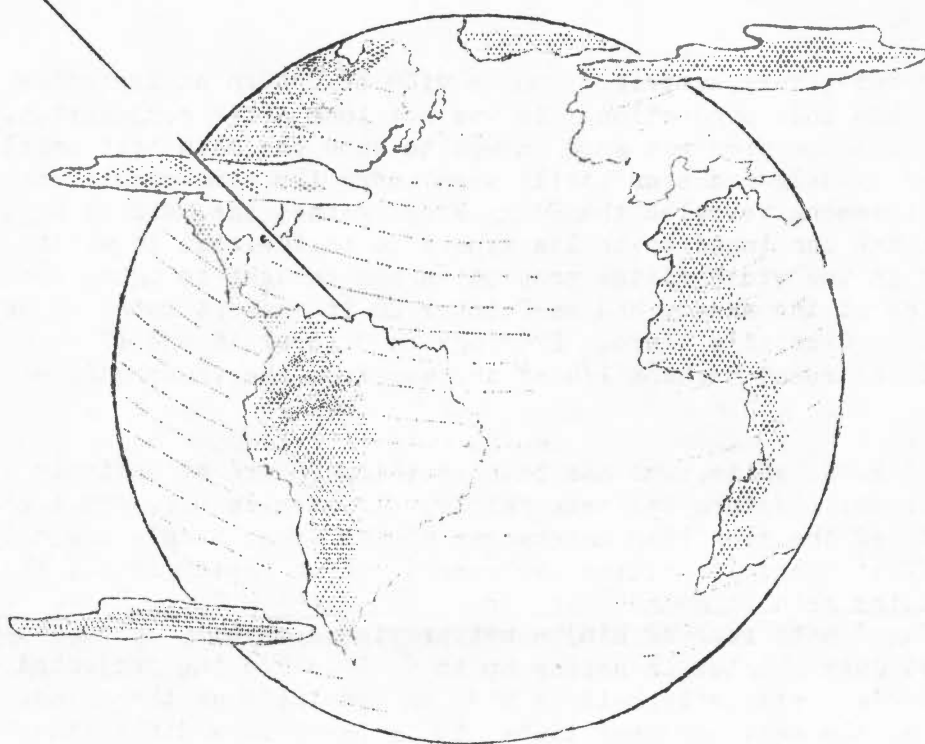


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THE DUSKY RING NARROWS !

by Walter H. Haas

Between June, 1935, and May, 1947, I examined the planet Saturn on hundreds of nights with over a dozen telescopes ranging in aperture from 4 to 18 inches. During this period I corresponded with other students of the planet, some of them now members of our Association of Lunar and Planetary Observers. Moreover, I have given some time to the literature on Saturn and have seen many published drawings and photographs, including ones with very large instruments. The purpose of this lengthy introduction is to emphasize that in September, 1947, I was familiar with the appearance of the planet. In particular, the Crape Ring and its dark projection against the ball had been regularly seen in 1938-47. (The rings were little opened in 1935-7.) This projection, crossing the ball just above (south of) the bright rings, had been an easy object in small telescopes, even under poor conditions of observation.

I was, therefore, very surprised when a view of Saturn on September 20, 1947, quite failed to show this projection. It was not long after conjunction, and the seeing was poor; yet the view was good enough to show the main belt doubled, and the projection previously had been easily seen under the same conditions. On September 23 fair seeing revealed the Dusky Ring against the ball as a very narrow dark band. Such has continued to be its aspect up to the time of writing (October 22). On October 16 the width of the projection was thought to equal that of Cassini's Division at the ansae, and on October 20 it was estimated to be perhaps only $2/3$ as wide as Cassini's there. Drawings on October 10 and 17 show the Crape Ring off the ball to reach perhaps $1/4$ of the way from the inner edge of Ring B to the globe.

On October 9 E. K. White, who has been watching Saturn attentively from 1942 on, wrote as follows: "Saturn has been fairly well seen lately, and I can well confirm your view of the startling narrowness of the Crape Ring's projection over the globe. My first suspicion of the narrowness was on September 22, the day you (Haas) wrote the note to me advising me to examine the Crape Ring. On September 23 (before Haas' note reached him) a better view convinced me of a definite change since last June. Later in seeing up to 6, I called the projected Crape Ring at the globes's center only half as wide as Cassini's at the ansae. Where it leaves the ball at the east and west limbs, it is equal in width to the ring's shadow on the globe; and off the ball at the ansae it appears as a violet, delicate belt extending $3/10$ of the way from the inner edge of Ring B to the globe."

We have also heard from the tireless E. J. Reese on this matter. A lovely drawing by him on October 13 shows the Ring C projection at the C.M. possibly only $1/3$ as wide as Cassini's at the ansae, though much wider at the east and west limbs (confirming White). Reese comments in his notes on that date that "the Ring C projection . . . still seems very narrow" and that at the ansae the Dusky Ring "extends slightly less than halfway to the globe." Reese made about 30 drawings of Saturn during the 1946-7 apparition. These invariably showed the Crape Ring projection much wider than Cassini's at the ansae.

We thus see that three experienced observers agree well on a pronounced change in the width of Ring C between June and September, 1947. Of course, this event

occurred with the planet near conjunction! The change was apparently the vanishing of the inner half, or possibly more, of the old ring. If this alteration was effected through the concentration of the individual particles in the outer parts of the old Ring C, the increased density thus implied for the present Ring C has not been detected through an altered intensity of the ring.

I know of no change in the Saturnian system in the past similar to the one under discussion.

I have so far been unable to think of any plausible explanation for the change.

We urge all readers who can possibly do so to direct their telescopes to Saturn. We shall be very eager to hear what they find. Photographs will be most welcome when of good enough quality to show the belts and zones on the ball. Any observer having the use of a micrometer should surely employ it to measure the present position of the inner edge of the Dusky Ring.

NEWS OF THE PLANETS

We rather expected September and October to be dull months for our favorite studies. They have not exactly lacked interest so far! Elsewhere in this issue, the reader may learn about the recent amazing narrowing of the Crape Ring of Saturn and about two more observations of what certainly appear to be lunar meteors.

The shadow of the rings of Saturn on the ball is very conspicuous and will continue to be so during the rest of 1947. The South Equatorial Belt is still seen doubled, with a dusky intervening space. The South Polar Belt is now faint and diffuse at best and sometimes is invisible. Reese and Haas have noted a narrow (hence delicate, even though probably fairly dark) belt about midway between the shadow of the rings and the north limb. It should probably be regarded as a North Temperate Belt. On October 13 Reese remarked a notably bright spot on the east limb (right with inverted view) in middle southern latitudes. Haas saw such a spot on October 17, 18, and 20. It appeared not to share the planet's rotation, and Reese suggests that it is a longitudinally extended high Saturnian cloud appearing bright only near the dull limb.

Reese and Haas have recorded some C.M. transits of dark marks on the north edge of the South Equatorial Belt, and White concordantly notes: "Some very vague dusky marks have been suspected in the S.E.B.'s north edge." The present one is the eighth consecutive apparition of Saturn during which at least one member of A.L.P.O. has obtained such transits. It appears as though usable marks are always present and that transit-work demands only a telescope good enough and an observer energetic enough. It is not yet possible to say whether the "abnormal" rotation period of $10^h 15^m 9$ found by A. F. O'D. Alexander for S.E.B. N marks in 1946-7 has persisted or not.

Views of Jupiter during the last month have been inferior ones, for the planet has been observable only at a low altitude on a twilight sky. Haas obtained poor views of the Red Spot Hollow on October 9 and 16, which showed it the same, at

least in general outlines, as in late September. There is perhaps some evidence that the longitude of the Hollow has increased a few degrees since last summer.

In several issues of The Strolling Astronomer we have spoken of the May-September white "cloud" in the South Temperate Belt. On September 3 Reese placed this object at longitude 223° (II). His latest report places its center near 213° on September 14 and 19 (Universal Time dates). He writes: "Drawings and transits both indicate that the 'cloud' was accelerated while approaching the Hollow and suddenly retarded upon reaching the preceding end of the Hollow."

On November 15 Mars will have an angular diameter of $7''.2$, the north pole will be tipped toward the earth by 19 degrees, and the areocentric longitude of the sun will be 17 degrees past the vernal equinox of the northern hemisphere.

A. F. O'D. Alexander writes of his good fortune in being able to observe with the 22-inch refractor on the Pic du Midi in September. It revealed to him on Mars the north cap, Syrtis Major, Sabaeus, Hellespontus, Hellas, Phison, Nepenthes-Thoth, and Utopia. He further remarks that Libya projected into Syrtis Major, as in 1945-6.

White in his 7-inch reflector during late September and early October found the north cap large and conspicuous, though it never looked pure white or brilliant. A dark wide band bordered it. White was quite unable to see any south cap.

Haas continued to follow Mars with a 6-inch reflector. The best views made the north cap fairly brilliant but rather small and hence not extremely conspicuous. Though very strong on October 20 at C.M. 33° , the bounding north polar band usually looked comparatively light. The south cap, to Haas, often appeared at least as large and bright as the north, though more variable in size and probably less sharply defined. (An atmospheric south cap contrasted with a surface north cap?) This observer found Hades canal strong on October 9 and Ganges-Issedon intense on October 16 and 20.

On pages 6-7 of our October issue we reported the strange appearances in Langrenus M found by Potts and Wilkins. Haas observed this crater under low evening lighting on October 1 without noticing anything unusual. He then followed it from October 18 to 22 (U.T. dates), inclusive, but failed to see the aspects described by Potts and Wilkins. The crater held a relatively far larger interior shadow than its neighbors, showing great depth. It is remarkable that on October 22, with the sun almost 60 degrees above the horizon of Langrenus M, exterior shadow was still present beside the east wall. M. Williams failed to see anything outstandingly strange about Langrenus M on October 18 or 19. We have not yet received further word from Mr. Wilkins about this crater.

MORE ABOUT THE MOON AND METEORS

Mr. Lyle T. Johnson of La Plata, Maryland, has reported his initial searches for possible lunar meteoric and/or meteoritic phenomena on several September dates. At 8:22 P.M., E.D.S.T., on September 17 he saw a moving luminous speck against the earthlit portions of the moon. Mr. Johnson was using an 8-inch reflector at $96\times$

with a very clear sky but mediocre seeing. He writes of his object: "(The speck) appeared to be of about the second magnitude; that is, it appeared as bright as a second magnitude meteor would to the naked eye. That would be about the ninth magnitude, I believe. The meteor was yellow, was visible for about half a second, and left a short trail. Unfortunately, the meteor was very near the southern edge of the field, and at the moment it appeared my eye had strayed toward the other edge of the field so that I can not be sure of the accuracy of my description. The length of the meteor's path was about equal to the length of the crater Endymion (78 miles, according to Neison's Moon)."

W. H. Haas observed a moving lunar speck at 6:35 P.M., M.S.T., on October 19. An unusual detail was a brighter flash at the end of the luminous path.

These specks have now been recorded by five different observers in the last six years. They are R. G. Johnson, L. T. Johnson, C. P. Smith, R. Schmidt, and W. H. Haas. The specks have been seen with telescopes ranging in aperture from 4 to 18 inches and including both reflectors and refractors,

If the moon has an atmosphere capable of causing entering meteorites to give rise to luminous meteors in it, the most brilliant of them would be telescopically detectable as luminous specks moving short distances across the surface of the moon during their brief periods of visibility. Between 15 and 20 objects of exactly this character have now been observed. It appears impossible to regard them as anything else but lunar meteors. If they are illusions, one must explain their appearance to different observers with different instruments at different stations. The observers have expressed confidence in the reality of their objects, Haas thinking his specks quite as certainly visible as fourth magnitude terrestrial meteors in a clear and dark sky. If the specks are ordinary terrestrial objects not far above the earth's surface, one must explain their bright appearance against the moon and their short visible paths. That some of the specks are terrestrial meteors which chance to lie on the line of sight to the moon is certainly possible; one simply cannot decide for an individual speck. That all of them are so explicable is hardly conceivable; the odds are very great against the supposition that such meteors should so regularly both begin and end within a small telescopic field of view.

Several readers have asked how there can be lunar meteors if the moon has no atmosphere. Obviously, there cannot. Obviously, too, the usual "proofs" that the moon has no atmosphere actually merely place an upper limit on its possible density. One must remember that terrestrial meteors occur at heights where the earth's atmosphere is very rarefied. Further, a lunar atmosphere would thin out with increasing height far more slowly than does the terrestrial; it is entirely possible in the light of present knowledge that at heights of more than 50 miles the moon's atmosphere is actually denser than is the earth's at corresponding elevations,

Dr. L. La Paz, Counsellor of A.L.P.O., calls attention to an unusual lunar observation reported by M. Valier in Astronomische Nachrichten, No. 4584, 1912. On May 19, 1912, near 8^h 55^m, M.E.Z., Valier observed with a 4-inch refractor at 114X a star-like bright point on the earthshine near Cape Laplace. With 229X the object showed a small disc brightest at the center and glowed with a somewhat reddish color. Dr. Rheden, observing at the same time, saw nothing; nor does a photograph show the object. There is an apparent resemblance to transient bright spots on the dark hemisphere observed by W. Herschel and J. Schroeter; reports on some of them are given in W. H. Haas' "Does Anything Ever Happen on the Moon?", J.R.A.S.C. for 1942. What is the explanation?

MISCELLANEOUS NOTES

E. J. Reese, 241 S. Mount Vernon Ave., Uniontown, Penna., offers to lend to any interested member of A.L.P.O. British Astronomical Association Saturn Section Circulars 5, 6, and 7. Their contents are outlined on page 5 of our October issue. Mr. Reese also offers to give to any interested member several surplus B.A.A. outlines of Saturn that he has. These outlines are convenient for making drawings of the planet. They may even encourage making such drawings; the editor, at least, has found the time needed to draw in beforehand the various ellipses of the globe and the ring-edges often elusive.

We thank Mr. Albert Ingalls for speaking of The Strolling Astronomer on page 240 of the November issue of Scientific American. Mr. Ingalls' "Telescoptics" department has long been familiar and helpful to telescope-makers.

M. Rosenkotter and E. J. Reese call attention to an article by R. S. Richardson in Air Trails for September. The title is "New Paths to New Planets;" it is written in an interesting vein and should be enjoyed by all who like to speculate upon space-travel.

Contributors of observations during the last month include the familiar names of E. J. Reese, E. K. White, and E. E. Hare. We were also happy to receive useful data from some new sources, namely, M. Williams, D. W. Rosebrugh, L. T. Johnson, and R. Missert. Remember, your observations are always welcome. Acquire the habits of planning what to look for before you go to the telescope and of keeping a written record in a notebook of what you see (or fail to see, which can be equally important). You will be pleasantly surprised at how much your eye's ability to perceive lunar and planetary detail will improve over a period of a few months.

The Association of Lunar and Planetary Observers was originally conceived of as primarily for amateurs in the United States. We have, however, been glad to obtain several readers in Canada and several others in England. We want here to welcome two subscribers from still other countries: Senor Jorge Gordienko in San José, Costa Rica, and Mr. S. C. Venter in Pretoria, South Africa. W. H. Pickering long ago realized the importance in studies of Mars of having observers at widely differing longitudes. Can A.L.P.O. hope to realize such a condition?

Foreword by Editor. Mr. H. Percy Wilkins, F.R.A.S., has been mentioned several times in this pamphlet as the author of the most detailed existing map of the moon and as the Lunar Director of the British Astronomical Association. Mr. Wilkins accordingly "knows whereof he speaks" when he talks of serious research with small instruments. We most heartily endorse his remarks. The work of the B.A.A. Lunar Section has chiefly consisted of the accurate and detailed mapping of the lunar surface. Our colleague has personally made great numbers of fine lunar drawings over a period of several decades. He has also carried out thermometric studies of the moon's surface during a lunar eclipse. His published papers in J.B.A.A. and elsewhere are very numerous. Address: 127 Eversley Ave., Barnhurst, Kent, England.

RESEARCH WITH SMALL INSTRUMENTS

by H. Percy Wilkins

Many people have the impression that possession of a small telescope precludes the accomplishment of any useful work. Such an impression is natural, for one reads about gigantic instruments the finders of which are often larger than one's own telescope. Since large instruments are generally housed in finely appointed establishments and equipped with all manner of accessories, it appears to indicate that while an amateur may gratify himself any really serious work is out of the question.

The truth is that to professional astronomers, with their great telescopes and all the other paraphernalia, a star is often nothing more than a deposit of grains on a photographic plate while the planets are deemed utterly unworthy of attention. Our knowledge of the moon and planets is largely due not to the astronomical "generals" but to the modest "privates," the amateurs who observe because they have an urge to do so. Many of the great names include amateurs, such as Herschel, Dawes, Elger, Webb and Stanley Williams.

Herschel discovered Uranus with his home-made 6-inch reflector, Dawes never used anything larger than an 8-inch, Webb, author of Celestial Objects, had a 3-7/10-inch refractor and a 9-inch reflector, while S. Williams performed miracles with a 6-1/2-inch reflector.

Take lunar work concerning which I profess to have had some experience. Lohrmann used a 4-1/4-inch refractor and Madler a 3-3/4-inch, but anyone who has seen their maps must have a profound respect for the work that can be done with very moderate means. I affirm right now that most valuable results can be achieved in selenography using small instruments; I go further and declare that a conscientious observer of lunar objects, especially near the limb, cannot help noting details hitherto unrecorded. Our knowledge of the limb regions is still very imperfect and in the careful delineation of their features, and also in the observation of the areas subject to variations in tint on all parts of the disc, it is possible for an amateur to produce work of lasting scientific value and to earn, for himself, a niche in the structure of astronomical research and history.

The writer has three telescopes, two reflectors of 12-1/2- and 6-1/2-inches aperture and a 3-inch refractor and has detected hitherto unrecorded details with each instrument. A 6-inch reflector is easy to manage and, provided that the mirror is good, will enable a careful observer to note many interesting details. With a micrometer the diameters and heights of lunar features can be measured with an accuracy equal to that attained by Madler and Schmidt. Success in astronomical work depends upon observer and instrument, and it is little use having a glass of great capacity if the observer's interest and energy is not of equal calibre.

To achieve success in lunar and planetary work great care and method is necessary in recording the minute detail and delicate tints and shadings. Whether you are gifted artistically or not, make a drawing; it may be imperfect, but there is no excuse for its being false. Better an outline sketch true to nature than an elaborate and beautiful looking but inaccurate and useless drawing. Having made your drawing, do not lose it in a drawer but circulate it to other observers in order that your observations may be confirmed. Numerous societies and periodicals will secure publication. American observers should remember that the writer is in a peculiar position to facilitate publication and always welcomes careful lunar notes.

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