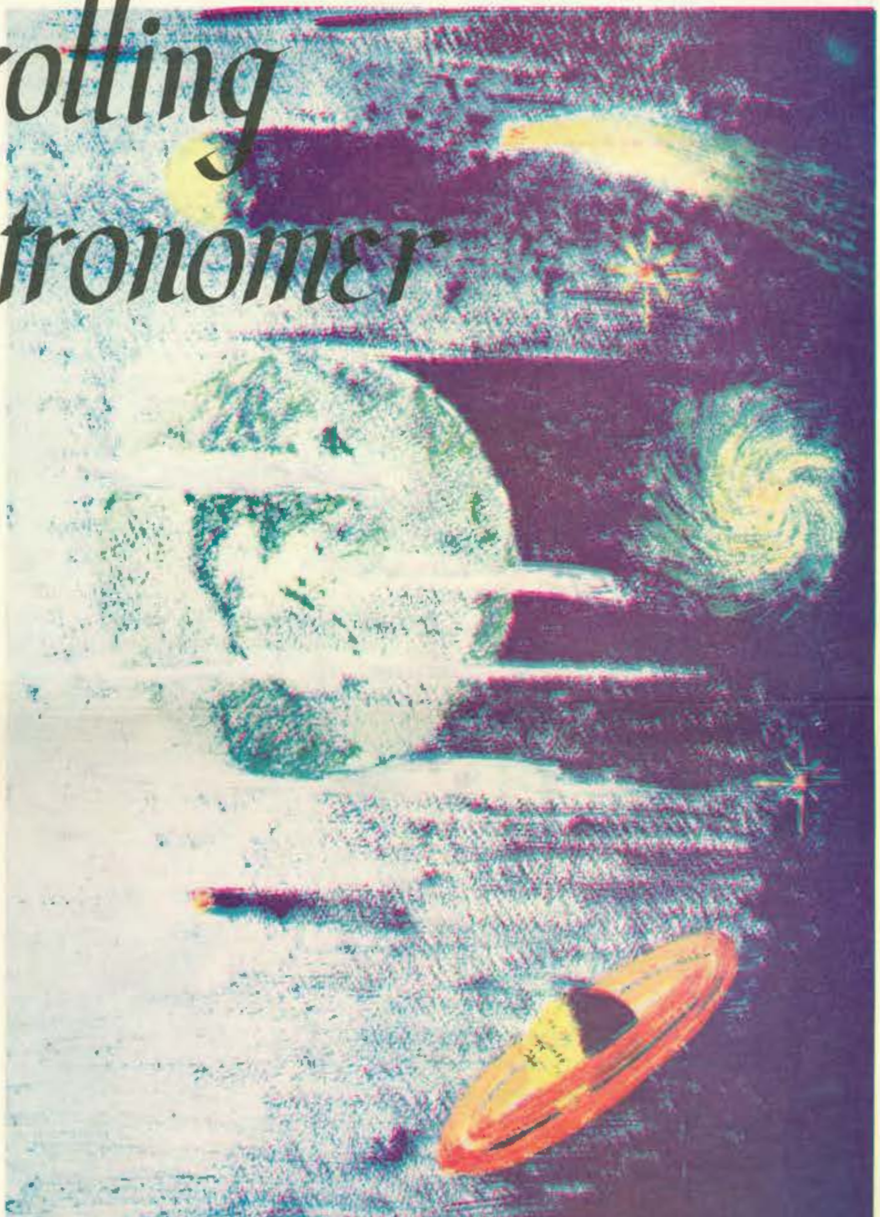
The Strolling Astronomer

Volume 6, Number 7 July 1, 1952

ASSOCIATION OF LUNAR AND PLANETARY OBSERVERS



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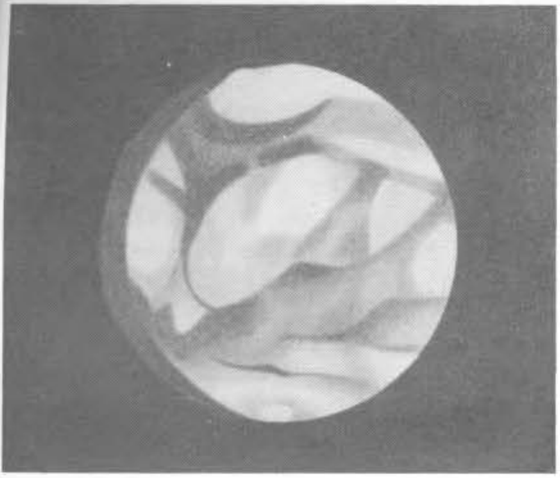

Figure 1. Mars.
I. Tasaka. 13-inch refl.
Feb. 29, 1952. 20^h43^m, UT
171X. C.M. = 322°

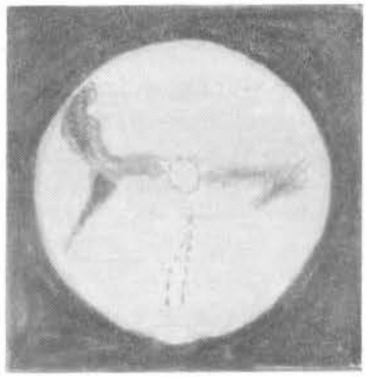

Figure 2. Mars. J.C.
Bartlett. 3.5-inch refl. 100X
April 20, 1952. 5^h36^m, U.T.
C.M. = 357°.

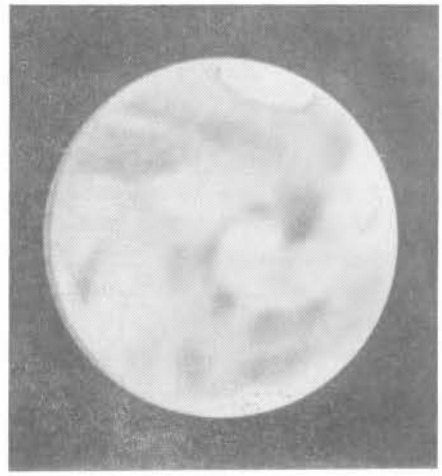

Figure 3. Mars.
S. Murayama. 8-inch refr.
April 5, 1952. 14^h45^m, UT
288X. C.M. = 265°.

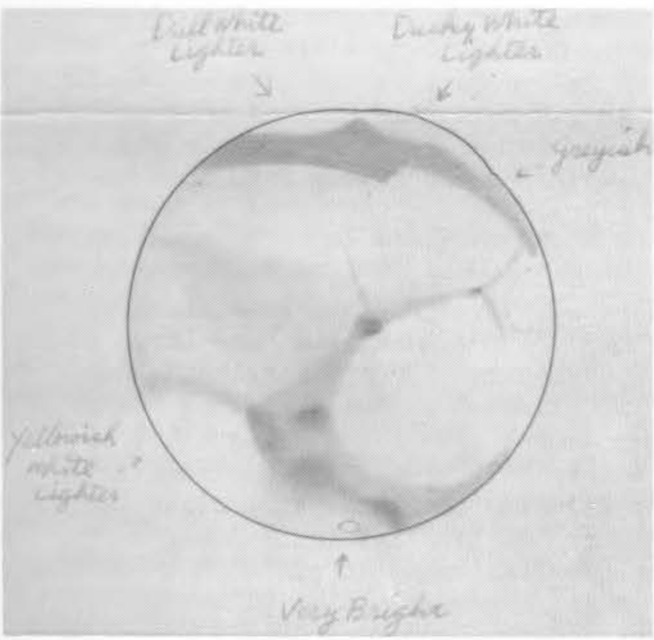

Figure 4. Mars. T. Saheki.
April 18, 1952. 17^h35^m, U.T.
8-inch refl. 400X. C.M. = 191°.

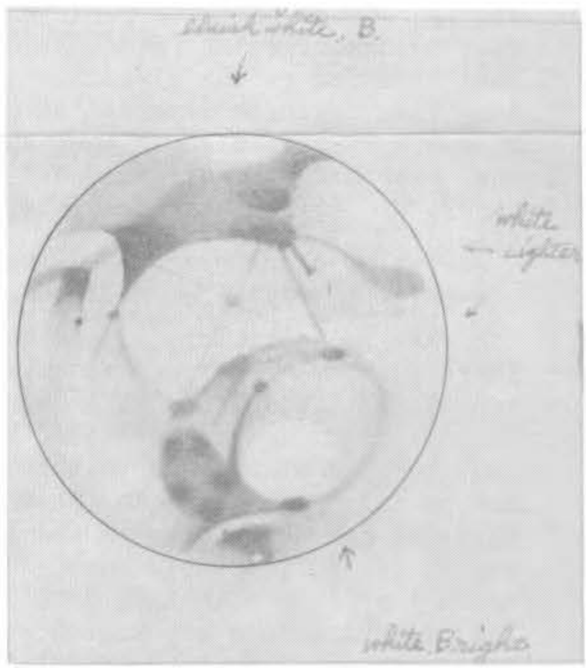

Figure 5. Mars. T. Saheki
April 30, 1952. 14^h15^m, U.T.
8-inch refl. 400X. C.M. = 44°.

The Wilkins Map of the Moon. Section XXIV of the Wilkins map of the moon appears on the back inside cover of this issue, and with it all the regular sections have been published. However, we plan to publish as an additional service to our readers several special sections which Mr. Wilkins has added to his map. These will continue to appear on the back inside cover of The Strolling Astronomer. Many readers have inquired about the availability of sections published in previous issues, many of which are now completely out of stock. We plan to make an announcement on this subject in the near future. We hope to give all interested persons the opportunity to obtain a complete set of the Wilkins map sections in the reduced size at a reasonable price.

As copies are received from Mr. Wilkins in England, the Editor will also supply the full-scale Wilkins map to those desiring it. The price of this Third Edition, including 25 regular sections, 3 special sections, a Title Page, and an Index Page, is now thirteen dollars ($13.00). Only orders which were received before July 1, 1952 can be filled at the old price. Increased costs of paper and printing in England and burdensome duties levied by the American customs have necessitated the increase. The map is, of course, of scientific and educational value only.

With the Largest Refractor in Europe. Early in April, 1952, our British friends, H. P. Wilkins and P. A. Moore, had the great privilege of observing the moon on several different nights with the 33-inch refractor of the Meudon Observatory. Some of their results appear in two papers in this issue, and others will be described in future issues. Both men were thrilled by the wealth of detail revealed in the 33-inch, and Mr. Wilkins is adding to his map of the moon many fine features observed at Meudon and never before recorded by lunar students. Both men emphasize that they saw the surface of the moon far more clearly than they ever had before; and their own telescopes are rather large by amateur standards, Mr. Wilkins having a 15-inch reflector and Mr. Moore having a 12-inch reflector.

The lunar views enjoyed at Meudon by Wilkins and Moore, as exemplified in the next two articles, should forcibly demonstrate to everyone the advantages of large apertures in lunar and planetary observing. To the question: How large a telescope should I use to study the moon and the planets?, there can be but one answer: As large as possible. It is true that some competent observers have made curious statements that in some locations a mere six inches of aperture is the useful upper limit on the moon and the planets. It is also true, however, that one can never gain in resolving-power by reducing aperture; and unless the seeing is sufficiently poor, one is instead sure to lose resolving-power and hence the finer planetary details, as the spurious disc grows larger with a smaller aperture. One may indeed get a steadier image with a reduction of aperture, but supposed gains in detail from this cause are likely to be completely illusory. Jupiter will present a very steady image with an aperture of half an inch and a power of 20X - and will be void of detail or nearly so. It is true, of course, that masking out a defective outer edge of a mirror or lens may improve the telescopic image. It is also true that a 5-inch telescope of good quality may outperform a 12-inch telescope of poor quality. It is certainly further true that many amateurs, including a number of A.L.P.O. members, obtain results worthy of great praise with very modest instrumental equipment. Even so, there can be no doubt that progressively larger telescopes give progressively better planetary views when other conditions are comparable.

PLATO

by H. P. Wilkins, F.R.A.S.

This fine lunar walled plain can rarely, if ever, have been as closely scrutinized as it was on April 3, 1952, with the 33-inch refractor of the Meudon Observatory near Paris, France. The moon was high and the sky was clear when, seated at the eyepiece of the third largest refracting telescope in the world, we brought Plato into the field of view.

The floor or plateau appeared remarkably uniform and level, its dark tint sharply contrasting with the bright surrounding wall. The appearance observed is shown by Figure 1 on pg. 96. The western portion of the floor was covered by the shadow of the wall, the shadow of one peak being decidedly curved. A little to the west of the center of the floor was a very conspicuous crater-cone, its white outer slopes contrasting strongly with the dark floor around them. The interior of this crater-cone was carefully observed to see whether there was any central peak or other detail, but nothing was seen except the concave shadow fringing its west rim. The interiors of this, the largest crater-cone, and of the three others seen are bowl-shaped. The cones rise comparatively little agove the floor since there was no trace of shadow on their eastern slopes. Of the twin cones in the northeastern part of Plato the more northerly is almost exactly 3/4 the size of its neighbor.

In addition to the 4 prominent cones, many white spots were also noted and were nearly all of the same size. One to the south of the central crater-cone was surrounded by a faint nimbus, while to the east was a diffuse white patch. Three light streaks were also noted.

When I had finished my drawing, Mr. Moore took his place at the eyepiece and made an independent drawing, which agrees with mine as regards the crater-cones and the chief white spots. Each observer noted small white spots which the other overlooked; but the cones and the white spots of whose existence we are certain are shown on the drawing, Figure 1 on pg. 96.

Comments by Editor. It appears certain as a result of this observation by Wilkins and Moore that the southwestern of the twin craterlets in Plato is larger than the northeastern one. When the northeastern looks larger, it must mean that the true outlines of the craterlets are not seen.

The four crater-cones are evidently shallow in view of the smallness of their internal shadows. Indeed, they may be about as shallow as Plato itself. Shadows have been seen in a few of the Plato craterlets by several A.L.P.O. members with ordinary telescopes but probably not so plainly as in the Meudon 33-inch.

On pp. 86-87 of our June issue we spoke of T. A. Cragg's failure to see any detail on the floor of Plato in a good view near $2^h\ 45^m$, UT., on April 4, 1952, not many hours after the Wilkins-Moore observation described above. The exact time of their observation is not stated; but if the moon were high in the sky at Paris, it was probably no later than 20^h, U.T., on April 3. Certainly there is no hint of lunar atmospheric obscurations when Messrs. Wilkins and Moore observed. Is it possible, then, that the appearance changed considerably between the two observations? We wish in vain that we had an observation simultaneous with Cragg's by a giant American telescope!

ARISTARCHUS

by H. P. Wilkins, F.R.A.S.

Aristarchus, being the brightest of all lunar formations and situated near one of the most remarkable contorted valleys, has received much attention from selenographers. In recent years attention has been more especially directed to the dusky bands which traverse the otherwise brilliant inner east slope. Numerous drawings have been published, chiefly as the result of observations with comparatively small telescopes. Naturally observers differ in their interpretation and delineation of the more delicate details.

The writer and Mr. P. A. Moore recently had the great privilege of observing this formation with an instrument of such impressive size and superlative optical quality as the 33-inch Meudon refractor. On April 7, 1952, after some early interference from cirro-stratus cloud, the sky cleared; and a steady period of very good definition ensued. The colongitude was 64°.9 so that the greater portion of the interior was illuminated. As seen with powers of 320X and 460X, the most minute details were clear and sharply defined and are shown on the accompanying drawing, Figure 2 on pg. 96, which represents all the detail visible on that occasion. I made the drawing of Aristarchus while Mr. Moore concentrated on the great valley to the north.

I very distinctly saw a crater-row under the southeast crest of the wall and two craters on the southwest, one of which appeared as a ring of light in the shadow of the west wall. Between these craters is the relic of an ancient ring. The brilliant central mountain contrasted strongly with the somewhat dusky floor, on which there were some lighter patches; undoubtedly low mounds and ridges. The long and narrow central mountain is slightly constricted in the center, and there is a very minute summit pit or craterlet. Four dusky bands were noted on the inner east slope, positions and extent as shown. The most southerly was by far the broadest and was traced across the floor to the central mountain. This band certainly, and probably the others as well, was clearly seen to be composed of a series of dark dots and dashes and not to be of uniform shade as usually depicted. Antoniadi, using the same instrument, found a similar appearance in connection with the Martian "canals".

The northern inner slope was broken up into separate masses, which were noted as intruding upon the floor and were strongly suggestive of the creeping of once plastic material. The west wall is precipitous in places near the crest with a lofty terrace on the inner slope, a portion of which protruded from the shadow; the inner east slope was also terraced, as shown.

Many of the features mentioned have not been recorded before and are too delicate for ordinary telescopes. The mass of delicate detail recorded on the numerous drawings I made of various formations during three nights of observation testify to the value of a large aperture, and I wish to acknowledge my indebtedness to the Observatory Director for kindly placing the third largest refracting telescope in the world at my disposal.

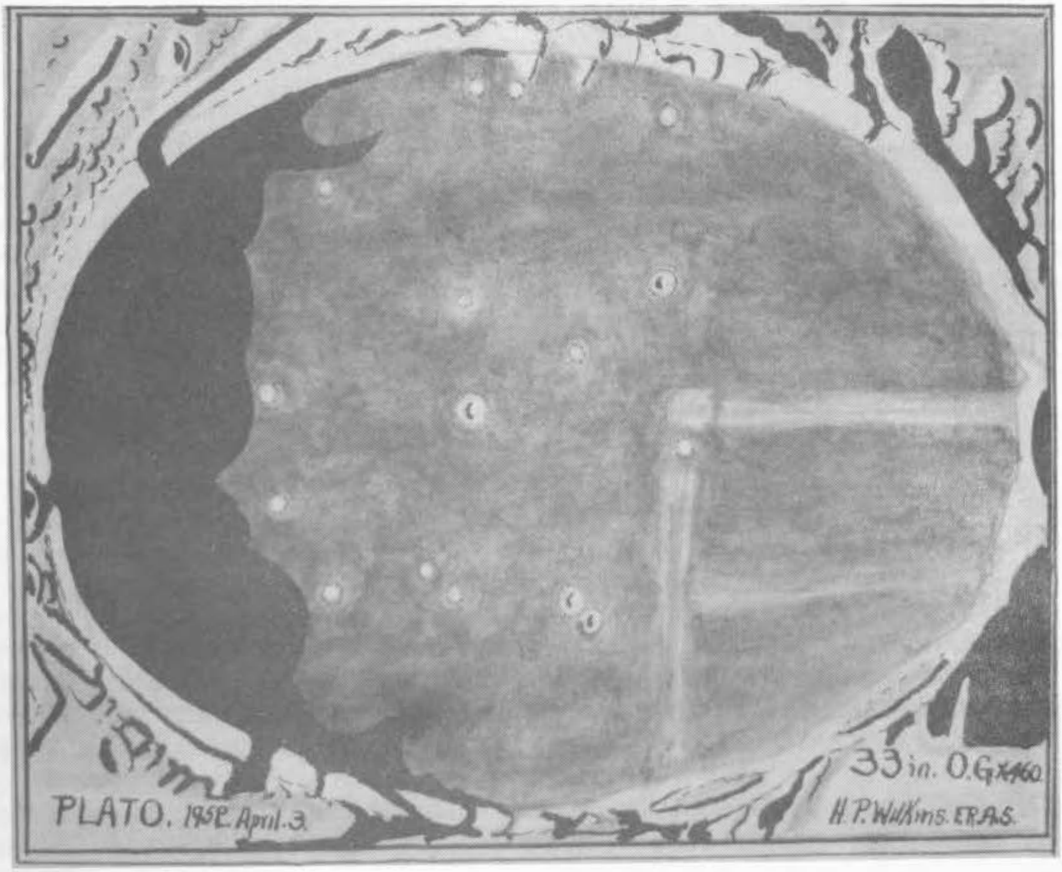

Figure 1. Drawing of Plato by H. P. Wilkins. 33-inch refractor, 460X. April 3, 1952. Colongitude near 16°.

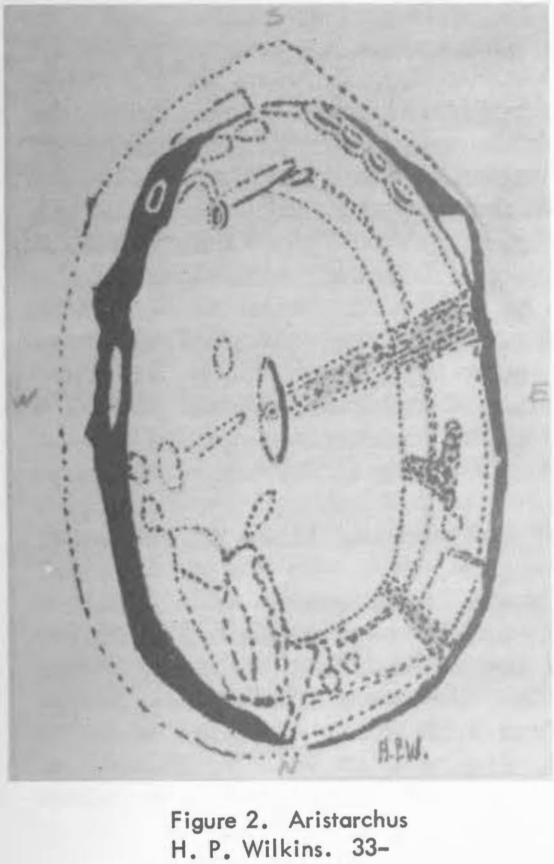

Figure 2. Aristarchus
H. P. Wilkins. 33-
inch refr. 320X.
April 7, 1952
21^h, U.T.
Colong. = 64°.9

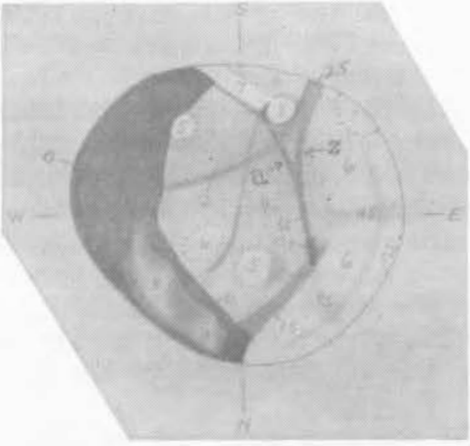

Figure 3. Conon
E. J. Reese. 6-inch
refl. 240X.
May 4, 1952. 2^h0^m, UT
Colong. = 24°.7

Remarks by Editor. The resolution of a dark band on the east inner wall into dots and dashes is indeed decisive evidence of the optical superiority of a 33-inch telescope. Walter H. Haas never obtained such a resolution in many views of Aristarchus with an 18-inch refractor in 1941-6. However, E. E. Hare partially resolved one dark wall band with a 12-inch reflector on September 24, 1950 (The Strolling Astronomer, Volume 5, drawing in No. 8, pg. 1, test in No. 3, pp. 11-12, 1951). The complex nature of the Aristarchus bands revealed by the Meudon refractor must certainly be considered in any explanation of them.

SIMILARITIES AND DIFFERENCES BETWEEN THE FESTOON SYSTEMS OF SATURN AND JUPITER

by James C. Bartlett, Jr.

In April and May of 1952 the writer observed rather marked festoon activity in the north hemisphere of Saturn, which appeared to be generally more active than the south hemisphere. This was shown not only by the persistence of the festoon systems but by the frequent appearance of small humps and dark spots along either edge of the N.E.B., by changes in the width of intensity of the N.E.B., by the occasional appearance of white spots and by the varying visibility of the N.T.B. and the N.N.T.B.

In this paper it is proposed to make a brief comparison of the Saturnian to the Jovian festoon systems. Saturnian festoons are naturally more difficult to see than their Jovian analogues, in consequence whereof considerably greater uncertainty enters into the observations; and in view of the small aperture used by the writer - 3.5-inches - some may consider that the phenomena discussed below should be referred to psychiatry rather than astronomy, but I leave this to the judgement of my peers.

A few preliminary remarks about festoons as such may be in order.

One of the great difficulties attending our understanding of these markings is our complete ignorance of their nature and perhaps we know better what they are not than what they are. That they are not material structures is indicated not only by the vast real distances between their termini, but especially by the peculiar, elastic property which they occasionally exhibit. This is such that a festoon may shorten and thicken, or lengthen and become thinner, according to the necessity dictated by the differential movements of belts connected by them. In a recent paper[1] the writer suggested that they may be manifestations of electromagnetic attraction between termini of opposite polarity, which would well explain the apparent elasticity. In this view, while the festoon itself is not a material structure, very finely divided matter may be constrained to follow the flux, and so give rise to a visible line.

In the same paper it was remarked that one of the missing links in our knowledge of festoons is the manner in which they are generated. So far as is known to me, no observation has yet been made of the actual development of a festoon from point of origin to terminus though what appears to be the beginning of the process has been observed many times. I refer to the development of small, dark, round, or oval spots along the outer edges of the Jovian and Saturnian belts. Occasionally short wisps are observed to arise from such spots, examples of which may be seen in Saheki's fine drawing of Jupiter, Figure 4 in Vol. 5, No. 11 of The Strolling Astronomer. It is virtually certain that by extension these wisps become fully developed festoons. Mature festoons may be seen in the Jupiter drawings of Johnson, Osawa, and Bartlett in Vol. 6, No. 2 of The Strolling Astronomer, p. 22.

A characteristic common to both the Jovian and Saturnian festoons is their marked inclination. This is such that difference in longitude between the termini may be very great - 26° in a recent Saturnian example - the result being that the festoons cross the zones diagonally. This might almost be said to be their "normal" appearance. But occasionally an "abnormal" aspect is observed. Then we see the festoon as a meridional line running north-south between its termini. Meridional festoons occur alike on Jupiter and Saturn; and the writer observed the transit of such a festoon on Saturn, May 27th at 1^h 41^m, U.T. Generally such festoons are rather short and columnar, but the one observed on Saturn was very long and relatively thin. It is tempting to regard meridional festoons as festoons which have just been completed, before differential movement of the terminal spots in longitude has resulted in the assumption of a diagonal position. But there are very great difficulties in supposing that the inclination is due to such differential movement, though differential movement has been observed to affect the length of a festoon as noted above. The recent festoons observed by the writer on Saturn well illustrate this difficulty. With the single exception of a short, diagonal festoon observed May 27th on the E.Z., all of the Saturnian festoons in April and May, 1952, ran between the north edge of the N.E.B. and the south edge of the N.N.T.B. With but two exception all were diagonals. Yet in all but one case the N.N.T.B termini preceded the N.E.B. termini.

In a recent letter to the writer, Mr. Cragg, our Saturn Recorder, called attention to a statement in ASTRONOMY, Vol. I, by Russell, Dugan, and Stewart, to the effect that the spectroscopic period of Saturn at latitude about 57° (presumably plus or minus) is about 1.5 hrs. longer than at the equator. If festoons actually represent paths of magnetic attraction, then the flux will be strongest when the termini of opposite polarity are nearest to each other. This being so, one would expect the equatorial belt termini, in general, always to preced the termini of higher latitudes. Even if they chanced to follow by a few degrees at the time the festoon was established, then the greater velocity of the equatorial belt termini should very shortly result in their over-taking and subsequently preceding the high latitude termini. Yet the reverse appears to be the case with the Saturnian festoons. The writer has observed one system, in which the N.N.T.B. termini preceded, to maintain this relationship for 22 terrestrial days. This is extremely difficult to understand and simply points up our dense ignorance of the nature of these markings. At any rate, differential movement is hardly the explanation of the observed inclinations.

In general, Saturnian festoons resemble their analogues on Jupiter; and it is scarcely questionable that both are phenomena of the same kind. Nevertheless there are apparent specific difference in the behavior of Saturnian festoons for which a ready explanation is not at hand.

Perhaps the most obvious difference is in the apparent preference of the Jovian festoons for the E.Z. By and large, the Jovian festoons occur most abundantly in the E.Z., either crossing the entire zone to connect the two equatorial belts or running between these belts and the Equatorial Band. On Saturn, however, the preference seems to be for temperate latitudes; and festoons appear to avoid the E.Z.

A more remarkable difference between the Jovian and Saturnian festoons is in the apparently much greater length of the latter. On Jupiter, the festoons commonly connect adjacent belts; but the Saturnian festoons recently observed appeared to cross the intermediate N.T.B. (occasionally visible) to connect the N.E.B. to the N.N.T.B. This was true of all cases excepting the single E.Z. festoon mentioned above. It is not certain whether this is to be regarded as a specific difference because observations of Saturnian festoons are too few to make generalizations anything but risky. It is quite possible also that the writer's observations are fallacious on this point, owing to insufficient aperture. Possibly two sets of festoons systems were actually present, the one connecting the N.E.B. to the N.T.B. and the other connecting the N.T.B. to the N.N.T.B. By visual integration these could appear as single systems. All that can be said with certainty on this point is that to the writer the festoons appeared to be continuous between the N.E.B. and N.N.T.B.

A significant agreement between Jovian and Saturnian festoons is in the occasional appearance of double festoons common to both planets. A double festoon is one in which, starting from a single point, two festoons diverge to end in widely separated termini. A good example may be seen near the E. limb of Jupiter in Figure 9, Vol. 6, No. 2, of The Strolling Astronomer, p. 22. On May 7th, 1952, at 3^h 32^m, U.T., the writer observed several double festoons on the northern hemisphere of Saturn.

Thus we may postulate that the festoon systems of Jupiter and Saturn are essentially identical in nature, while exhibiting a few more or less minor differences which may be related to the specific differences between the planets themselves. But much closer attention must be paid to Saturnian festoons before we can afford any pontifical pronouncements.

Reference

1. Bartlett, J.C.; The Spots of Jupiter; The Strolling Astronomer; Oct., 1951, p. 8

OBSERVATIONS AND COMMENTS

We shall first conclude our discussion of A.L.P.O. studies of Mars in February-April, 1952, space having been lacking in the June issue.

The most interesting Martian cloud of all in our records is perhaps a gray cloud observed in Japan in mid-April. It was first remarked by Ebisawa at 15^h 50^m, U.T., on April 16 as two grayish bulges projecting above the southeast limb. We might note that a gray cloud will scarcely project because of irradiation. By 16^h 40^m, C.M. = 195°, Ebisawa saw the cloud-bulges more clearly; he continued to observe until $18^h 0^m$ and decided that they lay in Eridania near longitude 210°, latitude 50° S. and that they rose 100 to 150 kms. (60 to 90 miles) above the surface of the planet. This height is very great for Martian clouds. On April 17 at 17^h 5^m, U.T., C.M. = 192°, Saheki observed that Eridania was grayish and projected slightly; Murayama on this date confirmed its dull tone but in bad seeing could not be sure about any projecting. On April 18 Saheki (Figure 4 on pg. 92) and Ebisawa found the north part of Eridania still dull and grayish; and Ebisawa at 18^h 0^m, C.M. = 196°, saw clearly a bulge on the south limb. The cloud was brighter than on April 16. Using color filters on this date, Saheki found most of Eridania to be about the same white color as Electris. By April 21 the appearance of Eridania was normal. We might mention that Osawa and Saheki found

Eridania grayish in tone, especially in its northern part, in early February and again in the middle of March. This grayish cloud may remind some of our readers of two similar clouds observed in Japan in 1950. The first of these was observed by T. Saheki and others on January 15, 1950; it was more prominent than the recent object and lay in Electris with its center near longitude 202°, latitude 58° S. (The Strolling Astronomer, Vol.4, No. 2, pg. 11, No. 3, pg. 11, and No. 4, pp. 13-14, 1950). The second one was observed by S. Ebisawa, T. Saheki, and S. Murayama from March 29 to April 4, 1950 and lay in the southern part of Thaumasia (The Strolling Astronomer, Vol. 4, No. 5, pp. 11-12, 1950). Saheki suggests that these three gray clouds are due to ash erupted by a Martian volcano, in spite of the extreme aridity of the planet. The similar geographical positions may favor some such localized cause.

We shall now describe the surface features of the planet as they were seen in February-April; a good map of Mars will help in following this discussion.

<u>Longitudes 0° to 60°</u>. The Forks of Aryn were perhaps the darkest feature in this region; but Mare Acidalium was also very dark, as were Sinus Margaritifer and Sinus Aurorae to a lesser extent. The Forks of Aryn were now readily divided in the better instruments used by the group of observers. On April 27 and 30 Saheki recorded a very tiny oasis just north of the east (following) Fork of Aryn (Figure 5 on pg. 92). Jani Fretum was a broad, easily visible band connecting Aryn and Margaritifer. Argyre I was dull, but Argyre II was often brilliant on the south limb. Pyrrhae Regio and Eos were rarely recorded as rather dim, yellowish areas. On April 27 and 30 Saheki drew Fons Juventae as a tiny spot; and Baetis canal, which joins Juventae to Aurorae, was narrow and black (Figure 5 on pg. 92). On these same dates Saheki faintly perceived the "new" lake in Chryse (Figure 5), which developed in 1950 at the intersection of Hydraotes and Jamuna canals. On April 7 Stephenson, confirmed by H. R. Prymer, found Chryse very brilliant near the sunset terminator at C.M. 119°. He had previously several times found Chryse rather bright near the edge of the disc but never to the degree it was on April 7. Lacus Niliacus was very small but distinct to Saheki. Among the lakes seen well in these longitudes were Oxia Palus, Lunae Lacus, Siloe Fons, and Idaeus Fons. Among the canals were Oxus, Gehon, Indus, Ganges, Nilokeras I and II, Tanais, Callirrhoe, and Deuteronilus. Jamuna and Jaxartes canals were weaker than some months previously. Tempe was whitened just east of Mare Acidalium (Figure 5 on pg. 92). On April 20 Stephenson in the better moments thought that Indus canal was discontinuous, and on March 28 Saheki thought Deuteronilus "knotted." To Murayama the more prominent canals and oases were seen as broad dusky areas. Colors on Mars were apparently not prominent in these longitudes. The southern <u>maria</u> were bluish gray but were almost black in their darkest spots; Mare Acidalium was a dark green, perhaps mingled with brown. At the end of March, but not in February or April, the region north of Mare Acidalium was very dusky.

<u>Longitudes 60° to 120°</u>: Solis Lacus was usually rather difficult to see, and there is good evidence that yellow clouds sometimes covered Thaumasia. Nectar canal and perhaps one or two others connecting to Solis Lacus were occasionally recorded. On April 7 at C.M. 152° Stephenson found Sinus Aonius plainly present and traced it clear to the south limb; on this occasion at least there can have been no appreciable south cloud-cap. Sinus Aonius was blue to Stephenson on April 7. In the best views Agathodaemon canal was narrow and black, and Tithonius Lacus was extremely dark. Araxes canal was seen well. Detail in the northern deserts in these longitudes was extremely faint and difficult,

being very hard to draw. Ascraeus Lacus and Mareotis Lacus were recorded as vague shadings. Uranius-Gigas canal was double to Cragg on April 15. Ceraunius formed a broad band or shading in middle northern latitudes and looked especially large and notable to Cragg on April 15 and 16.

Longitudes 120° to 180°. Mare Sirenum was usually intensely dark, though perhaps less so than in the last months of 1951. In fact, Saheki often found Sirenum rather faint and diffuse, as if covered by Martian clouds. Sinus Titanum was very outstanding on the north shore of Sirenum. On April 16 Saheki glimpsed Sinus Gorgonum as a small "caret" near longitude 152°. Atlantis was observed as a very narrow strait between Sirenum and Cimmerium. Saheki and Ebisawa found the hue of Sirenum to be a beautiful green-blue, although Stephenson was not certain of any color in this mare on April 7. Phaethontis and Electris were dull white in tone in mid-April, Figure 4 on pg. 92, though they had been brighter in mid-March, according to Saheki. Hyscus canal was broad and dark to Saheki on April 21. On April 7 Stephenson saw Mare Chronium and found it notably dark near longitude 120°, where he could trace it to the south limb. No one else recorded Chronium, and an 18.5-inch telescope has evidently scored here in recording a feature fully 70 degrees south of the center of the disc. Saheki frequently drew Propontis I, Propontis II, Euxinus Lacus, and Castorius Lacus as four rather dark spots in a large, grayish shading. Amazonis was notably dusky (Figure 4 on pg. 92), even to Bartlett in a 3.5-inch reflector. Amazonis was brownish gray to Saheki. Equatorial and northern detail was very difficult indeed in these longitudes and is inconsistently represented on the different drawings. However, an inspection of the drawings indicates the existence of at least these canals: Tartarus, Titan, Gigas, Pyriphlegethon, and Eumenides-Orucs, the last as a boundary of the dusky Amazonis.

Longitudes 180° to 240°. Mare Cimmerium was one of the darkest of the large maria, being distinctly darker than Mare Tyrrhenum to its east. The color of Cimmerium was green or blue to Saheki and olive-green or gray-green to Bartlett. Laestrygonum Sinus formed a definite hump on the north shore of Cimmerium, and Cyclopum Sinus and Cerberi Sinus lay farther east on this shore. It is very creditable to Dr. Bartlett that he saw Cyclopum and Cerberi plainly with only a 3.5-inch reflector; these two objects are shown well on Saheki's drawing reproduced as Figure 3 on pg. 77 of our June issue. On May 1 at C.M. 247° with extremely good seeing Bartlett noted: "In the south hemisphere, approximately near the south terminus of Mare Tyrrhenum, I was surprised to find a very small, intensely dark spot looking much like a satellite shadow looks on Jupiter, though perhaps not quite black. I think there can be no question of the existence of this phenomenon." The position indicated is near longitude 235°, latitude 40° S. No feature answering to any such description appears to be present on maps of Mars. Neither do we have any other reports of its existence at this writing. Was it, then, very temporary? Trivium Charontis was dark and possessed its usual triangular shape (Figure 3 on pg. 92). Hades I ran from Charontis to Propontis I; Hades II, from Charontis to Propontis II. Both canals were strong, Hades II the more so. The region enclosed between Hades I and II was slightly more dusky than its surroundings. Elysium was regularly notably bright near the limb or the terminator, much less bright near the C.M. The color of Elysium was yellowish white. In good views in the middle of April Saheki found that the brightest portion of Elysium was just east of Charontis (Figure 3 on pg. 77 of June issue), and this aspect was also remarked by C. W. Tombaugh at the Lowell Observatory on April 2 (pg. 74 of May issue). The pentagonal Elysium was bounded by canals of which Cerberus I was always conspicuous, Styx was often fairly dark, and the others were very faint. Pambotis Lacus was small and very dark (Figure 4 on pg. 92). Cerberus II canal was often seen, and Laestrygon canal was drawn by

Ebisawa as a broad and diffuse band. In high northern latitudes Saheki drew Stymphalius Lacus and depicted Gyndes canal as the boundary of a dusky region to its north.

Longitudes 240° to 300°. The narrowness of Hesperia remarked by Tombaugh on April 2 (pg. 74 of May issue) is confirmed by Saheki's failure to record this strait at all in April, although Murayama drew it on April 5 (Figure 3 on pg 92). Mare Tyrrhenum looked dark green to Ebisawa and bluish gray to Saheki. Hellas was regularly very bright, fully as bright as the north caps; and Saheki in April distinguished brighter spots within Hellas. Its color was bluish white, indicating Type I Martian clouds. The Casius-Utopia shading was dark and showed a complex, knotted structure in the best views (Figure 3 on pg 77 of June issue), as also in 1950. Its color was gray. At the south end of this shading Nodus Alcyonius was easily seen as a dark spot; and just west of Nodus Alcyonius was an equally conspicuous and similar-looking dark spot (Figure 3 on pg. 92). This "new" oasis was apparently discovered by Japanese observers in 1946 and has remained present down to this writing. It is interesting to speculate upon whether the "new" oasis is related to, or is one of, the chain of three "new" oases remarked by C. W. Tombaugh as an apparently new development on April 2 (drawing on pg. 61 and text on pg. 75 of our May issue). The agreement in position is, however, rather poor. Thoth-Nepenthes canal was conspicuous and often looked double to Ebisawa in an 8-inch refractor on April 5. Murayama drew Lacus Moeris as a larger darker spot in this canal just to the west of its junction with Syrtis Major (Figure 3). Other canals seen in these longitudes were Adamas, Nilosyrtis, Nasamon (faint), Astusapes (narrow and faint), and Amenthes. It is a curious fact that Adamas canal probably connected to the new oasis just west of Nodus Alcyonius (Figure 3 on pg. 92) rather than to Alcyonius itself, as in the past. Coloe Palus was undistinguished. Syrtis Major was very dark and possessed a beautiful deep sky-blue color. The different observers disagree about whether the "Libya gap" still indented the southwest shore of Syrtis Major on April 5 or whether instead Libya was dusky on that date. Syrtis Major and its immediate vicinity were often covered by clouds when near the sunrise limb or the sunset terminator. Just east of the north tip of Syrtis Major Murayama and Saheki saw plainly a small oasis called Sakura Fons by Saheki. It is this oasis which E. C. Slipher photographed as a new Martian feature in 1939.

On April 5 at C.M. 271° Saheki considered the appearance of Mars to be very similar to what he had observed in April, 1937.

Longitudes 300° to 360°. Hellespontus was rather dark. Pandorae Fretum was invisible, being merely the boundary of a dusky and greenish Noachis. Deucalionis Region was fairly bright. Sinus Sabaeus was very dark, especially near Portus Sigeus and the forks of Aryn; but as a whole Sabaeus was probably less dark than Syrtis Major. In April Sabaeus looked brown-gray to Saheki. Hammonis Cornu was a conspicuous indentation in the north shoreline of the main maria. Canals seen in these longitudes were Euphrates, Hiddekel, Protonilus, and Pierius. Ismenius Lacus was elongated and rather dark. Hiddekel and Gehon were the borders of a dusky wedge tapering to an apex at the forks of Aryn, and on February 29 Tasaka saw Euphrates as a similar wedge tapering to an apex at Portus Sigeus (Figure 1 on pg. 92). On March 28 Saheki glimpsed the far northern Arethusa Lacus.

O. C. Ranck, P. O. Box 161, Milton, Penna. has continued to observe Uranus and made two drawings of the small disc on April 21, 1952 and one on May 3, using a 4-inch refractor at 480X. It may be recalled that Ranck and Haas in January and February, 1952 observed a white area on the limb of Uranus and found some evidence from it that the planet rotates in 10 hrs. 46 mins. (The Strolling Astronomer, Vol. 6, pp. 53-54, 1952). On April 21 at 1^h 25^m, U.T., Ranck remarked a gray shading on the south limb and a white area on the southeast limb. By 2^h 25^m both objects had shifted their positions, the observed direction of rotation of the planet being in the same sense as the known motion of the satellites. On May 3 at 1^h 45^m Ranck drew a shading on the north limb and a bright area on the northeast limb, features thought to be different from those he observed on April 21. Ranck proposes that such white areas are temporary disturbances in the atmosphere of Uranus and that they vary in size and brightness.

E. J. Reese, 241 S. Mount Vernon Ave., Uniontown, Penna. made detailed drawings of the lunar crater Conon on May 3 and 4, 1952; one of these is reproduced as Figure 3 on pg. 96. The nomenclature used here is Reese's and is given on Figure 1 on pg. 83 of our June, 1952 issue. On May 3 at colongitude 12°.4 Mr. Reese found Dark Streaks U and Z very dark. The floor east of Z looked hazy and almost as bright as the east inner wall, an appearance once drawn by S.R.B. Cooke at 12°.3 with a 9.5-inch refractor. Hill P was seen as a rounded mound, and a low ridge ran southward from Hill P to the brilliant craterlet K_2. The sunlit eastern wall of Cleft V was seen at the edge of the sunrise shadow in Conon.

On May 4 at 24°.7 Reese found these dark streaks in order of decreasing conspicuousness: Fault B, Band U, Streak Z = Streak A, Streak S (difficult), and Cleft V. He saw plainly a Y-shaped figure formed by Streaks A and Z (Figure 3 on pg. 96). It will be noted that Bright Area O, on the opposite side of Cleft V from Hill P, did not cast any shadow, although Hill P still did so. On May 4 at 26°.3 W. H. Haas drew Conon with T. A. Cragg's 12-inch reflector and found these dark streaks in order of decreasing conspicuousness: Fault B, Band U, Streaks A and Z (merged into one), Streak S (diffuse and indefinite). He confirmed these additional features drawn by Reese three hours earlier: Wall Bands A, B, and C, Hill Q (as a bright spot), Bright Area G (on southeast rim of Conon), and Craterlet K_2. Mr. Reese directs attention to the very dark spot, 0.5 in intensity, which he drew at the north end of Streak Z on May 4 (Figure 3 on pg. 96). He saw this spot easily on that date; but under identical conditions on January 7, 1952 at 28°.7 the spot was completely invisible, even when very carefully looked for. On February 8, 1949 at 28°.2 Reese found this spot to be unusually large and dark.

R. M. Adams, 324 South Valley, Neosho, Missouri spent two to three hours in searches for possible lunar meteors from May 24 to May 28, using both a 3-inch refractor and a 10-inch reflector. Results were completely negative.

In our April, 1952 issue we called attention to some clefts near Schoreter's Valley discovered by H. P. Wilkins and F. H. Thornton (sketch on pg. 46, text on pg. 54). Their observations were made with 15-inch and 18-inch telescopes. It was hence a little surprising that Cecil C. Post, 621 S. Melendres, Las Cruces, N. Mex. on May 7, 1952 near 2^h 0^m, U.T., thus at colongitude 61°.3, observed some of the Wilkins-Thornton clefts with only a 6-inch reflector at 90X. Using the notation of Figure 4 on pg. 46 of our April issue, Mr. Post saw the "1950 cleft" very easily as a thin dark streak (no sign of a sunlit wall) and saw the "new cleft" with difficulty. The "new cleft" was not quite in line with the "1950 cleft" but was slightly to the south of its continuation. Post could see nothing of Clefts "A" and "B", and by 3^h 0^m the "1950 cleft" was difficult. On June 5 Post confirmed this observation; and on June 5 at 55°.8 and 56°.9 W. H. Haas, using a 6-inch reflector at powers from 94X to 298X, saw the "1950 cleft" as a rather diffuse, dark gray band about 4 miles wide. Haas would not have supposed this band to be a cleft, and he could see nothing of the other clefts on the Wilkins-Thornton chart; his view was evidently inferior to those enjoyed by Post.

It is a little surprising, as we said above, that Post's 6-inch telescope should reveal so easily a feature which was only discovered with more than twice that aperture. Indeed, this "1950 cleft" is completely lacking from the 1946 version of the Wilkins map of the moon, which certainly shows many features far beyond the grasp of a 6-inch. (Refer to Section XVIII on pg. 30 of our February, 1952 issue.) Haas cannot recall ever having seen any sign of the "1950 cleft" in the course of dozens of views of the neighboring Aristarchus with an 18-inch refractor from 1941 to 1946. Is it possible, then, that this cleft, and perhaps its neighbors as well, has recently become more conspicuous? However, a photograph of the moon taken with the Mount Wilson 100-inch reflector on July 20, 1938 near colongitude 187° appears to show the "1950 cleft" as a gray streak. We invite our readers to watch this region of the moon closely under low lighting.

Readers may recall that Mr. Jackson T. Carle on February 5, 1952 drew a small, very dark oval spot a little southeast of the center of the walled plain Plato (drawing on pg. 61 and text on pg. 70 of our May issue). The colongitude was 21°.9 so that Mr. Carle was observing under fairly low morning lighting. He suggested that what he saw was a very shallow depression full of shadow. If so, however, the depression must also hold shadow whenever the morning lighting is still <u>lower</u> than that when Mr. Carle observed. It hence appears to be decisive negative evidence that under such lower lighting Mr. H. P. Wilkins on April 3, 1952 saw no dark oval spot in the required position during an <u>excellent</u> view with the Meudon 33-inch refractor, his drawing being reproduced in this issue. Moreover, W. H. Haas in an observation on May 3, 1952 at colongitude 13°.8 with P. J. Nemecek's 12-inch reflector looked in vain for Carle's oval spot, the moon being defined well enough so that several pits on the floor of Plato were seen by glimpses. Mr. Carle must have seen something not normally present, whatever its explanation. Mr. David P. Barcroft, however, has become very interested in Carle's February 5 spot and thinks that it is shown on some lunar photographs, for example on the Mount Wilson 60-inch lunar photograph H 17 taken on October 15, 1927 under afternoon lighting at colongitude 145°.2. The Editor disagrees. The lighting was much higher on the photograph than on February 5, and the shape and location of the dark spot are only roughly similar. There are, as is well known, many high-sun darker patches on the floor of Plato; but it is not certain that these lie in depressions, and indeed views under very low lighting often stress the smoothness of the floor.

Since F. H. Thornton directed attention to some undescribed unusual appearance in the lunar crater Haze (pp. 27-28 of our February, 1952 issue), D. P. Barcroft has often examined this object but has to date found nothing remarkable. Mr. Barcroft reports, however, that he has found some detail not included on the Wilkins map of the moon. Where the map shows a mountain ridge, he has seen two interesting ridges. He has also discovered a rill or cleft running northward from Haze A, the chief craterlet on the floor, and crossing the north rim of Haze to enter the walled plain Petavius. Most of the floor of Haze looked smooth. Confirmation of these newly reported features is, of course, desirable.

O. C. Ranck has contributed these lunar drawings, made with his 4-inch refractor at 120X or 180X; Tycho on June 2 at colongitude 18°.9, Arzachel on June 3 at 31°.1, and Gassendi on June 5 at 55°.7. Tycho was more than half full of shadow, and its central peak cast a dome-shaped shadow. Mr. Ranck drew several shadow-filled terraces on the east inner wall. On June 5 Arzachel was half full of shadow, and its central peak also was casting a dome-shaped shadow. Ranck remarked several bright spots near the foot of the east inner wall, these are presumably hills or craterlets, but they are not readily recognized on lunar maps. The drawing of Gassendi resmebles others made by Mr. Ranck during the past year.

On pg. 56 of our April, 1952 issue we described some experiments with artificial discs being carried out by Howard Le Vaux, 910 S. Wooster Ave., Los Angeles 35, Calif. Mr. Le Vaux prepared paper discs with various kinds of planetary details such as large dusky areas, black spots, streaks, chains of dots, etc. and viewed them through a very small telescope at a proper distance, making drawings of the different discs. Of course, the experiments are conducted in such a way that the observer does not know the true appearance of the disc which he is drawing. The object of the experiments is to determine how accurately the observer draws different kinds of planetary detail. The observer may hope to learn in this fashion what subjective errors he makes in drawing planetary detail of different kinds - for example, whether he regularly shows dark bands too thin. It is true that the experiments can never give completely conclusive results because the circumstances of the experiments will never perfectly imitate the circumstances of planetary observations. Nevertheless, we can do in the experiments what we can never do with the actual planets; we can test how features of known true aspects will be drawn. Therefore, the experiments will at least tell us what kinds of errors we may be making in our drawings; and this information will grow more reliable as the conditions of the experiments approach reality - our actual telescopic observations of the actual planets.

Ernest L. Pfannenschmidt, P. O. Box 135, Duparquet, Quebec, Canada in a letter on May 11 suggested some refinements in the Le Vaux experiments: "Try observing ordinary white ping-pong balls with a small telescopic system, whose focal ration and power may be varied. Illuminate the ball in a dark room or at night by means of a lamp, thus causing 'phases'. Atmospheric effects may be induced by an electric toaster and condensing water vapor. Different-colored backgrounds may be added also, and so may filters if sunlight is used to illuminate the ball. It is thus possible to check the effects of phase, background, atmospheric seeing, light quality, focal ration, and power!" We hope that some of our readers will try Mr. Pfannenschmidt's helpful ideas and report their results to us.

Sadao Murayama, 10 Nishikata-machi, Bunkyo-ku, Tokyo, Japan on May 31 wrote in part as follows: "Recently I began some attempts at planetary photography, employing the 8-inch refractor of the National Science Museum. I enclose some copies of pictures of Mars and Saturn. These photographs were obtained with a miniature camera attached behind the eyepiece of the refractor. A fine-grain panchromatic film and an orange filter were used for Mars, and no filter was employed for Saturn. The size of the images on the negatives was less than 1/15 of an inch, and the mean exposure time was about 3 seconds."

We are very glad to note Mr. Murayama's interest in planetary photography and hope that more A.L.P.O. members will take up this branch of our studies. A photograph of Saturn taken by Mr. Murayama on May 4, 1952 at $11^h 45^m$, U.T. shows the bright Equatorial Zone, the shadow of the rings, a trace of the North Equatorial Belt, Cassini's Division (vaguely), and the greater brightness of Ring B as compared to Ring A.

SECTION XXI V

of

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

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