

**THE
ASTRONOMICAL SOCIETY
OF
SOUTHERN AFRICA**

HANDBOOK FOR

1966

THE ASTRONOMICAL SOCIETY OF SOUTHERN AFRICA

1965 - 1966

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The Astronomical Society of South Africa was formed in July 1922, by the amalgamation of the Cape and Johannesburg Astronomical Associations which had been in active existence for several years. Its name was changed to the Astronomical Society of Southern Africa in 1956. The declared objects of the Society are:—

- (1) The encouragement and stimulation of the study of Astronomy in Southern Africa;
- (2) The association of observers and their organisation in the work of astronomical observation and research;
- (3) The dissemination throughout Southern Africa of such current astronomical information as may be helpful to observers;
- (4) The publication from time to time of the results of the work accomplished by the Society.

Membership is open to all who are interested in Astronomy. The Society issues, usually, eleven numbers of "The Monthly Notes of the Astronomical Society of Southern Africa" (M.N.A.S.S.A.) each year, and distributes to each member copies of "Sky and Telescope", an illustrated monthly astronomical magazine published in the United States.

Candidates for election as members of the Society must be proposed and seconded by two members (not associate or student members). The annual subscription for members is R5.00 with an entrance fee of R2.50.

M.N.A.S.S.A. is also on sale to non-members of the Society. Enquiries concerning subscriptions and remittances by non-members should be addressed to the Circulation Manager, Mr. W. C. Bentley, P.O. Box 841, Cape Town.

All other communications for the Society should be addressed to the Hon. Secretary, Astronomical Society of Southern Africa, c/o The Royal Observatory, Observatory, Cape Province.

SOCIETY'S CALENDAR FOR 1966.

Material and Notes for M.N.A.S.S.A. by 20th of the month.

Nominations for Gill Medal by April 8.

Essay Competition closes May 31.

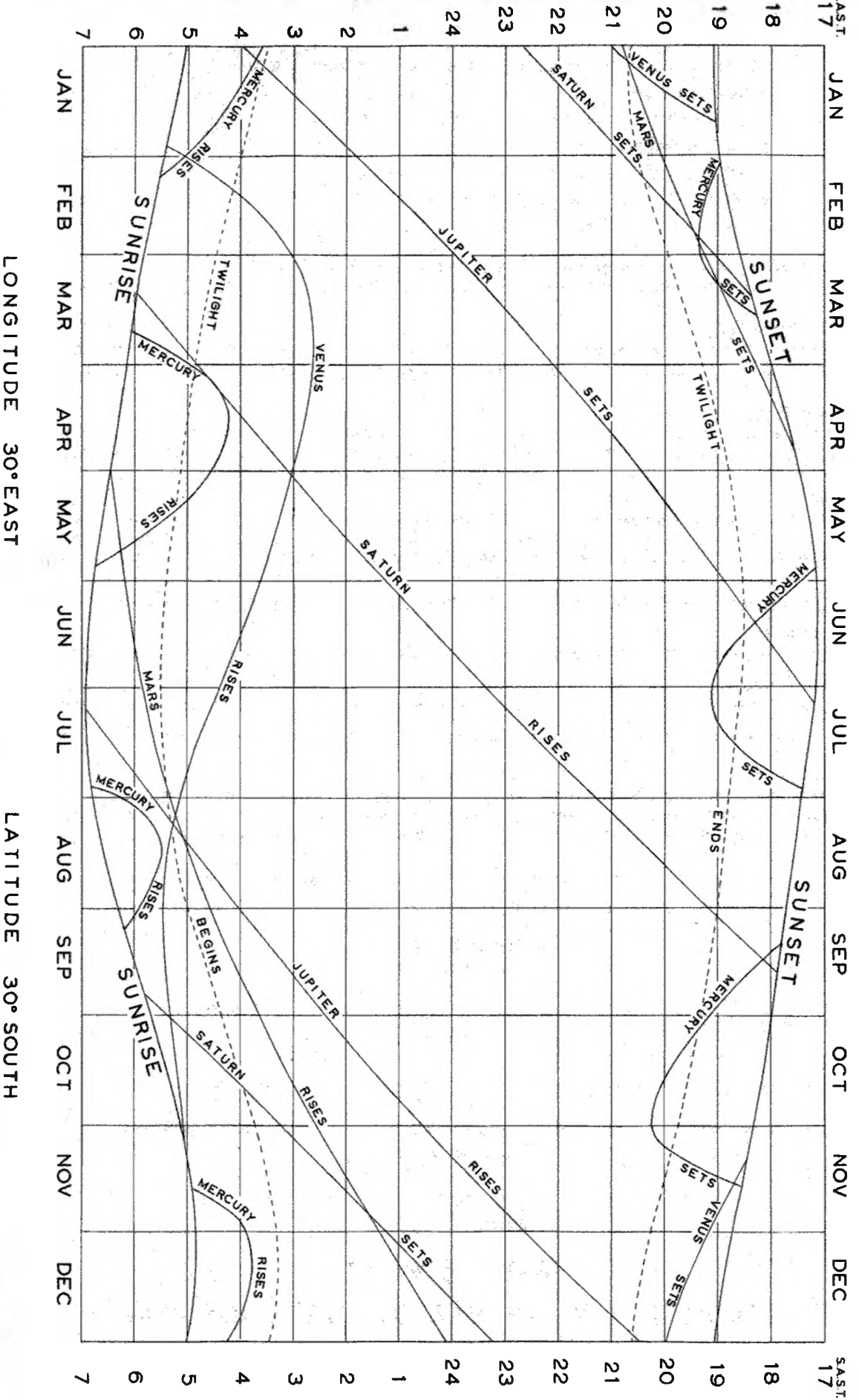
Nominations for Officers and Council by June 15.

Subscriptions due July 1.

Annual General Meeting at all Centres 4th Wednesday in July.

THE PLANETS AS SEEN FROM SOUTH AFRICA 1966

(For explanation see notes on planets)



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Price to Non-Members: 25 cents

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Acknowledgement is made to the following Members of the Society who have assisted in the preparation of the Handbook: Messrs. G. R. Atkins, A. P. Fairall, R. P. de Kock, S. C. Venter and I. Weinberg: to Miss Y. Z. R. Thomas who typed the manuscript, and to H. M. Nautical Almanac Office for the occultation predictions.

Although every care has been taken in the compilation of this Handbook, it is distributed and sold on the explicit condition that neither the Astronomical Society of Southern Africa nor any of its members accepts any responsibility for errors.

TIME SYSTEMS

All the times given in this booklet are South African Standard Time. This is also the Standard Time in use in Rhodesia, Zambia, the Protectorates, and Mozambique.

Local Mean Time

Local mean time is a uniform time system taken from the local meridian. South African Standard Time (S.A.S.T.) is the local mean time for the meridian 30° , or two hours, east of Greenwich. The local mean time for points not on the 30° E meridian can be found by applying a longitude correction to S.A.S.T. as given in Table I.

TABLE I

Reduction From S.A.S.T. To Local Mean Time			
Bloemfontein	- 15 ^m	Johannesburg	- 08 ^m
Bulawayo	- 06	Kimberley	- 21
Cape Town	- 46	Kitwe	- 07
Durban	+ 04	Port Elizabeth	- 18
East London	- 08	Pretoria	- 07
Grahamstown	- 14	Salisbury	+ 04

Conversely to obtain S.A.S.T. from local mean time, the same table can be used with the sign reversed. For example, at Johannesburg, local mean noon (i.e. 12h 00m local mean time) occurs at 12h 08m S.A.S.T.

Local Apparent Solar Time

This is the local time taken directly from the Sun (i.e. the time shown by a sundial). At noon in this system a shadow cast by the Sun will lie exactly in a north-south line.

The Equation of Time

Owing to the fact that the Earth does not go round the Sun with uniform circular motion in the plane of the Earth's equator, the local apparent solar time differs from the mean solar time by a quantity which is usually referred to as the "Equation of Time". The Equation of Time must be added to the mean solar time to give the apparent solar time. Its effect is shown in the second column of Table II which gives the S.A.S.T. of apparent noon, that is, of the Sun's transit over the 30° E meridian.

For example, on January 1, the S.A.S.T. of apparent noon at Longitude 30° E is 12.03; thus the S.A.S.T. of apparent noon at Johannesburg is 12.11, found by applying the longitude correction of Table I with the sign reversed.

Sidereal Time

For many purposes, sidereal time, that is local time as measured by the stars, is extremely useful. The sidereal time can be found by applying the S.A.S.T. (on a 24 hour basis) to the corresponding "Sidereal Time at 0 hours S.A.S.T." which is given in the third column of Table II, and correcting for longitude by means of Table I. A further small correction is needed to allow for the four-minute difference in length between the solar and sidereal days.

The correction is +1m for times between 03.00 and 09.00 S.A.S.T., +2m between 09.00 and 15.00, +3m between 15.00 and 21.00, and +4m between 21.00 and 23.59.

Example: Find the sidereal time at 8.15 p.m. on November 7 at Durban

Sidereal time at 00h 00m S.A.S.T. on November 7	3 03
S.A.S.T. elapsed	<u>20 15</u>
	23 18
Correction for longitude	+04
Interval correction	<u>+03</u>
Required sidereal time	23 25

Had this final result exceeded 24 hours, then of course 24 hours would have had to be subtracted.

The position of a star in the sky is fixed by its right ascension and declination, much as the position of a point on the Earth is fixed by its longitude and latitude. Latitude and declination are always measured in degrees north or south of the equator. Longitude and right ascension are measured either in degrees or in time, 360° being equal to 24 hours (1° equals 4 minutes; $15'$ equals 1 minute). Right ascension is always measured eastwards from the zero celestial meridian, and thus is the equivalent of the longitude measured eastwards from the Greenwich meridian.

The right ascension and declination of any star are the longitude and latitude of the point on the Earth directly beneath it at zero hours sidereal time at Greenwich. Hence the right ascension of a star crossing the local meridian at a particular time is given by the corresponding local sidereal time.

The Julian Day Calendar

For recording the time of variable star observations, the Julian Day calendar is usually used. This numbers the days consecutively from the beginning of the Julian era in 4713 B.C. The Julian day begins at Greenwich mean noon, that is, at 14.00 (2 p.m.) S.A.S.T. It is tabulated in the final column of Table II.

Note

The tabulated data in the table are given at intervals of 10 days. It is necessary to interpolate to find values for intermediate days.

TABLE II

Date 1966	S. A. S. T. of Sun's transit Longitude 30°E			Sidercal Time for Longitude 30° E		S.A.S.T.		Julian Date at 14 hours
	h.	m.	s.	h.	m.	h.	m.	
January 1	12	02	52	6	40	0	43	2,439,127.0
" 11	12	07	14	7	20	1	23	137.0
" 21	12	10	41	7	59	2	02	147.0
" 31	12	12	52	8	39	2	42	157.0
February 10	12	13	41	9	18	3	21	167.0
" 20	12	13	14	9	58	4	01	177.0
March 2	12	11	41	10	37	4	40	187.0
" 12	12	09	18	11	16	5	19	197.0
" 22	12	06	27	11	56	5	59	207.0
April 1	12	03	25	12	35	6	38	2,439,217.0
" 11	12	00	33	13	15	7	18	227.0
" 21	11	58	10	13	54	7	57	237.0
May 1	11	56	30	14	34	8	37	247.0
" 11	11	55	42	15	13	9	16	257.0
" 21	11	55	52	15	52	9	55	267.0
" 31	11	56	54	16	32	10	35	277.0
June 10	11	58	37	17	11	11	14	287.0
" 20	12	00	45	17	51	11	54	297.0
" 30	12	02	52	18	30	12	33	307.0
July 10	12	04	35	19	10	13	13	2,439,317.0
" 20	12	05	39	19	49	13	52	327.0
" 30	12	05	46	20	28	14	31	337.0
August 9	12	04	54	21	08	15	11	347.0
" 19	12	03	05	21	47	15	50	357.0
" 29	12	00	26	22	27	16	30	367.0
September 8	11	57	12	23	06	17	09	377.0
" 18	11	53	42	23	46	17	48	387.0
" 28	11	50	13	0	25	18	28	397.0
October 8	11	47	05	1	04	19	07	2,439,407.0
" 18	11	44	41	1	44	19	47	417.0
" 28	11	43	16	2	23	20	26	427.0
November 7	11	43	06	3	03	21	06	437.0
" 17	11	44	19	3	42	21	45	447.0
" 27	11	46	55	4	22	22	24	457.0
December 7	11	50	42	5	01	23	04	467.0
" 17	11	55	21	5	40	23	43	477.0
" 27	12	00	18	6	20	0	23	487.0

	CAPE TOWN				DURBAN				BLOEMFONTEIN			
	SUNRISE		SUNSET		SUNRISE		SUNSET		SUNRISE		SUNSET	
Jan 1	05 ^h	38 ^m	20 ^h	01 ^m	04 ^h	58 ^m	19 ^h	01 ^m	05 ^h	21 ^m	19 ^h	18 ^m
11	05	46	20	02	05	06	19	02	05	29	19	18
21	05	55	19	59	05	14	19	00	05	37	19	17
Feb 1	06	07	19	52	05	24	18	55	05	46	19	13
11	06	17	19	44	05	32	18	48	05	54	19	06
21	06	26	19	33	05	41	18	39	06	02	18	57
Mar 1	06	33	19	23	05	46	18	30	06	08	18	48
11	06	41	19	11	05	53	18	19	06	13	18	38
21	06	49	18	58	05	59	18	08	06	18	18	27
Apr 1	06	58	18	41	06	06	17	53	06	25	18	13
11	07	04	18	30	06	11	17	43	06	30	18	03
21	07	13	18	17	06	17	17	31	06	35	17	52
May 1	07	20	18	05	06	24	17	22	06	42	17	44
11	07	28	17	57	06	31	17	14	06	49	17	36
21	07	34	17	50	06	36	17	08	06	54	17	30
Jun 1	07	43	17	45	06	43	17	04	07	01	17	27
11	07	48	17	44	06	48	17	03	07	05	17	26
21	07	51	17	44	06	51	17	04	07	08	17	27
Jul 1	07	53	17	48	06	53	17	07	07	10	17	30
11	07	51	17	52	06	51	17	11	07	08	17	34
21	07	47	17	58	06	48	17	16	07	05	17	39
Aug 1	07	39	18	06	06	42	17	22	07	00	17	45
11	07	30	18	13	06	34	17	29	06	53	17	51
21	07	19	18	20	06	24	17	35	06	42	17	55
Sep 1	07	06	18	27	06	12	17	40	06	31	18	01
11	06	52	18	34	06	00	17	46	06	19	18	06
21	06	38	18	41	05	48	17	51	06	07	18	10
Oct 1	06	25	18	48	05	37	17	57	05	57	18	16
11	06	12	18	55	05	25	18	03	05	45	18	22
21	05	58	19	04	05	12	18	09	05	33	18	27
Nov 1	05	46	19	13	05	02	18	17	05	24	18	35
11	05	38	19	23	04	55	18	26	05	17	18	44
21	05	31	19	33	04	49	18	34	05	12	18	52
Dec 1	05	29	19	43	04	48	18	42	05	11	19	00
11	05	28	19	50	04	48	18	50	05	11	19	07
21	05	32	19	57	04	52	18	57	05	15	19	14

The table gives for five typical places in Southern Africa the S.A.S.T. of Sunrise and Sunset, i.e. the times when the upper limb of the Sun, as affected by refraction, is on the horizon. The last three columns give the approximate duration of Twilight at Durban, Bloemfontein and Johannesburg. For Cape Town the durations given must be increased by 2, 4, and 6 minutes for Civil, Nautical and Astronomical Twilight respectively, while for Luanshya they must be decreased by 3, 6, and 9 minutes.

	JOHANNESBURG		LUANSHYA		DURATION OF TWILIGHT (mins)		
	SUNRISE	SUNSET	SUNRISE	SUNSET	CIVIL	NAUTICAL	ASTRON
Jan 1	05 ^h 18 ^m	19 ^h 04 ^m	05 ^h 44 ^m	18 ^h 38 ^m	27	59	94
11	05 25	19 05	05 50	18 42	27	59	92
21	05 33	19 04	05 55	18 42	26	57	90
Feb 1	05 42	19 00	05 59	18 40	25	55	87
11	05 49	18 55	06 03	18 37	25	54	85
21	05 56	18 47	06 06	18 34	25	53	83
Mar 1	06 00	18 39	06 09	18 31	25	53	81
11	06 06	18 29	06 10	18 25	24	52	80
21	06 11	18 19	06 11	18 18	24	52	79
Apr 1	06 17	18 06	06 12	18 09	24	52	79
11	06 21	17 56	06 13	18 04	24	52	79
21	06 25	17 47	06 14	17 58	24	52	79
May 1	06 31	17 38	06 15	17 53	24	52	80
11	06 37	17 31	06 17	17 50	25	53	81
21	06 41	17 26	06 20	17 48	25	54	83
Jun 1	06 47	17 23	06 23	17 47	25	55	84
11	06 52	17 22	06 26	17 47	25	55	84
21	06 55	17 24	06 28	17 48	26	55	85
Jul 1	06 57	17 27	06 31	17 51	26	55	85
11	06 55	17 30	06 31	17 54	26	55	84
21	06 53	17 35	06 30	17 57	25	54	84
Aug 1	06 48	17 41	06 27	18 00	25	54	83
11	06 41	17 46	06 24	18 01	25	53	81
21	06 32	17 50	06 19	18 02	25	52	80
Sep 1	06 21	17 54	06 13	18 03	24	52	79
11	06 11	17 59	06 05	18 03	24	52	79
21	05 59	18 03	05 57	18 03	24	52	79
Oct 1	05 50	18 08	05 51	18 04	25	52	80
11	05 39	18 12	05 44	18 05	25	52	81
21	05 27	18 17	05 38	18 06	25	54	83
Nov 1	05 19	18 24	05 33	18 09	25	55	85
11	05 13	18 32	05 30	18 13	25	55	87
21	05 08	18 39	05 29	18 17	26	57	89
Dec 1	05 07	18 46	05 31	18 22	26	59	92
11	05 08	18 53	05 33	18 27	27	60	94
21	05 12	19 00	05 37	18 32	27	60	94

Civil Twilight is defined as beginning or ending when the Sun's centre is 6° below the horizon and includes the time during which operations requiring daylight may still continue. Nautical Twilight begins and ends when the Sun's centre is 12° below the horizon which, for all practical purposes, is the time when it is "dark". The limit of Astronomical Twilight corresponds to the Sun's centre being 18° below the horizon, at which time there is no light from the Sun whatever.

PERIGEE			APOGEE		
Date	S. D.	H. P.	Date	S. D.	H. P.
Jan 8 ^d 12 ^h	16' 38"	61' 03"	Jan 23 ^d 21 ^h	14' 42"	53' 57"
Feb 6 00	16 45	61 30	Feb 19 23	14 41	53 55
Mar 6 13	16 43	61 22	Mar 19 05	14 42	53 58
Apr 3 21	16 33	60 44	Apr 15 20	14 45	54 07
May 1 16	16 19	59 53	May 13 15	14 46	54 13
May 27 16	16 10	59 19	Jun 10 10	14 47	54 15
Jun 22 10	16 18	59 48	Jul 8 03	14 45	54 09
Jul 20 03	16 31	60 36	Aug 4 18	14 43	54 02
Aug 17 09	16 41	61 13	Sep 1 01	14 42	53 57
Sep 14 19	16 44	61 25	Sep 28 03	14 42	53 58
Oct 13 05	16 39	61 06	Oct 25 12	14 44	54 04
Nov 10 11	16 26	60 21	Nov 22 05	14 46	54 11
Dec 7 20	16 12	59 27	Dec 20 02	14 47	54 14

S.D. = Semi-diameter

H.P. = Horizontal Parallax

The distance of the Moon from the Earth in miles may be found by dividing 817,500,000 by the H.P. in seconds of arc. The Moon is at Perigee when it is closest to the Earth in its orbit, and at Apogee when it reaches its furthest point.

MAXIMUM LIBRATION

Longitude		Latitude	
+ West Limb exposed		+ North Limb exposed	
- East Limb exposed		- South Limb exposed	
Jan 2 -7.1	Jul 14 -6.7	Jan 10 -6.6	Jul 20 -6.6
14 +7.1	26 +6.3	24 +6.6	Aug 2 +6.6
31 -7.9	Aug 11 -7.4	Feb 6 -6.5	16 -6.5
Feb 11 +7.7	23 +7.4	20 +6.5	29 +6.6
28 -7.7	Sep 8 -7.6	Mar 6 -6.5	Sep 12 -6.6
Mar 12 +7.5	20 +7.7	19 +6.6	25 +6.7
28 -6.8	Oct 6 -7.0	Apr 2 -6.6	Oct 9 -6.7
Apr 9 +6.5	18 +7.3	15 +6.8	22 +6.8
24 -5.6	Nov 3 -5.9	29 -6.7	Nov 6 -6.8
May 7 +5.5	16 +6.3	May 12 +6.9	19 +6.9
20 -5.2	29 -5.0	26 -6.7	Dec 3 -6.7
Jun 3 +4.8	Dec 13 +5.2	Jun 9 +6.8	16 +6.7
16 -5.8	26 -5.4	22 -6.7	30 -6.6
29 +5.1		Jul 6 +6.7	

THE MOON IN JANUARY 1966

DAY	At 0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
S 1	126.4	9.0	13 ^h 24 ^m	0 ^h 37 ^m	14 ^h 09 ^m	1 ^h 12 ^m
S 2	127.4	10.0	14 20	1 09	15 10	1 41
M 3	128.4	11.0	15 21	1 45	16 16	2 12
T 4	129.4	12.0	16 26	2 26	17 24	2 49
W 5	130.4	13.0	17 33	3 14	18 34	3 34
T 6	131.4	14.0	18 41	4 10	19 42	4 28
F 7	132.4	15.0	19 43	5 14	20 44	5 32
S 8	133.4	16.0	20 39	6 23	21 37	6 43
S 9	134.4	17.0	21 28	7 34	22 21	7 58
M 10	135.4	18.0	22 11	8 43	22 59	9 12
T 11	136.4	19.0	22 49	9 50	23 33	10 23
W 12	137.4	20.0	23 25	10 53	.....	11 32
T 13	138.4	21.0	23 58	11 54	0 04	12 37
F 14	139.4	22.0	.....	12 54	0 33	13 41
S 15	140.4	23.0	0 33	13 53	1 04	14 44
S 16	141.4	24.0	1 10	14 51	1 36	15 47
M 17	142.4	25.0	1 50	15 50	2 11	16 47
T 18	143.4	26.0	2 33	16 46	2 53	17 47
W 19	144.4	27.0	3 20	17 41	3 39	18 42
T 20	145.4	28.0	4 11	18 31	4 30	19 32
F 21	146.4	29.0	5 05	19 16	5 23	20 15
S 22	147.4	0.3	5 59	19 57	6 20	20 53
S 23	148.4	1.3	6 53	20 34	7 18	21 26
M 24	149.4	2.3	7 47	21 07	8 15	21 56
T 25	150.4	3.3	8 39	21 38	9 11	22 23
W 26	151.4	4.3	9 30	22 08	10 07	22 49
T 27	152.4	5.3	10 22	22 37	11 02	23 14
F 28	153.4	6.3	11 15	23 08	11 59	23 41
S 29	154.4	7.3	12 09	23 40	12 57	.....
S 30	155.4	8.3	13 06	.....	13 58	0 10
M 31	156.4	9.3	14 07	0 17	15 03	0 43

PHASES OF THE MOON

Full Moon	Jan 7 ^d	07 ^h	17 ^m
Last Quarter	13	22	00
New Moon	21	17	47
First Quarter	29	21	49

THE MOON IN FEBRUARY 1966

DAY	At 0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
T 1	157.4	10.3	15 ^h 11 ^m	1 ^h 00 ^m	16 ^h 11 ^m	1 ^h 22 ^m
W 2	158.4	11.3	16 17	1 50	17 18	2 10
T 3	159.4	12.3	17 21	2 49	18 23	3 07
F 4	160.4	13.3	18 21	3 56	19 20	4 15
S 5	161.4	14.3	19 14	5 07	20 09	5 29
S 6	162.4	15.3	20 01	6 19	20 51	6 45
M 7	163.4	16.3	20 43	7 29	21 28	8 00
T 8	164.4	17.3	21 21	8 37	22 04	9 13
W 9	165.4	18.3	21 57	9 41	22 33	10 22
T 10	166.4	19.3	22 32	10 43	23 04	11 29
F 11	167.4	20.3	23 09	11 44	23 36	12 34
S 12	168.4	21.3	23 48	12 44	.....	13 39
S 13	169.4	22.3	.....	13 44	0 12	14 41
M 14	170.4	23.3	0 31	14 42	0 52	15 42
T 15	171.4	24.3	1 17	15 37	1 36	16 38
W 16	172.4	25.3	2 07	16 29	2 25	17 29
T 17	173.4	26.3	2 59	17 15	3 18	18 15
F 18	174.4	27.3	3 53	17 57	4 14	18 54
S 19	175.4	28.3	4 48	18 35	5 11	19 28
S 20	176.4	29.3	5 41	19 09	6 09	19 59
M 21	177.4	0.5	6 35	19 40	7 05	20 27
T 22	178.4	1.5	7 27	20 10	8 01	20 52
W 23	179.4	2.5	8 18	20 39	8 56	21 18
T 24	180.4	3.5	9 10	21 09	9 53	21 43
F 25	181.4	4.5	10 03	21 41	10 50	22 11
S 26	182.4	5.5	10 58	22 15	11 49	22 41
S 27	183.4	6.5	11 56	22 54	12 52	23 17
M 28	184.4	7.5	12 57	23 40	13 56	.....

PHASES OF THE MOON

Full Moon	Feb 5 ^d	17 ^h	58 ^m
Last Quarter	12	10	53
New Moon	20	12	50
First Quarter	28	12	16

THE MOON IN MARCH 1966

DAY	At 0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
T 1	185.4	8.5	14 ^h 00 ^m	.....^h .. ^m	15 ^h 01 ^m	0 ^h 00 ^m
W 2	186.4	9.5	15 03	0 33	16 06	0 52
T 3	187.4	10.5	16 04	1 34	17 04	1 52
F 4	188.4	11.5	16 59	2 42	17 56	3 01
S 5	189.4	12.5	17 48	3 52	18 42	4 16
S 6	190.4	13.5	18 32	5 02	19 21	5 31
M 7	191.4	14.5	19 12	6 12	19 56	6 46
T 8	192.4	15.5	19 49	7 19	20 28	7 58
W 9	193.4	16.5	20 27	8 24	21 00	9 08
T 10	194.4	17.5	21 04	9 29	21 33	10 17
F 11	195.4	18.5	21 44	10 32	22 08	11 25
S 12	196.4	19.5	22 26	11 34	22 48	12 30
S 13	197.4	20.5	23 12	12 34	23 31	13 34
M 14	198.4	21.5	.....	13 31	.....	14 33
T 15	199.4	22.5	0 01	14 25	0 19	15 26
W 16	200.4	23.5	0 53	15 14	1 12	16 14
T 17	201.4	24.5	1 48	15 57	2 07	16 54
F 18	202.4	25.5	2 42	16 36	3 05	17 30
S 19	203.4	26.5	3 36	17 11	4 02	18 02
S 20	204.4	27.5	4 29	17 43	4 59	18 30
M 21	205.4	28.5	5 22	18 13	5 55	18 56
T 22	206.4	29.5	6 14	18 42	6 51	19 22
W 23	207.4	0.7	7 06	19 11	7 48	19 47
T 24	208.4	1.7	7 59	19 42	8 45	20 14
F 25	209.4	2.7	8 54	20 16	9 44	20 43
S 26	210.4	3.7	9 52	20 54	10 45	21 17
S 27	211.4	4.7	10 51	21 36	11 48	21 57
M 28	212.4	5.7	11 53	22 26	12 53	22 45
T 29	213.4	6.7	12 54	23 23	13 56	23 40
W 30	214.4	7.7	13 54	.....	14 55	.....
T 31	215.4	8.7	14 49	0 25	15 48	0 45

PHASES OF THE MOON

Full Moon	Mar 7 ^d	03 ^h	46 ^m
Last Quarter	14	02	19
New Moon	22	06	47
First Quarter	29	22	44

THE MOON IN APRIL 1966

DAY	At 0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
F 1	216.4	9.7	15 ^h 39 ^m	1 ^h 33 ^m	16 ^h 34 ^m	1 ^h 54 ^m
S 2	217.4	10.7	16 23	2 41	17 15	3 07
S 3	218.4	11.7	17 04	3 49	17 49	4 20
M 4	219.4	12.7	17 42	4 56	18 22	5 32
T 5	220.4	13.7	18 18	6 02	18 54	6 43
W 6	221.4	14.7	18 56	7 07	19 27	7 53
T 7	222.4	15.7	19 34	8 11	20 01	9 02
F 8	223.4	16.7	20 17	9 16	20 40	10 11
S 9	224.4	17.7	21 02	10 19	21 23	11 18
S 10	225.4	18.7	21 52	11 20	22 10	12 21
M 11	226.4	19.7	22 44	12 17	23 03	13 19
T 12	227.4	20.7	23 39	13 09	23 58	14 09
W 13	228.4	21.7	.....	13 54	.....	14 53
T 14	229.4	22.7	0 35	14 35	0 56	15 31
F 15	230.4	23.7	1 29	15 12	1 53	16 04
S 16	231.4	24.7	2 23	15 44	2 51	16 33
S 17	232.4	25.7	3 15	16 15	3 47	17 00
M 18	233.4	26.7	4 07	16 44	4 44	17 25
T 19	234.4	27.7	4 59	17 14	5 40	17 50
W 20	235.4	28.7	5 52	17 45	6 37	18 17
T 21	236.4	0.1	6 47	18 17	7 36	18 46
F 22	237.4	1.1	7 45	18 53	8 38	19 19
S 23	238.4	2.1	8 45	19 35	9 41	19 57
S 24	239.4	3.1	9 47	20 23	10 47	20 42
M 25	240.4	4.1	10 49	21 17	11 51	21 35
T 26	241.4	5.1	11 49	22 18	12 51	22 36
W 27	242.4	6.1	12 45	23 22	13 45	23 43
T 28	243.4	7.1	13 35	.....	14 32	.....
F 29	244.4	8.1	14 20	0 29	15 12	0 54
S 30	245.4	9.1	15 00	1 35	15 48	2 04

PHASES OF THE MOON

Full Moon	Apr 5 ^d	13 ^h	14 ^m
Last Quarter	12	19	29
New Moon	20	22	36
First Quarter	28	05	50

THE MOON IN MAY 1966

DAY	At 0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
S 1	246.4	10.1	15 ^h 37 ^m	2 ^h 41 ^m	16 ^h 21 ^m	3 ^h 14 ^m
M 2	247.4	11.1	16 13	3 34	16 52	4 23
T 3	248.4	12.1	16 50	4 48	17 23	5 32
W 4	249.4	13.1	17 27	5 52	17 56	6 40
T 5	250.4	14.1	18 08	6 56	18 32	7 49
F 6	251.4	15.1	18 52	8 00	19 13	8 57
S 7	252.4	16.1	19 40	9 03	19 59	10 04
S 8	253.4	17.1	20 32	10 04	20 51	11 06
M 9	254.4	18.1	21 27	10 59	21 46	12 01
T 10	255.4	19.1	22 24	11 49	22 44	12 49
W 11	256.4	20.1	23 20	12 32	23 43	13 29
T 12	257.4	21.1	.....	13 10	.....	14 04
F 13	258.4	22.1	0 14	13 44	0 40	14 35
S 14	259.4	23.1	1 07	14 15	1 38	15 02
S 15	260.4	24.1	1 59	14 45	2 33	15 27
M 16	261.4	25.1	2 51	15 14	3 29	15 53
T 17	262.4	26.1	3 43	15 44	4 26	16 18
W 18	263.4	27.1	4 38	16 16	5 24	16 46
T 19	264.4	28.1	5 35	16 51	6 25	17 17
F 20	265.4	29.1	6 35	17 31	7 30	17 54
S 21	266.4	0.5	7 37	18 17	8 36	18 37
S 22	267.4	1.5	8 41	19 10	9 42	19 29
M 23	268.4	2.5	9 43	20 11	10 45	20 28
T 24	269.4	3.5	10 41	21 16	11 42	21 35
W 25	270.4	4.5	11 33	22 22	12 32	22 45
T 26	271.4	5.5	12 19	23 28	13 14	23 55
F 27	272.4	6.5	13 00	.....	13 50	.....
S 28	273.4	7.5	13 38	0 32	14 23	1 05
S 29	274.4	8.5	14 13	1 35	14 53	2 12
M 30	275.4	9.5	14 48	2 37	15 23	3 18
T 31	276.4	10.5	15 24	3 39	15 55	4 25

PHASES OF THE MOON

Full Moon	May 4 ^d	23 ^h	01 ^m
Last Quarter		12	19
New Moon		20	11 43
First Quarter		27	10 51

THE MOON IN JUNE 1966

DAY	At 0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
W 1	277.4	11.5	16 ^h 02 ^m	4 ^h 41 ^m	16 ^h 28 ^m	5 ^h 33 ^m
T 2	278.4	12.5	16 44	5 44	17 06	6 40
F 3	279.4	13.5	17 30	6 48	17 50	7 47
S 4	280.4	14.5	18 21	7 49	18 39	8 51
S 5	281.4	15.5	19 15	8 47	19 33	9 49
M 6	282.4	16.5	20 12	9 40	20 31	10 40
T 7	283.4	17.5	21 08	10 26	21 30	11 25
W 8	284.4	18.5	22 04	11 06	22 29	12 02
T 9	285.4	19.5	22 58	11 42	23 27	12 35
F 10	286.4	20.5	23 50	12 15	.....	13 03
S 11	287.4	21.5	.....	12 45	0 22	13 29
S 12	288.4	22.5	0 42	13 14	1 19	13 54
M 13	289.4	23.5	1 33	13 43	1 14	14 19
T 14	290.4	24.5	2 26	14 14	3 11	14 46
W 15	291.4	25.5	3 21	14 47	4 10	15 15
T 16	292.4	26.5	4 19	15 25	5 13	15 49
F 17	293.4	27.5	5 21	16 09	6 18	16 30
S 18	294.4	28.5	6 25	17 00	7 26	17 18
S 19	295.4	0.1	7 30	17 58	8 32	18 16
M 20	296.4	1.1	8 32	19 03	9 33	19 22
T 21	297.4	2.1	9 28	20 11	10 27	20 33
W 22	298.4	3.1	10 17	21 19	11 12	21 45
T 23	299.4	4.1	11 00	22 26	11 51	22 54
F 24	300.4	5.1	11 39	23 29	12 25	.....
S 25	301.4	6.1	12 15	.....	12 56	0 04
S 26	302.4	7.1	12 49	0 31	13 26	1 12
M 27	303.4	8.1	13 25	1 32	13 57	2 18
T 28	304.4	9.1	14 01	2 33	14 28	3 23
W 29	305.4	10.1	14 40	3 35	15 04	4 29
T 30	306.4	11.1	15 24	4 37	15 45	5 35

PHASES OF THE MOON

Full Moon	Jun 3 ^d	09 ^h	41 ^m
Last Quarter	11	06	59
New Moon	18	22	09
First Quarter	25	15	23

THE MOON IN JULY 1966

DAY	At 0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
F 1	307.4	12.1	16 ^h 12 ^m	5 ^h 38 ^m	16 ^h 31 ^m	6 ^h 39 ^m
S 2	308.4	13.1	17 05	6 36	17 24	7 39
S 3	309.4	14.1	18 01	7 32	18 20	8 33
M 4	310.4	15.1	18 58	8 20	19 19	9 20
T 5	311.4	16.1	19 54	9 03	20 18	9 59
W 6	312.4	17.1	20 49	9 41	21 16	10 34
T 7	313.4	18.1	21 42	10 14	22 13	11 04
F 8	314.4	19.1	22 33	10 45	23 09	11 31
S 9	315.4	20.1	23 25	11 14	.....	11 56
S 10	316.4	21.1	.....	11 42	0 03	12 20
M 11	317.4	22.1	0 16	12 12	1 00	12 46
T 12	318.4	23.1	1 09	12 43	1 57	13 13
W 13	319.4	24.1	2 05	13 18	2 56	13 44
T 14	320.4	25.1	3 04	13 59	4 00	14 21
F 15	321.4	26.1	4 07	14 46	5 06	15 06
S 16	322.4	27.1	5 11	15 42	6 13	15 59
S 17	323.4	28.1	6 15	16 45	7 18	17 03
M 18	324.4	29.1	7 15	17 53	8 15	18 13
T 19	325.4	0.7	8 09	19 03	9 06	19 27
W 20	326.4	1.7	8 56	20 12	9 48	20 42
T 21	327.4	2.7	9 37	21 19	10 25	21 53
F 22	328.4	3.7	10 15	22 23	10 58	23 02
S 23	329.4	4.7	10 51	23 26	11 29	.....
S 24	330.4	5.7	11 26	.....	11 59	0 10
M 25	331.4	6.7	12 02	0 27	12 31	1 16
T 26	332.4	7.7	12 40	1 30	13 04	2 22
W 27	333.4	8.7	13 22	2 31	13 44	3 27
T 28	334.4	9.7	14 09	3 32	14 28	4 32
F 29	335.4	10.7	15 00	4 31	15 18	5 32
S 30	336.4	11.7	15 54	5 26	16 12	6 28
S 31	337.4	12.7	16 50	6 16	17 10	7 17

PHASES OF THE MOON

Full Moon	Jul 2 ^d	21 ^h	37 ^m
Last Quarter	10	23	43
New Moon	18	06	31
First Quarter	24	21	00

THE MOON IN AUGUST 1966

DAY	At 0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
M 1	338.4	13.7	17 ^h 46 ^m	7 ^h 00 ^m	18 ^h 09 ^m	7 ^h 58 ^m
T 2	339.4	14.7	18 42	7 40	19 08	8 34
W 3	340.4	15.7	19 35	8 15	20 05	9 05
T 4	341.4	16.7	20 27	8 46	21 01	9 33
F 5	342.4	17.7	21 18	9 15	21 56	9 58
S 6	343.4	18.7	22 09	9 44	22 51	10 23
S 7	344.4	19.7	23 01	10 12	23 47	10 47
M 8	345.4	20.7	23 54	10 42	.....	11 13
T 9	346.4	21.7	.....	11 15	0 45	11 42
W 10	347.4	22.7	0 51	11 52	1 45	12 15
T 11	348.4	23.7	1 50	12 35	2 48	12 55
F 12	349.4	24.7	2 53	13 25	3 53	13 44
S 13	350.4	25.7	3 56	14 24	4 58	14 41
S 14	351.4	26.7	4 57	15 29	5 59	15 49
M 15	352.4	27.7	5 54	16 39	6 53	17 02
T 16	353.4	28.7	6 45	17 51	7 40	18 17
W 17	354.4	0.4	7 29	19 01	8 20	19 32
T 18	355.4	1.4	8 10	20 08	8 55	20 45
F 19	356.4	2.4	8 48	21 13	9 27	21 55
S 20	357.4	3.4	9 24	22 17	9 59	23 04
S 21	358.4	4.4	10 00	23 21	10 31	.....
M 22	359.4	5.4	10 39	.....	11 04	0 13
T 23	360.4	6.4	11 21	0 24	11 43	1 20
W 24	361.4	7.4	12 06	1 26	12 25	2 26
T 25	362.4	8.4	12 56	2 26	13 14	3 28
F 26	363.4	9.4	13 49	3 23	14 07	4 25
S 27	364.4	10.4	14 45	4 14	15 03	5 15
S 28	365.4	11.4	15 41	4 59	16 03	5 58
M 29	366.4	12.4	16 36	5 40	17 01	6 36
T 30	367.4	13.4	17 30	6 16	17 59	7 08
W 31	368.4	14.4	18 23	6 48	18 55	7 36

PHASES OF THE MOON

Full Moon	Aug 1 ^d	11 ^h 06 ^m
Last Quarter	9	14 56
New Moon	16	13 48
First Quarter	23	05 02
Full Moon	31	02 14

THE MOON IN SEPTEMBER 1966

DAY	At 0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
T 1	369.4	15.4	19 ^h 14 ^m	7 ^h 18 ^m	19 ^h 51 ^m	8 ^h 02 ^m
F 2	370.4	16.4	20 04	7 46	20 45	8 27
S 3	371.4	17.4	20 56	8 15	21 41	8 50
S 4	372.4	18.4	21 48	8 44	22 38	9 16
M 5	373.4	19.4	22 43	9 15	23 36	9 43
T 6	374.4	20.4	23 40	9 49	.....	10 14
W 7	375.4	21.4	.....	10 29	0 37	10 50
T 8	376.4	22.4	0 41	11 15	1 41	11 34
F 9	377.4	23.4	1 42	12 08	2 44	12 26
S 10	378.4	24.4	2 42	13 09	3 45	13 27
S 11	379.4	25.4	3 40	14 16	4 40	14 36
M 12	380.4	26.4	4 32	15 25	5 29	15 50
T 13	381.4	27.4	5 19	16 36	6 11	17 05
W 14	382.4	28.4	6 01	17 45	6 49	18 19
T 15	383.4	0.1	6 40	18 53	7 23	19 32
F 16	384.4	1.1	7 18	19 59	7 55	20 44
S 17	385.4	2.1	7 55	21 05	8 28	21 55
S 18	386.4	3.1	8 34	22 10	9 01	23 05
M 19	387.4	4.1	9 15	23 16	9 38	.....
T 20	388.4	5.1	10 00	.....	10 21	0 14
W 21	389.4	6.1	10 50	0 19	11 08	1 20
T 22	390.4	7.1	11 43	1 18	12 01	2 20
F 23	391.4	8.1	12 39	2 11	12 57	3 13
S 24	392.4	9.1	13 35	2 59	13 56	3 59
S 25	393.4	10.1	14 31	3 41	14 54	4 37
M 26	394.4	11.1	15 25	4 17	15 53	5 11
T 27	395.4	12.1	16 18	4 51	16 49	5 40
W 28	396.4	13.1	17 09	5 21	17 45	6 06
T 29	397.4	14.1	18 01	5 49	18 40	6 31
F 30	398.4	15.1	18 52	6 17	19 36	6 55

PHASES OF THE MOON

Last Quarter	Sep 8 ^d	04 ^h	08 ^m
New Moon	14	21	14
First Quarter	21	16	25
Full Moon	29	18	48

THE MOON IN OCTOBER 1966

DAY	At 0 ⁿ S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
S 1	399.4	16.1	19 ^h 45 ^m	6 ^h 46 ^m	20 ^h 32 ^m	7 ^h 20 ^m
S 2	400.4	17.1	20 39	7 17	21 30	7 46
M 3	401.4	18.1	21 35	7 50	22 31	8 15
T 4	402.4	19.1	22 34	8 28	23 33	8 50
W 5	403.4	20.1	23 34	9 11	.....	9 30
T 6	404.4	21.1	.....	10 00	0 36	10 18
F 7	405.4	22.1	0 33	10 57	1 36	11 14
S 8	406.4	23.1	1 30	12 00	2 31	12 19
S 9	407.4	24.1	2 23	13 06	3 21	13 28
M 10	408.4	25.1	3 10	14 14	4 04	14 40
T 11	409.4	26.1	3 53	15 21	44 43	15 53
W 12	410.4	27.1	4 32	16 29	5 17	17 06
T 13	411.4	28.1	5 10	17 36	5 49	18 18
F 14	412.4	29.1	5 46	18 42	6 21	19 29
S 15	413.4	0.8	6 24	19 50	6 55	20 42
S 16	414.4	1.8	7 05	20 57	7 31	21 54
M 17	415.4	2.8	7 51	22 03	8 12	23 03
T 18	416.4	3.8	8 40	23 06	8 59	.....
W 19	417.4	4.8	9 33	.....	9 51	0 09
T 20	418.4	5.8	10 30	0 04	10 47	1 06
F 21	419.4	6.8	11 27	0 54	11 47	1 55
S 22	420.4	7.8	12 24	1 39	12 47	2 37
S 23	421.4	8.8	13 19	2 18	13 45	3 13
M 24	422.4	9.8	14 12	2 52	14 42	3 43
T 25	423.4	10.8	15 04	3 24	15 38	4 11
W 26	424.4	11.8	15 55	3 52	16 33	4 35
T 27	425.4	12.8	16 46	4 21	17 29	4 59
F 28	426.4	13.8	17 40	4 49	18 25	5 23
S 29	427.4	14.8	18 33	5 19	19 24	5 50
S 30	428.4	15.8	19 29	5 51	20 24	6 18
M 31	429.4	16.8	20 28	6 28	21 26	6 51

PHASES OF THE MOON

Last Quarter Oct 7^d 15^h 09^m
 New Moon 14 05 52
 First Quarter 21 07 35
 Full Moon 29 12 01

THE MOON IN NOVEMBER 1966

DAY	0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
T 1	430.4	17.8	21 ^h 28 ^m	7 ^h 09 ^m	22 ^h 29 ^m	7 ^h 29 ^m
W 2	431.4	18.8	22 28	7 57	23 30	8 15
T 3	432.4	19.8	23 25	8 51	.....	9 08
F 4	433.4	20.8	.....	9 51	0 28	10 09
S 5	434.4	21.8	0 18	10 55	1 18	11 16
S 6	435.4	22.8	1 06	12 01	2 03	12 26
M 7	436.4	23.8	1 49	13 06	2 41	13 36
T 8	437.4	24.8	2 28	14 11	3 15	14 45
W 9	438.4	25.8	3 05	15 16	3 47	15 55
T 10	439.4	26.8	3 40	16 21	4 18	17 05
F 11	440.4	27.8	4 17	17 27	4 50	18 16
S 12	441.4	28.8	4 56	18 33	5 23	19 28
S 13	442.4	0.3	5 38	19 41	6 01	20 40
M 14	443.4	1.3	6 26	20 48	6 46	21 49
T 15	444.4	2.3	7 19	21 50	7 37	22 52
W 16	445.4	3.3	8 16	22 45	8 33	23 47
T 17	446.4	4.3	9 15	23 34	9 33	.....
F 18	447.4	5.3	10 12	.....	10 34	0 33
S 19	448.4	6.3	11 10	0 16	11 34	1 12
S 20	449.4	7.3	12 04	0 52	12 33	1 45
M 21	450.4	8.3	12 57	1 24	13 29	2 12
T 22	451.4	9.3	13 48	1 54	14 25	2 38
W 23	452.4	10.3	14 39	2 22	15 19	3 03
T 24	453.4	11.3	15 31	2 50	16 16	3 26
F 25	454.4	12.3	16 24	3 20	17 13	3 52
S 26	455.4	13.3	17 20	3 51	18 13	4 19
S 27	456.4	14.3	18 18	4 26	19 15	4 51
M 28	457.4	15.3	19 19	5 06	20 20	5 27
T 29	458.4	16.3	20 21	5 52	21 23	6 11
W 30	459.4	17.3	21 20	6 45	22 23	7 03

PHASES OF THE MOON

Last Quarter	Nov 6 ^d	00 ^h	19 ^m
New Moon	12	16	27
First Quarter	20	02	21
Full Moon	28	04	41

THE MOON IN DECEMBER 1966

DAY	0 ^h S.A.S.T.		JOHANNESBURG		CAPE TOWN	
	J.D. 2439000+	AGE	MOONRISE	MOONSET	MOONRISE	MOONSET
			S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
T 1	460.4	18.3	22 ^h 15 ^m	7 ^h 45 ^m	23 ^h 16 ^m	8 ^h 02 ^m
F 2	461.4	19.3	23 05	8 49	.....	9 09
S 3	462.4	20.3	23 49	9 54	0 02	10 17
S 4	463.4	21.3	.....	10 59	0 42	11 26
M 5	464.4	22.3	0 28	12 03	1 17	12 36
T 6	465.4	23.3	1 04	13 05	1 48	13 43
W 7	466.4	24.3	1 39	14 08	2 18	14 50
T 8	467.4	25.3	2 13	15 11	2 48	15 58
F 9	468.4	26.3	2 51	16 15	3 20	17 08
S 10	469.4	27.3	3 30	17 21	3 55	18 18
S 11	470.4	28.3	4 15	18 28	4 36	19 28
M 12	471.4	29.3	5 05	19 31	5 23	20 34
T 13	472.4	0.8	6 00	20 31	6 17	21 34
W 14	473.4	1.8	6 58	21 24	7 16	22 24
T 15	474.4	2.8	7 58	22 09	8 18	23 06
F 16	475.4	3.8	8 57	22 48	9 20	23 42
S 17	476.4	4.8	9 53	23 22	10 20	.....
S 18	477.4	5.8	10 48	23 53	11 18	0 12
M 19	478.4	6.8	11 39	.....	12 14	0 40
T 20	479.4	7.8	12 30	0 22	13 09	1 04
W 21	480.4	8.8	13 21	0 50	14 04	1 27
T 22	481.4	9.8	14 13	1 18	15 00	1 52
F 23	482.4	10.8	15 07	1 49	15 58	2 18
S 24	483.4	11.8	16 05	2 21	17 00	2 47
S 25	484.4	12.8	17 05	2 59	18 04	3 22
M 26	485.4	13.8	18 07	3 44	19 09	4 03
T 27	486.4	14.8	19 09	4 35	20 11	4 52
W 28	487.4	15.8	20 07	5 33	21 08	5 50
T 29	488.4	16.8	21 00	6 38	21 59	6 56
F 30	489.4	17.8	21 47	7 44	22 42	8 06
S 31	490.4	18.8	22 29	8 51	23 19	9 17

PHASES OF THE MOON

Last Quarter	Dec 5 ^d	08 ^h	23 ^m
New Moon	12	05	14
First Quarter	19	23	41
Full Moon	27	19	44

LUNAR OCCULTATIONS

Occultations of all stars down to magnitude 7.5, visible from the three stations whose coordinates are tabulated below, are given in the following lists.

	Longitude	Latitude
Cape Town	-18°475	-33°933
Johannesburg	-28.075	-26.182
Luanshya	-28.400	-13.127

Explanation:

Z.C. - is the number in the "Catalogue of 3539 Zodiacal Stars for the Equinox 1950.0" by James Robertson (U.S. Naval Observatory, 1939). This is the catalogue most generally used by occultation observers. An "m" after the Z.C. number indicates that a star is not single.

Sp - is the spectral classification of the star.

Mag - is the visual magnitude.

Dec. - is the Declination in 1950.0 coordinates.

Ph - is the phase. D = Disappearance; R = Reappearance.

h. m. - is the time of the occultation in S.A.S.T.

The approximate time of an occultation at a place $\Delta\lambda$ degrees west and $\Delta\phi$ degrees north of one of the standard stations given above may be found from:

$$\text{Approximate time} = \text{predicted time} + a \cdot \Delta\lambda + b \cdot \Delta\phi$$

where a and b are in minutes of time.

P.A. - the Position Angle measured from the Moon's north point, eastward around the limb.

Index of occulted stars, brighter than magnitude 5.0:

Z.C.		Z.C.		Z.C.		Z.C.
1008	49	Aur		2310	α^2	Sco
1122	6	Gem		2359	ν	Oph
1149	U	Gem		2650	66B	Sgr
1702	V	Vir		2721	ψ	Sgr
1941	74	Vir		2750	σ	Sgr
2033	K	Vir		3164	ϵ	Cap
2118	α	Lib		3175	K	Cap
2241	K	Lib		3419	ψ^1	Aqr
2307	α^1	Sco				

Date	Z.C.	Sp	Mag	(1950.0) Dec.	Ph	Cape Town				
						h.	m.	a	b	P.A.
Jan										
2	422	B5	5.5	+14° 53'	D	-	-	-	-	-
3	531	B8	5.5	+19 32	D	20	16.1	-1.9	0.0	74°
3	533	G5	6.3	+19 31	D	21	35.3			145
3	533	G5	6.3	+19 31	R	21	46.2	Grazed		159
4	714	G0	6.2	+24 00	D	22	37.4	-	-	357
4	716	B8	6.2	+23 32	D	-	-	-	-	-
9	1363	G5	5.2	+22 15	R	01	02.9	-	-	221
12	1739	F5	6.5	+05 50	R	02	52.2	-1.4	-1.7	302
15	2088	F8	6.2	-12 06	R	04	08.4	+0.3	-3.1	352
17	2337	B9	6.4	-21 11	R	-	-	-	-	-
28	258	AOp	6.6	+08 19	D	22	37.3	-0.7	+1.2	91
31	621	B8	6.2	+22 17	D	-	-	-	-	-
31	625	F2	7.0	+22 20	D	20	38.2	-1.9	+1.2	49
31	630m	F5	7.5	+22 41	D	23	12.9	-1.8	+2.6	31
Feb										
8	1689	M3	5.5	+08 25	R	01	00.1	-2.3	-0.4	257
8	1702	MC	4.2	+06 49	D	-	-	-	-	-
10	1921	K0	5.9	-04 40	R	-	-	-	-	-
10	1924	F2	5.8	-04 54	R	-	-	-	-	-
10	2033	K0	4.3	-10 03	R	-	-	-	-	-
13	2307	B2	4.1	-20 32	D	04	06.6	-1.0	-1.7	111
13	2307	B2	4.1	-20 32	R	05	22.5	-1.3	-2.0	306
14	2434m	A0	5.6	-23 04	R	03	04.6	+0.5	-2.6	334
27	586	K0	7.0	+21 11	D	21	33.7	-1.2	+0.4	113
Mar										
2	1056	B9	7.0	+27 21	D	20	55.1	-2.3	+0.6	64
2	1067	K2	7.2	+27 14	D	23	45.3	-2.2	+1.9	58
3	1206	K0	5.9	+25 32	D	-	-	-	-	-
4	1363	G5	5.2	+22 15	D	23	37.1	-1.2	-1.3	148
5	1365	G5	6.1	+22 12	D	00	04.9	-1.3	-0.8	135
5	1373	A0	6.1	+21 29	D	-	-	-	-	-
11	2114m	A2p	5.8	-13 57	R	01	39.4	-	-	6
18	3089	A0	5.3	-21 24	R	04	11.8	+0.1	-1.3	278
25	413	K0	6.8	+15 18	D	-	-	-	-	-
29	1013m	G0	6.9	+27 19	D	21	19.2	-1.4	+0.4	109
30	1149	K5	4.2	+27 01	D	19	30.3	-2.5	+0.8	58
31	1290	F8	6.8	+23 52	D	-	-	-	-	-
31	1290	F8	6.8	+23 52	R	-	-	-	-	-
Apr										
1	1424	B9	6.8	+20 31	D	19	15.2	-1.6	-1.6	126
3	1689	M3	5.5	+08 25	D	22	25.4	-1.6	-1.3	124

Date	Z.C.	Johannesburg				Luanshya			
		h. m.	a	b	P.A.	h. m.	a	b	P.A.
Jan									
2	422	-	-	-	-	22 56.4	-2.3	-0.1	101°
3	531	20 38.8	-2.5	+0.5	74°	20 54.3	-2.0	+1.9	42
3	533	21 55.2	-	-	133	21 45.8	-3.1	+0.3	87
3	533	-	-	-	-	-	-	-	-
4	714	-	-	-	-	-	-	-	-
4	716	-	-	-	-	23 57.2	-2.4	-0.2	104
9	1363	01 35.8	-2.8	+0.3	257	01 33.0	-2.6	-0.9	292
12	1739	02 49.8	-1.2	-2.3	331	02 05.7	-	-	16
15	2088	-	-	-	-	-	-	-	-
17	2337	-	-	-	-	03 10.3	-0.8	+0.5	246
28	258	-	-	-	-	-	-	-	-
31	621	20 22.8	-	-	12	-	-	-	-
31	625	21 09.9	-2.1	+2.0	41	-	-	-	-
31	630 ^m	-	-	-	-	-	-	-	-
Feb									
8	1689	01 15.2	-2.1	-1.1	291	00 55.2	-1.6	-2.1	322
8	1702	-	-	-	-	05 21.2	-1.3	-1.0	127
10	1921	-	-	-	-	00 11.5	-2.1	+1.2	243
10	1924	-	-	-	-	00 55.5	-	-	233
10	2033	23 32.3	-0.2	-1.1	277	-	-	-	-
13	2307	04 16.1	-3.0	+0.4	70	-	-	-	-
13	2307	05 08.8	0.0	-4.4	351	-	-	-	-
14	2434 ^m	-	-	-	-	-	-	-	-
27	586	21 49.7	-0.9	+1.0	88	22 07.4	-1.2	+1.9	51
Mar									
2	1056	21 33.9	-	-	34	-	-	-	-
2	1067	-	-	-	-	-	-	-	-
3	1206	21 52.2	-	-	175	21 21.3	-2.5	-1.5	127
4	1363	23 45.4	-1.8	-0.3	113	23 48.6	-3.3	+1.1	74
5	1365	00 17.9	-1.9	+0.2	100	00 36.7	-	-	44
5	1373	02 26.7	+0.2	-1.5	158	02 16.2	-0.7	-0.4	114
11	2114 ^m	-	-	-	-	-	-	-	-
18	3089	03 51.9	+0.9	-4.0	324	-	-	-	-
25	413	-	-	-	-	18 54.0	-1.1	+0.3	96
29	1013 ^m	21 39.5	-1.6	+1.2	77	-	-	-	-
30	1149	-	-	-	-	-	-	-	-
31	1290	-	-	-	-	20 57.0			196
31	1290	-	-	-	-	21 11.5		Graze	214
Apr									
1	1424	19 22.7	-2.2	-1.0	106	19 18.3	-2.9	+0.6	71
3	1689	22 40.5	-3.1	0.0	87	-	-	-	-

Date	Z.C.	Sp	Mag	(1950.0) Dec.	Ph	Cape Town				
						h.	m.	a	b	P.A.
Apr										
4	1702	M0	4.2	+06° 49'	D	03	42.4	-0.1	-1.5	162°
8	2192	K0	6.2	-17 59	R		-	-	-	-
8	2307	B2	4.1	-20 32	R	21	39.5	+0.6	-2.0	330
8	2310	G0	4.6	-20 44	R	22	06.1	+0.1	-1.6	300
10	2469	A0	6.3	-25 12	R		-	-	-	-
15	3178	A3	6.2	-19 51	D		-	-	-	-
15	3178	A3	6.2	-19 51	R		-	-	-	-
15	3175	G5	4.8	-19 06	R	03	59.7	-0.2	-2.9	303
16	3304	A0	6.4	-14 51	R	04	40.7	-0.3	-3.1	302
23	630m	F5	7.5	+22 41	D		-	-	-	-
25	958	K0	6.7	+27 14	D	19	53.6	-0.8	-0.2	131
26	1105	G5	6.5	+26 47	D		-	-	-	-
26	1108	K0	6.9	+26 54	D		-	-	-	-
27	1252	K2	7.4	+25 30	D	18	56.9	-2.4	+0.1	89
27	1263m	A3	7.1	+24 42	D	22	37.9	-0.1	-0.5	142
May										
1	1647	A2	6.7	+09 27	D		-	-	-	-
1	1755	A0	6.8	+04 20	D	22	31.0	-2.2	-0.5	105
9	2721	B8	3.3	-27 03	D		-	-	-	-
9	2721	B8	3.3	-27 03	R		-	-	-	-
12	3130	K0	5.5	-21 04	R		-	-	-	-
23	1067	K2	7.2	+27 14	D	18	27.4	-0.4	-0.9	148
25	1363	G5	5.2	+22 15	D	21	20.1	+0.1	-1.0	155
25	1365	G5	6.1	+22 15	D	21	42.7	-0.1	-0.4	140
28	1725	K0	7.5	+05 37	D	23	23.0	-0.3	-1.7	162
30	1941	M0	4.8	-06 00	D		-	-	-	-
31	2064m	F2	6.5	-11 27	D	18	23.0	-1.4	-0.5	68
Jun										
5	2650	K5	4.7	-27 04	R		-	-	-	-
9	3202	F2	6.1	-18 51	R		-	-	-	-
24	1689	M3	5.5	+08 25	D	19	13.3	-	-	69
27	1933	K0	7.0	-05 42	D	01	04.0	-0.4	+4.2	52
27	2036	G5	6.9	-11 36	D		-	-	-	-
28	2160	A0	6.6	-16 18	D	21	21.4	-3.1	+0.8	77
29	2282	B5	5.9	-20 50	D		-	-	-	-
Jul										
2	2750	B3	2.1	-26 22	D	23	29.7	-	-	38
3	2750	B3	2.1	-26 22	R	00	24.7	-	-	325
6	3158	F5	5.8	-20 18	R		-	-	-	-
6	3164	B5p	4.7	-19 41	R	01	53.0	-2.2	+0.5	248

Date	Z.C.	Johannesburg				Luanshya					
		h.	m.	a	b	P.A.	h.	m.	a	b	P.A.
Apr											
4	1702	03	39.4	-0.4	-0.2	123°	03	45.3	-1.0	+1.6	70°
8	2192	04	11.9	-2.4	+0.6	271	04	02.8	-2.1	-2.0	318
8	2307	-	-	-	-	-	-	-	-	-	
8	2310	21	49.9	+0.4	-2.1	329	-	-	-	-	
10	2469	-	-	-	-	02	38.4	-3.5	+0.8	253	
15	3178	-	-	-	-	03	20.2			154	
15	3178	-	-	-	-	03	37.3	Graze		182	
15	3175	-	-	-	-	-	-	-	-	-	
16	3304	-	-	-	-	-	-	-	-	-	
23	630m	-	-	-	-	18	50.5	-0.6	-0.1	106	
25	958	20	04.1	-1.0	+0.7	97	20	19.6	-1.9	+2.1	54
26	1105	-	-	-	-	18	57.5	-	-	168	
26	1108	19	55.2	-0.8	-0.7	135	19	51.9	-1.8	+0.1	97
27	1252	19	33.4	-	-	50	-	-	-	-	
27	1263m	-	-	-	-	-	-	-	-	-	
May											
1	1647	-	-	-	-	01	27.1	-0.3	-1.1	137	
1	1755	-	-	-	-	-	-	-	-	-	
9	2721	03	07.3	-	-	160	02	32.6	-2.9	-0.7	99
9	2721	03	42.4	-	-	201	04	16.4	-3.2	+0.5	262
12	3130	02	33.2	-1.7	+1.1	227	02	35.0	-1.6	-0.8	276
23	1067	18	32.3	-0.9	+0.2	110	18	41.1	-1.8	+1.3	70
25	1363	21	19.7	-0.5	+0.1	113	21	29.6	-1.7	+1.9	64
25	1365	-	-	-	-	-	-	-	-	-	
28	1725	23	22.0	-0.8	-0.3	121	23	28.9	-2.0	+2.1	68
30	1941	18	34.1	+0.4	-3.7	183	17	57.3	-0.7	-2.2	146
31	2064m	-	-	-	-	-	-	-	-	-	
Jun											
5	2650	-	-	-	-	00	52.2	-	-	224	
9	3202	00	16.3	-1.1	+0.9	227	00	17.0	-0.9	-0.7	275
24	1689	-	-	-	-	-	-	-	-	-	
27	1933	-	-	-	-	-	-	-	-	-	
27	2036	-	-	-	-	21	43.5	-1.7	-2.2	143	
28	2160	-	-	-	-	-	-	-	-	-	
29	2282	19	36.0	-0.9	-2.6	146	19	11.6	-1.8	-1.2	110
Jul											
2	2750	-	-	-	-	-	-	-	-	-	
3	2750	-	-	-	-	-	-	-	-	-	
6	3158	-	-	-	-	00	10.2	-2.3	+1.6	232	
6	3164	02	20.5	-3.1	+0.2	264	-	-	-	-	

Date	Z.C.	Sp	Mag	(1950.0) Dec.	Ph	Cape Town			
						h. m.	a	b	P.A.
Jul									
6	3175	G5	4.8	-19° 06'	R	06 04.6	-0.6	+2.7	213°
7	3304	A0	6.4	-14 51	R	06 09.0	+0.1	+3.7	186
8	3419m	K0	4.5	-09 22	D	06 51.4	-	-	349
21	1647	A2	6.7	+09 27	D	19 46.1	+0.3	-2.6	178
24	1997	F5	6.8	-09 40	D	-	-	-	-
24	2013	A2	7.5	-10 44	D	-	-	-	-
25	2117	F5	5.3	-15 47	D	-	-	-	-
25	2118	A3	2.9	-15 50	D	-	-	-	-
25	2118	A3	2.9	-15 50	R	-	-	-	-
26	2241	K5	5.0	-19 31	D	-	-	-	-
Aug									
4	3478	K0	6.5	-07 44	R	22 32.7	-0.5	+1.8	201
20	1962	M0	5.2	-08 27	D	-	-	-	-
22	2217	A2	5.5	-19 30	D	22 10.2	-1.4	-1.9	153
23	2351m	A2	7.4	-23 00	D	18 51.5	-1.2	-3.5	156
23	2357m	B3	6.6	-23 21	D	-	-	-	-
23	2359m	B5	4.8	-23 20	D	-	-	-	-
24	2501	K2	7.5	-26 10	D	-	-	-	-
24	2514	A0	6.3	-25 54	D	23 35.1	-	-	152
25	2650	K5	4.7	-27 04	D	-	-	-	-
26	2669m	A5	6.2	-26 40	D	01 28.5	-0.9	+0.8	101
26	2673	A3	6.3	-26 47	D	01 51.8	-1.9	-1.4	142
26	2676	A0	6.5	-26 37	D	02 04.1	-0.5	+0.9	100
26	2805	F0	7.0	-26 58	D	-	-	-	-
27	2824	K2	7.4	-26 16	D	00 28.3	-1.6	+1.2	83
27	2939	F0	7.2	-25 26	D	-	-	-	-
29	3089	A0	5.3	-21 24	D	01 31.6	-1.2	+2.2	52
Sep									
6	455	B3	6.1	+17 41	R	01 23.1	-0.4	+0.5	221
17	2036	G5	6.9	-11 36	D	19 36.9	-	-	43
18	2173	G5	7.0	-17 54	D	21 23.5	-0.6	-0.4	135
19	2319	A0	6.9	-22 02	D	22 04.3	0.0	+2.6	54
20	2452	B9	6.7	-25 38	D	-	-	-	-
20	2455	A5	6.8	-25 35	D	-	-	-	-
21	2469	A0	6.3	-25 12	D	00 00.5	+0.1	+1.2	85
24	3037	F8	7.3	-22 55	D	20 48.5	-1.6	+3.8	23
25	3062	K0	7.5	-22 12	D	02 16.5	-0.4	+1.4	80
25	3164	B5p	4.7	-19 41	D	19 36.0	-1.9	+0.5	61
26	3175	G5	4.8	-19 06	D	00 05.2	-2.4	+0.8	90
28	3419m	K0	4.5	-09 22	D	01 48.0	-1.8	+1.6	71

Date	Z.C.	Johannesburg				Luanshya					
		h.	m.	a	b	P.A.	h.	m.	a	b	P.A.
Jul											
6	3175	-	-	-	-	-	-	-	-	-	
7	3304	-	-	-	-	-	-	-	-	-	
8	3419 _m	-	-	-	-	-	-	-	-	-	
21	1647	19	37.9	-0.5	-0.6	132°	19	37.9	-1.2	+0.7	85°
24	1997	18	27.5	-0.9	-2.9	163	-	-	-	-	-
24	2013	-	-	-	-	-	23	22.1	-0.5	-1.1	135
25	2117	-	-	-	-	-	20	36.8	-1.7	-2.9	155
25	2118	-	-	-	-	-	20	49.0	-1.6	-3.2	159
25	2118	-	-	-	-	-	21	52.4	-2.0	+1.4	255
26	2241	18	20.9	-	-	64	-	-	-	-	-
Aug											
4	3478	22	48.7	-1.0	+0.7	230	22	48.1	-1.5	-1.1	279
20	1962	-	-	-	-	-	20	05.3	-0.9	-1.2	134
22	2217	22	13.6	-1.0	-0.5	126	22	17.1	-0.6	+1.0	79
23	2351 _m	18	53.3	-2.5	-1.1	115	18	56.9	-	-	64
23	2357 _m	21	01.1	-2.2	-3.2	154	20	45.0	-2.4	-0.1	100
23	2359 _m	21	03.2	-2.2	-2.5	147	20	51.7	-2.3	+0.1	95
24	2501	-	-	-	-	-	21	23.4	-	-	155
24	2514	23	42.1	-1.6	-0.8	130	23	43.2	-0.8	+0.7	84
25	2650	20	01.4	-2.7	-2.9	133	19	47.6	-3.4	+0.3	84
26	2669 _m	01	40.5	-0.4	+0.8	94	01	54.1	+0.3	+1.4	57
26	2673	01	58.1	-1.0	-0.7	131	-	-	-	-	-
26	2676	02	13.4	-0.1	+0.7	93	-	-	-	-	-
26	2805	-	-	-	-	-	19	22.4	-2.7	-1.3	107
27	2824	00	51.0	-1.0	+1.4	76	01	14.3	+0.1	+2.3	38
27	2939	-	-	-	-	-	20	38.7	-3.4	-2.7	122
29	3089	01	58.0	-0.8	+2.1	51	02	30.4	+0.5	+3.1	15
Sep											
6	455	01	34.5	-1.0	+0.8	227	01	39.8	-2.3	-0.2	265
17	2036	-	-	-	-	-	-	-	-	-	-
18	2173	-	-	-	-	-	-	-	-	-	-
19	2319	-	-	-	-	-	-	-	-	-	-
20	2452	-	-	-	-	-	20	34.3	-2.3	-1.9	135
20	2455	-	-	-	-	-	20	52.2	-1.8	-0.8	119
21	2469	-	-	-	-	-	-	-	-	-	-
24	3037	21	34.6	-	-	4	-	-	-	-	-
25	3062	02	28.6	0.0	+1.2	77	-	-	-	-	-
25	3164	20	06.5	-2.1	+2.3	39	-	-	-	-	-
26	3175	00	32.9	-1.9	+0.9	92	00	49.8	-1.0	+1.6	59
28	3419 _m	02	15.5	-1.4	+1.5	74	02	38.2	-0.7	+2.0	46

Date	Z.C.	Sp	Mag	(1950.0) Dec.	Ph	Cape Town				
						h.	m.	a	b	P.A.
Oct										
3	423	F2	6.4	+16° 17'	R	-	-	-	-	-
5	703	A3	6.3	+25 07	R	03	07.1	-3.1	-1.6	293°
6	844m	B8	5.7	+26 54	R	-	-	-	-	-
7	1008	A0	5.0	+28 04	R	02	56.2	-1.5	-1.5	285
7	1022m	B8	5.8	+28 19	R	05	13.4	-2.8	-2.1	318
8	1149	K5	4.2	+27 01	R	-	-	-	-	-
17	2398	A5	6.1	-24 22	D	20	18.1	-1.3	-1.0	141
18	2537	G0	7.4	-26 55	D	-	-	-	-	-
19	2721	B8	3.3	-27 03	D	22	52.6	-0.9	+0.2	121
19	2721	B8	3.3	-27 03	R	23	35.9	+0.7	+2.3	216
22	3130	K0	5.5	-21 04	D	-	-	-	-	-
23	3265	G5	6.6	-16 04	D	23	18.8	-1.2	+2.1	54
24	3358	K0	7.2	-12 27	D	-	-	-	-	-
27	55	G5	6.4	-00 20	D	00	09.8	-0.7	+2.8	15
Nov										
1	652m	B8	6.4	+24 11	R	02	23.7	-2.1	+0.7	242
4	1122	K0	3.9	+27 54	D	05	09.3	-	-	36
15	2650	K5	4.7	-27 04	D	21	05.0	-1.0	-0.6	137
16	2805	F0	7.0	-26 58	D	-	-	-	-	-
17	2939	F0	7.2	-25 26	D	-	-	-	-	-
18	3089	A0	5.3	-21 24	D	22	34.1	+0.2	+2.4	33
19	3214	A0	6.6	-18 08	D	-	-	-	-	-
21	3446m	K0	7.2	-08 44	D	-	-	-	-	-
22	12	B8	6.3	-02 50	D	-	-	-	-	-
22	12	B8	6.3	-02 50	R	-	-	-	-	-
22	13	K0	6.3	-02 44	D	-	-	-	-	-
24	226m	K0	6.6	+07 57	D	-	-	-	-	-
Dec										
6	1702	M0	4.2	+06 49	R	-	-	-	-	-
8	1937m	A5	6.1	-06 13	R	03	42.5	-0.2	-1.2	271
8	1941	M0	4.8	-06 00	R	03	52.9	+0.4	-3.4	6
17	3284	F5	7.1	-15 12	D	-	-	-	-	-
22	204	G5	7.3	+07 09	D	00	30.6	-0.7	+2.2	44
24	429	A3	6.9	+17 32	D	00	56.4	-1.4	+2.3	38
24	525	A0	6.4	+20 45	D	-	-	-	-	-
28	1149	K5	4.2	+27 01	D	-	-	-	-	-
28	1149	K5	4.2	+27 01	R	-	-	-	-	-

Date	Z.C.	Johannesburg				Luanshya					
		h.	m.	a	b	P.A.	h.	m.	a	b	P.A.
Oct											
3	423	-	-	-	-	00	16.7	-0.5	+2.5	200°	
5	703	03	28.9	-3.8	-1.4	296°	-	-	-	-	
6	844m	-	-	-	-	03	47.4	-1.9	+2.3	217	
7	1008	03	03.0	-2.3	-1.4	290	-	-	-	-	
7	1022m	-	-	-	-	-	-	-	-	-	
8	1149	02	50.7	-0.6	+0.2	237	02	48.2	-1.3	-0.6	275
17	2398	20	23.8	-0.8	-0.3	124	20	27.7	-0.2	+0.8	80
18	2537	-	-	-	-	19	37.2	-2.4	-2.0	135	
19	2721	23	00.0	-0.4	+0.1	115	-	-	-	-	
19	2721	-	-	-	-	-	-	-	-	-	
22	3130	-	-	-	-	21	35.6	-3.8	-0.7	106	
23	3265	23	43.9	-0.8	+1.9	56	24	12.1	0.0	+2.5	25
24	3358	-	-	-	-	18	46.4	-1.2	+3.8	14	
27	55	00	38.9	-0.7	+2.9	19	-	-	-	-	
Nov											
1	652m	02	53.5	-2.6	+1.1	247	03	02.1	-3.3	-0.2	279
4	1122	-	-	-	-	-	-	-	-	-	
15	2650	-	-	-	-	-	-	-	-	-	
16	2805	19	41.0	-1.9	-0.5	122	19	45.5	-0.8	+0.8	79
17	2939	-	-	-	-	19	24.4	-2.2	+0.2	95	
18	3089	22	48.7	+0.5	+2.2	30	-	-	-	-	
19	3214	-	-	-	-	22	18.2	-2.1	-0.8	113	
21	3446m	19	09.8	-1.8	+2.1	42	19	48.3	-0.4	+3.9	6
22	12	21	23.0			328	-	-	-	-	
22	12	21	40.6			305	-	-	-	-	
22	13	21	45.6			334	-	-	-	-	
24	226m	20	00.3			351	-	-	-	-	
Dec											
6	1702	-	-	-	-	02	09.3	-0.8	+0.3	251	
8	1937m	03	35.6	-0.4	-1.4	293	03	15.3	-0.1	-1.8	324
8	1941	-	-	-	-	-	-	-	-	-	
17	3284	20	10.3	-1.4	+1.2	82	20	29.8	-0.7	+1.7	53
22	204	-	-	-	-	-	-	-	-	-	
24	429	-	-	-	-	-	-	-	-	-	
24	525	20	13.2	-	-	121	20	03.0	-2.5	+0.4	75
28	1149	-	-	-	-	-	20	31.9	-0.4	+0.1	73
28	1149	21	43.9	-0.9	0.0	243	21	39.5	-1.5	-0.8	280

ECLIPSES

During 1966 there are four eclipses, two of the Sun and two of the Moon.

1. May 4 - 5 Penumbral eclipse of the Moon.
2. May 20 Annular eclipse of the Sun, invisible in Southern Africa.
3. October 29 Penumbral eclipse of the Moon, invisible in Southern Africa.
4. November 12 Total eclipse of the Sun.

Penumbral Eclipse of the Moon

May 4 - 5

Moon enters penumbra	4 ^d 21 ^h 06 ^m	S.A.S.T. in P.A. 155° East of north point.
Middle of the eclipse	4 23 12	
Moon leaves penumbra	5 01 17	in P.A. 109° West of north point
Maghitude of the eclipse	0.941	

This eclipse belongs to the terminal penumbral series following the umbral eclipse of 1948 April 23.

Annular Eclipse of the Sun

May 20

This eclipse will not be visible in Southern Africa, but some information of general interest is given here.

The path of the annular eclipse will start in the middle of the Atlantic Ocean near the Equator. It will then cross the bulge of Africa, the Mediterranean Sea, the Black Sea, Central Asia, and will eventually finish near the China coast. The path of the southern limit of the partial phase will pass through Angola but will move rapidly northwards as the eclipse progresses.

Total Eclipse of the Sun

November 12

The eclipse will actually start in the Pacific Ocean, west of South America. The path of totality then cuts across the continent of South America and the South Atlantic, and passes some six hundred miles or so south of the Republic to finish near longitude 40° E. The partial phases will be visible in Southern Africa just before sunset. Only the western part of the country will see the end of the eclipse, and the maximum phase will not be visible in Mozambique, Rhodesia and Zambia, with the exception of their extreme south-western portions.

Predicted circumstances are given below for Johannesburg and Cape Town. The predictions are of the following quantities:

- (i) Beginning (technically, "First Contact"): the moment at which the black disc of the Moon first impinges on the Sun, together with the position angle, reckoned from the north point of the Sun anticlockwise to the naked eye, through east, south and west, of the point on the edge of the Sun at which this first contact will occur.
- (ii) Mid-eclipse: the time of maximum obscuration of the Sun together with the magnitude of the eclipse, expressed in percentage of the solar diameter then obscured.
- (iii) End (technically, "Last Contact"): the same information as for the beginning of the eclipse but referring to the last instant of the eclipse when the Moon is just leaving the Sun's disc.

	Beginning		Mid-eclipse		End	
	Time	P.A.	Time	Mag	Time	P.A.
Cape Town	$17^{\text{h}}02^{\text{m}}.48$	269	$18^{\text{h}}05^{\text{m}}.51$	70.4%	$19^{\text{h}}02^{\text{m}}.52$	122
Johannesburg	17 17.21	258	18 11.67	54.9%	Not visible	

The point of Last Contact, the point where the penumbral shadow finally leaves the Earth is at:

Latitude $32^{\circ} 01' \text{ S}$ Longitude $21^{\circ} 43' \text{ E}$

This is near Fraserburg in the Cape Province.

THE PLANETS

The Chart (frontispiece) shows the S.A.S.T. of the rising and setting of the Sun and planets for position 30° E, 30° S. The approximate times for other places can be found by applying the longitude differences shown in Table I with the sign reversed, e.g. for Cape Town add 46 minutes, for Durban subtract 4 minutes. The correction for latitude will, in general, be sufficiently small to be ignored and in no case will it exceed 15 minutes. The approximate positions of the planets in the constellations, given in the table opposite, are intended for identification purposes.

Mercury will be best seen shortly after sunset near the greatest elongations on June 30 and October 26 and may possibly be glimpsed at the greatest elongation in March. The best morning visibility, just before sunrise, will occur near the greatest western elongation on April 18 while the planet should still be seen near the greatest elongations of August and December.

Venus overtakes the Earth in its orbit early in the year thus changing from an evening object to a morning object, and reaching greatest brilliancy (magnitude -4.3) on March 2. Thereafter it continues to draw away from the Earth, becoming gradually fainter, until on November 9 it passes round the far side of the Sun to reappear in the evening sky.

Mars will not be a very prominent object in 1966. It passes round the far side of the Sun on April 29 and will be seen in the morning sky towards the end of the year.

Jupiter begins the year as a prominent object in the evening sky. After conjunction on July 5 it will appear in the morning sky. By the end of the year it will be returning to the evening sky.

Saturn will be an evening object at the start of the year. After conjunction (March 11) it will appear in the morning sky, and by the end of the year will again be in the evening sky. It reaches maximum brightness (magnitude 0.8) at opposition (September 19).

Uranus and Neptune are at opposition on March 8 and May 12 respectively. They require optical aid, but can be found fairly easily from the ephemerides given on the opposite page.

THE PLANETS IN THE CONSTELLATIONS

	Venus	Mars	Jupiter	Saturn
January	Capricornus	Capricornus	Taurus	Aquarius
February	Sagittarius	Aquarius	Taurus	Aquarius
March	Capricornus	Pisces	Taurus	Aquarius
April	Aquarius	Aries	Taurus	Pisces
May	Pisces	Aries	Gemini	Pisces
June	Aries	Taurus	Gemini	Pisces
July	Taurus	Gemini	Gemini	Pisces
August	Gemini	Gemini	Gemini	Pisces
September	Leo	Cancer	Cancer	Pisces
October	Virgo	Leo	Cancer	Aquarius
November	Libra	Leo	Cancer	Aquarius
December	Sagittarius	Virgo	Cancer	Aquarius

EPIHEMERIDES FOR URANUS AND JUPITER

	Uranus		Neptune	
	R.A.	Dec.	R.A.	Dec.
Jan 1	11 ^h 23 ^m .1	+ 4° 50'	15 ^h 17 ^m .9	- 16° 28'
21	11 21.9	+ 4 58	15 19.7	- 16 34
Feb 10	11 19.7	+ 5 13	15 20.8	- 16 37
Mar 2	11 16.7	+ 5 33	15 20.9	- 16 36
22	11 13.5	+ 5 52	15 20.2	- 16 32
Apr 11	11 10.6	+ 6 10	15 18.7	- 16 26
May 1	11 08.6	+ 6 22	15 16.7	- 16 18
21	11 07.8	+ 6 27	15 14.5	- 16 09
Jun 10	11 08.2	+ 6 23	15 12.5	- 16 02
30	11 10.0	+ 6 11	15 10.9	- 15 56
Jul 20	11 12.8	+ 5 52	15 10.0	- 15 53
Aug 9	11 16.6	+ 5 28	15 09.9	- 15 54
29	11 21.0	+ 5 00	15 10.6	- 15 58
Sep 18	11 25.6	+ 4 30	15 12.2	- 16 06
Oct 8	11 30.1	+ 4 01	15 14.4	- 16 15
Oct 28	11 34.2	+ 3 35	15 17.1	- 16 27
Nov 17	11 37.6	+ 3 15	15 20.1	- 16 38
Dec 7	11 39.8	+ 3 01	15 23.1	- 16 49
27	11 40.7	+ 2 56	15 25.8	- 16 59

The coordinates are apparent geocentric positions for the equinox of date.

THE SATELLITES OF JUPITER

Details of phenomena, occurring between the end of astronomical Twilight and midnight, and when the planet is above the horizon in Southern Africa, are tabulated below. The predicted times are for mid-phenomena and are not instantaneous.

Explanation of Table:

The date and time of the phenomenon are given.

Sat. - is the satellite concerned

- I - Io
- II - Europa
- III - Ganymede
- IV - Callisto

Phen. - is the particular phenomenon. The first column given the type.

Ec - Eclipse: the satellite passes through the shadow of Jupiter

Oc - Occultation: the satellite is obscured by the disc of Jupiter

Tr - Transit: the satellite crosses the disc of Jupiter

Sh - Shadow transit: the shadow of the satellite transits the disc

The second column gives the phase of the phenomenon.

- D - Disappearance
- R - Reappearance
- I - Ingress
- E - Egress

Date	S.A.S.T.	Sat	Phen	Date	S.A.S.T.	Sat	Phen
Jan 3	21 ^h 36 ^m	III	Ec R	Jan 22	22 ^h 48 ^m	II	Sh I
4	23 06	I	Tr I	22	23 49	II	Tr E
4	23 32	I	Sh I	27	22 50	I	Tr I
5	23 03	I	Ec R	27	23 45	I	Sh I
6	21 37	II	Oc D	28	20 34	III	Sh I
12	22 07	I	Oc D	28	23 19	I	Ec R
13	21 29	I	Tr E	28	23 31	III	Sh E
13	22 08	I	Sh E	29	23 30	II	Tr I
13	23 53	II	Oc D	31	22 23	II	Ec R
15	21 29	II	Tr E	Feb 4	21 57	I	Oc D
15	22 54	II	Sh E	4	23 13	III	Tr E
17	23 44	III	Oc D	5	21 18	I	Tr E
19	23 53	I	Oc D	5	22 21	I	Sh E
20	21 03	I	Tr I	11	23 47	I	Oc D
20	21 50	I	Sh I	11	23 59	III	Tr I
20	23 15	I	Tr E	12	20 56	I	Tr I
21	21 23	I	Ec R	12	22 04	I	Sh I
22	21 07	II	Tr I	12	23 08	I	Tr E

Date	S.A.S.T.	Sat	Phen
Feb 13	21 ^h 38 ^m	I	Ec R
14	22 31	II	Oc D
15	21 44	III	Ec R
16	20 17	II	Tr E
16	22 42	II	Sh E
19	22 47	I	Tr I
19	23 59	I	Sh I
20	23 34	I	Ec R
21	20 40	I	Sh E
22	20 39	III	Oc R
22	22 44	III	Ec D
23	20 07	II	Tr I
23	22 36	II	Sh I
23	22 48	II	Tr E
27	21 59	I	Oc D
28	20 23	I	Sh I
28	21 20	I	Tr E
28	22 36	I	Sh E
Mar 1	19 58	I	Ec R
1	21 34	III	Oc D
2	22 39	II	Tr I
4	22 07	II	Ec R
7	21 02	I	Tr I
7	22 18	I	Sh I
7	23 14	I	Tr E
8	21 54	I	Ec R
12	20 37	III	Sh I
13	19 52	II	Sh E
14	22 56	I	Tr I
15	20 16	I	Oc D
16	19 38	I	Tr E
16	20 56	I	Sh E
18	21 56	II	Oc D
19	22 20	III	Tr E
20	19 45	II	Sh I
20	19 52	II	Tr E
20	22 28	II	Sh E
22	22 12	I	Oc D
23	20 38	I	Sh I
23	21 34	I	Tr E
24	20 13	I	Ec R
27	19 49	II	Tr I
27	22 21	II	Sh I
30	21 19	I	Tr I
30	21 52	III	Ec R
31	22 09	I	Ec R
Apr 1	19 16	I	Sh E
6	20 52	III	Oc R
7	20 37	I	Oc D

Date	S.A.S.T.	Sat	Phen
Apr 8	19 ^h 59 ^m	I	Tr E
8	21 12	I	Sh E
12	19 23	II	Oc D
13	21 02	IV	Ec D
14	19 36	II	Sh E
15	19 45	I	Tr I
15	20 53	I	Sh I
16	20 28	I	Ec R
17	19 45	III	Sh E
21	19 27	II	Sh I
21	20 01	II	Tr E
23	19 04	I	Oc D
24	19 25	III	Tr E
24	19 32	I	Sh E
24	20 39	III	Sh I
28	20 02	II	Tr I
30	19 08	II	Ec R
May 1	19 13	I	Sh I
2	18 47	I	Ec R
12	18 47	III	Ec D
16	19 16	II	Sh E
17	19 00	I	Tr E
23	19 06	II	Sh I
24	18 47	I	Tr I
25	19 00	I	Ec R
Nov 23	23 34	I	Ec D
24	23 10	I	Sh E
25	23 41	III	Sh E
Dec 1	22 48	I	Sh I
1	23 50	I	Tr I
2	23 16	I	Oc R
4	22 43	IV	Oc R
8	22 08	II	Sh E
9	21 50	I	Ec D
10	22 19	I	Tr E
12	22 58	IV	Sh E
15	21 51	II	Sh I
15	23 30	II	Tr I
16	23 44	I	Ec D
17	21 49	I	Tr I
17	23 19	I	Sh E
20	22 06	III	Ec D
24	22 26	I	Sh I
24	23 29	II	Oc R
24	23 34	I	Tr I
25	23 02	I	Oc R
29	22 03	IV	Tr E
31	21 32	III	Tr E
31	21 56	II	Ec D

METEOR CALENDAR 1966

Date	Shower	Radiant R.A. Dec	M a x i m u m		
			Date	Hourly Rate	Transit of Radiant
Jan 3	Quadrantids	227° + 46°	Jan 3	40	08 ^h 30 ^m
Mar 12	Hydraids	184 - 27	Mar 25	?	00 00
-Apr 25					
Mar 1	Virginids	200 - 6	Apr 3	?	00 00
-May 10					
Apr 2	Lyrids	273 + 35	Apr 21	12	04 00
-Apr 24					
Apr 29	Eta Aquarids	338 - 1	May 6	10	07 36
-May 21					
Apr 20	Sco - Sgr System	270 - 30	Jun 14	?	00 30
-Jul 30					
Jul 25	Delta Aquarids	343 - 17	Jul 28	20	02 00
-Aug 10					
Jul 18	Alpha Capricornids	304 - 12	?	?	-- --
-Jul 30					
Jul 20	Perseids	43 + 56	Aug 12	50	05 36
-Aug 19					
Aug 16	Piscids	0 + 14	Sep 12	?	00 30
-Oct 8					
Oct 11	Orionids	94 + 16	Oct 22	20	04 24
-Oct 30					
Sep 24	Taurids	58 + 21	Nov 13	6	00 36
-Dec 10					
Nov 16	Leonids	151 + 21	Nov 16	6	06 32
Dec 5					
-Dec 12	Geminids	113 + 30	Dec 12	30	02 00
Dec 5					
-Jan 7	Velids	149 - 51	Dec 29	?	03 30

The hourly rates would apply if the radiants were in the observer's zenith. The orbits of the cometary currents are closely related to the orbits of the comets named; the orbits of ecliptical currents to those of certain minor planets.

METEOR CALENDAR 1966

Recommended S&ST of watch	Conditions at Maximum	Nature of current	Appearance
Difficult in SA.			
22h - 24h	Favourable	Unknown	
22h - 24h	Unfavourable	Ecliptical	
02h - 04h	Unfavourable	Cometary: Comet 1861 I	Swift with streaks
03h - dawn	Unfavourable	Cometary: Halley	Very swift, long paths
20h - 24h	Favourable	Ecliptical	
23h - 02h	Favourable	Ecliptical	Slow, long paths
22h - 02h	-	Cometary: Comet 1881 IV	Very slow, bright
03h - dawn	Favourable *	Cometary: Comet 1862 III	
22h - 24h	Favourable	Ecliptical	
02h30m - 04h30m	Favourable	Cometary: Halley	Swift, with streaks
22h - 24h	Favourable	Ecliptical	
03h - dawn	Favourable **	Cometary: Comet 1866 I	
23h - 02h	Favourable	Ecliptical	Medium speed, white
23h - 03h30m	Unfavourable	Unknown	

* In view of the high northern declination of its radiant, this shower is difficult to observe from South Africa, and then only from low latitudes.

** Although the period of this shower is $33\frac{1}{4}$ years, (next expected maximum 1966), there was a slight increase in activity four years ago. Last spectacular shower, 1866: those of 1899 and 1932 - 33 disappointing (perturbation by Jupiter). Close watch for possible increase in activity recommended during coming years.

BRIGHT VARIABLE STARS

Name	Position (1950)		Range	Period Days	Expected	
	R.A.	Dec.			Maxima	1966
o Ceti (Mira)	02 ^h 16 ^m .8	- 3° 12'	2.6-9.4	331	Nov 24	
R Doradus	04 36.2	-60 11	5.3-6.4	Irr.		
R Pictoris	04 44.8	-49 20	6.9-9.2	172?		
L ₂ Puppis	07 12.0	-44 33	3.1-6.3	140?		
R Carinae	09 31.0	-62 34	4.5-9.4	309	Apr 5	
S Carinae	10 07.8	-61 18	5.7-8.3	149	May 15, Oct 11	
R Hydrae	13 27.0	-23 01	4.7-9.6	386	Jul 7	
T Centauri	13 38.9	-33 21	6.0-8.2	90	Mar 17, Jun 16, Sep 15, Dec 15	
R Centauri	14 12.9	-59 41	5.7-12.0	547		
R Aquarii	23 41.2	-15 34	6.7-11.6	387	Jun 8	

ASTRONOMICAL DIARY

JANUARY 1966

d. h.

Jan 5 19 Jupiter 2° S of Moon.
 8 07 Venus 4° N of Mars.
 16 03 Neptune 0°.7 N of Moon.
 26 11 Venus in inferior conjunction.

FEBRUARY 1966

d. h.

Feb 2 02 Jupiter 2° S of Moon.
 6 05 Mercury in superior conjunction.
 21 19 Saturn 3° N of Moon.
 22 15 Mars 1°.1 N of Saturn.

FEBRUARY 1966

	d.	h.	
Feb	23	18	Mercury $1^{\circ}.7$ N of Saturn.
	24	15	Mercury $0^{\circ}.7$ N of Mars.

MARCH 1966

	d.	h.	
Mar	2	01	Venus at greatest brilliancy.
	5	06	Mercury at greatest elongation, 18° E.
	7	04	Uranus 4° S of Moon.
	8	07	Pluto at opposition.
	8	17	Uranus at opposition.
	11	00	Saturn in conjunction with Sun.
	14	08	Mercury 4° N of Mars.
	21	04	Equinox.
	21	16	Mercury in inferior conjunction.
	28	21	Jupiter 3° S of Moon.

APRIL 1966

	d.	h.	
Apr	6	15	Venus at greatest elongation, 46° W.
	8	03	Neptune 2° N of Moon.
	9	05	Mercury $1^{\circ}.0$ N of Saturn.
	18	13	Mercury at greatest elongation, 28° W.
	29	07	Mars in conjunction with Sun.
	30	19	Uranus 5° S of Moon.

MAY 1966

	d.	h.	
May	1	20	Venus $1^{\circ}.0$ N of Saturn.
	4	23	Penumbral eclipse of the Moon.
	12	02	Neptune at opposition.
	20	12	Annular eclipse of the Sun, not visible in Southern Africa.
	27	09	Mercury in superior conjunction.

JUNE 1966

	d.	h.	
Jun	1	19	Neptune 1° N of Moon.
	11	22	Mercury 2° N of Jupiter.
	12	09	Mars 6° N of Aldebaran.
	21	22	Mercury 5° S of Pollux.
	21	23	Solstice.
	29	01	Neptune 1° N of Moon.
	30	22	Mercury at greatest elongation, 26° E.

JULY 1966

	d.	h.	
Jul	4	23	Venus 4° N of Aldebaran.
	5	16	Jupiter in conjunction with Sun.
	28	16	Mercury in inferior conjunction.

AUGUST 1966

	d.	h.	
Aug	4	04	Venus 1° S of Mars.
	7	19	Venus $0^{\circ}.1$ S of Jupiter.
	10	15	Venus 7° S of Pollux.
	12	07	Mars $0^{\circ}.7$ N of Jupiter.
	15	04	Mercury 6° S of Moon.
	16	02	Mars 6° S of Pollux.
	16	09	Mercury at greatest elongation, 19° W.
	24	09	Jupiter 7° S of Pollux.

SEPTEMBER 1966

	d.	h.	
Sep	8	08	Venus $0^{\circ}.7$ N of Regulus.
	10	09	Mercury in superior conjunction.
	11	05	Jupiter 5° S of Moon.
	11	12	Pluto in conjunction with Sun.
	13	09	Uranus in conjunction with Sun.

SEPTEMBER 1966

	d.	h.	
Sep	19	18	Saturn at opposition.
	23	14	Equinox.
	28	20	Saturn 2° N of Moon.

OCTOBER 1966

	d.	h.	
Oct	1	04	Mercury $1^{\circ}.8$ N of Spica.
	5	08	Pallas at opposition.
	11	06	Mars $1^{\circ}.0$ N of Regulus.
	25	23	Saturn 2° N of Moon.
	26	18	Mercury at greatest elongation, 24° E.
	29	12	Penumbral eclipse of the Moon, not visible in Southern Africa.

NOVEMBER 1966

	d.	h.	
Nov	8	05	Mars 3° S of Moon.
	9	03	Venus in superior conjunction.
	12	16	Total eclipse of the Sun, the partial phases visible in Southern Africa.
	14	20	Neptune in conjunction with Sun.
	17	13	Mercury in inferior conjunction.

DECEMBER 1966

	d.	h.	
Dec	4	19	Mercury at greatest elongation, 21° W.
	5	14	Mercury $0^{\circ}.6$ N of Neptune.
	22	09	Solstice.
	22	11	Ceres at opposition.

THE GILL MEDAL

Medallists

1956	H. Knox Shaw	1958	J. Jackson
1957	W. F. Hirst	1960	W. H. van den Bos
1963	A. W. J. Cousins	1965	R. H. Stoy

The Gill Medal commemorates Sir David Gill, F. R. S. Astronomer at the Cape (1879 - 1907) renowned for his numerous researches, especially in positional and mathematical astronomy and geodesy, and for his part in consolidating astronomical science in Southern Africa.

The medal was designed by Dr. P. Kirchhoff, President of the Society at the time, in 1955. The obverse carries a bas-relief portrait of Gill: the reverse incorporates a representation of the heliometer with which Gill undertook much of his positional work including a determination of the solar parallax. The medal which is struck in silver is awarded by Council for services to astronomy with special consideration to services in southern Africa.

SOUTHERN AFRICAN OBSERVATORIES

Private observatories are listed separately

Name	Place	E. Long.	S. Lat.	Alt.	Director
		1h+		ft	
Republic	Johannesburg	52m 18s.0	26°10'55"3	5925	J. H. Hers (acting)
Republic Annexe	Hartebeespoort	51m 30s	25°46'22"	4002	
Royal Observatory	Cape Town	13m 54s.6	33°56'02"5	26	R. H. Stoy
Radcliffe	Pretoria	52m 54s.9	25°47'18"	5059	A. D. Thackeray
Boyden	Bloemfontein	45m 37s.4	29°02'20"	4550	A. D. Andrews
Leiden	Hartebeespoort	51m 30s	25°46'22"	4002	D. F. Stevenson
Lamont-Hussey	Bloemfontein	44m 56s.8	29°05'46"1	4825	F. Holden
Smithsonian Astro-physical Observation Station	Olifantsfontein	52m 59s.6	25°57'33"9	5066	S. S. Tischler
Radio Space Research Station	Krugersdorp	48m 16s.3	25°53'14"5	4515	D. Hogg
Durban Satellite Tracking Station	Durban	54m 00s.1	29°50'39"5	250	G. Roberts A. Arnold

Details of instruments and specialised observations for optical observatories are as follows:

Observatory	Instruments	Specialised Observations
Republic	26½" Refr.; 9" Refr.; 6"/7" Refr.	Double star measurements, photoelectric photometry (eclipsing variables), and planetary observations
Republic Annexe	10" Franklin-Adams star camera.	Minor planets, comets and variable star fields.
Royal Observatory	6" Reversible Transit Circle; 40" Refl. (Newt., Cass. and Corr. plate); Twin Refr. 24" and 18" with 8" guide Refr. and 5" camera; Twin Refr. 13" and 10"; 30" Refl.; 18" Refl.; 8" and two 5" camera array; Lyot H-alpha Heliograph; 4" Heliograph; 6" Refr.; Danjon prismatic astrolabe.	Meridian observations, photography, proper motion and parallax measurements, photoelectric photometry, variable stars, solar observations and spectroscopy.
Radcliffe	74" Refl. (Newt., Cass., and Coude).	Spectroscopy, direct photography and photoelectric photometry.
Boyden	60" Refl.; 32"/36" Baker-Schmidt; 36cm Schmidt; 16" Refl.; 13" Refr.; 10" Refr.; Damon Patrol cameras; Remeis Patrol cameras; 3" Camera; 1" Camera.	Photography, photoelectric photometry, Southern Sky Patrol and variable star survey.
Leiden	36" Light Collector; Twin 16" Refr.	Photoelectric photometry and photography.
Lamont-Hussey	27" Refr.	Double Stars measurements.
Durban Satellite-Tracking Station	12" Refl.; 10" Refl.; 6" Refl. (Cass); Two 6" Refls. (Newt); Three 5" Apogee Refrs.; 2½" Refr. and cameras.	Satellite tracking, lunar and planetary observations, photography, photoelectric photometry and comet observations.

PRIVATE OBSERVATORIES

Owner	Address	Alt.
R. C. Allen	29 Frara Drive, Pinetown, Natal	1125
W. Bell	133, 16th Street, Parkhurst, Johannesburg	5210
J. C. Bennett	90 Malan Street, Riviera, Pretoria	4280
J. H. Botham	94 Ascot Road, Judith's Paarl, Johannesburg	5605
Chaplin School	P. O. Box 140, Gwelo, Rhodesia	4650
B. Conradie	Nou-toe-nou, Windellstraat 7, Durbanville, K.P.	485
J. Finch	9 Troutbeck Road, Greenhill, P. O. Morningside, Bulawayo, Rhodesia	4480
K. G. Fuhr	13 Smith Road, Rosebank, Cape	25
N. M. Hoogenhout	46 Lawley Street, Waterkloof, Pretoria	4725
C. R. Jacobs	"Broadacres", P. O. Bryanston, Transvaal	
G. F. G. Knipe	83 Ascot Heights, Quartz Street, Hillbrow, Johannesburg.	5915
M. Lipshitz	10 Carnarvon Place, Durban North, Durban	330
J. McBain	15, 26th Avenue, Famona, Bulawayo, Rhodesia	4400
C. Mollink	P. O. Box 1206, Pretoria	4545
A. G. F. Morrisby	P. O. Box 8099, Causeway, Salisbury, Rhodesia	4900
M. D. Overbeek	60 Edward Drive, Glendower, Edenvale, Transvaal	5380
C. Papadopoulos	22 Waterfall Road, Westcliff, Johannesburg	5585
People's Observatory Society	The Port Elizabeth People's Observatory, Society, c/o Mr. R. Maasdorp, 3 Lucas Street, Newton Park, Port Elizabeth	330
Prince Edward School	P. O. Box 8076, Causeway, Salisbury, Rhodesia	4850
R. F. Smith	P. O. Box 10031, Pretoria	4455
K. J. Sterling	5 Hekla Road, Valhalla, Pretoria	4720
S. C. Venter	P. O. Box 1416, Pretoria	4050
C. N. Williams	P. O. Box 5, Cleveland, Transvaal	5600
W. H. Wood	P. O. Box 1226, Salisbury, Rhodesia	4850

PRIVATE OBSERVATORIES

E. Long.	S. Lat.	Details of Telescopes	Specialised Observations
2 ^h 03 ^m 20 ^s	29°48' "	12" Refl. (Cass)	Lunar
1 52 05.8	26 08 10.6	12" Refl.	Planetary
1 52 50.8	25 43 43.5	3" Refr.; 5" Refr.	
1 52 17.3	26 11 23.3		
1 57 49.9	19 27 28	9" Refl.	
1 14 36.9	33 49 55.8	8" Refl.	Occultations, Variable stars
1 54 30	20 07	50 mm Refr.	Solar, Lunar, Planetary
1 13 54.5	33 57 09	80 mm Refr.	Occultations
1 52 58.6	25 46 46	12" Refl.; 3" Camera	
		12" Refl.	Planetary, Lunar
1 52 11.6	26 11 18.3	6" Refl.	
2 04 10	29 46 30	12" Refl.	
1 55 40	20 02	3" Refr.	Lunar, Planetary
1 52 57.1	25 45 34	12" Refl. (Coude)	
2 04 27.8	17 45 31.7	4" Refr.	Occultations
1 52 35.0	26 10 17.0	12" Refl. (Cass)	Variable stars
1 52 05.1	26 10 19.5	12" Refl.(Cass); 3" Refr.	Photography
1 42 19.2	33 57 11	8" Refr.	
2 04 08.9	17 49 04.8	12" Refl.; 6" Refl.; 3" Refr.	
1 53 14.3	25 44 57.5	10" Refl.	
1 52 37.1	25 48 08	6" Refl.	
1 52 46.9	25 40 14.8	12" Refl.; 2 $\frac{3}{4}$ " Refr.	Variable stars, Occultations, Comets, Sunspots
1 52 36.2	26 10 39	12" Refl.; 6" Refr.	Planetary
2 04 00	17 50	4 $\frac{1}{2}$ " Refl.	

PAST PRESIDENTS

1922 - 23	S. S. Hough	1943 - 44	W. H. van den Bos
1923 - 24	R. T. A. Innes	1944 - 45	A. W. J. Cousins
1924 - 25	J. K. E. Halm	1945 - 46	R. H. Stoy
1925 - 26	W. Reid	1946 - 47	W. P. Hirst
1926 - 27	H. Spencer Jones	1947 - 48	J. Jackson
1927 - 28	A. W. Roberts	1948 - 49	A. E. H. Bleksley
1928 - 29	A. W. Long	1949 - 50	W. S. Finsen
1929 - 30	H. E. Wood	1950 - 51	H. E. Krumm
1930 - 31	D. Cameron-Swan	1951 - 52	A. D. Thackeray
1931 - 32	H. L. Alden	1952 - 53	J. C. Bentley
1932 - 33	H. Spencer Jones	1953 - 54	David S. Evans
1933 - 34	D. G. McIntyre	1954 - 55	P. Kirchhoff
1934 - 35	J. K. E. Halm	1955 - 56	W. H. van den Bos
1935 - 36	J. Jackson	1956 - 57	S. C. Venter
1936 - 37	H. E. Houghton	1957 - 58	M. W. Feast
1937 - 38	J. S. Paraskevopoulos	1958 - 59	H. Haffner
1938 - 39	T. MacKenzie	1959 - 60	P. Smits
1939 - 40	R. A. Rossiter	1960 - 61	G. G. Cillie
1940 - 41	E. B. Ford	1961 - 62	M. D. Overbeek
1941 - 42	H. Knox Shaw	1962 - 63	A. J. Messelink
1942 - 43	A. F. I. Forbes	1963 - 64	A. G. F. Morrisby
	1964 - 65	H. C. Lagerweij	

HONORARY MEMBERS

Prof. Ch. Fehrenbach	Mr. D. G. McIntyre	Dr. H. Shapley
Dr. W. S. Finsen	Dr. J. H. Oort	Dr. W. H. van den Bos
Dr. H. Haffner	Dr. R. O. Redman	Dr. A. G. Velghe
Dr. H. Knox Shaw	Dr. J. Schilt	Sir Richard Woolley

HONORARY SECRETARIES

1922	H. W. Schonegevel
1922	
August	T. MacKenzie
1923	
	C. L. O'Brien Dutton
1923	
October	H. E. Houghton
1930	
July	S. Skewes
1931	
	H. Horrocks
1934	
November	H. W. Schonegevel
1935	
	A. Menzies
1965	
	T. W. Russo

OBSERVING SECTIONS

The Observing Sections exist to encourage amateurs in carrying out useful research. Enquiries about their activities should be addressed to the Directors of the Observing Sections, whose names and addresses are given below:—

Comets and Meteors:

Mr. S. C. Venter, P.O. Box 1416, Pretoria.

Variable Stars:

Mr. R. P. de Kock, The Royal Observatory, Observatory, Cape.

Nova Search Section:

Mr. D. H. Grant, P.O. Box 113, Honeydew, Transvaal.

A number of autonomous local Centres of the Society exists, which hold regular meetings. Information on local activity in fields such as "Moonwatch" (observation of artificial satellites), and telescope construction can be obtained through Centre Secretaries. Details of Centre organisation are as follows:—

CAPE CENTRE:

Chairman: Mr. A. P. Fairall.
Vice-Chairman: Mr. R. F. Horn.
Hon. Secretary: Mr. H. B. Molyneux.
Hon. Treasurer: Mr. I. Weinberg.
Hon. Auditor: Mr. A. Menzies.
Members of Committee: Messrs. J. Bondiotti, G. R. Atkins, J. Churms, R. R. Hirschberg and N. Saville.

Centre Representative on Council:

Mr. W. C. Bentley.

Meetings in winter on 2nd Wednesday of month at the Royal Observatory.

Secretarial address, c/o The Royal Observatory, Observatory, Cape.

TRANSVAAL CENTRE:

Chairman: Mr. C. R. Jacobs.
Vice-Chairman: Mr. W. Bell.
Hon. Secretary: Mr. B. J. C. Maurick.
Hon. Treasurer: Mrs. P. W. J. Maurick.
Members of Committee: Messrs. C. Mollink, C. Papadopoulos, E. F. von Maltitz and I. R. Brickett.

Public Representative:

Mr. J. A. Bruwer.

Pretoria Representative:

Mr. K. J. Sterling.

Centre Representative on

Council:

Mr. W. Bell.

Curator of Instruments:

Mr. T. E. Geary.

Hon. Librarian:

Mrs. M. M. FitzGerald.

Observing and lecture meetings in alternate months.

Secretarial address, 8, Eider Road, Florida Lake, Transvaal.

BLOEMFONTEIN CENTRE:

Chairman: Mr. G. N. Walker.
Hon. Secretary: Mr. J. I. Mahaffey.
Hon. Treasurer: Mr. N. Lincoln.
Members of Committee: Messrs. P. Keuris and J. C. van Loggerenberg and Dr. C. B. van Wyk.

Centre Representative on

Council:

Mr. N. Lincoln.

Secretarial address, P.O. Box 1050, Bloemfontein.

NATAL CENTRE:

For information apply to:

Mr. Gregory Roberts, c/o Laboratory, Lever Brothers (Pty.) Ltd. Maydon Wharf, Durban.