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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.

ANNOUNCEMENTS

Error in September-October, 1954 Issue. On page 125, line 7 from the bottom of the page, please read "and another near the north edge".

Errors in November-December, 1954 Issue. The front inside cover of this issue was left blank by mistake. We apologize for any inconvenience which the lack of the information normally given here may have caused our readers. In the table of contents on the front outside cover it looks as if K. Komoda is the author of the article on pg.141. He is not. The correct title is "Some Observations of Jupiter in 1952-53 by K. Komoda".

An Acknowledgment. We express our thanks to The Chicago Astronomer for their generous two-page description of the A.L.P.O. in their March, 1955 issue. The Chicago Astronomer is published ten times a year by the Burnham Astronomical Society; the Editor is Mr. Robert G. Johnsson, 7333 North Ridge Ave., Chicago 45, Illinois. Non-members of the B.A.S. may subscribe for one dollar per year. Many of the articles will interest the alert amateur anywhere.

Concerning Drawings Submitted for Publication. From time to time we are disappointed to receive drawings which are detailed, carefully made, and of special interest in one way or another but which are simply not suited for reproduction in The Strolling Astronomer. We think that our publishers, the Bronson Printing Co. of Las Cruces, are doing very well with our illustrations; but they cannot make clear and distinct planetary features in the illustration from ones which are faint or almost invisible on the original drawing. In fact, the published reproduction must inevitably show less than the original drawing. Therefore, we would request our readers to exaggerate contrasts of tone a little on drawings they submit. Outlines of planetary discs should be made dark and distinct. It will give an attractive appearance if the sky-background around the planet is blackened. It will also be best if drawings are not on too small a scale, for at present all drawings are published about two-thirds of their original size. We are, unfortunately, unable to reproduce drawings made in colors.

A Note on Possible Telescope Tubes. Mr. Joseph R. Pawlick of La Crescenta, California recently wrote us as follows: "The show at which I work changed over to Cinemascope and the new big screen came in a heavy and very stiff cardboard tube which was 19 feet long and 7¾ inches inside diameter; this size is perfect for a 6-inch telescope. I was informed that many such tubes are lying around theatres; and the owners are happy to give the tubes to anyone who asks for them, for otherwise they have to be burned or hauled away". Mr. Pawlick hopes that this information will be helpful to A.L.P.O. members who are planning to make a new telescope.

The Reporting of Telescopic Meteors. Any amateur may see a meteor flash through the field of his telescope at any time. The American Meteor Society is much interested in these objects; and standard report sheets may be obtained from Dr. C. P. Olivier, 521 N. Wynnewood Ave., Narberth, Penna. The sheets are simply maintained in the course of other observations and thus require extremely little extra effort. Only meteors seen in the telescope are recorded. Lunar and planetary observers will see fewer telescopic meteors than other amateurs because the rather high powers usually employed give small fields of view and because these fields are illuminated by the moon or a bright planet.

"Three Riddles of Plato". We heartily endorse an article with this title in the April, 1955 Sky and Telescope by Mr. Jackson Carle, our

Mercury Recorder. He describes in a very readable article some of the oddities of this enigmatic lunar walled plain. Those who have observed and drawn Plato will find the discussion so much the more enjoyable. The article is illustrated with three drawings by Mr. Carle, one drawing by Dr. Wilkins, one Lick lunar photograph, and a portion of one Mount Wilson lunar photograph. This personal record of some of one lunar observer's experiences shows what a fascinating study the moon can become.

THE RADIAL MARKINGS OF VENUS AND THEIR MODERN RESURRECTION

by James C. Bartlett, Jr.

In the year 1898 the astronomical world was startled anew by a strange communication from that famous observatory at Flagstaff, Arizona, whence had already come the highly controversial report of a Martian irrigation system. The dreadful uproar which resulted over the interpretation placed by Lowell on the canali discovered by Schiaparelli was in full swing; and now came the hardly less upsetting announcement that Venus too exhibited a well-marked system of straight lines . . . "in opposition to all previous observers"[1], as Young commented. The reception accorded this novel report was if anything even more hostile than that accorded the Martian communiques. Lowell's work on Venus was met with general disbelief and even derision, and many were not slow in pointing out that the discovery of linear markings on practically every celestial body appeared to be a Lowellian specialty. As we shall see a little later such a charge was not only ill-tempered but ill-founded, for the other non-Martian linear markings, e.g. those on Jupiter, are today universally admitted (the Jovian lines we know as festoons) while Schiaparelli drew the markings of Mercury largely as streaks as to a lesser extent did Antoniadi. It remains then to see what confirmation can be offered for the streaks of Venus.

Lowell began his observations of Venus in 1896 with the discovery of "fingerlike streaks pointing in from the terminator"[2]. These streaks all appeared to meet in a kind of hub at or near the center of the disc, giving to the planet the strange appearance of a wheel (Fig. 1). Although his critics chose to overlook Lowell's own evaluation of these markings, it is quite clear from his writings that he did not at any time claim any similarity, either in appearance or in origin, of the Venusian streaks to the Martian canals. The Martian lines he rightly regarded as being true surface features, whatever one may think of his explanation for them; but he specifically interpreted the streaks of Venus to be wholly of atmospheric origin.

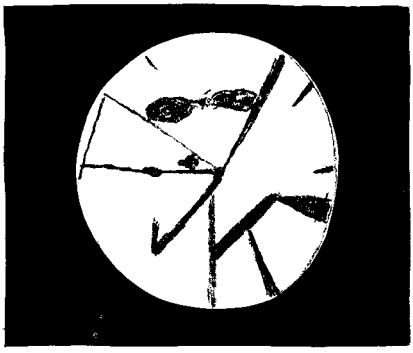

Fig. 1. Venus after Percival Lowell.

His theory of the nature of the Venusian "spoke system" was grounded in his belief that the planet, like Mercury, turned one side constantly to the sun. This being so, it followed that there must be a point on the surface, the subsolar point, at which the heating effect of the sun would be greatest. This point would account for the "hub" of the system, which he described as representing "a funnel-like rise of hot stagnant air creating a partial vacuum, which would be filled by draughts of cold air from the night side coming in from all sides of the periphery, thus

giving rise to a spoke system". Since he also believed that all water from the sunlit hemisphere had been evaporated and transferred by atmospheric currents to the arctic night side and there deposited as a universal glacier, the reason for the visibility of these assumed currents in the planet's atmosphere offered some difficulty, a difficulty which Lowell recognized but apparently never fully resolved.

Lowell's explanation of the spoke system met with the same chilly reception given his discovery of it. As with all highly controversial matters there was a good deal of confusion and misunderstanding of his position and it is difficult not to believe that some of it derived from pure malice. Among the stranger statements circulated was one by Young who though obviously skeptical was by no means malicious. According to Young, "In 1902 Mr. Lowell announced that he was now satisfied that the radial markings which he saw on Venus were probably due to optical illusion".[3] In the winter of 1953, when I was assembling material for this little paper, I sought confirmation of this statement from the Lowell Observatory. Apparently it was as much a surprise to the Flagstaff observers as it was to me; for after a careful search of "all publications for the years 1899-1903" Mr. Charles Osterberg of the Observatory staff was unable to find anything to support Young's definite statement. Moreover he sent to me a copy of Lowell Observatory Bulletin No. 6, dealing with Venus observations in 1903, from which it is quite apparent that Percival Lowell fully retained his belief in the objective existence of the linear markings on Venus. I have not been able to discover the source of Young's information, though it is fair sample of the misunderstanding which attended not only Lowell's announcement of the streak markings but also his opinions of them.

However the story of Lowell's alleged 1902 repudiation of his previous work arose - and Young believed it - there can be no question of Lowell's own beliefs as late as 1904. In Lowell Observatory Bulletin No. 6, dated January 1st, 1904, Percival Lowell himself plainly states the following:

"The lines making in from the terminator which constitute the spokes of the above singular configuration, appeared again in the same places they had occupied in 1897 and 1901. This alone is very strong evidence of their reality. In the next place, these markings came out at times with a definiteness to convince the beholder of an objectiveness beyond the possibility of illusion."[4]

Elsewhere in the same Bulletin Lowell reveals that he was fully conscious of the possibility of deception. He wrote:

"In view of the difficulty of the subject, and of the possibility of psychical illusion in the case, I took special care against self-deception in my scrutiny of the markings presented by the disk. Nothing was set down without a caveat until I had assured myself of the certainty of its non-subjective existence."[5]

He then goes on to mention some of the experiments he had undertaken to determine the properties and limits of illusion, and upon reading further the open-minded critic must not only acquit Lowell of any charge of ignorance in such matters but must also admit that he was firmly convinced of the objective reality of the spoke system. And this some two years after he was supposed to have repudiated it.

So much for the integrity of Lowell's belief. But what we wish to know is if Lowell's general work on Venus indicated anything more substantial than belief alone. One way of determining this is to compare his generalized picture of Venus to what is familiar today. Lowell divided the Venus-

ian markings into various classes, among which he particularly mentioned "nicks" in the terminator and "the collar around the south pole". Terminator indentations, of course, are old stories; but in the "collar" we immediately recognize a feature familiar to every acute A.L.P.O.observer of Venus. Lowell's "collar" is simply the dark cusp band usually found as the northern border of the bright south cusp cap, which may indeed mark the actual south pole. Lowell evidently was quite satisfied that it did. There is a subtle point here which should be noticed. Lowell's work on Mars so overshadowed his work on Venus that the average modern observer is scarcely aware of the latter. Hence it is extremely unlikely that such an observer is influenced by suggestion when recording such a conspicuous feature as the south cusp band, which Lowell figured as far back as 1897. Moreover the cusp band is frequently reported by observers who fail to see anything else on the disc. We seem forced to admit that when Lowell described his "collar", <u>that</u>, at least, was not an illusion but an objective reality which remains visible today. Associated also with the "collar" were two dusky spots, which Lowell called Astoreth and Ashera, like large dark beads strung upon the narrow line of the cusp band. These too have been seen in our times. So too have the "notches" which Lowell described at both cusps. The general picture of Venus which Lowell gave us in the 90's is one that is easily recognized today by every close student of the planet, including those who have never heard of his Venusian work. We must concede therefore that in the main he was factual and correct with respect to the markings of Venus. Must we also believe that with respect to the streak markings he was entirely deluded?

We might believe it if, as Young alleged, Lowell's streaks were in fact entirely opposed to all previous work, but a little inquiry reveals that linear markings on Venus have a respectable and fairly long history. As long ago as 1801 Schröter discovered "a dim oblique dusky streak, like one on Mercury"[6] while Gruithuisen "perceived repeatedly long vertical shades".[7] Linear markings were also recorded by Fournier, Perrotin, Mascari, and others. In 1899 Schiaparelli recorded a long streak beginning at the south cusp band, which he used to measure the rotation, and streak markings were recorded by Phocas in 1939-45.

Lowell, therefore, was neither the first nor the only observer to record linear markings on Venus despite Young's crisp remark. True, Espin pointed out that the streak markings recorded by Gruithuisen and Fournier were altogether different in arrangement from those depicted by Lowell; and in this limited sense Young's statement may have been justified . . . . but only in this sense. For we are not concerned with absolute identity of configuration, but only with the fact that linear markings on Venus were neither discovered nor invented by Percival Lowell. Exact identity is not important. When two observers can draw the same lunar crater so differently that it is hard to believe that they were observing the same formation, we need not be surprised that anything so fugitive as the streaks of Venus might not appear identical to different observers. It would be rather surprising if they did. Whether the <u>system</u> presented by the Venusian streaks is precisely as Lowell figured it may be open to question. Neither Antoniadi nor Barnard was able to see the Martian canals as they were seen at Flagstaff, nor was Hale at Mt. Wilson. Few today however would care to deny that there does exist on Mars some kind of a linear network which on the whole rather resembles the drawings by Lowell. The resemblance may not be precise, but there <u>is</u> a resemblance. Hence the important thing is not that others' observations of linear markings on Venus do not agree exactly with Lowell's, but that linear markings were observed both before and since Lowell's time. We must therefore suppose that they correspond in some way to something real.

I first saw the streak markings of Venus on March 16, 1927, with the 6-inch refractor of the Maryland Academy of Sciences;[8] and again in April

of the same year with both the 6 and 10-inch refractors of the Academy. I did not again see them until the autumn of 1944, and then with my own 3-inch refractor (the long interval signifies nothing but neglect of Venus in favor of other pursuits). Since then I have repeatedly observed them from time to time, though I have never seen the entire "spoke system" as reported by Lowell.

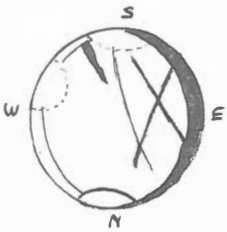

Fig. 2. Venus. O.C. Ranck.
4-inch refractor. 180X.
March 18,1954. $23^h\ 30^m$, U.T.
Seeing 3 to 4. Transparency 3.

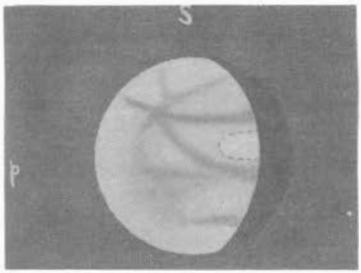

Fig. 3. Venus. D.P. Avigliano.
8-inch reflector. 194X, 273X.
June 12,1954. $3^h\ 0^m$, U.T.
Seeing 3.5. Transparency 4 to 3.5.

They have been seen by others. O. C. Ranck rather consistently records them (Fig. 2) and they were well seen by Avigliano in 1954 (Fig. 3). It is instructive to note that Ranck's interpretation differs from Avigliano's in much the same way that Lowell's Martian canals differed from those of Antoniadi. Of course the region drawn by Ranck may not be the same as the one drawn by Avigliano. Our ignorance of the rotation is both complete and sublime.

But there is one modern observer whose work deserves special mention, because it practically reproduces the famous sketches made at Flagstaff so long ago. Mr. Richard M. Baum, the very gifted English observer, not only sees a wealth of streak detail on Venus but he sees it essentially as Lowell saw it (Fig. 4).

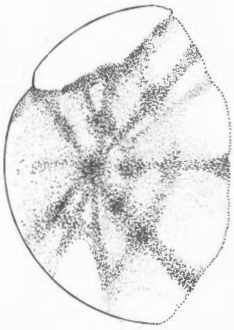

Fig. 4. Venus. R. M. Baum.
6-inch reflector (?). 100X.
April 26,1951. $16^h\ 0^m$ - $19^h\ 30^m$, U.T.
Seeing 8.

Mr. Baum began his surprising observations of Venus in the winter of 1951. Instruments used were a 75 mm. refractor and a 165 mm. reflector and work was commenced February 3, when the diameter of the disc was only 10".66 and the phase 95% of being full. In this connection it is interesting to note that Lowell declared the period near superior conjunction to be the best for observation of the markings - "The nearer the disk is to the full, the easier the markings are to make out"[9] - though Baum finds to the contrary as we would expect; which may be a measure of the difference between the seeing at Flagstaff and the seeing at Chester, plus the added advantage of 24 inches of aperture. Be all that as it may, no details were visible at Chester until February 19th when a dark spot was observed near the sub-solar point of the disc.

Then followed a hiatus to March 1, thanks to inclement weather, when another spot was observed in about the same position - possibly the same spot - which was the radiant of "an extremely curious system of dark longitudinal streaks".[10] It may be noticed that on that date the diameter of the disc was still only 11".36 and the Ephemeris value of k was approximately 0.905. Thus Baum got his first view of the streak system well within the period which Lowell found best for studying it.

It is important also to notice at this point that Mr. Baum had not then read either Lowell's or Schiaparelli's papers on the planet, which adds significance to his surprising discovery. At any rate both March and April proved so favorable that he was able to keep the system in view for 61 days; and on all occasions when the streaks were well seen he found them to possess a faint color, a sort of yellowish gray. Baum continued to observe the central spot and its associated streaks well into the crescent phase, i.e. past greatest elongation east. In a figure dated June 13, at $19^h\ 15^m$, U.T., the central spot is still to be seen, being then almost bisected equally by the terminator; and in a figure dated July 7, at $19^h\ 15^m$, U.T., the streaks are still evident though the central spot was then on the night side of the terminator and so invisible. After inferior conjunction indications of the streaks were seen on the very narrow crescent as early as October 10 at 6^h, while they had become unmistakable by October 23.

From a close study of these surprising features Baum drew certain conclusions. The observed spots, especially the straight streaks, are not superficial but permanent features as are certain polar features, notably the dark band around the southern cusp cap (Baum, like Lowell, regards the south cusp cap as marking the actual pole); and from his study of the streak system he considered that the rotation is very slow, lying between 195 days and 225 days, and that the axis is sensibly perpendicular to the plane of the orbit. He further considered that the central spot from which the streaks radiated represents "an enormous column of hot air"[11] rising from the sub-solar point and drawing into it currents of colder air from all quarters of the disc, thus agreeing with the conclusions reached by Lowell. Whether such an explanation of the streak system is valid will depend, of course, upon the validity of the long rotation period and the assumed inclination. This writer is of the opinion that despite the careful work of Mr. Baum, and the admitted weight of Percival Lowell, neither can be regarded as established . . . there are too many observations looking another way. But we are not so much concerned here with a physical theory to account for the streak system, as we are to account for its plain visibility to some and its complete invisibility to others.

R. M. Baum is an indefatigable observer and a fine draughtsman. Reading his report of the streak system one cannot doubt that here is a simple record of what was actually seen; yet it has to be admitted that other equally careful and experienced observers, e.g. Patrick Moore, have never been able to see the slightest indication of such a system. The present writer occupies a median position, having seen enough of the system to be convinced that pronounced linear markings do exist on Venus; but having seen it so imperfectly as to be quite unable to define the whole.

A little study of the work of various observers indicates that with respect to Venus they tend to fall naturally into two groups. In the one group is found preeminently R. M. Baum who sees the markings principally as a system of streaks, while in the other are those who see them always as large, diffuse, dusky areas. Between the two are those who partake of the characteristics of both, seeing sometimes linear markings, sometimes diffuse spots, and sometimes both in association. To the latter category belong O. C. Ranck, D. P. Avigliano, and the writer.

There is thus good evidence that we are really dealing with two classes

of markings each of which may have an objective existence. Our question therefore narrows down to this: Why do those who mostly see the large, maria-like spots fail to see aught but fragmentary glimpses of the streaks? And conversely: Why do those who mostly see the streaks record fewer observations of the dusky spots? Granting approximately the same intensity it would certainly seem that both should be equally visible; yet manifestly such is not the case. Furthermore it would seem very improbable that individual visual acuity could convert a large, diffuse, dusky tract into a narrow dusky line for one observer; or broaden such a line into a veritable Venusian mare for another. Unless all is illusion we are constrained to admit the existence of streaks and dusky areas, and must now explain why one class registers strongly with some observers and the other class registers as strongly with their opposite numbers.

This writer believes that the solution to the mystery lies in differences between color sensitivity of the several observers. The thought is not entirely original. Some years ago in the course of correspondence relating to faint planetary markings on Saturn, W. H. Haas suggested much the same thing. At any rate we know that the human eye may vary markedly in color sensitivity, some eyes being more sensitive in the longer wave lengths and some more sensitive in the shorter. To the former all colors falling within the warm region of the spectrum will register more strongly than those falling in the cold region - and vice versa. When we relate this fact to the general difficulty of seeing the Venusian markings at all, i.e. to their characteristic faintness, it becomes clear that the color of the markings must play a decisive role. R. M. Baum, for instance, records a warm tone - yellow - in the streak markings; but since these are faint enough at best an eye less sensitive to the longer wave lengths would very likely fail to see them at all. On the other hand, assuming the same eye to be blue-sensitive, very faint bluish areas would appear as the familiar diffuse spots of indefinite extent. Such would probably not be seen by the red-sensitive eye. Hence the two observers would differently record large dusky areas and narrow streaks . . . and both would be right.

So I read the riddle. I think too that this much can be regarded as fairly well established:

1. Linear markings do exist upon Venus

2. Indefinite dusky areas also exist, most of them probably arising only through slight differences in color and albedo compared to the surrounding area of the disc.

3. At least some examples of both classes are permanent markings.

4. The color sensitivity of the observer taken with the colors of the markings will determine which class of markings he will see predominately.

5. The validity of the above hypothesis is susceptible to test by color filters.

The recovery in our times by R. M. Baum of the system reported by Percival Lowell must certainly be regarded as among the more remarkable of recent contributions to planetary astronomy. We are indebted to Mr. Baum for his persistent and careful observations of Venus, which have reminded us that the questions raised by Lowell and Schiaparelli have yet to receive an adequate explanation. Illusion is no explanation whatever. As Lowell pointed out, comparison of his drawings of 1903 to those of Schiaparelli for 1877 and 1895 will reveal "an agreement so close as to carry instant conviction of a depicting of actuality to an unprejudiced mind". I have

myself been able to identify at least one of the streaks in my own observations with those of Lowell and Baum. Whatever may be the nature of the Venusian markings, some of them at least have some degree of permanency.

And if any one is inclined to doubt that such an elusive system could be glimpsed in the unsteady air of the British Isles, I would remind him that some of the best planetary work ever done anywhere has been done in England.

References

1. Young, C.A. ; Manual of Astronomy ; Ginn & Company, Boston; 1904 edition; p. 357.

2. Lowell, Percival; Evolution of Worlds; The Macmillan Co., New York; 1909; p. 77.

3. Young, C.A.; Manual of Astronomy ; Ginn & Company, Boston; 1904 edition; p. 381, footnote A.

4. Lowell, Percival; Lowell Observatory Bulletin No. 6; 1904; p.31.

5. Ibid.

6. Webb, T.W.; Celestial Objects for Common Telescopes; Longmans, Green and Co., sixth edition, London; 1917; p. 68.

7. Ibid.

8. Bartlett, J. C.; Curious Appearance of Venus ; Maryland Academy of Sciences Bulletin; Baltimore; April, 1927; p. 30.

9. Lowell, Percival; Lowell Observatory Bulletin No. 6; 1904; p.32.

10. Baum, R.M.; Neuvas Observaciones del Planeta Venus; reprint from "Urania", No. 229; Tarragona; 1952; p. 1.

11. Ibid. ; p. 3.

MARS, 1954 - 5 AREAS OF INTEREST

by D. P. Avigliano

In this special report we will discuss briefly 5 areas of more than usual interest seen on Mars in 1954. All name references in this and following articles refer to the A.L.P.O. map of Mars in 1954. Directions used in this and following articles will be Martian ground directions, that is, in an inverted telescopic view (as the map or drawings show) S. is at the top, N. is at the bottom, E. is to the left and W. is to the right. The degree numbers in parentheses refer to the approximate longitudes at which the areas mentioned may be found when using the map. All references to observers using the Lowell Observatory telescopes pertain to the private observations of said observers and are not official findings of the Lowell Observatory.

1. The Nodus Laocoontis-Thoana Palus developments (250°). One of the most unusual appearances in 1954 was the truly outstanding and extensive

development of the areas to the N.E. of the Thoth-Nepenthes. At their height these areas presented the appearance of well-developed extensions to the E. of the Nubis Lacus-Nodus Alcyonius areas, the 4 areas showing as a squarish darkened zone roughly divided into quarters (Fig. 5-A).

Before going on with a more detailed description of these features it might be well for us to delve into some of the past records of this region. The Nodus Laocoontis was first independently confirmed by Japanese observers in 1946. In the years 1948, 1950 and 1952 it was seen independently by both American and Japanese observers. As it was seen through the course of these apparitions it apparently gained in darkness (possible seasonal changes not considered). In 1954 the Nodus Laocoontis-Thoana Palus reached their greatest development to date. At the height of this development the Nubis Lacus and Nodus Alcyonius were dark and swollen and the Thoth-Nepenthes canal where it joined the Nubis Lacus was spread out into a wide "horse tail" shape. The wedge of Casius to the N. of the Nodus Alcyonius (bordered by the Casius and Alcyonius canals) was also wide and prominent. Ranck and Dove with refractors of only 4-inches aperture were able to show these developed areas. Clyde Tombaugh, using the 24-inch Clark refractor of the Lowell Observatory, wrote: "The tremendous spreading of the Thoth canal into a great horse tail shaped mare, past the Aqua Calidae [Nodus Alcyonius on the A.L.P.O. map] to the Arctic circle, and the great extension of the wedge of Casius toward Elysium, in the last of June, was nothing short of sensational."

From a study of the A.L.P.O. drawings available it would appear that the Nubis Lacus spread S. and W. and the Nodus Alcyonius spread W. and N. from their normal positions while the Thoth spread mainly to the W. The chain of features-Thoth-Nepenthes, Nubis Lacus, Nodus Alcyonius, Casius and the Umbra area made, basically, a dark half circle while the darkened Nodus Laocoontis-Thoana Palus extended considerably to the E. of the swollen Nubis Lacus-Nodus Alcyonius regions. At the earlier presentations of these regions (April-May) the areas were shown as extended but generally not quite so dark or developed as they appeared at the opposition presentations (June-July). Later presentations (Aug. - Sept.) showed these areas as not quite so extensive as near opposition. At the later presentations the Nodus Laocoontis-Thoana Palus areas appeared to be fading while the Thoth-Nepenthes appeared to be narrowing.

In the best views of these 4 basic areas the Nubis Lacus appeared to be the darkest area while the Nodus Alcyonius was nearly as dark. The Nodus Laocoontis was not so dark as either of these areas and the Thoana Palus was the faintest of the 4 areas.

It was possible for some of the observers to obtain rather good views of the internal structure of these areas; and as the finer details of this development would seem rather important, we are presenting a drawing of the highly probable detail seen in this area (Fig. 6-A). Based chiefly on the work of C. F. Capen, Jr., the finer details shown are those that had some basis of confirmation in the drawings of other observers. Note the caret-like connections to the 4 canals joining the Nodus Laocoontis, the darker oasis in the Nodus Laocoontis, the extension of the Casius to the Nodus Laocoontis, the curved Thoth-Nepenthes extending to the Casius, the connection of the Alcyonius to the Casius and the faint claw-like structure in the Thoana Palus.

Chiefly the work of C. F. Capen, Jr., T. A. Cragg, S. Ebisawa, R. Gomien, E. E. Hare, C. McClelland, T. Saheki, C. W. Tombaugh and D. P. Avigliano made the report on this area possible.

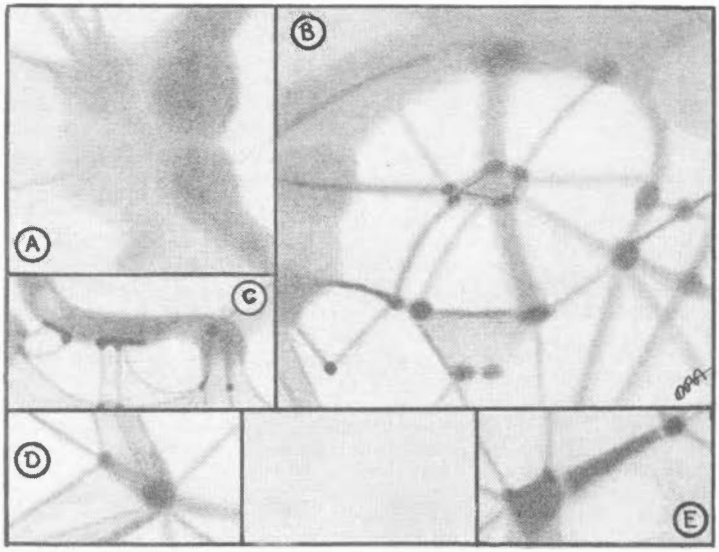

Figure 5.
Confirmed appearances in 1954 of the following Martian regions: A-The Nodus Laocoontis-Thoana Palus and surrounding areas. B-The Solis Lacus area. C-The Sabaeus Sinus and Meridiani Sinus. D-The Lunae Lacus and surrounding area. E-The Trivium Charontis-Cerberus I combination. See text.

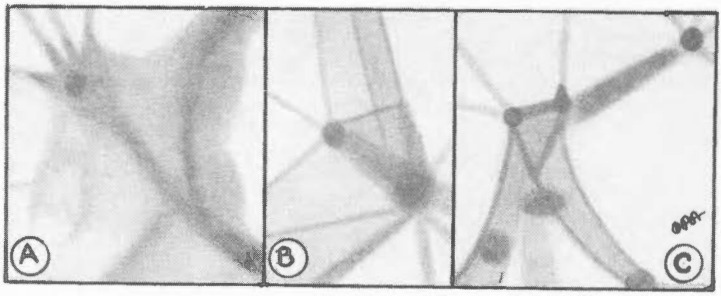

Figure 6.
Highly probable 1954 details in the following Martian areas: A-The Nodus Laocoontis-Thoana Palus and surrounding areas. B-The Lunae Lacus and surrounding area. C-The Trivium Charontis-Cerberus I combination and surrounding areas. See text.

2. The Solis Lacus area. This is an area that is always of great interest when it is well presented. Our observers were able to confirm, independently, much detail in this area (Fig. 5-B). There were no less than 9 canals connecting to the Solis Lacus itself and a number of confirmed oases in the general area. Of great interest is the shape of the Solis Lacus and its finer details. Five oases and what appeared to be three short connecting canals between them were confirmed <u>within</u> the Solis Lacus (see the insert on the A.L.P.O. map). More details

of these features will appear in a later paper on the canals and oases. Note the Nectaris Palus, the wider appearance of the Tithonius and Ambrosia, the Dargamanes (a dark region canal), the Coracus Portus and Bathys Portus, the canals (Baetis and Chrysas) connecting to the dark and tiny Juventae Fons, the dark region canal, Garrhuenus, connecting to the Nectar, the Coprates Triangle area with canals on 2 sides and the 7 canals connecting to the Phoenicis Lacus. A great many of our observers contributed excellent work on this area. The work on the finer details within the Solis Lacus was done primarily by Capen and Ebisawa.

3. The Sabaeus Sinus and Meridiani Sinus. During the latter part of July, 1954 (beginning of Martian S. hemisphere mid-spring) our observers began to note that these areas were breaking up into finer details (Fig. 5-C). Along the N. border of the dark arm of the Sabaeus Sinus were noted the double carets of the Sigeus Portus (335°) and the single caret of the Zeos Portus (323°). The former carets showed a dark extension to their W. in the Sabaeus Sinus while the Zeos caret showed a dark extension to its E. in the Sabaeus Sinus. Note the 2 components of the Euphrates canal connecting to the Sigeus Portus carets and the canals, Poros and Ceos, connecting to the Zeos area. At the N. tips of the forks of the Meridiani Sinus were confirmed oases, the one at the tip of the following (W.) fork, Lex Fons (3°), being very round and tiny and the other, at the tip of the preceding (E.) fork, Aes Fons (357°), being somewhat drop-shaped. The dark oasis in the Meridiani Sinus, the Olympia Fons (357°) was noted with the canal Aurum connecting to it. Two lighter zones were seen in the Sabaeus Sinus, one to the S.E. of the Zeos Portus and the other directly S. of the Edom Promontorium. The majority of the observers who saw the canal, Cantabras, noted that it came out of the W. side of the Meridiani Sinus. Most of the work on these areas was done by Cragg, De Azevedo, Saheki, Tombaugh and Avigliano.

4. The Lunae Lacus and surrounding area. The well developed Lunae Lacus (70°) was dark and roundish. It was the center for at least 8 canals (Fig. 5-D). From the Lunae Lacus there was a wedge-like extension up the W. component of the Ganges canal. The canal, Lysis, appeared quite heavy and ended at the round Oleaster Lacus. Most of the details in this area were noted by Capen, Cragg, Tombaugh and Avigliano. Also, most probably, there was a canal connecting the Oleaster Lacus to the end of the wedge-like extension that went up the W. (following) component of the Ganges (Fig. 6-B).

5. The Trivium Charontis-Cerberus I combination (215°). This dark elongated feature (Fig. 5-E) was very prominent during the 1954 apparition. The Trivium Charontis itself was confirmed to be generally triangular in shape. A caret-like point was seen at the connection of the canal, Laestrygon and an oasis-like feature at the connections of the Tartarus, Orcus and Erebus. At the S.W. end of the dark widened Cerberus I was the Pambotis Lacus. The details in this area were taken chiefly from the drawings of Capen, Cragg, Smith, Tombaugh and Avigliano. Most probably the triangular area of the Trivium Charontis was bordered by canals and Cragg noted a doubling of the Styx canal on two occasions (Fig. 6-C). Also shown on the latter figure are the well confirmed oases, the Stygis Lacus and the Aernos Lacus.

ON A REPORTED MARKING IN PICCOLOMINI

by J. Russell Smith

On June 3, 1954, Frank Edwards, then a Mutual news reporter and

commentator, broadcast a reported discovery, by an observer in New Orleans, of a dark line in the floor of the lunar crater Piccolomini. It was reported the line extended outward from the center toward the wall. Upon hearing the broadcast, I made plans immediately to observe the"discovery". Mr. Edwards mentioned that one might view the "new feature" on the following two nights. I, by using lunar maps, figured one could not see Piccolomini on the night of June 4 and probably not on the night of June 5. However, I observed the moon on the night of June 5, but the crater in question was not yet visible. On the next night, June 6, Piccolomini was well past the terminator, and the whole floor was carefully checked with my excellent 8-inch Newtonian. To my disappointment, no-such marking in the floor could be seen.

Upon request, Frank Edwards informed me that Frank Manning of New Orleans, La., had reported the "discovery". I wrote Frank Manning that I was unable to confirm his reported observation, but he did not reply. My 16-inch Newtonian here at the Skyview Observatory, Eagle Pass, Texas, has been used on the crater a number of times since my initial observation, but no such mark as reported has ever been seen in the floor of the crater.

On September 2, 1954, there appeared in the Washington Merry-Go-Round, a syndicated newspaper article by Drew Pearson, a paragraph on the Piccolomini crater. The article was written by Frank Edwards while Drew Pearson was on a brief vacation. This paragraph mentioned that the "new marking" had been photographed by several observatories and confirmed by others. It went on to state that about 60 visitors, who were participating in the Darling Observatory's guest night, were shown the "marking" by Frank Halstead who was in charge of the observatory. I have been unable to find any photograph or drawing by anyone which shows what 60 untrained visitors could see but which cannot be seen by some of the best trained and experienced observers who want to see it. During the latter part of 1954 and the early part of 1955, the following experienced observers, among others, have also reported no change in the floor of the crater: L. S. Copeland, David P. Barcroft, Dr. H. Percy Wilkins, F.R.A.S., (Director of the Lunar Section, B.A.A.), Patrick A. Moore, F.R.A.S., (Secretary, Lunar Section, B.A.A.), Jackson Carle, and Neil Stockton. No experienced lunar observer has since reported anything which might tend to confirm the Manning-Halstead report.

I am sure many observers, like myself, were in hopes the "new feature" really did exist, for it would have given the greatest boost in our times to selenology.

It is evident that Frank Edwards had no evidence of the reported change since no observable change has occurred at all. It is also evident that more care should have been used by the original observer in checking the lunar formation, which care would have prevented a nationwide erroneous report, one that, as far as I know, has never been corrected even though a letter was sent to Frank Edwards requesting that a correction be made.

INDEX OF VOLUME 7 (1953) OF THE STROLLING ASTRONOMER

by Howard G. Allen

Foreword by Editor. From the beginning of this periodical in 1947 we have been concerned about the need for an index of each Volume in order to make the material published easier to use for our readers.

We have not so far found it possible to supply such indexes. However, Mr. Elmer J. Reese kindly furnished a partial index of Volumes 1 - 6 (1947-52), which was published in The Strolling Astronomer, Vol. 7, pp. 79-83, 1953. Now Mr. Howard G. Allen, 119 Woodland Ave., Coatesville, Penna., has kindly furnished a detailed index by subjects of Volume 7 (1953). The references are given both by months (there was one issue a month throughout 1953) and by pages. An asterisk indicates that there is at least one illustration on that page dealing with that subject. Mr. Allen has not included in his index lunar features which were described as having been observed but about which no further information was given. We hope later to publish an index similar to this one for Volume 8 (1954). Meantime we should be glad to hear from you, our readers, how you like Mr. Allen's index.

BOOK REVIEWS

Field Book of the Skies, by William T. Olcott; revised and edited by R. Newton and Margaret W. Mayall. G. P. Putnam's Sons, N.Y., 1955; 482 pages, numerous charts and diagrams; $5.00.

Reviewed by James C. Bartlett, Jr.

Thomas Carlyle was wont to regret: "Why did not somebody teach me the Constellations, and make me at home in the starry heavens which are always overhead and which I don't half know to this day." A pity then that the Sage of Chelsea did not have access to a Field Book of the Skies; for had he been so favored, his lament would have been superfluous. In this little gold mine he would have found not only adequate instruction in star lore, but rich material on sun, moon, and planets with a slice of astronomical history thrown in for good measure.

R. Newton and Margaret Mayall have undertaken to bring up to date Olcott's classic handbook without materially disturbing the format and general structure so familiar to us, and in this they have eminently succeeded. Tables and positions have been brought up to the epoch of 1950 and corrections entered in data sections according to the latest determinations. The introductory, which in the revised version becomes Fundamentals, has been rewritten and there is a little rewriting here and there in other sections; but the bulk of the text is conformable to the third revised edition of 1936 and thus retains all of the excellencies thereof.

For beginners unfamiliar with the earlier editions let it be noted that Field Book of the Skies opens with a series of introductions which prepare the way for the intelligent use of the data sections which follow. Under head of Why Study Astronomy? cogent reasons are given for taking up the subject, and this leads to Fundamentals in which the basic data and concepts are attractively presented. How do we know? answers the challenge of the skeptic with convincing finality, and lastly How to Use This Book tells us exactly how to do just that.

Having gotten down this material and digested same, the novice is then ready for the next step which is to begin the actual study of the constellations themselves. In this he is greatly assisted by a series of comprehensive chapters on all of the recognized constellations

visible from 40° N. latitude grouped according to the four seasons. Each constellation is depicted in two maps, one for the naked eye and the other for the telescope, the latter chart including stars of special interest, clusters, variables, doubles, nebulae, etc. Each seasonal group of constellations is preceded by a general sky map showing all of the constellations visible for that particular season from latitude 40° N. and for seven different hours and dates.

The telescopic charts of individual constellations are accompanied by data sections containing the elements of double stars and other objects of interest with notes on same, and here the old hand will recognize some slight changes introduced by the present editors. The column of position angles has been omitted from the new edition as of little real help to the amateur observer of doubles and a column of Designations has been substituted, in which the right ascension and declination of the star or other object are given in a convenient notation which is fully explained in the text. This same notation now appears on the naked-eye and telescopic constellation maps.

There then follow individual sections on sun, moon, and planets filled with nuggets of fundamental knowledge, all brought up to date, and lunar observers will rejoice in a series of moon charts which show the principal lunar objects visible for eight different ages of the moon. Each moon diagram is accompanied by a data section containing specific and interesting information about the objects to be observed.

A particularly valuable asset of Field Book of the Skies has always been the comprehensive appendices; and this feature has been retained and even enlarged in the present edition. Here one will find a new table giving the elements of all the known satellites of the solar system in addition to the old favorites, generally enlarged and extended and in some cases revised. Star magnitudes, star names, all are there and a greatly extended table of periodic comets. Data on instruments, resolving power, observational techniques, etc., are given also. This material is worth the price of the book itself.

Perhaps the one feature which will be most missed by those familiar with the older editions is the photographic. Although richly endowed with charts, diagrams, and tables there is not a single photograph in the entire book, a fact which seems to have escaped the proofreaders; for the dust jacket specifically lists photographs as among the features to be found. Notwithstanding, there is nary a one.

Gremlins in the composing room are probably responsible for the strange statement on page 355 that under suitable conditions the belts of Saturn may be seen with nothing more than a field glass! One or two other slips occur here and there, but nothing that merits any special attention and nothing that in any way detracts from the enormous usefulness of this book. Field Book of the Skies should be in every observer's library and in every observer's pocket when he sallies forth afield. Highly recommended.

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Baruch Spinoza and Western Democracy, by Joseph Dunner, Ph. D. Philosophical Library, N.Y., 1955; 142 pages including index; $3.00.

Reviewed by James C. Bartlett, Jr.

Baruch Spinoza occupies a position in Western philosophy which is almost and perhaps quite unique. Belonging to no philosophical school and founding none; writing in a meter of pure logic and therefore appealing only to the intellectually gifted; living a life of uncomplaining personal poverty and comparative obscurity and dying at the early age of forty-four, this gentle man, this "God-intoxicated philo-

sopher", nevertheless so aroused the orthodox of his day as to have the unusual distinction of being excommunicated from the Jewish Synagogue and anathematized from the Christian Pulpit at one and the same time.

What then was the nature of Spinoza's philosophy to bring down the harshest condemnation from both sides of the theological fence? What manner of man was this who could be described as "an atheist, a scoffer at religion and a tool for evil in the republic?" And lastly what influence did he exert upon subsequent thought and what values did he leave which are applicable to the insane world of today? The answers to these questions constitute the raison d'etre of Dr. Dunner's small volume, for this interesting book is not a mere biography of Spinoza; not an apologetic for Spinozistic metaphysic; nor yet solely an exposition of Spinoza's philosophy, but rather a well-written synthesis of all three.

The true measure of Baruch Spinoza as a man of great personal courage can only be understood in the context of his origin, and against the somber backdrop of his day which in some respects resembled our own. Then as now a fundamental struggle was in progress. In the world of the 17th Century its aspect was mainly theological and philosophical, as in the world of the 20th Century it is mainly political and economic; but the goal was the same then as today ... the enslavement of the human mind. Into such a world was born Baruch Spinoza at Amsterdam in the year 1632, of parents who had been forced to flee from their Inquisition-ridden home in the Iberian peninsula to the comparative freedom of the Dutch Netherlands; and it is at this point that Dr. Dunner introduces us to the future philosopher and to his parochial world in the Jodenburt of Amsterdam.

With considerable restraint and sensitive feeling, Dunner takes us into the disturbed scene of that day beset by the bitter theological fueds and hatreds engendered by the Reformation; and shows how the impact of such events had constrained the natural optimism of the Jews to a gloomy despair. While Christian armies battled over Europe the position of the Jews had become increasingly critical, leading to a sense of insecurity and consciousness of personal fault which was to have a profound effect upon the fortunes of Spinoza. Subject to severe persecution at the hands of the Spanish Inquisition and badgered everywhere, it is only natural that these fear-haunted people should have eagerly migrated to Holland following upon the Dutch declaration of religious tolerance in 1579. Here - at least until the Dutch naval disasters in the war with England - they had found a measure of security; but it was well understood in the Jodenburt of Amsterdam that this measure of security was at best precarious. Communal unity in the face of potential danger naturally was stressed, and perhaps for this reason the rabbinate of the city was more than normally sensitive to any heresy which threatened to divide and embitter their little flock. It was Spinoza's misfortune that his unorthodox theology should have come to flower in such a time and situation, and it was only natural that his views should have brought down upon him the bitter words of excommunication. In times of crisis the Jewish people have always been inclined to credit their disasters to the result of their own falling away from the traditions and the God of Israel. Always in such times the remedy prescribed by the rabbis has been a return to strict orthodoxy of belief and practice.

We may imagine the reaction of the devout when it became apparent

that the essence of Spinoza's theology was a complicated pantheism; a pantheism in which for the majestic and awful figure of Yahweh there had been substituted a God who was simply the sum total of Nature and who was to be made manifest not by revelation but by reason through the methods of geometry, which is to say through the media of intellectual propositions, axioms, and corollaries. One can also understand the diatribes of the equally devout Dutch Pastors, given the peculiar conditions and thought patterns of the day. In his biographical introduction, Dr. Dunner shows how Spinoza came to abandon the traditional beliefs of Israel under the influence of physical science fortified by contemporary philosophical speculation. But most interesting is the picture we get of Spinoza himself.

Cast out by his own people and damned by many of the Christian clergy alike, he maintained a serenity which was truly Socratic. Supporting himself not too adequately by the not too profitable art of lens grinding, the philosopher contented himself with pursuing his studies and replying - when he felt it necessary to reply - by sober and reasoned arguments rather than by vituperation. Kindly disposed to all, and often charitable beyond his means, it was no accident that in the face of Church and Synagogue alike men should dare to speak of him as Blessed Spinoza.

This biographical opening chapter, which ends in the simple and dignified account of Spinoza's early death, is but the prelude to the much more difficult and perhaps less successful exposition of Spinoza's peculiar conceptions. The very uniqueness of the Spinozistic system renders such a task far from easy; for not only were Spinoza's ideas highly original but they were written admittedly for the informed and intelligent and thus are not susceptible to popularization. It is not to the heart but to the head that Spinoza always appeals. For this reason the chapters on Spinoza's metaphysics and on his pantheistic concept of God may make strange reading for those to whom any religious or quasi-religious system must necessarily imply warmth and emotion. Here they will find only the coldness of pure logic. True, the love of God is often stressed; but it is an intellectual love and its object is an abstract, not a personal, Deity. God is the sum total of Nature as man is a particularized portion of Nature. "Salvation" in the Spinozistic system - if such a term is applicable at all - lies in harmony with Nature.

Dr. Dunner has handled these difficult subjects well; and while he has very wisely made no attempt to make of Spinoza's metaphysic other than what it is, nevertheless he makes equally clear what it is not .... such as the atheism so often charged by those to whom God must always be merely Super Man. Moreover, in the midst of lengthy quotations from Spinoza's several works, he manages to convey a strong impression of the essential humanity of the man and of his genuine desire to bring happiness to a perplexed human race. Whether happiness can be best attained through propositions and axioms or through visions and dreams is left for each reader to decide for himself. Dr. Dunner does no preaching.

The political theories of Spinoza reveal an essential utilitarianism and what to some may appear a degree of realism bordering on cynicism; though, as Dunner shows, they follow logically from Spinoza's view of the nature of things. We learn that the central aspect of political organization for Spinoza is order ... geometric order; but order constrained by reason and ordained by necessity. Spinoza, as Dr. Dunner abundantly makes clear, totally rejects the concept of the totalitarian state, as he also rejects the idea of absolute monarchy

or aristocratic oligarchy. For Spinoza the ideal political organization of society is an enlightened and ordered Democracy; and Dunner - perhaps too liberally - credits the influence of Spinoza's political concepts upon the social and political upheavals of the 18th Century which led to the establishment of free Republics as we know them.

The last chapter of this book - Spinoza's Legacy for the Twentieth Century - is in some respects the most interesting of all; for herein Dr. Dunner undertakes to relate certain of Spinoza's theories to modern conditions ... and incidentally pays his own respects to the monstrous tyranny which passes for "Democracy" in the Soviet Union. If this chapter does nothing else it should certainly dispel the strange belief, advanced by modern witch hunters, that all intellectuals - particularly philosophers - are ipso facto sympathizers with the Communist lunacy.

Baruch Spinoza and Western Democracy is a work of sensitive feeling and restrained writing. Whether one agrees with all of the interpretations presented by the author will have nothing to do with the enjoyment one will derive from this book. Admittedly difficult in some spots, as when Spinoza's concepts are discussed, it is on the whole very easy to read and should offer no difficulty to the layman in philosophy. A good book well written.

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Exploring Mars, by Dr. Robert S. Richardson.
McGraw-Hill Book Co., Inc., New York, 1954, $4.00.

Reviewed by J. Russell Smith

Dr. Richardson, Mt. Wilson and Palomar astronomer, has given the general reader a non-technical account of our neighbor, the planet Mars. The well known astronomer considers the apparitions of 1954 and 1956, and he feels certain that astronomers will know much more about Mars after 1956 than they have ever known before. Rockets are briefly discussed and the reader is taken on a trip into outer space. This is followed by an interesting chapter on a lunar observatory where one could have near-perfect seeing conditions. The rocket follows a charted course to Mars and then the author discusses the following conditions on the dusty planet: time, atmosphere, temperature, life, and the canals. There are instructions with charts on how to locate Mars and follow it, with the naked eye, during 1955 and 1956.

One would think from the title that the book might be completely devoted to Mars; but Dr. Richardson gives, in contrast, a brief survey of Mercury, Venus, the asteroids, Pluto, and the giant planets, especially Jupiter.

The book has a pleasing and easy reading style. There are a number of excellent lunar and planetary photographs near the center of the volume. The reviewer likes to see the name of a book on the front cover, but this one has none. However, the jacket has the name under a fine view of the 200-inch.

AN IMPORTANT REQUEST

On May 14, 1955 Dr. G. de Vaucouleurs wrote Mr. Robert G. Brockes, the Jupiter Recorder of the A.L.P.O., as follows:

"I wonder if you could help me locate sources of information and obtain observations of Jupiter in 1950 and 1951. My interest in them arises from the recent detection of radio noise from Jupiter on tracings made at the Radiophysics Laboratory, Sydney in 1950 and 1951, which confirm the discovery announced earlier in the year by the Washington group.

"My Australian colleagues have asked me to collect American and European observations of Jupiter for comparison with the Australian data. I should be most grateful for your help."

Dr. de Vaucouleurs is already known to many A.L.P.O. members as the author of two classic books about modern astrophysical investigations of Mars, The Planet Mars and Physics of the Planet Mars. He is at present Observer-in-charge of the Yale-Columbia Southern Station Observatory, Mount Stromlo, Canberra, Australia. It is indeed an honor to our A.L.P.O. that a professional astronomer of Dr. de Vaucouleurs' stature should request our records for use in his research. Mr. Brookes suggests that neat copies of the requested records on Jupiter in 1950 and 1951 be sent to him at his address, P.O. Box 82, Newark, Arkansas, and that he then forward them to Australia. We hope that a goodly number of our members will be able to respond to this request.

OBSERVATIONS AND COMMENTS

Bullialdus. Recent observers of this imposing ring-plain include L. B. Abbey, Jr., P. W. Budine, J. Eastman, W. H. Haas, and J. E. Westfall. Westfall made a drawing on January 14, 1954 at colongitude 24°.3 with a 4-inch refractor at 180X in poor seeing; and Abbey made a drawing on July 10, 1954, at 23°.1 with a 6-inch reflector at 150X in good seeing. Bullialdus was full of sunrise shadow in both these views. Both observers drew a black spot near the middle of the sunlit east inner wall, presumably shadow in a terrace or valley there. Abbey was surprised to find the shadow a "much lighter gray" in the center of Bullialdus and wondered whether he was seeing a lunar atmospheric effect or a reflection from the sunlit east wall. Perhaps also the highest central peaks were catching enough sunlight to lighten the shadow, even though they were not seen individually. Westfall, however, found the shadow quite black in the center in his view with higher lighting although poorer seeing. Neither could Haas see any central whitening on April 2, 1955 at colongitude 25°.2, employing a 12.5-inch reflector at 367X in poor seeing. Eastman also drew nothing near the center of the shadowed floor in an observation on February 2, 1955 at 26°.3 with a 6-inch reflector at 135X and 225X and poor seeing. The pass through the southeast wall was drawn by Westfall and Eastman. Budine made a drawing on March 4, 1955 at 29°.9 with a 3.5-inch reflector at 125X and fairly good seeing. The shadow had then retreated far enough to disclose the central mountains, of which Budine saw two large peaks. The terracing of the inner wall was very evident (and was also noted by Eastman). Budine further drew a number of hills and ridges on the southeast and northeast inner walls, a hill at the foot of the northeast inner wall, and a dark spot at the foot of the north inner wall right at the edge of the shadow. A curious object on his drawing is a "cleft", perhaps rather a shadowed valley, shown to lie partly on the lower part of the southeast inner wall and partly on the floor of Bullialdus.

Reported Flash on the Moon. Mr. Patrick Moore, the Secretary of the Lunar Section of the British Astronomical Association, has com-

municated the following report:

"At 19 hrs., 20 mins., U.T., on 1955 April 24, Francis C. Wykes was observing the Moon when he noted a white flash, of short duration, on the unilluminated portion of the disk. The terminator at the time was closely east of Cleomedes, and the position of the flash, according to Wykes' sketch, was in the northern part of the Mare Serenitatis, not far and somewhat east of Posidonius. [The colongitude at the time was 300°.3. - Editor.]

"The instrument used was a 6-inch refractor, with a low power. The colour of the flash was white, so far as could be ascertained, and the magnitude was estimated to be 7. The time given, 19 hrs., 20 mins., may not be accurate to within a minute or two either way.

"Reports of lunar flashes are generally dubious, but Wykes is a young and keen-sighted observer, and it seems most unlikely that he would make a mistake of this kind. It will be interesting to note whether any other observer can confirm this flash. Skies in Britain were not generally clear, which is unfortunate."

It certainly would be a most important development if someone else "can confirm this flash". Since the moon was a narrow crescent at the time, only observers in a rather narrow belt of longitude centering near the British Isles had any opportunity to do so. The chance that some observer so located was looking at the position of Mare Serenitatis on the earthshine with adequate optics at the exact moment of Mr. Wykes' observation is very small - yet dare we hope?

We wonder whether the flash appeared stationary on the moon's surface to Mr. Wykes. The flash of a meteoritic impact on the lunar surface would be stationary, but a meteor luminous in a rare lunar atmosphere would almost always show some movement since its path would hardly ever coincide with the observer's line of sight.

The Apparent Twilight in Copernicus. On pg. 146 of our November-December, 1954 issue we reported a curious lightness of part of the shadow of Copernicus observed by Mr. G. H. Johnstone. It is now clear, however, that we erred in giving the U.T. date as November 6, 1954; the actual U.T. date was November 5, 1954, and the colongitude was actually 22°.5 to 23°.5 We request our readers who keep files of old issues to make this necessary correction. At this writing we still know of no other observations of Copernicus on November 5, 1954. On April 2, 1955 Copernicus was observed by both G. H. Johnstone (Cave 6-inch reflector) and Walter H. Haas (12.5-inch reflector). Mr. Johnstone observed from colongitude 23°.2 to 24°.2 and hence at about the same lighting as on the preceding November 5; nevertheless, he could find no sign of any "twilight" or abnormality in the shadow. With a power of about 300X his view was good enough that he could see clearly the small hills shown on Section VI of the Wilkins map just southeast of the main central mountains. At colongitude 25°.0, with Copernicus one-third to one-fourth full of shadow, Haas could see no hint of any twilight effect; shadows were jet black, and all floor detail was distinct. Therefore, we now have some additional evidence that whatever Mr. Johnstone recorded last November was a lunar abnormality.

Schickard. Among the observers of this giant walled plain near the southeast limb are Alan P. Lenham, Frank J. Kelly, and P. W. Budine. A remarkably detailed chart by Mr. Lenham is here given as Figure 7. Readers may wish to compare this chart to the aspect of Schickard on Sections XXI and XXII of the Wilkins map. This laudable piece of

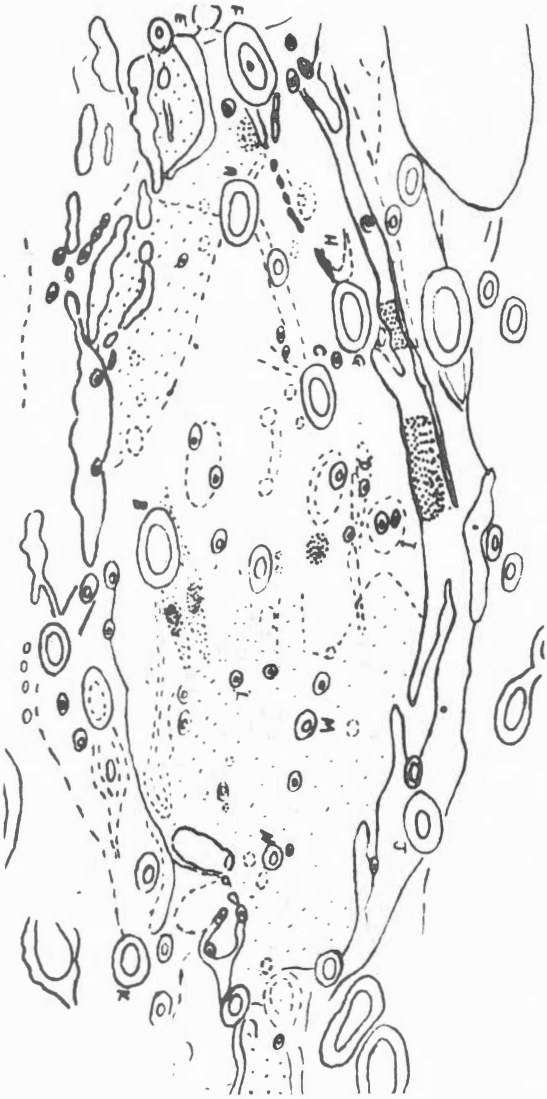

Figure 7
Chart of Lunar Walled Plain Schickard by A. P. Lenham. Based on Observations with a 3¼-Inch Refractor at 166X from 1949 to May, 1953.

work with only a 3¼-inch telescope should show that lunar and planetary opportunities certainly exist for small instruments of good quality. We suggest that Lenham's letter-designations in Figure 7 be adopted for future work on Schickard. Mr. Budine on November 8, 1954 at colongitude 59°.3 with a 3.5-inch Skyscope reflector confirmed a number of the objects charted by Lenham; he commented on the absence of the south wall of H and on the brilliance of the two craterlets a little southeast of B. The east edge of the floor was notably dusky to Budine. Many of the smaller details on Figure 7 will only be visible for a short time under low lighting, and it will also be an advantage to observe when Schickard is as far in from the limb as possible.

Hevel. This walled plain near the east limb has been drawn under low morning lighting by W. F. Barber, Jr. and L. B. Abbey, Jr., each with a 6-inch reflector. Mr. Abbey recorded the central hill and craterlets A and B near the east edge of Hevel.

Cleomedes and Posidonius.

Cleomedes is a large ring-plain a little north of Mare Crisium on Section XII of the Wilkins map, and Posidonius is another large ring-plain on the northwest shore of the Mare Serenitatis on Section III of this map. Mr. J. E. Westfall drew Cleomedes on January 8, 1954 at colongitude 311°.3 and Posidonius on January 10, 1954 at 335°.8. He employed a 4-inch refractor at 180X in bad seeing. The clefts on the floors of these craters were seen imperfectly. Tralles, which intrudes upon the northwest wall of Cleomedes, was drawn to have a single very dark band on its sunlit east inner wall.