the findings of Moore and Nicolson (J.B.A.A. Vol. 74 page 271) to the effect that, for Eastern elongations, before dichotomy visual phase lies below theoretical with a junction at about 30 per cent, while for Western elongations no clear pattern emerges. However, this 1964 series underlines yet again the point noted by Hedley Robinson previously (Report to Venus Section not published) that blue light phase lies below the red in both cases.

This would agree with the general rule that normal white light dichotomy is early at evening and late at morning elongations; but results in the blue dichotomy date being earlier still at evening elongations, while during morning elongations it is later than either white or red suggests. Thus the pattern discrepancy noted by Moore and Nicolson is enhanced in blue light.

It is again made abundantly clear that in considering the phase anomaly not only must the wavelength of the light be taken into consideration, but in visual observation the colour sensitivity of the observers must be taken into account if agreement is to be reached. The use of a standard near-monochromatic filter by all observers of a team, with its pass-band in perhaps the yellow region of the spectrum, might be of assistance.

MARS SECTION

E. H. COLLINSON, *Director*

MARS IN 1962–63

The apparition of 1962–63 was the second of the present series of aphelic and therefore unfavourable apparitions of the planet.

The northern hemisphere of Mars was turned towards the Earth, the tilt of the north pole being $+15°$, the season of this hemisphere being Spring. At opposition the apparent diameter of the planet was only 14″.0. of arc and in addition to the difficulty of observing the features of such a small disk the weather in England was generally unfavourable and intensely cold around opposition and not at all conducive to observing. Observations made by our members overseas were, therefore, particularly welcome. The names of those who contributed observations with particulars of their location and telescopes are as follows:

Observer	*Location*	*Instruments*
M. Atchison	London	6-inch and 8-inch O.G.
V. W. Attwool	Esher	11½-inch spec.
K. Bispham	Manchester	8-inch spec.
M. Blosfelds	Doncaster	8-inch spec.
J. H. Botham	Johannesburg	6-inch O.G.
I. R. H. Brickett	Johannesburg	6-inch O.G.
H. Brinton	Selsey	12-inch spec.
B. Burrell	Doncaster	10-inch spec.
W. B. Caunter	Billinghurst	6-inch O.G.

B. A. Carter and Birmingham Ast. Group	Birmingham	$8\frac{1}{2}$ and $12\frac{1}{2}$-inch spec.
E. H. Collinson	Ipswich	10-inch spec.
D. Copsey	E. Grinstead	$12\frac{1}{2}$-inch spec.
H. E. Dall	Luton	$15\frac{1}{2}$-inch spec.
J. Dragesco	Gabon, Africa	175-mm spec.
J. D. Ettenfield	Manchester	9-inch spec.
R. Gibbons	Chesterfield	18-inch spec.
A. W. Heath	Long Eaton	8-inch spec.
F. G. Howie	Dunfermline	$8\frac{1}{2}$-inch spec.
P. A. Moore	E. Grinstead	$12\frac{1}{2}$-inch spec.
K. J. H. Phillips	Ashford	$8\frac{1}{2}$-inch spec.
D. E. Purchase	Cambridge	8-inch O.G.
J. Rustige	Manchester	8-inch spec.
R. Sebbage	Maidstone	8-inch spec.
H. Sykes	Kuala Lumpur Malaya	12-inch spec.
A. W. Wake	Teignmouth	$3\frac{3}{4}$-inch O.G.

Observations were directed to detecting any changes in the shape and intensity of the principle features of the planet and to recording the visibility and intensity of the following minor features, namely, Oxia Palus, Phoenicis Lacus, Propontis, Cerberus, Moeris Lacus, Boreo-syrtis, Ismeniuns Lacus and Lunae Lacus. J. H. Botham again made a very comprehensive series of estimates of the intensities of many of the features and his results are given in Table I. Intensity estimates were also made by Dr J. Dragesco and his results are summarized in Table II. It will be seen that the changes recorded are very slight.

Some of the drawings made by members of the Section are reproduced in the plates accompanying this Report. They have been selected to illustrate the features described under the three regions of the planet.

Region I. ω 250°–10°

The northern half of Syrtis Major was darker than the southern half and was seen to be pointed to Atchison in December but rounded to him and Botham in January and February. The Thoth-Nepenthes curve was conspicuous. Moeris Lacus appeared dark to Brickett, Burrell, Caunter, Sykes and the Director in February. Thoth and Casius were superimposed on a broad dark shading, Casius being nearly as dark as the northern part of Syrtis Major. Isidis Regio and Neith Regio were often seen to be bright. A white cloud was observed over these regions by Atchison and Dragesco on January 13 and 16. The desert areas of Arabia and Moab, even in good seeing, were almost devoid of shadings. Ismenius Lacus was very faint or invisible. Protonilus was also very faint but Nilosyrtis was fairly conspicuous.

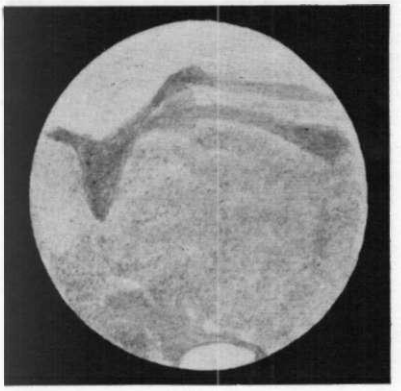

FIGURE 1. 1963 March 26. U.T. 21 hrs. 40 mins. $\omega = 334°$. $12\frac{1}{2}''$ Spec. P. Moore

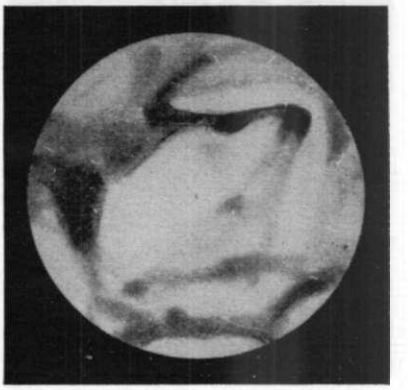

FIGURE 2. 1963 Feb. 16. U.T. 22 hrs.–22 hrs. 15 mins. $\omega = 325°$ 175 m.m. Spec. J. Dragesco

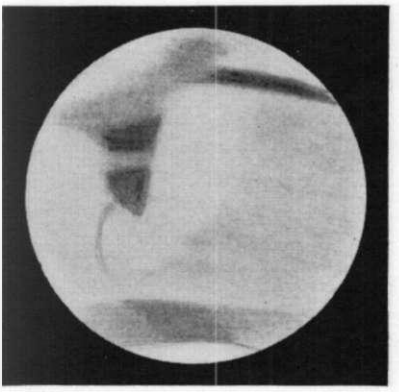

FIGURE 3. 1963 Feb. 13. U.T. 19 hrs. $\omega = 304°$. 8″ Spec. A. W. Heath

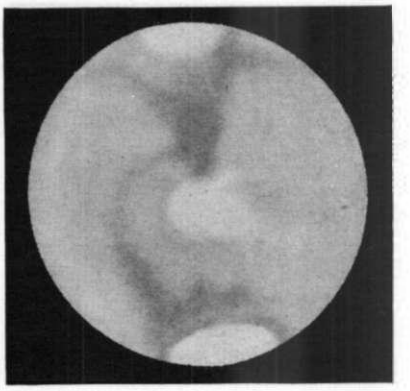

FIGURE 4. 1963 Jan. 13. U.T. 23 hrs. 40 mins. $\omega = 283°$. 8″ O.G. M. Atchison

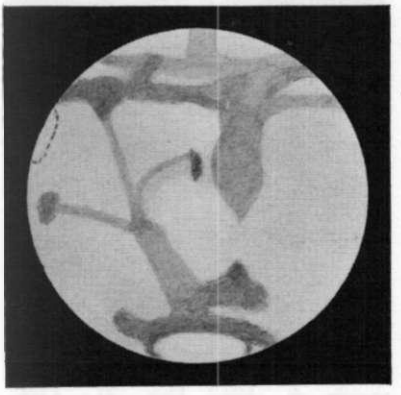

FIGURE 5. 1963 Feb. 19. U.T. 19 hrs. $\omega = 280°$. 10″ Spec. B. Burrell

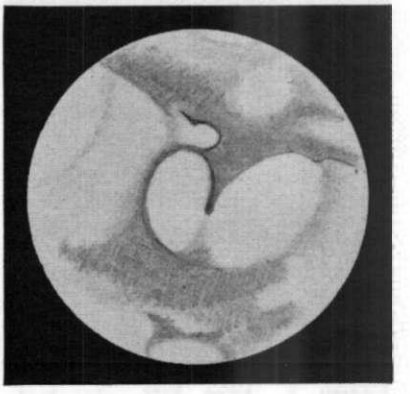

FIGURE 6. 1963 Feb. 24. U.T. 23 hrs. 10 mins. $\omega = 268°$. 8″ Spec. M. Blosfelds

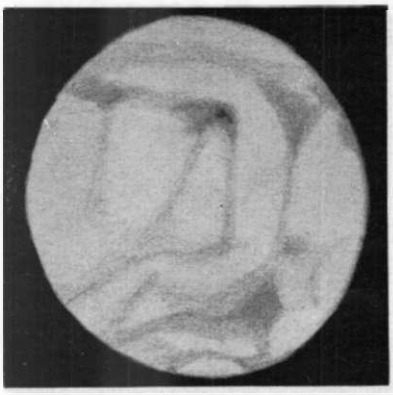

FIGURE 1. 1963 March 26 U.T. 23 hrs. 45 mins. $\omega = 5°$. $8\frac{1}{2}''$ Spec. B. A. Carter

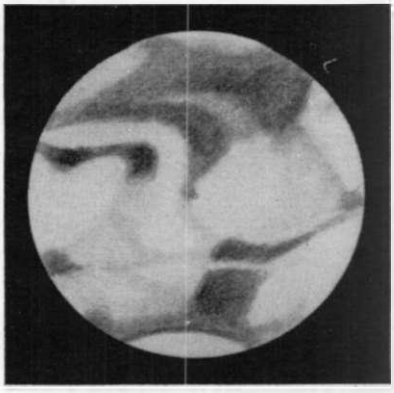

FIGURE 2. 1963 Feb. 9. U.T. 21 hrs. 30 mins.–21 hrs. 40 mins. $\omega = 25°$. 175 m.m. Spec. J. Dragesco

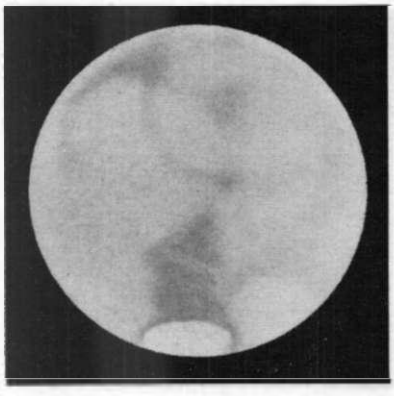

FIGURE 3. 1963 Feb. 5. U.T. 21 hrs. 31 mins. $\omega = 50°$. 8″ O.G. M. Atchison

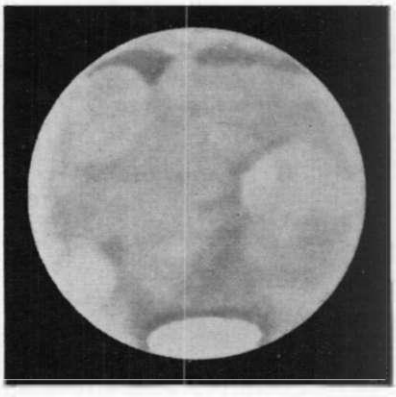

FIGURE 4. 1963 Jan. 22. U.T. 21 hrs. 52 mins. $\omega = 178°$. 6″ O.G. M. Atchison

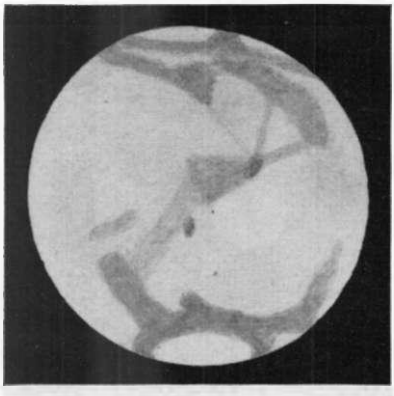

FIGURE 5. 1963 Feb. 27. U.T. 20 hrs. 45 mins. $\omega = 205°$. 10″ Spec. B. Burrell

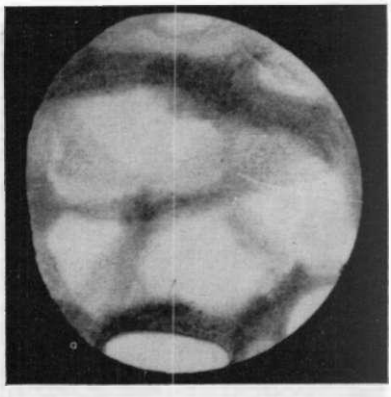

FIGURE 6. 1962 Dec. 21. U.T. 4 hrs. 05 mins–4 hrs. 20 mins. $\omega = 206°$. 175 m.m. Spec. J. Dragesco

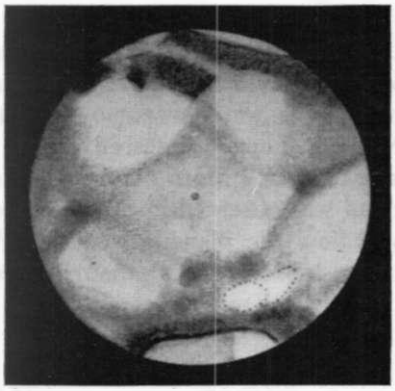

FIGURE 1. 1963 Jan. 22. U.T. 21 hrs. 15 mins.–21 hrs. 35 mins. $\omega = 171°$. 175 m.m. Spec.
J. Dragesco

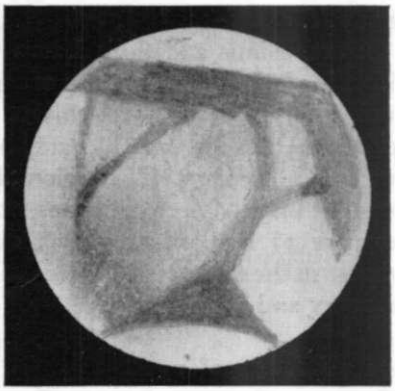

FIGURE 2. 1963 Feb. 21. U.T. 19 hrs. 15 mins. $\omega = 237°$. 9″ O.G.
I. R. H. Brickett

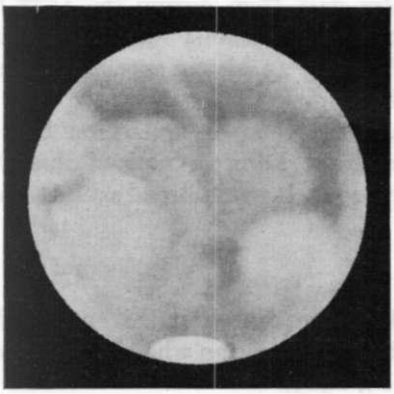

FIGURE 3. 1963 Feb. 26. U.T. 22 hrs. 55 mins. $\omega = 246°$. 9″ Spec.
M. Atchison

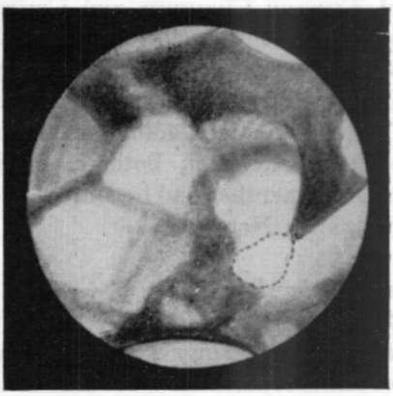

FIGURE 4. 1963 Jan. 16. U.T. 22 hrs. 40 mins.–23 hrs. $\omega = 248°$. 175 m.m. Spec.
J. Dragesco

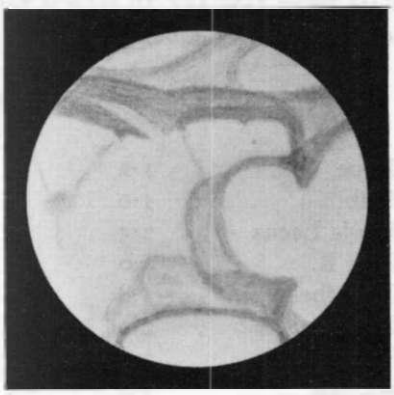

FIGURE 5. 1963 Feb. 11. U.T. 14 hrs. 10 mins. $\omega = 250°$. 12″ Spec.
H. Sykes

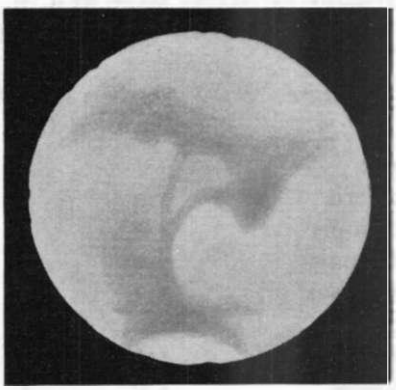

FIGURE 6. 1963 Feb. 16. U.T. 18 hrs. 30 mins. $\omega = 270°$. 6″ O.G.
J. H. Botham

Region II. ω 10°–130°

Aurorae Sinus and Solis Lacus were too far south to be well observed. Tithonius Lacus was seen as a conspicuous wedge-shaped shading disclosing much internal detail to Atchison. Lunae Lacus was conspicuous. Mare Acidalium was as usual, dark, but Niliacus Lacus appeared faint to Dragesco in January. The region of Tempe following Mare Acidalium often appeared bright. A conspicuous white cloud was observed in this region on February 11 by Botham which did not follow the planet's rotation. An increase in the darkness of Mare Acidalium was observed by Botham between February and mid March.

Region III. ω 130°–250°

In the southern hemisphere Electris, Ausonia and Eridania appeared white as though covered with cloud to Botham in January.

Atchison obtained some excellent observations of the Elysium region on January 22 in exceptionally good seeing. He found Elysium not so bright and Trivium Charontis and Cerberus less dark than during the 1958–60 apparition. The region between Elysium and Memnonia was full of faint shadings but these could not be seen on February 25, also in excellent seeing, although Trivium and Cerberus had darkened.

The Aethiopis shading had faded since the 1960–61 apparition but in February, Atchison, Botham, Brickett and the Director noticed that the "canal" Amenthes had become very conspicuous. It was as broad as and rather fainter than Nepenthes.

North Polar Regions

Some estimates of the latitude to which the cap extended and of the darkness of the fringe were made, particularly by Atchison who has published his results separately. (See J.B.A.A. 74, 25, 1963).

TABLE I

INTENSITY ESTIMATES MADE BY J. H. BOTHAM FROM JANUARY TO MARCH 1963

(north polar cap equals zero and the night sky equals 10)

Feature	*Intensity*	*No. of Obs.*	*Feature*	*Intensity*	*No. of Obs.*
Aeria	1·1	4	Meroe	1·2	2
Aetheria	1·0	1	Moab	1·0	2
Aethiopis	1·0	1	Moeris Lacus	2·5	2
Amazonis	1·0	7	Neith R.	1·0	2
Amenthes	1·2	2	Nepenthes	1·8	3
Arabia	1·0	3	Nilokeras	2·1	4
Ausonia	1·0	1	Nilosyrtis	2·7	2
Arcadia	1·0	3	Panchaia	3·6	3
Cecropia	3·0	3	Pandorae Fretum	2·0	1

Cerberus	2·6	3	Phlegra	1·8	3
Cimmerium M.	4·0	3	Propontis	2·2	3
Cydonia	1·3	2	Phaethontis	1·0	2
Chryse	1·1	2	Sabaeus Sinus	2·5	4
Deltoton	2·0	1	Serpentis M.	2·0	1
Deucalionis R.	2·0	1	Sirenum M.	3·0	2
Diacria	1·5	4	Stithonius Lacus	5·0	1
Electris	1·1	4	Solis Lacus	2·5	3
Edom	1·0	1	Tempe	1·2	2
Elysium	1·3	3	Thoth	2·2	2
Eridania	1·0	2	Thyamiamata	1·2	2
Gehon	1·4	2	Tithonius Lacus	2·5	2
Hellas	0·6	1	Trivium Charontis	2·6	3
Hiddekel	1·5	1			
Isidis R.	1·0	3	Tyrrhenum M.	2·7	2
Lybia	1·5	2	Umbra	3·0	1
Lunae Palus	2·2	3	Utopia	3·0	2
Meridianii S.	3·2	3	Xanthe	1·6	3

FEATURES NOTED TO HAVE CHANGED IN INTENSITY

Feature	*Dates of Observation and Intensity*
Acidalium	3 (3 Feb) 5 (9 Mar) 5–6 (13 Mar) 5 (15 Mar) 5·5 (17 Mar)
Aurorae S.	2·5 (3 Feb) 3·5 (9 Mar) 3 (13 Mar) 3 (15 Mar)
Boreum Mare	3·8 (28 Jan) 3·5 (2 Feb) 2·5 (5 Mar) 4 (9 Mar) 4 (15 Mar)
Boreosyrtis	3 (14 Feb) 3·5 (16 Feb) 4 (20 Feb) 4 (22 Feb)
Casius	1·3 (14 Feb) 2·5 (16 Feb) 2·5 (20 Feb)
Erythraeum M.	3 (22 Feb) 1 (17 Mar)
Iapigia	3 (14 Feb) 3·5 (16 Feb) 4 (20 Feb)
Margaritifer S.	2·5 (3 Feb) 2·5 (11 Feb) 2·5 (13 Mar) 3 (15 Mar) 4 (17 Mar)
Niliacus L.	3 (3 Feb) 4 (13 Mar) 3·5 (15 Mar)
Ortygia	3 (9 Feb) 1·5 (17 Mar)
Scandia	4 (19 Feb) 3·5 (1 Mar) 2·5 (5 Mar) 2·5 (17 Mar)
Syrtis Major	3·5 (14 Feb) 4·5 (16 Feb) 5 (20 Feb)

TABLE II

INTENSITY ESTIMATES MADE BY DR J. DRAGESCO

Feature	
M. Acidalium	8 (2 Feb) 8 (4 Jan) 7·5 (7 Jan) 6 (4 Feb) 7·5 (10 Feb)
M. Boreum	6·5 (27 Dec) 5·5 (9 Jan) 5 (4 Feb)
M. Erythraeum	5 (4 Jan) 5 (8 Jan) 4 (4 Feb) 6 (7 Feb)
Iapigia	7 (14 Jan)
Ismenius L.	4 (9 Jan) 4 (11 Feb) 4 (16 Feb)
Lunae L.	5 (29 Dec) 4 (30 Dec) 5·5 (2 Jan) 5 (3 Jan) 4·8 (4 Jan) 5 (7 Jan)
Margaritifer S.	5·5 (4 Feb) 7 (9 Feb) 6·5 (10 Feb)
Moeris L.	3·5 (14 Jan) 4 (15 Jan) 5 (18 Feb)
Niliacus L.	5 (4 Jan) 5 (7 Jan) 5·6 (4 Feb) 5 (7 Feb) 6 (10 Feb)
Phoenicis L.	4 (29 Dec)
S. Sabaeus	5·5 (7 Jan) 5 (9 Jan) 7 (10 Feb)
Syrtis Major	7 (9 Jan) 7 (16 Jan) 7·5 (11 Feb) 8 (15 Feb) 7·5 (17 Feb)
Thoth	6 (14 Jan) 6 (15 Jan) 4·5 (17 Feb)
Trivium	7 (22 Dec) 4·5 (17 Jan) 4·2 (22 Jan)

VARIABLE STAR SECTION

J. S. GLASBY, *Director*

TWO UG VARIABLES, 1946–1955

This report is in continuation of that for 1940–1945, which was published in J.B.A.A. 73 (3) 1963, and is a discussion of 5 255 observations by 19 members of the Variable Star Section during the decade 1946–1955. Only one observer followed both SS Aurigae and U Geminorum for the whole of that period—the late F. M. Holborn, whose 1 876 observations is well over one third of the total, and provides the link between the giants of the past and our present-day observers to whom we look to provide their successors. The Director is most grateful to Dr R. F. Churchhouse, who has checked the reduction of these observations to magnitudes, an onerous and monotonous task which has greatly expedited the appearance of this report.

Some of the data may seem insecure, some of the results sketchy; some maxima have undoubtedly been missed. For the difficulties confronting observers, reference should be made to J.B.A.A. 72 (3) pp. 130–133. Those who already observe these stars will understand only too well. Those who do not should accept the challenge!