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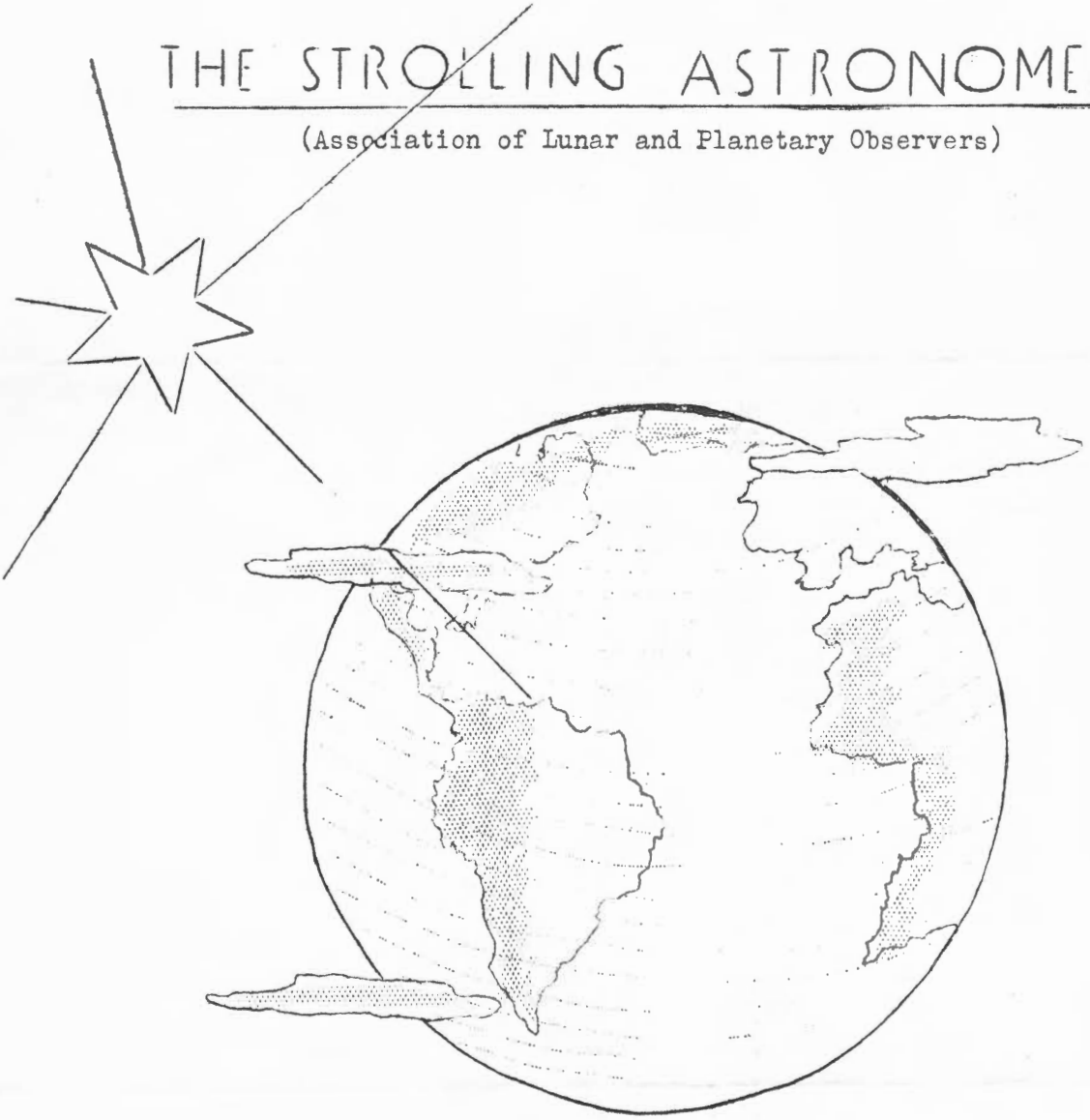
(Association of Lunar and Planetary Observers)



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JUPITER IN 1947

by Elmer J. Reese

(Concluded from June issue)

STrZ Disturbance

This feature was very dark and conspicuous in February and March but faded rapidly in the ensuing months and was last certainly seen on July 10. However a small, dark hump on the north edge of the STB which was followed until September 20 may have been a remnant of the disturbance. If so, the disturbance was considerably accelerated as it approached the Hollow. Before opposition the disturbance appeared as a dark neutral-gray or brownish-gray streak in the south tropical zone joining the SEB_S to the STB. Unlike the Hollow, the disturbance shows a decided attraction for the SEB_S - that belt usually being deflected south of its normal position near the disturbance. As the disturbance faded to a faint dusky column after opposition, the SEB_S retreated northward to its normal position although it remained dark and frequently bumpy following the disturbance. The center of the disturbance was at λ_2 313° at opposition.

Rotation Periods

A most fascinating program is to estimate the times when various markings transit the planet's central meridian. Tables in the "American Ephemeris and Nautical Almanac" make it easy to convert these transit times into Jovian longitudes. If the longitudes are then plotted against dates on graph paper, it will be found that the markings drift in various directions. It is only necessary to note how many degrees a particular marking drifts in 30 days to compute its rotation period by the following formulas:

For markings in System I: Rotation Period = $9^h50^m30^s.003 + (1^s.345)(\pm D_1)$

For markings in System II: Rotation Period = $9^h55^m40^s.632 + (1^s.367)(\pm D_2)$

Here, D_1 is the number of degrees a marking drifts in 30 days in System I longitude; D_2 refers to System II. Also, D_1 and D_2 are positive when the markings drift towards increasing longitudes, negative when the markings drift towards decreasing longitudes.

The table below lists the rotation periods which I have found for various Jovian currents during 1947.

	No. Transits Used	$\Delta\lambda/30^d$		Rotation Per. 1947	Rotation Period, 1902-1934*
NTB	18	+16°.0	II	$9^h56^m\ 3^s$	$9^h55^m54^s$
N. Edge NEB	33	-13.7	II	9 55 22	9 55 29
S. Edge NEB	159	- 8.9	I	9 50 18	9 50 30
SEB_n	16	- 4.2	I	9 50 24	
RSH	79	- 0.6	II	9 55 40	9 55 38
STrZ Disturbance	62	-13.4	II	9 55 22	
STB, Middle	49	-26.3	II	9 55 5	
S. Edge STB & STeZ	123	-25.0	II	9 55 7	9 55 19
EB	11	- 6.1	I	9 50 22	

The 1946-47 disturbance was probably related to a disturbance followed in 1945-46. In 1945-46, the disturbance had a rotation period of $9^h55^m24^s$. A period of $9^h55^m23^s.5$ would have brought the disturbance from its position of 118° on April 13, 1946 to 313° on May 14, 1947.

A Word to Beginners

Don't be discouraged if at first you don't see all the detail which others draw and describe. The ability of the eye (and the brain perahps) to apprehend delicate planetary detail improves greatly with practice.

Avoid straining or tiring the eyes. When observing at the eyepiece, both eyes should be open and completely relaxed.

*according to Rev. T.E.R. Phillips in the Encyclopoedia Britannica.

A black shield attached to the eyepiece adapter and extending in front of the unemployed eye will exclude any extraneous light which might otherwise be annoying.

Poor seeing is perhaps the greatest of all handicaps to the planetary observer. Good telescopes can be made, and good observers can be trained; but seeing conditions at a given locality are quite beyond our control. However, with experience an observer can piece together bit by bit a considerable amount of detail even in poor seeing.

An Appeal

Many years ago Richard A. Proctor spoke of the observer who gazes" hour after hour on the glories of the giant planet, gathering fresh delight as feature after feature is revealed beneath his scrutiny." The same delight still awaits those who will take a few hours respite from the turmoil of modern life to gaze with humble heart on the majestic belt-girded world whose volume and mass make the earth seem so insignificant by comparison. Furthermore, if the observer keeps an accurate record of what he sees, his results may help materially in furthering our knowledge of the physical conditions existing on Jupiter.

Jupiter has guarded its secrets well. Many problems of fundamental importance remain unsolved. Is Jupiter a hot or cold world beneath its mantle of clouds? From whence comes the enormous energy which continually agitates its cloudy envelope? What do the changing hues of the belts and zones indicate? How can the Great Red Spot endure so long in an otherwise chaotic atmosphere? The help of great telescopes and great minds will surely be needed to solve these and many more problems; but there remains a tremendous amount of important and interesting work which of necessity must be left to the amateur observer possessing only very modest instrumental means. There is no danger of one's work being merely a repetition of another's. The more observations accumulate, the more accurate the results become. It is earnestly hoped that more amateurs possessiong good telescopes will direct them upon the planets and send their observations to "The Strolling Astronomer."

NOTES

We regret very much to announce that Mr. Latimer J. Wilson died at his home in Nashville, Tennessee, of a heart attack on May 18. He was 69 years old. Mr. Wilson had for several decades been one of the leading amateur astronomers in this country. His visual observations of the moon and the planets were regularly excellent, and his photographs of them with small instruments were of a quality usually attained only at professional observatories. Mr. Wilson published numerous articles in astronomical magazines during the last 40 years, many of them in Popular Astronomy. Readers may recall his "Planetary and Lunar Photography" in our August, 1947, issue. He worked tirelessly to popularize astronomy in his community and was regularly consulted by newspapers there when such phenomena as comets, fireballs, and aurorae appeared. His efforts were recognized both here and abroad by membership in several astronomical societies. Astronomy has suffered a real loss in his passing.

The diagram illustrating standard Jovian nomenclature on pg. 1 of our June issue requires some minor corrections. The Equatorial Band is the narrow (dark) belt near the center of the disc. The much wider doubled belt next above it is the South Equatorial Belt (north and south components). The (bright) Equatorial Zone extends from the south edge of the North Equatorial Belt to the north edge of the South Equatorial Belt, thus lying on both sides of the Equatorial Band. There are, incidentally, no "Tropical Belts" in our Jovian terminology, though there are North and South Tropical Zones.

We thank Mr. H.D. Thomas for inviting the Association of Lunar and Planetary Observers to send an exhibit to the convention of the Northwest Region of the Astronomical League. These meetings were held in Portland, Oregon, on June 12 and 13. We also thank Mr. E.J. Reese for preparing the exhibit we used; it consisted of photographic copies of sample lunar and planetary drawings by various members of the Association. At the kind invitation of Mr. R.R. Lee, we hope to exhibit these

drawings at the National Convention of the Astronomical League in Milwaukee, Wisconsin, on July 3,4,and 5. Perhaps some of our members were able to attend the Portland convention or will attend the Milwaukee one.

E.L. Forsyth of Fallbrook, California, continues to be a most indefatigable observer of comets. He reported fully 15 observations of Bester's Comet (1947K), the first on February 24, 1948, and the last on April 25. We wonder whether any other amateur in the country did that well! The comet was restricted to the morning sky during most of the interval indicated above. Mr. Forsyth recently wrote that he found Honda's Comet (1948 g) to be of the sixth magnitude on June 15, using a 3-inch refractor at Lake Henshaw, Calif. (Fallbrook offers much to fog-lovers during June.) The comet showed a tail one-fourth of a degree in length and was a pretty yellow color. There is a description of Mr. Forsyth's Private Observatory in our January, 1948, issue.

E.E. Hare pertinently remarks that planetary observers may find useful certain relations between the apparent linear distance and the angular distance of a feature from the central meridian of a planet. When a feature is seen midway between the C.M. and the bright limb (not the terminator), it is then 30 degrees of longitude from the C.M. If it is 2/3 of the way to the limb, then it is 42 degrees from the C.M.; if 3/4, 49 degrees. Those familiar with trigonometry will already have recognized that nothing but the sine function is being used and will be able to obtain numerous further helpful relationships from trigonometric tables. These ratios and the known rotation-rates allow one to estimate roughly when a feature will transit the C.M.; for example, since Jupiter rotates 36 degrees in an hour, a spot seen half way between the C.M. and the right limb (simply inverted image, south at top) is 50 minutes short of the C.M. ($60^{\text{mins}}/50^{\text{mins}} = 36^{\circ}/30^{\circ}$).

On pg. 5 of our March issue we discussed observations of the occultation of Mars by the moon on January 28, 1948, with especial reference to the lunar limb band sometimes seen at planetary occultations. Two belated reports on this event deserve mention here. One is from R.R. LaPelle of Longmeadow, Mass., who used a 6-inch reflector at 96x. He observed only the immersion; this event occurred at the dark limb of the moon, though the width of the unilluminated lune was not more than 10". The view of Mars was good enough to reveal the polar caps and some other markings. Mr. LaPelle saw no limb band nor any other effects attributable to a lunar atmosphere.

Mr. M.B.B. Heath writes that he observed the occultation with a 10-inch reflector. He says: "I saw no lunar limb band at disappearance on the bright limb, though conditions here were very favorable for a prolonged view of it, the planet taking quite 3/4 minutes to be completely covered. The north polar cap was bright, white, and even irradiating a little, bordered by dark shadings and with Mare Acidalium dark on the terminator. Reappearance was very beautiful on the dark limb; but the width of the dark lune was, at the point of emersion, only about 1/4 the diameter of the planet [about 3"4]. Hence, there was a narrow black band between the emerging points on the planet and the bright terminator but even so no appearance of any limb band."

Mr. Heath also says that he noted the albedo of Mars to be about equal to that of the lunar terminator. This near-equality may bear upon the limb band; if it is an illusion caused by the differing brightnesses of the moon and a planet, perhaps there was not enough contrast present to produce it at this occultation.

NEWS OF THE PLANETS

Important Note on Time. Beginning with this issue of The Strolling Astronomer, all times and dates will always be given by Universal Time unless the contrary is expressly stated. Universal Time is the local mean solar time at Greenwich. Hence, zero hrs. by U.T. falls at 7P.M. on the preceding day by E.S.T., and the U.T. date will be one day ahead of the E.S.T. date between 7 P.M. and midnight. Otherwise, they agree. The preceding sentences will apply to other kinds of time used in the

United States with slight changes in wording; e.g., the U.T. date changes at 8 P.M. on the previous day by E.D.S.T. and at 6 P.M. by C.S.T. It is also helpful to remember that U.T. is five hours ahead of E.S.T., six hours ahead of C.S.T., etc.

Although Jupiter at declination -23° is poorly placed, a few of our best observers have sometimes seen a considerable amount of detail. A brief description of the present belt-pattern may be of interest. Usually the most conspicuous belt on the planet during the last decade, the North Equatorial Belt now possesses this dominance only in the longitudes of the Red Spot Hollow. The north and south edges are darker than the rest of the belt. Elsewhere on the planet, the N.E.B. is surpassed by a belt a little south of the center of the disc, which the editor interprets to be the South Equatorial Belt North (rather than the whole South Equatorial Belt). In longitudes opposite those of the Hollow, this supposed $S.E.B._n$ is extremely prominent, being intense, doubled (darker edges), and fully as wide as the N.E.B. Where in contact with the Hollow, the $S.E.B._n$ is comparatively narrow and light. Following about longitude (II) 280°, it widens and darkens greatly. When seen well, the structure of the belt is complex. It appears clear that the darker sections of the $S.E.B._n$ move by System II (because somehow dependent upon the Hollow?), although marks on at least the north edge of the belt, if indeed not anywhere on the belt, should move by System I. The South Temperate Belt is third in conspicuousness. It is narrow; Hare, Reese, and Haas have sometimes found it doubled, nevertheless. The North Temperate Belt often comes fourth; it is darker in some longitudes than in others but is hardly conspicuous anywhere, and Hare in excellent seeing on May 23 observed several darker spots within it. The Equatorial Band is narrow and light and hence is undistinguished; it mostly lies near the middle of the Equatorial Zone and is partly composed of dark borders of oval bright areas. The South Equatorial Belt South is usually even more elusive than the E.B.; Hare found the $S.E.B._s$ doubled for dozens of degrees following the Hollow on May 20 and 23 and sinuous near longitude (II) 340° on the later date. He suspected this twinning on April 21 when the components were too close for certain judging. Hare several times in March and April observed a thin belt between the $S.E.B._s$ and the S.T.B. and on May 23 saw a delicate belt in the North Tropical Zone. A rather wide and diffuse belt bounding the shaded South Polar Region is presumably the South South South Temperate Belt. The energetic Mr. Hare has also recorded a thin South South Temperate Belt and a belt near the south limb which must (alas!) be described as a South South South South Temperate Belt. Three Belts have been seen north of the N.T.B.; the most conspicuous one bounds the shaded North Polar Region and is apparently the North North North Temperate Belt. Hare on April 15 saw "a beautiful golden color" in the North North Temperate Belt. Needless to say, it takes a <u>good</u> view of Jupiter to show a total of more than six belts.

The Red Spot Hollow continues to exist as an oval area brighter than adjacent portions of the South Tropical Zone. On June 17, 18, and 22 the Hollow appeared unexpectedly inconspicuous to Haas; but confirmation is needed. The prec, and fol. shoulders of the Hollow are usually bordered by dark bands across the zone. It is curious that Haas failed to see the band at the fol. shoulder in a good view on April 28 while Reese saw this band distinctly on April 26, May 1, and May 10. Do we <u>perhaps</u> have rapid changes caused by vapors expelled from the Hollow? Observations by Haas from May 5 to June 22, inclusive, give these longitudes (II) of the Hollow: prec. end 216° (7 transits), center 228° (9 transits), and fol. end 238° (9 transits). Reese on May 10 put the center of the Hollow at 229°. Hare on May 20 put the prec. end at 226°, the center at 236°, and the fol. end at 247°; on June 1 he placed the center at 234°. The vexingly large "personal equation" of 1947 R.S.H. transits is evidently still with us! The Hollow is sensibly stationary in System II. The Red Spot remains invisible.

On pg. 3 of our September, 1947, issue we quoted a note from E.J. Reese about the drifts of three long-enduring South Temperate Zone brighter sections. Our informant further reported on May 24: "All the 1946 and 1947 S.Te.Z. drifts have been picked up again this year. The longest drift now extends from February 17,1946 at longitude (II) 256° to May 20, 1948 at longitude (II)282°. During these 823 days

this marking drifted 694° in decreasing longitude or -25°3 every 30 days. Agreement is also good for the other five drifts, although one of them was temporarily disturbed by the peculiar interzone activity following the R.S.H."

Hare comments on a white spot in the S.T.B. on May 27 at longitude (II) 155°. It much reminded him of the "white cloud" observed in this belt in 1947 (see past issues), which spot drifted from 320° (II) on May 7 to 220° on September 19 (values by Hare). The extrapolated drift thus appears to rule out identification with the May 27, 1948, object. On May 22, 1948, Hare remarked a dim section of the S.T.B. near 155° so that the spot may have been forming only then. Haas on June 10 and 12 observed a light section of the S.T.B. between 128° and 146° - perhaps an imperfect view of Hare's spot within the belt.

J.C. Bartlett has been making observations of colors on Jupiter, using color filters of known transmissivities to check impressions. He finds the N.E.B., the S.E.B., and the S.T.B. (the three chief belts) all " a sort of chocolate to reddish-brown." The S.P.R. shading, which had looked bluish gray to him in recent years, now instead shows a brownish tinge. What hues do you find?

A drawing of Jupiter by T. Cragg with a 6-inch reflector on May 1 shows some unusual aspects, which readers might think about and look for; the view was good, for a fair amount of structure showed up in each of the three main belts. In the S.Te.Z. - S.S.Te.Z. Cragg drew a "cloud band" covering up portions of the S.P.R. shading and composed of many individual masses. "These masses seemed to taper off or blend into one another until (the band) was observed as just a simple bright band when it reached the limb. To me it seemed obviously at a higher level than the general polar darkening." A similar appearance was observed in the N.Te.Z - N.N.Te.Z., where the individual "clouds" were globular, or perhaps slightly elliptical. A far southern bright spot on the fol. (sunrise) limb seemingly was only a magnitude fainter than Jupiter II, then egressing from transit. This spot lay well within the S.P.R. (latitude <u>about</u> -70°). Is there here a Jovian analogue to the Saturnian limb bright spots recorded by Reese and Haas in 1947-48?

Saturn remains much as described in our June issue. Haas finds Ring B still abnormally dim and the South Polar Belt now definitely less conspicuous than two or three months ago. R. Missert thought the South Polar Belt almost as dark as the South Equatorial Belt on April 26, but C.S. Slemaker found the S.P.B. the lighter by a fair margin on May 8. Mediocre views sometimes show to Haas both the N.T.B. and the E.B., the latter perhaps the more plainly. The Ring C projection continues to be extremely dark and conspicuous, though Missert thought it somewhat less black in May than in March and early April. This observer with a 6-inch relector estimated the width of the C projection to be 0.9 on April 26 and 1.0 on May 27, where the unit is the width of Cassini's at the ansae. W.H. Haas obtained 0.9 on June 8 and 1.0 on June 16, C.S. Slemaker finds Ring C at the ansae to fill about 1/3 the space between Ring B and the ball. Missert obtained 1/2 for this ratio on April 26, when the ring was "fairly easy to see.... almost conspicuous." Yet on May 27 in seeing and transparency estimated to be the same as on April 26, Missert perceived Ring C off the ball "only with great difficulty, and then only incompletely." He found the aspect different at the two ansae on both dates - a frequent if puzzling sort of Saturnian observation. Missert wonders whether small and unnoticed changes in transparency might affect the aspect of C to a considerable degree.

Slemaker has submitted an interesting drawing of Saturn with the Naval Observatory 12-inch refractor and 314X at 3^h10^m (U.T.) on May 8. The seeing was fairly good. He observed the shadow of Ring B within the Ring C projection. His report of it is only the second for this year received here, the other observation being by E.J. Reese on April 4. Slemaker also observed a brighter spot in the Equatorial Zone, confirmed by Mr. Cilley at the Naval Observatory. It was near the limit of visibility, which fact may explain why it was not seen elsewhere - at least to our knowledge. The drawing suggests a C.M. transit near 3^h40^m, or 10:40 P.M. on May 7 by E.S.T.; and the period should be near 10 hrs. ,14 mins. This spot should stress

the potential value of C.M. transits of marks on Saturn; as with La Pelle's February object, we know nothing of the rotation-period.

In his May 8 view Slemaker noted that Ring B was darker than the E.Z. and almost the same as Ring A, an aspect confirmed by Mr. Cilley. A photograph taken by Slemaker with the 12-inch refractor in March, 1948, is of great interest as exhibiting the rings to be dimmer than the ball. The exposure was seven seconds with Ansco Triple S Panchromatic film and no filter. Since the Saturn photographs familiar to all of us show the rings at least as bright as the ball (except when nearly closed), we have here very excellent additional evidence that Ring B has been abnormally dim in recent months. Slemaker further wrote on May 30 that in the Naval Observatory 26-inch refractor Rings B and C merge almost imperceptibly at their boundary, especially with mediocre or poor seeing. One is reminded of Hare's finding the whole inner half of Ring B dusky in May (see June issue).

J.C. Bartlett has communicated a pretty colored drawing of Saturn on May 11. He shows Ring A reddish and Ring B "normally yellow." The shaded South Polar Region was greenish; this area he finds to change color rather rapidly. The E.Z. was white. Three belts drawn by Dr. Bartlett are tentatively identified by the editor as the South Temperate Belt and the components of the South Equatorial Belt. If so, the $S.E.B._n$ was chocolate brown; the $S.E.B._s$ gray; the S.T.B., brownish. The space between the S.E.B. components was yellow, and that between the S.T.B. and the S.P.R. was distinctly brown. A white space separated the $S.E.B._s$ and the S.T.B. W.H. Haas, saw relatively little variety to the Saturnian hues in May and June. Except for red-brown in the S.E.B. components and the Ring C projection and a perhaps variable brown-gray in the S.P.B., he noted only whites, grays, and blacks.

Mars is now too far off to allow any but inadequate views. Slemaker in May saw both polar caps fairly easily, with the north one very small. Missert on May 31 wrote that the north cap was white and brilliant, though small. It looked sharply outlined, not diffuse, during the better moments. Missert usually saw no south cap and thinks that one he recorded near May 1 was probably really Hellas. Hare on May 24 wrote that the diameter of the north cap as measured on his original drawings was 22° or 23°. Since he obtained 18° on April 20 (our May issue), one might opine that melting stopped near that date and that since then the north cap has been of a constant size or may even have enlarged a little. Quantity Θ, which measures the seasons on Mars, was 87° on April 20, 102° on May 24, and 120° on July 1. Haas saw both polar caps in June; they were small, with the north the brighter. Perhaps the north cap was less brilliant than in the early months of the year. The north polar band is shown still intense on his drawings, and the grossly enlarged W edge of Casius remains notable and darker than the Propontii. Canals drawn by Haas include Nepenthes, Hades, Cerberus, and Nilosyrtis.

E. Pfannenschmidt in Germany submits an interesting note about the "Libya gap" in the prec. (left in simply inverted view) shore of Syrtis Major. He says that he has evidence from the work of several of his colleagues that near opposition it was frequently not recorded in spite of attentive searchings with good seeing. Is one dealing with localized Martian atmospheric effects?

We mentioned observations of the phase of Venus near the last dichotomy in our May and June issues. We now have from E. Pfannenschmidt these additional data:

Observer	Terminator slightly concave	Term. definitely concave
Dr. W. Sandner	April 12	April 13
E. Pfannenschmidt	April 10	April 12
Munich Observatory		April 16
B. Homburg Schindler		April 13

Since the terminator must have been straight before it was concave, our proposed April 9 or 10 for the date of observed half-phase accords with these new data. Theoretical half-phase did not arrive until April 16; the difference of six or seven days is due to the atmosphere of the planet.

Venus in June showed an angular perimeter well in excess of a semicircle, as always near an inferior conjunction; we hope to discuss this matter in our August issue when available observations should be more numerous.

During the last month we have received drawings of Venus by E. Pfannenschmidt, W.W. Spangenberg (via Pfannenschmidt), J.C. Bartlett, R.R. LaPelle, and C.S. Slemaker. We are specially indebted to J.C. Bartlett, who has contributed a set of 14 lovely oil paintings of the planet. The bright cusp-caps have been recorded by all the observers. The bordering dark cusp- bands have often been prominent (at least relatively) to Pfannenschmidt and Spangenberg. Haas concurs. A bright limb-band is also present on many of the drawings; it may be due to contrast. The observers disagree badly about the appearance of other features; in fact, Slemaker and Missert emphasize the near-blanknesss of the disc. La Pelle alone has sometimes drawn a dark belt perpendicular to the line joining the cusps; readers with recall the F.E. Ross' 1927 photographs exhibited this structure to the dark markings. Creditably concordant drawings were made by E. Pfannenschmidt at 19^h30^m on April 26 and W.W. Spangenberg at 19^h on April 27. The two observers agree on seeing the north cusp pointed and the south cusp rounded off, as well as on several features. La Pelle on May 10 and 16 oppositely made the south cusp sharp and the north cusp blunt. Bartlett also sometimes saw differences between the shapes of the cusps.

In April and May Pfannenschmidt with a 2-inch refractor and Bartlett with a 3.5 inch reflector frequently remarked irregularities upon the terminator. These can be explained either by clouds at different heights or by Venusian mountains. An observation by Bartlett near 0^h5^m on May 11 may be unique. With clear skies and good definition he remarked a bright speck on the dark hemisphere just off the terminator. It lay equally distant from the two cusps and exactly resembled a lunar peak on the night side of the terminator. Bartlett watched the speck for 19 minutes without detecting any change. The curve of the terminator itself looked perfectly smooth on this date. Much interest also attaches to " a rather long and shallow depression" observed by C.S. Slemaker with the Naval Observatory 12-inch refractor on May 14 at 13^h0^m. It lay about midway between the center of the terminator and the north cusp. Several other persons at the Observatory confirmed the presence of something, one seeing a slight flattening of the terminator just below its center. Bartlett writes of observing a shallow hollow midway between the center of the terminator and the north cusp at 0^h42^m on May 10, as well as a second hollow farther north. If the first object is the same as Slemaker's, the rotation of Venus may explain Bartlett's failure to find it on May 11 (see above). In connection with Bartlett's second, and more northerly, hollow, it is intriguing to wonder whether there is any connection with a dent in the north cusp-band at the terminator that Pfannenschmidt drew at 19^h20^m on May 14. This drawing apparently shows nothing of what Slemaker saw six hours earlier.

Perhaps some of our readers can supply more information about terminator-irregularities in mid-May. We should appreciate any such data; with luck, enough such contributions just might show something about the unknown motions of Venusian clouds.

Errata in June Issue

E.J. Reese found the terminator of Venus to be straight in April, 1948, when the sun-Venus-earth angle was 87° 5, not 85°5(pg. 6). It is the former number which we described as "in excellent agreement" with his 87°3for February, 1947.

E.E. Hare found the S.T.B. of Jupiter to be deflected southward by the R.S.H. on April 21, but not on April 25(bottom of pg 8). There was hence a change in only four days.

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S T A F F

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