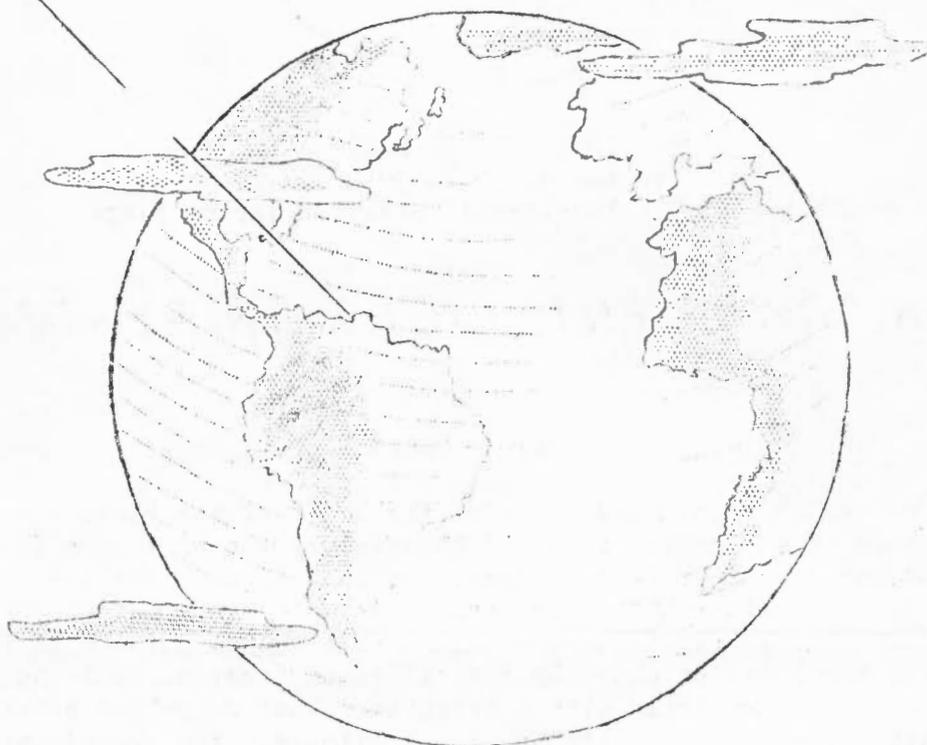


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# THE STROLLING ASTRONOMER

(Association of Lunar and Planetary Observers)

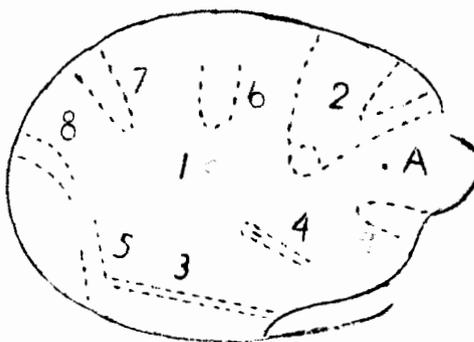


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## I N T R O D U C T I O N

We are pleased to present the following article about an unusual lunar appearance by Mr. A. W. Mount, who is an engineer for the Bell Telephone Company. His telescope is an 8 inch reflector of his own construction. In recent years he has submitted observations of Mars, Saturn, and the lunar crater Plato. Our contributor's address is 4326 Birchman Street, Fort Worth 7, Texas.



LUNAR CRATER PLATO  
September 3, 1944, 3H 40M U.T.  
Showing at "A" location of possible impact-flare

## A TRANSIENT LIGHT IN PLATO

by A. W. Mount

The sketch reproduced below of the lunar crater Plato shows the appearance of the crater floor as observed by the writer on September 3, 1944, at 3h 40m, Universal Time. At that time, after the crater had been under observation for perhaps ten minutes, there suddenly appeared a small bright point of light in the east portion of the crater floor at the location shown by dot "A" in the sketch. This unusual light glowed momentarily with a brightness that compelled attention and during its brief apparition of approximately two seconds was by considerable odds the most conspicuous and brightest object in the field of view.

The object was star-like in appearance, with not the slightest apparent motion relative to the lunar surface. As nearly as could be observed, it made its appearance at full brilliancy and then disappeared with equal or nearly equal suddenness.

The record made at the telescope on the day in question is quoted below, slightly edited for the sake of brevity and clearness. Reference is made to the drawing for the identification of the objects mentioned.

"Objects 1, 2, 3, and 4 - Well observed. 1 evident at first glance. Object 5 - Observed briefly at frequent intervals. Objects 6, 7, 8, and 9 - Glimpsed indistinctly at intervals. Object "A", represented by the dot between 2 and 9, was observed momentarily at 3h 40m U. T. as a point of light, brighter than object 1, probably twice as bright. Observation of Plato was continued at intervals until 6h 0m U. T. Details 1, 3, 4, and 5 were quite conspicuous during several short intervals of fine seeing; but the point of light was not seen again."

To anyone familiar with Plato, object 1 in the sketch will be recognized as the near-central craterlet that is usually outstanding under high illumination.

The following tabulation gives certain statistical data relative to the observation:

Date	September 3, 1944
Time	3h 40m U. T.
Telescope	8 inch reflector
Moon's Geocentric R. A.	348
Moon's Geocentric Dec.	-9
Age of Moon	15 Days
Conditions of Observation	Good, Seeing 6
Lunar Long. of Object (Approx.)	-11°
Lunar Lat. of Object (Approx.)	+51°
Color	White
Apparent Stellar Magnitude	+6?
Duration of Visibility	2.0 Secs.?
Apparent Angular Diameter	<1"

The last three items can be considered as approximations only. The estimate of magnitude is particularly doubtful because the object was seen against the bright background of the Moon; in fact, from some experience in observing stars near the Moon's limb while timing occultations, the writer thinks that this estimate may well be several magnitudes too low.

The writer has felt some hesitancy in putting forward a written account of this observation. That feeling has arisen from the fact that many will undoubtedly infer a subjective explanation for this phenomenon; and in the absence of corroborative observations the possibility of illusion cannot, of course, be entirely discounted. The object was indeed something quite beyond the ordinary detail observed in the changing aspects of this great mountain-walled plain. To the writer, however, the distinctness and the complete sense of reality of the object observed, the entire absence of illusions of a similar appearance either before or since and the fixed position in the field of view all point to this object as a lunar feature and leave no doubt of its objective nature.

Several explanations for this unusual visitor will occur to the reader. A terrestrial meteor at its radiant or other objects in the atmosphere cannot be overlooked but on the other hand seem quite improbable. The explanation that seems most adequate is that the point of light was indeed the impact-flare of a meteorite that plunged to the floor of the great lunar crater.

## REMARKS BY EDITOR

Mr. Mount's report is of such great interest in connection with the subject of lunar meteoric phenomena that we shall discuss it at some length. The reader may wish to refer to our articles on lunar meteors and lunar meteoritic impact-flares in the August and September issues of The Strolling Astronomer.

It is amazing that a British observer, F. H. Thornton, has also observed a bright flash in Plato. He has published an article called "Things Do Happen on the Moon" in Journal of the British Astronomical Association, Volume 57, pp. 143, 1947 (March). We quote in part:

"I resumed my study of Plato on the night of October 19 (1945).... while I was examining (Plato) I saw at the western rim, just inside the wall, a minute but brilliant flash of light.

"The nearest approach to a description of this is to say that it resembled the flash of an A. A. shell exploding in the air at a distance of about ten miles. In color it was on the orange side of yellow. I noted, first, as nearly as I could, the exact spot where it took place, and recorded this on my sketch, then took the time, which was 11:24 $\frac{1}{2}$  p.m., G. M. T. I cannot say with certainty that the flash was inside the shadow of the mountains, but it was very close indeed to the edge of the crater, and at that time, within 30 $\frac{1}{2}$  hours of full moon, the shadow is very narrow."

This observation was made with a 9 inch reflector at 220X. An accompanying drawing of Plato by Mr. Thornton shows three craters on the floor. The latitude of the flash was the same as that of the near, central crater, and the flash was perhaps only half a mile from the foot of the west inner wall.

It is always possible, of course, that a luminous object seen against the moon was really only a meteor in the earth's atmosphere. However, the odds are great against such a meteor's being stationary in the telescopic field; and it is much harder still to credit two stationary terrestrial meteors, as an explanation of the two observations.

It certainly appears very possible that Mount and Thornton observed lunar meteoritic impact-flares. The inquiring reader may ask whether such flares are not incompatible with the moving lunar specks, interpreted as lunar meteors, recorded by the editor and others from 1941 to the present. They are not incompatible. Although even a very tenuous lunar atmosphere would prevent most meteorites from reaching the surface of the moon, a sufficiently large meteorite would survive atmospheric surface ablation and create a flare upon striking the surface. The impact-flare created at the 1908 Siberia Fall on the Earth could have been easily seen by a telescopic observer stationed upon the moon. Moreover, systematic searches have not revealed impact-flares in the numbers that must occur if the moon has absolutely no atmosphere.

It would appear worthwhile for readers having the use of large and/or good telescopes to examine the positions of the Mount and Thornton objects for craterlets or other visible results of these possible meteoritical impacts. Chances for success may not be high since Meteor Crater is probably the only terrestrial impact-crater that would be telescopically detectable if removed to the moon.

The stellar magnitude of Mr. Thornton's object may have been about -6. Since an object at the average distance of the moon is 17 stellar magnitudes fainter than at a distance of 100 miles, the stellar magnitude at the latter distance would be about -23. That of the sun is -27, and we clearly have a most extraordinary luminous phenomenon if this object was on or near the surface of the moon.

Since the chance that any particular observer will witness one of these unusual events is apparently very small, it is clearly important for all lunar observers to be alert for their occurrence.

## SNAPSHOT OF A TELESCOPE

It has been suggested that readers of The Strolling Astronomer might like to see photographs of each other's telescopes. To initiate this idea, we enclosed a snapshot of W. H. Haas' 6 inch reflector in Albuquerque, New Mexico. We owe the prints to the courtesy of a contributor, who prefers to remain anonymous, but who is known to American amateurs, and shall be very glad similarly to distribute snapshots of the telescope of any reader who cares to supply prints.

This particular reflector was made by E. A. Miller, a machinist of Youngstown, Ohio. An unusual feature is that the barrel of the telescope can be revolved so that the eyepiece may be adjusted to a more convenient position. There is a slow-motion in declination and a victrola-motor mechanical drive. When the telescope is not in use, the barrel is detached from the mounting. The latter is then covered by canvas to give protection from sandstorms, rains, and small children. The base of the mounting is bolted to a plank at the ground-level; this plank in turn is bolted to a block of cement 24 inches by 12 inches by 6 inches.

## ACKNOWLEDGEMENTS

From A. F. O'D Alexander we have received Saturn Section Circulars 5, 6, and 7 of the British Astronomical Association. Number 5 is a comprehensive excellent program of observations on Saturn; number 6 is a list of references to that planet in the Journal of the British Astronomical Association for the period 1916-46; and number 7 discusses Saturnian central meridian transits. In the last named curcular Dr. Alexander summarizes results of his study of more than 350 transits recorded in 1946-7 by a number of different observers.

He obtains a "normal" rotation-period of 10h14m for spots on the south edge of the South Equatorial Belt but one of about 10h15m.9 for ones on the north edge. The former value has been obtained a number of times in the past for equatorial features. Dr. Alexander urges that work on Saturnian spots be vigorously pursued during the 1947-8 apparition and provides a table of C. M. longitudes and rotation rates to encourage such observations. These may be less difficult than is sometimes thought; E. E. Hare writes that he often saw spots on the edges of the South Equatorial Belt of Saturn in 1946-7 with a 7 inch reflector at 190X.

J. R. Smith has submitted observations of Jupiter in June-September, chiefly C. M. transits. Mr. Smith is one of our most experienced observers and was making drawings of Mars a decade ago. He now uses an 8 inch reflector in Eagle Pass, Texas.

E. E. Hare has contributed observations of Jupiter and Mars in recent months. Especially welcome are his detailed drawings of Jupiter depicting seven or more belts.

E. J. Reese also has been continuing to observe Jupiter. He has copied for us a drawing on May 29 which shows twelve belts, counting each component of doubled North Equatorial and South Equatorial North Belts. On September 1, Mr. Reese made drawings of the lunar craters Aristarchus and Plato. He comments upon the twin craterlets in the northeast part of the floor of the latter. These two objects are nearly identical; but the northeast craterlet may be very slightly larger than the southwest one, Reese opines. He estimates their separation at 1" or possibly less. Incidentally, T. R. Hake has separated these craterlets with only a  $4\frac{1}{2}$  inch refractor.

E. K. White has reported observations of Jupiter and Mars in August and September.

H. Percy Wilkins has lent us several lunar items of interest. These include water-color sketches of the earthlit part of the moon by Mr. A. R. Brown at Chididi, Nyasaland, Africa. The dark limb is shown fringed by a brighter rim. W. H. Haas has seen this appearance a great many times in recent years; he thinks that it is an illusion caused by the differing brightness of the earthlit moon and the sky. Haas has even seen this spurious bright rim on a sky so bright that the earthlit region itself is not visible. Mr. Brown's sketches show a brighter patch in the center of the earthlit hemisphere. Other material from Mr. Wilkins includes a drawing of Aristarchus by C. F. O. Smith and ones of Aristarchus, the Ramsden clefts, and Grimaldi by F. Fararger.

An especially fascinating item from Mr. Wilkins deserves to be quoted:

"One of my section members-Mr. (R. W.) Potts of Cambridge (England), recently drew my attention to the remarkable appearances presented by the crater Langrenus M (on my map). This is a small crater a little to the southwest of Langrenus and close to a longer ring. It is named M by Neison but displaced too much to the east on his map; he says it is deep. Goodacre shows it but makes no mention in the text.

"Mr. Potts describes M as a bottomless pit and says that, in early morning illumination it presents the appearance of a bright rimmed crater with a black centre. In other words the centre is filled with black shadow while all round the inner slopes are illuminated. It is exactly as though one were looking at a conical dish partly filled with some black liquid which is slowly escaping at the bottom so that the level falls.

"Now this is quite 'impossible', there cannot be a crater with the entire inner slopes illuminated and yet have the centre filled with shadow which decreases in size as shown on the rough sketch (by Mr. Potts).

"But I saw the same thing this lunation. (Drawings by Wilkins on July 22, 23, and 24 show a central blackening of steadily diminishing size.) Whether this is repeated at every lunation I cannot say, and how can the inner west slope be illuminated and yet have the centre full of shadow? Please look it up when opportunity offers."

We urge all Lunar and Planetary Observers to give attention to Langrenus M.

The Editor last month enjoyed meeting for the first time E. J. Reese of Uniontown, Pennsylvania, and H. A. Delano of York, Pennsylvania. Mr. Reese makes his observations with a 6 inch reflector mounted in his own back yard and is not deterred by soot from the numerous coke ovens near Uniontown. Mr. Delano is an engineer, one of whose hobbies is an excellent machine shop in his cellar. The editor was also glad to meet again T. R. Hake, C. L. Hake, F. R. Vaughn, and H. M. Johnson.

M. B. B. Heath has kindly communicated a copy of a drawing of Mercury on August 8. It shows a bright north cusp-cap, a shaded terminator, and a dark streak extending from the center of the terminator southward toward the limb.

## ON RECENT OBSERVATIONS

We have mentioned in recent issues the widely differing longitudes (II) of the Red Spot Hollow on Jupiter obtained by different observers through the method of C. M. transits. Since data from more observers are now available, we summarize some derived longitudes below. The numbers in parentheses are the number of observations available. It is thought that the Hollow has been at a practically constant longitude (II).

<u>Observer</u>	<u>Interval</u>	<u>Long. Prec. end.</u>	<u>Long. center</u>	<u>Long. fol. end.</u>
W. H. Haas	June 12-Sept. 22	213(9) <sup>o</sup>	224(9) <sup>o</sup>	236(10) <sup>o</sup>
H. M. Johnson	June 8-July 2	221(1)	234(1)	243(3)
E. J. Reese	Aug. 29-Sept. 10	213(3)	226(2)	238(1)
J. R. Smith	June 27-Sept. 10	222(2)	232(6)	247(1)
E. K. White	July 9-Aug. 19	226(4)	234(4)	242(6)

The table certainly indicates discouragingly large "personal equations." Mr. Smith suggests that the differing curve of the prec. and fol. shoulders of the Hollow may explain these discrepancies.

The Hollow itself has been seen as a bright oval in the South Tropical Zone deflecting the South Equatorial Belt South almost to the latitude of the South Equatorial Belt North. In August and September Hare and Haas each found the former belt intense preceding the Hollow and much lighter following it.

We have spoken in recent issues of Reese's "cloud" in the South Temperate Belt and of Haas' South Tropical Zone bright area indenting the north edge of that belt. It now appears clear that these objects are the same and that Haas failed to see a narrow strip of belt separating the white "cloud" from the zone. It is less certain that this feature drifted past the vestiges of the Disturbance in June, as Reese thought that he observed at the time; for the Disturbance was rather hard to identify positively during its final stages. This same "cloud" has been observed as an enclosed bright spot in the South Temperate Belt by Smith, Hare, and White. It was near  $260^{\circ}$ (II) on August 1, and was moving at a rapid (and accelerating?) rate in decreasing longitude; the last available observation, by Reese on September 3, put it then at  $223^{\circ}$ .

In recent months the South Temperate Belt has been growing less conspicuous and the South Equatorial Belt North more so. The South Temperate Belt (Identity not certain) also has lost strength.

Mars will remain remote in October, the angular diameter being only  $6''.6$  at the end of the month. The vernal equinox of the northern hemisphere (autumnal equinox of southern hemisphere) comes on October 10. The north pole will be tilted toward the earth by 13 degrees at the beginning of the month, increasing to 18 degrees at its end.

White reports that his 7 inch reflector showed him "a small dull white north cap" on Mars from September 1 to September 12. He saw no south cap. Haas with a 6 inch reflector from September 17 to 23 noted a fairly large and rather bright south cap, while the north cap was small, dull, and generally undistinguished. Drawings by Hare with a 7 inch reflector show a small south cap during August and perhaps a large one on September 16. On September 1, Hare perceived a tiny and brilliant north cap bordered by a dark blue band. His splended drawing on September 16, 315X and good seeing, shows a dent in this band (now slate-colored, not blue) at the base of Mare Acidalium. This drawing shows Aryn (forks combined) and Sinus Sabaeus. The north cap had continued to look brilliant to Hare.

It appears probable that Hare has seen the north cap better than have the two others, though Haas' view on September 23 was good enough to show the general outlines of Syrtis Major, Sabaeus, and Hellespontus. At the same time, we may tentatively doubt whether the north cap has been as extremely notable as during the same Martian season in 1943-4 and 1945-6.

Saturn is again visible in the morning sky, though still too close to the Sun for good views. The shadow of the rings is now conspicuously present upon the ball just north of the projected ring-ellipse. This shadow will remain very outstanding until early 1948. The rings are now less open than in 1946-47. Haas feels rather sure that the bright Equatorial Zone has been widened since the spring of 1947 through a southward shift of the South Equatorial Belt. The general pattern of detail on the ball and in the rings does not appear to have altered during the months that the planet was near conjunction with the Sun.

#### SUGGESTED LUNAR OBSERVATIONS

During the balance of 1947 the pre-midnight sky will be almost void of planets. W. Houston suggests that in this interval some members of the Association of Lunar and Planetary Observers might like to engage in lunar observational programs. We suggest these projects:

1. Langrenus M. See "Acknowledgements" in this issue. The crater will be on the sunrise terminator on the evening of October 16 (civil time date) and should be watched on subsequent nights. It would also be of interest to observe the craterlet under afternoon lighting, a thing apparently not yet done, on October 27, 28, 29, and 30.
2. Several observers have found the color of the floor of Grimaldi to vary irregularly from lunation to lunation. This walled plain will be in sunlight on October 27 and later.
3. H. P. Wilkins recommends the study of features in Condorcet, which will be near the terminator on October 16 and again on October 30. Observers should look for a central strip running north-south and perhaps actually a ridge, a cleft or low ridge near the southwest wall, and "some object" at the foot of the southeast wall.

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(We have not yet received enough orders to allow a reprinting, without loss, of the March and April issues.)

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