# THE
# ASTRONOMICAL SOCIETY
# OF
# SOUTHERN AFRICA

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## HANDBOOK FOR

## 1958

# THE ASTRONOMICAL SOCIETY OF SOUTHERN AFRICA

## 1957 — 1958



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 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, Leeuwendal Crescent, Cape Town.

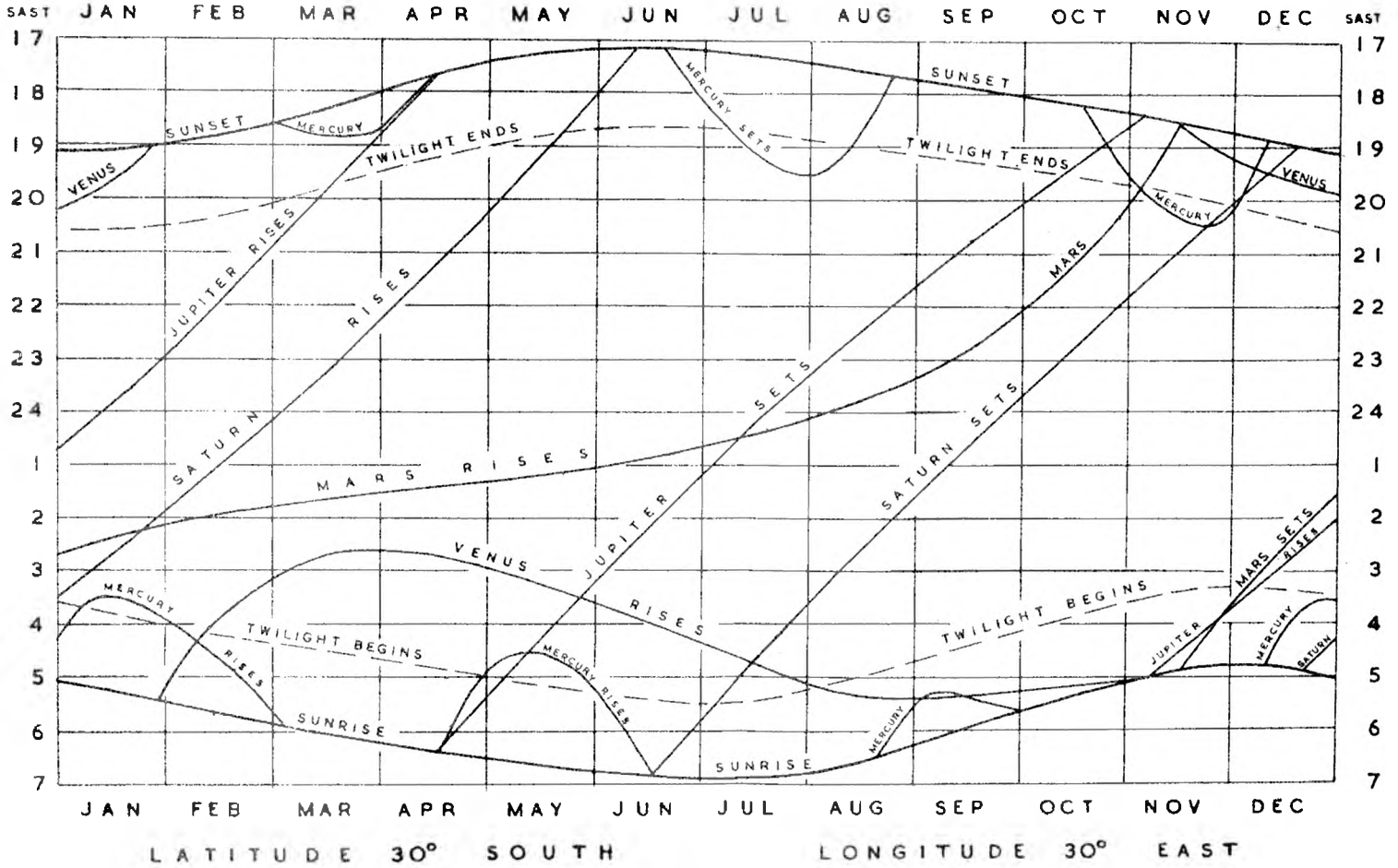
All other communications for the Society should be addressed to the Hon. Secretary, Astronomical Society of Southern Africa, c/o The Royal Observatory, Observatory, Cape Province.

### 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

## 1958




LATITUDE 30° SOUTH LONGITUDE 30° EAST

# THE

# H A N D B O O K

# OF THE

# ASTRONOMICAL SOCIETY OF SOUTHERN AFRICA

# 1958

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

Cape Town 1958

Price to Non-Members: Two shillings

CONTENTS

## TIME

All the times given in this booklet are South African Standard Time, that is, mean solar time for a meridian 30°, 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 | -15m | Grahamstown | -14m |
| 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. 12 h. 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.

Example: Find the S.A.S.T. of apparent noon at Port Elizabeth on November 13.

| | h. | m. |
|---|---|---|
| S.A.S.T. of noon at 30° E | 11 | 44 |
| Correction for longitude | | +18 |
| S.A.S.T. of noon at Port Elizabeth | 12 | 02 |

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. This correction is given below.

For times between S.A.S.T:-

| | | | | |
|---|---|---|---|---|
| 03.00 | and | 09.00 | add 1 | minute |
| 09.00 | " | 15.00 | " 2 | minutes |
| 15.00 | " | 21.00 | " 3 | " |
| 21.00 | " | 23.59 | " 4 | " |

Example: Find the sidereal time at 8.15 p.m. on October 14 at Port Elizabeth.

| | h. | m. |
|---|---|---|
| Sid. time at $00^h.00^m$ S.A.S.T. on October 14 | 01 | 28 |
| S.A.S.T. elapsed | 20 | 15 |
| | 21 | 43 |
| Correction for longitude | | -18 |
| Interval correction | | + 3 |
| Required Sidereal Time. | 21 | 28 |

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° 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.

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 ascention 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 exliptic, 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° per day.

-----coOco-----

BRIGHT VARIABLE STARS

| Name | Position (1950) R.A. | | Dec. | | Range | Period Days | Expected Maxima 1958 |
|---|---|---|---|---|---|---|---|
| o Ceti (Mira) | 02 | 17 | - 3 | 15 | 2.6-9.4 | 331 | Sept 14 |
| R Doradus | 04 | 36 | -60 | 10 | 5.3-6.4 | Irr. | ? |
| R Pictoris | 04 | 45 | -49 | 20 | 6.9-9.2 | 160? | ? |
| $L_2$ Puppis | 07 | 12 | -44 | 34 | 3.1-6.3 | 140? | Jan18,May31, Oct 18 |
| R Carinae | 09 | 31 | -62 | 34 | 4.5-9.4 | 309 | July 31 |
| S Carinae | 10 | 08 | -61 | 18 | 5.7-8.3 | 149 | Mar 8,Aug 4. |
| R Hydrae | 13 | 27 | -23 | 01 | 4.7-9.6 | 402 | Jan 1, 1959 |
| T Centauri | 13 | 39 | -33 | 21 | 6.0-8.2 | 91 | Feb 28,May 29, Aug 28, Nov 27. |
| R Centauri | 14 | 13 | -59 | 41 | 5.7-12.0 | 551 | No maximum |
| R Aquarii | 23 | 41 | -15 | 34 | 6.7-11.6 | 387 | Jan 9, 1959 |

ECLIPSES

There will be three eclipses in 1958, two of the Sun and one of the Moon. These are as follows:

1. April 19 Annular eclipse of the Sun, invisible in South Africa.
2. May 3 Partial eclipse of the Moon, invisible in South Africa.
3. Oct 12 Total eclipse of the Sun, invisible in South Africa.

TABLE II

| Date 1958 | Julian Date at 14 hours | S.A.S.T. of Sun's Transit | | | Sidereal Time at 0 hours | | Sidereal Time at 18 hours | |
|---|---|---|---|---|---|---|---|---|
| | | h. | m. | s. | h. | m. | h. | m. |
| January 7 | 2,436,211.0 | 12 | 06 | 11 | 7 | 04 | 1 | 07 |
| " 17 | 221.0 | 12 | 10 | 03 | 7 | 43 | 1 | 46 |
| " 27 | 231.0 | 12 | 12 | 46 | 8 | 23 | 2 | 26 |
| February 6 | 241.0 | 12 | 14 | 08 | 9 | 02 | 3 | 05 |
| " 16 | 251.0 | 12 | 14 | 11 | 9 | 42 | 3 | 45 |
| " 26 | 261.0 | 12 | 13 | 03 | 10 | 21 | 4 | 24 |
| March 8 | 271.0 | 12 | 10 | 58 | 11 | 00 | 5 | 03 |
| " 18 | 281.0 | 12 | 08 | 16 | 11 | 40 | 5 | 43 |
| " 28 | 291.0 | 12 | 05 | 16 | 12 | 19 | 6 | 22 |
| April 7 | 2,436,301.0 | 12 | 02 | 17 | 12 | 59 | 7 | 02 |
| " 17 | 311.0 | 11 | 59 | 41 | 13 | 38 | 7 | 41 |
| " 27 | 321.0 | 11 | 57 | 42 | 14 | 18 | 8 | 21 |
| May 7 | 331.0 | 11 | 56 | 31 | 14 | 57 | 9 | 00 |
| " 17 | 341.0 | 11 | 56 | 17 | 15 | 36 | 9 | 39 |
| " 27 | 351.0 | 11 | 57 | 00 | 16 | 16 | 10 | 19 |
| June 6 | 361.0 | 11 | 58 | 27 | 16 | 55 | 10 | 58 |
| " 16 | 371.0 | 12 | 00 | 27 | 17 | 35 | 11 | 38 |
| " 26 | 381.0 | 12 | 02 | 37 | 18 | 14 | 12 | 17 |
| July 6 | 2,436,391.0 | 12 | 04 | 32 | 18 | 54 | 12 | 57 |
| " 16 | 401.0 | 12 | 05 | 54 | 19 | 33 | 13 | 36 |
| " 26 | 411.0 | 12 | 06 | 26 | 20 | 12 | 14 | 15 |
| August 5 | 421.0 | 12 | 05 | 57 | 20 | 52 | 14 | 55 |
| " 15 | 431.0 | 12 | 04 | 30 | 21 | 31 | 15 | 34 |
| " 25 | 441.0 | 12 | 02 | 11 | 22 | 11 | 16 | 14 |
| September 4 | 451.0 | 11 | 59 | 09 | 22 | 50 | 16 | 53 |
| " 14 | 461.0 | 11 | 55 | 44 | 23 | 30 | 17 | 33 |
| " 24 | 471.0 | 11 | 52 | 12 | 0 | 09 | 18 | 12 |
| October 4 | 2,436,481.0 | 11 | 48 | 53 | 0 | 48 | 18 | 51 |
| " 14 | 491.0 | 11 | 46 | 09 | 1 | 28 | 19 | 31 |
| " 24 | 501.0 | 11 | 44 | 19 | 2 | 07 | 20 | 10 |
| November 3 | 511.0 | 11 | 43 | 37 | 2 | 47 | 20 | 50 |
| " 13 | 521.0 | 11 | 44 | 17 | 3 | 26 | 21 | 29 |
| " 23 | 531.0 | 11 | 46 | 20 | 4 | 06 | 22 | 09 |
| December 3 | 541.0 | 11 | 49 | 40 | 4 | 45 | 22 | 48 |
| " 13 | 551.0 | 11 | 54 | 02 | 5 | 24 | 23 | 27 |
| " 23 | 561.0 | 11 | 58 | 56 | 6 | 04 | 24 | 07 |

SOUTH AFRICAN OBSERVATORIES

| Name | Place | E. Long. | S.Lat. | Alt. | Director |
|---|---|---|---|---|---|
| | | 1h+ | | ft | |
| Union | Johannesburg | 52m 18s.0 | 26°10'55".3 | 5925 | W.S. Finsen |
| Union Annexe | Hartebeespoort | 51m 30s | 25°46'22" | 4002 | |
| Cape | 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 | H. Haffner |
| Leiden | Hartebeespoort | 51m 30s | 25°46'22" | 4002 | P.Th.Walraven |
| Hilltop | Haenetsburg | 59m 44s | 23°56' | 4600 | C. Jackson |
| People'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 |
| J.H. Botham | Johannesburg | 52m 17s.3 | 26°11'22".5 | 5605 | |
| K. Fuhr | Germiston | 52m 45s.6 | 26°14'11".5 | 5370 | |
| N.N. Hoogenhout | Pretoria | 52m 58s.6 | 25°46'46" | 4725 | |
| J.L. Jooste | Pretoria | 52m 47s.2 | 25°45'14" | 4359 | |
| G.F.G. Knipe | Johannesburg | 52m 09s.2 | 26°11'18" | 5915 | |
| H.C. Lagerweij | Johannesburg | 52m 02s | 26°08'36.5 | 5487 | |
| M.D. Overbeek | Germiston | 52m 33s.7 | 26°11'42" | 5605 | |
| S.C. Venter | Pretoria | 52m 46s.9 | 25°40'14".8 | | |
| C.N. Williams | Johannesburg | 52m 28s.4 | 26°12'00" | 5590 | |

## OCCULTATIONS OF BRIGHT STARS

| Date | N.Z.C. | Mag | Phase | Cape Town h. m. | Cape Town P.A. | Johannesburg h. m. | Johannesburg P.A. |
|---|---|---|---|---|---|---|---|
| Jan 3 | 765 | 5.3 | D | 20 13.3 | 88° | 20 26.0 | 78° |
| 8 | 1364 | 6.5 | R | N.O. | - | 2 16.5 | 251 |
| 8 | 1468 | 4.9 | R | Low | - | 22 17.9 | 304 |
| 22 | 3272 | 5.8 | D | Sun | - | 19 41.0 | 107 |
| Feb 7 | 1787 | 6.0 | R | Low | - | 22 12.5 | 313 |
| 7 | 1798 | 6.3 | R | 24 15.5 | 282 | 24 12.1 | 310 |
| 8 | 1807 | 5.9 | R | 3 23.2 | 256 | 3 43.3 | 297 |
| 9 | 1945 | 5.4 | R | 3 06.8 | 268 | 3 16.4 | 305 |
| 11 | 2209 | 5.9 | R | 4 02.5 | 284 | 3 59.7 | 321 |
| 12 | 2361 | 4.8 | R | 5 04.5 | 299 | 4 49.9 | 346 |
| 14 | 2640 | 6.1 | R | 3 42.5 | 263 | 3 34.4 | 297 |
| 14 | 2647 | 6.4 | R | 4 29.2 | 316 | N.O. | - |
| 14 | 2653 | 6.4 | R | 5 17.3 | 280 | Sun | - |
| 27 | 793 | 6.2 | D | 21 56.1 | 74 | 22 35.9 | 31 |
| 27 | 798 | 6.4 | D | 23 09.4 | 140 | 23 15.2 | 103 |
| 28 | 940 | 5.7 | D | Sun | - | 20 03.4 | 68 |
| Mar 11 | 2316 | 6.4 | R | N.O. | - | 5 16.6 | 236 |
| 12 | 2448 | 6.4 | R | 1 32.6 | 231 | 1 38.9 | 270 |
| 27 | 888 | 6.0 | D | 19 21.5 | 77 | 20 02.2 | 41 |
| 27 | 895 | 5.9 | D | 21 01.7 | 84 | 21 35.2 | 41 |
| Apr 2 | 1685 | 4.5 | D | N.O. | - | 23 24.4 | 181 |
| 13 | 3104 | 6.5 | R | 3 47.6 | 211 | 4 02.2 | 244 |
| 14 | 3229 | 5.6 | R | 5 18.7 | 306 | N.O. | - |
| 25 | 1141 | 5.6 | D | 22 15.0 | 75 | N.O. | - |
| 29 | 1611 | 5.7 | D | N.O. | - | 19 41.2 | 165 |
| 30 | 1744 | 6.5 | D | 21 11.6 | 176 | 21 01.9 | 132 |
| May 7 | 2640 | 6.1 | R | 2 34.3 | 225 | 3 07.0 | 256 |
| 7 | 2647 | 6.4 | R | 4 03.2 | 263 | 4 27.2 | 285 |
| 7 | 2653 | 6.4 | R | 4 34.6 | 217 | 5 11.8 | 239 |
| 21 | 947 | 5.2 | D | N.O. | - | 17 42.3 | 133 |
| 28 | 1836 | 6.3 | D | 0 16.7 | 50 | N.O. | - |
| June 5 | 2876 | 5.4 | R | N.O. | - | 0 16.7 | 217 |
| 5 | 2880 | 5.1 | R | 1 05.9 | 204 | 1 41.1 | 238 |
| 7 | 3133 | 5.8 | R | 0 57.7 | 267 | 0 55.3 | 299 |
| 10 | 3507 | 6.4 | R | 3 38.2 | 270 | 3 41.3 | 292 |
| 24 | 1787 | 6.0 | D | 21 18.0 | 93 | 21 54.7 | 40 |
| 24 | 1798 | 6.3 | D | 23 30.8 | 103 | 23 44.3 | 72 |
| 29 | 2361 | 4.8 | D | 2 52.8 | 162 | 2 52.7 | 132 |

| Date | N.Z.C. | Mag | Phase | Cape Town | | Johannesburg | |
|---|---|---|---|---|---|---|---|
| | | | | h. m. | P.A. | h. m. | P.A. |
| July 4 | 3104 | 6.5 | R | 6 41.2 | 209 | Sun | - |
| 5 | 3229 | 5.6 | R | 6 49.5 | 308 | Sun | - |
| 9 | 146 | 4.4 | D | Low | - | 1 25.0 | 84 |
| 9 | 146 | 4.4 | R | 2 20.2 | 206 | 2 33.5 | 225 |
| 13 | 654 | 6.0 | R | 6 25.6 | 272 | Sun | - |
| 20 | 1637 | 6.0 | D | 20 30.3 | 58 | N.O. | - |
| 26 | 2148 | 6.4 | D | 22 53.8 | 144 | 23 04.9 | 114 |
| 27 | 2578 | 6.4 | D | 19 51.9 | 110 | 20 04.5 | 76 |
| Aug 5 | 98 | 6.2 | R | 2 46.0 | 257 | 3 08.8 | 265 |
| 9 | 593 | 5.8 | R | 3 34.6 | 291 | 3 33.2 | 306 |
| 10 | 736 | 6.2 | R | 4 33.9 | 307 | 4 28.1 | 327 |
| 18 | 1836 | 6.3 | D | N.O. | - | 18 26.0 | 181 |
| 20 | 2114 | 5.8 | D | 21 37.3 | 95 | 21 53.5 | 71 |
| 25 | 2856 | Var | D | 20 53.2 | 111 | 21 12.8 | 87 |
| 26 | 2883 | 5.5 | D | 2 55.6 | 60 | 3 10.2 | 50 |
| Sept 4 | 422 | 5.5 | R | 1 37.7 | 285 | 1 44.6 | 298 |
| 19 | 2508 | 6.3 | D | 19 16.4 | 90 | 19 44.6 | 68 |
| 20 | 2674 | 6.0 | D | 22 47.8 | 76 | 23 06.8 | 65 |
| 25 | 3320 | 5.3 | D | 19 13.6 | 0 | N.O. | - |
| 28 | 146 | 4.4 | D | 0 02.6 | 46 | 0 32.5 | 40 |
| 29 | 146 | 4.4 | R | 1 32.2 | 257 | 2 03.9 | 263 |
| Oct 9 | 1428 | 3.8 | R | 4 43.0 | 283 | 4 39.2 | 301 |
| 20 | 3054 | 6.4 | D | 22 51.7 | 25 | 23 19.0 | 13 |
| 30 | 730 | 5.1 | R | 0 23.2 | 221 | 0 44.2 | 233 |
| Nov 3 | 1141 | 5.6 | R | 2 40.7 | 257 | 2 54.2 | 274 |
| 5 | 1381 | 6.3 | R | 2 42.5 | 275 | 2 41.2 | 292 |
| 1 | 3133 | 5.8 | D | 20 55.2 | 69 | 21 20.4 | 62 |
| 21 | 3515 | 6.2 | D | 1 21.4 | 114 | Low | - |
| 24 | 422 | 5.5 | D | 19 55.1 | 12 | Graze | - |
| Dec 3 | 1458 | 5.9 | R | 2 47.5 | 281 | 2 50.8 | 304 |
| 19 | 146 | 4.4 | D | 20 32.1 | 10 | 21 14.6 | 357 |
| 20 | 272 | 5.9 | D | 21 12.2 | 116 | 21 39.3 | 105 |
| 23 | 639 | 6.0 | D | 23 37.4 | 20 | N.O. | - |

NOTES

N.O. = Star not occulted

Low = Star's altitude below 10°

## THE PLANETS

The chart (Frontispiece) 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 Port Elizabeth add 18 minutes to the times given by the chart, for Durban subtract 4 minutes. The correction for latitude will in general be sufficiently small to be ignored.

Mercury will be most easily seen in the Western sky towards the end of July when its magnitude will be + 0.8. It will also be visible in the Western sky after sunset towards the end of November, magnitude + 0.2, and before sunrise in the Eastern sky about the middle of January, magnitude 0.0, and during May, magnitude + 0.9.

Venus will be an evening star during January. It will be in the morning sky from February to the middle of November, thereafter setting just after sunset in the evening sky. Maximum brightness, magnitude -4.4 occurs on March 4.

Mars is in the morning sky until Opposition in November when it becomes a conspicuous object in the evening sky. Its magnitude gradually changes from +1.8 in January to -2.0 at Opposition and then back to -0.6 towards the end of the year.

Jupiter will be in the morning sky until Opposition in the middle of April when it will be visible throughout the night. It will remain a conspicuous object in the evening sky until October. Rising just before the sun it appears in the morning sky during December. Its magnitude ranges from -2.0 to -1.2.

Saturn rises in the morning twilight at the begining of the year, reaches Opposition in the middle of June and remains in the evening sky until the end of the year. Its magnitude ranges between +0.8 and +0.2.

Neither Uranus, magnitude 5.7 nor Neptune, magnitude 7.7 are readily visible to the naked eye, but both are easy telescopic objects. Uranus is in Cancer and is in Opposition on January 30. Neptune is in Virgo until the end of the year where it passes into Libra. It is in Opposition on April 24.

## 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 | | Krugersdorp |
| 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 | $-7^m$ | Mossel Bay | + 1.03 | $-16^m$ |
| Durban | + 0.47 | -31 | Vereeniging | + 0.06 | - 2 |
| East London | + 0.88 | -34 | | | |

Example: To find the time of moonrise at Bloemfontein on 1958 January 8

| | | |
|---|---|---|
| Moonrise at Cape Town | | $21^h\ 51^m$ |
| Moonrise at Johannesburg | | 21 06 |
| Therefore | X = | 45 |

For Bloemfontein, A = + 0.38, B = $-7^m$. Hence the correction AX + B = $+10^m$

| | |
|---|---|
| Moonrise at Johannesburg | $21^h\ 06^m$ |
| AX + B | 10 |
| Moonrise at Bloemfontein | 21 16 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| Jan 1 | $15^h\ 01^m$ | $1^h\ 30^m$ | $15^h\ 53^m$ | $1^h\ 58^m$ |
| 2 | 15 56 | 2 13 | 16 51 | 2 39 |
| 3 | 16 52 | 3 01 | 17 48 | 3 26 |
| 4 | 17 48 | 3 54 | 18 43 | 4 18 |
| 5 | 18 41 | 4 51 | 19 35 | 5 16 |
| 6 | 19 32 | 5 52 | 20 24 | 6 19 |
| 7 | 20 21 | 6 56 | 21 10 | 7 25 |
| 8 | 21 06 | 7 59 | 21 51 | 8 32 |
| 9 | 21 49 | 9 03 | 22 30 | 9 39 |
| 10 | 22 30 | 10 06 | 23 08 | 10 46 |
| 11 | 23 13 | 11 08 | 23 47 | 11 51 |
| 12 | 23 55 | 12 10 | ..... | 12 57 |
| 13 | ..... | 13 11 | 0 26 | 14 01 |
| 14 | 0 40 | 14 11 | 1 09 | 15 04 |
| 15 | 1 28 | 15 11 | 1 54 | 16 05 |
| 16 | 2 19 | 16 07 | 2 43 | 17 03 |
| 17 | 3 12 | 17 01 | 3 36 | 17 56 |
| 18 | 4 06 | 17 50 | 4 31 | 18 44 |
| 19 | 5 02 | 18 36 | 5 27 | 19 27 |
| 20 | 5 56 | 19 17 | 6 25 | 20 07 |
| 21 | 6 49 | 19 55 | 7 21 | 20 41 |
| 22 | 7 42 | 20 31 | 8 16 | 21 15 |
| 23 | 8 34 | 21 06 | 9 11 | 21 46 |
| 24 | 9 24 | 21 39 | 10 04 | 22 17 |
| 25 | 10 14 | 22 13 | 10 58 | 22 47 |
| 26 | 11 05 | 22 48 | 11 51 | 23 20 |
| 27 | 11 56 | 23 25 | 12 45 | 23 55 |
| 28 | 12 48 | ..... | 13 40 | ..... |
| 29 | 13 42 | 0 06 | 14 35 | 0 33 |
| 30 | 14 37 | 0 51 | 15 32 | 1 16 |
| 31 | 15 32 | 1 40 | 16 27 | 2 05 |

## PHASES OF THE MOON

| | | | |
|---|---|---|---|
| Full Moon | Jan 5 | $22^h$ | $09^m$ |
| Last Quarter | 12 | 16 | 01 |
| New Moon | 20 | 00 | 08 |
| First Quarter | 28 | 04 | 16 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| Feb 1 | 16h 26m | 2h 34m | 17h 21m | 2h 59m |
| 2 | 17 18 | 3 33 | 18 12 | 3 59 |
| 3 | 18 09 | 4 36 | 18 59 | 5 04 |
| 4 | 18 57 | 5 40 | 19 44 | 6 11 |
| 5 | 19 42 | 6 46 | 20 26 | 7 20 |
| 6 | 20 26 | 7 51 | 21 06 | 8 29 |
| 7 | 21 10 | 8 56 | 21 46 | 9 38 |
| 8 | 21 54 | 10 00 | 22 26 | 10 46 |
| 9 | 22 40 | 11 04 | 23 09 | 11 52 |
| 10 | 23 27 | 12 06 | 23 53 | 12 57 |
| 11 | ..... | 13 06 | ..... | 14 00 |
| 12 | 0 16 | 14 03 | 0 42 | 14 58 |
| 13 | 1 08 | 14 57 | 1 33 | 15 52 |
| 14 | 2 02 | 15 47 | 2 26 | 16 42 |
| 15 | 2 56 | 16 35 | 3 21 | 17 25 |
| 16 | 3 50 | 17 15 | 4 18 | 18 06 |
| 17 | 4 44 | 17 54 | 5 14 | 18 42 |
| 18 | 5 36 | 18 31 | 6 09 | 19 16 |
| 19 | 6 27 | 19 06 | 7 03 | 19 47 |
| 20 | 7 18 | 19 40 | 7 57 | 20 18 |
| 21 | 8 09 | 20 14 | 8 50 | 20 49 |
| 22 | 8 58 | 20 48 | 9 44 | 21 21 |
| 23 | 9 49 | 21 25 | 10 37 | 21 55 |
| 24 | 10 41 | 22 03 | 11 31 | 22 31 |
| 25 | 11 35 | 22 46 | 12 25 | 23 11 |
| 26 | 12 26 | 23 31 | 13 20 | 23 56 |
| 27 | 13 19 | ..... | 14 14 | ..... |
| 28 | 14 12 | 0 22 | 15 07 | 0 46 |

## PHASES OF THE MOON

| | | | |
|---|---|---|---|
| Full Moon | Feb 4 | 10h | 05m |
| Last Quarter | 11 | 1 | 34 |
| New Moon | 18 | 17 | 38 |
| First Quarter | 26 | 22 | 51 |

## MOONRISE AND MOONSET

| | JOHANNESBURG | | CAPE TOWN | |
|---|---|---|---|---|
| DATE 1958 | MOONRISE S.A.S.T. | MOONSET S.A.S.T. | MOONRISE S.A.S.T. | MOONSET S.A.S.T. |
| Mar 1 | 15h 04m | 1h 16m | 15h 58m | 1h 41m |
| 2 | 15 54 | 2 15 | 16 46 | 2 42 |
| 3 | 16 43 | 3 18 | 17 32 | 3 46 |
| 4 | 17 29 | 4 22 | 18 15 | 4 55 |
| 5 | 18 15 | 5 28 | 18 57 | 6 04 |
| 6 | 19 00 | 6 34 | 19 38 | 7 14 |
| 7 | 19 46 | 7 41 | 20 20 | 8 25 |
| 8 | 20 32 | 8 47 | 21 03 | 9 35 |
| 9 | 21 21 | 9 52 | 21 49 | 10 43 |
| 10 | 22 12 | 10 56 | 22 38 | 11 49 |
| 11 | 23 04 | 11 56 | 23 29 | 12 51 |
| 12 | 23 58 | 12 52 | ..... | 13 47 |
| 13 | ..... | 13 44 | 0 23 | 14 38 |
| 14 | 0 52 | 14 31 | 1 18 | 15 25 |
| 15 | 1 46 | 15 14 | 2 14 | 16 05 |
| 16 | 2 39 | 15 55 | 3 09 | 16 43 |
| 17 | 3 32 | 16 32 | 4 04 | 17 17 |
| 18 | 4 23 | 17 07 | 4 58 | 17 49 |
| 19 | 5 14 | 17 41 | 5 52 | 18 21 |
| 20 | 6 04 | 18 15 | 6 45 | 18 52 |
| 21 | 6 55 | 18 50 | 7 39 | 19 23 |
| 22 | 7 45 | 19 25 | 8 32 | 19 57 |
| 23 | 8 36 | 20 03 | 9 25 | 20 32 |
| 24 | 9 28 | 20 44 | 10 20 | 21 11 |
| 25 | 10 20 | 21 28 | 11 14 | 21 53 |
| 26 | 11 12 | 22 16 | 12 06 | 22 40 |
| 27 | 12 04 | 23 07 | 12 58 | 23 32 |
| 28 | 12 55 | ..... | 13 49 | ..... |
| 29 | 13 44 | 0 02 | 14 37 | 0 28 |
| 30 | 14 31 | 1 01 | 15 21 | 1 29 |
| 31 | 15 18 | 2 02 | 16 05 | 2 31 |

## PHASES OF THE MOON

| | | |
|---|---|---|
| Full Moon | Mar 5 | 20h 28m |
| Last Quarter | 12 | 12 48 |
| New Moon | 20 | 11 50 |
| First Quarter | 28 | 13 18 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| Apr 1 | $16^h\ 03^m$ | $3^h\ 05^m$ | $16^h\ 46^m$ | $3^h\ 40^m$ |
| 2 | 16 47 | 4 10 | 17 27 | 4 48 |
| 3 | 17 33 | 5 17 | 18 09 | 5 58 |
| 4 | 18 19 | 6 23 | 18 52 | 7 09 |
| 5 | 19 08 | 7 30 | 19 38 | 8 19 |
| 6 | 20 00 | 8 36 | 20 26 | 9 29 |
| 7 | 20 53 | 9 41 | 21 18 | 10 35 |
| 8 | 21 49 | 10 41 | 22 14 | 11 36 |
| 9 | 22 45 | 11 36 | 23 10 | 12 31 |
| 10 | 23 40 | 12 27 | ..... | 13 21 |
| 11 | ..... | 13 13 | 0 07 | 14 04 |
| 12 | 0 34 | 13 54 | 1 04 | 14 43 |
| 13 | 1 27 | 14 32 | 1 59 | 15 18 |
| 14 | 2 19 | 15 08 | 2 53 | 15 52 |
| 15 | 3 10 | 15 42 | 3 47 | 16 23 |
| 16 | 4 00 | 16 16 | 4 40 | 16 54 |
| 17 | 4 50 | 16 50 | 5 33 | 17 25 |
| 18 | 5 41 | 17 26 | 6 26 | 17 59 |
| 19 | 6 32 | 18 03 | 7 20 | 18 33 |
| 20 | 7 24 | 18 43 | 8 15 | 19 11 |
| 21 | 8 16 | 19 26 | 9 08 | 19 52 |
| 22 | 9 08 | 20 13 | 10 02 | 20 38 |
| 23 | 10 00 | 21 03 | 10 55 | 21 28 |
| 24 | 10 51 | 21 57 | 11 45 | 22 22 |
| 25 | 11 40 | 22 53 | 12 33 | 23 20 |
| 26 | 12 27 | 23 51 | 13 18 | ..... |
| 27 | 13 11 | ..... | 14 00 | 0 20 |
| 28 | 13 55 | 0 51 | 14 40 | 1 24 |
| 29 | 14 38 | 1 53 | 15 20 | 2 29 |
| 30 | 15 22 | 2 57 | 16 00 | 3 36 |

## PHASES OF THE MOON

| | | |
|---|---|---|
| Full Moon | Apr 4 | $5^h\ 45^m$ |
| Last Quarter | 11 | 1 50 |
| New Moon | 19 | 5 23 |
| First Quarter | 26 | 23 36 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| May 1 | 16h 06m | 4h 01m | 16h 41m | 4h 45m |
| 2 | 16 54 | 5 07 | 17 25 | 5 54 |
| 3 | 17 44 | 6 14 | 18 12 | 7 04 |
| 4 | 18 38 | 7 20 | 19 04 | 8 13 |
| 5 | 19 33 | 8 23 | 19 58 | 9 18 |
| 6 | 20 31 | 9 23 | 20 56 | 10 18 |
| 7 | 21 28 | 10 17 | 21 55 | 11 11 |
| 8 | 22 25 | 11 06 | 22 53 | 11 59 |
| 9 | 23 20 | 11 51 | 23 50 | 12 40 |
| 10 | ..... | 12 31 | ..... | 13 18 |
| 11 | 0 13 | 13 08 | 0 46 | 13 52 |
| 12 | 1 05 | 13 43 | 1 41 | 14 24 |
| 13 | 1 55 | 14 17 | 2 34 | 14 56 |
| 14 | 2 46 | 14 51 | 3 27 | 15 27 |
| 15 | 3 36 | 15 26 | 4 20 | 15 59 |
| 16 | 4 27 | 16 03 | 5 14 | 16 33 |
| 17 | 5 18 | 16 42 | 6 09 | 17 10 |
| 18 | 6 11 | 17 24 | 7 03 | 17 50 |
| 19 | 7 04 | 18 10 | 7 57 | 18 35 |
| 20 | 7 57 | 19 00 | 8 51 | 19 24 |
| 21 | 8 48 | 19 52 | 9 43 | 20 18 |
| 22 | 9 38 | 20 48 | 10 32 | 21 15 |
| 23 | 10 25 | 21 46 | 11 17 | 22 15 |
| 24 | 11 11 | 22 45 | 12 00 | 23 16 |
| 25 | 11 54 | 23 44 | 12 40 | ..... |
| 26 | 12 36 | ..... | 13 19 | 0 20 |
| 27 | 13 18 | 0 46 | 13 57 | 1 24 |
| 28 | 14 00 | 1 47 | 14 36 | 2 29 |
| 29 | 14 45 | 2 50 | 15 17 | 3 36 |
| 30 | 15 32 | 3 54 | 16 01 | 4 43 |
| 31 | 16 22 | 4 59 | 16 50 | 5 51 |

## PHASES OF THE MOON

| | | |
|---|---|---|
| Full Moon | May 3 | 14h 23m |
| Last Quarter | 10 | 16 37 |
| New Moon | 18 | 21 00 |
| First Quarter | 26 | 6 38 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| June 1 | 17h 17m | 6h 03m | 17h 42m | 6h 58m |
| 2 | 18 14 | 7 05 | 18 38 | 8 00 |
| 3 | 19 13 | 8 03 | 19 38 | 8 58 |
| 4 | 20 11 | 8 56 | 20 38 | 9 49 |
| 5 | 21 08 | 9 42 | 21 37 | 10 35 |
| 6 | 22 03 | 10 26 | 22 34 | 11 15 |
| 7 | 22 56 | 11 06 | 23 31 | 11 51 |
| 8 | 23 48 | 11 42 | ..... | 12 25 |
| 9 | ..... | 12 17 | 0 26 | 12 56 |
| 10 | 0 38 | 12 51 | 1 19 | 13 28 |
| 11 | 1 29 | 13 25 | 2 13 | 13 59 |
| 12 | 2 20 | 14 01 | 3 06 | 14 32 |
| 13 | 3 11 | 14 39 | 4 00 | 15 08 |
| 14 | 4 03 | 15 20 | 4 55 | 15 47 |
| 15 | 4 57 | 16 05 | 5 49 | 16 30 |
| 16 | 5 50 | 16 53 | 6 44 | 17 18 |
| 17 | 6 43 | 17 46 | 7 37 | 18 10 |
| 18 | 7 34 | 18 42 | 8 28 | 19 07 |
| 19 | 8 23 | 19 40 | 9 16 | 20 08 |
| 20 | 9 10 | 20 39 | 10 00 | 21 09 |
| 21 | 9 55 | 21 39 | 10 42 | 22 13 |
| 22 | 10 36 | 22 40 | 11 20 | 23 16 |
| 23 | 11 18 | 23 41 | 11 59 | ..... |
| 24 | 12 00 | ..... | 12 37 | 0 21 |
| 25 | 12 42 | 0 42 | 13 16 | 1 26 |
| 26 | 13 27 | 1 44 | 13 58 | 2 32 |
| 27 | 14 14 | 2 47 | 14 42 | 3 37 |
| 28 | 15 06 | 3 50 | 15 32 | 4 43 |
| 29 | 16 00 | 4 51 | 16 25 | 5 46 |
| 30 | 16 58 | 5 50 | 17 22 | 6 45 |

## PHASES OF THE MOON

| | | |
|---|---|---|
| Full Moon | June 1 | 22h 55m |
| Last Quarter | 9 | 3 59 |
| New Moon | 17 | 9 59 |
| First Quarter | 24 | 11 44 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| July 1 | 17h 56m | 6h 44m | 18h 22m | 7h 38m |
| 2 | 18 54 | 7 34 | 19 22 | 8 27 |
| 3 | 19 51 | 8 20 | 20 21 | 9 10 |
| 4 | 20 45 | 9 01 | 21 18 | 9 49 |
| 5 | 21 38 | 9 39 | 22 15 | 10 24 |
| 6 | 22 30 | 10 15 | 23 09 | 10 56 |
| 7 | 23 21 | 10 50 | ..... | 11 28 |
| 8 | ..... | 11 24 | 0 03 | 12 00 |
| 9 | 0 11 | 11 59 | 0 56 | 12 32 |
| 10 | 1 02 | 12 36 | 1 50 | 13 07 |
| 11 | 1 54 | 13 15 | 2 44 | 13 43 |
| 12 | 2 46 | 13 58 | 3 38 | 14 24 |
| 13 | 3 39 | 14 45 | 4 33 | 15 10 |
| 14 | 4 32 | 15 36 | 5 27 | 16 01 |
| 15 | 5 25 | 16 30 | 6 19 | 16 55 |
| 16 | 6 16 | 17 28 | 7 09 | 17 56 |
| 17 | 7 04 | 18 29 | 7 56 | 18 58 |
| 18 | 7 51 | 19 30 | 8 40 | 20 03 |
| 19 | 8 36 | 20 32 | 9 21 | 21 08 |
| 20 | 9 18 | 21 34 | 10 01 | 22 14 |
| 21 | 10 00 | 22 36 | 10 39 | 23 19 |
| 22 | 10 43 | 23 38 | 11 18 | ..... |
| 23 | 11 27 | ..... | 11 58 | 0 25 |
| 24 | 12 13 | 0 40 | 12 42 | 1 30 |
| 25 | 13 02 | 1 42 | 13 29 | 2 34 |
| 26 | 13 54 | 2 43 | 14 19 | 3 37 |
| 27 | 14 48 | 3 41 | 15 13 | 4 36 |
| 28 | 15 45 | 4 36 | 16 10 | 5 30 |
| 29 | 16 42 | 5 27 | 17 10 | 6 20 |
| 30 | 17 39 | 6 14 | 18 09 | 7 05 |
| 31 | 18 35 | 6 57 | 19 06 | 7 46 |

## PHASES OF THE MOON

| | | |
|---|---|---|
| Full Moon | July 1 | 8h 04m |
| Last Quarter | 9 | 2 21 |
| New Moon | 16 | 20 33 |
| First Quarter | 23 | 16 19 |
| Full Moon | 30 | 18 47 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| Aug 1 | $19^h\ 28^m$ | $7^h\ 36^m$ | $20^h\ 03^m$ | $8^h\ 22^m$ |
| 2 | 20 21 | 8 13 | 20 58 | 8 56 |
| 3 | 21 12 | 8 49 | 21 53 | 9 28 |
| 4 | 22 03 | 9 23 | 22 47 | 10 00 |
| 5 | 22 54 | 9 58 | 23 40 | 10 32 |
| 6 | 23 45 | 10 34 | ..... | 10 06 |
| 7 | ..... | 11 12 | 0 34 | 11 41 |
| 8 | 0 36 | 11 52 | 1 28 | 12 20 |
| 9 | 1 29 | 12 37 | 2 22 | 13 02 |
| 10 | 2 20 | 13 25 | 3 15 | 13 50 |
| 11 | 3 13 | 14 17 | 4 07 | 14 42 |
| 12 | 4 04 | 15 13 | 4 58 | 15 40 |
| 13 | 4 54 | 16 13 | 5 47 | 16 42 |
| 14 | 5 42 | 17 15 | 6 32 | 17 46 |
| 15 | 6 29 | 18 18 | 7 16 | 18 53 |
| 16 | 7 13 | 19 22 | 7 57 | 19 59 |
| 17 | 7 57 | 20 25 | 8 37 | 21 07 |
| 18 | 8 41 | 21 29 | 9 17 | 22 14 |
| 19 | 9 25 | 22 33 | 9 58 | 23 21 |
| 20 | 10 12 | 23 36 | 10 41 | ..... |
| 21 | 11 00 | ..... | 11 28 | 0 27 |
| 22 | 11 51 | 0 37 | 12 17 | 1 30 |
| 23 | 12 44 | 1 36 | 13 10 | 2 30 |
| 24 | 13 40 | 2 32 | 14 05 | 3 26 |
| 25 | 14 36 | 3 23 | 15 02 | 4 17 |
| 26 | 15 32 | 4 11 | 16 01 | 5 02 |
| 27 | 16 27 | 4 54 | 16 58 | 5 44 |
| 28 | 17 21 | 5 35 | 17 55 | 6 21 |
| 29 | 18 14 | 6 12 | 18 50 | 6 56 |
| 30 | 19 05 | 6 48 | 19 44 | 7 29 |
| 31 | 19 56 | 7 23 | 20 39 | 8 01 |

## PHASES OF THE MOON

| | | |
|---|---|---|
| Last Quarter | Aug 7 | $19^h\ 49^m$ |
| New Moon | 15 | 5 33 |
| First Quarter | 21 | 21 45 |
| Full Moon | 29 | 7 53 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| Sept 1 | $20^h\ 47^m$ | $7^h\ 58^m$ | $21^h\ 32^m$ | $8^h\ 33^m$ |
| 2 | 21 37 | 8 33 | 22 25 | 9 06 |
| 3 | 22 28 | 9 10 | 23 19 | 9 41 |
| 4 | 23 19 | 9 49 | ..... | 10 17 |
| 5 | ..... | 10 32 | 0 12 | 10 58 |
| 6 | 0 11 | 11 17 | 1 04 | 11 42 |
| 7 | 1 02 | 12 06 | 1 56 | 12 32 |
| 8 | 1 53 | 12 59 | 2 47 | 13 25 |
| 9 | 2 43 | 13 56 | 3 36 | 14 23 |
| 10 | 3 31 | 14 56 | 4 22 | 15 25 |
| 11 | 4 17 | 15 58 | 5 06 | 16 31 |
| 12 | 5 03 | 17 02 | 5 48 | 17 38 |
| 13 | 5 48 | 18 07 | 6 30 | 18 46 |
| 14 | 6 33 | 19 12 | 7 11 | 19 56 |
| 15 | 7 18 | 20 18 | 7 53 | 21 06 |
| 16 | 8 06 | 21 24 | 8 37 | 22 14 |
| 17 | 8 55 | 22 28 | 9 23 | 23 20 |
| 18 | 9 47 | 23 29 | 10 13 | ..... |
| 19 | 10 40 | ..... | 11 06 | 0 23 |
| 20 | 11 36 | 0 26 | 12 01 | 1 21 |
| 21 | 12 32 | 1 21 | 12 58 | 2 14 |
| 22 | 13 28 | 2 09 | 13 56 | 3 01 |
| 23 | 14 23 | 2 53 | 14 53 | 3 43 |
| 24 | 15 16 | 3 34 | 15 49 | 4 22 |
| 25 | 16 08 | 4 12 | 16 44 | 4 57 |
| 26 | 17 00 | 4 49 | 17 38 | 5 30 |
| 27 | 17 51 | 5 23 | 18 32 | 6 02 |
| 28 | 18 42 | 5 58 | 19 26 | 6 34 |
| 29 | 19 32 | 6 35 | 20 19 | 7 07 |
| 30 | 20 23 | 7 10 | 21 12 | 7 41 |

## PHASES OF THE MOON

| | | |
|---|---|---|
| Last Quarter | Sept 6 | $12^h\ 24^m$ |
| New Moon | 13 | 14 02 |
| First Quarter | 20 | 5 17 |
| Full Moon | 27 | 23 43 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| Oct 1 | 21h 14m | 7h 48m | 22h 06m | 8h 17m |
| 2 | 22 05 | 8 29 | 22 58 | 8 56 |
| 3 | 22 55 | 9 13 | 23 49 | 9 39 |
| 4 | 23 45 | 10 00 | ..... | 10 25 |
| 5 | ..... | 10 50 | 0 39 | 11 16 |
| 6 | 0 34 | 11 44 | 1 28 | 12 10 |
| 7 | 1 21 | 12 40 | 2 13 | 13 09 |
| 8 | 2 08 | 13 40 | 2 57 | 14 11 |
| 9 | 2 52 | 14 41 | 3 39 | 15 15 |
| 10 | 3 36 | 15 44 | 4 20 | 16 22 |
| 11 | 4 20 | 16 49 | 5 00 | 17 30 |
| 12 | 5 06 | 17 55 | 5 42 | 18 41 |
| 13 | 5 53 | 19 02 | 6 26 | 19 51 |
| 14 | 6 42 | 20 09 | 7 12 | 21 01 |
| 15 | 7 35 | 21 14 | 8 02 | 22 08 |
| 16 | 8 30 | 22 16 | 8 56 | 23 11 |
| 17 | 9 27 | 23 13 | 9 52 | ..... |
| 18 | 10 24 | ..... | 10 50 | 0 07 |
| 19 | 11 22 | 0 05 | 11 49 | 0 58 |
| 20 | 12 18 | 0 52 | 12 47 | 1 42 |
| 21 | 13 12 | 1 34 | 13 44 | 2 23 |
| 22 | 14 05 | 2 13 | 14 39 | 2 58 |
| 23 | 14 56 | 2 49 | 15 34 | 3 33 |
| 24 | 15 47 | 3 25 | 16 27 | 4 04 |
| 25 | 16 37 | 3 59 | 17 21 | 4 37 |
| 26 | 17 28 | 4 34 | 18 14 | 5 08 |
| 27 | 18 18 | 5 10 | 19 07 | 5 42 |
| 28 | 19 10 | 5 48 | 20 01 | 6 17 |
| 29 | 20 01 | 6 28 | 20 54 | 6 55 |
| 30 | 20 51 | 7 10 | 21 45 | 7 37 |
| 31 | 21 41 | 7 57 | 22 35 | 8 22 |

## PHASES OF THE MOON

| | | | |
|---|---|---|---|
| Last Quarter | Oct 6 | 3h | 20m |
| New Moon | 12 | 22 | 52 |
| First Quarter | 19 | 16 | 07 |
| Full Moon | 27 | 17 | 41 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| Nov 1 | $22^h\ 30^m$ | $8^h\ 45^m$ | $23^h\ 24^m$ | $9^h\ 11^m$ |
| 2 | 23 17 | 9 38 | ..... | 10 04 |
| 3 | ..... | 10 32 | 0 10 | 10 59 |
| 4 | 0 02 | 11 29 | 0 53 | 11 59 |
| 5 | 0 46 | 12 27 | 1 34 | 12 59 |
| 6 | 1 29 | 13 26 | 2 14 | 14 02 |
| 7 | 2 11 | 14 28 | 2 53 | 15 08 |
| 8 | 2 54 | 15 32 | 3 32 | 16 15 |
| 9 | 3 40 | 16 38 | 4 14 | 17 24 |
| 10 | 4 27 | 17 45 | 4 58 | 18 35 |
| 11 | 5 18 | 18 52 | 5 46 | 19 45 |
| 12 | 6 12 | 19 57 | 6 38 | 20 52 |
| 13 | 7 10 | 20 58 | 7 35 | 21 53 |
| 14 | 8 10 | 21 55 | 8 35 | 22 48 |
| 15 | 9 09 | 22 46 | 9 36 | 23 37 |
| 16 | 10 08 | 23 31 | 10 37 | ..... |
| 17 | 11 04 | ..... | 11 35 | 0 20 |
| 18 | 11 58 | 0 12 | 12 32 | 0 59 |
| 19 | 12 51 | 0 50 | 13 28 | 1 34 |
| 20 | 13 43 | 1 26 | 14 22 | 2 06 |
| 21 | 14 33 | 2 00 | 15 15 | 2 39 |
| 22 | 15 23 | 2 35 | 16 08 | 3 10 |
| 23 | 16 14 | 3 10 | 17 02 | 3 42 |
| 24 | 17 05 | 3 47 | 17 55 | 4 18 |
| 25 | 17 56 | 4 27 | 18 48 | 4 55 |
| 26 | 18 48 | 5 08 | 19 41 | 5 35 |
| 27 | 19 38 | 5 54 | 20 32 | 6 19 |
| 28 | 20 28 | 6 42 | 21 22 | 7 08 |
| 29 | 21 16 | 7 34 | 22 09 | 7 59 |
| 30 | 22 02 | 8 27 | 22 53 | 8 54 |

## PHASES OF THE MOON

| | | |
|---|---|---|
| Last Quarter | Nov 4 | $16^h\ 19^m$ |
| New Moon | 11 | 8 34 |
| First Quarter | 18 | 6 59 |
| Full Moon | 26 | 12 16 |

## MOONRISE AND MOONSET

| DATE 1958 | JOHANNESBURG MOONRISE S.A.S.T. | JOHANNESBURG MOONSET S.A.S.T. | CAPE TOWN MOONRISE S.A.S.T. | CAPE TOWN MOONSET S.A.S.T. |
|---|---|---|---|---|
| Dec 1 | $22^h\ 45^m$ | $9^h\ 23^m$ | $23^h\ 34^m$ | $9^h\ 52^m$ |
| 2 | 23 27 | 10 20 | ..... | 10 51 |
| 3 | ..... | 11 18 | 0 13 | 11 53 |
| 4 | 0 08 | 12 17 | 0 52 | 12 55 |
| 5 | 0 50 | 13 17 | 1 29 | 13 59 |
| 6 | 1 32 | 14 20 | 2 08 | 15 05 |
| 7 | 2 16 | 15 24 | 2 49 | 16 12 |
| 8 | 3 04 | 16 29 | 3 33 | 17 20 |
| 9 | 3 55 | 17 34 | 4 22 | 18 28 |
| 10 | 4 51 | 18 38 | 5 16 | 19 33 |
| 11 | 5 50 | 19 38 | 6 15 | 20 32 |
| 12 | 6 50 | 20 33 | 7 16 | 21 26 |
| 13 | 7 51 | 21 22 | 8 19 | 22 13 |
| 14 | 8 51 | 22 06 | 9 20 | 22 55 |
| 15 | 9 47 | 22 47 | 10 20 | 23 32 |
| 16 | 10 42 | 23 25 | 11 18 | ..... |
| 17 | 11 35 | ..... | 12 14 | 0 07 |
| 18 | 12 26 | 0 00 | 13 07 | 0 39 |
| 19 | 13 17 | 0 35 | 14 01 | 1 12 |
| 20 | 14 07 | 1 10 | 14 54 | 1 44 |
| 21 | 14 58 | 1 47 | 15 47 | 2 18 |
| 22 | 15 49 | 2 25 | 16 41 | 2 53 |
| 23 | 16 40 | 3 05 | 17 34 | 3 32 |
| 24 | 17 32 | 3 49 | 18 26 | 4 15 |
| 25 | 18 23 | 4 37 | 19 17 | 5 02 |
| 26 | 19 12 | 5 28 | 20 06 | 5 53 |
| 27 | 20 00 | 6 22 | 20 52 | 6 48 |
| 28 | 20 45 | 7 18 | 21 35 | 7 46 |
| 29 | 21 28 | 8 14 | 22 15 | 8 45 |
| 30 | 22 10 | 9 13 | 22 54 | 9 46 |
| 31 | 22 50 | 10 11 | 23 31 | 10 48 |

## PHASES OF THE MOON

| | | |
|---|---|---|
| Last Quarter | Dec 4 | $3^h\ 24^m$ |
| New Moon | 10 | 19 23 |
| First Quarter | 18 | 1 52 |
| Full Moon | 26 | 5 54 |

# METEOR CALENDAR 1958

| Date | Shower | Radiant | Maximum | | |
|---|---|---|---|---|---|
| | | | Date | Hourly Rate | Transit of Radiant |
| Jan 3 | Quadrantids | 227° + 46° | Jan 3 | 40 | $08^h\ 30^m$ |
| 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 1958

| Recommended SAST of watch | Conditions at Maximum | Nature of current | Appearance |
|---|---|---|---|
| Difficult in SA. | - | Unknown | |
| 22h - 24h | - | Unknown | |
| 22h - 24h | Unfavourable, Full moon | Ecliptical | |
| 02h - 04h | Favourable | Cometary: Comet 1861 I | Swift, with streaks. |
| 03h - dawn | Unfavourable, Moon | Cometary: Halley | Very swift, long paths. |
| 20h - 24h | Favourable | Ecliptical | |
| 23h - 02h | Unfavourable, Moon | Ecliptical | Slow, long paths. |
| 22h - 02h | - | Cometary: Comet 1881 IV | Very slow, bright. |
| 03h - dawn | - | 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, Moon . | Unknown | |

# ASTRONOMICAL DIARY

## JANUARY 1958

Mercury is visible in the morning twilight. Venus sets in the evening twilight. Mars rises two hours after midnight. Jupiter rises about midnight. Saturn rises about two hours before dawn.

| | d. | h. | |
|---|---|---|---|
| Jan | 3 | 16 | Earth in Perihelion, distance 0.983 astronomical units. |
| | 4 | 07 | Mars in Conjunction with Antares, Mars 5° N. |
| | 5 | 11 | Mercury at a Stationary Point. |
| | 6 | 10 | Venus at a Stationary Point. |
| | 13 | 07 | Jupiter in Conjunction with the Moon, Jupiter 2° N. |
| | 16 | 06 | Mercury at Greatest Elongation, 24° W. |
| | 16 | 17 | Mars in Conjunction with the Moon, Mars 3° S. |
| | 17 | 01 | Saturn in Conjunction with the Moon, Saturn 2° S. |
| | 18 | 00 | Mercury in Conjunction with the Moon, Mercury 3° S. |
| | 21 | 02 | Venus in Conjunction with the Moon, Venus 0° .7 N. |
| | 23 | 12 | Mars in Conjunction with Saturn, Mars 2° S. |
| | 28 | 22 | Venus in Inferior Conjunction with the Sun. |
| | 30 | 02 | Uranus in Opposition with the Sun. |

## FEBRUARY 1958

Mercury rises in the morning twilight as also does Venus. Mars rises about two hours after and Jupiter about two hours before midnight. Saturn rises about an hour after midnight.

| | d. | h. | |
|---|---|---|---|
| Feb | 5 | 23 | Neptune at a Stationary Point. |
| | 7 | 09 | Mercury in Conjunction with Venus, Mercury 10° S. |
| | 9 | 16 | Jupiter in Conjunction with the Moon, Jupiter 2° N. |
| | 13 | 11 | Saturn in Conjunction with the Moon, Saturn 2° S. |
| | 14 | 14 | Mars in Conjunction with the Moon, Mars 5° S. |
| | 16 | 03 | Jupiter at a Stationary Point. |
| | 16 | 08 | Venus in Conjunction with the Moon, Venus 3° N. |
| | 17 | 20 | Venus at a Stationary Point. |
| | 20 | 07 | Pluto in Opposition with the Sun. |

## MARCH 1958

Mercury sets soon after the Sun. Venus is a morning star and is conspicuous in the Eastern sky reaching greatest brilliancy on the 4th. Mars rises about two hours after midnight. Jupiter rises about two hours after sunset. Saturn rises just before midnight.

| | d. | h. | |
|---|---|---|---|
| Mar | 3 | 22 | Mercury in Superior Conjunction with the Sun. |
| | 4 | 12 | Venus at greatest brilliancy. |
| | 8 | 23 | Jupiter in Conjunction with the Moon, Jupiter 2° N. |
| | 12 | 20 | Saturn in Conjunction with the Moon, Saturn 3° S. |
| | 15 | 13 | Mars in Conjunction with the Moon, Mars 6° S. |
| | 16 | 13 | Venus in Conjunction with the Moon, Venus 1° S. |
| | 21 | 05 | Equinox. |
| | 22 | 00 | Mercury in Conjunction with the Moon, Mercury 0° 2 S. |
| | 29 | 09 | Mercury at Greatest Elongation, 19° E. |

## APRIL 1958

Mercury towards the end of the month rises in the morning twilight. Venus is still brilliant in the morning sky. Mars rises about an hour after midnight. Jupiter rises at sunset and is visible throughout the night. Saturn rises about three hours after sunset.

| | d. | h. | |
|---|---|---|---|
| Apr | 4 | 23 | Saturn at a Stationary Point. |
| | 5 | 06 | Jupiter in Conjunction with the Moon, Jupiter 2° N. |
| | 6 | 17 | Mercury at a Stationary Point. |
| | 9 | 01 | Venus at Greatest Elongation, 46° W. |
| | 9 | 04 | Saturn in Conjunction with the Moon, Saturn 3° S. |
| | 13 | 15 | Mars in Conjunction with the Moon, Mars 7° S. |
| | 15 | 02 | Venus in Conjunction with the Moon, Venus 4° S. |
| | 15 | 14 | Uranus at a Stationary Point. |
| | 16 | 21 | Mercury in Inferior Conjunction with the Sun. |
| | 17 | 09 | Jupiter in Opposition with the Sun. |
| | 19 | | Annular Eclipse of the Sun, not visible in South Africa. |
| | 24 | 04 | Neptune in Opposition with the Sun. |
| | 29 | 05 | Mercury at a Stationary Point. |

## MAY 1958

Mercury and Venus are visible in the morning sky. Mars rises about an hour after midnight. Jupiter sets about two hours before dawn. Saturn rises about two hours after sunset.

| | d. | h. | |
|---|---|---|---|
| May | 2 | 11 | Jupiter in Conjunction with the Moon, Jupiter 2° N. |
| | 3 | | Partial eclipse of the Moon not visible in South Africa. |
| | 6 | 12 | Saturn in Conjunction with the Moon, Saturn 3° S. |
| | 12 | 17 | Mars in Conjunction with the Moon, Mars 6° S. |
| | 14 | 16 | Mercury at Greatest Elongation, 26° W. |
| | 15 | 02 | Venus in Conjunction with the Moon, Venus 4° S. |
| | 16 | 16 | Mercury in Conjunction with the Moon, Mercury 4° S. |
| | 29 | 16 | Jupiter in Conjunction with the Moon, Jupiter 2° N. |

## JUNE 1958

Mercury rises in the morning twilight at the beginning of the month. Venus is still a morning star. Mars rises about an hour after midnight. Jupiter sets about two hours after midnight. Saturn is in Opposition on the 14th and is visible throughout the night.

| | d. | h. | |
|---|---|---|---|
| June | 2 | 20 | Saturn in Conjunction with the Moon, Saturn 3° S. |
| | 9 | 17 | Jupiter in Conjunction with Spica, Jupiter 4° N. |
| | 10 | 18 | Mars in Conjunction with the Moon, Mars 5° S. |
| | 10 | 22 | Mercury in Conjunction with Aldebaran, Mercury 5° N. |
| | 14 | 01 | Saturn in Oposition with the Sun. |
| | 14 | 05 | Venus in Conjunction with the Moon, Venus 0° .8 S. |
| | 18 | 19 | Mercury in Superior Conjunction with the Sun. |
| | 19 | 18 | Jupiter at a Stationary Point. |
| | 22 | 00 | Solstice. |
| | 25 | 22 | Jupiter in Conjunction with the Moon, Jupiter 2° N. |
| | 29 | 20 | Jupiter in Conjunction with Spica, Jupiter 4° N. |
| | 30 | 01 | Saturn in Conjunction with the Moon, Saturn 3° S. |

## JULY 1958

Mercury is visible in the evening sky towards the end of the month. Venus in the morning sky rises about two hours before the Sun. Mars rises and Jupiter sets just after midnight. Saturn sets about two hours before sunrise.

| | d. | h. | |
|---|---|---|---|
| July | 1 | 13 | Mercury in Conjunction with Pollux, Mercury 5° S. |
| | 5 | 08 | Venus in Conjunction with Aldebaran, Venus 4° N. |
| | 5 | 22 | Earth in Aphelion, distance 1.017 astronomical units. |
| | 9 | 17 | Mars in Conjunction with the Moon, Mars 3° S. |
| | 11 | 05 | Mercury in Conjunction with Uranus, Mercury 0° .7 N. |
| | 14 | 08 | Venus in Conjunction with the Moon, Venus 3° N. |
| | 15 | 01 | Neptune at a Stationary Point. |
| | 18 | 23 | Mercury in Conjunction with the Moon, Mercury 5° N. |
| | 23 | 06 | Jupiter in Conjunction with the Moon, Jupiter 2° N. |
| | 26 | 07 | Mercury in Conjunction with Regulus, Mercury 2° S. |
| | 26 | 23 | Mercury at Greatest Elongation, 27 E. |
| | 27 | 05 | Saturn in Conjunction with the Moon, Saturn 3° S. |

## AUGUST 1958

Mercury is visible in the evening sky at the beginning of the month. Venus rises just before morning twilight. Mars rises about midnight. Jupiter sets about one hour before midnight. Saturn sets about 3 hours after midnight.

| | d. | h. | |
|---|---|---|---|
| Aug | 5 | 00 | Uranus in Conjunction with the Sun. |
| | 7 | 12 | Mars in Conjunction with the Moon, Mars 1° S. |
| | 9 | 01 | Mercury at a Stationary Point. |
| | 11 | 01 | Venus in Conjunction with Pollux, Venus 7° S. |
| | 13 | 13 | Venus in Conjunction with the Moon, Venus 5° N. |
| | 19 | 17 | Jupiter in Conjunction with the Moon, Jupiter 0° .9 N. |
| | 23 | 10 | Saturn in Conjunction with the Moon, Saturn 3° S. |
| | 23 | 17 | Mercury in Inferior Conjunction with the Sun. |
| | 24 | 07 | Saturn at a Stationary Point. |
| | 25 | 20 | Pluto in Conjunction with the Sun. |
| | 27 | 01 | Venus in Conjunction with Uranus, Venus 0° .1 N. |

## SEPTEMBER 1958

Mercury and Venus rise in the morning twilight. Mars rises about an hour before midnight. Jupiter sets about two hours after sunset. Saturn sets just after midnight.

| | d. | h. | |
|---|---|---|---|
| Sept | 1 | 15 | Mercury at a Stationary Point. |
| | 4 | 23 | Mars in Conjunction with the Moon, Mars 0° .5 N. |
| | 5 | 04 | Mercury in Conjunction with Venus, Mercury 2° S. |
| | 8 | 19 | Venus in Conjunction with Regulus, Venus 0° .7 N. |
| | 9 | 11 | Mercury at Greatest Elongation, 18° W. |
| | 10 | 11 | Mercury in Conjunction with Regulus, Mercury 0° .0 N. |
| | 12 | 11 | Mercury in Conjunction with the Moon, Mercury 5° N. |
| | 12 | 15 | Venus in Conjunction with the Moon, Venus 5° N. |
| | 16 | 09 | Jupiter in Conjunction with the Moon, Jupiter 0° .2 N. |
| | 18 | 08 | Mercury in Conjunction with Venus, Mercury 0° .3 N. |
| | 19 | 17 | Saturn in Conjunction with the Moon, Saturn 3° S. |
| | 23 | 15 | Equinox. |
| | 26 | 08 | Jupiter in Conjunction with Neptune, Jupiter 0° .8 S. |

## OCTOBER 1958

Mercury becomes visible in the evening sky towards the end of the month. Venus rises just before the Sun. Mars rises about three hours after sunset. Jupiter sets in the evening twilight. Saturn sets about an hour before midnight.

| | d. | h. | |
|---|---|---|---|
| Oct | 2 | 20 | Mars in Conjunction with the Moon, Mars 2° N. |
| | 5 | 14 | Mercury in Superior Conjunction with the Sun. |
| | 10 | 00 | Mars at a Stationary Point. |
| | 12 | | Total Eclipse of the Sun, not visible from South Africa. |
| | 14 | 04 | Jupiter in Conjunction with the Moon, Jupiter 0° .4 S. |
| | 17 | 03 | Saturn in Conjunction with the Moon, Saturn 3° S. |
| | 22 | 14 | Mercury in Conjunction with Jupiter, Mercury 2° S. |
| | 28 | 13 | Neptune in Conjunction with the Sun. |
| | 29 | 21 | Mars in Conjunction with the Moon, Mars 3° N. |

## NOVEMBER 1958

Mercury is visible in the evening sky. Venus is too near the Sun to be visible. Mars is in Opposition on the 16th and is visible as a brilliant object throughout the night. Jupiter rises out of the morning twilight towards the end of the month. Saturn sets about two hours after sunset.

| | d. | h. | |
|---|---|---|---|
| Nov | 5 | 03 | Jupiter in Conjunction with the Sun. |
| | 8 | 15 | Mars nearest the Earth. |
| | 11 | 14 | Venus in Superior Conjunction with the Sun. |
| | 11 | 14 | Mercury in Conjunction with Antares, Mercury 2° N. |
| | 12 | 18 | Mercury in Conjunction with the Moon, Mercury 6° S. |
| | 13 | 18 | Saturn in Conjunction with the Moon, Saturn 4° S. |
| | 16 | 16 | Mars in Opposition with the Sun. |
| | 20 | 21 | Mercury at Greatest Elongation, 22° E. |
| | 22 | 14 | Uranus at a Stationary Point. |
| | 25 | 09 | Mars in Conjunction with the Moon, Mars 3° N. |
| | 30 | 10 | Mercury at a Stationary Point. |

## DECEMBER 1958

Mercury towards the end of the month rises just before the morning twilight. Venus sets just after the Sun. Mars sets about two hours before sunrise as Jupiter rises. Saturn sets with the Sun and is not visible.

| | d. | h. | |
|---|---|---|---|
| Dec | 8 | 20 | Jupiter in Conjunction with the Moon, Jupiter 2° S. |
| | 10 | 05 | Mercury in Inferior Conjunction with the Sun. |
| | 12 | 07 | Venus in Conjunction with Saturn, Venus 2° S. |
| | 20 | 04 | Mercury at a Stationary Point. |
| | 20 | 14 | Saturn in Conjunction with the Sun. |
| | 20 | 20 | Mars at a Stationary Point. |
| | 22 | 07 | Mars in Conjunction with the Moon, Mars 4° N. |
| | 22 | 11 | Solstice. |
| | 29 | 16 | Mercury at Greatest Elongation, 22° W. |

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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:—

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

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

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