

THE  
ASTRONOMICAL SOCIETY  
OF  
SOUTHERN AFRICA

---

HANDBOOK FOR  
1959

# THE ASTRONOMICAL SOCIETY OF SOUTHERN AFRICA

## 1958 — 1959

*President:*

Professor H. Haffner.

*Vice-Presidents:*

Dr. M. W. Feast. Professor R. H. Stoy. Mr. H. C. Lagerweij.

*Hon. Secretary:*

Mr. A. Menzies.

*Hon. Treasurer:*

Mr. G. Orpen.

*Members of Council*

Dr. D. S. Evans, Mr. M. J. Bester, Professor J. M. le Roux, Mr. J. Churms.

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 copy 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 is £2 2s., with an entrance fee of £1 1s. The annual subscription to M.N.A.S.S.A. for non-members is £1 1s.

Subscriptions and enquiries concerning M.N.A.S.S.A. only should be addressed to the Circulation Manager, Mr. H. E. Krumm, 3, Leeuwendaal Crescent, 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 1958

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.

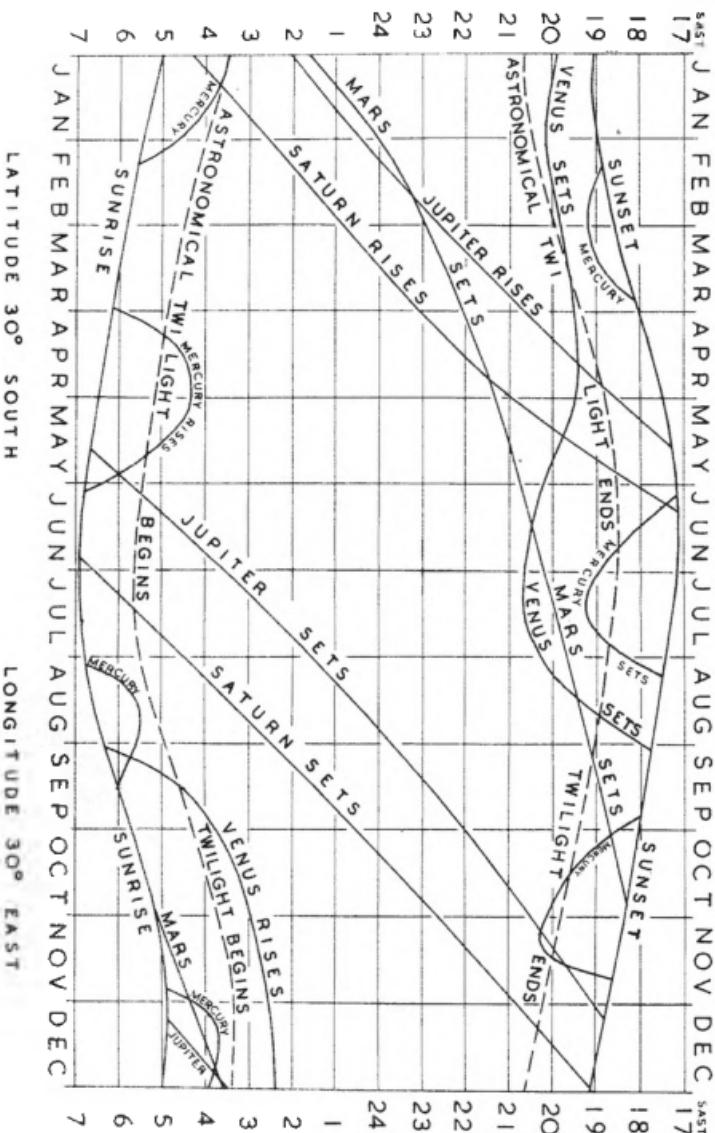
Nominations for Officers and Council by June 15.

Subscriptions due July 1.

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

## THE PLANETS AS SEEN FROM SOUTH AFRICA

1959



THE  
H A N D B O O K  
OF THE  
ASTRONOMICAL SOCIETY OF SOUTHERN AFRICA  
1959

Computed and Prepared  
by  
The Computing Section of the Transvaal Centre  
and the Editorial Board of MNASSA

Cape Town 1959

Price to Non-Members: Two shillings

## CONTENTS

	Page
Planetary Diagram .....	Frontispiece
Time .....	3
Julian Date, Sun's Transit and Sidereal Time .....	5
Tables of Moonrise and Moonset .....	6
Occultations of Bright Stars .....	19
Eclipses .....	21
The Planets .....	22
Ephemeris for Uranus and Neptune .....	23
Meteor Calendar .....	24
Astronomical Diary .....	26
Bright Variable Stars .....	32
South African Observatories .....	33
Past Presidents, Honorary Members and Honorary Secretaries ..	34

## TIME

All the times given in this booklet are South African Standard Time, that is, mean solar time for a meridian  $30^{\circ}$ , or two hours, east of Greenwich.

To get the local mean time at other places in the Union the longitude difference shown in Table I must be applied to the ordinary S.A.S.T.

TABLE I

## CORRECTION FOR LONGITUDE

Bloemfontein	$-15^m$	Grahamstown	$-14^m$
Cape Town	$-46$	Johannesburg	$-08$
Durban	$+04$	Port Elizabeth	$-18$
East London	$-08$	Pretoria	$-07$

Conversely, to get the S.A.S.T. from the local mean time these longitude corrections must be applied with the sign reversed. Thus the S.A.S.T. of local mean noon (i.e. 12h. 00m. local mean time) at Port Elizabeth is 12h. 18m.

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 (i.e. the time shown by a sundial) differs from the local 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 third column of Table II which gives the S.A.S.T. of noon, that is, of the Sun's transit over the meridian.

For example, the S.A.S.T. of apparent noon at Port Elizabeth on 1959 November 18 is 12.03 S.A.S.T. found by applying the longitude correction of +18m to the tabulated value for  $30^{\circ}$  E,  $30^{\circ}$  S.

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 fourth 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  $+1^m$  for times between 03.00 and 09.00 S.A.S.T.,  $+2^m$  between 09.00 and 15.00,  $+3^m$  between 15.00 and 21.00 and  $+4^m$  between 21.00 and 23.59.

Example: Find the sidereal time at 8.15 p.m. on October 19 at Port Elizabeth.

	h. m.
Sid. time at 00 <sup>h</sup> .00 <sup>m</sup> S.A.S.T. on October 19	01 46
S.A.S.T. elapsed	<u>20 15</u>
	22 01
Correction for longitude	-18
Interval correction	<u>+ 3</u>
Required Sidereal Time.	<u>21 46</u>

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.

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. In fact 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. 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,  $360^{\circ}$  being equal to 24 hours ( $1^{\circ}$  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.

For considering the motions of the Sun, Moon and Planets, the system of co-ordinates known as celestial latitude and longitude is very convenient. These co-ordinates define the position of a celestial body with reference to the Ecliptic in exactly the same way as right ascension and declination define its position with reference to the Celestial Equator. The (celestial) latitude is the angular distance of the body north or south of the ecliptic, while the longitude is the distance from the Vernal Equinox as measured eastwards along the Ecliptic. Celestial latitude and longitude are usually measured in degrees.

The Ecliptic is defined by the apparent path of the Sun about the Earth. The latitude of the Sun is therefore always (approximately) zero, whilst its longitude increases by approximately  $1^{\circ}$  per day.

-----

TABLE II

Date 1959	Julian Date at 14 hours	S. A. S. T. of Sun's transit Longitude 30°E	Sidereal Time for Longitude 30° E		
			S.A.S.T. 0 hours	S.A.S.T. 18 hours	
January 2	2,436,571.0	12 03 48	6 43	0 47	
" 12	581.0	12 08 09	7 23	1 26	
" 22	591.0	12 11 30	8 02	2 05	
February 1	601.0	12 13 35	8 41	2 44	
" 11	611.0	12 14 20	9 21	3 24	
" 21	621.0	12 13 47	10 00	4 03	
March 3	631.0	12 12 09	10 40	4 44	
" 13	641.0	12 09 45	11 19	5 22	
" 23	651.0	12 06 51	11 58	6 01	
April 2	2,436,661.0	12 03 49	12 38	6 41	
" 12	671.0	12 01 00	13 17	7 20	
" 22	681.0	11 58 38	13 57	8 00	
May 2	691.0	11 57 01	14 36	8 39	
" 12	701.0	11 56 18	15 16	9 19	
" 22	711.0	11 56 31	15 55	9 58	
June 1	721.0	11 57 36	16 34	10 37	
" 11	731.0	11 59 22	17 14	11 17	
" 21	741.0	12 01 29	17 53	11 56	
July 1	2,436,751.0	12 03 35	18 35	12 36	
" 11	761.0	12 05 18	19 12	13 15	
" 21	771.0	12 06 16	19 52	13 55	
" 31	781.0	12 06 19	20 31	14 34	
August 10	791.0	12 05 23	21 10	15 13	
" 20	801.0	12 03 29	21 50	15 53	
" 30	811.0	12 00 48	22 29	16 32	
September 9	821.0	11 57 33	23 09	17 12	
" 19	831.0	11 54 02	23 48	17 51	
" 29	2,436,841.0	11 50 33	0 28	18 31	
October 9	851.0	11 47 30	1 07	19 10	
" 19	861.0	11 45 08	1 46	19 49	
" 29	871.0	11 43 48	2 26	20 29	
November 8	881.0	11 43 45	3 05	21 08	
" 18	891.0	11 45 04	3 45	21 48	
" 28	901.0	11 47 46	4 24	22 27	
December 8	911.0	11 51 39	5 04	23 07	
" 18	921.0	11 56 19	5 43	23 46	
" 28	931.0	12 01 17	6 22	0 25	

TABLES OF MOONRISE AND MOONSET  
FOR JOHANNESBURG AND CAPE TOWN

For places due east or west of Johannesburg or Cape Town the times of moonrise and moonset will be roughly one minute earlier for every fifteen miles east and one minute later for every fifteen miles west. Corrections to Johannesburg times for places in the neighbourhood are:-

-1 m	0 m	+1 m
Benoni	Germiston	Florida
Boksburg		Krundersdorp
Brakpan		Randfontein
Springs		Roodepoort
Pretoria		

For Port Elizabeth subtract 30 minutes from the times given for Cape Town. Times of moonrise and moonset for other places in the Union may be obtained by adding  $AX + B$  to the times given for Johannesburg, where  $X$  = time of the phenomenon at Cape Town minus time of phenomenon at Johannesburg.

Typical values are:-

	A	B	A	B
Bloemfontein	+ 0.38	- 7 <sup>m</sup>	Mossel Bay	+ 1.03 - 16 <sup>m</sup>
Durban	+ 0.47	- 31	Vereeniging	+ 0.06 - 2
East London	+ 0.88	- 34		

Example: To find the time of moonrise at Bloemfontein on 1959 January 8

Moonrise at Cape Town	$04^{\text{h}} 57^{\text{m}}$
Moonrise at Johannesburg	$04^{\text{h}} 32^{\text{m}}$
Therefore	$X = \underline{\underline{25}}$

For Bloemfontein,  $A = + 0.38$ ,  $B = - 7^{\text{m}}$ . Hence the correction  $AX + B = + 2^{\text{m}}$

Moonrise at Johannesburg	$04^{\text{h}} 32^{\text{m}}$
$AX + B$	$2$
Moonrise at Bloemfontein	$04^{\text{h}} 34^{\text{m}}$

## MOONRISE AND MOONSET

1959 JANUARY

	J.D. at 14h 2436000+	JOHANNESBURG		CAPE TOWN	
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
		h m	h m	h m	h m
T 1	570.0	23 <sup>h</sup> 35 <sup>m</sup>	11 <sup>h</sup> 14 <sup>m</sup>	.....	11 <sup>h</sup> 51 <sup>m</sup>
F 2	571.0	.....	12 11	0 09	12 54
S 3	572.0	0 14	13 13	0 48	13 59
S 4	573.0	0 58	14 14	1 29	15 05
M 5	574.0	1 46	15 18	2 15	16 11
M 6	575.0	2 38	16 20	3 04	17 15
W 7	576.0	3 33	17 21	3 58	18 16
T 8	577.0	4 32	18 18	4 57	19 12
F 9	578.0	5 32	19 10	5 59	20 03
S 10	579.0	6 32	19 57	7 01	20 47
S 11	580.0	7 31	20 41	8 02	21 28
M 12	581.0	8 28	21 21	9 00	22 05
T 13	582.0	9 23	21 58	10 00	22 38
W 14	583.0	10 17	22 34	10 56	23 12
T 15	584.0	11 08	23 09	11 51	23 44
F 16	585.0	11 59	23 44	12 45	.....
S 17	586.0	12 50	.....	13 38	0 17
S 18	587.0	13 41	0 22	14 31	0 52
A 19	588.0	14 32	1 01	15 24	0 29
T 20	589.0	15 23	1 44	16 16	2 10
W 21	590.0	16 14	2 29	17 08	2 55
T 22	591.0	17 04	3 18	17 58	3 44
F 23	592.0	17 53	4 11	18 46	4 37
S 24	593.0	18 40	5 07	19 31	5 34
S 25	594.0	19 25	6 05	20 14	6 35
M 26	595.0	20 05	7 04	20 54	7 36
T 27	596.0	20 50	8 04	21 33	8 40
W 28	597.0	21 32	9 04	22 11	9 43
T 29	598.0	22 14	10 05	22 50	10 47
F 30	599.0	22 58	11 06	23 30	11 52
S 31	600.0	23 44	12 08	.....	12 57

## PHASES OF THE MOON

Last Quarter	Jan 2 <sup>d</sup>	12 <sup>h</sup>	50 <sup>m</sup>
New Moon	9	07	34
First Quarter	16	23	26
Full Moon	24	21	32
Last Quarter	31	21	06

## MOONRISE AND MOONSET

1959 FEBRUARY

DAY	J.D. at 14h 2436000+	JOHANNESBURG		CAPE TOWN	
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
S 1	601.0	.....	13 <sup>h</sup> 10 <sup>m</sup>	.....	14 <sup>h</sup> 01 <sup>m</sup>
M 2	602.0	0 34	14 11	1 01	15 05
T 3	603.0	1 26	15 11	1 52	16 05
W 4	604.0	2 22	16 08	2 47	17 02
T 5	605.0	3 19	17 01	3 45	17 54
F 6	606.0	4 18	17 49	4 46	18 40
S 7	607.0	5 17	18 34	5 47	19 22
S 8	608.0	6 14	19 15	6 47	20 00
M 9	609.0	7 10	19 54	7 46	20 36
T 10	610.0	8 05	20 31	8 43	21 10
W 11	611.0	8 58	21 06	9 39	21 43
T 12	612.0	9 49	21 43	10 34	22 16
F 13	613.0	10 40	22 19	11 27	22 51
S 14	614.0	11 32	22 58	12 21	23 27
S 15	615.0	12 22	23 38	13 14	.....
M 16	616.0	13 13	.....	14 05	0 05
T 17	617.0	14 03	0 22	14 57	0 48
W 18	618.0	14 53	1 08	15 47	1 34
T 19	619.0	15 42	1 59	16 36	2 25
F 20	620.0	16 30	2 53	17 22	3 20
S 21	621.0	17 17	3 50	18 06	4 19
S 22	622.0	18 01	4 49	18 48	5 20
M 23	623.0	18 45	5 50	19 28	6 24
T 24	624.0	19 28	6 51	20 08	7 29
W 25	625.0	20 11	7 54	20 48	8 35
T 26	626.0	20 56	8 56	21 29	9 41
F 27	627.0	21 42	10 00	22 12	10 48
S 28	628.0	22 31	11 03	22 59	11 54

## PHASES OF THE MOON

New Moon	Feb 7 <sup>d</sup>	21 <sup>h</sup>	22 <sup>m</sup>
First Quarter	15	21	20
Full Moon	23	10	54

## MOONRISE AND MOONSET

1959 MARCH

DAY	J.D. at 14 <sup>h</sup> 2436000+	JOHANNESBURG		CAPE TOWN	
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
S 1	629.0	23 <sup>h</sup> 23 <sup>m</sup>	12 <sup>h</sup> 05 <sup>m</sup>	23 <sup>h</sup> 49 <sup>m</sup>	12 <sup>h</sup> 58 <sup>m</sup>
M 2	630.0	.....	13 06	.....	14 00
T 3	631.0	0 18	14 03	0 43	14 57
W 4	632.0	1 14	14 56	1 39	15 49
T 5	633.0	2 11	15 45	2 38	16 37
F 6	634.0	3 09	16 30	3 38	17 19
S 7	635.0	4 05	17 12	4 37	17 58
S 8	636.0	5 01	17 51	5 35	18 35
M 9	637.0	5 56	18 28	6 33	19 09
T 10	638.0	6 49	19 05	7 28	19 42
W 11	639.0	7 40	19 40	8 24	20 15
T 12	640.0	8 32	20 17	9 18	20 50
F 13	641.0	9 23	20 55	10 11	21 25
S 14	642.0	10 14	21 34	11 05	22 02
S 15	643.0	11 04	22 17	11 57	22 43
M 16	644.0	11 55	23 01	12 48	23 27
T 17	645.0	12 44	23 49	13 38	.....
W 18	646.0	13 33	.....	14 27	0 15
T 19	647.0	14 20	0 41	15 12	1 07
F 20	648.0	15 06	1 35	15 56	2 02
S 21	649.0	15 50	2 32	16 39	3 02
S 22	650.0	16 35	3 31	17 20	4 03
M 23	651.0	17 18	4 32	18 00	5 07
T 24	652.0	18 02	5 34	18 40	6 14
W 25	653.0	18 48	6 39	19 23	7 21
T 26	654.0	19 34	7 44	20 06	8 31
F 27	655.0	20 24	8 49	20 53	9 39
S 28	656.0	21 17	9 54	21 43	10 47
S 29	657.0	22 12	10 58	22 37	11 52
M 30	658.0	23 09	11 58	23 34	12 52
T 31	659.0	.....	12 52	.....	13 46

## PHASES OF THE MOON

Last Quarter	Mar 2	d	04	h	54	m
New Moon	9		12		51	
First Quarter	17		17		10	
Full Moon	24		22		02	
Last Quarter	31		13		06	

## MOONRISE AND MOONSET

1959 APRIL

## JOHANNESBURG

## CAPE TOWN

DAY	J.D. at 14 <sup>h</sup> 2436000+	MOONRISE		MOONSET		MOONRISE		MOONSET	
		S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.	S.A.S.T.
W 1	660.0	0 <sup>h</sup> 07 <sup>m</sup>		13 <sup>h</sup> 43 <sup>m</sup>		0 <sup>h</sup> 33 <sup>m</sup>		14 <sup>h</sup>	35 <sup>m</sup>
T 2	661.0	1 04		14 30		1 33		15 15	19
F 3	662.0	2 01		15 12		2 31		15 59	
S 4	663.0	2 56		15 51		3 29		16 35	
S 5	664.0	3 50		16 28		4 26		17 10	
M 6	665.0	4 43		17 04		5 22		17 43	
T 7	666.0	5 35		17 40		6 17		18 18	16
W 8	667.0	6 26		18 16		7 11		18 49	
T 9	668.0	7 17		18 53		8 04		19 24	
F 10	669.0	8 08		19 33		8 58		20 01	
S 11	670.0	9 59		20 13		9 51		20 40	
S 12	671.0	9 49		20 57		10 42		21 23	
M 13	672.0	10 38		21 44		11 32		22 09	
T 14	673.0	11 27		22 32		12 21		22 59	
W 15	674.0	12 13		23 24		13 06		23 51	
T 16	675.0	12 59		.....		13 50		.....	
F 17	676.0	13 43		0 19		14 32		0 47	
S 18	677.0	14 25		1 15		15 12		1 46	
S 19	678.0	15 08		2 13		15 52		2 48	
M 20	679.0	15 51		3 14		16 32		3 51	
T 21	680.0	16 35		4 16		17 12		4 58	
W 22	681.0	17 21		5 21		17 55		5 06	
T 23	682.0	18 10		6 27		18 44		7 15	
F 24	683.0	19 03		7 34		19 31		8 26	
S 25	684.0	19 59		8 41		20 25		9 34	
S 26	685.0	20 58		9 44		21 23		10 39	
M 27	686.0	21 58		10 44		22 24		11 38	
T 28	687.0	22 57		11 38		23 25		12 32	
W 29	688.0	23 55		12 27		.....		13 18	
T 30	689.0	.....		13 12		0 26		14 00	

## PHASES OF THE MOON

	Apr	8 <sup>d</sup>	05 <sup>h</sup>	29 <sup>m</sup>
New Moon				
First Quarter		16	09	32
Full Moon		23	07	13
Last Quarter		29	22	38

## MOONRISE AND MOONSET

1959 MAY

DAY	J.D. at 14 <sup>h</sup> 2436000+	JOHANNESBURG				CAPE TOWN			
		MOONRISE S.A.S.T.		MOONSET S.A.S.T.		MOONRISE S.A.S.T.		MOONSET S.A.S.T.	
F 1	690.0	0 <sup>h</sup>	52 <sup>m</sup>	13 <sup>h</sup>	52 <sup>m</sup>	1 <sup>h</sup>	24 <sup>m</sup>	14 <sup>h</sup>	37 <sup>m</sup>
S 2	691.0	1	46	14	30	2	22	15	12
S 3	692.0	2	39	15	06	3	18	15	45
M 4	693.0	3	31	15	41	4	12	16	18
T 5	694.0	4	22	16	17	5	06	16	50
W 6	695.0	5	13	16	53	5	59	17	25
T 7	696.0	6	04	17	31	6	53	18	01
F 8	697.0	6	55	18	12	7	46	18	39
S 9	698.0	7	45	18	55	8	38	19	20
S 10	699.0	8	35	19	40	9	28	20	05
M 11	700.0	9	23	20	28	10	18	20	54
T 12	701.0	10	11	21	19	11	04	21	45
W 13	702.0	10	55	22	11	11	48	22	39
T 14	703.0	11	39	23	06	12	50	23	36
F 15	704.0	12	22	.....	.....	13	09	.....	.....
S 16	705.0	13	03	0	01	13	47	0	34
S 17	706.0	13	43	0	59	14	26	1	35
M 18	707.0	14	26	2	00	15	04	2	38
T 19	708.0	15	09	3	00	15	45	3	43
W 20	709.0	15	56	4	05	16	28	4	51
T 21	710.0	16	47	5	10	17	15	6	00
F 22	711.0	17	41	6	18	18	08	7	10
S 23	712.0	18	40	7	24	19	05	8	17
S 24	713.0	19	41	8	27	20	07	9	22
M 25	714.0	20	43	9	26	21	10	10	20
T 26	715.0	21	44	10	19	22	13	11	12
W 27	716.0	22	43	11	07	23	14	11	57
T 28	717.0	23	40	11	50	.....	.....	12	37
F 29	718.0	.....	.....	12	30	0	14	13	14
S 30	719.0	0	34	13	07	1	11	13	47
S 31	720.0	1	27	13	43	2	06	14	21

## PHASES OF THE MOON

New Moon	May 7 <sup>d</sup>	22 <sup>h</sup>	11 <sup>m</sup>
First Quarter	15	22	09
Full Moon	22	14	56
Last Quarter	29	10	13

## MOONRISE AND MOONSET

1959 JUNE

DAY	J.D. at 14 <sup>h</sup> 2436000+	JOHANNESBURG		CAPE TOWN	
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
M 1	721.0	2 <sup>h</sup> 18 <sup>m</sup>	14 <sup>h</sup> 19 <sup>m</sup>	3 <sup>h</sup> 01 <sup>m</sup>	14 <sup>h</sup> 53 <sup>m</sup>
T 2	722.0	3 09	14 55	3 55	15 27
W 3	723.0	4 00	15 31	4 48	16 02
T 4	724.0	4 50	16 11	5 41	16 39
F 5	725.0	5 41	16 53	6 34	17 19
S 6	726.0	6 31	17 38	7 25	18 03
S 7	727.0	7 20	18 26	8 15	18 51
M 8	728.0	8 09	19 15	9 03	19 41
T 9	729.0	8 55	20 07	9 48	20 34
T 10	730.0	9 39	21 01	10 30	21 30
T 11	731.0	10 21	21 56	11 11	22 28
F 12	732.0	11 03	22 52	11 48	23 27
S 13	733.0	11 44	23 49	12 26	.....
S 14	734.0	12 23	.....	13 02	0 27
M 15	735.0	13 04	0 48	13 40	1 29
T 16	736.0	13 47	1 49	14 21	2 33
W 17	737.0	14 34	2 51	15 04	3 39
T 18	738.0	15 25	3 57	15 53	4 47
F 19	739.0	16 21	5 03	16 47	5 56
S 20	740.0	17 21	6 07	17 46	7 02
S 21	741.0	18 23	7 08	18 49	8 03
M 22	742.0	19 26	8 06	19 54	8 59
T 23	743.0	20 28	8 58	20 57	9 48
W 24	744.0	21 27	9 44	22 00	10 33
T 25	745.0	22 24	10 27	23 00	11 12
F 26	746.0	23 19	11 06	23 57	11 48
S 27	747.0	.....	11 43	.....	12 22
S 28	748.0	0 12	12 18	0 54	12 55
M 29	749.0	1 04	12 55	1 48	13 28
T 30	750.0	2 54	13 32	2 41	14 03

## PHASES OF THE MOON

New Moon	Jun 6	13 <sup>h</sup>	53 <sup>m</sup>
First Quarter	14	07	22
Full Moon	20	22	00
Last Quarter	28	00	12

## MOONRISE AND MOONSET

1959 JULY

DAY	J.D. at 14 <sup>h</sup> 2436000+	JOHANNESBURG			CAPE TOWN		
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
W 1	751.0	2 <sup>h</sup> 45 <sup>m</sup>	14 <sup>h</sup> 10 <sup>m</sup>	3 <sup>h</sup> 35 <sup>m</sup>	14 <sup>h</sup> 39 <sup>m</sup>		
T 2	752.0	3 36	14 51	4 28	15 18		
F 3	753.0	4 27	15 34	5 20	16 00		
S 4	754.0	5 16	16 22	6 10	16 47		
S 5	755.0	6 05	17 10	7 00	17 37		
M 6	756.0	6 53	18 03	7 46	18 29		
T 7	757.0	7 38	18 57	8 30	19 25		
W 8	758.0	8 22	19 51	9 12	20 23		
T 9	759.0	9 03	20 47	9 50	21 21		
F 10	760.0	9 44	21 44	10 28	22 21		
S 11	761.0	10 24	22 42	11 05	23 22		
S 12	762.0	11 03	23 41	11 41	.....		
M 13	763.0	11 45	.....	12 19	0 24		
T 14	764.0	12 29	0 41	13 01	1 28		
W 15	765.0	13 17	1 43	13 46	2 33		
T 16	766.0	14 09	2 47	14 35	3 39		
F 17	767.0	15 05	3 50	15 30	4 44		
S 18	768.0	16 05	4 52	16 30	5 46		
S 19	769.0	17 07	5 51	17 34	6 44		
M 20	770.0	18 09	6 45	18 38	7 37		
T 21	771.0	19 11	7 34	19 42	8 24		
W 22	772.0	20 10	8 19	20 44	9 06		
T 23	773.0	21 06	9 01	21 44	9 45		
F 24	774.0	22 01	9 39	22 42	10 20		
S 25	775.0	22 55	10 17	23 38	10 55		
S 26	776.0	23 47	10 53	.....	11 28		
M 27	777.0	.....	11 30	0 32	12 02		
T 28	778.0	0 38	12 08	1 26	12 38		
W 29	779.0	1 29	12 48	2 20	13 16		
T 30	780.0	2 19	13 31	3 12	13 57		
F 31	781.0	3 09	14 16	4 03	14 41		

## PHASES OF THE MOON

New Moon	Jul 6 <sup>d</sup>	04 <sup>h</sup>	00 <sup>m</sup>
First Quarter	13	14	01
Full Moon	20	05	33
Last Quarter	27	16	22

## MOONRISE AND MOONSET

1959 AUGUST

DAY	J.D. at 14 <sup>h</sup> 2436000+	JOHANNESBURG		CAPE TOWN	
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
S 1	782.0	4 00 <sup>m</sup>	15 <sup>h</sup> 04 <sup>m</sup>	4 53 <sup>m</sup>	15 <sup>h</sup> 29 <sup>m</sup>
S 2	783.0	4 47	15 55	5 41	16 21
M 3	784.0	5 34	16 49	6 26	17 16
T 4	785.0	6 18	17 44	7 09	18 14
W 5	786.0	7 01	18 41	7 50	19 13
T 6	787.0	7 43	19 38	8 28	20 14
F 7	788.0	8 24	20 36	9 07	21 15
S 8	789.0	9 05	21 36	9 44	22 18
S 9	790.0	9 46	22 35	10 22	23 21
M 10	791.0	10 29	23 36	11 02	.....
T 11	792.0	11 15	.....	11 44	0 26
W 12	793.0	12 04	0 37	12 32	1 29
T 13	794.0	12 57	1 40	13 23	2 33
F 14	795.0	13 54	2 41	14 19	3 35
S 15	796.0	14 53	3 39	15 19	4 33
S 16	797.0	15 54	4 34	16 22	5 27
M 17	798.0	16 55	5 25	17 25	6 16
T 18	799.0	17 54	6 11	18 28	7 00
W 19	800.0	18 53	6 54	19 29	7 39
T 20	801.0	19 49	7 35	20 28	8 17
F 21	802.0	20 43	8 13	21 25	8 52
S 22	803.0	21 36	8 49	22 21	9 26
S 23	804.0	22 29	9 27	23 16	10 00
M 24	805.0	23 20	10 05	.....	10 36
T 25	806.0	.....	10 45	0 10	11 13
W 26	807.0	0 11	11 26	1 03	11 53
T 27	808.0	1 01	12 08	1 54	12 36
F 28	809.0	1 50	12 57	2 44	13 22
S 29	810.0	2 39	13 46	3 33	14 12
S 30	811.0	3 26	14 38	4 19	15 05
M 31	812.0	4 12	15 32	5 03	16 02

## PHASES OF THE MOON

New Moon	Aug 4 <sup>a</sup>	16 <sup>h</sup>	34 <sup>m</sup>
First Quarter	11	19	10
Full Moon	18	14	50
Last Quarter	26	10	03

## MOONRISE AND MOONSET

1959 SEPTEMBER

DAY	J.D. at 14 <sup>h</sup> 2436000+	JOHANNESBURG			CAPE TOWN		
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.		
T 1	813.0	4 <sup>h</sup> 56 <sup>m</sup>	16 <sup>h</sup> 29 <sup>m</sup>	5 <sup>h</sup>	45 <sup>m</sup>	17 <sup>h</sup>	00 <sup>m</sup>
W 2	814.0	5 39	17 27	6	25	18	02
T 3	815.0	6 21	18 26	7	05	19	04
F 4	816.0	7 02	19 26	7	42	20	06
S 5	817.0	7 45	20 27	8	22	21	12
S 6	818.0	8 28	21 29	9	02	22	18
M 7	819.0	9 13	22 32	9	44	23	22
T 8	820.0	10 02	23 34	10	30	.....	.....
F 9	821.0	10 54	.....	11	20	0	27
T 10	822.0	11 49	0 35	12	14	1	29
F 11	823.0	12 46	1 34	13	12	2	28
S 12	824.0	13 46	2 28	14	13	3	22
S 13	825.0	14 45	3 19	15	14	4	11
M 14	826.0	15 44	4 06	16	15	4	55
T 15	827.0	16 41	4 49	17	16	5	36
W 16	828.0	17 37	5 30	18	15	6	14
T 17	829.0	18 28	6 09	19	13	6	49
F 18	830.0	19 23	6 47	20	10	7	24
S 19	831.0	20 19	7 24	21	05	7	58
S 20	832.0	21 11	8 02	22	00	8	33
M 21	833.0	22 02	8 40	22	54	9	11
T 22	834.0	22 53	9 21	23	46	9	49
W 23	835.0	23 42	10 04	.....	.....	10	30
T 24	836.0	.....	10 49	0	36	11	15
F 25	837.0	0 31	11 37	1	25	12	03
S 26	838.0	1 18	12 27	2	12	12	53
S 27	839.0	2 03	13 20	2	56	13	48
M 28	840.0	2 48	14 15	3	38	14	45
T 29	841.0	3 31	15 11	4	19	15	44
W 30	842.0	4 13	16 10	4	55	16	46

## PHASES OF THE MOON

New Moon	Sep	3 <sup>d</sup>	03 <sup>h</sup>	55 <sup>m</sup>
First Quarter		10	00	07
Full Moon		17	02	51
Last Quarter		25	04	22

## MOONRISE AND MOONSET

1959 OCTOBER

DAY	J.D. at 14 <sup>h</sup> 2436000+	JOHANNESBURG		CAPE TOWN	
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
T 1	843.0	4 <sup>h</sup> 55 <sup>m</sup>	17 <sup>h</sup> 10 <sup>m</sup>	5 <sup>h</sup> 37 <sup>m</sup>	17 <sup>h</sup> 50 <sup>m</sup>
F 2	844.0	5 37	18 12	6 15	18 55
S 3	845.0	6 21	19 16	6 57	20 02
S 4	846.0	7 07	20 20	7 39	21 09
M 5	847.0	7 56	21 24	8 25	22 17
T 6	848.0	8 48	22 28	9 15	23 22
W 7	849.0	9 43	23 28	10 09	.....
T 8	850.0	10 41	.....	11 07	0 23
F 9	851.0	11 40	0 25	12 07	1 18
S 10	852.0	12 39	1 17	13 08	2 09
S 11	853.0	13 38	2 04	14 09	2 54
M 12	854.0	14 35	2 48	15 08	3 36
T 13	855.0	15 31	3 29	16 08	4 14
W 14	856.0	16 25	4 08	17 04	4 49
T 15	857.0	17 18	4 45	18 01	5 24
F 16	858.0	18 11	5 21	18 56	5 57
S 17	859.0	19 04	5 59	19 51	6 32
S 18	860.0	19 55	6 38	20 45	7 08
M 19	861.0	20 46	7 18	21 38	7 46
T 20	862.0	21 36	8 00	22 29	8 26
W 21	863.0	22 24	8 43	23 19	9 09
T 22	864.0	23 12	9 30	.....	9 56
F 23	865.0	23 57	10 19	0 06	10 45
S 24	866.0	.....	11 09	0 50	11 37
S 25	867.0	0 41	12 03	1 32	12 32
M 26	868.0	1 23	12 57	2 13	13 29
T 27	869.0	2 04	13 54	2 51	14 28
W 28	870.0	2 46	14 51	3 30	15 29
T 29	871.0	3 27	15 52	4 07	16 33
F 30	872.0	4 10	16 55	4 47	17 39
S 31	873.0	4 55	18 00	5 29	18 48

## PHASES OF THE MOON

New Moon	Oct 2 <sup>d</sup>	14 <sup>h</sup>	31 <sup>m</sup>
First Quarter	9	06	22
Full Moon	16	17	58
Last Quarter	24	22	22

## MOONRISE AND MOONSET

1959 NOVEMBER

DAY	J.D. at 14 <sup>h</sup> 2436000+	JOHANNESBURG		CAPE TOWN	
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
S 1	874.0	5 <sup>h</sup> 43 <sup>m</sup>	19 <sup>h</sup> 05 <sup>m</sup>	6 <sup>h</sup> 14 <sup>m</sup>	19 <sup>h</sup> 57 <sup>m</sup>
M 2	875.0	6 36	20 12	7 04	21 06
T 3	876.0	7 32	21 16	7 58	22 11
W 4	877.0	8 31	22 17	8 56	23 11
T 5	878.0	9 31	23 13	9 58	.....
F 6	879.0	10 32	.....	11 00	0 05
S 7	880.0	11 32	0 04	12 02	0 53
S 8	881.0	12 30	0 48	13 03	1 37
M 9	882.0	13 26	1 30	14 02	2 15
T 10	883.0	14 21	2 09	14 59	2 51
W 11	884.0	15 14	2 46	15 55	3 25
T 12	885.0	16 06	3 23	16 51	3 59
F 13	886.0	16 58	4 00	17 45	4 33
S 14	887.0	17 49	4 37	18 39	5 08
S 15	888.0	18 41	5 16	19 33	5 45
M 16	889.0	19 31	5 57	20 24	6 24
T 17	890.0	20 20	6 40	21 14	7 06
W 18	891.0	21 08	7 25	22 05	7 51
T 19	892.0	21 54	8 13	22 48	8 40
F 20	893.0	22 38	9 04	23 30	9 30
S 21	894.0	23 21	9 54	.....	10 23
S 22	895.0	.....	10 48	0 11	11 17
M 23	896.0	0 02	11 41	0 49	12 14
T 24	897.0	0 40	12 37	1 25	13 13
W 25	898.0	1 21	13 35	2 02	14 14
T 26	899.0	2 01	14 34	2 39	15 17
F 27	900.0	2 43	15 37	3 19	16 23
S 28	901.0	3 28	16 41	4 01	17 31
S 29	902.0	4 18	17 46	4 48	18 40
M 30	903.0	5 13	18 55	5 40	19 49

## PHASES OF THE MOON

First Quarter	Nov 7 <sup>d</sup>	15 <sup>h</sup> 23 <sup>m</sup>
Full Moon	15	11 42
Last Quarter	23	15 03
New Moon	30	10 46

## MOONRISE AND MOONSET

1959 DECEMBER

DAY	J.D. at 14 <sup>h</sup> 243600+	JOHANNESBURG		CAPE TOWN	
		MOONRISE S.A.S.T.	MOONSET S.A.S.T.	MOONRISE S.A.S.T.	MOONSET S.A.S.T.
T 1	904.0	6 <sup>h</sup> 12 <sup>m</sup>	19 <sup>h</sup> 59 <sup>m</sup>	6 <sup>h</sup> 37 <sup>m</sup>	20 <sup>h</sup> 54 <sup>m</sup>
W 2	905.0	7 13	21 03	7 39	21 54
T 3	906.0	8 17	21 55	8 44	22 47
F 4	907.0	9 20	22 44	9 49	23 33
S 5	908.0	10 20	23 29	10 53	.....
S 6	909.0	11 19	.....	11 54	0 15
M 7	910.0	12 15	0 10	12 53	0 53
T 8	911.0	13 10	0 48	13 50	1 28
W 9	912.0	14 02	1 25	14 46	2 02
T 10	913.0	14 54	2 01	15 40	2 35
F 11	914.0	15 45	2 37	16 34	3 10
S 12	915.0	16 37	3 15	17 28	3 46
S 13	916.0	17 27	3 56	18 20	4 24
M 14	917.0	18 17	4 39	19 11	5 04
T 15	918.0	19 05	5 23	20 00	5 45
W 16	919.0	19 52	6 10	20 47	6 36
T 17	920.0	20 37	6 59	21 30	7 25
F 18	921.0	21 20	7 50	22 11	8 18
S 19	922.0	22 01	8 43	22 50	9 12
S 20	923.0	22 40	9 36	23 26	10 08
M 21	924.0	23 19	10 30	.....	11 05
T 22	925.0	23 58	11 25	0 02	12 03
W 23	926.0	.....	12 22	0 38	13 03
T 24	927.0	0 38	13 20	1 15	14 05
F 25	928.0	1 20	14 21	1 54	15 10
S 26	929.0	2 05	15 25	2 36	16 16
S 27	930.0	2 55	16 30	3 23	17 24
M 28	931.0	3 51	17 36	4 17	18 31
T 29	932.0	4 51	18 39	5 16	19 34
W 30	933.0	5 54	19 38	6 20	20 31
T 31	934.0	6 59	20 32	7 27	21 23

## PHASES OF THE MOON

First Quarter	Dec 7 <sup>d</sup>	04 <sup>h</sup>	11 <sup>m</sup>
Full Moon	15	06	49
Last Quarter	23	05	28
New Moon	29	21	09

## OCCULTATIONS OF BRIGHT STARS

Date	N.Z.C.	Mag	Phase	Cape Town			Johannesburg		
				h.	m.	P.A.	h.	m.	P.A.
Jan	13	3420	7.1	D	21 39.1	85°	Low	-	-
	17	340	7.1	D	Sun	-	20 12.7	5°	
	20	726	6.8	D	Sun	-	20 15.1	120	
	20	730	5.1	D	21 57.2	127	22 17.2	106	
Feb	11	64	6.6	D	20 48.6	12	N.O.	-	-
	15	527	6.3	D	20 22.7	132	20 40.3	107	
	17	800	7.5	D	Graze	-	21 20.8	125	
	18	947	5.2	D	21 01.5	74	21 40.3	46	
	27	1962	5.2	R	1 51.9	289	1 51.4	325	
	28	2088	6.2	R	0 43.7	267	0 42.2	298	
Mar	1	2247	5.6	R	5 30.9	302	Sun	-	-
	2	2399	5.0	R	N.O.	-	4 39.5	24.3	
	18	1040	6.2	D	21 42.0	142	21 52.7	107	
	20	1176	7.4	D	0 58.5	100	Low	-	-
	26	2028	6.5	R	21 16.3	284	21 06.3	310	
	27	2060	6.3	R	5 20.8	281	Sun	-	-
	27	2064	6.5	R	5 55.7	306	Sun	-	-
	30	2495	6.0	R	1 52.1	288	1 41.6	328	
	Apr	3	3093	4.5	D	3 35.7	72	3 42.7	37
	3	3093	4.5	R	4 39.5	266	4 35.5	299	
	14	985	6.9	D	19 02.4	93	19 35.2	60	
	15	1116	7.4	D	22 30.2	70	N.O.	-	-
	18	1458	5.9	D	N.O.	-	20 03.7	150	
	19	1478	7.2	D	1 47.4	189	Low	-	-
	20	1708	6.2	D	N.O.	-	22 58.3	191	
	25	2291	5.5	R	5 37.1	234	Sun	-	-
	29	2913	5.0	R	Graze	-	2 20.6	232	
	30	3045	6.0	R	1 36.5	260	1 29.9	294	
May	1	3185	5.3	R	3 06.2	265	3 01.1	298	
	1	3187	6.2	R	3 22.6	195	3 44.2	233	
	12	1072	6.2	D	N.O.	-	19 19.5	14.3	
	13	1190	7.1	D	N.O.	-	19 30.7	147	
	15	1428	3.8	D	N.O.	-	22 17.4	139	
	24	2674	6.0	R	22 26.3	264	22 22.4	299	
	26	2876	5.4	R	4 31.6	192	5 13.4	216	
	26	2880	5.1	R	5 51.3	209	Sun	-	-
	27	3002	6.2	R	2 27.0	249	2 43.1	275	

Date	N.Z.G.	Mag	Phase	Cape Town			Johannesburg		
				h.	m.	P.A.	h.	m.	P.A.
June	1	104	5.8	R	6 30.2	198°	Sun	-	-
	8	1040	6.2	D	N.O.	-	18 02.4	141	
	17	1995	6.9	D	0 01.6	66	N.O.	-	
	17	1997	6.8	D	0 03.1	108	0 21.2	77	
	17	2110	6.4	D	19 49.4	110	20 05.8	70	
	19	2291	5.5	D	2 22.1	147	2 28.1	120	
	22	2913	5.0	R	Low	-	20 17.8	277	
	29	184	6.2	R	Low	-	2 21.8	225	
July	13	1947	7.1	D	20 39.8	55	N.O.	-	
	14	2064	6.5	D	N.O.	-	18 21.5	181	
	15	2088	6.2	D	0 56.3	139	Low	-	
	15	2208	7.4	D	20 26.8	137	20 37.3	101	
	22	3185	5.3	R	5 46.2	308	Sun	-	
	22	3285	6.1	R	N.O.	-	21 24.7	221	
	23	3308	6.2	R	N.O.	-	2 08.8	188	
	27	257	4.5	D	Low	-	0 48.4	71	
	27	257	4.5	R	1 50.2	224	0 59.1	241	
	30	620	6.3	R	Low	-	3 59.0	284	
Aug	10	2033	4.3	D	18 57.7	84	Graze	-	
	11	2180	7.0	D	22 02.8	152	22 06.8	122	
	13	2460	6.1	D	Sun	-	19 09.4	39	
	13	2485	7.4	D	23 43.5	122	23 57.1	103	
	14	2495	6.0	D	1 11.4	95	1 23.0	81	
	23	214	6.4	R	2 10.3	248	2 32.4	256	
	28	836	5.5	R	Low	-	2 49.6	245	
	Sept	5	1874	7.5	D	19 37.3	75	Low	-
	8	2280	6.8	D	N.O.	-	21 27.2	159	
	11	2606	7.1	D	0 25.4	62	0 39.3	48	
	12	2913	5.0	D	23 09.2	106	23 31.3	94	
	14	3187	6.2	D	22 30.4	0	N.O.	-	
	19	184	6.2	R	5 18.1	216	Sun	-	
	23	653	4.8	R	1 40.3	272	1 47.9	283	
Oct	5	2223	4.0	D	Sun	-	19 03.4	72	
	7	2548	7.5	D	22 12.4	93	22 23.3	80	
	8	2722	7.1	D	N.O.	-	23 23.6	142	
	9	2680	5.1	D	N.O.	-	22 52.9	136	
	10	3002	6.2	D	19 32.5	52	20 08.5	34	
Nov	3	2485	7.4	D	Sun	-	19 35.0	133	
	3	2495	6.0	D	20 39.7	121	Low	-	
	6	2972	6.7	D	22 00.2	84	22 16.3	74	
	6	2975	7.0	D	22 27.3	68	22 42.8	57	
	13	214	6.4	D	0 44.7	114	1 08.0	99	

Date	N.Z.C.	Mag	Phase	Cape Town			Johannesburg		
				h.	m.	P.A.	h.	m.	P.A.
Nov	21	1210	5.9	R	0 29.9	259°	0 32.7	273°	
	25	1660	6.2	R	Graze	-	3 31.6	21.9	
	25	1663	5.2	R	N.O.	-	4 11.9	239	
	27	Venus	-	R	Low	-	2 59.5	268	
Dec	3	2913	5.0	D	Sun	-	19 54.0	56	
	5	3216	6.6	D	23 17.6	35	Low	-	
	7	3474	6.0	D	20 16.2	29	20 50.3	23	
	9	184	6.2	D	23 44.9	63	24 12.7	48	
	13	648	3.9	D	20 20.1	71	20 32.2	61	
	13	653	4.8	D	21 09.1	115	21 21.1	104	
	13	658	4.2	D	22 42.7	14	N.O.	-	
	18	1284	6.3	R	Low	-	22 54.4	318	
	23	1730	6.5	R	N.O.	-	1 49.7	217	
	24	1849	6.2	R	3 27.8	298	3 18.8	326	

#### NOTES

N.O. = Star not occulted

Low = Star's altitude below 10°

-----ooOoo-----

#### ECLIPSES

There will be three eclipses in 1959, two of the Sun and one of the Moon. These are as follows:-

1. Partial eclipse of the Moon, March 24. The circumstances are as follows:-

Moon enters penumbra	March 24	24 <sup>d</sup>	19 <sup>h</sup>	56 <sup>m</sup>
" " umbra			21	16
Middle of eclipse			22	11
Moon leaves umbra			23	06
" " penumbra			24	27

The magnitude of the eclipse is 0.269 (Moon's diameter = 1.0)

2. Annular Eclipse of the Sun, April 8, not visible in Africa.
3. Total Eclipse of the Sun, October 2, visible as a partial eclipse in Southern Africa, north of the Tropic of Capricorn. The Belt of Totality lies across Africa, North of the Equator.

## THE PLANETS

The chart shows the S.A.S.T. of the rising and setting of the Sun and the Planets at a place whose latitude and longitude are 30°S, 30°E. 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.

Mercury will be most easily seen just after sunset near the time of evening elongation in June/July and November, and just before sunrise in January and April/May. Its magnitudes at these times will be +0.8, +0.7, -0.2 and +0.8, respectively.

Venus will be an evening star from January to August. From September to December it will be a morning star. It reaches its maximum brightness at magnitude -4.3, in the beginning of October.

Mars sets after midnight in the beginning of the year and can be seen in the evening sky to the end of October. In November and December it can be found in the morning twilight. Its brightness steadily decreases from magnitude -0.6 in January to magnitude +2.0 in July.

Jupiter, rising well after midnight in the beginning of the year, will be in opposition to the sun in the middle of May, and then remains a fine object in the evening sky until November. In December it will be visible in the morning twilight, where it will be close to Mercury on December 26.

Saturn is visible in the morning sky from January to April, and during the whole night from May to July. It will be an evening object in November and December. It reaches its maximum brightness, (magnitude 0.2), near the time of opposition in June.

Neither Uranus, magnitude 5.7, nor Neptune, magnitude 7.7, is readily visible to the naked eye, but both are easy telescopic objects. They can easily be found in the beginning of the year by means of the following ephemeris. Their respective times of opposition to the sun are February 3 and April 26.

Ephemeris for Uranus and Neptune 1959

1959	Uranus				Neptune			
	R.A.	Decl.	R.A.	Decl.				
Jan 2	9 <sup>h</sup> 13 <sup>m</sup> .3	+ 16° 49'	14 <sup>h</sup> 19 <sup>m</sup> .4	- 12° 04'				
" 22	9 10.2	+ 17 03	14 20.5	- 12 09				
Feb 11	9 06.7	+ 17 19	14 20.8	- 12 09				
Mar 3	9 03.5	+ 17 32	14 20.3	- 12 06				
" 23	9 01.0	+ 17 43	14 19.0	- 11 58				
Apr 12	8 59.7	+ 17 47	14 17.2	- 11 48				
May 2	8 59.8	+ 17 46	14 15.1	- 11 37				
" 22	9 01.3	+ 17 39	14 13.1	- 11 27				
Jun 11	9 04.1	+ 17 27	14 11.5	- 11 19				
Jul 1	9 08.0	+ 17 10	14 10.5	- 11 15				
" 21	9 12.5	+ 16 50	14 10.2	- 11 15				
Aug 10	9 17.4	+ 16 28	14 10.8	- 11 19				
" 30	9 22.2	+ 16 05	14 12.1	- 11 27				
Sep 19	9 26.7	+ 15 45	14 14.1	- 11 39				
Oct 9	9 30.5	+ 15 27	14 16.7	- 11 53				
" 29	9 33.2	+ 15 15	14 19.5	- 12 07				
Nov 18	9 34.6	+ 15 09	14 22.4	- 12 21				
Dec 8	9 34.6	+ 15 10	14 25.0	- 12 34				
" 28	9 33.2	+ 15 18	14 27.2	- 12 44				

## METEOR CALENDAR 1959

Date	Shower	Radiant	Date	Maximum Hourly Rate	Transit of Radiant
Jan 3	Quadrantids	227° + 46°	Jan 3	40	08 <sup>h</sup> 30 <sup>m</sup>
Mar 12 -Apr 25	Hydraids	184 - 27	Mar 25	?	00 00
Mar 1 -May 10	Virginids	200 - 6	Apr 3	?	00 00
Apr 2 -Apr 24	Lyrids	273 + 35	Apr 21	12	04 00
Apr 29 -May 21	Eta Aquarids	338 - 1	May 6	10	07 36
Apr 20 -Jul 30	Sco - Sgr System	270 - 30	Jun 14	?	00 30
Jul 25 -Aug 10	Delta Aquarids	343 - 17	Jul 28	20	02 00
Jul 18 -Jul 30	Alpha Capricornids	304 - 12	?	?	-- --
Jul 20 -Aug 19	Perseids	43 + 56	Aug 12	50	05 36
Aug 16 -Oct 8	Piscids	0 + 14	Sep 12	?	00 30
Oct 11 -Oct 30	Orionids	94 + 16	Oct 22	20	04 24
Sep 24 -Dec 10	Taurids	58 + 21	Nov 13	6	00 36
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	Velaids	149 - 51	Dec 29	?	03 30

The hourly rates quoted 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 1959

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

## ASTRONOMICAL DIARY

JANUARY 1959

Mercury is visible in the morning twilight. Venus sets in the evening twilight about an hour after the Sun. Mars sets soon after midnight while Jupiter rises at about the same time. Saturn rises shortly before the Sun.

d. h.

Jan	3	3	Earth in perihelion
	5	13	Jupiter in conjunction with the Moon, Jupiter $2^{\circ}$ S.
	7	18	Mercury in conjunction with the Moon, Mercury $4^{\circ}$ S.
	8	1	Saturn in conjunction with the Moon, Saturn $3^{\circ}.8$ S.
	10	13	Venus in conjunction with the Moon, Venus $6^{\circ}.5$ S.
	11	6	Mercury in conjunction with Saturn, Mercury $0^{\circ}.8$ S.
	19	1	Mars in conjunction with the Moon, Mars $5^{\circ}$ N.

FEBRUARY 1959

Mercury is very close to the Sun. Venus sets in the evening about an hour after the Sun. Mars sets soon after midnight and Jupiter rises at about the same time. Saturn rises about two hours after midnight.

d. h.

Feb	2	3	Jupiter in conjunction with the Moon, Jupiter $2^{\circ}.6$ S.
	4	14	Saturn in conjunction with the Moon, Saturn $4^{\circ}$ S.
	7	16	Mercury in conjunction with the Moon, Mercury $6^{\circ}.7$ S.
	9	20	Venus in conjunction with the Moon, Venus $4^{\circ}.6$ S.
	14	7	Mercury in superior conjunction, Mercury $2^{\circ}$ S.
	16	7	Mars in conjunction with the Moon, Mars $5^{\circ}.9$ N.

MARCH 1959

Mercury is an evening star most of the month but too close to the Sun for easy visibility. Venus is an evening star setting about an hour after the Sun. Mars sets about an hour before midnight. Jupiter rises about 2 hours after sunset, while Saturn rises at about midnight.

	d. h.	
Mar	1 12	Jupiter in conjunction with the Moon, Jupiter $2^{\circ}.9$ S.
	4 00	Saturn in conjunction with the Moon, Saturn $4^{\circ}.2$ S.
	4 16	Mars $7^{\circ}.5$ N of Aldebaran.
	11 2	Mercury in conjunction with the Moon, Mercury $1^{\circ}.3$ N.
	12 2	Venus in conjunction with the Moon, Venus $0^{\circ}.1$ N.
	12 15	Mercury at greatest eastern elongation, ( $18^{\circ}.3$ ) .
	16 21	Mars in conjunction with the Moon, Mars $6^{\circ}.6$ N.
	21 11	Equinox.
	24 22	Partial eclipse of the Moon, visible in S. Africa.
	28 20	Jupiter in conjunction with the Moon, Jupiter $2^{\circ}.9$ S.
	29 12	Mercury at inferior conjunction.
	31 8	Saturn in conjunction with the Moon, Saturn $4^{\circ}.3$ S.

### APRIL 1959

Mercury is a morning star, best visible towards the end of the month when it rises two hours before the Sun. Venus is an evening star and sets about two hours after the Sun. Mars sets about two hours after midnight. Jupiter rises about three hours after sunset, while Saturn rises an hour or two before midnight.

	d. h.	
APR	6 22	Mercury in conjunction with the Moon, Mercury $0^{\circ}.02$ S.
	8 5	Annular eclipse of the Sun, not visible in S. Africa.
	11 8	Venus in conjunction with the Moon, Venus $4^{\circ}.7$ N.
	14 13	Mars in conjunction with the Moon, Mars $6^{\circ}.9$ N.
	23 16	Venus $7^{\circ}.2$ N of Aldebaran.
	25 2	Jupiter in conjunction with the Moon, Jupiter $2^{\circ}.8$ S.
	26 12	Mercury at greatest western elongation, ( $27^{\circ}.2$ ).
	27 16	Saturn in conjunction with the Moon, Saturn $4^{\circ}.3$ S.

### MAY 1959

Mercury is a morning star but very close to the Sun at the end of the month. Venus is an evening star setting three hours after the Sun. Mars sets in the early evening and, towards the end of the month, is in line with Castor and Pollux. Jupiter is in opposition during the month while Saturn rises about two hours after sunset towards the end of the month.

d. h.

May	5	17	Mercury in conjunction with the Moon, Mercury $2^{\circ}.4$ S.
	11	16	Venus in conjunction with the Moon, Venus $7^{\circ}.1$ N.
	13	5	Mars in conjunction with the Moon, Mars $6^{\circ}.8$ N.
	18	22	Jupiter in opposition.
	21	8	Mars $5^{\circ}.3$ S. of Pollux.
	22	8	Jupiter in conjunction with the Moon, Jupiter $2^{\circ}.5$ S.
	24	23	Saturn in conjunction with the Moon, Saturn $4^{\circ}.1$ S.
	31	20	Venus $4^{\circ}.2$ S of Pollux.

### JUNE 1959

Mercury is too close to the Sun for easy visibility. Venus is an evening star shining brightly in the western sky for several hours after sunset. Venus and Mars pass within a degree of each other on the 14th. Jupiter sets just before dawn at the beginning of the month. Saturn is in opposition during the month and is visible throughout the night.

d. h.

June	3	6	Mercury in superior conjunction.
	6	23	Mercury in conjunction with the Moon, Mercury $5^{\circ}.9$ N.
	10	17	Venus in conjunction with the Moon, Venus $7^{\circ}.1$ N.
	10	20	Mars in conjunction with the Moon, Mars $6^{\circ}.1$ N.
	14	15	Venus in conjunction with Mars, Venus $0^{\circ}.9$ N.
	18	13	Jupiter in conjunction with the Moon, Jupiter $2^{\circ}.5$ S.
	21	7	Saturn in conjunction with the Moon, Saturn $4^{\circ}.1$ S.
	22	6	Solstice.
	23	10	Venus at greatest eastern elongation, ( $45^{\circ}.4$ ).
	24	11	Mercury $5^{\circ}.0$ S of Pollux.
	26	5	Saturn in opposition.

### JULY 1959

Mercury is an evening star setting two hours after the Sun at the beginning of the month. Venus continues to grow brighter until the 26th when it is 11 times brighter than Sirius, and easily seen in daylight. There is a close appulse of Venus to Regulus on the 7th, unfortunately in daylight, but the two objects will be close together for several days. Mars sets about 2 hours after the Sun and passes close to Regulus between the 18th and 22nd. Jupiter sets about two hours after midnight and Saturn sets just before dawn. All five planets can be observed in the course of one night.

	d. h.	
July	5 9	Earth in aphelion.
	7 16	Venus $0^{\circ}.0$ S of Regulus.
	8 12	Mercury in conjunction with the Moon, Mercury $4^{\circ}.1$ N.
	8 23	Mercury at greatest eastern elongation, ( $26^{\circ}.2$ ).
	9 11	Mars in conjunction with the Moon, Mars $4^{\circ}.9$ N.
	10 1	Venus in conjunction with the Moon, Venus $3^{\circ}.3$ N.
	15 19	Jupiter in conjunction with the Moon, Jupiter $2^{\circ}.7$ S.
	18 13	Saturn in conjunction with the Moon, Saturn $4^{\circ}.1$ S.
	18 23	Mars $0^{\circ}.7$ N of Regulus, (Closest approach on 20th).
	26 22	Venus at greatest brilliancy, Magnitude $-4.2$ .

### AUGUST 1959

Mercury is too close to the Sun for easy visibility at the beginning of the month; even at greatest elongation on the 23rd it rises only an hour before the Sun. Venus is an evening star but is rapidly approaching the Sun. Mars is close to Venus for several days around the 11th and sets about an hour after the Sun. Jupiter sets about midnight and Saturn about three hours later.

	d. h.	
Aug	4 20	Mercury in conjunction with the Moon, Mercury $0^{\circ}.9$ S.
	5 19	Mercury in inferior conjunction. Mercury $4^{\circ}.9$ S.
	7 02	Mars in conjunction with the Moon, Mars $3^{\circ}.2$ N.
	7 05	Venus in conjunction with the Moon, Venus $2^{\circ}.9$ S.
	11 4	Venus in conjunction with Mars, Venus $6^{\circ}.8$ S.
	12 2	Jupiter in conjunction with the Moon, Jupiter $3^{\circ}.1$ S.
	14 19	Saturn in conjunction with the Moon, Saturn $4^{\circ}.3$ S.
	23 . 20	Mercury at greatest western elongation, ( $18^{\circ}.4$ ).

### SEPTEMBER 1959

Mercury is too close to the Sun to be easily visible. Venus passes between the Sun and the Earth on the 1st and becomes a morning star. Mars sets soon after sunset, Jupiter sets at about 11 o'clock and Saturn sets at about 1 a.m.

	d. h.		
Sep	1 8	Venus in inferior conjunction, Venus $8^{\circ}.6$ S.	
	2 4	Mercury in conjunction with the Moon, Mercury $4^{\circ}.8$ N.	
	2 19	Venus in conjunction with the Moon, Venus $6^{\circ}.5$ S.	
	4 14	Mars in conjunction with the Moon, Mars $1^{\circ}.3$ N.	
	4 14	Mercury $1^{\circ}.1$ N of Regulus.	
	8 12	Jupiter in conjunction with the Moon, Jupiter $3^{\circ}.5$ S.	
	11 00	Saturn in conjunction with the Moon, Saturn $4^{\circ}.5$ S.	
	11 6	Venus $9^{\circ}.3$ S of Regulus.	
	17 3	<sup>31<sup>m</sup></sup>	Penumbral eclipse of the Moon, visible in S. Africa.
	17 23	Mercury in superior conjunction, Mercury $1^{\circ}.5$ N.	
	23 21	Equinox.	
	29 20	Venus in conjunction with the Moon, Venus $2^{\circ}.3$ S.	

### OCTOBER 1959

Mercury is an evening star setting about two hours after the Sun at the end of the month. Venus reaches greatest brilliancy in the eastern sky at dawn on the 8th, when it is 12 times as bright as Sirius. Mars is too close to the Sun to be seen. Jupiter sets in the early evening and Saturn sets at about midnight. There is a total eclipse of the Sun on the 2nd, the path of Totality passing across North Africa. It is visible as a partial eclipse in the Northern Transvaal and the Rhodesias.

	d. h.		
Oct	1 10	Venus $5^{\circ}.7$ S of Regulus.	
	2 14	<sup>31<sup>m</sup></sup>	Eclipse of the Sun.
	3 5	Mars in conjunction with the Moon, Mars $0^{\circ}.8$ S.	
	3 9	Mercury in conjunction with the Moon, Mercury $1^{\circ}.6$ S.	
	4 11	Mercury $2^{\circ}.1$ N of Spica.	
	6 2	Jupiter in conjunction with the Moon, Jupiter $3^{\circ}.8$ S.	
	8 7	Saturn in conjunction with the Moon, Saturn $4^{\circ}.6$ S.	
	8 13	Venus at greatest brilliancy, magnitude $-4.3$ .	
	28 16	Mercury in conjunction with the Moon, Mercury $0^{\circ}.9$ N.	
	30 4	Mars in conjunction with the Sun.	

## NOVEMBER 1959

Mercury is an evening star passing between the Sun and Earth on the 24th. Jupiter, Mercury, and Antares form a close group a few degrees south of the Moon on the 2nd, coming closer together until the 9th. Venus is a morning star rising a couple of hours before the Sun. On the 27th, (night of the 26th), there is an occultation of Venus by the Moon; at Johannesburg, Venus will reappear at the dark limb at 2h 59<sup>ms</sup>.5 soon after moonrise. At Cape Town the Moon rises too late. Jupiter may be seen in the eastern twilight, while Saturn sets about 2 hours after the Sun.

d. h.

Nov	2	14	Mercury in conjunction with the Moon, Mercury $7^{\circ}.3$ S.
	2	20	Jupiter in conjunction with the Moon, Jupiter $4^{\circ}.1$ S.
	3	12	Mercury at greatest eastern elongation, ( $23^{\circ}.6$ ) .
	4	18	Saturn in conjunction with the Moon, Saturn $4^{\circ}.6$ S.
	7	12	Mercury in conjunction with Jupiter, Mercury $3^{\circ}.4$ S.
	10	7	Mercury $2^{\circ}.0$ N of Antares.
	12	0	Venus at greatest western elongation, ( $46^{\circ}.6$ ) .
	15	18	Jupiter $5^{\circ}.2$ N of Antares.
	17	8	Mercury in conjunction with Jupiter, Mercury $2^{\circ}.1$ S.
	17	23	Mercury $3^{\circ}.3$ N of Antares.
	24	13	Mercury in inferior conjunction, Mercury $0^{\circ}.8$ N.
	27	3	Occultation of Venus by the Moon.
	29	15	Mercury in conjunction with the Moon, Mercury $2^{\circ}.0$ S.
	29	17	Mars in conjunction with the Moon, Mars $4^{\circ}.3$ S.
	30	17	Jupiter in conjunction with the Moon, Jupiter $4^{\circ}.3$ S.
	30	7	Venus $4^{\circ}.5$ N of Spica.

## DECEMBER 1959

Mercury is a morning star rising in the eastern twilight. Venus also rises in the east a couple of hours before the Sun. Mars and Jupiter also rise shortly before the Sun. Near the end of the month, Mercury, Mars, and Jupiter are closely grouped and Mercury is very close to Jupiter on the evening of the 26th. Saturn sets soon after the Sun.

d. h.

Dec	2	8	Saturn in conjunction with the Moon, Saturn $4^{\circ}.4$ S.
	5	21	Jupiter in conjunction with the Sun.
	12	9	Mercury at greatest western elongation, ( $21^{\circ}.0$ )
	15	18	Mars $4^{\circ}.4$ N of Antares.
	20	10	Mercury $6^{\circ}.0$ N of Antares.
	22	17	Solstice.
	25	15	Mercury in conjunction with Mars, Mercury $1^{\circ}.0$ N.
	26	21	Venus in conjunction with the Moon, Venus $1^{\circ}.6$ S.

	a.	h.	
Dec	27	3	Mercury in conjunction with Jupiter, Mercury $0^{\circ}.02$ S.
	28	14	Mars in conjunction with the Moon, Mars $5^{\circ}.3$ S.
	28	14	Jupiter in conjunction with the Moon, Jupiter $4^{\circ}.4$ S.
	28	15	Mercury in conjunction with the Moon, Mercury $4^{\circ}.7$ S.
	29	3	Mars in conjunction with Jupiter, Mars $0^{\circ}.8$ S.
	30	1	Saturn in conjunction with the Moon, Saturn $4^{\circ}.4$ S.
	31	23	Saturn in conjunction with the Sun.

-----oo0oo-----

### BRIGHT VARIABLE STARS

Name	Position (1950)			Range	Period Days	Expected Maxima 1959
	R.A.	Dec.				
o Ceti (Mira)	02 <sup>h</sup> 17 <sup>m</sup>	-3° 15'		2.6-9.4	331	Sep 2
R Doradus	04 36	-60 10		5.3-6.4	Irr.	
R Pictoris	04 45	-49 20		6.9-9.2	160?	Feb 12, Jul 29
L <sub>2</sub> Puppis	07 12	-44 34		3.1-6.3	140?	Apr 27, Sep 14
R Carinae	09 31	-62 34		4.5-9.4	309	May 28
S Carinae	10 08	-51 18		5.7-8.3	149	Jan 8, Jun 6, Nov 2
R Hydriæ	13 27	-23 01		4.7-9.6	402	No maximum
T Centauri	13 39	-33 21		6.0-8.2	91	Mar 7, Jun 6, Sep 5, Dec 5
R Centauri	14 13	-59 41		5.7-12.0	551	Sep 30
R Aquarii	23 41	-15 34		6.7-11.6	387	Jan 11

## SOUTH AFRICAN OBSERVATORIES

Name	Place	E. Long.	S. Lat.	Alt.	Director
		1h+		ft	
Union	Johannesburg	52m 18s.0	26°10'55"3	5925	
Union Annexe	Hartbeespoort	51m 30s	25°46'22"	4002	W.S. Finsen
Cape	Cape Town	13m 54s.6	33°56'02"5	26	R.H. Stoy
Hadcliffe	Pretoria	52m 54s.9	25°47'18"	5059	A.D. Thackeray
Boyden	Bloemfontein	45m 37s.4	29°02'20"	4550	H. Haffner
Leiden	Hartebeespoort	51m 30s	25°46'22"	4002	P.Th. Malraven
Hilltop	Haenetsburg	59m 44s	23°56'	4600	C. Jackson
Davy's	Port Elizabeth	42m 20s	33°57'	300	P.E. Centre
Lamont-Hussey	Bloemfontein	44m 56s.8	29°05'46"1	4825	No resident director
Smithsonian Satellite-Tracking Station	Olifantsfontein				R.C. Cameron
J.H. Botham	Johannesburg	52m 17s.3	26°11'22.5	5605	
E. Fuhr	Germiston	52m 45s.6	26°14'11"5	5370	
N.H. Hoogenhout	Pretoria	52m 58s.6	25°46'46"	4725	
J.L. Jooste	Pretoria	52m 47s.2	25°45'14"	4359	
P.F.G. Knipe	Johannesburg	52m 09s.2	26°11'18"	5915	
P.C. Lagerweij	Johannesburg	52m 02s	26°08'36"5	5487	
I.D. Overbeek	Germiston	52m 33s.7	26°11'42"	5605	
I.C. Venter	Pretoria	52m 46s.9	25°40'14"8	4050	
J.W. Williams	Johannesburg	52m 28s.4	26°12'00"	5590	

PAST PRESIDENTS

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

HONORARY MEMBERS

Dr. R.O. Redman	Dr. H. Spencer Jones	Dr. H.L. Alden
Dr. R.v.d.R. Woolley	Dr. J. Schilt	Dr. J.H. Oort
Dr. J. Jackson	Dr. H. Knox-Shaw	Dr. H. Shapley
Dr. W.H. van den Bos		Mr. A.F.I. Forbes

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

## 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:—

### Variable Stars:

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

### Meteor Section:

Vacant.

### Computing and Occultation Section:

Mr. W. P. Hirst, "Water's Edge", Greenbanks Road, Rondebosch, Cape.

### Planetary Section:

Mr. I. R. H. Brickett, c/o Union Observatory, Johannesburg.

A number of autonomous local Centres of the Society exists, which hold regular meetings.

Details of Centre organisation are as follows:—

### CAPE CENTRE:

Chairman:	Mr. P. Smits.
Vice-Chairman:	Mr. J. Churms.
Hon. Secretary:	Mr. N. E. Saville.
Hon. Treasurer:	Mr. H. E. Krumm.
Hon. Auditor:	Mr. A. Menzies.
Members of Committee.	Messrs. W. C. Bentley, O. H. Chilton, P. L. Meadows, J. Simenhoff, E. H. Tibbitts, I. Weinberg.

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. M. D. Overbeek.
Hon. Secretary:	Mr. A. Johnston.
Hon. Treasurer:	Mr. G. F. G. Knipe.
Pretoria Member:	Mr. J. H. Jooste.
Members of Committee:	Mr. I. R. H. Brickett, Dr. M. W. Feast, Dr. K. H. Führ, Dr. P. Kirchhoff, Mr. R. S. Tuffin, Dr. C. N. Williams.

Observing and lecture meetings in alternate months.

Secretarial address, c/o Union Observatory, Gill Street, Observatory, Johannesburg.

### PORt ELIZABETH CENTRE:

Chairman:	Mr. J. C. Bentley.
Hon. Secretary:	Mr. W. L. Schlesinger.
Hon. Treasurer:	Mr. E. F. Jansen.
Members of Committee:	Messrs. H. Welsh, A. A. Foster, E. Warring, Woodall, G. Anderson, Haigh, B. Simpson, E. Blignaut, Dr. Reid.

Secretarial address, 120a Princes Street, Port Elizabeth.

### NATAL CENTRE:

Chairman:	Mr. H. Ottens.
Vice-Chairman:	Mr. W. de Palo.
Hon. Secretary:	Mr. M. Burns.
Hon. Treasurer:	Mr. M. Harpur.
Members of Committee:	Mr. J. Barker, Mr. G. Pollard, Mr. J. le Roux.

Secretarial address, 57 Delew Court, 110 Stanger Street, Durban.