

AMATEUR ASTRONOMY

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Ten Cents

FORWARD

L. E. ARMFIELD, Organizing Chairman
American Amateur Astronomical Association

In the northern latitudes the summer season is rapidly drawing to a close. Bathing, boating, touring and week-end vacations soon will be stored away until another season. Thoughts will be turning to leisure time activities during the winter months ahead.

As an organization, the AAAA has been using the lull of the summer months for building the foundation of the financial structure of the magazine, *Amateur Astronomy*. Perhaps the members of our far flung organization are not aware of it, but *Amateur Astronomy* has not been self-sustaining, and in many instances it was only through the gracious tolerance of our printers, the Schneider Printing Company, that the magazine made its regular monthly appearance.

Through personal conversation, by letter and telephone, we have received assurance from AAAA members throughout the land that the magazine and the association must carry on, for to carry on is only a partial payment of our debt to astronomy for the cultural benefits received through the study of science. In addition to these welcome expressions of confidence, ten members have agreed to contribute five dollars per month for a twelve month period. The 50 dollars collected monthly in this fashion guarantees the publication of 10 issues of *Amateur Astronomy* during the coming year and provides the 60 dollars required to cover the printing, postage and envelope costs of each issue. In the meantime, all revenues derived from subscriptions, advertising and reservation of space by the affiliated societies in the twelve month period, August 1, 1937 to July 31, 1938, will be deposited in a credit union. At the end of the year, the money accumulated will be withdrawn and divided among the 10 contributors. They have agreed graciously, however, to take whatever loss may be incurred, which probably will be between 12 and 24 dollars.

Donations received from seven other members discharged debts which were accumulated during the period January 1, 1937 to August 1, 1937, thereby wiping the slate clean and permitting the asso-

ciation to establish the pay-as-you-go plan as outlined in the paragraphs above.

The AAAA is indebted deeply to these 17 members and our printers, for without their general support the publication of the magazine, *Amateur Astronomy*, would have been reduced by necessity to six issues a year or perhaps discontinued entirely. In recognition of the faith which these members have expressed in the work of the association it would be little enough for each member to obtain one new subscriber to *Amateur Astronomy*, within the next few months. We trust sincerely that our members will take advantage of this opportunity for contributing his or her bit toward the establishment of the magazine on a firm financial basis.

We wish also to take this opportunity for expressing our appreciation to the many faithful members of the AAAA who have devoted their talents and untold hours of effort to the development of the association. Mere words of commendation are entirely inadequate for voicing the gratitude of the AAAA to section leaders such as Cooke, Haas, Martz, Matthias, Rosebrugh, Scanlon, Smith, Wilson and Wiegel for their excellent work in guiding the research activities open to amateur astronomers. It is impossible also, to compensate in praise or remuneration, the never ending labors of the publications committee, namely, Fisher, Grunwald, Halbach, Nickels and Wight. The regional organizers, Andrews, Binney, Callum, Doolittle, Scanlon, Simpson and Wilson have carried a tremendous load since the inception of the movement for which the association is unendingly grateful. The observers, investigators, optical workers, instrument builders and lecturers who, through their efforts furnished the material for discussion and dissemination in the columns of *Amateur Astronomy*, have contributed immeasurably to the rapid success of the AAAA.

In a brief moment of calm reflection it is strikingly evident that the AAAA is a vital living being, deriving its nourishment from the very lives of its members. With its roots in such fertile soil,

(continued on page 121)

A Peruvian Amateur Astronomer

The Harvard University news office recently released the following tribute to a Peruvian amateur astronomer, whose efforts are inspirational to amateur astronomers the world over.

"A Peruvian amateur astronomer recording last month's total solar eclipse with his own hand-operated telescope camera, obtained notable photographs of the sun's corona. The negatives, just received at Harvard Observatory, are among the finest ever seen by the Harvard observers, and will be of considerable scientific importance for future analysis of some of the mysteries of the bright solar halo," according to Dr. Donald H. Menzel, Harvard specialist in eclipse phenomena.

The amateur astronomer is Fernando de Romana, of Arequipa, Peru, who acted as an unofficial and volunteer Harvard observer during the spectacular eclipse of June 8. Using special polaroid screens sent him from the Harvard Observatory, he obtained four photographs showing very clearly the effects of polarization in the light of the sun's corona.

Although this was the observer's first eclipse work, so far as is known, the Harvard scientists have found his photographs so accurately standardized as to enable delicate quantitative studies of the coronal polarization.

Dr. Menzel emphasized that it was unusual to obtain such excellent photographs when the telescope is operated by hand. Romano's telescope had a 6-inch aperture, and an 8½-foot focal length.

Romano also obtained four striking pictures of the corona as it appears to the human eye, its light unaffected by the polaroid. His measures of the brightness of the corona made with a Weston illumination meter are consistent with measures reported by professionals working elsewhere on this eclipse. His observations were taken at Huangra, Peru.

A sidelight of the affair, it was revealed, is that Harvard Observatory had made up its mind to take no observations of the June eclipse. But months ago Romano asked Harvard for advice in making photographs of the totality, and his request led the astronomers to entrust their valuable equipment to him.

The Romano negatives were especially welcome, it was pointed out, since additional photographs were needed to supplement the measures of coronal polarization made last year by the Harvard-M. I. T. eclipse expedition to Russia under the direction of Dr. Menzel. The Peruvian pictures thus fill out the 1936 observations, which the Harvard astronomers are now analyzing.

Variable Star Section

D. W. ROSEBRUGH, Director

A POPULAR VARIABLE STAR

Among the letters which have been received commenting on this column there have been inquiries as to its purposes and aims. The sole purpose is to encourage the active observation of variable stars by amateurs. It appears that this aim can be achieved best in three ways; first, by stimulating new observers to take up the work, second, by making the paths of all observers as easy as possible by passing on suggestions as to time-saving methods discovered by others, and third, by securing and publishing interesting facts with regard to variable stars which will make the work of those who are now observing these stars more fascinating.

This column is not intended to supplant any work being done by the AAVSO or any other society or publication. The ultimate hope is that through the efforts of this column more and better

observations of variable stars will be obtained by amateurs and submitted to the AAVSO and others who can use them best. In time these observations may help to solve the secrets of the universe.

The lists showing the number of observations made which have been included in this column in the past have been merely intended to interest other amateurs in observing for themselves the sights reported. However, as this material appears elsewhere in more complete form, it seems better for the present to cease listing the number of stars seen and the observations made. It is believed, however, that the comments upon the unusual actions of various stars are of sufficient interest to warrant continuing this feature. If our readers feel that this is the case the writer would appreciate receiving many more com-

ments of this type. All that is necessary is a post card giving the data. To those who have contributed observations in the past we extend our thanks and ask them to continue reporting on this new basis.

It is hoped that a brief description of the popular star 154428 R Coronae Borealis will further the aim of this column as described above for this star is an easy one for the beginner and its vagaries are also of great interest to experienced amateurs.

R Coronae is located east of the middle of the well-known Northern Crown. It is visible during the evening hours from about March to December and as it is usually of about the sixth magnitude, any one can locate and observe it with the minimum of optical aid. It is commended to all beginners as an easy star on which to start and to all experienced observers as a star which will lure them out to observe it each clear night, after which they will most likely remain to observe other more difficult stars as well.

R Coronae spends most of its life placidly fluctuating about the sixth magnitude, but between Nov. 15, 1934 and Dec. 15 it dropped to the tenth magnitude. It then rebounded to the ninth which it reached about Jan. 1, 1935. Then it dropped precipitously to the twelfth magnitude by Jan. 20. After a brief pause at the twelfth magnitude the star brightened about Feb. 1 and reached the ninth magnitude by March 1. About April 1 it dropped again to the tenth magnitude but immediately thereafter it staged a slow but regular recovery to the sixth magnitude which it reached by the end of 1935 where it has remained ever since.

In 1924 R. Coronae also suffered a sinking spell to the eighth magnitude, in 1923 to the twelfth, in 1921 it dipped twice to the eighth but it is necessary to go back to 1917 before we find such a long and deep declivity as that of 1934-35. Prior thereto it suffered dips at irregular intervals back to times when apparently first attracted notice. The dips have not occurred at regular intervals nor have the depths and characteristics of the minima been alike. No one can foretell whether or when R Coronae will again toboggan.

In Harvard College Observatory Bulletin No. 896 Dr. T. E. Sterne draws the conclusion that R. Coronae is an "ideally irregular star". That is, its dips show no signs of occurring at regular intervals and in fact his analysis shows that

they occur entirely at random as they would if determined by the laws of chance. The following tabulation based upon data supplied to Dr. Sterne by Prof. Leon Campbell shows the irregularity with which the dips occur.

Length of time between dips to below the 7.5 mag.	No. of Occurrences
0-300 days	28
300-600 days	11
600-900 days	9
900-1200 days	4½ (including present period to date)
1200-1500 days	3½
1500-1800 days	2
Longer than 1800	1
	59

It will be noted that there are fewer long periods than short ones and that the decrease in number follows an exponential curve as would be the case if the length of the period is determined entirely by chance. Dr. Sterne draws the conclusion that since the lengths of time between dips are apparently governed entirely by the laws of chance the causes of the dips themselves must differ from each other. In other words the dip of 1934 may have been caused by one circumstance and that of 1924 by quite another.

Some years ago the suggestion was made that the light of R Coronae might be intermittently dimmed by the star's passing behind clouds of dust in space. If these clouds were distributed at random in the space in front of the star it is possible that they might give irregular dips of the type actually found, though it seems probable that if such dust clouds exist they would be rendered faintly luminous by the light of R. Coronae itself and should therefore be visible as nebulosity. Another fact militates against this theory and that is that the other variable stars of this same type such as 191033 RY Sagittarii have the same general type of spectrum, N type stars like R Coronae has. These in their atmospheres, in deal of carbon tinted the atmosphere of R. Coronae as 69% carbon. This stamps it at once as a very peculiar star, quite outside the main sequence of M type stars which have atmospheres of titanium oxide, calcium and hydrogen.

It is interesting to contrast these thoughts with a tentative theory of the

variation of R. Coronae stars as set forth by Noah W. McLeod in the April 1937 Popular Astronomy. This article states that there is no evidence that the light changes in R Coronae are accompanied by temperature changes. In other words there is no indication that the star gets cooler and redder as the light fades. After discussing the two possibilities that the light of R Coronae fades because it expands and cools off, and that some change occurs in the internal construction of the star so that its surface emits less light per square mile—and finding them both unacceptable because of the foregoing fact—the following tentative theory is advanced:

At maximum light the energy radiated by the star is probably provided in whole or in part by Boron isotope of atomic weight 12 which disintegrates and gives off beta rays and leaves carbon. After a while the star has used up all its available Boron isotope B12 so that it can no longer radiate as much light as before and the center of the star shrinks away from the outer portions leaving a white dwarf center surrounded by a shell of gas. Under the higher pressures and densities prevailing in the dwarf stage the carbon in the star may be built up into Nitrogen N16; this in turn gives off an alpha particle leaving B12. The B12 is now available again to restore the star to its original brightness, but this may take some time, for in the dwarf stage of temperatures and pressures the B12 may have to go through intermediate stages before it can break down, though as the center of the star expands and returns to normal conditions the breaking down process becomes shorter and B12 can probably break down directly into beta rays and carbon. The star then stays at normal brilliance until it uses up its newly developed supply of B12 when it fades again.

At this point one may well wonder whether this process would not result in cycles of approximately equal length, even though Dr. Sterne points out that the cycles are of random length.

In true serial ~~stage~~ ^{cycle} we left our heroine ~~temporary~~ ^{temporary} eclipse. Our readers will be glad to know that Zeta regained her pristine glory on J.D. 8673 after a lapse of 30 days.

Walter Scott Houston sent a fine series of observations on the recent maximum of SS Cygni. He noted, as the writer has occasionally, that SS dropped suddenly from 11.9 on J.D. 656 to 12.4

on 660 just before it rose rapidly to 8.1 on 670. S. J. Fairbanks, 1917 Kimball Ave., Waterloo, Ia., says that he has just resilvered and remounted his telescope. On 672 he found the type star 081473 Z Cam at maximum of 12.9 while on 681 it had risen to a maximum of 10.4. S Vir 132706 was 12.5 on 681 which is unusually faint. He has also been observing T and UY Dra, 175458a and b. These stars are so close together that 150x is required to separate them, and it is difficult to estimate their brightness for this reason. Robert Peters, RR4 Victoria, B. C., who is responsible for the monthly phenomena contained in the observer's handbook of the Royal Astronomical Society of Canada, has kindly sent in a list of the predicted minima of Algol. For those amateurs who have not yet seen this interesting phenomenon the minima which can be most readily observed for the rest of 1937 are listed hereunder. Time is E.S.T.

Date	Time	Date	Time
July 21	1:20 a.m.	Oct. 17	10:30 p.m.
July 23	10:10 p.m.	Oct. 20	7:20 p.m.
Aug. 12	11:50 p.m.	Nov. 7	0:30 a.m.
Sept. 2	1:30 a.m.	Nov. 9	9:00 a.m.
Sept. 4	10:20 p.m.	Nov. 29	10:50 p.m.
" 24-25	Midnight	Dec. 2	7:40 p.m.
Sept. 27	8:50 p.m.	Dec. 22	9:20 p.m.
Oct. 15	1:40 a.m.	Xmas	6:10 p.m.

STARS FOR BEGINNERS

Try your hand on the following stars which probably will be above the eighth magnitude and should be visible with field glasses or binoculars sometime during the late summer and fall. These stars are arranged approximately in the order of increasing difficulty. Read columns downwards:

184205	193449	180531	213753
154428	190108	154615	163266
021403	183308	200938	
210868	104048	094217	

6 ~~times~~ Blvd.,
Poughkeepsie, N. Y.

ERRATUM

Please note that the name of the author of the article describing the Cook observatory in the June-July issue was misspelled. It should be James Stokley.

although shown as a broad double canal by Lowell, photographed only as a broad single arc; and so it appears visually to me. It is possible that the Nilo-Syrtis, Hiddekel and Gehon canali are also recorded on the photographs, although for these a closer examination is necessary.

The Fastigium Aryn or Forked Bay is clearly split into two short parts on several of the 12-inch refractor negatives and major markings such as the Syrtis, Acidalium, Cassius, Mare Sirenum, Margaritifer Sinus, etc., are well defined and clear. The scale of the original, unenlarged photographs ranges from a diameter of 3mm. with the 6-inch and 5mm. with the 12-inch refractor to 1cm. with the 60-inch reflector at the Cassegrainian focus with enlarging ocular lens. Because of the magnified effect caused by poor springtime seeing on the large aperture of the 60-inch, the photographs have not yet been as well defined as those taken with the smaller apertures, although it is hoped that July will bring good seeing conditions for the large telescope. In the meantime, the two refractors are doing all and much more than was expected from them.

The Griffith Observatory
Griffith Park
Los Angeles, Calif.

Forward

(continued from page 115)

the tree of the AAAA cannot help but flourish and serve astronomy through its many branches.

In realization that the AAAA is a structure composed only of its members and friends we trust sincerely that each person will take advantage of the leisure time offered by the fall and winter months for contributing to the association in any form possible. Subscriptions, funds, observations, ideas, descriptions of observatories, instruments, auxiliary equipment, articles of general interest, news notes accounting the activities of affiliated societies and countless other things, if contributed, will result in the growth of the organization, expansion of the magazine in size, quality and inclusion of photographs, sketches, etc., and increase the organization's service to astronomy.

Let us go forward and fill the niche in the field of amateur astronomy in this country which has been vacant prior to the advent of the American Amateur Astronomical Association.

1410 N. Marshall Street,
Milwaukee, Wisconsin.

Solar Notes

MAUDE S. WIEGEL

An abundance of large spots and spot groups continue on the sun. During the last few months faculae have been seen plainly, especially near sundown, when the earth's atmosphere shuts out some of the sun's bright rays.

Any one not watching the sun as the present cycle waxes is really missing a world of interest or rather a "sun" of interest. Great clouds of dark smoke-like streamers often hover near a group of spots when spots are active.

On May 10 three spots forming a close group appeared and were followed closely by a large area of faculae standing out plainly near the limb. An hour before sunset is best for observation of faculae; they stand high above the sun's surface allowing the gaseous atmosphere below to shut out some of the sun's light. The next day, May 11, at 6 P.M. the faculae had disappeared and great streamers of dark cloud-like material floated over the three spots and a newcomer which had appeared some time earlier.

The first half of May marked a slight lessening of spots. Rain prevailed over western Pennsylvania, but on April 23, the sun shone out through a clearing sky and showed much activity. Three complex groups, a pair of spots and three elongated spots forming a group were visible, some of these spots ranking among the largest of the present cycle. Five days of clouds and rain followed and on April 29 several spot groups were visible, one of which was very interesting. It was a three cornered spot lying near the sun's equator and close to the margin next to the equator a brilliant white spot appeared over the spot; it was much whiter than the sun's yellow or green as the shade glass shows it. This was a strange sight and was probably a streamer of gas brighter than any other object on the sun's surface. The next day it was gone. Such phenomena are probably the result of the present active cycle.

Science News Letter, May issue, tells of a great magnetic storm on April 25, unseen and unfelt except for telegraph and short wave radio; it was said to be the greatest magnetic storm in years.

The May issue contains several interesting articles on this subject and on its relation to sunspots.

Twin Elms Solar Observatory,
Elizabeth, Pa.

Meteor Heights, Shower of May 5-6, 1937

R. D. COOKE

This is a report of the preliminary reductions of meteor heights by the graphic method from the observations of the Aquarids, May 5-6, announced in *Amateur Astronomy*, May 1937, p. 96. Of three duplicate plots secured No. 2 was not in agreement and appeared to be two different meteors. The other yielded heights as follows:

	Beginning	Ending
1	95 Km.	127 Km.
2	63 Km.	35 Km.

NOTE: No. 1 has the distinction of being the only known case of a meteor beginning lower than it ended. Both figures are equally good based on the plots, and one can toss out whichever one looks the worse.

The base line from Phillips farm to Milton is 67.1 Km., and the respective azimuths are $250^{\circ} 49'$ and $70^{\circ} 49'$.

1182 Kavanaugh Place

Wauwatosa, Wis.

The Monthly Star Finder

Attention must be called to a new publication in the field of amateur astronomical literature. The *Monthly Star Finder*, edited by James S. Andrews, official astronomer of the Observation Roofs, Rockefeller Center, made its debut in June 1937. The magazine contains a monthly star chart, planet notes, announcements of astronomical interest, news notes of amateur societies and popular discussions of astronomical subjects. The publication is issued monthly for the nominal subscription of \$1.00 per year. Mr. Andrews has served astronomy faithfully and diligently for many years and the AAAA extends its sincere best wishes for every success in his worthy venture.

Occultations Section

R. D. COOKE, Director

The following table gives the reduction of occultations observed in 1936 by members of the Milwaukee Astronomical society. The reductions were computed by Sister Mary Felice, S.S.N.D., of Mount Mary College and R. D. Cooke.

Observers *	Stars **	Date 1936	GCT			X		X - ρ		$\sigma' - \rho$
			h	m	s	°	'	°	'	
C	99 Tauri	Mar 28	3	08	53.5	148	2	59	40	+2.8
C	42 Librae	July 1	4	04	45.0	140	3	40	49	+2.4
C	199B Sge	Sept. 25	3	44	19.5	99	52	21	31	-1.7
C	72B Aquarii	Oct. 25	0	48	6.0	115	34	46	37	-6.1
C	136B Pisc	Nov. 25	1	35	16.0	48	3	-20	19	-0.5

* C=Cooke

** Star positions (not shown) are from the American Ephemeris and Nautical Almanac.

We have a letter from Franklin W. Smith of Glenolden, Pa., reporting that he has computed the reductions of 17 occultations of 1935. If any other members of the AAAA are participating in this work we should like to be advised in order that proper credit may be given in this publication.

1182 Kavanaugh Place,
Wauwatosa, Wis.

AAVSO Nova Program Notes

L. E. ARMPFIELD

We welcome initial observations from Arthur T. Hewlett, 52 Raymond Place, Hewlett, N. Y., and John Sharp, Jr., 1834 W. Jackson Boulevard, Chicago, Ill. Your scribe wishes to express his appreciation to all nova programmers for the unusually fine report received for May and June. Edwin E. Friton, Neil McNabb, Jr., and Bert Topham deserve special mention for reviewing their regions down to the 8th and 9th magnitude, a painstaking task to be sure!

A brief review of the columns below will readily reveal that a pleasingly large

number of our members are employing low-powered finders for this splendid response to our pleas for instrumental aid in perusing the regions.

The following observations for the months of May and June are gratefully acknowledged:

Observer	Location	Region	Magnitude of faintest star easily visible							Total Night			
			9	8	7	6	5	4	3				
Ballhassen	(May)	Scarsdale, N. Y.	12	.....	.....	.....	1	2	.....	2	5
			55	.....	.....	.....	2	.....	.....	4	6
	(June)		57	.....	.....	1	6	3	2	3	15
			57	.....	.....	.....	.....	2	1	.....	3
Diedrich	(May)	Milwaukee	43	.....	.....	.....	6	2	1	.....	9
	(June)		43	.....	.....	.....	5	.....	1	.....	6
Friton	(May)	St. Louis	9	.....	7	1	.....	.....	1	.....	9
			10	.....	7	1	.....	.....	1	.....	9
Hanna	(May)	New York	62	.....	.....	.....	5	.....	.....	.....	5
	(June)		64	.....	.....	.....	4	1	.....	.....	5
Halbach	(May)	Milwaukee	71	.....	.....	.....	.....	.....	2	1	3
			99	.....	.....	.....	1	.....	.....	.....	1
			99	1	3	4	
Hewlett	(June)	Hewlett, N. Y.	39	.....	.....	.....	10	1	.....	1	12
			44	.....	.....	.....	10	1	.....	1	12
Inouye	(Mar.)	Tokyo, Japan	35	.....	.....	.....	4	.....	.....	.....	4
			80	.....	.....	.....	.....	1	.....	.....	1
	(Apr.)		85	.....	.....	.....	.....	3	.....	.....	3
			86	.....	.....	.....	.....	1	.....	.....	1
	(May)		85	.....	.....	.....	.....	2	1	.....	3
Keuziah	(May)	Milwaukee	86	.....	.....	.....	.....	.....	1	.....	1
	(June)		15	.....	.....	.....	2	12	.....	.....	14
Kirkpatrick	(May)	New York	15	.....	.....	.....	.....	20	.....	.....	20
	(June)		61	.....	.....	7	1	2	.....	.....	10
Loreta	(May)	Bologna, Italy	17	.....	.....	.....	.....	1	3	.....	4
	(June)		105	.....	.....	.....	2	.....	.....	.....	2
	(May)		105	.....	.....	.....	3	3	.....	.....	6
McNabb, Jr.	(May)	Acton, Canada	8	.....	.....	.....	.....	3	4	.....	7
			58	.....	.....	.....	3	.....	.....	.....	3
			72	10	3	13	
(June)			8	.....	.....	.....	2	1	.....	.....	11
			58	2	3	3	
Moore	(May)		58	.....	.....	.....	3	1	.....	.....	4
	(June)		26	1	2	9	1	1	14	
Northcott	(May)		26	1	4	5	3	4	17	
	(May)		9	2	2	
Rosebrugh	(May)	Poughkeepsie	71	4	3	7	
			1	2	2	2	1	1	8	
			52	1	1
Seely	(June)		1	.....	.....	.....	3	1	.....	.....	4
	(June)		58	3	3	
Sharp, Jr.	(June)	Chicago, Ill.	88	5	3	5	13	
			89	5	3	5	13	
Smith	(May)		38	1	1	
	(May)		3	6	1	7	
Thomas	(June)	Cambridge	3	.....	.....	.....	.....	.....	4	2	6
	(June)		3	6	
Topham	(May)	Toronto, Can.	16	1	1	2	
			75	1	1	2
			16	2	2
(June)			75	.....	1	.....	.....	.....	.....	.....	1

19 Observers 38 regions 3800 square degrees of sky reviewed.

The following observers used low-powered telescopes or binoculars: Ballhassen, Friton, Hanna, Hewlett, II, Inouye, Kirkpatrick, Loreta, McNabb, Jr., Moore, Northcott, Rosebrugh, Sharp, and Topham.

1410 N. Marshall Street,
Milwaukee, Wis.

Calendar of Events

GEORGE DIEDRICH

AUGUST, 1937

(All times C. S. T.)

- Wed. 18 Mercury at greatest elongation east. (27° 25')
- 21-23 Eta Aquarid meteors.
- Sat. 21 Full moon at 6:47 P.M.
- 22-23 Omicron Draconid meteors
- 25-26 Gamma Pegasid meteors.
- Sat. 28 Last quarter at 5:54 P.M.

SEPTEMBER, 1937

- Wed. 1 Conjunction of Venus and moon at 9:06 P.M. Venus 3° 42' N.
- Sat. 4 New moon at 4:54 P.M.
- Sun. 5 Conjunction of Mercury and the moon at 11:02 P.M. Mercury 29' north.
- 6-8 Epsilon Perseid meteors.
- Tue. 7 Chi Perseid meteors.
- Fri. 10 Quadrature of Mars and the sun.
- Sun. 12 First quarter at 2:57 P.M. Conjunction of Mars and the moon at 12:26 P.M. Mars 3° 20' south.
- Tue. 14 Inferior conjunction of Mercury and the sun. Conjunction of Jupiter and the moon at 11:32 P.M. Jupiter 3° 37' south.
- Mon. 20 Full moon at 5:32 A.M.
- Thur. 23 Sun enters Libra. Autumn blows in at 5:13 A.M.
- Fri. 24 Opposition of Saturn and the sun at 11:00 P.M.
- Sun. 26 Last quarter at 11:43 P.M.
- Tue. 28 Alpha Taurid meteors.
- Wed. 29 Mercury at greatest elongation west. (17° 53')

OCTOBER, 1937

- Fri. 1 Conjunction of Venus and the moon at 10:28 P.M. Venus 6° 39' N.
- Mon. 4 New moon at 5:58 A.M.
- Sat. 9 Draconid meteors. (AMS)
- Mon. 11 Delta Piscid meteors.
- Tue. 12 First quarter at 9:47 A.M. Quadrature of Jupiter and the sun.
- Tue. 19 Full moon at 3:48 P.M.
- 15-24 Orionid meteor shower. Maximum on the 19th. (AMS Shower.)

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J. F. Loeffle

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sistant at the University of Pittsburgh Seismograph Station.

A large group attending the last regular meeting of the season on June 11 heard Dr. Frank C. Jordan, Director of Allegheny Observatory, present an interesting and instructive talk on "The Expanding Universe" from the standpoint of man's increasing penetration into the depths of space. By means of larger and finer telescopes as well as by scientific methods for measuring stellar distances, man has gradually been extending his concept of the magnitude of his universe. With the completion of the 200-inch telescope the boundaries of the sky will again be pushed back farther into space.

The June meeting was concluded by a general discussion of plans for the summer. Many expressed a desire to repeat last year's pilgrimage to Oglebay Park in Wheeling, W. Va., where stars are stars!

Valley View Observatory,
Pittsburgh, Pa.

Optical Division

OF THE
AMATEUR ASTRONOMICAL ASSOCIATION
HAYDEN PLANETARIUM, NEW YORK
LEW LOJAS, President

Over the Memorial Day weekend the members of this society visited the Harvard College observatory with the Amateur Astronomers Association. The main party left on the excursion train from Grand Central station, but Messrs. Lojas, Hanna, Grosswendt, and Grant went by car. We arrived in Boston at 5:30 a.m. and like all good astronomers and telescope nuts forgot the astronomic and headed for the nearest restaurant to satisfy the gastronomic. At 9 a.m. we assembled at the Cambridge Observatory to examine the instruments and to hear a lecture on the history of the Harvard College Observatory. After lunch we visited the Oak Ridge station of the Observatory located 26 miles from Cambridge. The main instrument here is a 61-inch reflector built by Fecker for spectroscopic work. Dr. Harlow Shapley personally took every one for a ride on the observers' platform, and as his nimble fingers played upon the control box, the large telescope obediently turned in R.A. or in Dec. Also present were Miss Anna J. Cannon, noted American astronomer and Dr. and Mrs. Donald Menzel. Every one, astronomers and telescope makers alike, spent extra time around the largest Ross photographic

telescope in the world. It is eight inches in diameter and has five components. We are greatly indebted to the Bond Astronomical society and the Boston Telescope Making society for their help in making our trip a success.

Mr. Thylstrup and Mr. Tous who are regular "field trip" attenders declared this trip the most successful one we have ever made. For once the weather behaved.

Society members have become Rich Field crazy, (not forgetting that they were already crazy). At our last meeting in one hour twelve 4¼ inch pyrex blanks were distributed and the crowd is still yelling for more.

1510 White Plains Road,
Bronx, N. Y.

Milwaukee News Notes

M. N. FISHER, Correspondent

At a recent meeting of the board of directors it was voted that the by-laws be changed to provide several new classes of membership. Shortly thereafter, through the efforts of George A. Morrison and Dr. Stanley J. Seeger in obtaining Dr. Otto Struve, director of Yerkes Observatory, as the guest speaker at an open meeting, further public interest in the work of the Milwaukee Astronomical Society was aroused.

The society heartily welcomes the following persons to its membership:

Mr. R. W. Baird, 7029 Milwaukee Avenue
Mrs. F. W. Dickey, 7219 Milwaukee Avenue
Mrs. E. G. Kearney, 1839 N. 74th Street
Mr. Robert A. Uihlein, 235 W. Galena Street
Mrs. C. B. Whitnall, 2942 N. Dousman Street
Mr. D. E. W. Wenstrand, 2227 E. Woodstock St.
The first three are residents of Wauwatosa, the latter of Milwaukee, Wisconsin.

The Minikani Observatory of the YM-CA summer camp on Lake Amy Belle will be directed this summer by George Knott who will succeed Scott Houston, who has been director for the last few years. Knott has been one of the outstanding members of the Junior Auxiliary and is well qualified to take over the task of directing the difficult job of astronomy for the younger boys. His equipment will consist of an observatory with a 13-foot dome, a 6-inch reflector, a 4-inch reflector and, later on, 10-inch and 4-inch instruments as well. Camp Minikani, with an enrollment of 100 boys, is one of the few camps in the country which offers this project, and George Knott will have a splendid opportunity to further knowledge of the science.

836 N. 14th Street,
Milwaukee, Wis.

AMATEUR ASTRONOMY

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OCTOBER, 1937

Ten Cents

Double Star Work at the Flower Observatory

By CHARLES P. OLIVIER

One of the very few places in America where visual double star work is actively carried on is the Flower Observatory. The excellent 18-inch refractor, with lens made by Brashear, is about as large an instrument as the climate of eastern Pennsylvania would permit us to use effectively. With it the late Eric Doolittle made an enviable reputation in double star astronomy. Therefore on the writer's appointment as director, it was most natural to continue it as he himself had worked very largely in the same field both at the McCormick and Lick Observatories. At present about one half of the available time of the 18-inch goes to double stars: S. G. Barton devoting all his observing to them, the writer about 60 per cent of his. Also while R. H. Wilson was here he had largely used his time in making a series of most interesting and accurate measures with an interferometer, which he had made. In fact, his measures with this form the one satisfactory series of any length secured up to date by anyone in America. The more usual type of measures by the rest of the staff are made using a filer micrometer by Warner and Swasey. This now has one fixed and two movable wires, illuminated by a small electric light, used with a green shade glass. The powers usually employed, in order of frequency, are: 212, 423, and 700. Because we have city lights within one to two hundred yards of the dome, because we are also only six miles from the very center of Philadelphia, and are in the middle of a large suburb, the transparency is cut down by smoke, dust etc., illuminated by the various lights outside. Also the steadiness of the air is seldom excellent, and these combined handicaps cause fainter images of stars, as well as blurred ones. Hence the 212 is the only power that can be used for many objects on a distressingly large percent of our nights. Keeping these points in mind, it will be seen that an observing program at Flower Observatory cannot contain so large a proportion of very difficult objects as would a similar one, for instance at the Lick Observatory, for an 18-inch telescope there.

Actually, Barton works so far as possible upon stars selected from the 2200 pairs he has found by examining a large

number of the Carte du Ciel catalogues. As these average faint, and few of them are close, he adds other stars which he considers specially worthy of measurement. The observing list of Olivier is largely made up of the pairs discovered by Aitken, Hussey, Jonckheere and Espin, and when possible those in the southern sky by Innes and others. Many well-known binaries in rapid motion are also included. For poorer nights stars of all varieties, which, however, stand in need of a new measure, are sometimes observed. With all our desire to increase the percentage of pairs under 1" separation, seeing conditions keep this much under one-fifth of all measured. As to practical details, the writer usually makes four independent settings in position angle and four for double distance, which adds up to 12 in all. In angle, he has of late found it more accurate to place his wire *perpendicular* to the line joining the two components, rather than trying to bisect them. Published results depend on from two to at most four or five separate nights' work. Three is the more usual number. Well over a thousand pairs have been fully measured since our last publication, and are now ready when funds are available for printing. Both Barton and Olivier have discovered a certain number of double stars when using the telescope. Special efforts are made to measure these promptly, and, for such stars found many years ago, to secure accurate re-measures for possible motion. However, due to the systematic surveys made since 1900 on all the B. D. stars, it is now difficult to find a new double among them, and only with the fainter stars is there much chance for new discoveries. As the Naval and Yerkes Observatories are the only other places in America where double star work has been prosecuted of late, we feel that we are fulfilling a real need in astronomy by continuing it here.

Few amateurs are able to measure double stars due to the lack of a good micrometer. Yet many have telescopes sufficiently powerful, as fine work can be done with an 8-inch, and better still with a 12-inch. There is a cheaper form of micrometer known as the double image. This might be tried with suc-

cess. But for some who have the proper telescopes and are able to purchase a filar micrometer, double star work is strongly advised both for its interest and its importance. It should be added that a driving clock is essential for its success, but certainly some of the better telescopes have this accessory. As America was, due to Burnham, Aitken and others, the leader in double star astronomy for a certain period, it would be too bad for it to be neglected now, mostly because of present interest in astrophysical lines of research. It is hoped that this brief account will encourage at least a few to take a part in this truly interesting field of observational astronomy.

Flower Astronomical Observatory,
Upper Darby, Pennsylvania

AAVSO

26th Annual Meeting

October 15-16

Harvard College Observatory
Cambridge, Mass.

Members and friends of the AAVSO and the AAAA are cordially invited to attend this meeting for it offers the finest opportunity to meet both amateur and professional astronomers. A fine program, astronomically and socially, awaits you at Harvard.

Tentative plans indicate that a large delegation from midwest will be attending the meeting. There may be someone in your vicinity who is going by auto and looking for a travelling companion. Transportation may be arranged by communicating with L. E. Armfield, 1410 N. Marshall St., Milwaukee, Wis.

May we meet you there?

Leo J. Scanlon

Editorial Note: Amateur Astronomy takes pleasure in presenting this first of a series of biographical sketches of prominent living Amateur Astronomers.



Any one who has taken an active part in the amateur telescope making movement knows well that it has called for a lot of his time and energy. His reward, beyond

some personal development, may seem small, but on consideration he will find that he has become acquainted with some fine congenial men. The friendship of half a dozen good telescope nuts is reward enough for any man. No one is in the A. T. M. activity long without becoming acquainted with Leo J. Scanlon of Pittsburgh, and it is the writer's pleasant duty to present a short biographical sketch of that eminent gentleman and astronomer.

Leo is about 34 years old and built like a good telescope mounting—not too long for his width. He is a plumber by vocation and a telescope nut and amateur astronomer by avocation, or vice versa.

He became interested in telescopes in 1929 and is one of the charter members of the astronomy section of the Academy of Science and Art of Pittsburgh. This section, beginning with four persons, has

grown to well over 150, and the well directed energy of our friend has been a large factor in this development. One of his outstanding characteristics is the common sense method he uses in approaching a problem. By means of letters and questionnaires he gathers all available information and makes his plans on that data and his own knowledge. He has made many fine mirrors, flats, and other optical equipment. Valley View Observatory, which he and his brother Larry built at their home, has a dome and a fine 10-inch telescope. It is visited by hundreds of interested persons every year. His article on observatories in the new A. T. M. A. is filled with practical information and should certainly be read by any one contemplating the construction of a dome. One of Leo's important activities is the collecting and arranging of A. T. M. exhibits; he has had many successes in that field. The exhibit at the 1934 meeting of the American Association for the Advancement of Science in the Mellon Institute attracted the attention of Dr. Albert Einstein and we have a photograph of that great scientist in conversation with our great amateur. Leo is a regional director and member of the council of the AAVSO, a member of the American Meteor Society, a member by invitation of the American Astronomical Society (the professional organization), and one of the leaders in our own association.

By Wm. Callum,

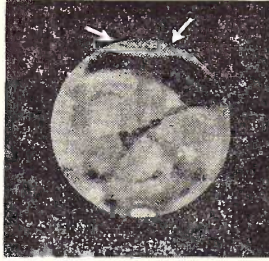
1319 W. 78th Street,
Chicago, Ill.

Planetary Report No. 24

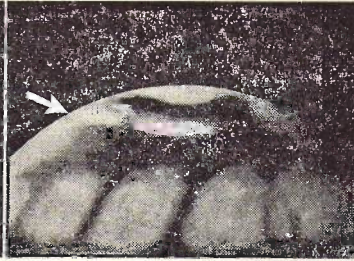
Mars, 1937, III

E. P. MARTZ, JR., Planetary Section Director

1937, May 30,
5^h 30^m G.C.T.
C. M.: 203°.3



1924, Sept. 15
14^h 30^m G.M.T.
C. M.: 205°.2



ASPECT OF REGION THYLE I AND II, ON THE PLANET MARS, IN 1937 AND 1924.
(Cloud or fog in latter.) Drawings by Latimer J. Wilson with 12-inch
aluminized reflector, and 250X from Nashville, Tenn.

THE POLAR CAPS—Planetary Reports, Nos. 22 and 23 indicated that since early May of this year we have not been able to distinguish clearly either the north or south polar snow caps. It was between April 17 and 20 that I last observed a small but brilliant white north snow cap on Mars from the Lowell Observatory with Clyde Tombaugh's 12.5-inch reflector. At no later time during my work at Mount Wilson and Griffith Observatories in Southern California did I observe or clearly photograph by red or yellow lights, obvious snow caps at either pole.

The white polar and limb spots and areas I photographed in green and blue lights, and those that were visible through a blue-violet filter, are believed to be due to Martian clouds and atmospheric scattering and reflection, and not to snow. Therefore, I was led to believe that no snow has existed during the present apparition at either Martian pole since early May. This belief was further strengthened in a letter from the Rev. T. E. R. Phillips, of the British Astronomical Association, which appeared to corroborate these observations. While admitting that observing conditions have usually been very poor in England during the present apparition, Mr. Phillips writes:

"What has rather surprised me has been the complete invisibility of the north polar cap. There usually has been a whitish area in the polar regions, but I believe it to have been cloud or mist. I consider that I have not seen the snow cap at all."

Though the southern cap itself is turned away from the earth during the present opposition by the tilt of the axis of Mars (the Martian season is late winter), some of the polar snows should have been visible to us during the en-

tire opposition unless some quite unusual seasonal change and early melting of the snow caps had occurred.

It is therefore of importance that we determine whether the snow caps actually have been absent since May or, if they were truly present, whether we did not recognize them because of veiling by Martian atmospheric haze or other causes. As previously mentioned, my own set of more than 450 photographic images of Mars, obtained with the 60-inch reflector and 12-inch and 6-inch refractors, do not appear to show either snow cap; nor do the yellow and infra-red photographs of May 22, made with the 36-inch Crossley reflector at the Lick Observatory, and which Prof. William H. Wright has very kindly sent to me. On the red and yellow images of Mars, both north and south poles appear of the same shade and of the same relative intensity as the desert regions of the planet; if the snow caps were present, we should expect them to be much brighter than the rest of the disk.

However, Dr. E. C. Slipher of the Lowell Observatory has pointed out to me that on the panchromatic and orthochromatic plates used for the red and yellow photographs the white polar snows and the yellow of the desert regions of the disk of Mars will both photograph as a white of very comparable intensity, this due to the yellow-red spectral selectivity of the filters used for these long wavelength photographs.

This consideration seems to raise a question as to the actual validity of the interpretations suggested in the previous paragraph. Further doubt on the actual absence of the polar snow caps is indicated by visual observations of the planet made by Latimer J. Wilson, Walter H. Haas and Hugh M. Johnson and sent to us. Wilson and Haas are already

well known to the readers of these reports, but Johnson is a new acquisition to the ranks of our planetary observers. He has been observing from Des Moines, Iowa, with 7-inch and 8-inch reflectors. Drawings by these three observers show white areas with definite borders in the region of both poles, largest and most pronounced being at the south pole. Mr. Johnson describes this latter as being a "dull white" and as varying little in shape during the period covered by his observations. As previously suggested, this white area may have been due to frost; and indeed this explanation seems more likely than that of polar clouds which I have considered, as clouds would hardly remain unchanged for periods of several weeks. Although, as previously indicated, it seems to me rather unusual that I saw no such white polar regions during the opposition, after April, except when a blue-violet (Wratten 47C5) filter was used for viewing Mars.

I am still inclined to interpret the blue-white regions thus viewed, and photographed in blue and green lights (3700-5200 A. U. and 4800-5500 A. U.) as being Martian polar clouds—haze and light scattered by an atmospheric suspension, probably dust particles, or even scattering by an excess of carbon dioxide molecules, but not surface snow or frost. A later communication from Mr. Johnson, and a talk with Mr. Haas, indicate that they are neither certain that the white polar areas they saw were true surface snow caps, because their dullness, as though veiled by haze, was striking throughout the opposition. Photographs and drawings of Mars by Mr. Wilson on May 30, near 5^h 30^m G.C.T., show a definite white south polar cap, which he apparently interprets as being surface snow. His photographs were taken with a 12-inch aluminized reflector on Eastman panatomic film without any filter and therefore record the blue as well as the red light from the planet; thus the bright area in the south polar regions might be interpreted as being the blue-white polar cloud cap noted above, rather than as a surface snow cap. However, Mr. Wilson's visual observations of this region the same night and his reputation as an excellent observer, seem to uphold his own interpretation—that the cap was truly surface snow.

Undoubtedly, then, there are two Martian polar caps: the surface snow cap visible sometimes and occasionally photographed by red and yellow light, and the atmospheric polar cloud and haze halo or cap, visible when viewed through a blue-violet filter and photographed by green and blue lights. Of course, these differentiations have been pointed out

repeatedly by Ross, Wright and Slipper since 1920.

During a conversation, Dr. E. C. Slipper of Lowell Observatory, indicated to me that he feels both polar snow caps to have been present throughout the opposition, although in reduced intensity—apparently due (among other things) to veiling by the Martian atmosphere. Furthermore, he believes that a very minute northern cap, and a more extensive southern one, have been recorded on long wave length photographs of the planet taken during this apparition at Lowell Observatory.

Before leaving the Martian polar regions, there are two individual observations of interest which should be considered. The first is that made by Hugh Johnson on June 26. He observed a light sky-blue color extending on the disk over a large area around the north pole of Mars, near Martian longitude 300°. The following night this blue color had disappeared. The night of June 25-26 was one of the best nights I had from Mount Wilson Observatory during the opposition. My blue light photographs of that date, made with the 60-inch reflector, show a brilliant white area, very prominent around the north pole of Mars in longitudes 270°—360°.

As these photographs were taken on blue-sensitive plates with a 47C5 blue-violet filter, the light which was transmitted was blue-violet only and, in recording, blue regions on the planet appear white on the positives; as indeed do the north polar regions on these images. Conversely, on yellow and red light photographs, the blue light does not register; thus blue regions appear dark as no light coming from them is recorded on the plate.

This is exactly what occurred in the north polar regions on the red and yellow light photographs of the above date taken with 60-inch reflector and the 6-inch refractor coincidentally with the blue photographs. Therefore, Johnson's visual observation of blue in that region on Mars is abundantly confirmed by my photographs. As noted above, these blue-white areas are undoubtedly clouds or atmospheric haze suspensions. So far as I am aware, this observation of Johnson's is the first visual observation of this particular type of polar clouds. It was made without the aid of a dark blue filter, used to increase the contrast of the clouds with the disk and to cut down the bright yellow-red obscuring light from the surface of the planet. His detection of this hue indicates that his eyes are undoubtedly unusually sensitive to the blue end of the spectrum and probably deficient in the red.

The second observation is that of Wilson on May 30 concerning the south polar cap. Prof. William H. Pickering has kindly sent me the following excerpt from a letter Wilson wrote to him:

"On May 30, between 5 and 6 hours G.C.T., when seeing was rated 9 on a scale of 10 (as perfect), there appeared a series of brilliant flashes across the south cap of Mars about midway between the northern edge of the cap and the southern rim of the planet. The flashes spread across the cap from about longitude 180° to 250° . I estimate the latitude about -65° , 200° being the central meridian of the disk.

"The largest flash was in about 212° longitude. This region corresponds with Thyle I and II, I believe . . . Two others here saw the flashes. A tentative explanation is that the northern edge of Thyle I and II is perhaps elevated and was covered with ice which reflected the solar rays as rotation brought the proper relation of angles. Clear sky must have prevailed in that area at the time. As this region will again be in view in the latter part of June and early July, though the planetocentric latitude of earth will be higher in value—bringing the region nearer the rim of the disk—perhaps a repetition of the flashes will occur.

"I have long suspected that this area of Mars is slightly elevated and cut by deep gorges, Mare Chromium being a depression. The flashes were estimated to be about a magnitude brighter than the rest of the southern cap, and my impression was that there was a movement from an opposite direction to that of the planet's rotation. It is the first time that I have seen so extended a line of prismatic light, like fire, running across the polar cap."

Professor Pickering writes me that he and Lowell, observing in 1894 from the Lowell Observatory, saw this same phenomenon, confirming Wilson's observation very satisfactorily. This former observation is described in the "Annals of Lowell Observatory" and in Lowell's book, "Mars", p. 86. In a personal letter to me, Wilson also speaks of this strange phenomenon he observed and at the risk of some repetition, I will quote him again verbatim:

"One of the outstanding observations of Mars secured here was on the evening of May 30, during the interval 4^h 35^m G.C.T. to 6^h 0^m G.C.T. Slightly less than one second of arc north of the southern rim from estimated longitude 180° to 250° , a series of brilliant flashes extended across the southern snow cap. I have projected this graphically and find it to lie along about south latitude 55° .

Irradiation, because of its brightness, probably explains why its thickness (the snow cap) at times reached northward to about -50° and southward almost to the edge of the disk. As well as I can determine the position, it was in south latitude 55° , with two major centers in longitude about 190° and 212° that the flashes occurred. I used my 12-inch out here; seeing estimated 10, which is excellent and 250X.

"Two others here, my nephew and my brother-in-law, also saw the flashes. They were very real and about a magnitude brighter than the rest of the cap which had itself appeared unusually bright since May 24. I tentatively identified the region as the northern border of Thyle I and II. (Flammarion's map, Popular Astronomy, Report on Mars No. 15—Pickering.) I believe this region to be a plateau, as also Electris and Eridania. If so, Mare Chromium may be a deep impression and possibly the northern escarpment of Thyle I and II has steep slopes which on May 30 were ice-coated, thus reflecting direct sunlight because of the clear sky at the time in that section. The rays should reach maximum intensity in a limited region of earth, would they not? This might explain why no one else (outside of Nashville) saw them. They did not appear during the July apparition of this part of the planet, but the angle was not the same. I should like to know your opinion, and if you have had any other reports concerning the matter. I have never seen it before, though I have seen isolated twinkling flashes in the snow caps at times. My photographs, secured during the interval, are not good enough to settle the matter, but images of the cap are different in intensity during the brief time photos were made."

In a further communication, Mr. Wilson continues: ". . . To me the Southern Cap was brightest along a line about (or less than), one second of arc, (measured on drawings), in from the Southern Limb. For a time, about 5:15 to 5:30 hrs., the brilliant flash aspect occurred frequently. I estimate that I saw at least eight (flashes); and my brother-in-law and nephew saw several. When no flashes occurred, a line of small bright spots stretched across the cap, as shown on my drawing. Suddenly, some of these seemed to run together, and to swell into a spot that reached to the Southern Limb; from white, it changed to yellow and then red-yellow, and murky, and finally to a tiny white spot; the description "prismatic" is best; though distinct blue or green were not noted. It was a 'sharp' light compared even with the whiteness of the small white spots. After the flashes had ceased the string of

white spots remained; but they had faded considerably by 6hrs.0m.; and when Mars reached a position over trees observation was discontinued shortly afterward. If the seeing had been poor I would have thought the phenomenon a result of this, but during the maximum interval the seeing was remarkably good. I believe the aspect real; and as nearly accurately described as I am able to describe it. An impression of movement from left toward right, contrary to the rotation of Mars, was noted." (L.J.W.)

It was early thought that these flashes described by Mr. Wilson, had been seen at another observatory in Nashville, with a 12-inch reflector on the same date. However, in this regard Wilson writes further:—"... Mr. J. H. De Witt shortly after May 30, said that he and his brother were looking at Mars during the period I mentioned and that he had noticed the unusual appearance of the South Polar Cap, and thought he had seen the phenomenon that I had described. Later, when I saw him and questioned

him concerning the matter, he seemed uncertain, and as no records had been made, said he would talk to his brother about it and let me know. After conferring with his brother the conclusion was reached that what they had noticed was the contrast between the (bright) Southern Cap and the rest of the disk."

Mr. Wilson also sent a fine drawing and photographs covering the period of his observations and illustrating it. He observed from Nashville, Tenn., with his 12-inch reflector.

Unfortunately, I had cloudy weather on the night of May 30 in southern California so I could not observe Mars and no observations for that particular night have yet been sent in to me by the other associated planetary observers. Dr. E. C. Slipper tells me that he was observing Mars with the 24-inch refractor at Lowell Observatory during the time interval covered by Wilson's observations on May 30, but that he may

(continued on page 138)

Variable Star Section

W. D. ROSEBRUGH, Director

It is hoped that the last two articles dealing with Zeta Aurigae and R Coronae Borealis have whetted the curiosity of prospective variable star observers so that some of our readers have been inspired to start work on the variable stars. To assist these newcomers it seems best to pass on a few further valuable tips as to methods and equipment which have just been furnished to the writer. Next issue we will turn again to the study of individual stars and will discuss the most popular star in the sky, namely SS Cygni.

The writer has recently had the opportunity of inspecting the telescope of Miss Louise Ballhausen, 1 Gilmore Ct., Scarsdale, N. Y. From opinions which he has heard voiced by several of the experienced members of the AAVSO during recent months he believes that Miss Ballhausen's telescope represents an ideal instrument for those of us who have to make our few dozen monthly observations whenever the weather, trees, engagements and even travel will permit. A brief description of her telescope is therefore being given as it may prove helpful to those who are building up their observing equipment.

For brighter stars such as R Coronae Borealis she uses good quality opera glasses, probably costing around \$10 with objectives of about 32 mm. in size. These she finds will show her 7.^m5 stars

under favorable conditions. However a word of editorial caution should perhaps be given; after a great deal of experimentation the writer, who is very short sighted, has found that nothing but wide angle, 7X, prismatic binoculars with 32 mm. objectives, with which he can see 8.^m0 stars under good conditions, are of any use to him for this purpose.

Miss Ballhausen's telescope is a 3-inch refractor of about 24-inch focal length (f8 instead of the more usual f15) equipped with 20, 40 and 60 power celestial eyepieces and a 40 power terrestrial eyepiece and rack and pinion focussing tail piece. The telescope is held on a fork type alt-azimuth mounting supported on a sturdy tripod with extensible legs. When in use the tripod and telescope can be carried on the shoulder from place to place. The tout ensemble packs in a neat traveling case about 10" square and 40" long which can be placed in a car or can be carried like a suit case when travelling. The telescope with the 20X lens and a field of between 2° and 3° acts as its own finder. The higher powers are used for observing faint stars when their fields are located and Miss Ballhausen has been able to observe 12.^m1 stars with this light portable telescope. With it she finds it possible to make observations when it would be impossible otherwise because time might not be available to swing a larger tele-

scope into action, or a permanently mounted telescope might be masked by trees, and of course when travelling a larger telescope cannot be conveniently transported.

Miss Ballhausen keeps her charts, blanks, and monthly predictions in a waterproof folding cover like a loose leaf book without rings, in which the charts are held in place by rubber elastic so that they cannot blow away. When she sallies forth with the chart cover under her arm, a flashlight and opera glasses in her pocket and her telescope over her shoulder, she is ready to start observing whether in the backyards of Scarsdale or the mountains of Connecticut. When a star has been observed for the evening its chart is transferred from the right hand side of the cover where it has lain face upward in order of R.A., to the left hand cover face down.

Walter Houston, 807 E. Otjen St., Milwaukee, who bids fair to become the ace observer of the AAVSO, has kindly furnished the following information upon the use of reflectors, which supplements that given by D. F. Brocchi in the May issue.

Mr. Houston has a 10-inch aluminized Newtonian reflector of 86-inches focal length mounted equatorially on a 4-inch pipe pedestal. He says that this should be a 6-inch pipe however. The tube of the telescope does not rotate in the cradle and the eyepiece is brought out parallel to, but on the opposite side of the telescope tube from the declination axis. This is very convenient for the following reasons: The "d" chart can be mounted in a holder on the telescope tube alongside the eyepiece with the long direction of the chart at right angles to the length of the telescope tube, and the south end of the chart at the upper side, that is, nearest the sky. Under these conditions the stars seen in the eyepiece will be exactly at the same tilt or angle as those seen on the chart. When the telescope is changed to the other side of the pier, as when one has been looking low in the west and now wishes to look low in the east, the chart for the new field should be placed with the S end uppermost and the chart and stars will still lie at the same angle. If one's reflector rotates in its cradle, instead of being solidly attached like Mr. Houston's, Mr. Houston points out that the chart must be rotated in its holder by an equal amount and scales should be provided both on the tube and the chart holder to make this adjustment possible. These comments are very valuable for all who use reflectors.

Mr. Houston is much handicapped by

trees and he was compelled to obtain a complete set of the AAVSO charts in order to have stars available to observe at all times. In general he uses a comet ocular which gives him a field of one degree. This is a Ramsden eyepiece of 1.5-inch e.f.l. and it has a field lens two inches in diameter. Mr. Houston feels that these eyepieces should be used more by variable star observers than they are. (Parenthetically the writer might remark that his limited experience with two such eyepieces seems to indicate that those who must wear glasses even at the telescope eyepiece cannot derive any benefits from such wide angle eyepieces and might as well use ordinary 1.5 or 2.0-inch eyepieces, because glasses move the eye too far back for the pupil to intercept the full cone of light leaving a wide angle eyepiece. More data on this point from other observers will be welcomed by the writer and by all who are very myopic and astigmatic like himself). For 13^m to 15^m stars Mr. Houston uses 1-inch and ¾-inch oculars or 8 to 34 powers per inch of aperture.

Mr. Houston uses a 1¼-inch finder with a Kellner eyepiece and a field of 6°. He emphasizes the importance of a really good finder which will bring out faint stars. At present he uses a diagonal prism on his finder so that the eyepieces of the finder and the main telescope come out parallel to each other about eye distance apart. This he finds convenient despite the fact that the field of the finder is reversed by the prism. He says one soon gets used to this but he hopes eventually to add another prism to the finder diagonal so that he will have a non-reversing diagonal as recently described by Mr. Brocchi in the publication of the Texas observers.

Mr. Houston does not use finder charts but instead plots the location of the variables on the AAVSO atlas prepared by Brocchi. He locates the general neighborhood of the field with his 6° finder and then uses the main telescope with its 1° field for final location of the field. He finds that the new AAVSO atlas is very well designed for this purpose and commends it highly.

The AAVSO chart committee consisting of Prof. S. A. Mitchell, H. B. Webb, F. Hartmann, curator, and Mr. D. F. Brocchi, chairman, just issued a list of revisions to the charts. This is dated April 1937 and completes the extensive revision of the charts commenced some years ago. The chart committee is certainly to be thanked and commended on the successful completion of this work.

Many new comparison stars are given, especially for the white "c" charts issued two years ago. The "b" charts for

many stars are revised to conform with the "d" charts so as to show the same comparison stars as the more detailed "d" charts down to the limit of the "b" chart. Mr. Hartmann says that this is done so that those with 3-inch telescopes can use "b" charts exclusively and do not need "d" charts.

A much needed new chart on 201437b WA Cygni is announced. A chart for a new field 224049 RV Lacertae is also listed. This looks like a good star for moonlight nights as it is fairly bright, 9.9 to 11.4 and is well removed from the ecliptic. The corresponding finder chart is number 160A.

Improvements to the finder charts, catalog, and atlas are also listed.

An article by Miss Shirley Patterson in the May-June 1937 Journal of the Royal Astronomical Society of Canada states that seven of the amateur members of the Toronto center of the R.A.S.C. are undertaking variable star and nova search work. We hope that these amateurs will enjoy this hobby as much as the rest of us do and we wish them every success in their enterprise.

We wish to thank Messrs. William Callum, Ferdinand Hartmann, Neil McNabb, jr., and Franklin W. Smith for their reports which they submitted during the last two or three months, on the number of stars seen and observed. As was explained in last month's article it seems best to discontinue this feature as the complete summary of all observa-

tions made is published elsewhere. However, comments as to unusual phenomena observed will be appreciated as it is believed that these comments will serve to stimulate the interest of all observers, especially beginners. All observers are invited to contribute such comments as the following:

DQ (Nova) Herculis is fading slowly. It is now about 8.4 which is approximately a magnitude fainter than it was last year at this time. At this rate it should remain visible in small instruments for some years longer.

R Scuti took a sudden dip from 5.9 on 8740 to 7.1 on 8750.

RY Sagitarii, the R Coronae Borealis type star, seems to have pretty well regained its normal brilliancy. It rose from 8.3 to 7.3 between 8725 and 8746.

Nova Lacertae is fading slowly but much more rapidly than Nova Herculis. On 8747 it appeared to be about 10.6 or 8 magnitudes below what it was a year ago.

SS Cygni, which we hope to discuss in the near future underwent a maximum of about 8.3 on 8726. Beginners should try their hands at this star which will be favorably placed all fall.

The regular fall meeting of the AA VSO will be held on Oct. 15-16, at the Harvard College Observatory, Cambridge, Mass. All are welcome whether members or not.
Poughkeepsie, N. Y.

AAVSO Nova Program Notes

L. E. ARMFIELD

This section is deeply indebted to Hideo Inouye of Tokyo, Japan, and S. Kaneko of Tokyo-Tanasikiyokuku, Japan, editor of Amateur Meteor Observers, a Japanese publication similar to Amateur Astronomy, for their kindness in bringing the AAVSO Nova Search Program to the attention of amateur astronomers in Japan. A recent issue of AMO devoted an entire page to the nova search program showing a typical example of region assignment; the column headings used on the monthly report blanks, reference to the publication of observations in Amateur Astronomy and a brief explanation of the program in general. This fine spirit of cooperation on the part of our Japanese friends is gratefully appreciated and we trust sincerely that we may find an opportunity to return the favor.

We take pleasure in introducing to the readers of these columns the following new contributors to the nova search program: Allan Karl, 2836 Lealand Avenue, Chicago, Ill.; Claude B. Carpenter, Secretary of the Detroit Astronomical Society, 34624 Chestnut Street, Wayne, Mich.; Mary Ellison, 400 Park Road, Webster Groves, Mo.; Franklin Lewis, Director of the Lewis Observatory, 278 S. Glenwood, Columbus, Ohio; Jack Scovel, 1261 Rosedale Ave., Chicago, Ill.; John Swensson, 2200 Bennett Ave., Evanston, Ill., and Nicholas Waitkus, Pittsburgh, Pa.

We are happy also, to receive observations again from Roy A. Seely, 16 Sutton Place, New York city, who is a member of the nova search committee and one of our charter contributors. Miss Louise Ballhausen, who has been forwarding her reports regularly from Scarsdale, New York, will be located during the academic year at Oxford, Miss., where she will be head of the science department of the University High School. We hope that she will be able to sell nova regions to interested amateurs in her new location for participants residing in southern latitudes are seriously needed.

Observer	Location	Region	Magnitude of faintest star easily visible						Total Nights		
			9	8	7	6	5	4		3	
Carpenter	(July)	Wayne, Mich.	13	---	---	---	5	---	---	5	
Diedrich	(July)	Milwaukee	43	---	---	---	12	6	2	20	
	(Aug.)		43	---	---	---	9	1	2	12	
Ellison	(Aug.)	Webster Groves	---	---	---	1	1	---	---	2	
Friton	(June)	St. Louis	9	2	4	2	---	---	---	8	
	(June)		10	2	4	2	---	---	---	8	
	(July)		9	6	4	3	2	---	---	15	
	(July)		10	6	4	3	2	---	---	15	
Halbach	(July)	Milwaukee	99	---	---	---	1	5	2	8	
	(Aug.)		99	---	---	---	2	---	5	2	
Hanna	(July)	New York City	11	---	---	---	5	1	---	6	
	(July)		62	---	---	1	5	2	---	1	
Karl	(July)	Chicago	13	---	2	4	10	2	2	2	22
	(July)		14	---	2	3	11	2	2	2	22
Keuziak	(July)	Milwaukee	15	---	---	---	---	26	---	26	
Kirkpatrick	(Aug.)	New York	61	---	---	---	1	---	2	3	
Lewis	(Aug.)	Columbus ,O.	2	---	---	---	---	1	4	4	
	(Aug.)		42	---	---	---	---	2	---	2	
	(Aug.)		46	---	---	---	---	1	---	1	
	(Aug.)		73	---	---	---	1	1	7	9	
Loreta	(July-Aug.)	Italy	17	---	---	1	6	6	---	13	
	(July)		105	---	---	---	3	3	---	6	
McNabb, jr.	(Aug.)	Acton, Can.	8	---	---	1	4	---	---	5	
	(Aug.)		58	---	---	1	3	---	---	4	
	(Aug.)		77	---	---	---	5	---	---	5	
	(Aug.)		78	---	---	---	5	---	---	5	
	(Aug.)		86	---	---	---	5	---	---	5	
Moore	(July)	Milwaukee	26	---	---	---	4	10	3	1	18
	(Aug.)		26	---	---	---	11	10	5	---	26
Rosebrugh	(July)	Poughkeepsie	1	---	---	6	2	4	---	12	
	(Aug.)		1	---	---	1	---	2	---	1	
	(Aug.)		52	---	---	---	1	1	---	1	
Scovel	(Aug.)	Chicago	24	---	---	5	3	---	---	8	
			27	---	---	5	3	---	---	8	
			39	---	---	5	3	---	---	8	
			58	---	---	---	---	6	2	---	8
Seely	(July)	New York City	58	---	---	---	1	---	---	1	
	(Aug.)		58	---	---	---	---	---	1	1	
Sharp, jr.	(July)	Chicago	31	---	---	---	---	---	1	1	
	(July)		88	---	---	---	5	9	4	---	18
	(July)		89	---	---	---	5	9	4	---	18
	(Aug.)		88	---	---	---	10	4	3	---	17
	(Aug.)		89	---	---	---	10	4	3	---	17
Swensson	(Aug.)	Evanston, Ill.	23	---	---	---	1	6	1	---	8
	(Aug.)		25	---	---	---	1	7	2	---	10
	(Aug.)		26	---	---	---	1	7	2	---	10
Topham	(July)	Toronto, Can.	16	*2	---	1	---	---	---	3	
	(July)		75	*2	---	1	---	---	---	3	
Waitkus	(July)	Pittsburgh	7	---	---	---	4	---	---	4	
	(July)		25	---	---	---	5	---	---	5	
	(July)		26	---	---	---	1	---	---	1	
	(July)		42	---	---	---	3	---	---	3	
	(July)		43	---	---	---	3	---	---	3	
	(July)		62	---	---	---	4	---	---	4	
	(Aug.)		25	---	---	---	8	2	---	10	
	(Aug.)		26	---	---	---	8	---	---	8	
	(Aug.)		43	---	---	---	3	2	---	5	
	(Aug.)		62	---	---	---	7	3	---	10	

16 Observers—31 different regions—3100 square degrees of sky reviewed.

Diedrich and Keuziak have originated a feature which is greatly appreciated by your scribe for a very selfish reason: it saves a host of work in compiling this monthly report. On the back of their report blanks they summarize their observations for the month in accordance with the tabular form used in the columns above. Such a summary does not entail a great deal of extra time on the part of each individual contributor, but it is a great timesaver for yours truly, and it would be much appreciated if others could do likewise. Thanks.

1410 N. Marshall Street, Milwaukee, Wis.

Tri State News Notes

AMATEUR ASTRONOMERS' ASSOCIATION OF PITTSBURGH

WILLARD A. MacCALLA, Correspondent
During the months of July and August, although no formal meetings of our association were held, several "get-togethers" and inspection trips were made by the group, and a considerable amount of individual activity was carried on. Of course the sweep of Finsler's comet across the skies was watched by everyone who had access to a telescope. Variable star and nova observations were made regularly. Nick Waitkus, who has recently joined the ranks of nova searchers, has been busy equipping his observatory for camera patrol work.

Five autos packed with amateurs from this region made the 60-mile trip to beautiful Oglebay Park, Wheeling, W. Va., on the week-end of June 26 and 27. After the campfire ceremonies on the first evening, we climbed to the hilltop observatory, together with about 50 camp guests, to view Mars, Jupiter and other objects through the 8-inch Oglebay telescope and an excellent 7-inch Cassegrainian representing the work of Brownsville, Pa., amateurs.

Dr. and Mrs. Benjamin Souther played host to our group at their new home in Perrysville, Pa., on Aug. 18. This date was selected because of the favorable opposition of Mercury, but the weather was unkind. Before the evening ended, however, we succeeded in penetrating the haze with Dr. Souther's 6-inch Newtonian. Among the 25 guests was Z. Daniels of Allegheny Observatory, discoverer of three comets.

Our worthy vice-president, Fred Garland, has been making a fine contribution to the cause by conducting classes in elementary astronomy and constellation study every Monday night during August and September at the Wissahickon Nature Cabin at Riverside Park. There are nearly 100 in his class, including many teachers and scout leaders. Several new astronomy enthusiasts were won in Scottdale, Pa., according to Willard MacCalla, who gave an illustrated talk at the Rotary club of that city on Aug. 30. The projector and slides were kindly loaned by Warren A. Donaldson, past president, who made the slides with his own equipment.

An interesting 10 day trip was taken by Leo and Larry Scanlon. Frank Surovec and Charles Frost with the primary object of attending the annual convention of the Springfield Amateur Telescope Makers, on Aug. 14. A large group attended, including most of the well known figures in amateur astronomy. The Pittsburgh party's first eve-

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- Amateur Astronomers Association of Pittsburgh, Pennsylvania.
Astronomical Society of Rutherford, N. J.
Astronomers Guild of Jamestown, New York.
Chicago Amateur Astronomical Association, Chicago, Ill.
Eastbay Astronomical Association, Oakland, Calif.
Long Island Telescope Makers, Wantagh, N. Y.
Louisville Astronomical Society, Louisville, Ky.
Madison Astronomical Society, Madison, Wis.
Metropolitan Astronomical Society, New York, New York.
Milwaukee Astronomical Society, Milwaukee, Wis.
Missouri-Southern Illinois, St. Louis, Mo.
New Jersey Astrophysical Society, Woodbridge, N. J.
Norwalk Astronomical Society, Norwalk, Conn.
Optical Division of the AAA, New York, N. Y.

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ning was spent as guests of Walley Everest, at Pittsfield, Mass. Mr. Everest was the first to develop the honeycomb lap.

Following the convention, the local delegation spent two days in Boston seeing historical points and visiting the Harvard College Observatory, where they were entertained by Dr. Shapley, Prof. Campbell, and others of the staff. After leaving Boston, the quartet spent several days in New York meeting the Amateur Telescope Makers group and visiting the Hayden Planetarium. Philadelphia, with its planetarium and Cook Observatory, was also on the itinerary. Leo Scanlon reports that equipment at the Cook Observatory has doubled since his visit two years ago.

At our Sept. 10 meeting, reports of summer activities were featured and plans prepared for constructive programs for telescope building and observing.

Valley View Observatory,
Pittsburgh, Pa.

Milwaukee News Notes

M. N. FISHER, Correspondent

Edward A. Halbach, former treasurer of the Milwaukee Astronomical Society, was elected president of the society at the fifth annual meeting which was held Sept. 16 at the Milwaukee City club. M. J. Phillips was elected vice-president, Miss Pauline Royt, treasurer and Laverne Armfield, secretary. Herbert Cornell was appointed assistant secretary by the secretary. Messrs. Cornell, Parkinson, Cooke and Armfield were chosen to succeed themselves on the board of directors.

T. R. Hedengren was chosen to complete the unexpired term on the board of directors caused by the resignation of Arthur F. Boyd, who has left the city.

Mr. Phillips acted as toastmaster at the meeting. Speakers included Cooke, Halbach, Armfield, C. B. Whitnall, Cornell, Diedrich.

The Society welcomes the following persons to membership:

Dr. John A. Ball, A. R. Ball, John D. Johnstone, Mark Kindt, of Kenosha C. N. Kindt, Paul Sommer and E. B. Heckenkamp.

Miss Carolyn Nickels, former assistant secretary of the society, a member of the AAAA and of the publications committee of *Amateur Astronomy*, is studying at the University of Wisconsin this year. The society will miss her greatly and is looking forward to her return next summer.

Work on the society's observatory located on the Phillips' farm in Waukesha county is progressing rapidly. At present the fabrication of the dome is under way.

E. P. Martz, jr., and Walter H. Haas were welcome visitors in Milwaukee on Sept. 2 and 3. It was a pleasure for society members to meet Mr. Martz after his interesting summer's work in the west and to meet in person Mr. Haas whose lunar work we have long admired. J. W. Simpson, of the Missouri-Southern Illinois group, stopped off in Milwaukee and attended the society's picnic at Lake Geneva Aug. 28. The following day Mr. Simpson and a group of Milwaukee amateurs went to Chicago for a visit with members of the Chicago Astronomical association. It is a pleasure to have an interchange of thought between workers in various parts of the country through letters, but we like much more to meet our correspondents in person.

Approximately 30 of us won't soon forget the good time we had at the annual get-together of the Chicago and Milwaukee groups on Saturday, Aug. 7 at Joseph E. Boehm's observatory on Lake Geneva. (See Chicago news notes.) And at least 40 of us won't easily forget our annual picnic Aug. 28 at Lake Geneva. A tour of Yerkes Observatory at Williams Bay was made during the afternoon under the guidance of Dr. Ebbighausen and later, on the lake shore. Dr. Ebbighausen, Dr. and Mrs. Van Biesbroeck, Dr. and Mrs. Storrs B. Barrett and Miss Mary Calvert joined us at a picnic supper. When the stars came out many of the members wound up the evening at Joe Boehm's with a swim and a bit of observing.

817 N. 28th Street,
Milwaukee, Wis.

Optical Division

of the

AMATEUR ASTRONOMICAL ASSOCIATION
HAYDEN PLANETARIUM, NEW YORK
LEW LOJAS, President

On Friday the thirteenth, the 40 members of the optical division gathered in the optical workshop, and, defying the thousand and one elements of superstition, began the long task of grinding a 21-inch mirror. Prof. William H. Barton, jr., associate curator of the Hayden Planetarium, poured on the first charge of carbo and Charles A. Federer, jr., supplied the water. The vice squad, in the persons of Leo Mattersdorf, second vice-president of the AAA and Robert G. Cox, vice-president of the optical division, had the honor of making the first strokes across the big disk. Mr. Lojas and Professor Barton massaged the disk with a little carbo under a 12½-inch tool. Members of the optical division followed in turn.

Immediately afterward, the rouge bottle was fetched and the thumbs of the members polished for the long trip to the annual telescope nut hot air conflagration at Springfield, Vermont. The representatives from New York in order of their arrival were: Messrs. Grosswendt, Cox, Froehly, Mehling, Howland, Hanna, Brown, Lojas, Mrs. Lojas, Stoy (who came all the way from Georgia), and Paul Luce. Mr. Grosswendt had the distinction of being the first member of the optical division to sign the register on Mt. Porter. Two richest field telescopes were brought by the members; their performances was most commendable in the clear and steady atmosphere at Stellafane.

1510 White Plains Road,
Bronx, N. Y.

NAS Star Notes

NORWALK ASTRONOMICAL SOCIETY
LEWIS L. DOOLITTLE, Correspondent

Again the Norwalk Astronomical Society is pleased to have its notes in Amateur Astronomy after a lapse of some months, due to events which occurred that necessitated a "quiescent period." However, activities are now again in full swing. For the first time, the Society inaugurated summer meetings this year in the form of outdoor picnics and informal stargazing parties. And the project was met with great success, for there was a capacity attendance at each picnic, on June 23, and August 21. At the first affair the Society furnished all the food and soft drinks for a hamburger roast. After that it was, "Each man bring his own lunch, the club furnishes coffee." The New Haven Astronomical Society met with Norwalk at the July meeting to swell the attendance and enthusiasm. Plans are now under way for the third annual convention of the NAS, the tentative date of which has been set at September 18. The society is trying to secure Father Paul McNally, famous astronomer and director of the astronomical department of Georgetown University, as guest speaker for the banquet.

Early this summer the writer had the pleasure of making the acquaintance of an amateur astronomer, Harry H. Haskin, of Stony Creek, Connecticut, who, for the past three years, has been working on the mathematical calculations of the oft looked for planet Vulcan, with the assistance of a member of the Yale Observatory. His results have been startling and thought-provoking. A transit was predicted for August 10, but general sky conditions and the unsuitable time made it impossible to see anything here in the east. A transit, much more favorable as to time, is predicted for January 14 of next year; in the near future a full report of Mr. Haskin's work will be published in *Amateur Astronomy*.

A complete bank of clouds, at least here in Connecticut, prevented both the New Haven and Norwalk groups from doing any work during the week of the Perseid meteor shower. It is hoped that other sections of the country met with better success.

P. O. Box 341,
South Norwalk, Conn.

Chicago News

CHICAGO AMATEUR ASTRONOMICAL
ASSOCIATION

H. C. TORREYSON, Secretary

On Saturday, July 10, about 30 members of the Association journeyed to Williams Bay, Wis., to inspect the telescopes at the Yerkes Observatory and to enjoy an outing at Lake Geneva. After listening to a very interesting lecture by Dr. Moffitt about the world's largest refracting telescope, and being conducted on a tour of the grounds and buildings by Dr. Morgan, the gang gratefully accepted Joe Boehm's invitation to visit the other side of the lake and take a swim and motorboat ride at his cottage. However, disappointment ruled for a while later in the evening when, owing to cloudiness, we were unable to "observe the observers observe" through the big telescope as per schedule.

The meeting at 1319 West 78th Street on July 16 was well attended. Several telescopes were in use and the sky was clear except for an occasional cloud, so everyone was busy observing. It was one of the best observing sessions that the club has had in the city for some time.

Saturday, August 7, was the date of the annual get-together of the Chicago and Milwaukee groups, and Joe Boehm's cottage on Lake Geneva was the place. During the afternoon, swimming and motorboating were enjoyed at the wonderful beach of Lake Geneva. Cameras were continually snapping. It is hoped that many of the informal snaps will make good prints. If so, they should certainly be worth the money. With the coming of darkness, telescopes began to be in evidence everywhere. It is believed that everyone had ample opportunity to observe his favorite celestial object. About 65 persons were present.
3738 N. Richmond St.,
Chicago, Ill.

Mars

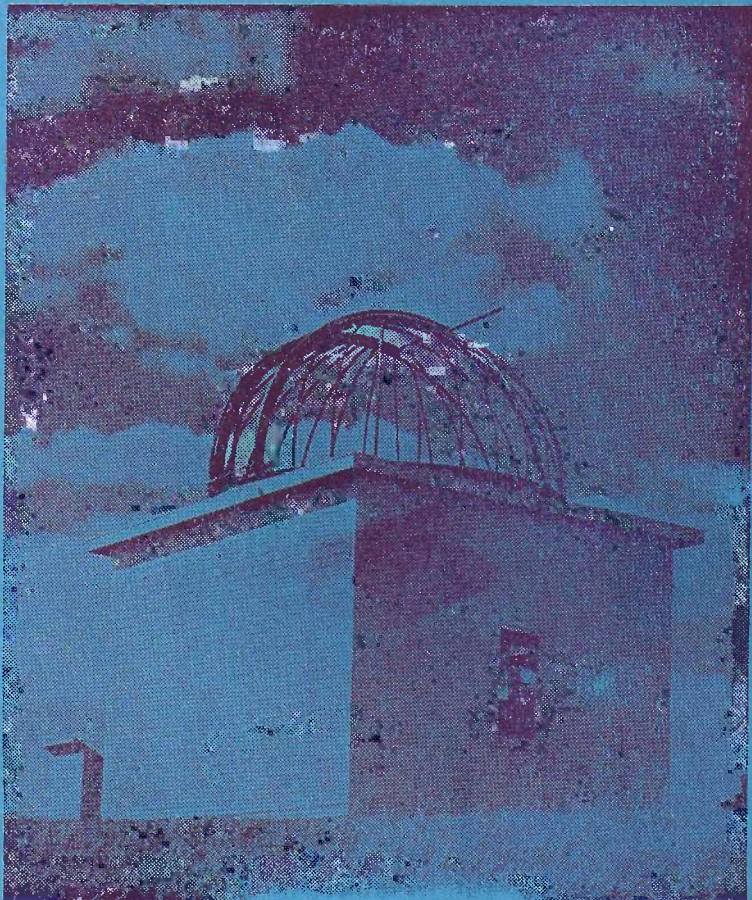
(continued from page 132)

easily have missed the flashes observed by Wilson while taking photographs or changing the camera and plates.

Any coincident observations or information bearing on the several phenomena discussed in this planetary report will be greatly appreciated by us; we hope planetary observers will be kind enough to communicate the data as soon as possible.

726 N. Elmwood Ave.,
Oak Park, Ill.

M A S OBSERVATORY



Reprint From The Milwaukee Journal

This photograph shows the construction progress. The building is 16 x 16-ft., with a 14½-ft. diameter dome. The building in the left background houses Mr. Tabbatt's 8-inch reflector.