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STAFF

-Editor-

Walter H. Haas, Instructor in Mathematics
Astronomer, Institute of Meteoritics
University of New Mexico
Albuquerque, New Mexico

-Counsellor-

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

-Acting Venus Recorder-

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

-Acting Jupiter Recorder-

Elmer J. Reese
241 South Mount Vernon Avenue
Uniontown, Pennsylvania

-Acting Mercury Recorder-

C. B. Stephenson
Yerkes Observatory
Williams Bay, Wisconsin

A PLANNED INTERNATIONAL STUDY OF MARS

by Walter H. Haas

Planetarians have long been aware of the potential importance in studies of Mars of having a chain of observers around the entire world. For any particular observer a given portion of Mars, such as the Syrtis Major region, must go unwatched for several weeks at a time. A few decades ago Professor W. H. Pickering was the leader of a small, world-wide circle of Mars observers, long since dissolved. On April 15, 1949 Mr. Ernest Pfannenschmidt wrote me about a proposed program of international cooperation on Mars during its 1949-50 apparition. Any friend of observational astronomy must be most anxious to see such a plan succeed. In a later letter to Mr. E. J. Reese on June 3 Mr. Pfannenschmidt discussed this proposal in some detail. He tells us that all German observers have agreed to cooperate and that the just-beginning apparition of Mars is there arousing interest among not only amateurs but also professionals. It will be a very great advantage to us if American professional astronomers also assist.

Einbeck or Munich is to be the center for all observations made in Europe. Those made in the New World or Great Britain should be sent to Albuquerque. Details about the program are to appear in issues of Sternenwelt and The Strolling Astronomer, and these same publications will discuss observational results as they become available. It is most important for the quick and efficient study of the data that all Mars observers report promptly and completely. I request all colleagues reporting to Albuquerque to submit a report of each month's work so as to reach me no later than the tenth of the following month. Participating observers will be obliged to furnish the following data on all work:

1. The name and address of the observer and the latitude and longitude of his station.

2. Instrument, whether a reflector or a refractor, of what type (e.g., Newtonian), of what focal length, and by whom made (e.g., Clark, homemade).

3. The kind of eyepiece (or eyepieces) used and its magnification.

4. The date, including the year, and the time, including the kind of time-system employed.

5. The seeing or atmospheric steadiness on a scale of 0 to 10, with 10 best.

6. The transparency on a scale of 1 to 5, with 5 best.

7. If a drawing is not a simply inverted view, it must be stated just what it is. West on Mars will be taken to mean toward the left in a simply inverted view in the northern hemisphere; east is the opposite direction.

8. If any color-filters are used, their commercial names and the spectral region of maximum transmission should be stated. Any micrometer or photometer employed should be described.

9. In photographic work the films or plates used, any filters employed, the exposure-times, etc. should be reported.

It is hoped that these requirements will not appear too dismaying to the reader! It may be possible to furnish blank-forms with outlines of the planet upon them as an aid. The geologist must learn to identify a large number of rocks; the successful planetary observer must take some pains with the technical details listed above.

There are a number of kinds of Martian studies open, depending upon the equipment and preferences of the observer.

1. Drawings are the most fundamental method of study. These usually require at least a four-inch telescope, though some observers have mapped the coarser features well with less. The drawings are made right at the telescope. Because of the rotation of the planet, they should be completed within 15 minutes; if more time must be taken, then it is quite necessary first to place the larger details and then to position the more delicate features relative to them. A drawing should be made without foreknowledge of the central meridian of longitude of Mars; it should never be altered later to correspond better with maps of the planet. Observers having available 10 inches of aperture or more can profitably make detailed studies of especially interesting objects such as Solis Lacus, Syrtis Major, Acidalium, etc.

2. Color studies of the various regions may be carried out, preferably with reflectors. It is possible to see some colors with only a two- or three-inch telescope, but a larger instrument is preferable. Color filters of known transmission (see above) can be an important aid here. A set of several different filters will be best; for example, a red filter, a yellow filter, a green filter, and a blue filter would be a good selection. Especially with small telescopes the observer should avoid using filters that transmit too little light; nothing is gained if the image of the planet becomes too dim. Colors should never be recorded except when the sky is clear and completely dark (avoid dawn and twilight).

3. Observations of the relative darkness and brightness of different features may be recorded. A good five-inch can and should do something here, but this program is especially recommended to owners of large telescopes - say above twelve inches. These contrast-observations are useless unless the time is exactly noted, for the intensity of a feature changes with its distance from the central meridian. The relative conspicuousness of two features should always be compared by throwing the image out of focus. The more conspicuous one will remain visible farther from focus.

4. Photometric and colorimetric studies may primarily appeal to colleagues having only very meager equipment. Binoculars or apertures below two inches may be used, and something can be done with nothing but the eye. The brightness and color of the planet are to be compared to those of stars of known stellar magnitude and spectral class, pre-

ferably at about the same altitude. The step-method may be used to estimate brightness, the step or unit being the smallest perceptible difference in brightness. Such light- and color-estimates should be repeated several times during the night, for single observations are worth very little.

5. Martian clouds are always of interest. They are of two general types, blue and yellow; color filters may help the observer to decide to which class a given cloud belongs. A cloud may rarely be seen as a bright projection on the limb or terminator. Observers fortunate enough to witness such an event should make as careful and detailed a record as possible, being especially attentive to the position of the cloud-projection. Every effort should be made to reobserve the projection the next night, when it may well have drifted to a new position on Mars. If a cloud can be observed on the central meridian, transits of its preceding and following edges will give their longitudes; latitudes may be estimated at the telescope, measured later on a drawing, or (best of all) measured with a micrometer. Changes in the appearance of a cloud from day to day or during the same Martian day should be followed.

6. Central meridian transits of surface features on Mars are good for easy and fairly accurate determinations of longitude. Probably one should here have at least a six-inch telescope and should use a power of 200X or more. Because of the complicating effect of phase, transits are best made within a few weeks of the opposition on March 23, 1950. The observer merely times to the nearest minute when any sufficiently recognizable Martian feature is midway between the east and west edges of the planet. Those using professional telescopes are advised to locate the axis of rotation of the planet by means of Ephemeris data; others may orient the image by one or both of the polar caps.

7. Careful word-descriptions of the polar caps, topographic features, and any unusual appearances can be a valuable supplement to the drawings mentioned above. Observers will aid analysis of the data if they will explicitly record changes they find on the planet.

8. Observers able to employ micrometers can make important measures of the positions of Martian features. We urge them to do so because few of us will have this opportunity. They should also regularly measure the sizes of the polar caps.

9. Photographs of the planet are scarcely worthwhile unless one has an aperture of at least 10 inches and a focal length of at least 100 inches. With these advantages they are a valuable method of study, and photographs in different colors (e.g., orange, green, and blue) may supply important information not obtainable otherwise.

These categories are intended to serve as a general guide. The program of cooperation will be most successful if all observers work along some of the same lines. Its success also depends upon the prompt and regular submitting of reports with proper data. The goal that can be realized if the A.L.P.O. and others give full support to this program is a worthy one. There will be available for the first time a truly very large mass of data on Mars obtained in a short time and to be reduced and analyzed by the same methods.

May we count on you?

MERCURY IN JULY, 1949

by C. B. Stephenson

The rather unfavorable June-July morning apparition of Mercury was, probably like most of its morning apparitions, not widely observed. The only observations of the planet that we have for this period are those of Mr. E. K. White and Mr. C. B. Stephenson; the former used a $7\frac{1}{2}$-inch reflector and the latter a 6-inch refractor. All times and dates mentioned are by U.T.; the terminology used for the surface markings is that of Antoniadi, whose map of Mercury is reproduced on pg. 193 of F. L. Whipple's Earth, Moon, and Planets.

White observed in daylight on July 1,2,3, and 9, in poor seeing. No surface markings were seen, but the phase-change from crescentic to gibbous was followed. The terminator was found to be concave on July 1 and 2; and on July 3 at $20^h\ 30^m$ with $i = 89^\circ$ it was still "definitely slightly concave". This conclusion was checked in the best moments by placing a filar micrometer wire close to the terminator and parallel to it. Theoretically the terminator should have been very slightly convex at this time, theoretical dichotomy having already occurred (at approximately 16^h); and we have here another case of slight retardation of true dichotomy analogous to the early occurrence of dichotomy sometimes observed when Mercury is east of the sun. The seeing on this occasion, at best, was somewhat better than for any other view obtained by White in July. On this date he also suspected a brightened south cusp-cap but could see no dark cusp-band at either cusp. On July 9 the terminator was slightly convex, no surface markings being visible.

Stephenson observed on July 14,15,16, and 23, being restricted by bad weather to about half the number of observations originally planned. In a view immediately after sunrise on July 14 markings were thought to be definitely present on the gibbous disc and were found to resemble markings on the surface of a globe rather than mere shadows on a disc to an unusual extent. He drew what seems to correspond to Solitudo Lycaonis, Horarum Vallis, S. Jovis, Martis as a hook-like appendage to Horarum Vallis - Jovis, Dionysi, and a marking near the south cusp in the region marked S. Promethei on Antoniadi's map but bearing little resemblance to anything on the map here. No cusp-caps were seen. In a daylight view on July 15, conditions being slightly inferior to those on the 14th, Lycaonis, Dionysi, and Martis were probably drawn; and an isolated spot near the limb was suspected, which may have been S. Maiae. No cusp-caps were thought present. On July 16 in a post-sunrise view somewhat inferior to those obtained on the 14th and 15th Lycaonis, Horarum Vallis, Promethei (?), and probably Dionysi were evidently drawn; and a rather prominent north cusp-cap was recorded, as well as a lesser south cap, which was perhaps not centered on the cusp but about a point on the terminator near the cusp. The bright areas did not seem to extend to the nearest dark markings. The planet was last observed by Stephenson on July 23 at $10^h\ 35^m$, with $i = 15^\circ$. The seeing was wretched and though steadily improving was still hopeless at $10^h\ 45^m$, when observation was terminated by clouds.

On July 16 Mars was observed in twilight for the purpose of comparing the markings on its 4".0 disc with those on the 5".5 disc of

Mercury, one hour of R.A. to the east. Both were observed at roughly the same altitude, viz. 15°, though of necessity Mercury was observed on a brighter sky. A small north polar cap was thought to be present on Mars, and a southern one was suspected. The Martian north cap was less conspicuous than the Mercurian caps seen on the same date; this constitutes some evidence in support of the reality of the Mercurian caps but not of their variability nor, of course, of their nature. The opinion was formed that the markings on the two planets were of approximately equal prominence. The Martian markings could be seen for certain but not well enough to be identified before the longitude of the central meridian had been ascertained by W. H. Haas. We have here indication, if any is needed, that conclusions about the exact form of markings seen on Mercury when of the order of 5-6 seconds in diameter, with a 6-inch telescope, are not too reliable. W. H. Haas remarks that "..in October and November, 1936, I observed the very remote Mars [c.f. J.R.A.S.C., vol. 31, pp. 273-5] in the hope of determining how accurately known features on so small a disc would be drawn. The diameter was 4" to 4".5. The telescope used was a 10-inch refractor ... It was possible to identify many of the markings drawn with known objects on Mars. However, they appeared on the drawings with badly distorted shapes and often were grossly misplaced on the disc. I have very little doubt that the same statements apply to Mercury." Othersobservers have compared the two planets in the past. M. Jarry-Desloges found the Mercurian markings seen in September, 1909, "at least as dark as those seen on Mars", with an aperture of 11.4 inches; and in October, 1917 H. McEwen compared the two planets (Mercury = 7".5 to 5".4, Mars = 5".2 to 5".5) and found the Martian markings more prominent than those seen on Mercury. C. B. Stephenson on June 8, 1948 found the markings on the 10".1 disc of Mercury considerably easier to make out than those on the 6".6 disc of Mars, not far away to the east. At this time the Martian markings were themselves seen well enough to identify everything drawn, though the features were drawn considerably misplaced on the disc. It would be of interest to repeat such a comparison at a future date.

OBSERVATIONS OF VENUS DURING JULY AND AUGUST, 1949

by T. R. Cave, Jr.

A series of very fine observations and drawings of Venus have been received from W. H. Haas, Albuquerque, N. M.; T.A. Cragg, Los Angeles, Calif.; Donald O'Toole, Vallejo, Calif.; and E.K. White, Chapman Camp, B.C., Canada. The Recorder also observed the planet on a few occasions.

Mr. E. K. White, using his 7" refl., observed several times (no dates given) and found "Belt like detail" and prominent north and south cusp-caps, the north cap being the more prominent. These observations confirm the results obtained by several other members of the A.L.P.O.

The following observations are in order of date, and all dates and times are given in Universal Time.

On July 16, $3^h\ 15^m$, T. Cragg, using a 6" refl., 104X, S = 3, T = 4, found a cusp-cap protrusion on the south cusp. Here S and T are the seeing and the transparency respectively. The north cusp-cap was large and full. A small white terminator area and one of nearly equal area in the same latitude on the limb were also seen. There were two vague

dark areas, one surrounding the south cusp-cap and the other, belt-like in appearance, near the equator. Cragg also found a similar, but not identical, appearance on July 19, 3^h 15^m, using the same instrument and power with S = 3, T = 3, which fact he suggests may indicate some rotational effect. He says: "The shift in the position of the protrusion can be caused by an atmospheric effect due to rotation; that doesn't say, however, that it might be rotating with the solid surface of the planet underneath." W. H. Haas observed Venus on July 21 at 2^h 27^m, using 141X on his 6" refl., S = 3, T = 3-4. He noted both cusp-caps to be visible and the north one to be the more conspicuous since it was "brighter and/or larger than the south". Cusp-bands were not prominent, and the darker shadings were near the terminator. He also noted: "...a wide band-like dark mark perpendicular to the terminator near its middle but of no great length; perhaps it is part of T. Cragg's 'equatorial belt'". Cragg observed on July 22, 3^h 30^m, S = 1-3, T = 4 with his 6" refl. at 104X and viewed an effect similar to what Haas saw except that the perpendicular marking was near the center of the illuminated disc. T. R. Cave observed on July 24 at 3^h 15^m with his 6" refl. at 240X, S = 4-5, T = 5 at Mint Canyon, Calif. Employing a neutral filter, he noted a large vague dark area (about 1/4 the area of the illuminated disc) situated in southern latitudes and extending to the limb. The terminator shading was well seen, and a large white area on the northern portion of the terminator was evident. On the same date at 2^h 25^m Haas observed with his 6" refl. at 141X, S = 3-4, T = 4 and found less detail than he had on the 21st. The north cusp-cap appeared brighter than the south, and the fragment of the "equatorial belt" was still visible; also, a similar "belt" was noted in southern latitudes.

On July 26 at 2^h 30^m, 6" refl. at 200X, S = 2-3, T = 3, Cave observed equal cusp-caps, a bright area near the equator on the limb, and a vague, uneven "belt" in a moderate southern latitude. On July 27 Haas observed Venus from 2^h 1^m to 2^h 27^m with a 6" refl. at 141X and 188X, S = 2-4 (usually 2), T = 2-4. Hindered during the observation by interrupting clouds, he found: "The terminator is very definitely dimmer than the limb....The shadings are darker near mid-terminator than near mid-limb." He found the dark markings mainly linear and of different degrees of intensity. On the same date at 2^h 45^m Cave used a 6" refl. with 140X and 200X, S = 4, T = 2-3 and noted a few dark markings, similarly placed to those observed by Haas. Cragg also viewed Venus on July 27; he employed at 3^h 10^m the Griffith Observatory 12" refractor at 125X, S = 3, T = 4. Cragg found four "belts" with a suspicion of a double "equatorial belt". He points out that this type of belt-like marking was often photographed by Ross at Mount Wilson in 1927 and suggests that those who might doubt the objectivity of belts should refer to pg. 197 of F. L. Whipple's Earth, Moon, and Planets, for some good reproductions of some of these famous plates. Haas observed again on July 28 from 2^h 9^m to 2^h 19^m with his 6" refl. and 141X, S = 3, T = 4. He found the detail very similar to what he had seen on July 27. There had perhaps been a darkening of southern shadings, including belts. On this date he found detail equally dark in the north and south hemispheres. On July 29 from 1^h 51^m to 2^h 16^m, while using chiefly 188X on his 6" refl., Haas again found detail very similar to what he had seen on July 27. "Occasional rather pleasing views show the north cusp-cap distinctly the brightest feature on the disc." Shadings along the terminator were "diffusely outlined" to Haas.

Mr. Donald O'Toole observed Venus carefully on a number of dates between the middle of June and the last part of July but obtained unsatisfactory views with no suspicion of detail except the terminator shading. He employed 3.5" and 6" telescopes and magnifications occasionally as high as 350X. Nearly all his views were in daylight. On August 1 and 6 he suspected details other than the general terminator shading, namely, cusp-caps and definite terminator shadings. Of special interest is O'Toole's excellent drawing on August 6 at $1^h\ 0^m$; it indicates a bright area of considerable size near the terminator and just to the north of the "equator". On all dates O'Toole had well defined images of Venus with the terminator shading visible. On August 8 at $2^h\ 45^m$ Cragg and Cave observed simultaneously without previous arrangements at stations separated by 25 miles. Both observers saw the cusp-caps and a bright area near the southern terminator. The observations agree reasonably well on the "equatorial belt", though Cragg found dusky detail on either side of this "belt" and placed differently than the details observed by Cave.

The Recorder congratulates all these observers of Venus for the very fine quality of work received and for the rather surprisingly good agreement found on comparing drawings by the several observers. The Recorder wishes very much to hear from all those who wish to begin observations of our fascinating Sister Planet. Work should certainly be continued now as the angular diameter of the disc increases, though observing will become somewhat more difficult as the planet goes south in declination. W. H. Haas has made some very interesting intensity observations of details on Venus using a scale of 0(very dark markings) to 5 (very bright markings). Other observers interested in intensity work could adopt this scale. The Recorder has found a neutral filter very helpful when it is necessary to observe Venus in a nearly dark sky or advanced twilight.

Postscript by Editor. The enclosed print of 12 drawings of Venus by different observers will illustrate much of Mr. Cave's discussion above. The 12 drawings are all ones referred to in the discussion. Careful students of Venus will want to study Mr. Cave's article in conjunction with these drawings and to compare the ways that different observers see and draw features on this planet. The prints were very kindly supplied by Mr. E. J. Reese, whom we thank very much for them. The making of over 100 prints for members of the A.L.P.O. naturally required a large expenditure of time on his part.

Mr. Cave requests observers of Venus to be closely attentive to the phased outline of the planet during the approaching near-dichotomy period. The atmosphere of the planet has been found to modify the appearance that one would expect from geometry alone. Observers should carefully note whether the terminator is convex, straight, or concave, trying to establish on what date it is exactly straight. If the terminator shows a curve not a simple ellipse (or line when exactly straight), its deviations should be carefully recorded. In particular, it is still uncertain whether the bright cusp-caps actually project somewhat beyond closely adjacent parts of the terminator or whether one here has only a spurious effect of the dark cusp-bands. Observers should also estimate whether the "breadth of phase"(mid-limb to mid-terminator) is more or less than half of the "diameter" (north cusp to south cusp).

A filar micrometer can give very valuable aid here, and E. K. White has lately employed one for the same purpose on Mercury. These phase-observations should begin near November 1 or even a few days sooner. They should continue until the terminator is unmistakably concave and the "breadth of phase" is surely less than half of the "diameter" - quite possibly into late November.

Members of the A.L.P.O. having micrometers might well now begin to make measures of the angular perimeter of the illuminated limb and continue them at least until the inferior conjunction early in 1950.

It would be an excellent control on these phase-observations of Venus to make similar estimates of the phase of the moon, either with the naked eye or with binoculars. Such lunar studies are naturally made near first or last quarter. It may be found that the appearance is appreciably influenced by the brightness of the sky-background.

JUPITER, LATE-SUMMER VIEWS

by Elmer J. Reese

General Appearance. The NEB and STB were by far the most prominent belts on the planet during August. The NEB was invariably the widest and most conspicuous belt; however, F. E. Brinckman and L. T. Johnson sometimes found the STB to be darker area for area than the NEB. The SEBs continued to fade while the SEBn became somewhat darker. In mid-August D. O'Toole found the SEBs to be more conspicuous than the SEBn preceding the Hollow and less conspicuous than the SEBn following the Hollow. Dr. Bartlett summarizes his recent observations of the EZ as follows: "This zone appears to have been brightening constantly since about July 12 with occasional darkenings of brief durations. This brightening appears to have been brought about by the apparent break-up of the dark masses and the appearance among them of large, whitish, cloud-like areas." More than 80 intensity estimates by W. H. Haas and E. J. Reese from February through August indicate that the brightness of the EZ declined to a minimum in June and increased somewhat thereafter.

A list of the more prominent belts recorded in July arranged in order of decreasing average conspicuousness follows: NEB, STB, SEBs, NTB, NNTB, SEBn, EB, SSTB. A similar list for August follows: NEB, STB, SEBs, SEBn, NNTB, NTB, EB, SSTB. These lists are based on a total of 48 sets of estimates by L. T. Johnson, D. R. Monger, D. O'Toole, E.J. Reese, and E. K. White.

NEB White Gap. W. H. Haas recently called our attention to a remarkable white area causing almost a complete gap in the NEB at longitude (I) 264° on September 4. This gap forcibly reminded him of the white spot observed in the NEB by German observers in September-October, 1948. Reese saw nothing of the present gap on September 2 when the region was on the central meridian; however, he did see a small white cloud in the middle of the NEB at 256° (I). We have received the following note from E. E. Hare pertaining to this feature: "The white gap has not been seen on the central meridian but attracted attention on September 4

when it was estimated to be 27° east, and on September 7 nearly halfway to the west limb. In these positions it looked like a complete gap 13° or 14° wide." Hare estimated the longitude of the gap to be near 263° (I) on September 4 and near 286° on September 7. On September 8, 10, and 13 Haas observed a number of white areas at the south edge of the NEB between 227° and 304°; however, the white gap in the belt had apparently disappeared. Can anyone add to our present knowledge of this unusual feature?

Curiosities of the Red Spot. Two dusky areas within the Red Spot and a very dark southeastern edge were observed by T. Cragg on August 6, Bartlett on August 16 and Reese on August 24 found the major axis of the elliptical Spot to be oriented in a northeast to southwest direction. On August 13 T. R. Cave found the south edge of the Spot very nearly flat and separated from the STB by a narrow bright space. This appearance was confirmed on August 27 by C. B. Stephenson with a 6-inch refractor. Referring to the appearance of the Red Spot on that date, Mr. Stephenson writes: "It is best described as long and narrow, quite homogeneous in intensity and flatter on the south than the north." A surprising development was recorded on September 10 when both Hare and Reese observed a definite whitish area within the Red Spot. Hare drew this area as a white rift extending in a north-south direction and completely severing the Spot. The following end of the Hollow became indefinite during August, and the Red Spot became more prominent than the Hollow. The Red Spot and Hollow appear to be moving unusually rapidly in increasing longitude (II). A rotation period greater than $9^h\ 55^m\ 44^s$ is indicated!

EZ Festoons. J. C. Bartlett has recently observed a large number of thin dark streaks or festoons connecting dark spots on the south edge of the NEB to similar dark spots on the north edge of the SEBn. In all cases these festoons were observed to cross the EZ from northwest to southeast. These festoons have been recorded by several other observers. These other observers, however, frequently show the festoons terminating at the EB rather than the SEBn.

SEB Disturbance. It now seems probable that the disturbance which was first observed by Hare on July 23 (pg. 13 of September issue) was the preliminary outbreak of a more general disturbance which by early September had darkened much of the SEB Interior Zone for some 170° preceding the Hollow. The advancing front of this dusky area swept westward through the Interior Zone at a rate of 2°.2 per day relative to system II. By September 4 the preceding end had reached longitude (II) 45°. The following end apparently remained anchored at the preceding shoulder of the Hollow. Since we know relatively little about the drift of markings on the middle of the SEB, every effort should be made to observe as many transits as possible in this region during the remaining weeks of apparition.

Note by Editor. A few more remarks on the NEB-near-gap may be worthwhile. Excellent drawings by Reese of part of the NEB on Sept. 2 and 4 appear to show clearly that what Hare and Haas saw on September 4 was the result of a longitudinal conjunction of a white area on the south edge of the NEB and the white area in its middle seen by Reese at 256° (I) on September 2. This interpretation Reese suggested in a letter dated September 11, and it accords closely with the fact that in

1948 he found white marks in the NEB to increase in longitude (I) by about 4°7 per day. If this explanation applies, the near-gap would vanish in a day or two. Hare's gap on September 7 may well have been due to the conjunction of the cloud in the NEB with a different white area on the south edge. The former mark should have been near 278° (I) on September 7, the very longitude at which Reese found a white area on the south edge of the belt on September 4.

Is it possible that the gap in the NEB observed by our German colleagues a year ago was also due to a longitudinal conjunction of bright areas? This feature was described by E. Wiesenfeld in Saturn for November, 1948.

THE FIRST CONVENTION OF WESTERN AMATEURS

by T. R. Cave, Jr.

Amateur Astronomy in the Far Western regions of the United States has long been suffering by a lack of Conventions. These general get-to-gethers have been rather frequent in the Eastern states during recent years. This unfortunate absence of such an affair in the West prompted Prof. G. Bruce Blair, of the University of Nevada, to suggest a Convention in his "Astronomical Information Sheets" early this year. Professor Blair has been one of the foremost amateur astronomers in America for many years. In the Spring he wrote the officers of the Los Angeles Astronomical Society inviting that organization to sponsor such a meeting sometime during the summer. The Los Angeles Society quickly accepted and set to work, organizing committees for physical arrangements, program, and publicity, so necessary for the success of such an undertaking. During the next three months form bulletins were mailed to several hundred individual amateurs and twenty-one Societies. Responses were excellent, a great many requiring personal replies. The general plan of the meetings took shape; and although some changes were made from time to time, the arrangements developed pleasingly. It is perhaps appropriate to mention two members of the sponsoring Society in particular whose work was vital to the meeting's success. They are Mr. H. L. Freeman and Mr. Less Mawhinney. Mr. Freeman was responsible for a large part of the physical arrangements; and Mr. Mawhinney, for the nation-wide radio and newspaper notices of the Convention.

On Monday morning, August 22nd, more than one hundred and fifty delegates registered in the lobby of the Bovard Auditorium of the University of Southern California, the scene of the meetings during the first two days of the three day gathering. Particularly outstanding among the many present were Prof. G. B. Blair, Prof. W. H. Haas, Dr. H. Page Bailey, Mr. and Mrs. Schopke, and Mrs. Champ, who led the large delegation from the Sacramento Valley Association. Dr. Henry Power headed the somewhat smaller group from the Peninsular Society, as did Dr. W. T. Skilling from San Diego. Many amateurs were in attendance from several Eastern states, and undoubtedly Mr. and Mrs. Federer came from the greatest distance. From Cambridge, Mass., the editors of "Sky and Telescope" had crossed the continent to be on hand; officially to cover the events for their magazine, unofficially to meet and chat with many of their friends.

Early Monday afternoon the first Session was called to order, Prof. Blair presiding. The Invocation was given by the Rev. D.V. Johnstone, Past President of the L.A.A.S. Mr. Walter De Palma, President of the Los Angeles Society, delivered the "Address of Welcome", pointing out the need for greater cooperation among amateurs and for an annual western Convention. This Session was devoted to "General Astronomical Topics"; and only four papers were presented, all of major length. Dean K. A. Ryerson inspired those present with his "An Appreciation of R. W. Porter". Dr. C. H. Cleminshaw, Associate Director of the Griffith Observatory, presented the paper "Meteor Path Tracing" for Dr. J. Hugh Pruett, who was unable to attend. Mrs. Fayetta Philip spoke on "Light and the Importance of Ancient Astronomers to Modern Research". Prof. Blair's paper was "Amateur Astronomy in the Far West", covering all known Western Societies and leading amateurs.

Monday evening the Griffith Observatory was host to the gathering, and the evening was most certainly an enjoyable one. Dr. Dinsmore Alter, the Director of the Griffith Observatory, spoke on the subject, "Cooperation Between Professional and Amateur", discussing the many fields for amateur research and the increasing necessity of cooperation between the professional and non-professional. "A Trip to the Moon" was Dr. C. H. Cleminshaw's lecture, using the Zeiss Planetarium Projector and the Observatory's newly developed Space Travel Projector. The audience was taken imaginatively to within one thousand miles of the lunar surface and on the return trip saw the earth from outer space. Mr. George Bunton, Chief Technician at the Observatory, then talked briefly on "Fundamental Optics of the Planetarium".

Tuesday morning and afternoon were filled with many papers, the great majority being brief ten-minute talks by amateurs. During the morning the "Telescopes and Accessories Session" was presided over by Mr. H. L. Freeman. Eleven papers were presented at this Session, dealing with telescope making and related optical and mechanical problems of great interest to amateurs. The "Observing Session" was held in the afternoon, Prof. Walter Haas presiding. Ten papers were presented, several of outstanding interest to members of the A.L.P.O. Prof. Haas presented his major paper on the subject "Lunar and Planetary Observing Projects", beautifully illustrated with many slides of drawings by members of the Association. Prof. Haas gave a number of helpful hints to observers and told of the work being done by the A.L.P.O. Mr. David Barcroft, the well known Selenologist of Madera, Calif., and an active observer in the A.L.P.O. discussed the most interesting theory in his paper "The Drifting of Lunar Formations During the Moon's Pre-Hardening Period". Mr. Thomas Cragg of the A.L.P.O. spoke briefly on "The Axis of Rotation of Venus", using some of his observations to illustrate the results he obtained. Mr. Paul Roques told of his methods employed with the 12" Refractor at Griffith for "Planetary Photography".

Tuesday evening the Convention Banquet was held at the Roger Young Auditorium. After dinner Mr. DePalma acted as Toastmaster, presenting Life Memberships in the L. A. A. S. to Mr. Freeman and Mr. Mawhinney for their excellent work on behalf of the Society. An exhibit of amateur work was held at Bovard Auditorium after the banquet.

Considerable work of the A.L.P.O. was shown, including drawings of Jupiter and lunar detail by Mr. Edwin Hare and paintings of lunar detail, Jupiter, and Saturn by Dr. Bartlett, using some of Mr. Elmer Reese's work. A map of the lunar crater Conon by Reese also attracted considerable interest. Drawings of Mars in 1941 and 1948 were exhibited by Mr. Cave.

The delegates assembled atop Mt. Wilson Wednesday afternoon for a tour of the Observatory, with particular emphasis on the solar equipment. Dr. R. S. Richardson demonstrated the sixty-inch reflector, and Dr. Pettit had his monochromator set up to show everyone an interesting solar prominence through the six-inch Clark refractor. Dr. Richardson gave a major paper on "Sunspot Cycles", discussing work done by earlier observers as well as the present day studies. A brief discussion followed relating to possible organization and to next year's Convention City. In the early evening thirty telescopes were set up for the Telescope Contest. Dr. Power, Prof. Blair, and Mr. Schopke acted as judges, awarding prizes to Mr. Carl Helm for the best optically performing telescope, a ten inch Newtonian. Mr. George Schmitt's ten inch won the best mounting and best accessories award. Mr. Chalmer Myers' $2\frac{1}{2}$" refractor was awarded the most unusual telescope prize. He used an astrocompass modified for the equatorial mounting. "Life" magazine photographers were present, snapping pictures for a possible future story. By midnight most of the telescopes were packed away, and the many amateurs were homeward bound.

A.L.P.O. members known to have been present are Messrs. Barcroft, Brinckman, Carruthers, Cave, Cleminshaw, Cragg, Forsyth, Haas, Le Wahl, Moyen, O'Toole, Schopke, Thomas, and Williams.

Note by Editor. Mr. Cave modestly neglects to say that he was Program Chairman for the Convention and contributed importantly to its success.

The editor personally found the Convention a most thoroughly enjoyable affair and is already looking forward to next year's gathering. He hopes that some astronomical friends who could not attend the first Convention will find it possible to be present at the second one in 1950.

MARS NOT AT ITS NEAREST

A small number of observations of Mars were secured in August and September by F. E. Brinckman (6-inch refl.), W. H. Haas (6-inch refl.), E. E. Hare (7-inch refl.), D. O'Toole (6-inch refl.), and E. K. White (7-inch refl.). The planet is still very remote; the angular diameter was 4".2 on August 15 and will still be only 4".9 on October 15. On the later date the north pole will be tipped toward the earth by 20 degrees.

The vernal equinox of the northern hemisphere fell on August 27, 1949. It is in accord with past studies at this Martian season that the observers have seen both polar caps and that the north cap has been more brilliant, more conspicuous, more regularly visible, and less diffuse than the south cap. The north cap has been variously described

as both "large" and "small"; E. E. Hare writes that he has measured its diameter on his drawings to be 40 to 45 degrees. He here refers to drawings made up to September 10. In a "very nice view" on September 14 E. K. White saw a dark north polar band around the north cap. Haas on September 18 found a light polar band around each cap.

The southern maria have been but poorly seen on the small disc. On September 10 Hare apparently viewed an enlarged Wedge of Casius in northern latitudes. On September 18 Haas drew Propontis and found it darker and easier than the southern maria. It may be remembered that Acidalium, the merged Propontii, and Casius were large and conspicuous early in 1948 (The Strolling Astronomer, Volume 2, No. 2, pg. 5, 1948).

FINAL NOTES

Don't forget that lunar eclipse on October 6 (local civil date). Instructions for observing were given on pp.6-9 of our September issue. These should be followed. An eclipse of the moon affords an unusual opportunity to search for both possible lunar meteors and possible lunar meteoritic impact-flares. In addition, one can watch for possible temperature-effects on lunar regions where physical changes have been reported. The editor wishes all of you clear skies and good seeing on October 6 and hopes soon to hear what you saw.

The Institute of Meteoritics is always interested in reports of unusual fireballs, which have apparently been rather numerous recently. Members of the A.L.P.O. are requested to submit to the Institute records of any such which they are fortunate enough to witness. The Institute of Meteoritics is also always interested in securing information on possible meteorites, for it desires to build up its collection of these objects.

The Twelfth Meeting of the Meteoritical Society was held on September 6, 7, and 8. The first two days were given to the presenting of papers; the Society met on the campus of the University of Southern California. On September 8 there was an all-day excursion to Mount Palomar. The members of the Society there viewed the 200-inch Hale Telescope and the 48-inch Schmidt, which is just beginning a most important photographic survey of all of the sky usefully available from the latitude of Palomar. Such a survey can and will indicate a huge number of research problems, and there are rumors that the 200-inch is already an unloved stepchild!

Some of the papers given will be published in the Contributions of the Meteoritical Society. However, a rapid summary of a number of them will appar in this issue of The Strolling Astronomer and following ones. Dr. Lincoln LaPaz, Director of the Institute of Meteoritics, spoke on "The Possible Preservation in Concretions of Traces of Ancient Meteorites." The lack of meteorites in geological strata has long been puzzling. Were those that fell in the geologic past totally destroyed by terrestrial agencies? Dr. LaPaz suggested that meteorites may be found in sedimentary concretions, the meteorite perhaps supplying a nucleus for the concretion. There was read a paper called "Preliminary Report on the Distribution of Gallium, Palladium, Gold, and Nickel in 45 Iron Meteorites" by Dr. Harrison Brown and Dr. Edward Goldberg of

the Institute for Nuclear Studies, University of Chicago and the Argonne National Laboratory, Chicago, respectively. It was suggested that rare elements might aid in determining whether two meteorites belong to the same fall or not. Dr. LaPaz and Dr. Carl Beck, of the Geology Department of the University of New Mexico, presented their studies of the structure and composition of samples of the record breaking Norton County, Kansas-Furnas County, Nebraska achondrite, the strewn field of which fall was located by means of calculations carried out at the Institute of Meteoritics and field survey parties sent out from the University of New Mexico. An earlier conjecture by Dr. LaPaz (Science, Vol. 107, No. 2786, pg. 543, May 21, 1948) that this fall is distinctive enough to be regarded as the type stone of a new class of achondrites appears fully verified by these analyses. Dr. F. C. Leonard in "The Polar Coordinate Number of a Meteoritic Fall" proposed that falls be identified by their geographic positions. If the north-south distance be measured from the south pole and if the other coordinate be measured always in one direction up to 360°, then neither coordinate requires a plus or minus sign. Conventional latitudes and longitudes do. Dr. W. D. Crozier and Mr. Ben K. Seely, New Mexico School of Mines, discussed "Collection and Identification of Airborne Particles." The equipment employed was described. Their methods may well open a field that will be of great importance to meteoriticists in the future.

An air-mail letter from F. E. Brinckman on September 27 may contain a startling bit of last-minute news. On September 25 (U.T.) Messrs. T. R. Cave, B. Mitchell, R. Bohannon, W. DePalma, and several others were observing with an 8-inch reflector and 120X at Bohannon's house in Los Angeles. In poor seeing and mediocre transparency Mr. Cave was amazed to see a star of visual magnitude 7-9 in the northwest quadrant of the nucleus of the Andromeda Nebula and within 7-9 minutes of the center. The others all confirmed this star. They then telephoned Dr. Baade at Mount Wilson; about an hour before he had noticed nothing in a visual examination of the Andromeda Nebula with the 100-inch! Did Cave and his friends catch a supernova on the rise? Dr. Baade said on the telephone that he would immediately return to the 100-inch and photograph the Andromeda Nebula, but Mr. Brinckman did not know what Dr. Baade then found. Mr. Brinckman himself observed the Nebula near 7h on September 27 (U.T.) Conditions were poor but were quite good enough to show a star of magnitude 9 with great ease; nevertheless, he saw nothing. Fading already? We urge readers to take a look.

As we "go to press," we have been saddened to learn of the sudden death on September 19 of Professor G. Bruce Blair of the University of Nevada. Amateur astronomers have lost a devoted and unselfish co-worker, and those who knew him have lost a good friend.