

MARS SECTION

E. H. COLLINSON, *Director*

SECTION REPORT: MARS IN 1971

The apparition of 1971 was the second of the present series of perihelic apparitions of the planet in which it made the nearest approach to the Earth since 1924, its apparent diameter being 24".9.

Since presenting the preliminary report to the February meeting further observations have been received making a total of 51. The names of the members who have contributed observations, with particulars of their locations and telescopes used, are as follows:

<i>Observer</i>	<i>Location</i>	<i>Instruments</i>
D. Allen	Pasadena, U.S.A.	100 inch Cass.
W. Allen	Dundee	25 cm O.G.
J. Andrews	Worthing	15 cm and 12 cm Spec.
A. Appleyard	Sheffield	19.5 cm and 31.75 cm Spec.
K. N. L. Bailey	Wallingford	16 cm Spec.
K. Birch	Netford	29 cm Cass.
J. H. Botham	Kempton Park, S.A.	20 cm Spec.
S. F. Burch	Leeds	25 cm O.G.
B. Burrell	Doncaster	17 cm Spec.
C. F. Capen	Flagstaff, U.S.A.	60 cm and 30 cm O.G.
W. B. Caunter	Billinghurst	15 cm O.G.
J. Coates	Burnley	17.5 cm O.G.
L. Cockrane	Fleetwood	15 cm Spec.
J. A. Cooke	Wigan	16 cm O.G.
C. A. Cross	Northwich	20 cm Spec.
K. J. Delano	Taunton, U.S.A.	31 cm Cass.
P. B. Doherty	Doncaster	25 cm Spec.
J. Dragesco	Yaoundi, Cameroun	26 cm Spec.
E. L. Ellis	St Albans	9 cm O.G.
M. W. Findlay	Dundee	25 cm O.G.
R. Fletcher	Stockport	21 cm Spec.
W. G. T. Fletcher	Sunderland	10 cm Spec.
M. Foulks	Cleethorpes	22 cm Spec.
M. H. Gaiger	Ewell	6 cm O.G.
M. J. Gainsford	Nuneaton	21 cm Spec.
M. V. Gavin	Worcester Park	6 cm O.G.
A. W. Heath	Long Eaton	30 cm Spec.
E. Holliday	Goole	6 cm Spec.
A. R. Hutchings	Exeter	10 cm O.G.
A. C. Jones	Liverpool	15 cm Spec.
R. J. Livesey	Glasgow	21 cm Spec.
C. J. R. Lord	Fleetwood	16 cm O.G.
A. Mackay	Edinburgh	15 cm O.G.
R. A. MacKenzie	Dover	7.5 cm O.G.
S. W. Mathers	Tasmania	30 cm Spec.
J. P. Merrilees	Dawlish	10 cm Spec.

<i>Observer</i>	<i>Location</i>	<i>Instruments</i>
R. W. Middleton	Brightlingsea	12.5 cm O.G.
J. L. Mitchell	Oak Ridge, U.S.A.	15 cm Spec.
P. Moore	Selsey	31 cm Spec.
J. B. Murray	Pic du Midi	Various
J. C. McConnell	Manchester	15 cm Spec.
J. Hedley Robinson	Teignmouth	26 cm Spec.
J. H. Rogers	Cambridge	20 cm O.G.
R. H. Soper	Onchan, I.o.M.	30 cm Spec.
K. Sturdy	Helmsley	15 cm Spec.
N. Tavnik	Minos, Brazil	15 cm O.G.
D. B. Taylor	Dundee	25 cm O.G.
R. de Terwangne	Antwerp	20 cm Cass.
R. G. Veitch	Edinburgh	15 cm O.G.
A. W. Wake	Teignmouth	—
J. D. Whelan	Tikorangi, N.Z.	26 cm Spec.

Observations were also received from members of the Herschel Astronomical Society, Slough, the Newtonian Observatory Astronomical Society, Worthing, the Torbay Astronomical Society, and from M. Filip Doutreligne, M. Ivo Demeulenare and M. Roger Verheyen of the Royal Astronomical Society of Belgium (communicated by Baron R. de Terwangne).

As in previous apparitions the southern hemisphere of the planet was turned towards the Earth, the tilt of the S. pole being 15° at opposition.

The martian season was late Spring and early Summer in the southern hemisphere thus enabling the shrinking of the South Polar Cap to be particularly well observed.

SURFACE FEATURES

No major changes were recorded during this apparition.

Some notes on the appearance of the surface features, as shown on members' drawings and photographs, are given below under the three regions of the planet as in previous Reports.

REGION I: ω 150° – 10°

Hellas was not particularly conspicuous and was brightest in its northern half. Some faint canals were seen by Capen within this area. As was to be expected Hellespontus was very conspicuous linking the South polar regions with M. Serpentis.

Thoth-Nepenthes was very faint and narrow and often not seen. Syrtis Major, M. Serpentis and S. Sabaeus were dark. Pandora Fretum was faint in its central region. Some fine detail was seen around the north side of S. Sabaeus by Dragesco. Ismenius Lacus was too far north for useful observation. (See figures 1, 2 and 3.)

REGION II: ω 10° – 130°

This interesting region is well presented during perihelic apparitions and was well observed by our members situate farther south than the British Isles.

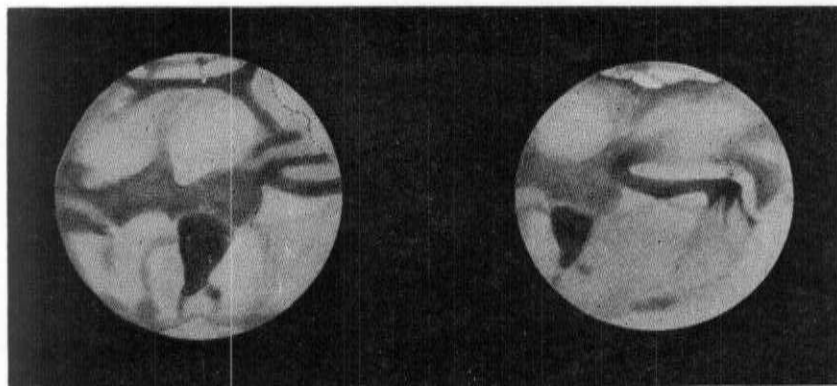


FIGURE 1 (*left*). 1971 July 13d. 23h. 6m. $\omega = 282^\circ$. FIGURE 2 (*right*). 1971 August 13d. 21h. 10m. $\omega = 328^\circ$. Both with 26 cm Spec., Dragesco.

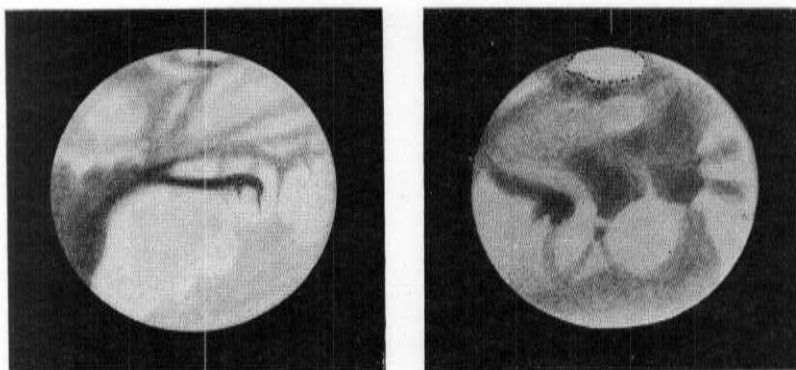


FIGURE 3 (*left*). 1971 August 16d. 0h. 0m. $\omega = 350^\circ$. 16 cm O.G., C. J. R. Lord. FIGURE 4 (*right*). 1971 August 8d. 22h. 10m. $\omega = 27^\circ$. 20 cm Cass., R. de Terwangne.

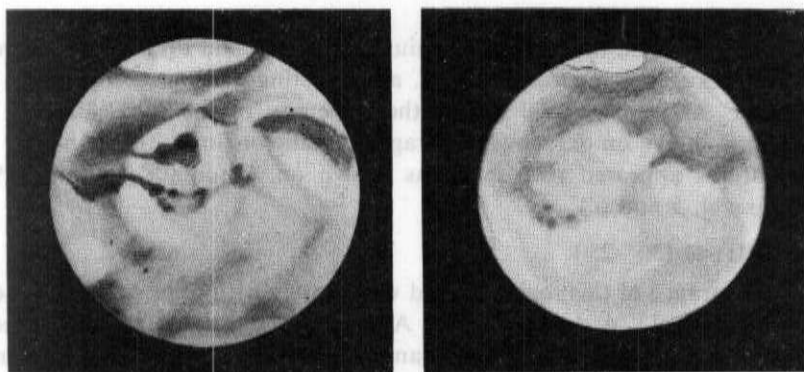


FIGURE 5 (*left*). 1971 July 1d. 2h. 50m. $\omega = 87^\circ$. 26 cm Spec., J. Dragesco. FIGURE 6 (*right*). 1971 September 4d. 20h. 10m. $\omega = 120^\circ$. 20 cm Cass., R. de Terwangne.

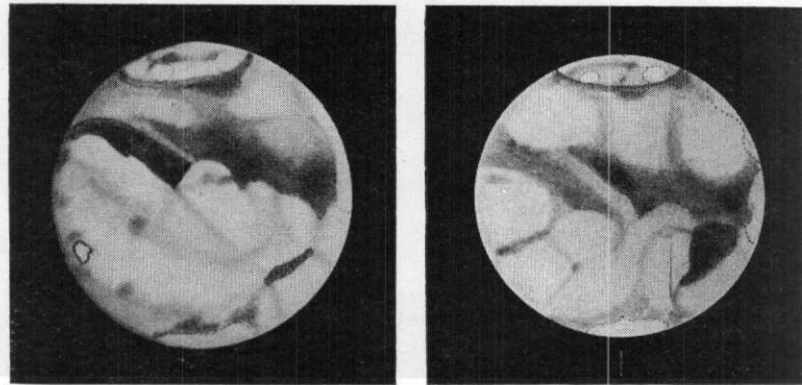


FIGURE 7 (*left*). 1971 June 24d. 4h. 30m. $\omega = 174^\circ$. FIGURE 8 (*right*). 1971 July 17d. 23h. 32m. $\omega = 243^\circ$. Both with 26 cm Spec., J. Dragesco.

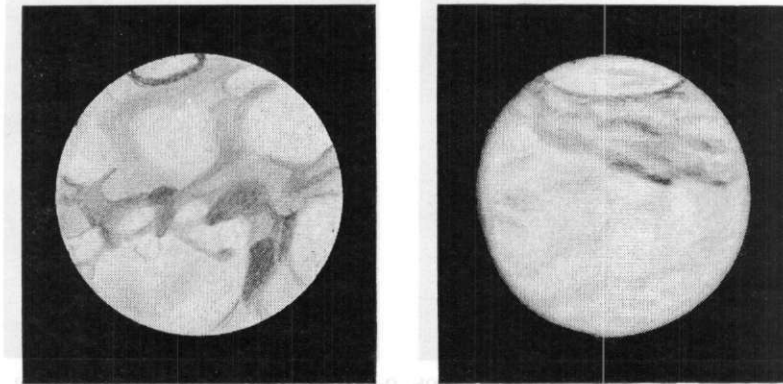


FIGURE 9 (*left*). 1971 July 19d. 1h. 0m. $\omega = 256^\circ$. 16 cm O.G., L. Cochrane. FIGURE 10 (*right*). 1971 July 9d. 12h. 20m. $\omega = 153^\circ$. 100-inch Cass., D. Allen.

Oxia P., Lunae L., Melas L., Tithonius L., Solis L. and Phoenicis L. were all well seen. Dragesco recorded Solis L. as consisting of three components and Juventae F. as a very small dot at the extremity of the canal Baetis. Nix Olympica is shown on drawings by Dragesco made on June 20, 22 and 24. All these features appeared very much as shown on Antoniadi's map of 1930. (See figures 4, 5 and 6.)

REGION III: $\omega 130^\circ$ – 250°

The appearance of this region agreed very closely with the I.A.U. Map. (See figures 7, 8 and 9.) A drawing by D. Allen made with the 100-inch Reflector at Mount Wilson shows M. Sirenum and Phaethontis resolved into numerous dark patches and some faint shadings in Amazonis. (See figure 10.) The dark area in the Aethiopsis–Amenthes region noted in 1969 was no longer visible.

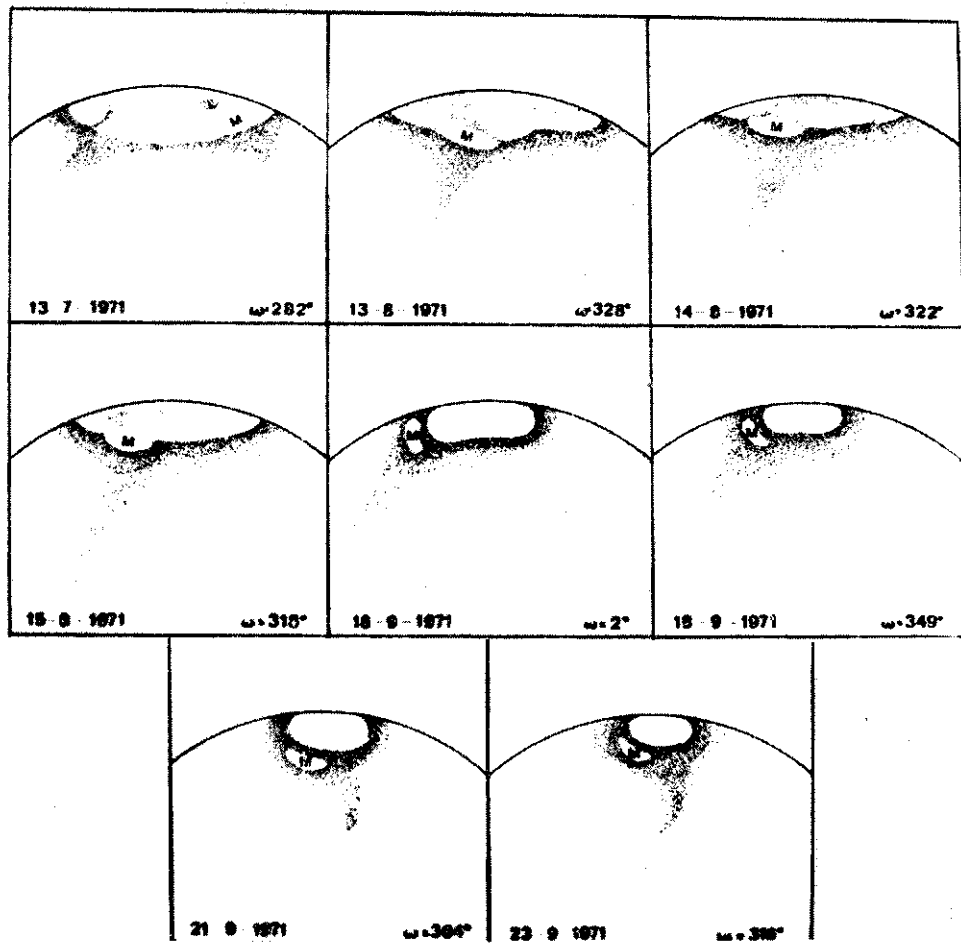


FIGURE 11. Detachment of the Mountains of Mitchell from the South Polar Cap—J. Dragesco.

SOUTH POLAR REGION

Observations in May in the early part of the apparition revealed a very extensive South Polar Cap extending according to Botham to -40° Latitude, the southern edge of M. Erythraeum. The subsequent shrinking of the Cap during the martian Spring and Summer was followed with much interest. A number of irregularities appeared along its edge and in July and August rifts and a central dark patch were seen. The detachment in late August of the Mountains of Mitchell from the Cap was well observed by Dragesco, whose drawings are reproduced in figure 11.

The Cap was quite small when it was obscured by the great yellow cloud which developed in late September.

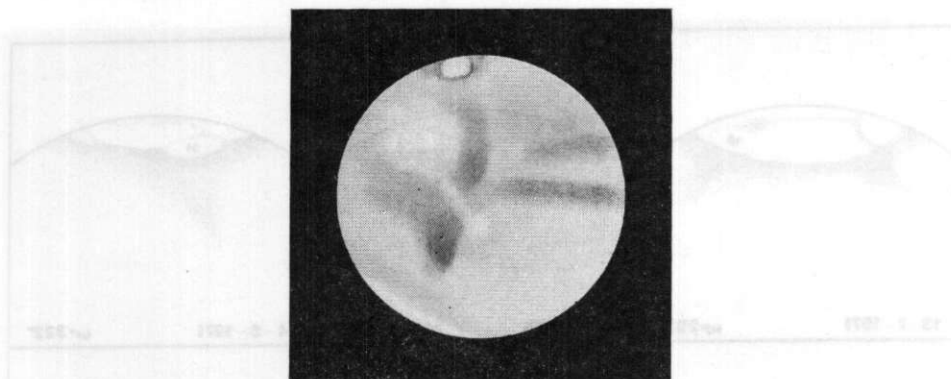


FIGURE 12. 1971 September 21d. 20h. 30m. $\omega = 327^\circ$. 30 cm Spec., A. W. Heath.

ATMOSPHERIC PHENOMENA

Botham recorded that all features were faint and ill-defined up to mid-September and observations by Caunter and the Director during August and early September confirmed this. Several observers remarked on the faintness of Solis Lacus during early September. On June 19, August 28 and 29, and October 3, Botham recorded that the M. Sirenum region, 100° to 180° , was devoid of all detail and faint markings indicating the presence of a general yellow veiling.

Few white clouds were seen, but Murray at the Pic du Midi observed the well-known "W" cloud in Amazonis between August 27 and September 4. It appeared during the martian afternoon attaining its greatest brightness at 15 h. martian time and remaining visible until it crossed the sunset terminator.

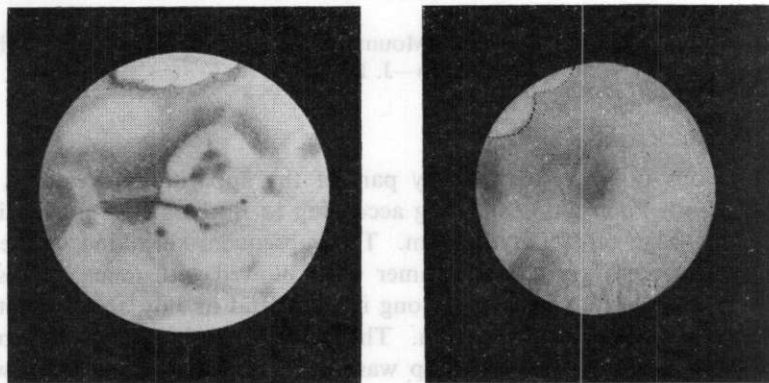


FIGURE 13. 1971 August 3d. 22h. 15m. $\omega = 70^\circ$. FIGURE 14. 1971 October 15d. 17h. 45m. $\omega = 61^\circ$. Both by J. Dragesco, showing obscuration of Solis Lacus region by dust cloud.

TABLE

Feature	Observers								
	APPEYARD	BOTHAM	COCHRANE AND LORD	DELANO	GAINSFORD	HEATH	MACKENZIE	STURDY	TERWANGNE
Acidalium M.	4	4.5	2			5	4		4
Aonius S.		3							4.5
Araxes	3	3						4	3.5
Aurorae S.	2	4	4	7	6	5	5	4	4.5
Australe M.	3.5		5				7		4.5
Casius	3.5								3.5
Cerberus		3		3					3.5
Cimmerium M.	5	5	6	8	4	5	5	7	5.5
Coprates	3	3.5	2.5			3			4
Deltoton S.		4	4.5						5.5
Erythraeum M.	4	4	4	7	6	5	5	7	4.5
Hadriacum M.	5	3.5	3	3		3		5	4.5
Hesperia		4						5	4.5
Hellespontus	4	3	1.5		6	4	3		4.5
Iapigia	5	4.5	6			6	7.5	7	5.5
Ismenius L.	3		1						3.5
Laestrygonum S.	5								
Laestrygon				3					
Lunae P.		3.5							3.5
Margaritifer S.	4.5	3.5	4	8	3	4	7		5
Meridiani S.	6	5	6		6	6.5	7		5.5
Moeris L.		6	4.5				5		4
Nectar		4	4						4
Nepenthes	3.5		3						3.5
Niliacus L.	3.5	3	1	6		2			
Nilokeras	3		0.5						3.5
Nilosyrtis	3		3						
Oxia P.		2.5	4						4
Pambotis L.	5								
Pandorae F.	4	3.5	3	7.5	4	3	6		4
Phlegra	4								3.5
Phoenicis L.		3	2						3.5
Propontis	3						5		
Sabaeus S.	5	5	5	8	5	5	6		5
Serpentis M.	5	5	6	8.5		5	7	6	6
Sirenum M.	5	4.5	7		5	5	6	6	4.5
Solis L.	3.5	4	5	7		4	5		4
Syrtis Major	6	5	7	8.5	7	6	7	7	6
Thoth									3
Tithonius L.	3.5	3.5	2	7					4
Trivium Charontis	3.5	3	2	8		2	4		3.5
Tyrrhenum M.	5	4.5	6			5	7	6	5

It was A. W. Heath who on September 21 first noticed a bright streak over Iapigia which marked the beginning of the great yellow dust cloud which was such a remarkable feature of this apparition. (See figure 12.) This feature developed into a large yellow cloud which spread rapidly in an East-West direction, obscuring the South Polar Cap by September 30 and by mid-October obscuring most of the planet so that it appeared almost featureless.

Owing to the prevailing poor seeing conditions, observers in the British Isles were unable to follow adequately the various stages of the development of this cloud but, as mentioned in the Preliminary Report, detailed observations were made by Murray at the Pic du Midi. Drawings were also made by Dragesco, two of which are reproduced in figures 13 and 14.

INTENSITY ESTIMATES

Estimates of the intensity of the surface features on the usual scale of 0 = the brightness of the South Polar Cap and 10 = the background of the night sky, as in previous Reports, are given in the Table on page 289. They represent means of estimates made before the yellow dust cloud appeared.