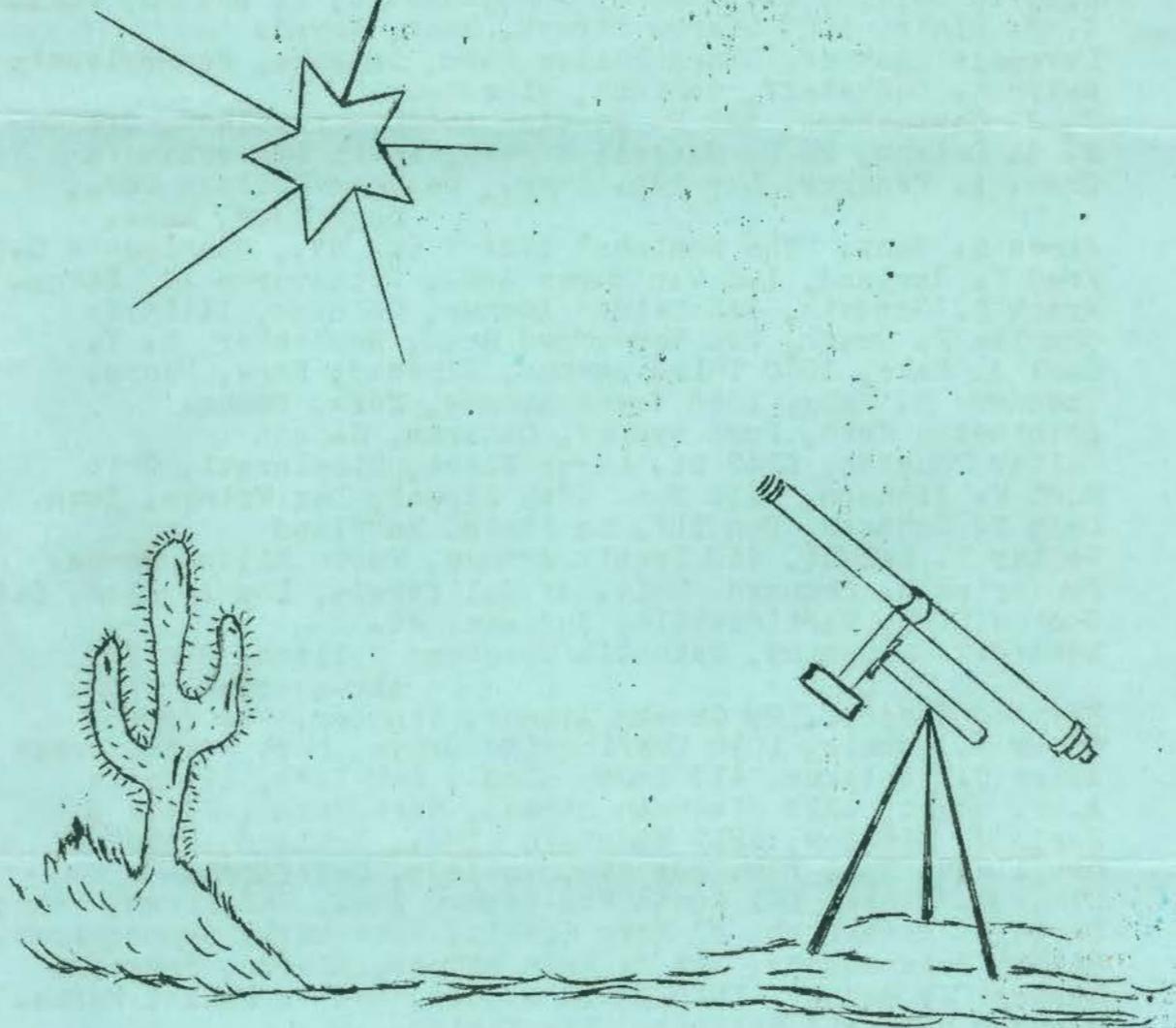


Volume I, Number 3

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THE STROLLING ASTRONOMER

(Association of Lunar and Planetary Observers)



MAILING ADDRESS

THE STROLLING ASTRONOMER
Institute of Meteoritics
University of New Mexico
Albuquerque, N.M.

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Lyle T. Johnson, Box 187, La Plata, Maryland

Walter W. Leight, 440 Tennis Avenue, North Hills, Penna.

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Albuquerque, N. M.

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A. W. Mount, 4326 Birchman Street, Fort Worth, Texas

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Elmer J. Reese, 241 South Mt. Vernon Ave., Uniontown, Penna.

David W. Rosebrugh, 87 Fern Circle, Waterbury, Connecticut.

Milton Rosenkottér, 103 W. Main Street, Pierce, Nebraska

Norbert J. Schell, 1019 Third Avenue, Beaver Falls, Penna.

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A NEW IDEA

Mr. David W. Rosebrugh is well known to most of our readers as the former Secretary of the A.A.V.S.O.

Some months ago Mr. Rosebrugh approached me about the problem of a possible Planetary Section of the A.A.V.S.O. Having been concerned since 1936 with the question of how best to promote useful lunar and planetary observations among amateurs, I was greatly interested in his idea; and we have had much pleasant correspondence on this subject. Mr. Rosebrugh, better known as "Dave" to his astronomical friends, has spent considerable time and effort on this project in contacting prominent astronomers and in soliciting opinions. He much deserves the thanks of all of us. You, the members of The Association of Lunar and Planetary Observers, are the final court. What will best serve the future of lunar and planetary science?

WALTER H. HAAS, Editor

FELLOW READERS OF "THE STROLLING ASTRONOMER":

The time has come, I think, to organize lunar and planetary observing on this continent on a formal basis, as it is organized in England under the British Astronomical Association. Do you agree?

If you do agree, here are three possible plans of action. We may ask the American Association of Variable Star Observers (AAVSO) to set up a Planetary Section under Mr. Walter H. Haas as Chairman, as the AAVSO did for Solar Work under Mr. Neal J. Heines. We may ask for affiliation with the newly-organized Amateur Astronomers League (AAL). Or we may maintain our own independent organization.

The writer at the suggestion of Mr. Haas and the leaders of the AAVSO and the AAL has already taken steps towards sounding out these organizations as to what steps they think are **best** for promoting the interests of lunar and planetary observers - But what do YOU think? YOU are the ones who have the real say.

Here are just a few matters to be considered:

Where should we publish our observational results? Presumably THE STROLLING ASTRONOMER can help fill current needs, and long papers can appear in such larger magazines as POPULAR ASTRONOMY and JOURNAL OF THE ROYAL ASTRONOMICAL SOCIETY OF CANADA (as they have in the past). Or should we have a monthly half-page in such a magazine as SKY AND TELESCOPE?

What should be done with the observations made? It appears best to submit these to W. H. Haas at the University of New Mexico, who has been a sort of "de facto" director

of such work for some years. Ought we to have sets of instructions for observing, blanks for reporting data, etc.?

Will affiliation with such a group as the AAVSO or the AAL give us an advantageous prestige? Can our group, in turn, add something worthwhile to these organizations? I think there would be mutual benefits.

There is, of course, a financial problem involved in any sort of formal organization. Money will be needed for postage, for cuts in magazine articles, for clerical work in the reduction of observations, etc. If we become a really going concern, an eventual annual sum of \$200 may be desirable. Perhaps affiliation with a larger organization would help solve this problem.

Please write me about these matters and express your opinions freely so that Mr. Haas, the AAVSO and the AAL may have your guidance in promoting the interests of amateur lunar and planetary observers. I shall, in turn, keep you informed in THE STROLLING ASTRONOMER of subsequent developments.

DAVID W. ROSEBRUGH,
87 Fern Circle,
Waterbury 69,
Connecticut, U.S.A.

SOLAR SYSTEM BULLETIN

The remarkable South Tropical Streak on Jupiter noted in our March and April issues still exists. Here are some recent longitudes in System II of points in it, according to observations by the editor:

Date (U.T.)	S Prec. Corner	N Prec. Corner	N Fol. Corner	S Fol. Corner
March 22	315°	321°	335°	337°
March 29	305	316	330	332
April 11	312	316	326	332
April 18	307	313	322	327
April 27	304	312	320	320

It will be noted that the feature is growing markedly shorter because of the differing motion of its two ends. This behavior is very reminiscent of the similar Streak of

THE ADAPTATION of the TELESCOPE (Reflecting) to LUNAR & PLANETARY Work

By

FRANK R. VAUGHN

The title of this paper is misleading in a sense, since an instrument adapted for lunar and planetary work is actually best for nearly all observation.

Very few telescopes are built specifically for delicate observations, except for the general idea of the maker that the telescope shall be a "good one". There is, however, a vast difference between the design of the reflector as usually made, and the ideal type, which probably should be of the order of $f:20$ or more, figured off-axis (no obstruction), and mounted in an oversized tube having good insulation qualities. As no telescopes having all the above characteristics are known to me, a slightly more practical position is in order, in which certain assumptions concerning telescopes likely to be owned by readers will be made.

No one instrument is likely to possess all the faults listed below, but I think most will have some of them:

1. Defective primary mirror.
 - a. poorly corrected or astigmatic.
 - b. of too high a relative aperture
(low f. number).
 - c. poor support of primary mirror.
2. Defective diagonal.
 - a. low degree of planeness.
 - b. "plate glass" diagonal (poor quality of polish).
 - c. excessive size.
 - d. unnecessarily heavy supports.
3. Eyepieces of poor quality.
4. Metal tube, or tube only slightly larger than primary mirror.

It will be noted that mention of the mounting itself has been neglected, and I think that this is only of minor importance since much good work has been done with mountings having not even slow motions. A good, clock-driven equatorial with slow motions is, of course, much to be desired; but it is of much less importance practically than the things listed above.

Delicate work is impossible with a poor, or geometrically unsuitable, mirror or with a good one poorly supported (hence with induced errors).

Spherical aberration may be thought of as rotated astigmatism; that is, if one places an off-axis diaphragm over a spherical mirror, an astigmatic image will result, owing to the non-symmetrical nature of the surface to impinging axial rays in this sector. A paraboloid is, of course, in this sense symmetrical to such rays, while astigmatic to rays emanating from its mean center of curvature (the sphere is perfectly symmetrical to such rays). Thus, if the aforementioned off-axis diaphragm is placed in many positions at once (spherical mirror--parallel axial rays) about the axis, or effectively a mirror at full aperture, we see that although parallel reflected rays from any small area about the axis are astigmatic at focus, the total of these areas is symmetrically distributed, hence a round but blurred image.

From the above it will be seen that unsymmetrical diaphragming of a poorly corrected primary mirror is unsound optics, since nearly all the evil effects are retained. Symmetrical diaphragming may apparently improve matters slightly, but here one runs rapidly into difficulties from an obstruction (diagonal) of large size relative to the mirror and also from decreased light-grasp. Need one mention the serious loss of resolving power over what would be potentially possible with the original aperture?

In view of the above it is obvious that the only effective means of dealing with an imperfect mirror is refiguring or, if the owner feels unable to do this himself, having the glass refigured by a reputable person (even so, it is desirable to give the refigurer a clear understanding of what is wanted, and of what will be demanded, possibly on some sort of "money-back" arrangement).

If the primary mirror is of high relative aperture (say f:4 to f:8) the Barlow, or negative, lens is useful, as I have verified. Good ones are sold by several optical houses at reasonable prices.

It occasionally happens, usually with mirrors of above 10 inches aperture, that poor performance may be traced to inadequate or incorrect support of the glass. This subject is adequately dealt with in A.T.M., to which the reader is referred.

(To be continued in the June Issue)

AN OBSERVATIONAL PROGRAM FOR AMATEURS

Jupiter presents more detail than any other planet for ordinary-sized telescopes. There is perhaps no more easy, and no more worthwhile planetary observational program for the average amateur than the recording of the central meridian (CM) transits of marks on this planet. As Jupiter rotates, the spots on his visible surface move across the disc from right to left, as seen in the simply inverting telescope. One time, to the nearest minute only, when a particular spot is on the central meridian; in other words, midway between the right and the left edge of the disc. The image is readily oriented by means of the belts, which lie along parallels of Jovian latitude.

It is necessary, of course, to adopt some nomenclature for the belts and zones. The diagram on page 8 shows the terminology used by the British Astronomical Association and by the present Jovian observers of The Association of Lunar and Planetary Observers. The pattern of belts and zones is subject to change, and it is impossible to predict its future aspect. A brief description of each mark observed is recorded. A careful study of the imaginary example on page 8 should be helpful to the beginner. Any feature at all may be observed. If the object is long, one may wish to time transits of its two longitudinal ends, known as the preceding and following ends. The preceding end will transit first; it is the left end in a simply inverted view.

Our readers may wish to know how the data are reduced and used. The observed time of transit supplies the longitude of the mark, referred to an arbitrarily selected zero meridian of longitude (like Greenwich on earth) and an arbitrary period of rotation. On Jupiter it is convenient to have two systems of longitude, System I for objects between the south edge of the North Equatorial Belt and the north edge of the South Equatorial Belt, inclusive, and System II for objects in other positions. System I has a period of 9 hrs., 50 mins., 30 secs. or an hourly longitudinal motion of 36958. System II has a period of 9 hrs., 55 mins., 41 secs. or an hourly motion of 36926. The longitude of the central meridian in each system at 0 hours, Universal Time (or Greenwich Civil Time), is given on pages 416 and 417 of the 1947 American Ephemeris and Nautical Almanac. This value, increased by the computable motion since 0 hrs., U.T., supplies the longitude of the spot.

If a spot is observed for some weeks or months, its observed longitudes may be plotted against the corresponding times. One thus gets a graph showing its motion. This graph will be a straight line if the period is constant (even if not identical with that of the System used), a more complicated curve if the period varies. It is in practice not usually possible to recognize a Jovian feature from appearance only at successive presentations, and it becomes important to have a great many observations to enable reliable graphs to be obtained. One hence wants many observers to assure adequate study of all portions of the planet.

Central meridian transits of this sort have supplied practically all of our present knowledge of the motion of the clouds at the visible surface of Jupiter (and of Saturn). The well-known equatorial acceleration has been noted above. Actually, about a dozen different latitudinal currents have been identified. Different features along the same belt-edge often show different motions. A circulating motion of spots has been found in the South Tropical Zone between the Red Spot and the South Tropical Disturbance of the first 40 years of this century. The fastest current yet observed, period 9 hrs., 48 mins., is not near the equator but at the south edge of the North Temperate Belt. On the north edge of this belt is the slowest current known, period 9 hrs., 56 mins.

Jupiter is now coming into the early evening sky and will continue observable there for some months.

(See next page for Diagram)

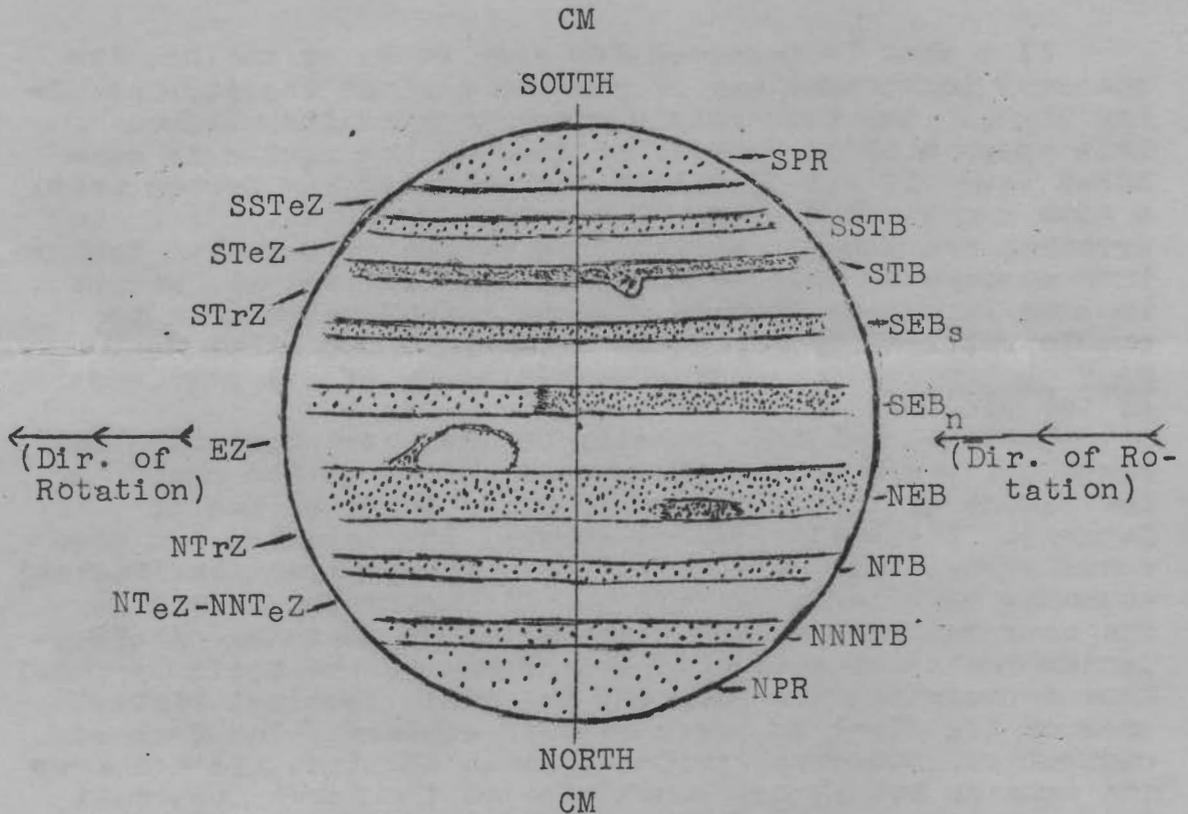
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PLANETARY QUIZ

(See Page 9 for Answers)

1. Of what planets is the visible surface a solid surface?
2. When Jupiter occults a star, does the star always disappear at the visible edge of the planet?
3. From what planets would the earth sometimes be seen in opposition to the sun?
4. Should the atmosphere of Mars thin out more rapidly with increasing altitude than that of the earth or not?
5. What is the largest moon of Saturn?

IMAGINARY SET OF CM TRANSITS



Fictitious View of Jupiter at 9:30 P.M., E.S.T., on April 31, 1947.

Abbreviations used above:

- | | |
|--------------|-----------------------|
| N for North | E for Equatorial |
| S for South | Tr for Tropical |
| B for Belt | T or Te for Temperate |
| Z for Zone | P for Polar |
| R for Region | |

Fictitious Record of Transits. April 31, 1947.
8-inch refl. at 250X. Seeing fair to good. Sky clear.

<u>No.</u>	<u>Mark</u>	<u>E.S.T. Central</u>
1	Base Dark Projection S Edge NEB	8:46 P.M.
2	Preceding End Bright Area S Edge NEB	8:52
3	Following End Same	9:16
4	Preceding End Darker Section SEB _n	9:25
5	Hump N Edge STB	9:36
6	Center Dark Condensation N Edge NEB	9:57

ACKNOWLEDGMENTS

G. Bruce Blair, 1059 Sierra Street, Reno, Nevada, has kindly mentioned THE STROLLING ASTRONOMER in his ASTRONOMICAL INFORMATION SHEETS. The purpose of these excellent papers is to disseminate information on current astronomical events like novae, comets, etc. among observing amateurs. Subscribers receive 15 mailings, comprising about 50 mimeographed pages, for one dollar.

Professor Blair further suggests a convention of Western Amateurs this summer, along the lines of Stellaphane, probably either in Oakland or Los Angeles. We urge our Western readers to write to him their reaction to the idea.

T. R. Hake, F. Garland, H. J. Carruthers, E. K. White, and others have sought to enlarge our subscription list. Our sincere thanks for their efforts; in return we will keep trying to improve THE STROLLING ASTRONOMER.

The enthusiastic Frank Vaughn has sent us more photographic copies of lunar and planetary views. We have a number of extra ones for interested members. Mr. Vaughn has also communicated several references to Saturnian rotation-determinations. Of special interest is a drawing of Saturn by W. Herschel (copied by Vaughn) from PHILOSOPHICAL TRANSACTIONS for 1794. Cassini's Division is shown all the way around, and Ring B is drawn shaded near its inner edge. The editor would opine that Sir William saw Saturn about as well as most modern 6- to 10-inch telescopes can reveal it.

Larry Braymer saw a telescopic meteor near Jupiter with 15X binoculars on April 8. Lunar and planetary work is perhaps the worst branch of observational astronomy for seeing telescopic meteors (small and brightly lit fields of view), but we will be glad to forward any such reports to persons specializing on meteors.

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PLANETARY QUIZ ANSWERS

(Questions on Page Number 7)

1. Mercury and Mars only.
2. Not always. The phase is not usually exactly full; hence the visible edge need not be the true edge.
3. Mercury and Venus, with orbits inside that of the earth.
4. Much less rapidly, because of the smaller surface gravitation.
5. Titan.

