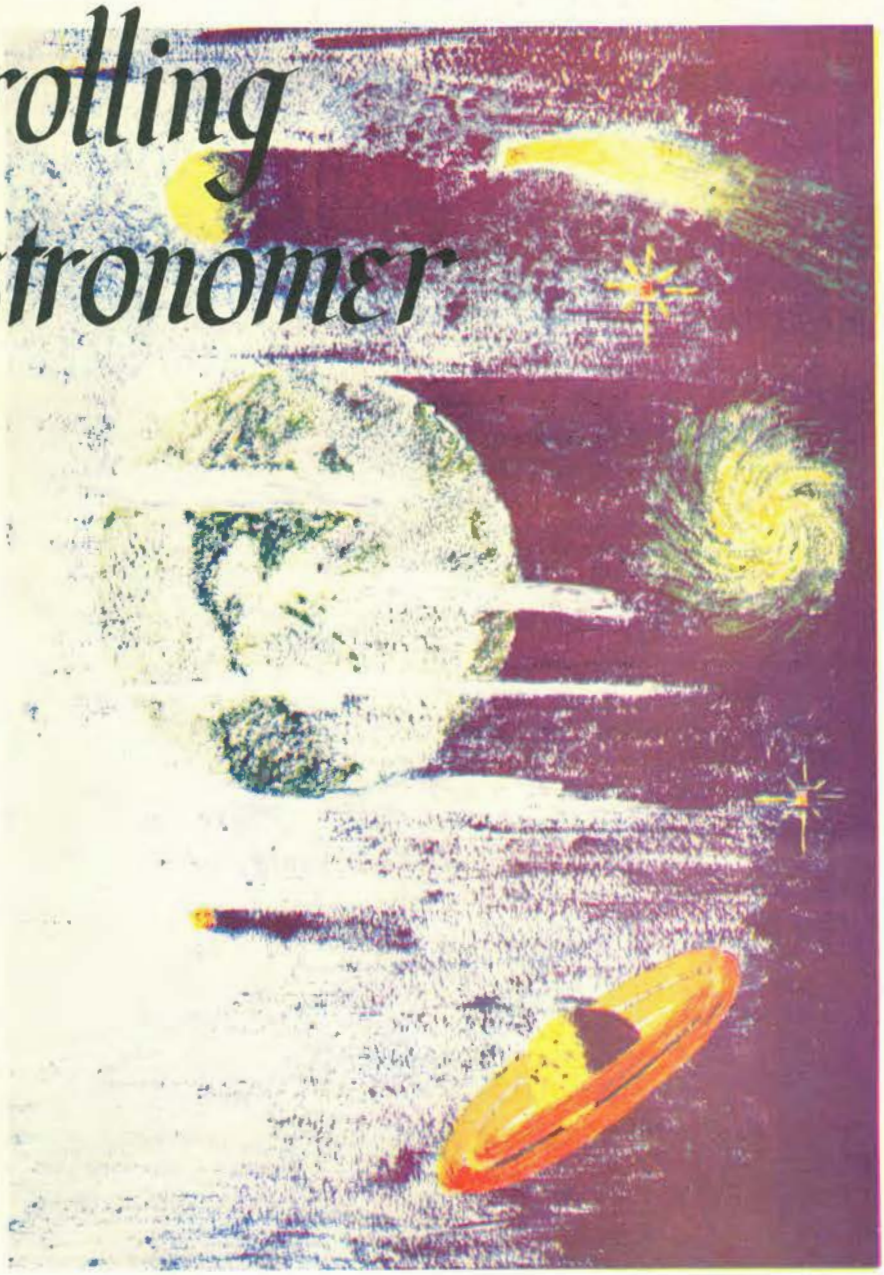
The Strolling Astronomer

Volume 5, Number 1 January 1, 1951

ASSOCIATION OF LUNAR AND PLANETARY OBSERVERS



Mailing Address

The Strolling Astronomer
167 W. Lucero Street
Las Crucos, New Mexico

SUBSCRIPTION RATES

1 Year.....$3.00
6 Months..... 1.50
1 Issue..... .25

STAFF

-Editor-

Walter H. Haas
167 W. Lucero Street
Las Cruces, New Mexico

-Counsellor-

Dr. Lincoln LaPaz, Head of Mathematics Department
Director, Institute of Meteoritics
University of New Mexico
Albuquerque, New Mexico

-Acting Venus Recorder-

Thomas R. Cave, Jr.
265 Roswell Avenue
Long Beach 3, California

-Acting Jupiter Recorder-

Edwin E. Hare
1621 Payne Avenue
Owensboro, Kentucky

-Acting Mercury Recorder-

Donald O'Toole
114 Claremont Avenue
Vallejo, California

NOTICE: In order to facilitate the reproduction of drawings in future issues, readers are requested to exaggerate contrasts on drawings submitted. Extremely faint marks cannot be reproduced. Outlines of planetary discs should be made dark and distinct. It is not feasible to reproduce drawings made in colors. Following these precepts will permit better reproductions.

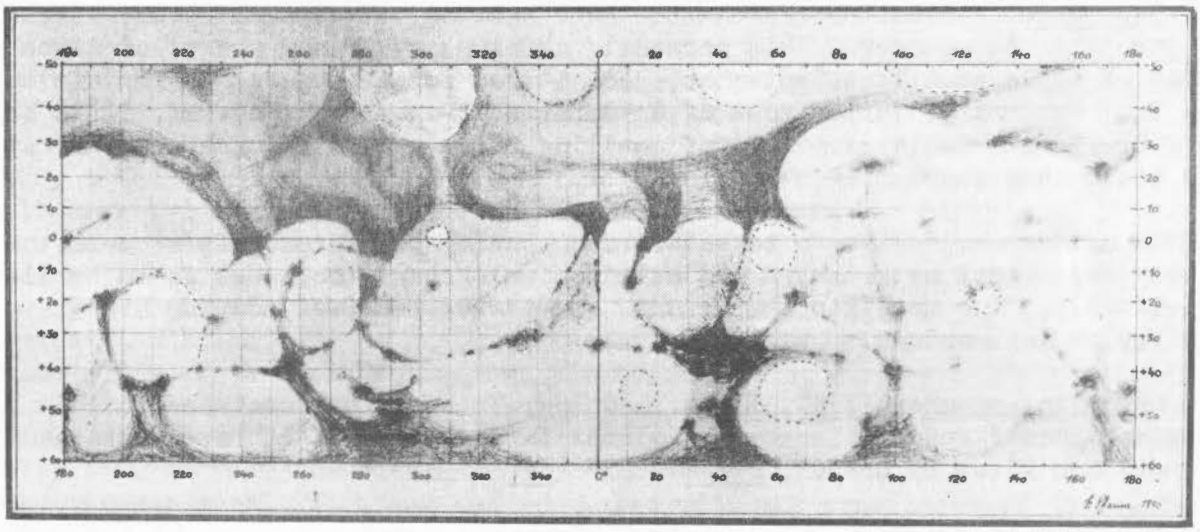


Fig. 1. Map of Mars in January-June, 1950. Drawn by E. Pfannenschmidt with a 5-inch reflector. Powers 116X to 193X.

Fig. 2 Lunar walled plain Grimaldi. J. C. Bartlett, Jr. 3.5-inch refl. at 100X. July 31, 1950. $5^h\ 2^m$, U.T. Colongitude 109°9

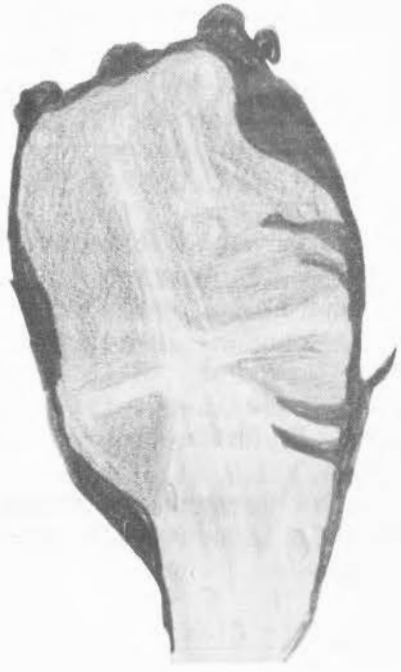


Fig. 3. Lunar walled plain Grimaldi. J. C. Bartlett, Jr. 3.5-inch refl. at 100X. Nov. 18, 1948. $1^h\ 34^m$, U.T. Colongitude 110°4

(Note the discrepancies in these two drawings obtained under almost identical solar illumination.)

Personal. The editor regrets the late mailing of several recent issues of The Strolling Astronomer. His personal affairs have been unsettled since his change of employment last September, and it was further necessary for him to be away from New Mexico during most of November and December. However, it is hoped to return to a regular schedule of mailing this periodical near the first of each month in a short time.

The editor would like to take this opportunity to express his sincere thanks to many East Coast astronomers and astronomical groups, too numerous to be listed individually, for many kindnesses and courtesies received during his visit to that region last autumn.

Error in December, 1950, Issue. On pg. 7 the first sentence in the last paragraph should read: "Two early volumes in the writer's library contained two quarter-moon views by Draper, circa 1865" (not 1856).

New Name on the Moon. Mr. David P. Barcroft, an A.L.P.O. member of Madera, Calif., has been honored by having his name given to a crater on the moon. Mr. H. P. Wilkins, Lunar Director of the British Astronomical Association, has bestowed the name Barcroft upon the crater formerly known as Dollond B. Crater Barcroft is near the upper right corner of Section II of Wilkins' map of the moon and is readily found thereon north of Dollond and southeast of Taylor. This Section was reproduced in our December, 1950, issue. Mr. Barcroft's long interest in lunar matters is well known among West Coast astronomers. We congratulate our colleague upon the deserved distinction which has come to him.

REPORT NO. 3 ON JUPITER IN 1950

by Edwin E. Hare

Information obtained by observing with their own telescopes was received from: C. E. Bomgren (3-in. refr.), Phillip Clar (5-in. refr.), Thomas Cragg (6-in. and 12-in. refls.), Eugene Epstein (6-in. refl.), E. E. Hare (12-in. refl.), L. T. Johnson (10-in. refl.), F. A. Keysor (3-in. refr.), R.R. Lee (13-in. refl.), Sadao Murayama (8-in. refr. and 8-in. refl.), P. J. Nemecek (12½in. refl.), Don O'Toole (6-in. refl.), O. C. Ranck (4-in. refr.), G. D. Roth (4¼-in. refr.), and E. K. White (7½-in. refl.).

Six persons in the above list have included transit work, from which it was possible to construct charts on the movement of a fairly large number of Jovian objects.

SEBn White Cloud: Probably the most important happening on Jupiter, in a theoretical sense, of the year is this cloud obstruction in the north element of the South Equatorial Belt. Some attention was given to this object in the October issue, in which it was mentioned that the motion of the cloud was slower than that of the belt in which it was centered and that, as a result, the belt was stacking up very dark and wide above while fading away below. This action continued thru September and October, the period of this report. Sadao Murayama, Director of the Jupiter Section of the Oriental Astronomical Association, was very interested in the set-up, remarking: "The preceding end of the darker section of the SEBn is very remarkable and it is always surrounded by a bright region, especially on the preceding side. This seems as if the darker section is pushing the preceding white clouds."

When a nova is announced, the astronomers are usually able to retrace some of its development in huge libraries of plates. The A.L.P.O. cache of observations for 1950 is not nearly so well supplied; but a search was made, nevertheless, to find what was recorded about the cloud. Its first mention was a June 23 notation that a gap in the SEB_n, already large, was in conjunction with the Red Spot Hollow. No mention here of the belt piling up against it. Nor did any early apparition views have the belt prominent anywhere. Other gaps in the SEB_n were recorded (as in 1949), but they were smaller and had no effect. The cloud being investigated, however, was different; for on July 7 Murayama saw that a darker section of the SEB_n had begun to form above it. Don O'Toole had a good look at the bright gap on Aug. 6. He estimated the belt to be only 6th in prominence preceding and 4th following, the object. Johnson's excellent view of Aug. 26 placed the p. end of the pent-up stream at (I) 164°. Charted positions show the longitude to be increasing 19°/30 days, a period of $9^h\ 50^m\ 55^s$. Roth personally secured four transits, deducing a similar drift. E. K. White also submitted transit work. T. Cragg was impressed with the prominence of the cloud on Sept. 10. P. J. Nemecek one night later saw the cloud as a large white oval and supposed it to be the RSH. Mr. Epstein on Sept. 22 drew the feature to be very large; and on the same evening Hare thought that he was seeing the RSH, in a look between visitors, so large and darkly enclosed had this cloud become.

On the night of the lunar eclipse (Sept. 26) the p. end of the SEB_n cloud had caught up with the f. end of the RSH. The two appeared as twin ovals, the former the whiter. Since both ovals completely filled the SEB Interior Zone, it was evident that considerable jostling or bumping together was about to take place. By good fortune L. T. Johnson, after ten days of cloudy weather, made an observation on Oct. 1 and found the two hollows almost exactly opposed. The RSH was taking up most of the space in the SEB, but not all; for Johnson drew a gray border between them south of the SEB_n line. Hare observed on the same date, and again two nights later. Like Johnson, he noted that most of the cloud had been squeezed down into the Equatorial Zone. The squeezing may have elongated the cloud, for now it stretched from (I) 157° to 186°, being about 5° longer than the Hollow! The lengthening, perhaps not unexpectedly, took place at the preceding end where so little of the belt remained to resist the pressure. Succeeding studies show that the cloud did not remain in the EZ; Murayama's fine drawing on Oct. 8 has it again centered over the SEB_n. Only the f. end of the cloud remained prominent; the forward two-thirds was narrower and was bridged by many gray filaments. On the other hand, the encounter had but minor effects upon the RSH. There appeared to be a little flattening of the Hollow and a redistribution of some of its dark enclosure; the north-following quarter of the enclosure was swept thinner than it had formerly been, the material being swept into the north-preceding quarter of the RSH, closing the gap or open gateway there.

Red Spot Hollow: Photographs taken by E. K. White on Sept. 8 are of especial interest because the dark border on the f. side of the Hollow, spanning across the South Tropical Zone, is recorded so strongly - more strongly than a thin adjacent portion of the STB. Interest in the images will be understood when it is remembered that a darker section of a very faint line of clouds in the STrZ was discovered to be moving rapidly along the zone. Although not easy to see, the darker bit was visible to Murayama on Aug. 16. Its motion should have carried it to the f. end of the Hollow in early September. White's photographic success is our surest evidence that the darker material was then piling up against it. We also have visual estimates of increased darkness on Sept. 7 and 14. By Sept. 19, however, the former dimness was believed to have returned; and Murayama,

writing on Oct. 31, expressed his opinion that the dark band surrounding the RSH had recently faded a little. Because of their high velocity one might suppose the STrZ dark clouds to be at a high altitude and to float across the RSH. Hare did not think that he could see increased markings within the Hollow in September nor in October. However, both Cragg and Murayama, in the latter month, did see more definite markings. Cragg, in an obviously pleasing view on Oct. 26, remarked that he was able to see the Red Spot more easily than at any previous time in the apparition. The Spot was in the south-prec. quarter of the Hollow.

We have given much attention to the accumulation of opaque material in the SEB_n against the white cloud obstruction. Doubtless many observers were also interested in a similar development in the other half of the SEB: late in August there was a noticeable darkening of the SEB_s against the f. side of the RSH; by Sept. 7 it was found to be quite dense there by Ray Missert, and by October the concentration backed far upstream. Thus in that month the Giant Planet presented the spectacle of two belts being locked up by two white regions until the congestion in each on one side was exceeded by only the North Equatorial Belt, while on the other side they faded to a very low ebb!

SEB_s Dark Spot: In addition to observations by Roth, Cragg, Reese, and Johnson already reported, this interesting black object is visible in a photo by White, even tho a low contrast film was used, and is clearly represented on drawings by Johnson and by Lee. Furthermore Murayama, in September, noted an east-west elongation; and from numerous transits of the object he derived a rotation period of $9^h\ 55^m\ 30^s$. On Sept. 18 Hare saw the bar-shaped fester to be split cleanly in two, but it later reunited. It has been pointed out (Strolling Astronomer, Vol. 4, No. 10, pg. 13) that because of its faster motion the spot (or bar) was overtaking a much smaller spot on the same belt. According to our chart this event occurred about Oct. 5. No immediate effedts have been reported, but ten days afterward there began a sudden decrease in the velocity of the large bar; from Oct. 15 to the end of the month it remained stationary in system II - a change of nearly $\frac{1}{2}°$/day. The change occurred at (II) 155°. Perhaps it is merely a coincidence that this is the longitude at which the Great SEB Disturbance of 1949 first erupted.

NEB Dark Spots: These very intense spots (ox-blood red) have attracted the interest of every observer equipped to be able to see them. Roy Lee, during a variable star schedule on Aug. 5 at the Milwaukee A.S. 13-in., paused at Jupiter and was so pleased with one of these spots (then at 203°) that he attempted his first sketch of the planet. Four of the spots, located just inside the north edge of Jupiter's principal belt, are being charted and on Aug. 26 were positioned at (II): No. 1 93°, No. 2 110°, No. 3 191°, No. 4 265°. The first three are decreasing 20°/30 days; and the 4th, 30°/30 days. On Sept. 18 Lyle Johnson drew No. 2 as a long dash. It thus appears to be lengthening or still forming. On Sept. 10 Mr. Bomgren almost succeeded in resolving this long spot with only 3 inches of aperture; for he reported seeing a very definite brown streak in the North Tropical Zone, nearly touching the belt and at the correct longitude. Murayama has marvelled at the unchanging endurance of No. 3, the most intense of the family. No. 4 is prominently displayed on two of Cragg's drawings.

North Temperate Zone: The short, black sections of a belt (the NNTB) in this Zone continue to be interesting. O'Toole was surprised to see a very dark "spike" of a belt appear from around the limb in one of his first views of the year. Eugene Epstein, who is just beginning his first year in planetary observing, often draws these pieces-of-a-belt in their correct locations. Johnson,

Murayama, and White have forwarded transits of them for charting. Of four sections visible in July one, centered at (II) 220°, has faded away. It was last seen by Murayama on Aug. 16.

Mr. Nemecek, who has his instrument equatorially mounted and enclosed within a 13-foot dome, has been successful in seeing numerous belts, as well as white clouds in the EZ. O. C. Ranck's Oct. 18 view with his 4-in. refractor revealed four bright zones and four belts. The most nearly central belt made a deep sag where the RSH is located (II 250°). Phillip Clar's drawing for Oct. 15 defines four belts and three white zones. Mr. Keysor has sent in several estimates on the relative brightnesses of the satellites with his small refractor and is marketing for a larger scope.

A drawing by Mr. Cragg, made on Oct. 3 with his 12-in. refl., records our best view of a 30°-long bulging, or displacement, of the south half side of the NEB into the EZ. The p. end was at (I) 189°, and preceding it was a very bright cloud from which a narrow white streak invaded the NEB for the full 30° length. Cragg believes these white intrusions to lie above the dark belt, apparently discarding the wedge-like appearance.

Mr. Roth, of Germany, in addition to very good detail work with his 4¼-in. refr., is especially interested in color estimations. In the NEB he sees gray-black with red-brown; in the NTB, a gray-black-blue; and in the STB, dark gray and olive. By comparison, Tsuneo Saheki with an 8-in. refl. colors the NEB a chocolate brown, the NTB brownish gray, and the STB bluish gray. The Recorder would be surprised to find complete agreement, for the color blend in the temperate belts seems difficult to analyze; he thought that there was much brown in both and suspected a blue-tinted admixture as well. Perhaps the blue tint was not imaginary after all.

Postscript by Editor. Mr. Hare sent a number of drawings of Jupiter to illustrate the discussion above, but they arrived too late to be included in this issue. We plan to use them in the February issue. Some of the Jovian nomenclature employed above is shown on Figure 8 on pg. 3 of our August, 1950, issue.

VENUS IN THE MORNING SKY IN 1950

by T. R. Cave, Jr.

This Report on the planet Venus is the first one to deal with observations since the inferior conjunction of January 31, 1950. Since that date only a comparatively small number of observations have been received by the Recorder, as was to be expected when the planet was not conveniently placed for most observers.

The following are the observers whose work has been used in this Report: T. R. Cave, Jr. (8-inch refl.), W. H. Haas (6-inch refl.), L. T. Johnson (10-inch refl.), H. Le Vaux (6-inch and 10-inch refls.), D. O'Toole (6-inch refl.), G. D. Roth (4-inch refl.), T. Saheki (8-inch refl.), and S. C. Venter (3-inch refr.).

We wish to take this opportunity of welcoming another new member into the Venus Section, Mr. Tsuneo Saheki of Osaka, Japan, who is certainly very well known to us already through his outstanding planetary work. Mr. Saheki has sent

us some very beautiful and natural-appearing drawings of Venus made in April and June, 1950. Mr. Howard Le Vaux is very much to be congratulated for the very great number of observations which he obtained when few other observers were able to follow the planet well.

The Cusp-Caps. Both the north and the south cusp-cap were visible to most observers, and there has normally been rather excellent agreement on their visibility. Mr. Haas found the south cap to be the more prominent on March 9, 1950; and Mr. Johnson noted much the same thing four days earlier on March 5. Mr. Le Vaux thought that the north cap was the brighter during nearly all of March but considered that the south cap developed and became more conspicuous fromthe last of March until late May. O'Toole found on April 4 that the north cusp-cap was slightly larger and more prominent than the south one. On April 8 Mr. Roth noted with a blue color filter that the south cap was the only one visible; however, with red and yellow filters he found the two caps of nearly equal intensity. Observing on April 18, Mr. Venter estimated the north cap to be but slightly more intense than the south cap. Mr. Saheki may have found frequent and rapid changes in the intensity of both cusp-caps. He noted the south cap to be the brighter on April 15, but on the following day he observed the north cap to be rather the brighter and somewhat the larger. On June 6 Saheki found that the north cap was somewhat dim and dull in appearance while the south cusp-cap was considerably more brilliant and was noticeably yellowish white. Observing on June 17, Cave thought the two caps of equal size and intensity in a fairly good view.

As is customary in The Strolling Astronomer, the dates above all are given by Universal Time.

The White and Dusky Areas. These were visible to a number of observers, including Cave, Haas, Johnson, Le Vaux, O'Toole, Roth, and Saheki, and were probably as easily visible to these observers as during the preceding 1949-50 evening apparition. Roth found some surprising differences in the appearance of light and dusky details with various color filters during the same views. Saheki found a creditable amount of similar light and dusky details on three of his drawings (April 15 and 16 and June 6), which he feels may be at least in part illusory. He suggests a rotation period of the planet of either 30 to 40 days or else a much shorter period of from 24 to 30 hours. On April 4,O'Toole recorded the following remarks upon a drawing: "Most of these details are easy and real beyond any doubt, but the exact forms or positions of the markings are not easily made out, especially for the smaller streaks and spots." A very incomplete analysis of Le Vaux's lengthy and excellent set of sketches discloses that he was apparently seeing the same dusky details from day to day and that in some instances he was able to follow them for several days. It is also apparent that there were normal displacements of detail, usually rather marked over several days of time, indicating perhaps either a fairly long rotation period or else one differing only slightly from 24 hours. Le Vaux followed a most interesting white spot near the north limb from June 25 until June 28. He was perhaps seeing the same white spot or another one very similar in size and position as early as May 21. It is possible in the Recorder's opinion that a close study of these white spots over a prolonged period of time may tell us more concerning the rotation period of Venus than a study of the larger dusky areas, primarily because it is always easier to observe a small very white area than a faintly contrasting half-tone dusky marking.

Peculiar Appearance of the Dark Hemisphere. Several weeks after the evening dichotomy late in 1949, W. H. Haas and L. T. Johnson observed the dark hemisphere of Venus to be sometimes brighter than the surrounding sky-background and

sometimes darker than the sky. After the middle of December, 1949, a considerable number of other observers were also able to see this peculiar appearance. Haas and Johnson were also successful to a degree in observing this appearance when Venus was in the morning sky in February, 1950, although with considerably greater difficulty. With his 6-inch reflector on February 15 Haas noted the portion of the unilluminated hemisphere adjoining the concave terminator and extending to a line connecting the prolonged cusps to be slightly darker than the sky-background. He noted this appearance with Wratten Filters 25 (red) and 58 (green). When using Wratten Filter 47 (blue), however, he thought the entire dark hemisphere to be slightly brighter than the sky background. Observing again on February 18, Haas noted: "The half of the dark hemisphere enclosed by the horns of the crescent is very slightly darker than the sky with all three filters (the ones also used on February 15), least noticeably with W. F. 58. On the darkened region darker details are glimpsed but defy depiction; perhaps they are as much like the lunar maria by earthshine as anything else." On February 11 Le Vaux with his 6-inch reflector found a very similar appearance, and on March 26 he again observed the dark hemisphere to be darker than the sky. L. T. Johnson, using his 10-inch modified Gregorian reflector at 300X, on March 5 noted: "The portion of the dark hemisphere nearest the crescent is darker than the sky." Johnson comments: "This certainly must have been a contrast effect when observed on a bright noonday sky."

W. H. Haas has kindly forwarded his translation of some most interesting material from R. R. gollet's Documentation des Observateurs, as follows: "Mr. A. Hestin, schoolmaster at Acy-en-Multien, observed the illumination of the atmosphere of Venus at the time of the recent inferior conjunction (Jan. 31, 1950). The angle at the center of the crescent measured on his drawings 210 degrees on January 23, 240-250 degrees on January 24, and 250 degrees on January 26; but Mr. Hestin mentions that the seeing was very poor. The ashy light of the planet [i.e., the unilluminated hemisphere] appeared clearly visible on the 23rd, uniform and bluish gray, and gray-blue on the 26th, this tint being mixed with orange toward the non-illuminated limb, possibly an effect of contrast. - 75 mm. refr., 45X-145X."

Dichotomy. During the morning apparition of Venus the Recorder received only a few observations of the time of half-phase or dichotomy.

Observer	Telescope	Observed Date of Dichotomy	i	Remarks
L. T. Johnson	10-inch refl.	1950, April 22.6, U.T.	84°2	from drawings
H. Le Vaux	6-inch refl.	April 16.9	87.4	from drawings
D. O'Toole	6-inch refl.	April 16.0	87.9	from estimates
S. C. Venter	3-inch refr.	April 19.2	86.1	from observations

The predicted date of dichotomy from data in the American Ephemeris is April 12.5, and the value of i was naturally then 90°0. (It will be recalled that the phase-angle i is the angle at Venus between lines drawn to the sun and to the earth. The reason for the difference between the times of observed and predicted half-phase is presumably the optical effedts of the atmosphere of the planet.) The above observations receive support from two other observers, who did not observe dichotomy but who did note the planet's terminator to be concave

prior to the dates in the above table. To T. Saheki the terminator was concave on April 16, and the same appearance was very definite to G. D. Roth on April 8.

Remarks by the Recorder. The Recorder is indeed sorry that circumstances prevented him from participating more fully personally in observations of Venus during the present morning apparition. The Recorder wishes sincerely to thank all observers who submitted their work and particularly to praise Mr. H. Le Vaux for his very full and excellent long series of observations during this slack period in Venusian observations.

Postscript by Editor. Three drawings of Venus made during the morning apparition here reviewed by Mr. Cave were reproduced as Figures 4,5, and 6 on pg. 1 of the November, 1950, Strolling Astronomer. It is suggested that they be examined in connection with this Venus Report.

THE LUNAR ECLIPSE OF OCTOBER 7, 1949

by Walter H. Haas

(concluded from November, 1950, issue)

PHOTOGRAPHS OF ECLIPSE

Mr. P. R. Engle has kindly submitted prints of several photographs taken with his 17-inch reflector at State College, New Mexico. This instrument was described in Sky and Telescope for October, 1950. He used his Cassegrain focus, which has a focal length of 388 inches; hence, the diameter of the moon's image on the prints is about three and a half inches. Development was in D 76. One print submitted was made with an exposure-time of 4seconds on an Eastman Wratten "M" Plate, and another employed an exposure-time of 7 seconds on Eastman Tri-H Plate. Mr. J. W. Reed at Columbia, Missouri, secured a series of 12 photographs running from first contact to fourth contact with his 6-inch, F:8 reflector. Mr. Reed's procedure was to project the moon's image through a one-inch eyepiece and to take the photographs at a distance of about two inches from the eyepiece. He thus obtained a scale of about 1.6 inches to the moon's diameter.

Neither the Engle nor the Reed photographs show enough detail to allow a useful study of the possible eclipse-caused changes discussed in our November, 1950, issue. It is evident, however, that the photographic method has great advantages here; and it would be excellent if some A.L.P.O. members could obtain photographs of sufficiently good quality for this purpose at future lunar eclipses. Apertures of 10 inches or more evidently are desirable. For focal lengths of less than, say, 200 inches, it will be important to enlarge the size of the moon's image by projection through the eyepiece or by some other method in order to obtain an adequate scale. Finally, it is likely that considerable practice in photographing the moon before the eclipse will be needed to develop a good technique. Messrs. Engle and Reed had been unable to carry out such experiments prior to the October 7, 1949, eclipse.

GLOW IN ARISTARCHUS?

Suggestions having been made that the appearance of Aristarchus on the eclipsed moon was perhaps not always completely ordinary, a number of observers

were attentive to this crater. G. Brown comments on its brightness in a 5.5-inch telescope at 60X; for a time it suggested to him "an elongated electric light." E. E. Hare writes: "Aristarchus was observed right through mid-totality with both the 7-inch reflector and the 1.7-inch finder, glowing steadily - apparently pure white. I think the glow dame from the floor of the crater because the diameter appeared to increase near the end of totality with increasing illumination." Mr. Hare began to observe at $2^h\ 40^m$, U.T., when Aristarchus had already been in the umbra for a long time. R. Venor of the Montreal Centre, using a 12-inch reflector at 70X, reports that at the commencement of totality (thus at 2^h20^m) Aristarchus was very outstanding with a phosphorescent glow. Employing a 6-inch reflector at 48X, J. W. Reed reports that at $2^h\ 52^m$ (U.T., here and later) Aristarchus became bright but did not gleam "after the moon had been without any noticeable bright object for quite some time." This aspect then died down, Reed continues, only to reappear at $3^h\ 10^m$ and to remain, although less bright, for the rest of totality. (Totality ended at $3^h\ 33^m$.) F. E. Brinckman, Jr., with a 6-inch reflector at 45X at $3^h\ 0^m$ found Aristarchus very conspicuous and bright greenish-white. At $3^h\ 25^m$ Brinckman with 120X was surprised to find Aristarchus doubled in a north-south direction, with the south object the brighter; this effect did not persist for more than five minutes and was not visible with light green and light blue color filters. The photographs of Engle and Reed suggest, however, that the doubling was nothing remarkable; for they reveal a brightened area a little north of Aristarchus after sunlight was restored. Apparently this area reflected less green and blue light than Aristarchus since the area vanished with green and blue filters.

It appears a little difficult to decide from these data whether we are dealing with any more than the well-known fact that Aristarchus reflects light very well. The data available are also not wholly satisfactory. For example, the dimming of Aristarchus soon after $2^h\ 52^m$ recorded by Reed completely escaped Hare in his simultaneous views; and the doubled appearance that greatly surprised Brinckman near $3^h\ 25^m$ was not noticed at all by Hare or Reed, or at least they say nothing of it. The editor does not think that we have conclusive evidence of any abnormal glow in Aristarchus at this eclipse. If the study is to be repeated at future eclipses, more refined techniques than visual impressions of brightness may be needed to give definite results. These could consist of determinations of the stellar magnitude of Aristarchus by comparing its out-of-focus image with out-of-focus images of stars near the moon or, better still, of photographic measures of the light of Aristarchus.

TIMES OF CONTACTS

These were observed by F. De Kinder and G. H. Hall with a 4-inch refractor at 180X, by C. M. Good with a 4-inch refractor, by P. S. Scott with a 12-inch reflector, by W. H. Birtles with a 6-inch refractor, and by J. W. Reed with a 6-inch reflector at 48X. All but Mr. Reed are members of the Montreal Centre of the Royal Astronomical Society of Canada. Results are as follows:

First Contact. De Kinder-Hall $1^h\ 4^m46^s$.Good $1^h\ 5^m\ 40^s2$. Scott $1^h\ 5^m\ 3^s$. Average $1^h\ 5^m\ 10^s$. Ephemeris $1^h\ 4^m\ 42^s$.

Second Contact. De Kinder-Hall $2^h\ 19^m\ 28^s$. Good $2^h\ 19^m\ 29^s2$. Scott $2^h\ 18^m\ 48^s6$. Birtles $2^h\ 19^m\ 28^s2$. Reed $2^h\ 19^m\ 45^s$. Average $2^h\ 19^m\ 24^s$. Ephemeris $2^h\ 19^m\ 30^s$.

Third Contact. De Kinder-Hall $3^h\ 34^m\ 0^s$. Good $3^h\ 33^m\ 45^s.4$. Scott $3^h\ 33^m\ 3^s$. Birtles $3^h\ 33^m\ 13^s$. Reed $3^h\ 33^m\ 29^s$. Average $3^h\ 33^m\ 28^s$. Ephemeris $3^h\ 33^m\ 12^s$. (O'Toole and Hare in rough estimates secured $3^h\ 32^m.5$ and $3^h\ 33^m.5$ respectively).

Fourth Contact. Good $4^h\ 48^m\ 22^s.4$. Scott $4^h\ 48^m\ 6^s$. Average $4^h\ 48^m\ 14^s$. Ephemeris $4^h\ 48^m\ 6^s$.

It will be noted that 6 of the 15 observed values differ from the predicted time in the Ephemeris by more than 15 seconds, the largest discrepancy being 58 seconds. The agreement among De Kinder-Hall, Good, and Birtles in timing the beginning of totality is indeed extraordinarily good. It is plausible that first and third contacts should be perceived only after their actual occurrence, all but one of the 8 observed times here being later than the pertinent Ephemeris value.

IMMERSION AND EMERSION-TIMES OF CRATERS

W. H. Haas with a 6-inch reflector at 141X, E. E. Hare with a 7-inch reflector at 170X, L. T. Johnson with a 10-inch reflector at 300X, D. O'Toole with a 6-inch reflector at 47X, and the Messrs. Roques with a 4-inch refractor at 152X timed when certain craters were immersed in the umbral shadow and when they emerged from it. Realizing that such events cannot be instantaneous, Haas sought to observe when each formation watched was bisected by the umbral shadow. Johnson's timings were much hampered by clouds over the moon. E. J. Reese on September 20, 1949, communicated a list of predicted immersion - and emersion - times for a number of craters that were going to be watched. He found these values by a graphical process and estimated that its probable error might be 1.5 minutes. The observed times are given below, along with Reese's predicted values whenever available.

Alphonsus Emersion. Hare $4^h\ 10^m$ (?).

Aristarchus Emersion. Hare $3^h\ 54^m$. O'Toole $3^h\ 53^m$. Average $3^h\ 53^m.5$.

Atlas Immersion. Roques $1^h\ 42^m$. Reese Prediction $1^h\ 44^m.3$.

Atlas Emersion. Haas $4^h\ 35^m.5$. Hare $4^h\ 35^m$. Roques $4^h\ 36^m.5$. Average $4^h\ 35^m.7$. Reese Prediction $4^h\ 33^m.5$.

Conon Immersion. Johnson $1^h\ 34^m$ (?). Reese Prediction $1^h\ 35^m.5$.

Copernicus Emersion. Hare $4^h\ 4^m$. O'Toole $4^h\ 4^m$. Average $4^h\ 4^m.0$.

Eratosthenes Emersion. Haas $4^h\ 11^m.1$. O'Toole $4^h\ 10^m$ (?). Average $4^h\ 10^m.6$. Reese Prediction $4^h\ 9^m.9$.

Fracastorius Emersion. O'Toole $4^h\ 25^m$.

Gassendi Emersion. Hare $3^h\ 49^m.5$.

Grimaldi Emersion. Haas $3^h\ 40^m.7$. Hare $3^h\ 40^m.5$. O'Toole $3^h\ 37^m$. Average $3^h\ 39^m.4$. Reese Prediction $3^h\ 40^m.0$.

Hercules Emersion. Hare $4^h\ 33^m$.

Linné Emersion. Haas $4^h\ 25^m.3$. Hare $4^h\ 25^m$. O'Toole $4^h\ 24^m.5$ (?). Average $4^h\ 24^m.9$. Reese Prediction $4^h\ 23^m.8$.

Plato Emersion. Hare $4^h\ 14^m.5$ to $4^h\ 16^m$. O'Toole $4^h\ 14^m$. Average $4^h\ 14^m.6$. Reese Prediction $4^h\ 15^m.0$.

Ramsden Emersion. Hare $3^h\ 48^m.5$.

Riccioli Dark Area Immersion. Johnson $1^h\ 12^m$ (?). Reese Prediction $1^h\ 11^m.3$.

Riccioli Dark Area Emersion. Hare $3^h\ 40^m$. Reese Prediction $3^h\ 39^m.6$.

Schickard Emersion. Hare $3^h\ 39^m$.

Tycho Emersion. Haas $3^h\ 55^m.6$. Hare $3^h\ 54^m.2$ to $3^h\ 56^m.5$. O'Toole $3^h\ 55^m$. Average $3^h\ 55^m.3$. Reese Prediction $3^h\ 56^m.3$.

The data are scarcely abundant enough to allow a meaninful statistical study, but perhaps a few simple numerical deductions will possess some interest. Taking all cases where it is possible to compare individual observations with an average value for an event timed, we secure from 20 examples an average numerical deviation of 0.57 minutes. There are only 3 examples of deviations exceeding 1.0 minutes. The differences may easily have been enlarged by uneliminated systematic errors. In the 20 cases where it is possible to compare an individual observed value with one of Reese's predicted values, there results an average residual in the sense observed time minus predicted time of 0.15 minutes and an average numerical residual (sign ignored) of 1.22 minutes. The two largest discrepancies are 3.0 minutes, one positive and one negative.

FINAL REMARKS

J. W. Reed writes that from $2^h\ 20^m$ until about $2^h\ 23^m$ either Delambre or Agrippa was the most brilliant object on the moon. There appeared to be a pinpoint of light pulsating from the center of the crater. This aspect returned near $3^h\ 56^m$. Other observers make no mention of this phenomenon. It might be well to give some attention to this portion of the moon at future eclipses.

The editor regrets the long delay in publishing this discussion of the October 7, 1949, lunar eclipse. He hopes soon to present the results obtained upon the more recent eclipse of September 26, 1950. In this connection he requests all observers who have not yet communicated their work on this eclipse to do so quickly. Finally, he wants to express his thanks to all those colleagues who submitted their work upon the October 7, 1949, eclipse of the moon.

OBSERVATIONS AND COMMENTS

What may well turn out to be the last observation of Mars of the 1949-50 apparition was secured by D. O'Toole on November 5, 1950, when the angular diameter of the planet was only 5".0. In his 6-inch reflector at 370X, O'Toole found the white south cap less bright than a few months before and the bordering south polar band considerably more faint. Part of the south cap (Argyre?) appeared to project; but it would be difficult, in the editor's opinion, to be certain of the reality of this effect on the small disc. The diameter of the south cap was measured on the drawing to be 50^o, less than O'Toole had obtained in September so that melting was presumably in progress. He saw no north cap on November 5. His drawing for that date shows an intensely dark, fork-shaped

marking in the general vicinity of Sinus Aurorae. This fork was blue-black in color, other dark markings being brown. Quantity ☌ was 212° on November 5, and the tilt of the axis toward the earth was 0°.

There is reproduced on pg. 1 a map of Mars in 1950 by our German colleague E. Pfannenschmidt, Director of the Planetensektion of the Bund der Sternfreunde. Mr. Pfannenschmidt emphasizes that atmospheric conditions for observing were unfavorable while he carried on his study of Mars and that the map shows only the relatively coarse markings, the finest details being omitted. He considers that he did have the advantage of optically excellent instruments. Several other A.L.P.O. members have constructed maps of Mars in 1950; we hope to reproduce at least part of these in future issues.

D. R. Curey has contributed several drawings of Plato made with a 3.5-inch reflector at 60X and 100X. He has apparently caught glimpses of several of the bright spots on the floor under high lighting, most frequently of the one numbered 5 on Figure 2 on pg. 1 of the May, 1950, Strolling Astronomer.

Mr. Lyle T. Johnson of La Plata, Maryland, has reported results of three searches of the earthlit moon for possible lunar meteors in April and November, 1950. Using a 10-inch reflector at 179X, he had a field of view about 10 minutes of arc in diameter and placed therein that part of the earthshine the equator near the east limb and thus farthest from the hampering sunlit crescent. The area of the lunar region watched was about 750,000 square miles. The total time spent in the three searches was 190 minutes. A tenth magnitude meteor that crossed the entire field of view was unquestionably terrestrial. A swift eighth magnitude meteor that terminated in the field of view was very probably also terrestrial. The only other unusual luminous object remarked was "a momentary tenth magnitude flash" suspected at $23^h\ 38^m$, U.T., on November 14. It is, of course, very uncertain that any meteor or impact-flare close to the surface of the moon is involved. Mr. Johnson has shown the position of all three luminous objects on sketches, which also portray precisely what portion of the moon he was watching - an excellent idea.

Perhaps more important than Mr. Johnson's observations just summarized, however, is an appeal he issues to other observers to join him in planning cooperative simultaneous searches of the earthlit moon for possible lunar meteors and lunar meteoritic impact-flares. We scarcely suppose that news normally travels from our colleague to his neighbors in the Northeastern States via New Mexico, but we should like to second this appeal most heartily. It can never be certain whether any object seen by just one observer against the moon is in the earth's atmosphere or outside it. If enough short-pathed moving bright objects are seen against the moon, one may indeed have a strong statistical argument that it is unlikely that all of them can be terrestrial meteors. However, if two observers can plan their watches of the moon so as each to witness the same object, then its observed parallax will at once tell us conclusively whether or not we have an ordinary meteor within the earth's atmosphere or something far outside it. The editor strongly urges all A.L.P.O. members who can do so to plan to participate in such duplicate surveys of the moon. Here is an excellent group-project for member-societies of the Astronomical League. It might become as fascinating as meteor-parties! Those living within a few hundred miles of Mr. Lyle T. Johnson may wish to write to him about such planned searches; his address is Box 187, La Plata, Maryland. Cooperation is limited to persons living close enough together that the moon is favorably placed for all of them at the same time. It is a great advantage if telescopes employed in this program are clock-driven and if observers can be alternated at short intervals (say

five to ten minutes). Telescopes used should be as large as possible, though even six inches of aperture is usable. Exact timing is essential, and every object seen should be plotted as carefully as possible against its lunar background.

In a letter dated November 27, 1950, Mr. Tsuneo Saheki of Osaka, Japan, wrote in part as follows: "As I have been saying in my last letters, I cannot believe in the brownish wave on Mars which was suggested by Mr. G.de Vaucouleurs in his excellent book, The Planet Mars, but only in the green or dark wave, which Dr. Lowell named the quickening wave, progressing on the Martian surface from the polar regions and moving across the equator into the other hemisphere during the spring. However, I have observed the Martian dark areas to show their colors turning, only temporarily, from greenish to brownish at the end of spring, this change taking place from the end of spring to the end of summer. The normal green color returns with the approach of autumn. These variations of color in the Martian dark areas were clearly shown in the numerous excellent pastel drawings by Mr. S. Mayeda in 1937, 1941, and 1943 and have also been confirmed by Mr. E. Date's color drawings of 1939. Unfortunately, however, this brownish color on the tiny globe of Mars may be very difficult or impossible to detect with such small apertures as we are using now, as was asserted by the late great planetary observer Antoniadi in 1909; if that is true, we may need to employ telescopes more than 50 cms. in diameter." These remarks may interest those of our readers who study colors on planets. The editor thinks that large apertures certainly should be preferred for color observations, and he would further specify large reflectors. Color filters can also be a useful auxiliary in such observations.

Saheki also calls attention to a cleft connecting the lunar craters Lohrmann and Riccioli, which cleft was observed by S. Miyamori of the Oriental Astronomical Association in about 1940 and which has been recorded in more recent years by S. Murayama and others. As nearly as the editor can judge, the cleft appears to be shown well on Section XIX of H. P. Wilkins' map of the moon as the northern of a pair of short clefts running east-west from the rim of Lohrmann to the rim of Riccioli. Some of our readers might like to examine this region, the illumination being favorable about a day and one-half before full moon. Mr. Wilkins' map of the moon is in the process of being serially reproduced in The Strolling Astronomer; Section III is elsewhere in this issue.

On July 2, 1950, at colongitude 116°6 (thus roughly two days after full moon) J. C. Bartlett, Jr. saw no dark bands on the inner walls of the lunar crater Aristarchus, using his 3.5-inch reflector. He has seen them well enough on other occasions with similar solar lighting. The editor was greatly surprised by this observation, for he has always found the Aristarchus bands extremely easy objects. He therefore specifically questioned Dr. Bartlett about his observation and received the following reply: "Your understanding is correct. I did not see the bands on that occasion, as reported in the observation. Whatever the explanation, I might add that there was no indistinctness in the crater itself as one might anticipate from an obscuring mist." We thus appear to have a remarkably gross variation in the aspect of Aristarchus under essentially the same solar lighting. Indeed, such a change would be well within the grasp of lunar photography by amateurs, perhaps even with only six inches of aperture. May we hope that this incident will furnish motivation for some A.L.P.O. members to undertake a program of lunar photography? It is doubtless vainto hope that some photographs were actually made upon July 2, 1950!

Many readers will remember J. C. Bartlett's article "Grimaldi, A Lunar Enigma", which was published in The Strolling Astronomer in 1949. Our colleague has continued to study this walled plain and on August 31, 1950, submitted a well-illustrated report describing some of his results. We regret that we lack space to publish this report in full. However, Figures 1 and 2 on pg. 1 are reproductions of two of the drawings he submitted; they were obtained under very similar solar illumination, and a careful study may profitably be made of the differences between them. We can perhaps present Dr. Bartlett's ideas about Grimaldi no better than by quoting portions of his report:

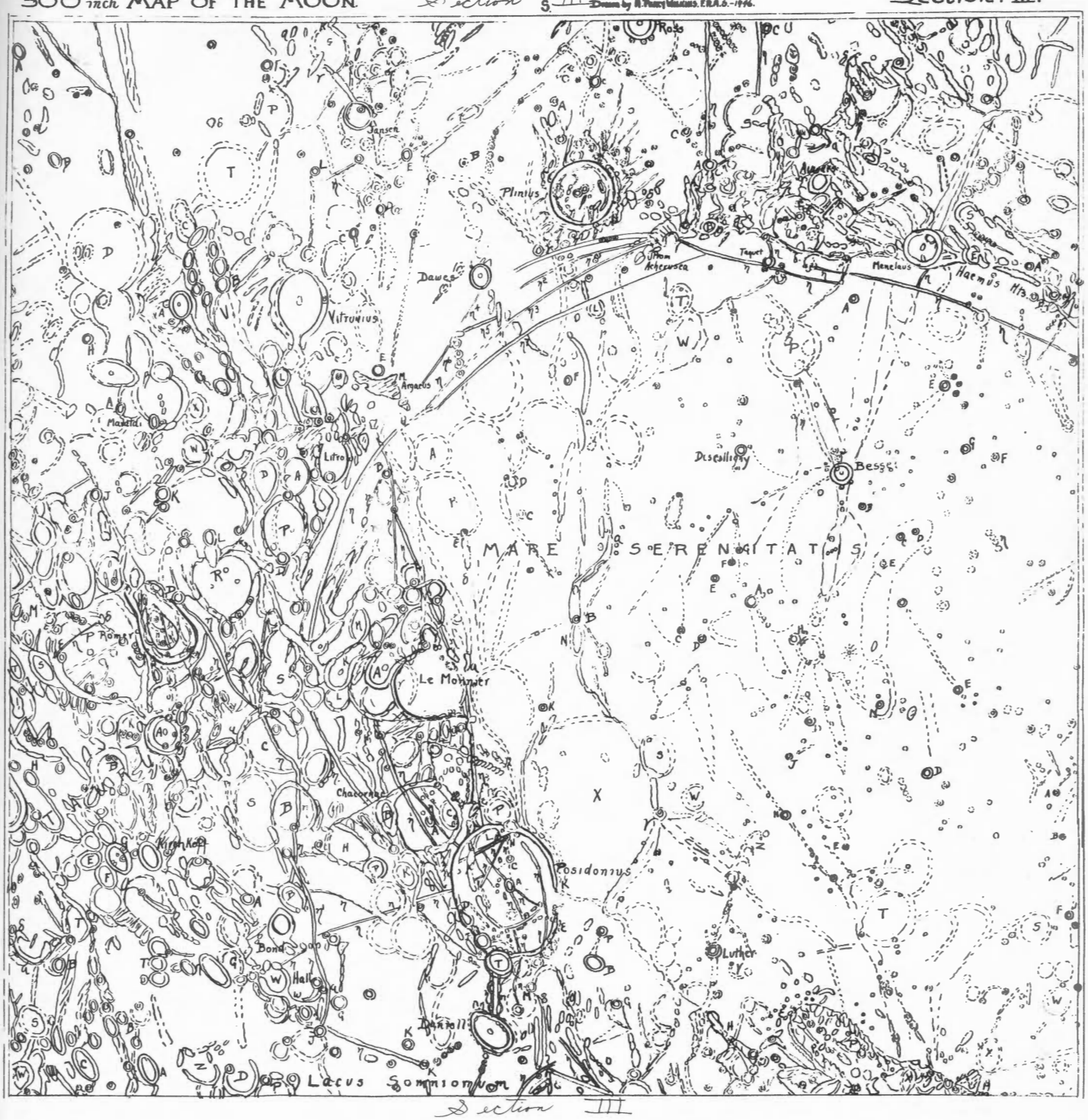
"The present report on Grimaldi has been compiled in view of the recent abnormal phenomena of this formation, to which reference has been made in previous communications. The most striking of these abnormalities was the complete failure of the Chevron Pattern to develop through the August 1949 lunation and in November, 1949. The extent of this failure is not known, thanks to lost months owing to poor weather; but it was again visible in July and August, 1950.

"The prolonged disappearances of various floor details is a common feature of Grimaldi, to which reference was made in 'Grimaldi, A Lunar Enigma'. One such detail has not been seen by the writer since 1947, but there is little doubt that it will turn up again.

"Two important Grimaldi discoveries were made by the writer during the July and August, 1950, lunations, the discovery of a second Chevron Pattern, July 31, 1950, and the discovery of two dark bands on the inner face of the east wall, August 9, 1950, apparently of the same nature as the bands of Aristarchus and Proclus. Neither of these appearances has been seen before by the writer, though this is not meant to imply that they are new developments...It is believed that a critical analysis of text and drawings will convince an impartial critic that the striking differences for comparable colongitudes are too great to be explained by slight differences in lighting. Nor, for the same reason, do they seem capable of explanation by changes in libration.

"The writer further believes that the extent and nature of the changes are also entirely too great to be explained by instrumental or observational errors, and in relation to the former it is to be noted that all data in this report have been obtained with the same telescope at the same power using the same eyepiece. As to personal equation, the writer is naturally incapable of judging; but it may be pointed out that no system can be discovered in the changes which would show a personal bias towards any given appearance at any given colongitude. Finally, to the best of his ability, the writer has attempted to present an honest and factual report of what he has observed, regardless of how the phenomena are to be explained...

"In conclusion the writer reiterates his belief that the Grimaldi phenomena, whatever their true nature, cannot be explained by changes of lighting nor explained away. This singular formation should receive the closest possible attention from as many qualified observers as it is possible to obtain."



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