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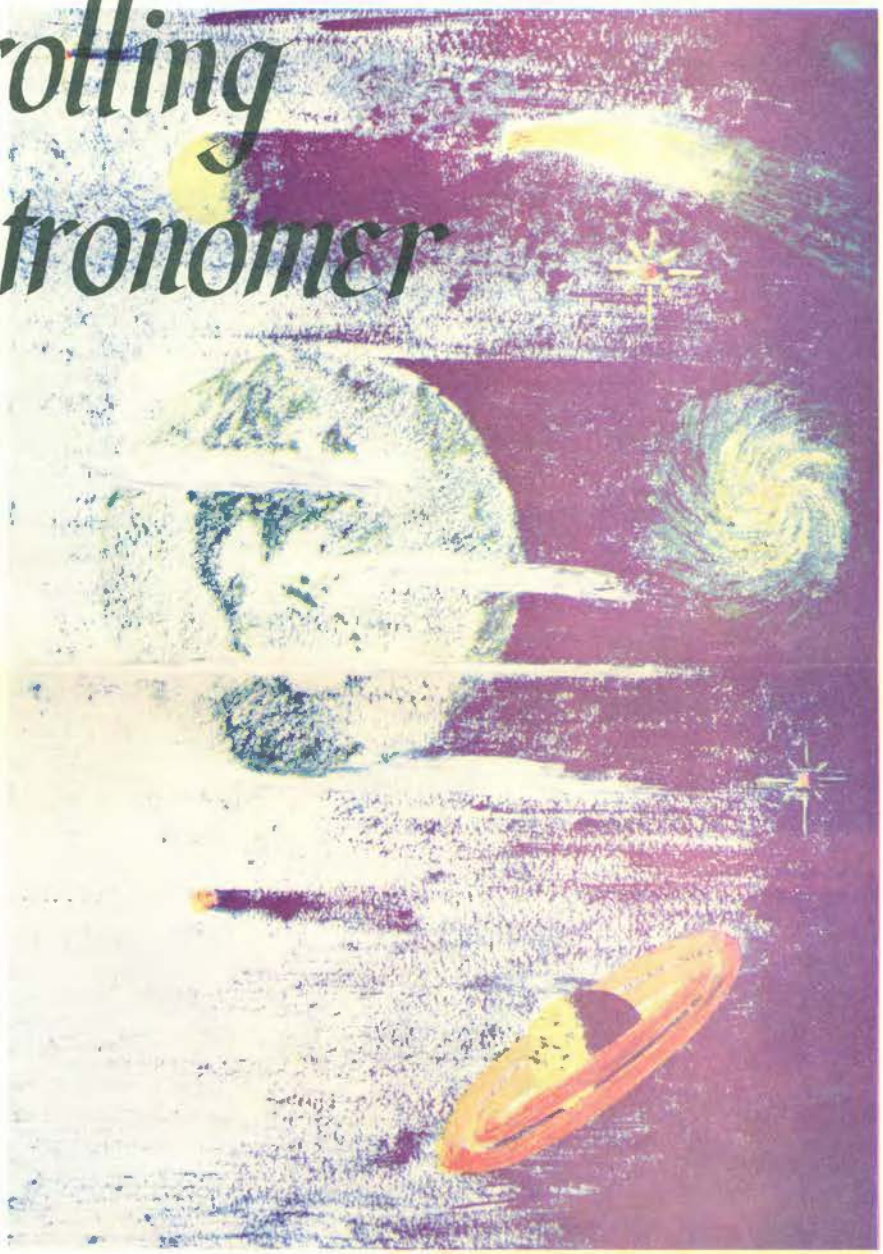
The Strolling Astronomer

ASSOCIATION OF LUNAR AND PLANETARY OBSERVERS



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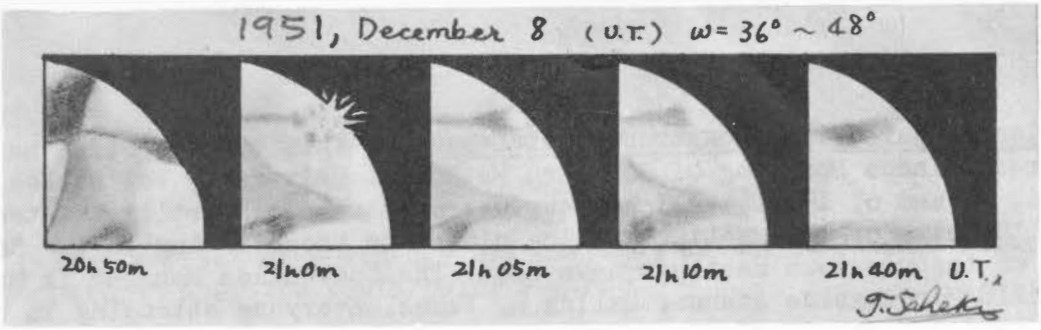


Figure 1. A Curious Bright Spot on Mars. Refer to article by Tsuneo Saheki in this issue.

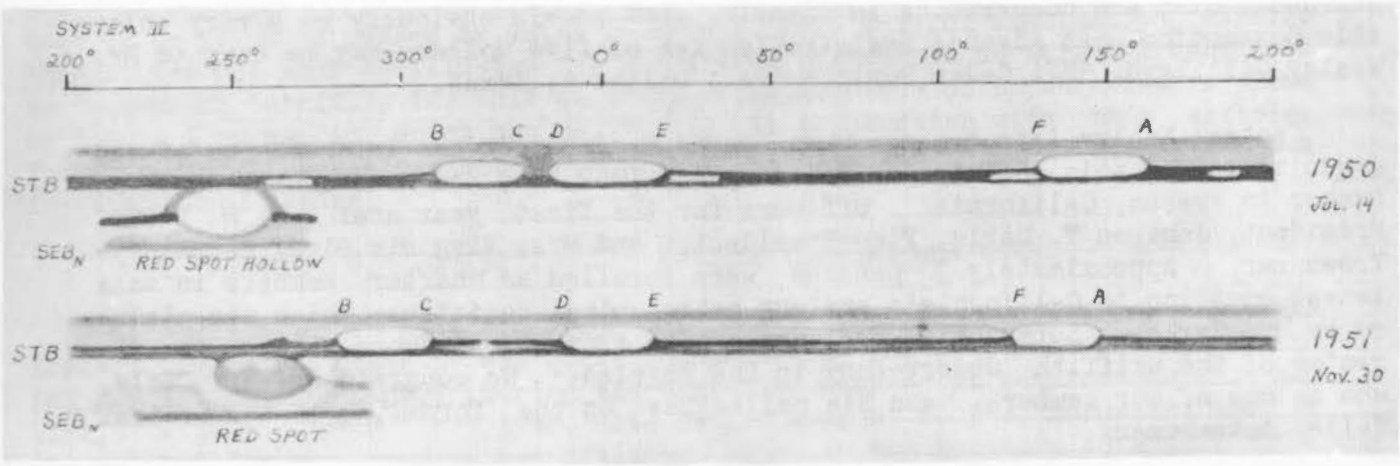


Figure 2. Long-Enduring Bright Areas in Jupiter's South Temperate Zone.

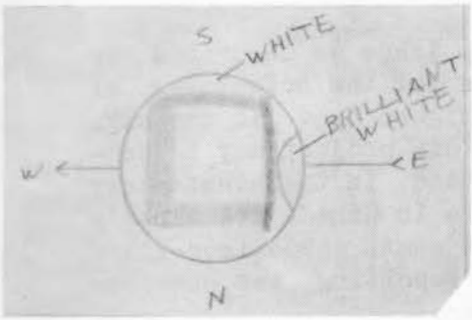


Figure 3. Uranus.
W. H. Haas
Jan. 16, 1952. 4^h26^m, U.T.
6-inch reflector. 298X.

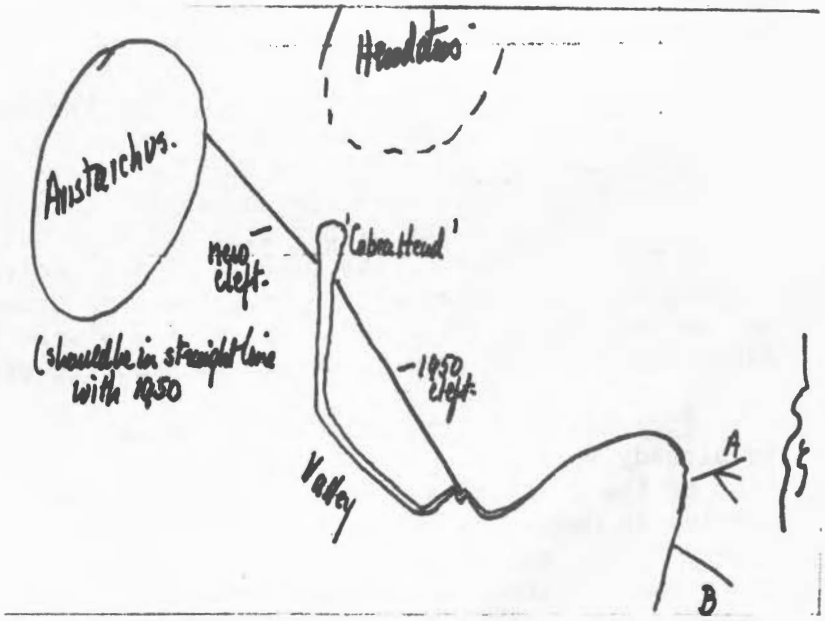


Figure 4. Rough Sketch of Clefts near Aristarchus Discovered by Wilkins and Thornton.

National Convention of Astronomical League. This meeting will be held in the Fondren Science Building of Southern Methodist University at Dallas, Texas, on July 4, 5, and 6, 1952. All amateur astronomers are heartily invited to attend, and the site of the meeting will be closer to those living in the Southwest than any of the previous meetings have been. The Convention Manager is Mr. E. M. Brewer, 5218 Morningside Avenue, Dallas 6, Texas. Everyone attending is urged to bring or send an exhibit of some kind; suitable subjects include portable telescopes, plans for amateur observatories, meteorites, models and teaching aids of all kinds, and the various telescope accessories. Those wishing to present papers should write the Program Chairman, Mr. James H. Karle, 10925 S. W. 49th Ave., Portland 19, Oregon. The Texas Astronomical Society of Dallas, the Fort Worth Astronomical Society, the Port Arthur Astronomy Club, and the Fort Worth Junior Astronomy Club are cooperating in planning what should obviously be a very enjoyable Convention. An advance registration fee of five dollars may be sent to Mr. Wesley Gilliland, 3824 Cedar Springs Ave., Dallas 5, Texas.

Central Valley Astronomers. Mr. David P. Barcroft has informed us of the organization of this society on February 11, 1952, at the home of Mr. Earle R. Bunker in Fresno, California. Officers for the first year are: G. M. Ravis, President, Jackson T. Carle, Vice-President, and Mrs. Virginia Bird, Secretary-Treasurer. Approximately 30 persons were enrolled as charter members in this latest addition to California's amateur astronomical societies, which was planned by Mr. Carle. Substantial assistance came from Dr. Dinsmore Alter, the Director of the Griffith Observatory in Los Angeles. We congratulate Mr. Carle, who is one of our members, and his colleagues on the formation of the Central Valley Astronomers.

Eugene Epstein Honored. We learn from the February and March issues of The Planetary Observers' Bulletin that Mr. Eugene Epstein of Hollywood, Calif. placed twelfth out of a total of 15,000 entrants in the Westinghouse National Science Contest. His topic was a 1,000-word written report upon "The Construction of a Small Observatory and Observations of Jupiter". His achievement will be rewarded with a scholarship to the college of his choice. Mr. Epstein is one of our members, and his observations have been discussed in this periodical. We extend to him our very hearty congratulations.

A Simple Project on Uranus. In our February, 1951, issue we described how A.L.P.O. members could make simple and useful estimates of the brightness of Uranus, comparing its light to that of stars in its neighborhood in the sky. Only wide-field binoculars are needed for this study. This project may be continued in 1952, and the planet will still be suitably placed in the evening sky during April and May. The members of the Montreal Centre in Canada are already working upon estimates of the brightness of Uranus. The same comparison-stars may be used as in 1951, and copies of a simple form for reporting the observations will be sent free of charge to those requesting them.

Foreword by Editor. Mr. Tsuneo Saheki, the author of the following article, is already very well known to our readers. He is the Director of the Mars Section of the Oriental Astronomical Association and lectures at the Municipal Planetarium in Osaka. He has been a most valuable contributor of lunar and planetary observations, especially of Mars, to the A.L.P.O. In the following article he describes one abnormal Martian phenomenon, a very brilliant spot briefly visible near the limb, and one normal seasonal development, the formation of the south polar cap. Mr. Saheki's address is No. 29 Shi-Jūtaku, Uriono-Cho II-24, Sumiyoshi-Ku, Osaka, Japan.

SOME RECENT CURIOUS PHENOMENA ON MARS

by Tsuneo Saheki

Herein I wish to speak of a strange bright spot on the Tithonius Lacus and of a large "snowstorm" over the south polar regions.

When I first looked at Mars some minutes before $21^h\ 0^m$, Universal Time, on December 8, 1951 (6:00 A.M. on December 9, Japanese Standard Time), I saw Tithonius Lacus just inside the east limb (right in simply inverted view with south at the top); but very soon afterwards a very small and extremely brilliant spot became visible at the east end of this marking. At first I could not believe my sight because the appearance was so completely unexpected, and I thought that it must be an illusion caused by motes in my eye. More careful examination revealed that it was not such an illusion but was a true phenomenon on Mars! I continued to observe it carefully for half an hour. The sequence of appearances is shown by Figure 1 on pg. 46, which may be studied in conjunction with this article. The following observations were made with my 8-inch reflector at 200X and 400 X in fairly good seeing.

1951, December 8. $20^h\ 50^m$, U.T. Nothing unusual was seen.

$21^h\ 0^m$. A bright spot appeared. It was very white and brilliant but extremely tiny. Its diameter was quite inappreciable for my 8-inch telescope, being perhaps less than 0".5. During the next five minutes it remained present and always twinkled like a fixed star. Its brightness, of course, surpassed that of the north polar cap, then rather brilliant late in the northern spring of Mars. The stellar magnitude of the spot was perhaps five or six.

$21^h\ 5^m$. The brightness of the spot now decreased; and it gradually became a small, dull, cloud-like spot about equal in diameter to Tithonius Lacus. It thus grew larger and dimmer and so continued.

$21^h\ 10^m$. By this time the spot was only a common white cloud near the limb. After $21^h\ 10^m$ it very rapidly faded out.

$21^h\ 40^m$. Observing Mars after a break of about 30 minutes, I could see no trace of the white spot.

This spot is certainly one of the most extraordinary phenomena ever recorded by students of Mars, being unique in my personal observations from 1933 to the present. However, it did remind me of a strange brilliant spot recorded by Mr. Sizuo Mayeda on June 2, 1937, which appeared on the northeast limb of Mars near Lacus Sithonius (not Tithonius). [There is a brief description in The Strolling Astronomer, Volume 4, No. 9, pp. 8-9, 1950.] Therefore, I wrote about my discovery to my close friend, Mr. Mayeda; and also Dr. Issei Yamamotod kindly wrote to him. Unfortunately, Mr. Mayeda died after a long illness just after our letters arrived. His death is very sad for all of us in the Oriental Astronomical Association. He was the keenest observer in our group and the only one who had made beautiful pastel drawings of Mars from 1937 to 1943; we had hoped for his return to good health.

The only other known Japanese observation of Mars while the spot was present on December 8, 1951, was made by Mr. Ichiro Tasaka with a 13-inch Paloma-type reflector. His drawing at $21^h\ 5^m$, U.T., shows no unusual bright spot but only a small, dull, white cloudy mass; therefore, I think that he observed a few minutes too late to witness the curious phenomenon and saw only the later, undistinguished phase.

We can consider several possible explanations of the phenomenon:

1. Sunlight reflected very brilliantly from a water surface on Mars or from a field of ice or snow. This hypothesis appears unacceptable because the plane of the reflecting surface (water, ice, or snow) would have to be inclined about 76° to the horizontal at its position on the surface of the planet.

2. An impact-flash caused by the fall of a giant meteorite or a small asteroid. Such an impact-flash would be instantaneous, however, and could not endure for four or five minutes, as observed.

3. The fire of a Martian volcano. This hypothesis appears the most likely to me. We may suppose that an erupting volcano caused the very brilliant spot enduring for some minutes and that the volcanic ashes or volcanic moisture then diffused into a small cloud, finally quickly fading out, thus resembling vulcanism on the earth.

4. A signal from the Martians or a large atomic bomb!'It is hardly profitable for students of Mars to consider these, but perhaps they will interest some journalists.

I shall now speak of the large "snowstorm" in the south polar regions. On January 5, 1952, Osawa and Tasaka observed a white patch on the south limb of Mars; and all members of the Mars Section of the Oriental Astronomical Association have watched it carefully since that date. [Mr. Saheki was writing in the middle of February, 1952.] It grew brighter and brighter, especially after January 15, and at last on January 20 seemed to be fully as brilliant as the north polar cap. Since then this bright south cap has preserved its brilliance and has shown that it is the reappearing south polar cap. In fact, however, careful examinations have shown me that it is not a true surface polar cap but is only a large heavy snow cloud and snow fallen from that cloud, for these reasons:

1. Although the south cap appeared to be as brilliant and as white as the north cap on a completely dark sky, a different appearance was seen on a dawn sky as sunrise approached. On such a bright sky the south polar bright region quickly lost its brightness and white color and finally became a rather dim yellowish white or a dull white cap on the south limb. At the same time the north cap, a true surface cap, maintained its great brightness and its pure white color.

2. The south cap occasionally projected on the south limb of Mars just like an ordinary yellow cloud, especially on February 5. At $19^h\ 50^m$ on this date I saw on the extreme south limb a very narrow, non-projecting white band, which was very difficult to see. By $20^h\ 30^m$ the bright white band was seen more easily but still did not cause any bulge on the south limb. By $21^h\ 10^m$, about 30 minutes before sunrise at Osaka, the area showed a yellow color and was dimmer; now there was a slight bulge on the south limb, which was larger on its east (limb) side than on its west (terminator) side.

Considering these results, I suggest that this southern light area must be due to a heavy snow cloud and to snow fallen from it. Of course, this phenomenon is not strange and is only a normal, seasonal development on Mars. It was, however, the <u>first</u> and <u>largest</u> phenomenon of this kind at the current apparition and appeared important to me for that reason.

<u>Comments by Editor</u>. We agree with Mr. Saheki's interpretation of the far southern bright area.

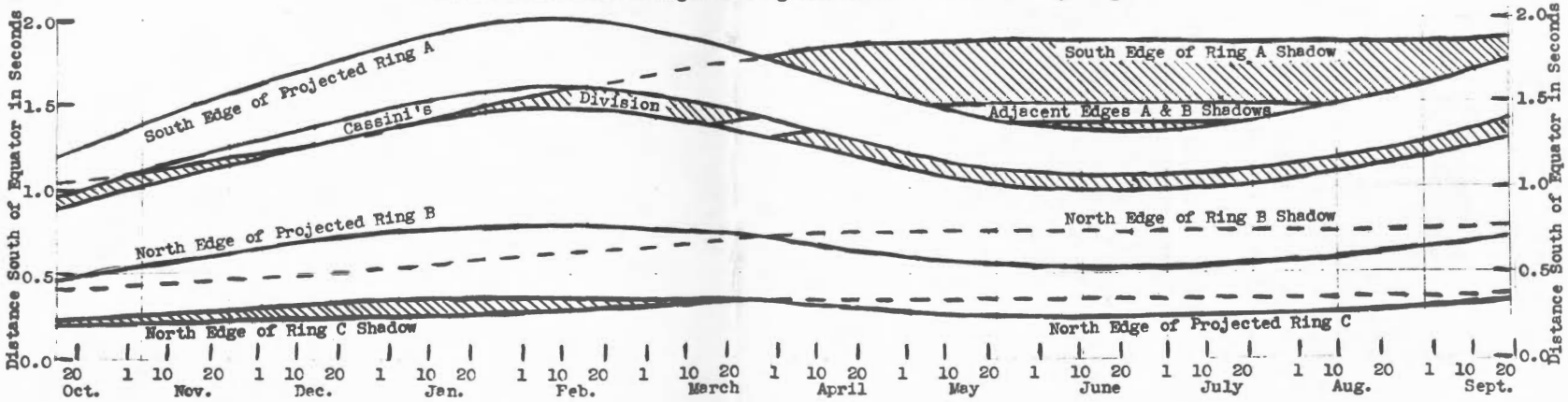
APPARENT WIDTHS OF SATURN'S RINGS AND RING SHADOWS AT CM 1951-1952

Based on following dimensions:

Ring A - 169,300 Miles OD
Ring B - 112,600 Miles ID
Ring C - 92,900 Miles ID

Cassini's Div. - 3000 Miles Wide
Saturn - 75,100 Miles Eq. Dia.

Dashed lines indicate edges of ring shadows which are hidden by rings.



The very brilliant spot of December 8, 1951, must almost certainly be regarded as a highly abnormal phenomenon since apparently only two of its kind have ever been recorded. The chief objection to vulcanism is the extreme aridity of Mars and the fact that our terrestrial volcanoes are found near large bodies of water. The rapid simultaneous increase in size and decrease in brightness of the spot strongly suggest that the brilliant material, whatever its nature, was diffusing itself in the Martian atmosphere. Saheki's drawings (Figure 1 on pg. 46) would indicate, however, that the material diffused outward from its original location by as much as 200 miles in 10 minutes - hence at the rate of 1200 miles per hour! Even allowing for the uncertainity of this figure, we must have some most remarkable forces in the atmosphere of Mars to explain such an observed effect! It can scarcely be ordinary diffusion in the rare Martian atmosphere. Although the impact of a giant meteorite would cause an instantaneous impact-flash, the surface materials fused at the impact might remain hot and luminous for some time; even so, the meteoritic hypothesis cannot explain the observed increase in size. This objection also applies to regarding the brilliant spot as the image of the sun reflected off a plane surface.

Incidentally, the stellar magnitude of the spot in its brilliant phase may have surpassed the estimated five or six. We can calculate from data on pp. 440-441 of the 1951 A.E.N.A. that on December 8 the average stellar magnitude of a square second of arc on the surface of Mars was 6.3. A circular spot with a diameter of only 0".56 would have an area of a square second. Of course, Mr. Saheki's spot was much brighter than the average of the surface.

We confess ourselves unable to think of a satisfactory explanation for the spot. Can some of our readers help us?

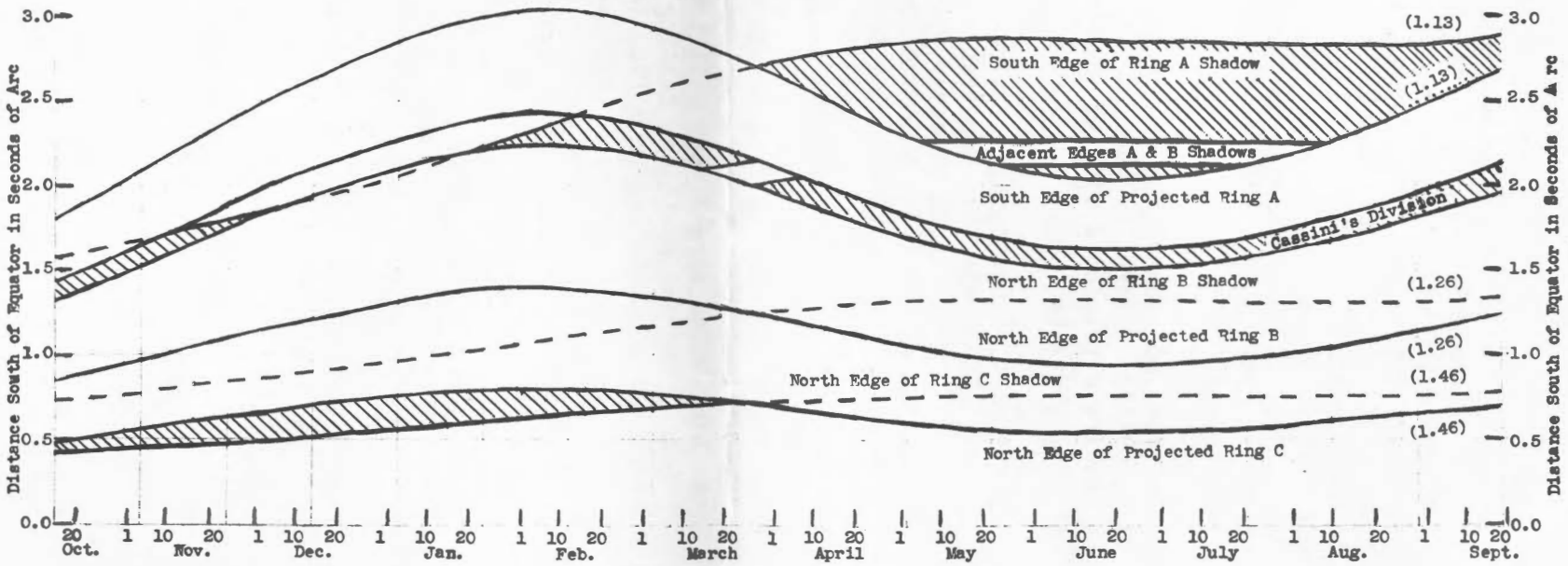
OBSERVATIONS AND COMMENTS

On pages 50 and 52 there are reproduced graphs showing the dimensions of the projections of the rings of Saturn upon the ball and their shadows during the 1951-52 apparition. These were prepared and communicated by Mr. Lyle T. Johnson of La Plata, Maryland. The graphs will be self-explanatory, we think, after a short study. Each square represents 0".1 in the vertical direction and four days in the horizontal direction. A few problems may indicate the possible uses of the graphs, for which we express our thanks to Mr. Johnson.

1. What was the width of the shadow of the rings at the central meridian on April 10, 1952? Referring to pg. 50 and estimating by eye to the hundredth of a second, we find that the south edge of the Ring A projection was then 1".68 south of the equator of Saturn and that the south edge of the shadow of Ring A was then 1".81 south of the equator. The breadth of the (observable) shadow was thus 0".13, and it lay south of the projection of the rings.

2. What was the width of the Crape Band at the C.M. on November 16, 1951? Experience has indicated that the Crape Band consists of the Ring C projection plus any ring-shadows lying on the same side of the Ring B projection as the Ring C projection. On November 16, 1951, then, the Crape Band extended from the north edge of the Ring B projection to the north edge of the shadow of Ring C. We learn from pg. 50 that the north edge of the Ring B projection lay 0".60 south of the equator of Saturn and that the north edge of the Ring C shadow lay 0".23 south of the equator. Hence, the width of the Crape Band was 0".37.

APPARENT WIDTHS OF SATURN'S RINGS AND RING SHADOWS
15° From Terminator 1951-1952
To get curves at terminator multiply by numbers in parentheses at right end of each curve



3. What will be the width of the Ring C projection on May 2, 1952, at a distance of 15 degrees from the terminator? At the terminator itself? Going now to pg. 52, we find that at a distance of 15 degrees from the terminator the north edge of the Ring B projection will lie 1".05 south of the equator; the north edge of the Ring C projection, 0".60 south. There results a width of 0".45. To get to the terminator we multiply 1".05 by 1.26, the factor on pg. 52 for the north edge of the Ring B projection, and secure 1".32. We likewise multiply 0".60 by 1.46 and obtain 0".88. Hence, the breadth of the Ring C projection at the terminator was 0".44. The values for 15 degrees from the terminator, which may be read directly from the graph on pg. 52, will ordinarily be preferable for comparing to actual observations.

It may be noted that the portion of the globe visible through Cassini's Division in 1951-52 is sometimes covered by shadows and is sometimes free of shadows. It might well require a telescope with an aperture of 20 inches or more to observe this distinction, however.

Figure 2 on pg. 46 is a pair of sectional drawings of Jupiter communicated by Mr. Elmer J. Reese. They illustrate the appearance of the South Temperate Zone of Jupiter on July 14, 1950, chiefly as observed by E. E. Hare with a 12-inch reflector, and on November 30, 1951, as observed by E. J. Reese with a 6-inch reflector. Readers will note the long-enduring brighter sections in this Zone studied by Mr. Reese and described on pp. 33-34 of our March issue. The letters used on Figure 2 to denote the terminal ends in longitude of the brighter sections are the same as those used in the graph on pg. 35 of our March issue. Reese has now extended his investigation to include the central meridian transits observed by W. H. Haas with an 18-inch refractor during the apparitions of 1943-4 and 1944-5. These longitudes agreed <u>very well indeed</u> with those of both earlier and later apparitions, the new positions falling so near the projected lines on the chart (of longitude against time from 1940 to 1951) that it was not necessary to draw a new chart! If there could be very little doubt before that these South Temperate Zone features endured from 1940 to 1951, there can be much less still now - however the fact is to reconciled with the general turbulence and instability of the Jovian surface.

Some rather interesting observations of Uranus were obtained in January and February, 1952. When making the drawing reproduced as Figure 3 on pg. 46, Haas was much impressed by the great brilliancy of the white spot on the east limb - it was forcibly reminiscent of a Martian polar cap. His interest in this marking was much increased a few days later upon the arrival of a drawing by O. C. Ranck with a 4-inch refractor at 480X on January 8, 1952, at $2^h\ 45^m$, U.T. - again there was shown a brighter area on the east limb. Assuming the two white areas to be the same, one here had the valuable opportunity of determining <u>directly</u> the period of rotation of Uranus; the value of 10.75 hours given in textbooks rests upon photometric and spectroscopic data only. Assuming that Uranus rotated 18 times in the interval of 193 hours, 41 minutes between the Ranck and Haas drawings, one gets a period of <u>10 hrs., 45.6 minutes</u>, in very pleasing agreement with the photometric value. Therefore, several observers made some efforts to reobserve the white area - and discovered that a 20-inch telescope and perfect seeing must aid greatly in dealing with the small disc of Uranus! Haas, however, almost certainly reobserved this spot on January 24 and February 2, 1952, though it appeared smaller and less brilliant than on January 16. From the two initial drawings and the period of rotation of $10^h\ 45^m.6$, we can predict that the white area would return to the east limb near $6^h\ 7^m$ on January 24 and near $5^h\ 19^m$ on February 2. Since a pole of Uranus is now near the center

of the disc, the observer may watch the rotational drift of markings near the limb by estimating their changing position-angles on the disc. This position-angle is referred to directions in the terrestrial sky, being 0° for north, 90° for east, and 180° for south. On January 24 Haas estimated the position-angle of a white spot on the limb to be 140° at 4^h 15^m, 95° at 5^h 45^m, and 80° at 6^h 35^m, the return to the east limb (90°) thus coming near 6^h 2^m. The decreasing position-angle would mean that the rotation of the planet is in the same direction as the revolution of the satellites. On February 2 at 4^h 5^m Haas suspected a bright spot on the limb near position-angle 140°. Ranck on February 11 at 1^h 10^m drew a rather indefinite bright area near position-angle 190°; since the white area should have returned to the east limb near 4^h 31^m on this date, the position is in fair agreement with a rotation-period of 10^h $45^m.6$.

The evidence here presented leads us to suggest that A.L.P.O. members have confirmed visually that Uranus rotates in about 10.75 hours. On the negative side, however, we must mention that C. C. Post and C. W. Tombaugh with 6-inch and 8-inch apertures could not secure truly definite views of detail on Uranus and that W. H. Haas glimpsed some other white areas on the limb, which may have been confused with the one under discussion in views on January 23 and later. More observations may shed important light on the problem, and we hence request our readers to submit immediately all their observations and drawings of Uranus in January and February, 1952. The white area recorded on the east limb on January 8 and 16 may well have been a Uranian feature of unusual prominence.

Ranck saw most of the limb of Uranus to be very dusky in his 4-inch refractor at 480X. On February 11 at 1^h 10^m he drew a brilliant circular spot near the center of the disc. A brightened polar region?

Figure 4 on pg. 46 shows some lunar clefts in the region of Schroeter's Valley discovered by H. P. Wilkins with a 15-inch reflector and by F. H. Thornton, another British lunarian, with an 18-inch reflector. The clefts marked A and B were discovered by Thornton; the others, by Wilkins. Confirming these clefts may well require both a fairly large aperture and good seeing, but some of our best-equipped members may want to try. Mr. Thornton says that Mr. Wilkins' 1950 cleft (Figure 4) is sometimes visible and sometimes invisible.

Mr. R. M. Adams has contributed a drawing of Aristarchus made on February 9, 1952, at colongitude 68°.9 with a 10-inch reflector at 144X and 288X. The seeing was excellent; the transparency, poor. Colongitude, let us remember, is the lunar eastern longitude of the sunrise terminator and measures the solar illumination of a given region. Mr. Adams depicted two dark bands on the east inner wall, a white streak (a ridge?) in the east part of the floor, and a dark east border to the floor. He exercised care to draw only those markings which were certainly seen, as one should always do.

On January 4, 1952, at 0^h 55^m, C. C. Post of Las Cruces was much surprised by the appearance of Julius Caesar in his 6-inch reflector. The colongitude was 350°.7 so that Julius Caesar was close to the sunrise terminator. The floor looked very dusty, and there were some cloud-like bright markings. Mr. Post even wondered whether a meteorite had just struck the moon here and had raised dust from the surface! He telephoned W. H. Haas, who began to examine Julius Caesar at 1^h 50^m. Haas thought the appearance completely normal; a dark area in the north part of the floor and a couple rather poorly defined bright spots were seen but can be found upon photographs in W. H. Pickering's Photographic Atlas of the Moon and upon a Mount Wilson photograph near colongitude 5°. Post and Haas continued to observe until 4^h 30^m and saw nothing further of note.

Although there is no reason to think that anything unusual was observed in Julius Caesar on January 4, we should like to commend Mr. Post's keen interest in bringing this matter to our attention as an example to our members. Perhaps next time there will be an important lunar phenomenon - and perhaps you will be the one to see it. Especially in metropolitan areas the A.L.P.O. member should request his friends by telephone to confirm possibly peculiar appearances on the moon and planets, for time may be of the greatest importance. He should remember too that observations confided only to his own memory, or even to his own notebook, are hardly any observations at all. The A.L.P.O. seeks to coordinate lunar and planetary studies, and it is by a cooperative effort that we may hope to advance the science.

E. J. Reese had a good view of the lunar crater Conon in his 6-inch reflector on January 7 at colongitude 28°7. Fault B was very conspicuous, dark and unbroken; its northeast end was nearly as prominent as its southwest end. Streak S was seen very clearly but was not conspicuous. W. H. Haas observed Conon on February 7 at 45°5, using a 6-inch reflector at 298X in fair seeing. Fault B was the plainest dark streak in Conon; Streak S and Cleft V were invisible. It was Haas' impression that the overall aspect of Conon was about the same as in 1941, when he observed it with a 6-inch reflector and an 18-inch refractor.

W. H. Haas also observed the walled plain Plato on February 7 at 45°5 and found in decreasing conspicuousness: near-central craterlet, east central diffuse white area, and northeast twin craterlets. By glimpses the near-central craterlet was clearly seen to be a craterlet, not just a bright spot; and by glimpses the twins were resolved into a pair of small craterlets. Both appearances are a fairly severe test of the optics of a 6-inch telescope.

The small partial lunar eclipse on February 10-11 was observed by some of our members, though others had cloudy skies. The Detroit Astronomical Society arranged a public viewing with portable telescopes in front of the Public Library; in spite of low temperatures and a strong wind, more than a thousand persons came to view the celestial show. We congratulate our colleagues in Detroit on this fine effort to popularize our subject. As far as we know, no one looked for possible lunar meteors during the eclipse; nor did anyone look for possible eclipse-caused changes. The most detailed report is from Mr. H. P. Wilkins, the Lunar Director of the British Astronomical Association, who observed with field glasses between breaks in clouds. The moon entered the penumbra at $22^h\ 6^m$ on February 10, and penumbral shading was easily seen by Mr. Wilkins on the southeast limb at $22^h\ 45^m$. The umbral shadow was subsequently rather dark; and no coppery hue appeared within the umbra, which was instead slaty-gray. The penumbra in the field glasses was very dark near the umbra but was not visible far from that edge. Clouds ended observations soon after mid-eclipse.

The eclipse of the sun on February 25 was observed as a partial eclipse by H. P. Wilkins and R. M. Baum in England. Using both direct vision and the projection method, Mr. Wilkins employed a 3-inch refractor at 50X. Conditions were good. The edge of the moon was singularly regular, only one mountain being seen in profile. The cusps were always geometrically sharp. At maximum eclipse (near $9^h\ 14^m$) the portion of the moon seen against the sun appeared decidedly darker than the sky, but the moon's limb could not be traced off the solar disc. Using a 1.8-inch refractor, Mr. Baum also had favorable conditions. The moon appeared purplish black. An assistant observer with a 3-inch refractor carefully studied the lunar profile and found the limb very regular. One suspected peak was perhaps the one recorded by Wilkins. About one-tenth of the sun's diameter was

eclipsed in England. As we go to press, we have no news of any spectroscopic observations of the eclipse of the kind proposed by Mr. Lyle T. Johnson on pg. 14 of our January, 1952, issue.

Mr. Howard Le Vaux, 910 S. Wooster Ave., Los Angeles 35, Calif. has been conducting an extremely interesting experiment and one which might be capable of being expanded into a project of great importance to lunar and planetary observers. Stimulated by the evident fact that the great differences between drawings of Venus by different observers must be chiefly in each observer's interpretation of the features rather than in the optical system employed, Mr. Le Vaux prepared a set of several dozen paper discs with various kinds of detail thereupon: large dusky areas, black spots, streaks, strings of dots, etc. The discs were mounted on a flat, black sheet of cardboard and were viewed at such a distance as to correspond to a planet having an angular diameter of 15" viewed with 100X. The discs are observed through very small telescopes. Preliminary results indicate that sharply defined and strongly-contrasting markings are drawn rather accurately but that accuracy falls off with decreasing contrast until drawings of very faint dusky areas do not resemble reality at all. Mr. Le Vaux is thinking of increasing the scope of his experiment to include the placement of markings, the depiction of various forms of detail, and the effects of poor seeing. (A radiator near the discs induces poor seeing as desired.) Mr. Thomas A. Cragg proposes that the observer should view the discs with the telescope with which he regularly observes, a desirable closer approach to reality. The overall objective is, of course, to determine the observer's ability to interpret the telescopic image. Mr. Frank R. Vaughn carried out a similar experiment a number of years ago but has not yet published the results.

We heartily congratulate Mr. Le Vaux on this experiment, and we would very much like to see other members imitate it. The results can be reported in future issues of The Strolling Astronomer. It may be worthwhile to give some thought to making the experiment resemble our telescopic studies as closely as possible. For example, suitably colored globes would be preferable to flat white paper discs. With some ingenuity the sun's illumination of the planets might also be imitated.

Dr. A. G. Smith of the University of Florida has kindly contributed a map of Mars in 1950, based upon drawings with his 6-inch reflector. There are many points of good agreement with the results of other A.L.P.O. members. Dr. Smith resolved Sinus Gomer from Mare Cimmerium; the only others to do so were S. Ebisawa and E. E. Hare, each of whom used a 12-inch reflector. Like Dr. R.J. Trumpler in 1924 and Dr. E. Pettit in 1939, Dr. Smith began his studies with the opinion that the canals are very probably illusions; but nevertheless he was soon drawing them! Indeed the objective reality of the canals should no longer be questioned; their presence on photographs is conclusive evidence. Smith does not see most of the canals as Lowellian lines, however: rather they are dusky streaks ranging from very broad and diffuse to relatively narrow. He does find a very few of the canals to be fine, sharp lines in good seeing; and that is also the opinion of a number of B.A.A. observers, among others.

Observations of Mars from December, 1951, to February, 1952, have been reported by T. Osawa (6-inch reflector), O. C. Ranck (4-inch refractor), T. Saheki (8-inch reflector), and A. G. Smith (6-inch reflector).

Writing on February 15, Dr. Smith said that he had had several nights of good seeing and that on December 27 he had seen the most conspicuous cloud

which he has yet observed on Mars. It formed a brilliant and striking protuberance beyond the terminator and lay somewhat north of the equator. In the same view the north cap was extremely dull, being presumably covered by haze. It may be recalled that T. Saheki also saw cloud-projections on the remote Mars near the end of 1951 (pg. 41 of March issue). We now pass to the work of Saheki and Osawa, who together obtained 29 drawings during the period under discussion.

The Japanese observers found that the north cap from December to February was sometimes sharp and very brilliant and was then bordered by a narrow, very dark polar band and was at other times dim and diffuse and was then bordered only by far northern maria. It is their interpretation that the former appearance was that of the true surface cap and that the latter appearance occurred when intermittent clouds covered the northern polar regions. We should remember that the summer solstice of the northern hemisphere fell on January 30, 1952. The table below rests upon measures of his own drawings by Mr. Saheki, who allowed for the tip of the axis of Mars in computing the corrected true diameter.

Interval	⊙	No. Observations	Angular Diameter	Corrected True Diameter
1951, Dec. 29-1952, Jan 3	76°-78°	4	17°	930 kms
1952, Jan. 15-20	83 -86	6	18	1010
Jan. 26 - Feb. 5	88 -93	7	13	740

The observation of the seasonal melting was complicated by the clouds mentioned above. Saheki on February 5 found a brilliant surface cap measured to be only 280 kms. in diameter to sparkle like a star, as indeed an object only 0".8 in diameter might well do in an 8-inch telescope.

Japanese observations of the south polar regions are described elsewhere in this issue.

A fair number of clouds were observed between the two polar regions, usually as bright areas near the limb or the terminator. On January 18 Saheki at C.M. 1° and again at C.M. 8° observed a very bright cloud just north of Aromatum Promontorium, though it was less brilliant than the north polar cap. In the view at C.M. 8° he drew a large bright cloud on the terminator near the equator to project a little. Other clouds revealed themselves indirectly by obscuring surface markings; thus Osawa found the whole of Syrtis Major faint on January 25 but more normal in appearance on January 26. The southern part of Mare Acidalium was similarly rather vague to Saheki on January 15.

The forks of Aryn were still seen single. Jani Fretum was plain and broad to Saheki on January 18 and 20. Eos was seen as a whitish area south of Aromatum Promontorium. Southern maria between longitudes 0° and 80° were usually fairly dark, though vague and indistinct to Osawa on January 14. Mare Acidalium was prominent, and Achillis Pons was a whitish lane between Acidalium and Niliacus. Joining Acidalium to the north polar cap, Jaxartes was an extremely dark canal. Canals seen well in these longitudes include Gehon, Indua, Nilokeras I and II, Jamuna, and Ganges. In a good view on January 15 Saheki drew Idaeus Fons on the north component of Nilokeras and depicted Lunae Lacus as a pair of dark spots. The region enclosed by Jamuna, Nilokeras, and Ganges was somewhat more dusky than its surroundings. A white spot, probably Nix Tanaica, was often seen in a yellowish Tempe Regio adjacent to Acidalium. Perhaps Jamuna was weaker than

in the autumn of 1951. On January 18 Osawa noted Oxia Palus as an intense spot at the north tip of Margaritifer.

Although Tithonius Lacus and some other dark markings were visible on the north shore of Thaumasia, Solis Lacus was searched for in vain. Ceraunius was broad and faint, and Ascraeus Lacus and Mareotis Lacus were seen as darkish spots. Mare Sirenum was one of the darkest maria on the planet, being black even on the terminator to Osawa on one date. Northern and equatorial detail between longitudes 100° and 160° was very difficult; both observers recorded Pyriphlegethon canal as a fairly dark streak and Nodus Gordii as a dark spot. Sirenius canal was also recorded. On January 3 Saheki drew Titan and Tartarus canals as the borders of a triangular shaded region. Propontis I and II were conspicuous separate dark spots.

Mare Cimmerium was moderately dark, and Laestrygonum Sinus was observed well as a "caret" on its north shore. Hades canal was very dark and comparable to Jaxartes; Cerberus canal was fairly dark where it formed the southwest border of Elysium, but its continuation to Sinus Gomer was very faint. A yellow-white Elysium looked brighter near the limb or the terminator than near the C.M. Its form was approximately circular. Curiously, the drawings show no sign of Trivium Charontis, where Hades and Cerberus meet. On February 4 Osawa saw Eridania to be white near the limb, becoming gray as it approached the C.M. On January 28 he recorded Hesperia as a white lane between Cimmerium and Tyrrhenum. Adamas, Alcyonius, Styx canals were occasionally recorded; and Laestrygon manifested itself as a small triangular shading. On February 4 Aetheria, just south of Alcyonius, appeared to Osawa to be covered with clouds.

Mare Tyrrhenum and Syrtis Major were very dark. Hellas was very bright to Saheki on January 26, fully equal to the north cap. Both observers found a yellowish tint in the white of Hellas. The Utopia shading remained conspicuous, and Nodus Alcyonius was seen at its south end. From January 25 to 28 the region west of Syrtis Major was apparently obscured by Martian clouds. Thoth-Nepenthes canal and Moeris Lacus, so prominent in mid-November, were faint or invisible. It appears significant in connection with this obscuration that on January 25 there was a white area just north of the north end of Syrtis Major (all of which was faint on January 25) and that Isidis Regio was dusky on January 25 and 26. Nilosyrtis and Nasamon canals emanated from the north tip of the Syrtis. Hellespontus was very dark, sufficiently so to cause an apparent concavity of the terminator to Saheki on January 18 at C.M. 8°. Pandorae Fretum was visible as a narrow streak; Sabaeus Sinus was narrow and very dark. Deucalionis Regio was whitish; and Noachis was dusky, perhaps especially so on January 18. Gehon and Hiddekel canals formed the edges of a triangular faint shading with its apex at Sinus Meridiani, and there was another similar shading with its apex at Portus Sigeus. The long sweeps of Protonilus-Deuteronilus, Oxus, and Pierias-Callirhoe canals were sometimes seen well. Coloe Palus and Ismenius Lacus were ill-defined darker knots on them.

The dark markings on Mars chiefly showed only gray and black colors to the two Japanese observers. Rarely blue or green tones were recorded in the southern maria.

On February 5 at $19^h\ 50^m$ (4:50 A.M., J.S.T., on February 6) Saheki had a very strong impression that the whole disc of Mars was unusually dim and that all markings were vague. The C.M. was 175°. The sky was very clear. Very widespread Martian atmospheric obscurations?

BOOK REVIEW

by Walter H. Haas

Stars. A Guide to the Constellations, Sun, Moon, Planets, and Other Features of the Heavens. 150 paintings in color. 155 pages and index. Written by H. S. Zim and R. H. Baker. Illustrated by James Gordon Irving. Simon and Schuster, New York. Price $1.00.

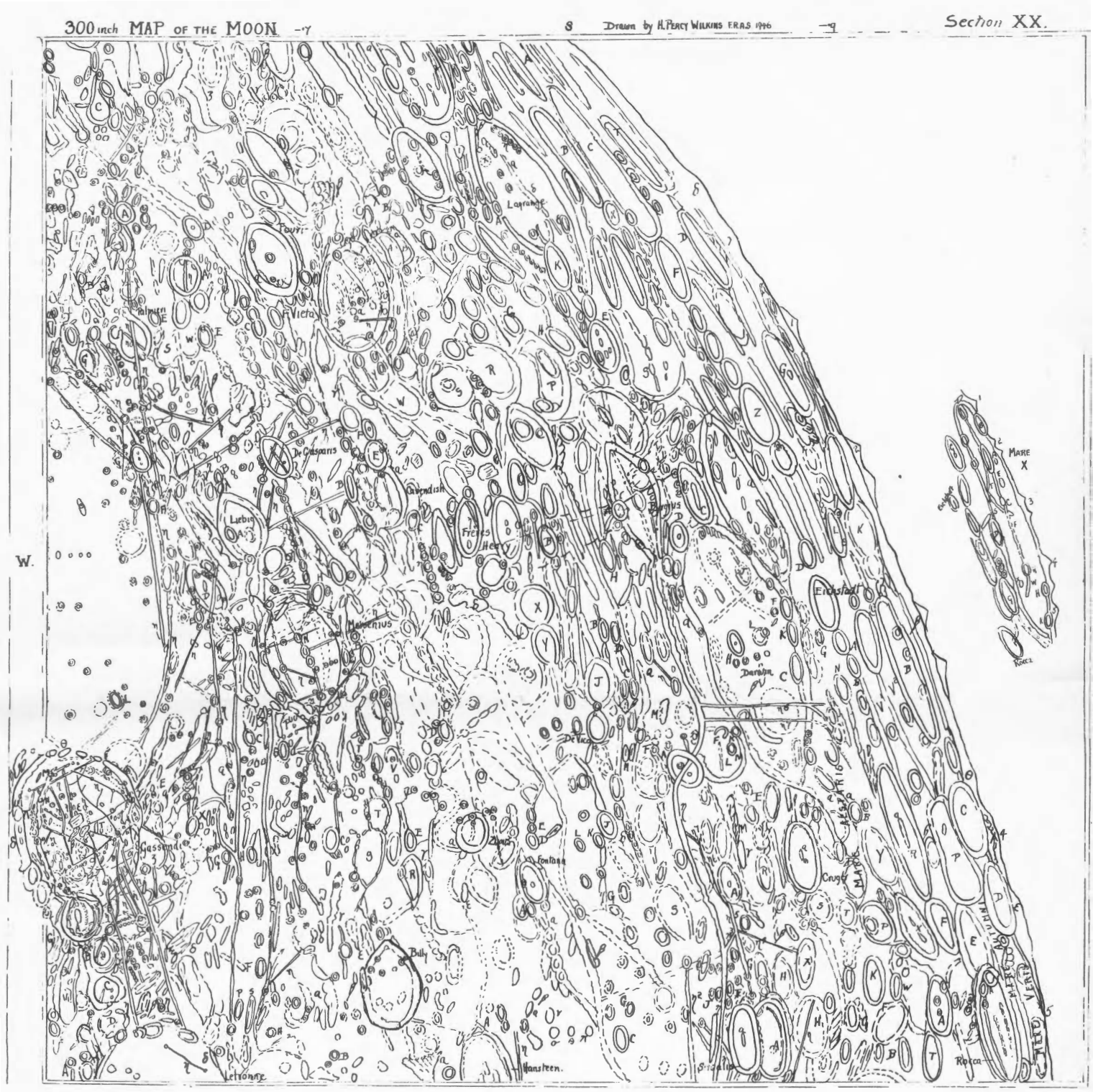
This pocket-size little booklet of the Golden Nature Guide Series intended for the beginning amateur. It should certainly whet his appetite to know more, and the reviewer recommends it highly for this purpose. Perhaps some of our members might like to make a present of it to interested friends.

The book opens with a very general introduction to amateur astronomy, ending on pg. 15. There follows a section on the sun and sunlight, telescopes, and stellar astronomy. The next section, pages 50 to 101, is devoted to a brief description of the major constellations and may well be the part of the book which will appeal most to many nature-lovers. The balance of the book deals with the solar system. The style of writing is simple and lucid. The text is briefly descriptive. The illustrations are beautifully done, most of them in color. Many photographs from large observatories are used. In a few cases we feel that more text or more caption would have made an illustration more meaningful to the novice.

A reviewer is expected to find a few errors - perhaps to show that he has read the book! On pg. 27 one might note that astronomical twilight can last for several hours even in the United States. On pg. 117 it is only one polar cap of Mars which extends "south" in its winter, but both caps in that season extend toward the equator. We doubt that many living observers have ever seen the Red Spot on Jupiter nearly as red as the painting on pp. 118-119 would lead one to expect it to be. The occasional visibility of Vesta to the unaided eye would form an exception to the statement on pg. 123 that the known asteroids are all telescopic objects. However, these slips are few enough and minor enough that they do not detract from the value of the book; and its general level of accuracy is the high one which we would expect from the authors.

We suggest that the list of astronomical literature on pg. 15 should be a little longer. Surely there are more than five books and one magazine to which the novice who has finished Stars can be properly referred.

We commend this attractive booklet to the beginning amateur.



SECTION XX

OF

H.P. WILKINS 300-INCH MAP OF THE MOON

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