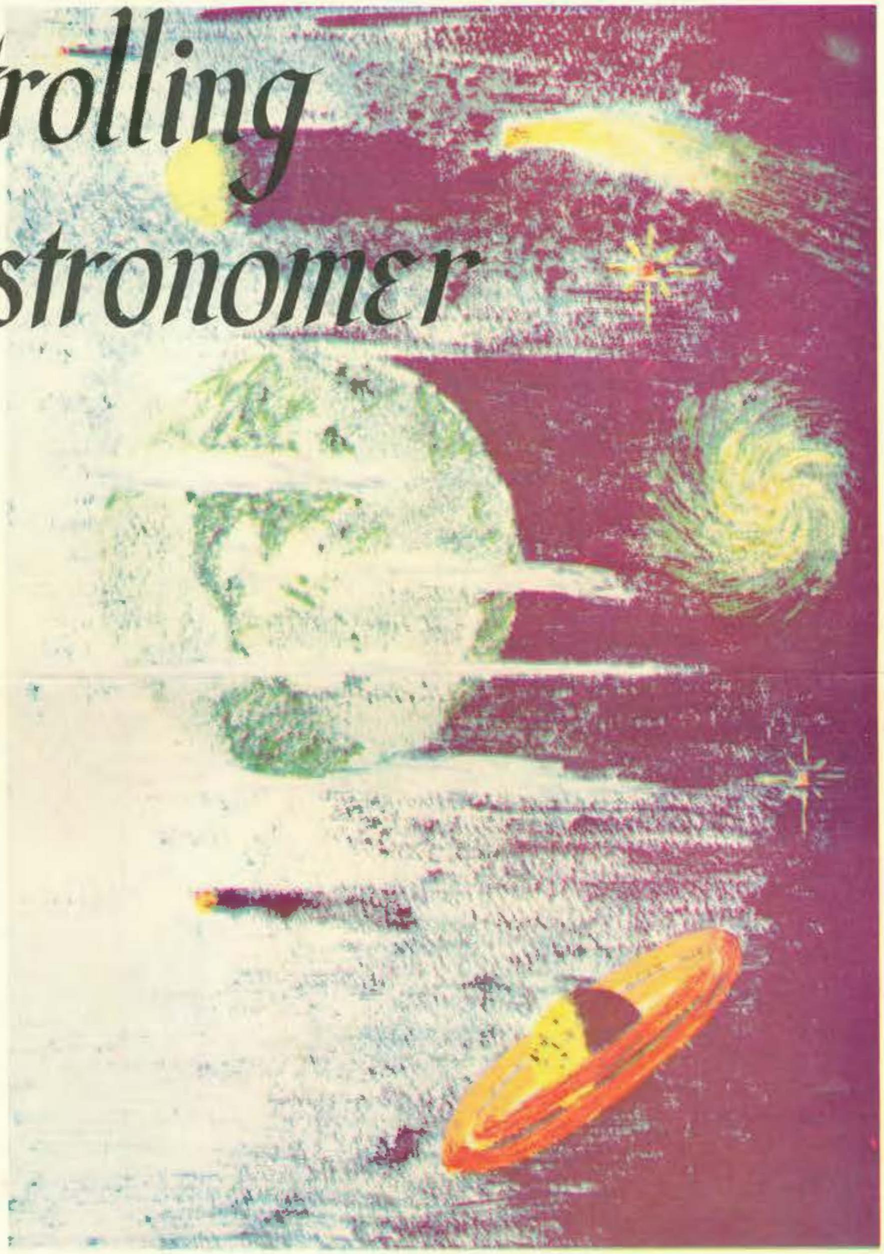
The Strolling Astronomer

Volume 6, Number 11 November 1, 1952

ASSOCIATION OF LUNAR AND PLANETARY OBSERVERS



The Strolling Astronomer
1203 N. Alameda Street
Las Cruces, New Mexico

SUBSCRIPTION RATES

1 Issue (in stock)	$0.35
6 Months	1.75
1 Year	3.00
2 Years	5.00

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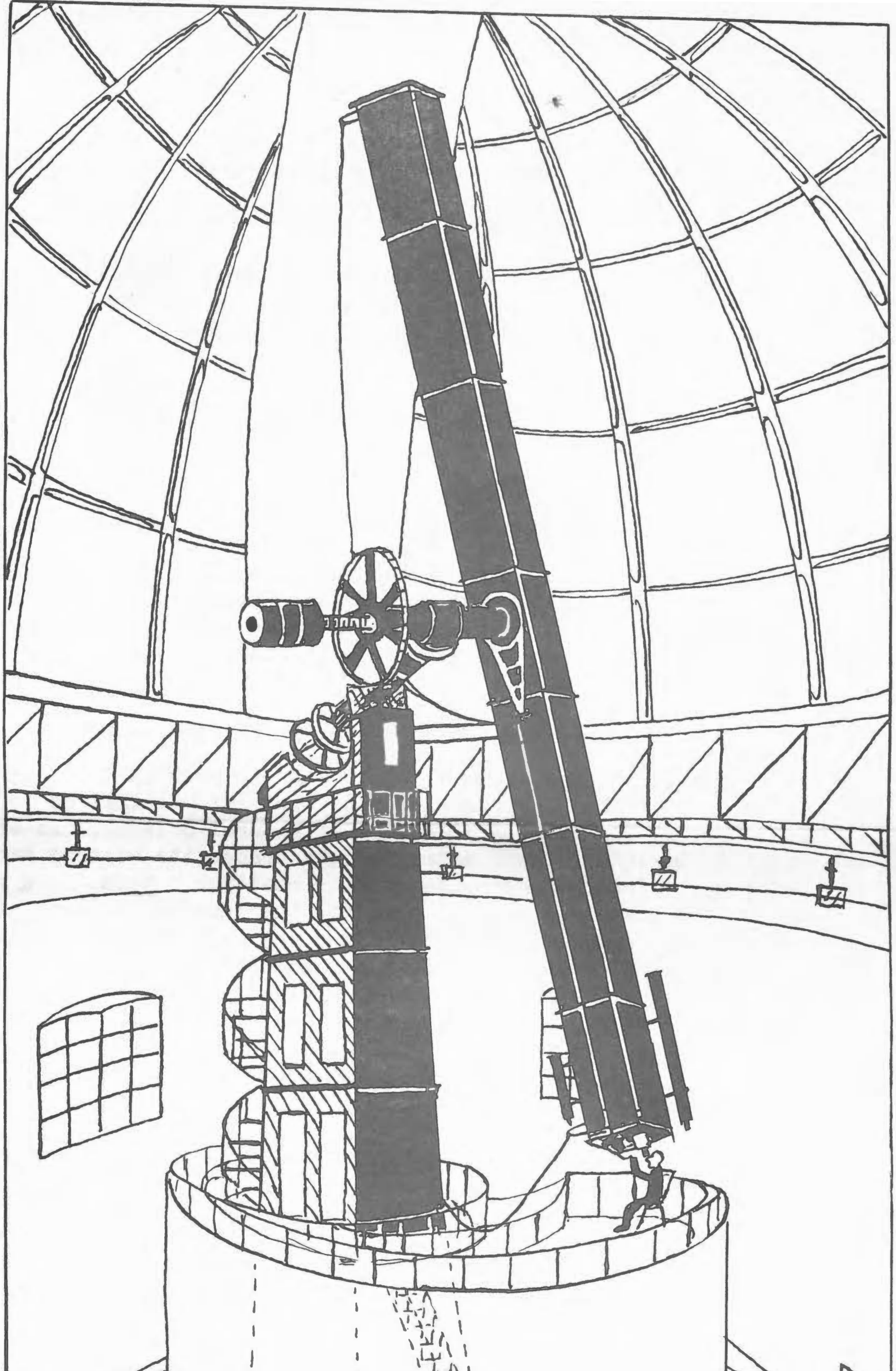

Sketch by H. P. Wilkins of 33-inch refractor at
Meudon Observatory near Paris, France.

Corrections to October, 1952, Issue. Pg. 143, line 9. Read "eyepiece view of the Ring Nebula". Pg. 145, line 10. Read "names of plants". Pg. 145, lines 16-20. The two asteroids named by Dr. Herget in his M.N.R.A.S. report were Hapag and Aribeda, which may not be quite clear from the text.

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SEASON'S GREETINGS. It is possible that this issue is the last one which will reach many of our readers before the holidays at the end of the year. Therefore, the staff of The Strolling Astronomer wishes to all its friends and readers

A VERY MERRY CHRISTMAS

and

A MOST HAPPY NEW YEAR.....

We appreciate the support and assistance which you have given us in the past and want to continue to share with you the fellowship of astronomical studies in the year to come. With your help we can make The Strolling Astronomer an ever-more valuable contribution to lunar and planetary science. And so - may each of you find a 20-inch telescope in his stocking by the fireplace Christmas morning!

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Vega. The name of this famous star is also that of a new star in the firmament of astronomical journals - the monthly publication of the Department of Astronomy of the Chester Society of Natural Science, Literature, and Art at Chester, England. The Chester Society traces its history back to 1871, and the Department of Astronomy holds monthly meetings. Vega, in a mimeographed format, is for the amateur, even in part for the amateur without a telescope. Among the writers in the first three issues are some names already familiar to A.L.P.O members - P. A. Moore, G.D. Roth, W. Sandner, A. P. Lenhan, and R. M. Baum, Mr. Baum being the Chairman of the Department. Vega includes notes about suggested amateur observing programs, general astronomical notices, line drawings, and monthly planetary positions. Each issue sells for one shilling, threepence. Those interested should write to the Department of Astronomy, C.S.N.L.A., 1, Dee Banks, Boughton, Chester, England.

The Wilkins Map of the Moon. With this issue we conclude the publication of the Second (1946) Edition of the H. P. Wilkins map of the moon and the several Special Sections added later. (The large mailing envelopes for which some members made special arrangements in order to avoid folding the map will be discontinued.) The Third (1951) Edition of the map is being supplied by the Editor as copies are received from Mr. Wilkins in England. Its price is thirteen dollars. Many readers who began their subscriptions after we began to publish the Second Edition have inquired about completing their Strolling Astronomer sets of the map. We hope to announce soon what arrangements we have been able to make.

The Special Section on the back inside cover of this issue is of the huge walled plain Ptolemy, a giant enclosure fully 90 miles across and near the center of the lunar disc. The amount of detail on this map is absolutely amazing; Ptolemy is drawn on the same scale as a regular Section of the Wilkins map! This map of Ptolemy is based in part on Mount Wilson and Pic du Midi lunar photographs of great excellence. Certainly it will be of fundamental value to future students of this region. Many of the objects shown will severely tax ordinary telescopes and will be visible only briefly under low enough solar lighting.

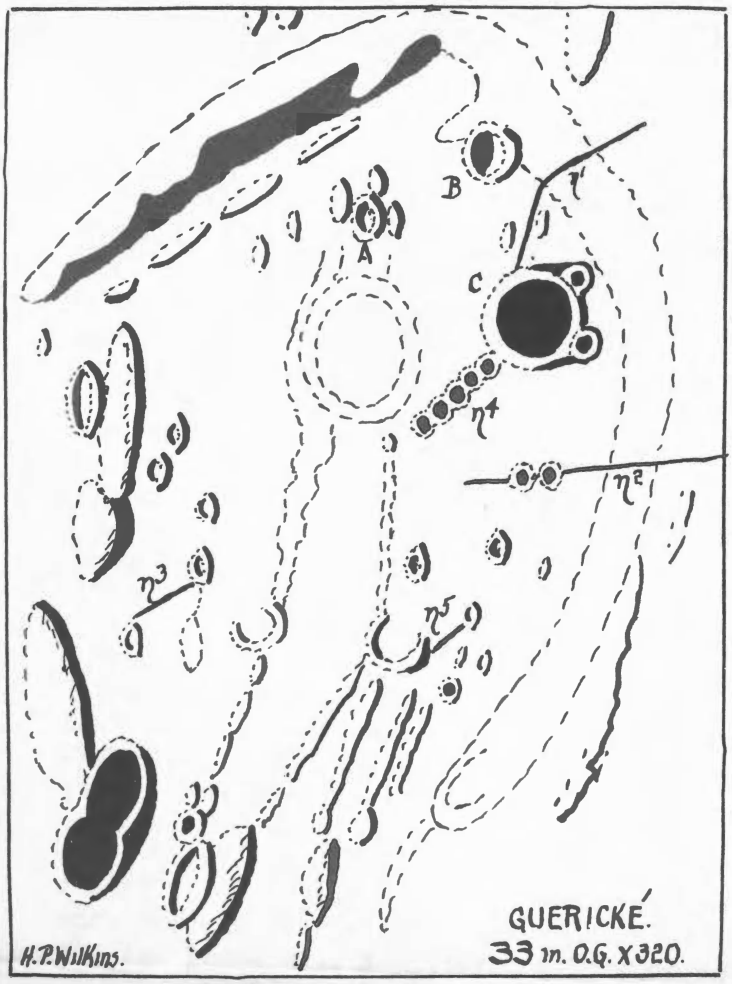


Figure 1. Lunar Crater Guericke.
April 3, 1952. 22^h, U.T.
Meudon 33-inch refractor.
Colongitude = 16°.7 .

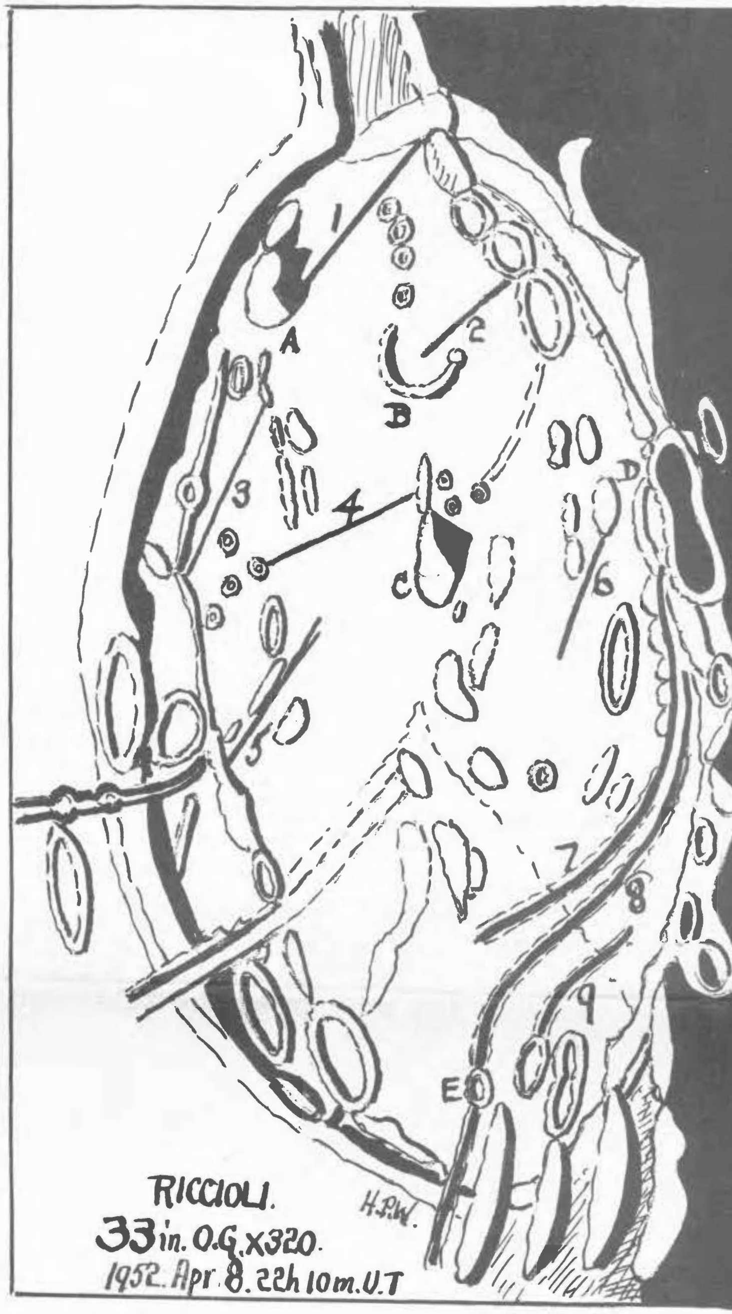


Figure 2. Lunar Walled Plain Riccioli.
H. P. Wilkins. Meudon 33-inch refractor.
Colongitude = 77°.7 .

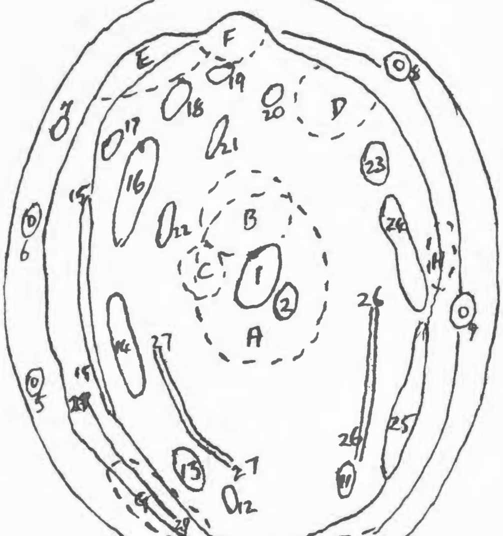


Figure 3 (Left) Chart of Taruntius by A. P. Lenham. Based on drawings in 1948-52 with a 3-inch Refractor at 128X and 166X.

We express our gratitude to Mr. Wilkins for his gracious permission to reproduce his map in this periodical.

THE MEUDON 33-INCH REFRACTOR

On pg. 152 readers will find a somewhat rough sketch by Mr. H. P. Wilkins of the Meudon 33-inch refractor, the third largest refractor in the world. Although photographs of the larger Yerkes and Lick refractors are often shown in popular texts, we suspect that few of our members have ever seen a photograph of the Meudon instrument and are the more glad to reproduce Mr. Wilkins' sketch on this account. He made it when he and Mr. P. A. Moore visited the Meudon Observatory in April, 1952. The sketch shows the rectangular iron tube with the 33-inch visual objective uppermost and the 25-inch photographic objective at the bottom. Mr. Moore is observing at the eyepiece and is adjusting in declination. There are two finders, the larger about five inches in aperture; and we can also see on pg. 152 the irons at the top and bottom of the tube with their connecting rope. The tall pier, the upper part iron and the lower brick, together with the spiral stairs giving access to the axes, appears on the left side.

Our English friends were very graciously allowed to use the giant refractor for lunar studies by M. d' Azambuja, the Director of the Observatory. M. Bertaud of the Meudon staff kindly assisted them in using the telescope. There is a fixed circular platform on the pier at a height of about 20 feet above the floor; from the fixed platform the observer enters the observing platform and closes the gate in its surrounding railing. The control box is on the observing platform, which can be raised or lowered to give access to the eyepiece in different positions of the telescope. A steel wire at the side of the tube enables the observer to roll up a roller-blind type objective cover. A hand wheel at the side of the tube frees the telescope for manual adjustments in position.

GUERICKÉ

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

Figure 1 on pg. 154 is another of the writer's Meudon observations, this time of Guerické on April 3, 1952 at 22^h, U.T. The crater was seen well, the air being clear and definition very good.

The well-known valley crossing the floor from North to South is, on the South, an old ring. The deep crater C has 2 pits on the East, and a bent cleft runs South and then Southeast. Crater A has 3 hills on the South. The craterlet-row from C runs N.W., and beyond its northwest end is a small hill. There are two partial rings on the North part of the floor and two short clefts. There was no trace of the curved cleft mentioned by Goodacre as being on the western part of the floor; evidently it does not exist. The most delicate cleft passes through two small pits. Nearly all details, excepting B, C, A, and the shallow valley, are "new" and have not been previously detected.

Gurericke may not have been one of the Objects Previously observed by A.L.PO members, or for that matter, B.A.A. members. This drawing will, however, be of the greatest value to anyone who observes it, and it will be interesting to note how small an aperture will show at least some of the fine detail drawn at Meudon.

RICCIOLI

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

This large lunar walled-plain has not hitherto been exhaustively mapped, partly owing to its position near the East limb and partly because its details are difficult to distinguish clearly with the telescopes most often found in the possession of amateurs. It was known that the walls are comparatively low and that the floor contains some ridges and other objects, including a dark area on the Northern portion.

It was therefore fortunate that the formation was well placed on April 8, 1952, on which evening I was observing with the great 33-inch Refractor at Meudon Observatory. The sky was clear when, returning from Paris, we entered the Observatory to find that the telescope had been moved from the position in which we had left it the previous night and that it required to be swung around. This, a simple thing for a small instrument, is quite another matter when the moving parts weigh twenty tons. As I turned the hand-wheel on the pedestal and in obedience the might mass of the giant telescope swept slowly over our heads I vaguely wondered, for a fleeting moment, what would happen if a few bolts or rivets happened to give way! By the time the telescope was adjusted, the objective uncowered, the observing platform raised, and the driving clock set in motion, over a quarter of an hour had lapsed; and we opened the slit of the dome to find that the night had become one of those tantalizing occasions in which masses of dense cloud, separated by perhaps five minutes of clear sky, passed across the moon.

The first glance revealed that the interior of Riccioli was covered with detail. The drawing, made at the eyepiece, and now reproduced as Fig. 2 on pg. 154, records 2 valleys, 9 clefts, 27 craters, 9 craterlets, 23 hills or mounds, 8 ridges, and a ruined ring. Most of this detail was recorded for the first time. The clefts 7, 8, and 9 were quite conspicuous objects and were at once confirmed by Mr. P. A. Moore, whome I called to the eyepiece in order that he might see for himself the wealth of detail then displayed.

From the south end we have a prominent, isolated mountain mass **A**, from which runs cleft 1; the ruined ring B and cleft 2; 4 craterlets and 3 shallow craters. There is a central hill C, with a mound on the South from which runs cleft 4 to a craterlet near the West wall. There are also some mounds, ridges, and cleft 3. Between the central hill C and the double crater D, to the East, are mounds and cleft 6. A valley, with craterlet anlargements, cuts through the West wall to a ridge, beyond which is cleft 5. Further North is another but more shallow valley which was traced across the floor to a hill. There are some large craters on the West and one on the East, between clefts 6 and 7. Cleft 7 originates at a low ring abutting on the double crater D and curves Westwards on to the floor, while cleft 8, after reaching a small crater, cuts through the North wall. Cleft 9 begins at crater E and runs for a short distance South-East. To the East of E are two craters, one being double.

The three rougly parallel clefts, 7, 8 and 9, should be visible in moderate sized instruments; but the others are very delicate objects. So are the numerous craterlets, craters, and mounds. With the drawing at hand it will be interesting to see how many of these features can be detected with small telescopes.

Allowing for interruptions by the passing clouds, it took me about an hour to complete the drawing, after which Mr. Moore observed other objects. In this manner, each in turn used the telescope until complete clouding over stopped observation. After the turmoil of Paris we welcomed our nightly visits to the Observatory. Within the dimly lit dome the only sound was that of the whirl of the motors, when observing platform or dome was moved, the soft purr of the driving-clock, and conversation between ourselves and M. Bertaud who so kindly stayed with us. The huge tube stretched towards the opened slit through which shone the moon as we, representing the B.A.A. and A.L.P.O., took advantage of every minute in order that our friends and lunar observers in other countries might have the results of our unique privilege placed before them in pictorial form. With the giant telescope we seemed to look into the moon for the first time and see it as it really is. It is to be hoped that our drawings will prove both of interest and value to our friends everywhere; they may be relied upon as accurate representations of what we saw.

THE 1951-52 APPARITION OF SATURN

by Thomas Cragg

The observations which make this report possible have been submitted by the following colleagues: J. C. Bartlett, Jr. (3.5-inch refl.), T. R. Cave, Jr. (12½-inch refl.), T. Cragg (6-inch refl., 6-inch refr., 12-inch refl.), W. H. Haas (6-inch refl.), E. E. Hare (12-inch refl.), M. B. B. Heath (10-inch refl.), L. T. Johnson (10-inch refl.), E. Kunkel (6-inch refl.), A. P. Lenham (3-1/4-inch refr.), P. A. Moore (8½-inch refl., 12½-inch refl.), S. Murayama (8-9nch refr.), T. Osawa (6-inch refl.), G. Persson (6-inch refl.), O. C. Ranck (4-inch refr.), E. J. Reese (6-inch refl.), and H. P. Wilkins (15-inch refl.).

A general description is in order, primarily for our newer readers and for those recently interested in Saturn. Refer here to the general view of the ball and rings, Figure 1 on pg. 158. Proceeding north from the south limb, we find in order: South Polar Region (S.P.R.), South Polar Belts (S.P.B.), South Temperate Zone (S.T.Z.), South Temperate Belt (S.T.B.), South Equatorial Belt (S.E.B.), and, during the latter half of the apparition, the shadow of the rings on the ball. On the north side of the projected rings we have, in order, the very brilliant Equatorial Zone (E.Z.), in which an Equatorial Band (E.B.) was occasionally found, the North Equatorial Belt South and the North Equatorial Belt North ($N.E.B._s$ and $N.E.B._n$ respectively), the North Temperate Belt (N.T.B.), and finally the North Polar Region (N.P.R.). The nomenclature of the rings is very simple and is as follows:

Ring A, the fainter part of the rings outside of Cassini's Division.

Ring B, the middle brightest portion between the inner edge of Cassini's Division and the outer edge of the Crape Ring.

Ring C, the Crape Ring.

Those divisions in the rings having numbers are numbered in the order of their detection by A.L.P.O. members. The divisions are as follows:

1. Cassini's Division, the prominent gap between Rings A and B.

2. Encke's Division, between 6/10 and 7/10 of the way from Cassini's Division to the outer edge of Ring A.

The Third Division, about 1/3 of the distance from the inner edge of Ring B to its outer edge and on the outer border of the darker inner part of Ring B.

The Fourth Division, about 2/3 of the distance from the inner edge of Ring B to its outer edge.

The Fifth Division, separating Ring B from Ring C.

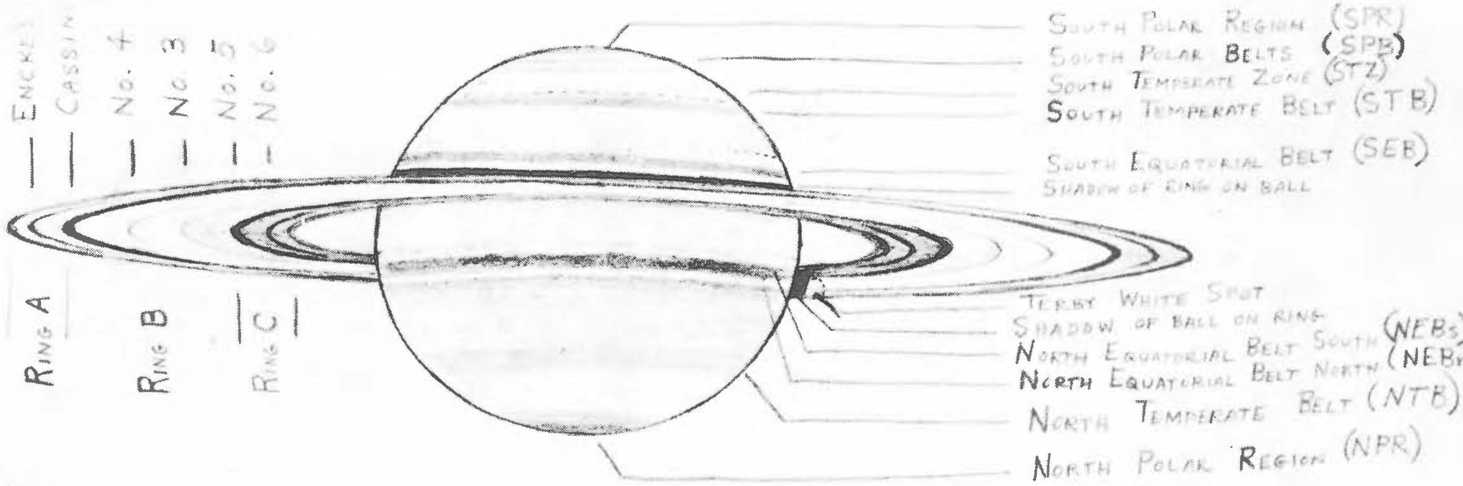


Figure 1. General View of Saturn in 1951-52 Apparition, Giving Standard Nomenclature.

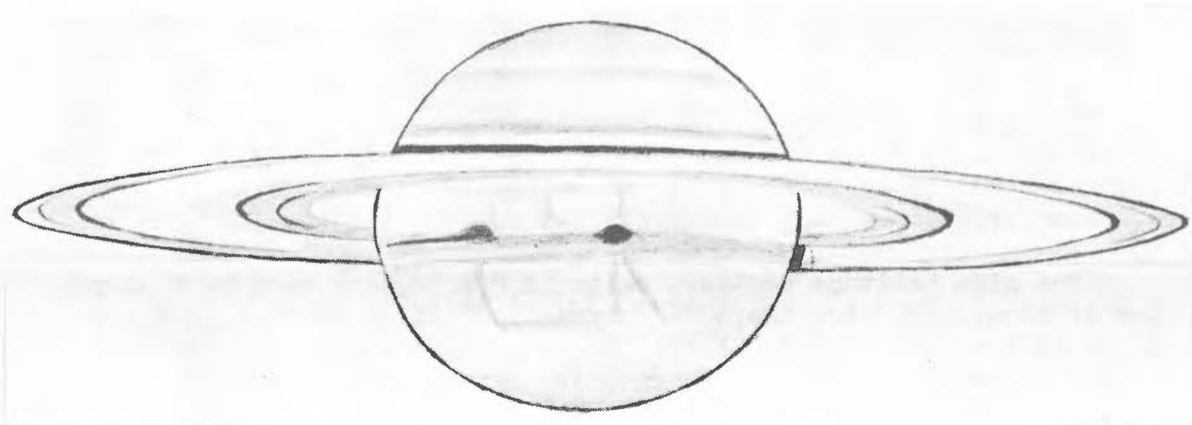


Figure 2. Saturn T. A. Cragg. 12-inch refl. July 12, 1952. 3^h0^m, U.T. S = 4. T = 4.5.

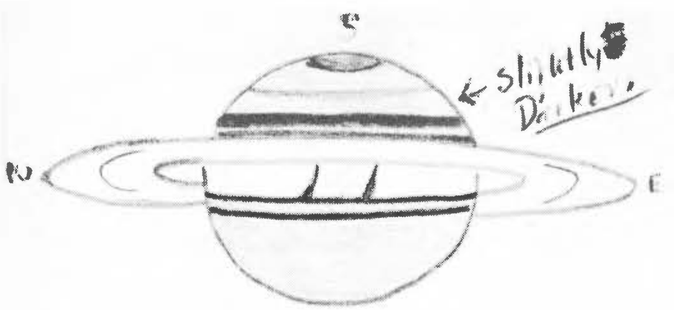


Figure 3. Saturn. O.C. Ranck. 4-inch refr. 240X. S = 5. T = 4. June 29, 1952. $2^h\ 0^m$, U.T.

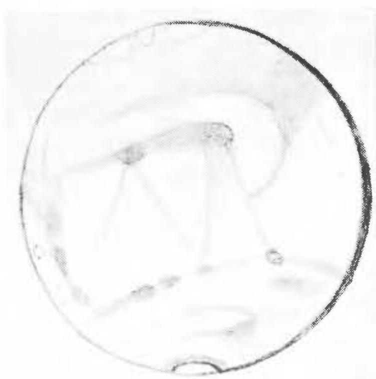
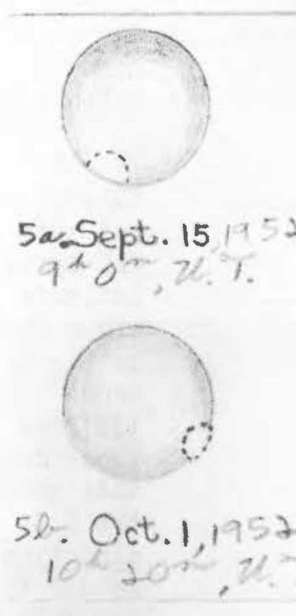


Figure 4. Mars.
T.A. Cragg
6-inch refr. 300X.
May 30, 1952. 5^h, U.T.
C.M. = 356°.



Uranus.
A.G. Smith
8-inch refl. 452X, 703X

The Sixth Division, approximately in the middle of Ring C.

Immediately adjacent to the shadow of the ball on the rings is the Terby White Spot, an optical illusion probably caused by the contrast of the black shadow against the bright Ring B.

Without much doubt Saturn in 1951-52 had its most active apparition in many years. Of course, the activity was primarily in the equatorial regions. It is really very strange indeed that several observers with large apertures completely failed to see the markings revealing this activity, while numerous reports were made by some other observers having apertures of four inches and even less! Most of this activity took the form of spots on the south edge of the N.E.B., one spot being observed sufficiently to permit a fairly reliable rotation-period to be determined. This spot is "Osawa's Spot", first recorded by Osawa on February 5, 1952. Subsequent observations by Cragg and others, but primarily by W. H. Haas, show a gradual and apparently sensibly constant lengthening of the period from 10 hrs., 14.0 mins. at the end of February to 10 hrs., 15.8 mins. at the end of March. One or two observations of this mark were made in April, but by this time numerous spots, streaks, and festoons were making their appearance. (Note Figure 2 on pg. 158, a drawing by Cragg on July 12, 1952.) In fact, one might even say that the detail was comparable to the complexity of Jupiter's N.E.B.!

The S.T.B. is shown by several observers throughout the apparition, primarily by O. C. Ranck (Figure 3 on pg. 158) and T. Cragg (Figure 2 on pg. 158) and occasionally by P. A. Moore and T. Osawa. Although not always observed, it was seen frequently enough to prove its actual existence at this apparition.

The high latitude southern belts (S.P.B.) were seen by T. Cragg on a number of occasions, but there is only an indication of them on a drawing by P. A. Moore on April 14. This being the only confirmation of Cragg, it appears a little uncertain if we should consider that these belts were present in 1951-52.

Most observers usually saw the S.P.R. to be rather dark, but several observers noted some definite variations. In a fine series of graphs of intensities of various Saturnian features, A. P. Lenham shows a rather marked sinuous oscillation with maximum darkness in mid-April and late July and minimum darkness in late March and very late May and early June. In July Ranck agrees with Lenham, but Cragg disagrees. Ranck usually, but not always, disagrees; and Cragg agrees both in May and June. It is thus obvious that many observations of both polar regions are necessary before anything can be said with much degree of certainty.

The E.Z. was always the brightest portion of the ball and was very active this time. A large number of bright oval-shaped clouds were observed by Cragg, but very few of them were recovered at a second presentation. Those that were all agreed very with the 10 hrs., 14 mins. rotation-period accepted for this latitude. J. C. Bartlett and O. C. Ranck, especially the former, observed numerous festoons going into the E.Z. (see Figure 3). Dr. Bartlett discussed these in his article in The Strolling Astronomer, Vol. 6, pp. 97-99. Cragg did not see these festoons with his 12-inch reflector but noted that the borders of the elliptical clouds referred to above were dark (see Figure 2 on pg. 158). Perhaps these dusky borders were seen by other observers as festoons; Dr. Bartlett agrees that such is possible. Lenham's graphs show some variations in brightness of the E.Z. and the N.E.B.; these correspond almost exactly and are in the same direction at the same time. That is to say, when the E.Z. got a little darker, so did the N.E.B., etc. Since irradiation can hardly be held responsible, Lenham feels that real changes were taking place. Unfortunately, we have no confirmatory material at hand.

Aside from what was mentioned earlier about the N.E.B., this belt was observed double most of the time; but it was occasionally seen single. Observations by Ranck indicate a general drifting together of the two components from November, 1951 to January, 1952. This drifting together also is as yet unconfirmed.

There were many festoons between the N.E.B. and the N.T.B. These festoons offer a good opportunity to check the rotation rate<u>s</u> of the higher latitudes <u>if one sees the commencement</u> of a festoon. If a substantial difference in rotation exists between the termini of these festoons and <u>if</u> the festoon is independent of the motion of the surface over which it passes, then a drift in longitude should be experienced as the latitude is increased. This drift should be eastward if higher latitudes move westward at a slower rate than the equatorial regions and westward if the opposite be true. (We here think of <u>east</u> and <u>west</u> as directions in the terrestrial sky.) With these ideas in mind it is a little difficult to interpret the direction of festoons on Cragg's July 12 drawing, Figure 2.

During this apparition several observers noted bright elliptical clouds, somehwat similar to the R.S.H. of Jupiter, in north temperate latitudes. Unfortunately, not a single such cloud was ever observed a second time. Bartlett, Osawa, Persson, and Ranck recorded such clouds. Persson's object was a very brilliant spot between the $N.E.B._s$ and the $N.E.B._n$ on May 6, 1952 at 21^h 25^m, U.T. These spots are <u>very</u> important, for they offer the <u>best</u> method for checking the "book value" rotation rate for high latitudes.

The N.P.R. grew slowly brighter during January and February, reaching a maximum around February 28, then grew progressively fainter until apparently back to normal at the beginning of May, according to Lenham's graphs. Observations by others are rather badly scattered to permit much of a conclusion.

Since the rings were considerably more widely opened than during the two previous apparitions, some pleasing views of detail in them were had by a number of observers. Quite as mysterious as the lack of observations of the N.E.B. spots with large apertures are observations of the minor divisions in the rings. H. P. Wilkins in his 15-inch reflector perceived Cassini's Division clear around the observable portion of the rings,as very creditable achievement at their present inclination, but apparently failed to see <u>any</u> of the other divisions! All the observers saw Cassini's Division, and several saw Encke's; but the other divisions were evidently rather difficult. In fact, they were recorded only by Cave and Cragg,except that Haas sometimes saw the Third Division. Cave employed his 12½-inch F;10 reflector; Cragg,his 12-inch F:7 reflector and the 6-inch F:15 refractor on Mount Wilson. Sufficient observations of each division were secured that we can be reasonably certain of them at this apparition.

Color observations of the rings were made rather extensively by Bartlett, who undoubtedly possesses an uncanny eye. He has on a number of occasions found one ring-arm redder than the other. These observations have been confirmed with color filters. Complete changes in a 24-hour period have been noted - that is, from relative prominence to inconspicuousness. The Recorder admits being completely baffled by such an enigma.

During the 1951-2 apparition two observers <u>suspected</u> a faint dusky ring <u>outside</u> of Ring A! This region is still within the Roché Limit, and it is theoretically entirely possible that a faint ring can be present there. Cave suspected it twice and Cragg once on three different occasions when that rare combination of good seeing and good transparency occurred.

Also, at least half a dozen times Cragg saw the rings in the shadow of the ball! A nineteenth century drawing by Trouvelot on pg. 84 of The Griffith Observer for July, 1949 shows this appearance very plainly.

We may best conclude this report with a summary of what can and should be done during the 1952-53 apparition, which has already begun.

1. Measure the latitudes of the belts and zones with a filar micrometer (or even on photographs and carefully made drawings).

2. Observe central meridian transits of spots and streaks.

3. Study color changes in the belts and zones with color filters of known wave-length transmissions.

4. Observe the relative intensities of various features.

5. Observe the high-latitude festoons and spots to determine high-latitude rotation-rates.

6. Observe the relative color of each arm of the rings.

7. Look closely for minor divisions in the rings.

8. Observe the inner limit of the Crape Ring.

9. Watch for a possible dusky ring outside Ring A, preferably with a large aperture.

10. Determine how close to opposition the shadow of the ball on the rings can be seen and how narrow a shadow of the rings on the ball can be discerned with different apertures.

The above are but a few, but are some of the more important, things that can be done.

OBSERVATIONS AND COMMENTS

Many dozens of observations of Mars near its 1952 opposition have been received. They have still been only partially analyzed, and discussion will be deferred to a later issue. Figure 4 on pg. 158 is a sample of what can be seen on Mars with a small telescope of good optical quality.

Dr. A. G. Smith at the University of Florida made about a dozen observations of Uranus in the late summer and early autumn of 1952. His two best views are reproduced as Figures 5a and 5b on pg. 158. The small disc was brightest near its center, now near a pole of rotation; and the limb was dusky, as on the other Giant Planets Jupiter and Saturn. However, the limb was not uniformly dusky all the way around; nor was the pattern of duskiness always the same. On one date Dr. Smith viewed Uranus with orange, yellow, and green filters but found no improvement in the detail. On September 15 he noted a very small white spot at position angle 350°. (One here has 0° at the north direction in the terrestial sky, 90° at east, 180° at south, and 270° at west.) It had an estimated change in position angle of 15° in half an hour. On October 1 there was a small bright spot on the limb at a position angle of 40°. It was moving in the direction of decreasing position angle, as it must if the rotation of Uranus is in the same direction as the revolution of the satellites. Dr. Smith points out that if the September 15 and October 1 spots are one and the same, then they conform perfectly to the accepted rotation period of 19 hrs., 45 mins. The interval between the observations is 385 hrs., 20 mins., while with the accepted period 36 rotations would require 387 hrs., 0 mins. Thus the spot had 1 hr., 40 mins. to diminish its position angle from 40° to 350°, the required rate being 30 degrees per hour. Readers might like to compare this visual study of the rotation of Uranus with the report of some results secured by O.C. Ranck and W. H. Haas, The Strolling Astronomer, Vol. 6, pp. 53-54, 1952. We commend Dr. Smith on a good piece of work. We further urge that an independent visual determination of the photometric and spectroscopic period of rotation of Uranus may be, within the powers of ordinary telescopes of good quality, even if what has been done recently should almost certainly be regarded as confirmation and not as an independent determination.

Edward Lindemann, 367 Whalley Ave., New Haven, Conn. on August 30 wrote of his keen interest in experiments with flat discs and ping-pong balls to test the visual telescopic interpretation of planetary detail, as described on pg. 105 of our July issue. Mr. Lindemann urges that it would be very helpful to make gray plaster models of certain lunar craters in which the appearance of the finer detail has given rise to differences of opinion and to observe these models with a telescope at reasonably long distances of a mine or two. The models would be subjected to different illuminations from a single lamp. They would probably have to be placed on the outer wall of a moderately high building, and the observer would need to be in telephone communication with his assistant at the building. Poor seeing effects could be added as desired. Although highly accurate models of craters cannot be made because of the imperfections in our knowledge, Mr. Lindemann urges that even reasonable facsimiles can tell us much about optical effects resulting from changing lighting and about interpretational variations among different observers. He expresses the hope: "A thoroughgoing series of such tests would probably eliminate a lot of uncertainty in lunar observing."

There was a partial eclipse of the moon of magnitude 0.538 on August 5,1952, the northern part of the moon being eclipses. Though this event was invisible in the United States, H.P. Wilkins secured observations in England with a 3-inch refractor at 50X and a 15-inch reflector at 250X. The middle of the eclipse came at $19^h 47^m$, U.T., only a short time after moonrise at Mr. Wilkins' station. In the 3-inch telescope no detail was visible within the coppery umbra, which nevertheless did not appear to be very dense. Near $20^h 30^m$ and $20^h 58^m$ Grimaldi and the dark area in the north part of Riccioli were the darkest areas on the disc, darker than Plato or any mare. The moon left the umbra at $21^h 1^m$, but at $21^h 30^m$ penumbra was still very perceptible on the northwest limb. At $21^h 30^m$ Wilkins looked for possible eclipse-caused changes in three areas, using the 15-inch. The Linné bright area looked very bright and certainly larger than on August 4; the observer felt rather sure of an enlargement, amounting to about 50%. In Grimaldi the darker patches on the dusky floor were very plain. The Riccioli dark area ran to a long, fine, needle-like south point, a bright area on its east side apparently concealing part of the normally seen dark area. Wilkins felt rather confident that the south tip had been rendered much better defined by the eclipse. Curiously, there is good evidence that some past eclipses have resulted in a temporary fading of the south tip of the Riccioli dark area. Since it was impossible to observe Linné and Riccioli before the eclipse in England, the opinion that the eclipse altered their appearance necessarily rests upon the observer's knowledge of their ordinary aspect at full moon.

R. M. Baum, 1 Dee Banks, Boughton, Chester, England on August 6 announced the discovery of a Wargentin-like object between lunar formations Cuvier and Jacobi. These may be found on Section XXIII of the Wilkins map. The discoverer was R. L. T. Clarkson, using a 6.5-inch reflector at 200X on June 29, 1952. The formation in question is a flat-topped tableland and impressed Mr. Clarkson as remarkably similar to Wargentin, which has long been the only known large lunar ring having an interior elevated above its surroundings. Clarkson's object encroaches on Cuvier to its north, its western boundary is apparently chiefly marked by a row of craterlets, and to its east are two small craterlets. The otherwise flat surface of this curious lunar formation is dotted with a large number of pits and hillocks. The object will be seen best near the terminator, a position which it occupies near first quarter. For American amateurs the evening of December 23, 1952 (local civil time date) will be favorable for examining the area. We invite A.L.P.O. members to study the region and to report their findings.

Mr. Alan P. Lenham, 43 Newcastle St., Swindon, Wiltshire, England has contributed a number of lunar drawings and charts. His example should be an inspiration to many of us of what care and industry can accomplish with even a very small telescope, for he has made his observations with a 3-1/4-inch refractor at 128X and 166X. Mr. Lenham's work is also typical of much of that carried out by the Lunar Section of the British Astronomical Association in that it deals with the detailed topographical mapping of selected lunar regions. We regret that we lack space to publish all of Mr. Lenham's drawings and charts, but we shall be glad to lend particular ones to members who request them.

Lenham drew the floor of the lunar walled plain Endymion on February 28, 1952 at colongitude 308°.4. Several longitudinal (north-south) ridges were only slightly brighter than the rest of the floor. The eastern part of the floor was slightly darker than the western in this morning lighting, the well-defined boundary between them being in places a thin shadow. Two narrow shadows near the foot of the east inner wall may mark longitudinal ridges otherwise invisible or even valleys. Several craters near the north end of the floor may well be present on the Wilkins map (Section XIV).

Lenham drew the crater Halley and its environs to the north and east on April 2,1952 at 4°.2. Halley lies on the south rim of the giant but rather poorly bounded enclosure Hipparchus and is on Section I of the Wilkins map. Only the east inner wall of Halley was illuminated in this near-sunrise view. The drawing shows a number of craters and low ridges near Halley; but as Mr. Lenham says, his drawing differs somewhat from previous representations.

Lenham has further contributed a chart of the lunar crater Taruntius, which appears as Figure 3 on pg. 154. On Section XI of the Wilkins map, Taruntius is near the north end of Mare Fecunditatis and is roughly midway between Messier and Proclus. The figures and letters on Figure 3 are Lenham's own notation for markings in Taruntius. The rim, he reports, is bright; but the inner walls are of the same dull tone as the floor. On the bright upper walls are four small craters, 5, 6, 8, and 9, and a small peak, 7. From 5, 6, 7, 8, and 9 short, distinct bright rays spread out across the surrounding mare. On the inner slopes is a valley, 29-29, and to its southeast a ridge, 15-15. On the inner south slope is a depression. At the north is a deep crater, 3; and on a long, downward slope from 3 is a small, shallow craterlet, 4. Lenham further reports that the frequently charted inner concentric ring of Taruntius is really composed of these mountain blocks: 25, 24, 23, 19, 18, 16, 14, 13, and 12. Under very low illumination this ring may appear almost complete, being connected by an extremely low and narrow ridge. There are even traces of a third ring; it is composed of the ridges 27-27 and 26-26 and the mountain blocks 22, 21, 20, and 11. Features 1 and 2 appear to be clearly separated central peaks. Areas E, F, G, and H are darker than the rest of the floor under high lighting; areas A, B, C, and D have occasionally been seen darker than the rest of the floor under low lighting. On February 29, 1952 the southeast interior was brighter than the rest of the floor to Lenham, even shadows appearing gray; but under similar lighting on February 12, 1951 this area as quite normal. It might be worth watching carefully.

A comparison to the Third Edition of the Wilkins map confirms Lenham's craters 8, 9, 3, and 4 and may very well partially confirm his third ring but shows the central mountain single. Goodacre calls it single and "almost globular in form".

On February 16, 1952 at colongitude 153°.4 and thus under very low evening illumination A. P. Lenham drew the plain just east of the lunar crater Burg. One finds Burg on Section XIV of the Wilkins map as a rather isolated crater on the Lacus Mortis; the plain drawn by Lenham is of interest to lunarians because of the clefts which cross it. His drawing shows nine clefts, two craterlets, a bright area of unknown topographical nature, two ridges or elongated hills, and a number of hillocks. The main east-west cleft, which is easily found on the Wilkins map, was the deepest cleft; and Lenham found its south edge to be very slightly raised above the plain so that it cast a thin shadow. The bright area mentioned above lay in the northeast part of the plain and close to the edge of the sunset shadow. Two objects shown as clefts on the Wilkins map were represented by Lenham as hills or ridges. But lest we give the impression that visual lunar observers are always disagreeing with each other, we should say that four of Lenham's clefts, his two craterlets, and three of his hillocks conform very well to the Wilkins map - no mean accomplishment for so small an aperture.

The very energetic Mr. Lenham has also constructed a chart of Condorcet, a ring-plain about 45 miles in diameter and located near the southwest shore of Mare Crisium, on the basis of 6 drawings secured between February 27 and March 12, 1952. Goodacre asserts that Condorcet is devoid of detail, and even the Third Edition of the Wilkins map shows very few markings here. Nevertheless, Lenham's chart shows several craterlets on the inner walls and at the south end of the floor as well as a number of hills scattered over the floor.

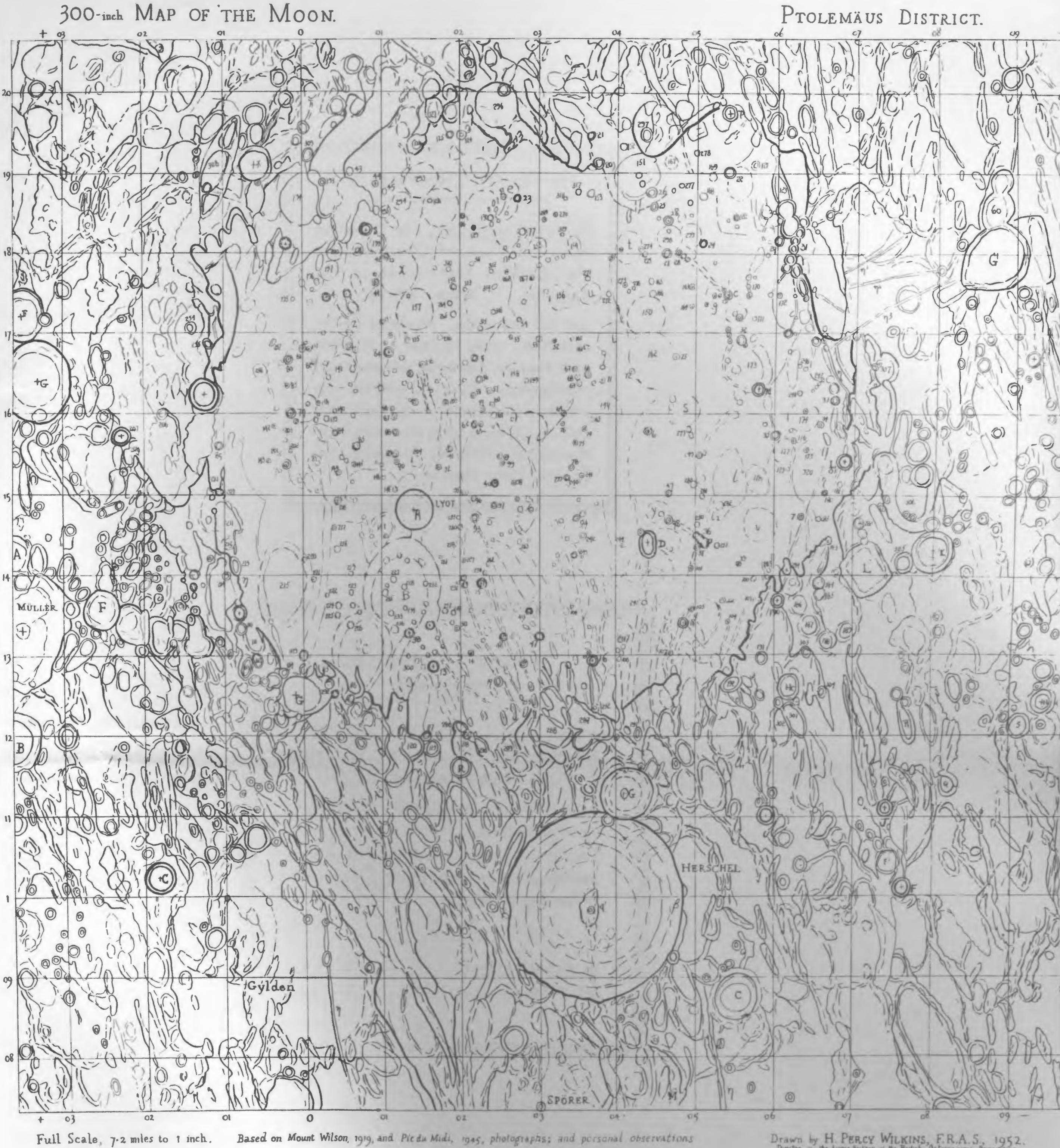
Finally, Lenham has submitted a sketch of the region from the walled plain Gauss to the northwest limb, based upon observations on February 26 and 27 at colongitudes 284°.0 and 296°.1 respectively. The former figure may well surprise us - the moon was only 1 day, 9 hours old at this observation! B.A.A. lunarians have given much serious study to the limb regions in recent years. These regions are shown very badly on most lunar maps, even giant walled plains being completely omitted. The amateur with a small telescope can still contribute effectively to improving the mapping of the lunar limb, provided that he will observe regularly and learn to make accurate sketches of what he sees. Some of our readers might like to take up this phase of lunar work.

D. P. Barcroft writes of looking for color in the dark area just west of the small crater Lichtenberg on August 6, 1952 at colongitude 94°.4 (near full moon). One finds Lichtenberg near the northeast limb on Section XVIII of the Wilkins map. Using J. T. Carle's 8-inch reflector, Barcroft saw only a gray color here. Brighter hues, reds and even purples, have been recorded in the past, by the famous Maedler more than a century ago and during the last 13 years by Barcroft, Baum, and Haas. It is difficult to explain this color, and it appears sometimes to vary independently of the solar lighting. Amateur observers might well add the Lichtenberg area to their list of objects to study; color filters of known transmission will aid in establishing what hue is present.

T. Osawa reports that he suspected a "flash", a moving lunar bright speck, while observing Miyamori's Valley on September 3, 1952 at 13^h 57^m, U.T. He was using a 6-inch reflector. The flash was white in color, and its duration was only about 0.1 to 0.2 seconds. A sketch shows the path of the speck to lie just west of the crater Lohrmann; the length of the projected path on the moon's surface was about 45 miles. If the speck was at the distance of the moon, there thus results - though with great uncertainity - a velocity of 225 to 450 miles per second. If this object was a meteor in a very rare lunar atmosphere, then it must have been of very remarkable brilliance to be seen against the sunlit portions of the moon only 13 hours before the full phase. Of course, one can never be certain without a duplicate observations by a second observer that what was seen was not merely a foreground bright object somehwere in the earth's atmosphere.

J. C. Bartlett has communicated recent observations of Tycho on September 28 and 29 near colongitude 20° and 32° respectively. He was especially interested in a brilliant spot on the east inner wall just below the crest; it was fully as bright as Censorinus. On September 28 Bartlett also recorded a dull spot within the shadow just below the crest of the west inner wall. The brilliant spot on the east inner wall under low morning lighting is typical of many other spots in many other craters. Bartlett wonders whether we may here see a distorted image of the sun reflected from a crystalline, asphanitic, or glassy portion of the inner east walls.

In a letter dated August 30 Dr. Bartlett engaged in an interesting and instructive discussion of widespread veilings of markings on Mars by obscuring material in its atmosphere. We would like to share this discussion with our readers. He points out that Moulton on pg. 277 of An Introduction to Astronomy speaks of a "very remarkable" phenomenon "not easy to explain", namely that the whole disc of Mars is dim and obscure as though covered by a thin mist, sometimes for considerable periods. Proctor cites many examples of extensive veilings. Lowell, however, rejects them and insists on pg. 90 of Mars and Its Canals that the whole surface of the planet outside the immediate vicinity of the polar caps is free of cloud or mist with very rare exceptions. Dr. Bartlett suggests that the transparency of the Martian atmosphere, like our own, is subject to periodic changes and that Lowell worked during a very transparent period. Though feeling obliged to accept the observations alluded to by Moulton and Proctor, Bartlett points out that there are difficulties in explaining planet-wide atmospheric obscurations. An aqueous mist requires for its existence a very delicate balance among absolute humidity, pressure, and temperature. It appears quite impossible to suppose that such a balance can be maintained from one pole of Mars to the other, especially in view of the known great aridity of the planet. We may next wonder about a universal dust haze, but Dr. Bartlett notes that a change of pressure and/or temperature would act to dispel such a haze. We can hardly imagine that pressure and temperature are sinsibly uniform over the whole planet, and hence we must dismiss any true universal dust haze. Our Baltimore colleague goes on to say that rather localized veilings might sometimes give the appearance of planet-wide veilings. Most of the major dark areas are in the southern hemisphere; during the northern summer they will lie well to the south of the center of the disc and in addition will be seasonally lightened during their winter. For example, suppose that at C.M. 100° and with the center of the disc at latitude 23°N. we have a mist or a dust haze over Sinus Aurorae and Solis Lacus. Most of the disc would look featureless in a small telescope, and yet there would be no widespread Martian atmospheric obscurations. Dr. Bartlett finally suggests that many apparent obscurations may be due to a graying-off effect of turbulence in the Martian atmosphere, here diminishing the visibility of the features as seen from outside.



SPECIAL SECTION OF THE H.P. WILKINS MAP OF THE MOON
SHOWING THE WALLED PLAIN PTOLEMY.

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