPPP		34	45			3400 Km	+	-	
		E	iS		38	40				+	+	
		N	iSS		40	35				+		
		NE	L		42	40						
		N	M <sub>1</sub>		45	18	8	30				
		N	M <sub>2</sub>		48	27	17	56				
		E	M <sub>2</sub>		51	54	12	77				
		F		20	15	-						
13	19	NE	eP	05	49	10			16.2°	+	+	U.S.C.G.S:43.4°N,8.2°E
		E	i		50	02			1800 Km		+	
		NE	iS		52	09				-	-	
		NE	iSS		52	45				-	-	
		E	L		53	45						
		E	M		55	28	8	61				
		N	M		56	19	9	63				
		F		07	17	-						
14	20	E	eP	07	02	53			85°		+	
		N	e		02	58			9465 Km	-	-	
		E	iPPP		07	54						
		NE	eS		13	23				+	+	
		E	eSSS		22	54					+	
		NE	e	08	02	-						
		N	M		12	08	23	18				
		E	M		12	20	20	5.5				
F			48	-								

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. "	$\Delta^\circ$ km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.						
15	24	E	eS	11	55	32			86°	N	E	U.S.C.G.S: 24.6°N, 122.0°E
		NE	eSS	12	01	17		9555 Km	+	+		
		NE	e	08	00					+	+	
		E	L	15	12							
		E	M	19	53		22	10				
		N	M	12	18		20	5.5				
		F		53								
16	26	NE	iP	04	22	07				+	-	U.S.C.G.S: 42.1°N, 21.5°E T <sub>o</sub> = 04h 17m 15s
		NE	i	22	12			22°	-	+		
		NE	i	22	47			2445° Km	+	-		
		NE	iS	26	03				-	-		
		NE	i	26	18				-	+		
		E	iSS	27	02							
		N	L	29	-							
		E	M	30	07		9	41				
		N	M	30	23		16	74				
		F		05	31	-						
17	29	N	eSKS	20	42	10			153°	-		U.S.C.G.S: 30.2°S, 177.3°W
		N	ePSKS	48	53			17000 Km	+			
		E	e	50	43							
		N	e	53	53					+		
		E	e	57	03							
		N	L	21	40	58						
		E	L	41	08							
		E	M	48	37		18	13				
		N	M	48	53		20	8				
		F		22	48	-						
18	30	N	e	07	04	53				-		U.S.C.G.S: 51.7°N, 158.1°E
		N	e	06	03					-		
		N	e	07	55					-		
		E	e	10	03						+	
		E	e	11	33						+	
		E	M	24	03		20	4				
		N	M	30	10		15	3				
				F		08	05	-				
19	Aug. 2	E	e	09	16	37					+	U.S.C.G.S: 56.3°N, 34.5°W
		N	e	17	12					-		
		NE	e	20	02					+		
		N	M	23	57		18	3.5				
		E	M	24	00		15	3				
		F		40	-							
20	3	E	iP	10	31	15			56°		+	U.S.C.G.S: 7.7°N, 35.8°W No N-S record available T <sub>o</sub> = 10h 21m 38s
		E	i	34	37			6220 Km		+		
		E	iS	39	04					+		
		E	ePS	39	42					-		
		E	i	41	08					-		
		E	iSSS	44	42					+		
		E	L	46	30							
		E	M	49	34		10	96				
		F		13	39	-						
21	3	N	e	20	32	00				-		
		E	e	34	12						+	
		N	M	37	17		10	1				
		E	M	38	07		10	1				
				F		44	-					

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. μ	Δ° km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.				N	E	
22	6	NE NE NE N E	i, eP e L M M F	13	40	33 43 58 44 45 46 28 46 43 14 05 -	18 17	13 14		+ - - - -	+ +	U.S.C.G.S: 57.0°N, 33.6°W
23	8	E NE N E N	eS e L M M F	02	35	03 35 18 47 43 03 06 20 06 25 14 -	15 15	1.5 1.5		- - - - -	- +	U.S.C.G.S: 54.2°N, 168.1°E
24	8	E E N	L M M F	12	22	17 33 32 33 42 43 -	17 20	3 2.5				U.S.C.G.S: 27.3°N, 129.1°E
25	9	E N E E N	e eS L M M F	06	12	17 12 32 13 23 17 07 17 10 25 -	13 14	4.5 3.5		- -	+	U.S.C.G.S: 44.5°N, 11.9°E
26	9	E N E	e M M F	15	48	10 56 20 16 11 10 24 -	17 15	2 1.5			+	? U.S.C.G.S: 3.0S, 152.3°E Disturbance from 15h 40m -17h 00m
27	15	NE E NE NE NE E NE E E N	iP i e, iPP ePPP S iPS e L M M F	06	23	44 24 06 26 45 28 40 33 46 34 36 38 31 50 11 56 10 55 23 08 05 -	23 25	13 17	79.6° 8845 Km	- + - - - - - + + - -	+ - - + + + + + +	U.S.C.G.S: 37.9°N, 141.6°E iN 24m 17s eN, 34m 33s
28	15	NE NE N E NE NE NE NE NE	eP i iPP iPPP iS iPS i i i	17	37	06 37 22 40 43 42 26 46 56 48 36 50 50 51 08	10	49 E) 28 N)		- + + + + + + - -	- + - + - + + - -	U.S.C.G.S: 13.8°S, 69.3°W iE 39m 35s Deep focus
29	17	NE E NE N E E NE E N	i, eP iPP iS ePS eSS eSSS L M M F	11	25	07 28 25 35 28 36 20 41 17 44 35 52 30 58 35 58 42 13 14 -	25 23	83.4° 9265 Km	+ + - - + + + + +	+ + + + - - - - -	U.S.C.G.S: 30.6°N, 130.9°E T <sub>0</sub> = 11h 25m 45s. eN 45m 15s.	

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. μ	Δ° km.	Directions of Motion		Remarks Time of Origin						
				h.	m.	s.												
30	22	E	iSSP	20	31	12	17	3		N	E	U.S.C.G.S: 9.4°S, 158°E + + - + No N-S record available						
		E	eSSS		36	12												
		E	e		51	22												
		E	e		59	07												
		E	L		21	05				12								
		E	M F		14	09												
				44	-													
31	25	N	e	06	30	25	15	1.5		-		?U.S.C.G.S: 38.9°N, 38.4°E + +						
		E	e		31	20												
		NE	e		34	15												
		E	M F		35	15												
					43	-												
32	25	NE	ePP	12	39	05		140° 15555Km		-	+	U.S.C.G.S: 17.5°S, 178.8°W + + - - + Deep focus + Slight effect from 14h 05 to 14h 21m						
		E	ePPP		43	20												
		NE	iSKS		43	40												
		N	eSKKS		45	57												
		N	ePPS		52	17												
		E	iSS		57	19												
		E	eSSS		13	02				25								
		NE	LM F		indefinite 59	-												
33	27	E	i	04	23	00	15	2.5		+		+ U.S.C.G.S: 45.9°S, 75.3°W						
		N	e		30	10												
		N	M F		37	20												
					45	-												
34	29	E	iP	09	02	48	15	35	50.7° 5635Km		+	+ U.S.C.G.S: 39.6°N, 74.2°E - + iE 10m 17s + T <sub>o</sub> = 08h 53m 48s + + + +						
		E	ePP		04	47												
		N	iS		10	02												
		NE	i		12	35												
		NE	iSS		13	32												
		E	iSSS		15	28												
		E	i		19	57												
		N	i		20	22												
		E	M <sub>1</sub>		25	37							15					
		N	M <sub>1</sub> F		29	02							15					
					10	18							-					
35	29	NE	e, iP	15	43	35		20	90° 10,000Km		+	+ U.S.C.G.S: 7.1°S, 81.6°W + iN 47m 11s - + eN 54m 04s + +						
		E	iPP		47	00												
		N	iPPP		48	57												
		E	iSKS		53	59												
		E	iPS		55	14												
		E	eSS		16	00							27					
		N	eSSS		04	07												
		N	L		16	27												
		E	M		19	12							22					
		N	M		37	17							18					
					18	17							-					



## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. " "	$\Delta^\circ$ km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.						
36	Sept 3	N	e	09	16	20				N	E	U.S.C.G.S:62.8°N, 25.2°W
		E	eP		16	27				-	-	
		NE	eS		18	57				-	-	
		E	M		21	00	15	2				
		N	M F		21 31	20 -	10	1				
37	4	N	iP	05	11	36			22.2°	+		U.S.C.G.S:36.1°N, 5.3°E T <sub>o</sub> = 05h 06m 42s
		E	i		13	57			24.65Km		-	
		NE	iS		15	34				+	+	
		N	L		18	07						
		E	M		19	15	15	9.5				
		N	M F		21 59	22 -	15	13				
38	4	NE	i, eP	13	38	34			31.1°	-	+	U.S.C.G.S:71.4°N, 73.3°W T <sub>o</sub> = 13h 32m 13s
		N	i		39	40			34.55Km	+	+	
		NE	e, iS		43	43				+	+	
		N	L		46	49						
		N	M		49	15	22	53				
		E	M F		49 15	22 03	20	46.5				
39	6	N	e	06	46	11				-		U.S.C.G.S:36.4°N, 130.6°E Light failed on E-W
		N	L		46	50						
		N	M F		51 07	00 17	15	2.5				
40	7	N	e	02	01	00				-		
		E	e		01	50					+	
		N	e		03	53					-	
		E	i		05	10					+	
		N	e		06	40					-	
		E	e		09	09					-	
		N	i		09	56					-	
		E	i F		12 30	11 -						
41	7	E	eSS	09	19	05					+	U.S.C.G.S:11.7°S, 13.6°W
		NE	e		23	10				+	-	
		E	eL		27	25						
		E	M		32	03	20	2.5				
		N	M F		34 51	15 -	15	1				
42	15	N	iPP	01	08	26			132.3°	+		U.S.C.G.S:10.3°S, 165.6°E iE 27m 13s
		E	i		09	31			14.700Km		+	
		NE	iPPP		11	30				+	-	
		N	iSKS		13	30					-	
		E	i		13	46					-	
		N	iSKKS		15	31					-	
		N	i		18	56					+	
		NE	iPPS		33	59					+	
		N	eSS		26	41					+	
		N	iSSS		31	20					+	
		E	M <sub>1</sub>		52	30	26	50			-	
		N	M <sub>1</sub>		53	46	22	56				
		N	M <sub>2</sub>		02	07	20	21	30			
		E	M <sub>2</sub> F <sup>2</sup>		07 03	42 34	18	27				

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. "	$\Delta^\circ$ km.	Directions of Motion		Remarks Time of Origin
				h.	m.	s.						
43	17	NE	ePKP	19	39	14			132.3 <sup>o</sup> 14700Km	N	E	U.S.C.G.S:10.1 <sup>o</sup> S, 165.3 <sup>o</sup> E T <sub>o</sub> = 19h 20m 14s eN 20h 00m 05s U.S.C.G.S:gives two subsequent shocks at (1)20h 00m 56.6s, and (2)22h 28m 29.6s in same locality
		NE	i, ePP	41	47					+	+	
		NE	i, eSKP	42	57					+	-	
		N	iPPP	44	37					+		
		E	i	48	02						+	
		N	iPPS	53	20					+		
		E	eSS	59	35					-	+	
		N	iSSS	20	04	17				+		
		N	L	22	30							
		N	M <sub>1</sub>	26	35		25	74				
		E	M <sub>1</sub>	32	47		23	51				
		N	M <sub>1</sub>	36	03		22	40				
E	M <sub>2</sub>	40	55		18	45						
			F <sup>2</sup>	22	24	-						
44	18	N	eP	17	03	47			27.2 <sup>o</sup> 3020 Km	-		U.S.C.G.S:40.9 <sup>o</sup> N, 29.2 <sup>o</sup> E T <sub>o</sub> = 16h 58m 02s
		N	iS	08	28					-		
		N	iSS	09	31					-		
		N	L	11	15					-		
		N	M	16	24		17	58				
			F	59	-							
45	19	E	eP	16	53	29			22.3 <sup>o</sup> 2480 Km	-		U.S.C.G.S:47.1 <sup>o</sup> N, 27.4 <sup>o</sup> W
		E	eS	58	27					+		
		N	eF	17	01	24				+		
			F	10	-							
46	23	E	e	09	22	58					+	
		E	e	39	40					+		
		E	M	46	34		15	5				
		N	M	47	25		15	3				
					F	10	10	-				
47	24	NE	iSKS	16	53	42			91.4 <sup>o</sup> 10155Km	+	+	U.S.C.G.S:10.6 <sup>o</sup> S, 78.0 <sup>o</sup> W T <sub>o</sub> = 16h 30m 15s
		NE	iS	54	14					+	+	
		E	i	54	52					+	+	
		N	iPS	55	25					+	+	
		E	iSS	17	00	32				-	+	
		NE	i, eSSS	05	07							
		N	L	12	00							
		N	M	16	47		25	5				
E	M	16	57		25	6.5						
			F	47	-							
48	29	E	eP	22	22	10				-		U.S.C.G.S:36.1 <sup>o</sup> N, 18.0 <sup>o</sup> E Very slight
		E	eS	28	30				-			
			F	35	-							

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A. E. M. Geddes

# SEISMOLOGICAL BULLETIN

KING'S COLLEGE OBSERVATORY, ABERDEEN


Lat. 57°10' N. Long. 2°6' W. Height above M.S.L. 12M. Lithologic Foundation: Glacial deposit over boulder clay.

OCTOBER - DECEMBER, 1963

Instruments: Milne-Shaw Seismographs, Photographic Registrations, Two Components.

Compt.		Mass	To	Damping Ratio	Magnification	1" Tilt	Date from which constants apply	
N	E	1 lb.	10 sec.	20 : 1	150	19.0mm.	E-W	1.10.63
E	N	1 lb.	10 sec.	20 : 1	150	18.1 mm.	N-S	1.10.63

No.	Date	Compt.	Phase	Time G.M.T. h. m. s.	Period sec.	Ampl. μ	Δ° km.	Dir <sup>n</sup> of Motion	Remarks Time of origin
1	Oct. 3/4	N	i	23 42 12				N E	U.S.C.G.S:32.2°N,131.6°E  
		N	i	48 18				+	
		N	i	53 12				+	
		NE	e	58 30				-	
		E	L	24 05 00				+	
		N	M	18 31	14	16			
2	5	E	M	18 40	14	16			U.S.C.G.S:11.6°N,42.8°E
		N	F	43 -					
		N	e	15 26 12				+	
		E	e	26 19				+	
		N	i	31 14				-	
		E	L	32 22					
3	12	N	M	36 26	14	5			U.S.C.G.S:44.8°N,149.0°E  iN 48m 24s iN 48m 50s
		E	M	39 34	15	5.5			
		N	F	16 05 -					
		E	eP	11 39 01			73.4°	-	
		NE	iPP	42 00			8155	+	
		E	iS	48 29				+	
		E	iPS	49 14				-	
		E	iSS	53 22				+	
		N	L	12 10 30				+	
		N	M <sub>1</sub>	14 57	17	34			
4	13	N	M <sub>1</sub>	15 48	17	34			U.S.C.G.S:44.8°N,149.5°E T <sub>0</sub> = 05h 18m 02m  iN 45m 14s  Number of minor shocks between 06h 05m and 10h 10m.
		E	M <sub>1</sub>	21 05	19	47			
		N	M <sub>2</sub>	22 05	17	44			
		E	F <sub>2</sub>	14 41 -					
		NE	iP	05 29 42			75.0	-	
		E	i	30 15			8335Km	-	
		NE	iPP	32 35				-	
		N	iPPP	34 19				-	
		N	iS	39 19				-	
		E	i	39 45				+	
N	E	iSS	44 14				-		
		L	53 30				+		
		M <sub>1</sub>	06 05 10	17	N 330				
		E	M <sub>2</sub>	10 47	17	E 500			
		F <sub>2</sub>	10 10	17	500				



## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. $\mu$	$\Delta^\circ$ km.	Directions of Motion		Remarks Time of Origin	
				h.	m.	s.							
5	Oct 13	E e		16	43	17	17	4		N	E	U.S.C.G.S:44.9°N,150.5°E	
		E e				47							28
		E M				52							02
		F				53							-
6	14	E e		00	40	55				-	+	U.S.C.G.S:44.9°N,150.9°E	
		NE e				49							55
		N e				59							10
		F				01							03
7	15	NE iS		10	05	11	10	37		+	+	U.S.C.G.S:67.2°N,18.4°W.	
		NE i				05							56
		E M				16							23
		N M				07							16
		F				24							-
8	16	NE iP		16	03	15	10	15	48.0°	+	-	U.S.C.G.S:38.6°N,73.4°E.	
		N eS				10							12
		N i				10							27
		N iSS				13							40
		E iSSS				14							17
		N L				17							39
		N M				19							02
F				31	-								
9	31	E eSS		03	59	24	16	4.5	144.6°	+	-	U.S.C.G.S:21.8°S,175.0°W	
		E eSSS				04							04
		E e				10							19
		E eL				24							22
		E e				33							37
		E M				48							20
		F				05							03
10	Nov 3	E iP		03	22	48	25	17	83.8°	+	-	U.S.C.G.S:3.5°S,77.8°W.	
		E i				24							26
		E ePP				26							07
		E iS				33							11
		E i				33							15
		E i				35							35
		E eSS				38							55
		E eSSS				42							21
		E L				48							35
		E M				56							12
		F				04							59
11	3	E e		14	44	31	10	1		-	+	U.S.C.G.S:39.2°N,21.1°E.	
		E e				47							16
		E M				49							40
		F				15							00
12	4	E eP		01	32	02	20	192	117.3°	+	-	U.S.C.G.S:6.8°S,129.6°E	
		E ePKP				35							55
		E iPP				37							06
		E i				37							49
		E iSKP				38							54
		E iSKS				42							22
		E iPS				46							47
		E iSS				53							03
		E i				56							42
		E L				02							17
		E M				25							29
F				05	49								

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. " "	$\Delta^\circ$ km.	Directions of Motion	Remarks Time of Origin	
				h.	m.	s.						
13	Nov 9	E	iP	21	27	23	20	55	86.0 9555 Km	N E	U.S.C.G.S: 9.0°S, 71.5°W	
		E	e		30	37						+
		E	i		33	15						-
		E	iSKS		36	47						+
		E	iS		37	19						-
		E	iPS		38	12						+
		E	iSS		43	13						+
		E	iSSS		46	17						-
		E	M		50	37						
		F	23	28	-							
14	10	E	iSKS	01	21	53			86.0 9555 Km		U.S.C.G.S: 9.2°S, 71.5°W.	
		E	iS		22	12						+
		E	ePS		23	15						+
		E	eSS		28	11						+
		E	e		31	02						-
		F		43	-							
15	10	E	e	18	06	45					U.S.C.G.S: 44.4°N, 149.0°E	
		E	i		08	07						-
		E	i		13	38						-
		F		29	-							
16	15	NE	e	21	25	49	19	25		-	U.S.C.G.S: 44.3°N, 149.0°E	
		NE	i, eS		28	14						+
		N	iSS		33	31						+
		NE	L		49	20						+
		E	M		55	59						17
		N	M		56	41						12
17	17	E	i	00	03	52	20	4			U.S.C.G.S: 22.1°S, 173.5°W	
		E	i		10	16						-
		E	M		14	24						
		F		19	-							
18	17	E	e	00	30	-					Very slight	
					55	-						
19	17	E	i	01	01	29	10	26			U.S.C.G.S: 7.6°N, 37.4°W.	
		E	eS		05	34						-
		E	iPS		06	26						+
		E	eSS		09	42						-
		E	iSSS		11	14						+
		E	M		15	20						
20	18	E	iP	14	50	20					U.S.C.G.S: 29.9°N, 113.6°W	
		E	eSS	15	04	52						+
		E	iSSS		08	03						+
		E	L		14	56						+
		E	M <sub>1</sub>		21	15						15
		E	M <sub>2</sub>		24	49						15
21	23	E	e	08	30	27	10	1.5				
		E	i		33	10						+
		E	M		36	35						
		F		45	-							

## KING'S COLLEGE OBSERVATORY, ABERDEEN

No.	Date	Compt	Phase	Time G.M.T.			Period sec.	Ampl. "	$\Delta^\circ$ km.	Directions of Motion		Remarks Time of Origin		
				h.	m.	s.								
22	Dec 2	E	iP	21	01	07	15	4		N	E	U.S.C.G.S:80.1°N,0.6°W. Light failed on N-S.		
		E	PPP		01	48				-	+			
		E	eS		05	16					+			
		E	eSS		06	07					-			
		E	L		07	46								
		E	M		08	55								
		F	26	-										
23	3	E	L	23	55	55	20	5.5				U.S.C.G.S:22.4°S,69.3°W.		
		E	M		57	52								
		F	24	01	-									
24	4	E	Traces	02	13	-								
25	15	NE	iPP	19	52	20	20	11		+	+	U.S.C.G.S:4.8°S,108.0°E. Deep focus		
		E	iSKS		57	22					+			
		E	iSKKS		58	12					+			
		E	eS		59	20					+			
		N	e	20	04	00					+			
		N	eSS		08	10					-			
		E	eSSS		12	25					+			
		N	e		20	15					-			
		E	M		41	11								
		F	52	-										
26	16	N	e	02	48	25	18	13		-		U.S.C.G.S:6.1°S,104.9°E		
		E	e		53	45					+			
		N	M		55	05								
		E	M		55	42					17			
		F	03	05	-									
27	18	N	iPKP	00	49	45	22	128		+		U.S.C.G.S:24.8°S,176.6°W iE 53m 40s. iE 12m 00s		
		NE	i,e		50	02					-		+	
		E	i		51	05					+			
		N	iSKP		53	25					+		-	
		E	ePPP		56	11					-			
		E	iSKS		56	45					-			
		N	iPSKS	01	03	33					+		-	
		N	iSS		12	15					-		-	
		E	M		32	13								
		E	eL		41	17								
		E	M	02	03	25					22		56	
N	M		12	50		20	19							
		F	03	05	-									
28	21	E	e	13	57	-	20	2.5				U.S.C.G.S:16.1°N,119.7°E No effect on N-S.		
		E	M	14	01	03								
		F		16	-									
29	26	E	traces	08	05	30						U.S.C.G.S:76.5°N,22.4°E.		
					15	-								
30	31	N	e	18	33	46	20	15		-				
		E			36	16					-			
		N	L		39	36								
		N	M		43	36					20			
		E	M		49	36					20			
		F	19	00	-									

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