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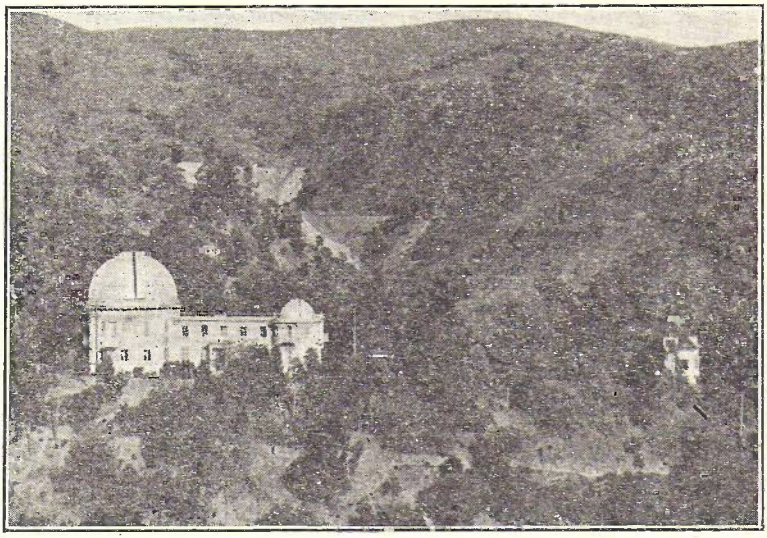
New Year Brings New Unit



Chabot Observatory

We take great pleasure in announcing the affiliation of the Eastbay Astronomical Association of Oakland, California, with the American Amateur Astronomical Association.

The EAA was organized in 1924 and thereby holds the distinction of being one of the oldest amateur astronomical societies in the country. During the thirteen years of its existence it has enjoyed constantly a larger membership than is usually experienced by other amateur societies. The activities of the EAA are pleasantly diversified. Meetings are held on the first Saturday evening of each month at the Chabot Observatory. Distinguished astronomers from the University of California, Lick Observatory, Mount Wilson Observatory and visiting astronomers from abroad have lectured before the association at its meetings.

Other constructive work is accomplished through the activities of the association's various working sections.

Section meetings are held at the Chabot Observatory as well as at the homes and observatories of members who have telescopes. The work of the solar section is greatly augmented through access to the Chabot Observatory telescopes, spectroscope and the instruments at the Students Observatory of the University of California in Berkeley. Skilled members of the Variable Star Section have the splendid opportunity to observe faint regular and irregular variables as well as faint novae with the 20-inch telescope of the Chabot Observatory.

The AAAA cordially welcomes the active and well organized Eastbay Astronomical Association and extends sincere greetings to each and every one of its 100 members who are now also fellow members of the nation wide fraternity of amateur astronomers. News from the EAA appears in the pages devoted to the affiliated societies.

We are happy to add also, that the EAA will serve as the regional headquarters of the California region of the AAAA.

Variable Star Section

D. W. ROSEBRUGH

The human mind is very specialized. Psychologists tell us that some of us can subtract with ease but can add only with difficulty, while with others the reverse is true. A well known artist was unsuccessful as a landscape painter, but he has established an international reputation since he started painting flowers. These facts are surprising to most of us for we would ordinarily suppose that a person who is good at any part of arithmetic would be good at all portions, and that a painter who can paint flowers would be able to paint landscapes equally well. However it is indeed fortunate that some of us are capable in one way, while others are gifted in other lines, for it insures the fact that the whole field of knowledge will be thoroughly explored. This is as true in astronomy as in any other field of human endeavor, as a glance through the pages of *Amateur Astronomy* will show. Among the subjects discussed are meteors, the motions of the moon and earth as measured by lunar occultations, celestial photography, planetary markings, the sun and variable stars.

Some of us are better fitted by disposition or are better supplied with the necessary instruments to add to human knowledge by working in one of these specialized fields, while others of us prefer to study different lines. Without attempting to make comparisons, those of us who observe and report the variations in the brightness of variable stars, may perhaps be pardoned if we feel that this phase of astronomy is the one in which the amateur astronomer can make the most important contributions to astronomy.

When we look at the starlit sky, almost every object we see is a distant sun. These distant suns or stars are the building blocks of the universe. Observations made of the variations in the brightness of a star, such as for example, U Geminorum, give some information, both directly and indirectly, about its size, temperature, and physical constitution. Such information cannot readily be secured in any other way for the star is ordinarily too faint to study it with the spectroscope. Dr. Frank S. Hogg told the writer on his recent visit to the David Dunlap Observatory, Toronto, Canada, that even with their fine 74-inch reflector it takes all night to secure the spectogram of an 11th magnitude star. Because of the light fog on photographic plates when they are exposed for long periods we cannot at present secure information upon the physical state of this star when it is at its minimum of 14th magnitude in any other way than by observing its changes in brightness. Enthusiastic amateurs with the larger instruments can do this work as well as the big observatories, and thereby save the time of their instruments for other work such as spectroscopy, which the amateur is not equipped to do.

The importance of variable star observing and the amount of it to be done is so great that new observers of variable stars are always welcomed to the ranks of the American Association of Variable Star Observers. Those wishing to undertake the work are invited to write to Mr. Leon Campbell, Recorder, Harvard College Observatory, Cambridge, Mass.

To make this new Variable Star Section of the AAAA a success, those members who are already active members of the AAVSO are requested to mail a post card each month to the writer, showing merely the number of different variable stars observed during the month and the total observations made. These totals will be reported in this column each month about in the same manner that the Nova Program observations are now being reported. The regular monthly report giving all details should of course be sent to Harvard each month by each observer as at present. Please jot down on the post card sent to the writer any interesting comments which occur to you upon what you have seen during the month.

Mr. Ferdinand Hartmann, our Chart Curator, reports this month that 052034, S Aurigae is unusually faint. At present it is about 12.5 magnitude while it does not often fall below about the 11th magnitude at minimum. Mr. Hartmann also caught U Geminorum at maximum about Dec. 15, when it reached 8.4 magnitude. SS Cygni, the other well-known variable star of this same type, was also bright at the same time, but it passed its peak about a week earlier. Omicron Ceti was quite bright at its recent maximum when it reached 2.2 or 2.3 magnitude. Last year it reached only 4.1 magnitude, acting as though it were fatigued after its effort in the winter of 1934-35, when it reached about 2.3 magnitude, which was the brightest it had been for 30 years previously. It will be interesting to see what magnitude it reaches in the fall of 1937, after its recent bril-

(continued on page 11)

basic sciences and those in other fields related to our own, for a true and adequate analysis and synthesis of our planetological problems and hypotheses. We must call upon the trained specialists in those fields, that our analysis of planetary problems may not err in the many phases wherein the other sciences cross our own. We must keep abreast of the latest developments in those fields as well as in our own. Therefore, the debt of planetology to the workers in related fields of astronomy, geology, meteorology and geophysics, as well as mathematics, will be a great one indeed, even though we do not need to employ rigidly the methods of thought and investigation used in the basic, mathematical sciences.

The writer cannot do better than to end this discussion with a final quotation from Professor Bucher's excellent paper: " . . To see the work of many in one perspective, to realize the common bond of natural law that permeates all our experience of nature, means to realize the 'internal harmony of the world', which, as Poincare pointed out repeatedly, is 'the only true objective reality', the ultimate goal of all science."

Planetary and Lunar Observations in 1936

It is earnestly requested that all the readers, whether AAAA members or not, who have made observations of the moon or the planets during 1935 or 1936, forward descriptions of their work to the section director, or at least communicate with them. Walter H. Haas, the director of the lunar observation section for AAAA, requests that all 1936 moon observations be forwarded or communicated to him by Feb. 1, 1937, so that they may be included in the AAAA lunar report for 1936 when it is published. Address: 1842 S. Union Street, Alliance, Ohio. Observations of Mars, Jupiter, and Saturn should be sent to Latimer J. Wilson, 1606 Woodland Street, Nashville, Tenn. All other planetary observations, and general communications in regard to planetary observations in 1935 or 1936 should be sent to the writer as soon as possible.

726 N. Elmwood Avenue,
Oak Park, Ill.

AMS Meteor Notes

WISCONSIN-NORTHERN ILLINOIS REGION

L. E. ARMFIELD

One of the outstanding contributions to meteoric astronomy during 1936 was the successful use of two-way short radio communication for identifying meteors observed in duplicate from two stations some distance apart. This adaption of the electronic art to astronomy was accomplished by E. A. Halbach, C. F. Oakley, Joe Schmitz and their colleagues, E. R. Cooke, R.D. Cooke, and Loofboro, during the Orionid shower on the night of October 19-20.

So far as is known by the writer, the first recorded use of radio for identification of meteors observed in duplicate was by Dr. La Paz, AMS regional director of the Ohio region and his associates during the 1933 Leonid epoch. Duplicate observations were identified by a radio signal sent over WOSU by La Paz, which ceased when the meteor disappeared. Note of simultaneity of the cessation of the signal and the disappearance of the meteor was made on the record sheets of observers located at Columbus, Bellfontaine, Lancaster, near Sunbury and Cleveland Heights, Ohio. A list of fifteen such coincidences was sent in to the American Meteor Society with complete records; of which two of them were with other Columbus observers only and one other proved to be erroneous.

Scott Houston, who was attending the University of Wisconsin at the time, happened to hear the radio signals being sent over WOSU by La Paz. Upon Houston's next visit to Milwaukee he informed the Milwaukee members of La Paz' pioneering work. Steps were immediately taken by the Milwaukee group to interest radio amateurs in the use of radio phone two-way communication for duplicate height work. Bramble W. Burke, a radio amateur in Milwaukee, who was equipped with a 500 watt phone station, devoted much time, effort and energy in contacting various other men in the radio fraternity with respect to establishing a network of short wave phone stations to cooperate with AMS meteor stations in this region. Due to a series of unfortunate illnesses he was forced to drop his preparations for the use of the radio phone during the 1934 August Perseids. With his leadership removed the radio amateurs who had been engaged in the project dropped by the wayside and interest lagged until Halbach together with Cooke, Loofboro, Oakley and Schmitz successfully carried through the project.

The members of this region may be justly proud of the splendid contributions of all those mentioned above in this pioneering work. It is sincerely hoped

that the future will bring further co-operation between amateur radio men and amateur astronomers in other parts of the country.

The two-way radio communication was also used during the 1936 Leonid maximum with a success which naturally exceeded the first trial during the Orionids.

The AMS appreciates greatly, Mr. Cooke's excellent discussion and preliminary report of the duplicate meteor observations obtained on Oct. 19-20, 1936. The results are important historically as they are the first rewards of coordinating meteor observations by means of two-way short wave radio communication.

1410 N. Marshall St.,
Milwaukee, Wis.

PRELIMINARY REPORT OF DUPLICATE METEOR OBSERVATIONS, OCTOBER 19-20, 1936

R. D. COOKE

The instrumental set-up for meteor observations at two stations with two-way radio communication was described in the November *Amateur Astronomy*, page 126. In that article there was also reported the procedure used in observing and recording duplicate meteor observations on the night of the maximum of the Orionid shower and a summary of the splendid results secured. That session was regarded as something of a dress rehearsal, but the results have been reduced in a preliminary way, and it is the purpose of this report to set forth the outcome of the program in terms of the actual heights of the meteors as derived from the data.

The elements of the base line are the following. Station No. 1, Wauwatosa, Wis. long. W. 5^h 52^m, latitude N. 43° 2'.7. Station No. 2, Milton, Wis. long. W. 5^h 56^m, latitude N. 42° 46'.4, length of base line 79.6 km. (49.5 miles). At Station 1 the azimuth of the base line, reckoned from north to east, is 248° 11'. At Station 2 it is 68° 11'.

The method used for these preliminary computations was a simplified one in which the curvature of the earth, within the area covered, was neglected. The meteor positions were referred to a plane tangent to the earth's surface at the mid-point of the base line. It is thought that the errors introduced by this assumption are far less than the errors due to faulty observation. Without giving the complete formulas, the method consists briefly in converting for each station the right ascension and declination of the observed point to altitude and azimuth through well known equations. From the two azimuths and the base line a triangle on the horizontal plane is constructed representing a vertical projection of the main triangle formed by the base line and the two lines of sight. From the two opposite sides of this base triangle and the observed altitudes we obtain directly the vertical height of the observed point. If these agree well for the two stations the accuracy is regarded as satisfactory.

The following table shows the heights derived from the nine duplicate plots made during the Orionid shower.

Serial No.	GCT Oct.20	Beginning Height,Km.	Acc'y	Ending Height,Km.	Acc'y
1	7:20	141	Good	51	Fair
2	7:29	Did not yield a reasonable solution			
3	7:34	Did not yield a reasonable solution			
4	7:34	Did not yield a reasonable solution			
5	7:45	.....	Poor	88	Poor
6	8:03	128	Poor	79	Poor
7	8:11	Did not yield a reasonable solution			
8	8:25	104	Good	45	Good
9	8:26	130	Poor	93	Good

On the night of Nov. 15-16, in the Leonid shower, the same set-up and procedure were used, with some minor technical changes in the radio equipment. Two-way communication was maintained almost without interruption for four and one half hours during which time approximately 45 duplicate plots were recorded. Observing and plotting at the Wauwatosa end were done by E. A. Halbach, Geo. Diedrich, Arthur Peck, Elizabeth Wight, and R. D. Cooke. At Milton, C. F. Oakley did the observing and plotting single-handed throughout the session.

None of the data of the latter shower have been reduced at this time. This will be a good spare time amusement for someone during the winter. It is not planned to carry on another observing program of this kind before spring.

* * * *

On the night of Oct. 18-19, a brilliant fireball was seen and plotted by George Diedrich at Milwaukee, and by Jos. E. Boehm at Lake Geneva, Wis. The time was 11:53 P.M., CST. The height has been computed by the same procedure outlined above. The beginning point was not in good agreement. The ending point yielded a height of 64 km. with fair accuracy. The distance between the observers was 67.7 km. (42 miles).

1182 Kavanaugh Pl.
Wauwatosa, Wis.

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Send all communications to the above address.

AAAA Notes

Effective January 1, 1937, the AAAA inaugurates a new section of activity. The Variable Star Section is designed to stimulate interest in variable stars, encourage membership in the AAVSO and participation of its various observing programs, disseminate information pertinent to the subject of variable stars which is not readily available to members of the AAAA and generally to serve the telescope maker, novice observer, and prospective amateur astronomer in becoming acquainted with this fertile and fascinating field of astronomical activity.

The association is extremely fortunate in securing the services of David W. Rosebrugh, AAVSO regional adviser for eastern New York State, as director of the AAAA Variable Star Section. Mr. Rosebrugh is highly capable to fulfill the responsibilities of his position. He has attained prominence as an observer of variable stars and has gained much organizational experience as a member of the AAVSO nova search committee, as regional adviser of the AAVSO for Eastern New York State and in his Canadian campaign for new AAVSO memberships.

Mr. Rosebrugh's excellent introductory article will be found in the pages devoted to the reports of the working sections.

Calendar of Events

GEORGE DIEDRICH

(All time C.S.T.)

JANUARY, 1937

Fri. 1 We wish all our friends a profitable astronomical New Year.
1-4 Quadrantid meteor shower. Maximum on the 2nd (AMS Shower)
2-4 Zeta Cancrid meteors.
Mon. 4 Last quarter at 8:22 A.M.
Tue. 5 Conjunction of Mars and the moon at 9:35 P.M. Mars 6° 41′ north.
Tue. 12 New moon at 10:47 A.M. Conjunction of Mercury and the moon at 7:31 P.M. Mercury 10′ south.
Thu. 14 Inferior conjunction of Mercury and the sun.
Sat. 16 Conjunction of Venus and the moon at 8:39 A.M. Venus 6°27′ south. Conjunction of Saturn and the moon at 9:33 P.M. Saturn 7° 52′ S.
Sun. 17 Chi Cygnid meteors.
Tue. 19 First quarter at 2:02 P.M.
Wed. 20 Coma Berenicid meteors.
Sat. 23 Conjunction of Venus and Saturn at 8:00 P.M. Venus 1° 56′ north.
Tue. 26 Full moon at 11:15 A.M.

FEBRUARY, 1937 (First Half)

Wed. 3 Last Quarter at 6:04 A.M. Conjunction of Mars and the moon at 10:00 A.M. Mars 4° 48′ north.
Thu. 4 Quadrature of Mars and the sun.
Fri. 5 Venus at greatest elongation (46° 50′) east of the sun.
7-10 Alpha Aurigid meteors.
Sun. 7 Mercury at greatest elongation (25° 41′) west of the sun.
Mon. 8 Conjunction of Jupiter and the moon at 7:21 A.M. Jupiter 1° 59′ south.
Thu. 11 New moon at 1:34 A.M.
Sun. 14 Conjunction of Venus and the moon at 2:50 P.M. Venus 2° 50′ S.
Mon. 15 Beta Ophiuchid meteors.

3331 W. National Ave.,
Milwaukee, Wis.

AAVSO Nova Program Notes

L. E. ARMFIELD

We welcome heartily initial observations received from Miss Carita Cushman, Poughkeepsie, N. Y.; Perkinson, Fresno, Calif. and T. R. Treadwell, Arlington, N. J.

Additional observations of nova regions during November are listed below and are hereby gratefully acknowledged.

Observers		Region	Location	Magnitude of faintest star visible 7	6	5	4	3	2	Total Nights
Ballhaussen		57	Scarsdale	—	1	—	—	1	—	2
		55		3	—	1	—	—	—	4
		12		7	1	1	—	—	—	9
		33		7	1	1	—	—	—	9
Cox		65	New York	—	9	—	—	—	—	9
		62		—	10	—	—	—	—	10
Cushman		16	Poughkeepsie	—	2	—	—	—	—	2
Diedrich	(Nov.)	43	Milwaukee	—	11	—	3	3	3	20
	(Oct.)	43		—	6	6	5	3	2	21
	(Sept.)	43		—	8	3	1	—	—	12
	(Aug.)	43		—	7	2	3	—	1	13
Gale		49	Ames, Iowa	—	9	—	—	—	—	9
Hanna		11	New York City	—	3	—	—	—	—	3
		84		—	2	—	—	—	—	2
		62		—	2	—	—	—	—	2
Houston		18	Milwaukee	2	1	1	1	—	—	5
Jones, E. H.	(Nov.)	14	Goffstown, N. H.	—	—	2	2	1	—	5
	(Oct.)	14		—	—	4	1	—	—	5
Kirkpatrick		92	New York City	1	—	—	—	—	—	1
		61		—	2	1	1	—	—	4
Moore		26	Milwaukee	—	4	4	5	—	—	13
Perkinson		34	Fresno, Calif.	7	12	—	—	—	—	19
		101		4	2	—	—	—	—	6
Phillips		30	Avon, Conn.	—	2	4	—	—	—	6
Rosebrugh		1	Poughkeepsie	8	4	1	—	—	—	13
		52		7	5	1	—	—	—	13
Thomas		3	Cambridge	—	—	5	6	4	1	16
Treadwell		47	Arlington, N. J.	—	—	3	2	—	—	5

14 Observers 22 Regions — 2200 square degrees of sky reviewed

Binoculars or low powered finders were employed by the following observers in reviewing their regions: Ballhaussen, Cox, Hanna, Houston, Kirkpatrick, Perkinson and Rosebrugh.

1410 N. Marshall Street, Milwaukee, Wis.

Solar Section News

(continued from page 3)

0.0005-inch he secured a sharp spectrum at whatever wave length was focussed upon, and the two dark lines of sodium absorption were well separated.

On Nov. 29, 1936, in a communication, Mr. Lapham gives his latest observation on solar position and spots. At this time the north pole of the sun was inclined 1°.04 toward us and 16°.95 to the east. Of sunspots, six large complex groups, seven minor complex groups, four large spots with penumbra, and five medium size spots were present. No new spots under two days old were showing; although long, winding, white, faculae at about 20° N. latitude, on the extreme East limb, suggested a possible approaching spot or group. One spot group was to be seen with only the dark sun glass between the eye and the sun.

Twin Elms Solar Observatory, Elizabeth, Pa.

Tri-State News Notes

AMATEUR ASTRONOMICAL ASSOCIATION OF PITTSBURGH

FRED M. GARLAND, Vice President

Our November meeting was held on Friday the thirteenth. A certain little fellow named Jinx, who is said to gleefully wring his hands on that day, failed to show up. After the regular business session President S. S. Weisiger read an amusing astronomical poem. Our new treasurer, N. C. Goin, was given an accumulation of real cash.

Variable star observations for the month were reported as follows:

Rev. Morgan Cilley	157
Lancaster Hiett	58
Leo Scanlon	38
William MacCalla	10

Mr. Z. Daniel of Allegheny Observatory, discoverer of three comets, was welcomed by the group.

Leo J. Scanlon has been elected a councilor in the AAVSO.

The speaker of the evening, Mrs. Maude Wiegel, director of solar section, AAAA, presented an illustrated lecture entitled "What the Stars Are Made of." Many of the lantern slides used were prepared by Mrs. Wiegel at her own Twin Oakes Observatory. Moon, sun, planets and stars were taken apart and their make-up revealed in a style cleverly and swiftly handled.

Mrs. Wiegel surveyed red-hot stars, white-hot stars, and expertly classified many of those ranging in color from red, through orange, yellow and white to the bluish-white or blue. Then she centered her spectroscopic analyses on the 10 types of spectra from O, B, A etc. through to N; she determined star magnitudes; stellar motions were compared; common directions and velocity were ably discussed. A most interesting phase of the lecture dealt with that miniature solar system, the atom; we explored the space covered by released atomic energy, and were elevated from the earth far up above the thin air traversed by man in his stratosphere ascension.

We saw beautifully colored pictures of the sun's prominences, and photographs of huge sun-spots that are so closely related to some things which happen here on our earth; she had slides of eclipses showing the corona of the sun flashing out suddenly; and diagrams of great distances made far away objects seem astonishingly near.

The high points of Mrs. Wiegel's talk were woven around her pet topic, "the sun and its secrets." We learned a lot about sun-spots that are very short-lived, and some that remain (such as the larger) for a number of days. Sun-spot cycles were explained, and the spectroheliograph was turned on the solar atmosphere. Flocculi, those great masses of gas in the chromosphere; the magnetic condition of sun-spots; the collision of electrons and protons, said to generate energy; these subjects were excellently expatiated upon. And we rode in a fiery chariot atop the sun, shooting high from the photosphere through the gaseous reversing layer into the chromosphere, floating ever upward with the prominences and flocculi, finally entering into and hovering wonderously about the region of the corona, perhaps a million miles or more from the surface of the sun.

Mrs. Wiegel still found time to study that mysterious cosmic ray, searching the extent of its penetrating forces; and had us contemplate on the theory of whether we could consider in the cosmic ray as Jeans said, "the dismal death rattle of dying atoms," or, according to Millikan, "the wail of newborn tiny worlds." Thus she guided the audience on a journey that left us feeling how humble and frail man seems in his home on this globe, yet with what magnificent spirit he has reached out in his quest for knowledge of things unseen, of powers and forces unknown.

At the close of this very fine lecture, Dr. Charles S. Palmer, prominent scientist, and a councilor in the American Chemical Society, praised Mrs. Wiegel in the highest terms. May we briefly add through the medium of this column, the thanks and appreciation of both officers and members of our group for the privilege of seeing a picture skillfully drawn and hearing a story delightfully told.

Valley View Observatory,
Pittsburgh, Pa.

Variable Stars

(continued from page 2)

liance. The summer standbys, R Coronae Borealis and R Scuti are now lost to the evening skies, though early risers can find R Coronae Borealis low in the northeast before dawn. R Scuti, however, is too near the sun to be observed for some time to come. Nova Aquilae, 191201, is also too low in the west at sunset to follow any longer, but Nova Lacertae and DQ (Nova) Herculis are favorably placed for observation.

Poughkeepsie, N. Y.
3 Yates Boulevard,

NAS Star News

NORWALK ASTRONOMICAL SOCIETY
WARREN E. PREECE, Secretary

The NAS has undertaken to build a lantern slide library. Although we realize that it is always possible to rent astronomical slides, we felt that slides would mean much more to us if they were products of our own and about subjects of our own. At first our slides will of necessity be composed of the material we have at hand; some star trails and a set of pictures we took of the phases of the moon. However, after we get started we plan to cover a number of subjects most useful in illustrating lectures.

To our readers it might be interesting to know how lantern slides are made. They are made from photographic negatives in much the same method as paper prints are prepared. Since the slides must be transparent for use in the lantern, they are printed on sensitized glass plates made for the purpose and obtainable from any photographic dealer. The emulsion side of the negative to be used is placed in contact with the sensitized side of the plate and the two usually placed in a printing frame which provides uniform pressure between the surfaces in contact. The light sensitive plate is exposed to a dim light at some distance, the light passing through the negative first. The exposure time is best determined by experiment and is usually several seconds. After exposing, the plate is developed to good contrast (1½ to 5 minutes), removed from the developer, rinsed in clear water and placed in an acid hardening bath for fixing, as the photographer terms it. A common fault of amateur slides is underdevelopment, so take heed! After fixing, the plate is washed thoroughly for 20 minutes and allowed to dry. The emulsion on the finished plate is protected from harm by a cover glass of the same dimensions as the plate and the two taped together around the edge to form the completed lantern slide. If desired, a mask may be inserted between the two plates before binding with tape.

Although these directions are brief, we are glad to give advice to anyone who contemplates making slides, or accept advice from those who may have had much more experience in this interesting work.

2 Roland Avenue,
East Norwalk, Conn.

Milwaukee News Notes

MILWAUKEE ASTRONOMICAL SOCIETY
M. N. FISHER, Correspondent

Situated in the Davis mountains, 180 miles southeast of El Paso, Tex., is the new McDonald Observatory now being completed by the University of Texas in cooperation with the University of Chicago. News of this major cooperative project between two of the larger American universities was brought by Dr. George W. Moffitt, of Yerkes Observatory, to a meeting of the Milwaukee Astronomical Society Dec. 9 at the Milwaukee Public Museum.

For the present, the University of Chicago will furnish the personnel for the new observatory, according to Dr. Moffitt.

The first and second floors of the observatory under the dome will be utilized, contrary to present custom, for the offices. The dome proper is a ventilated steel structure with double skin metal walls, built in this way to reduce rapidly the interior temperatures to the surrounding air. The mirror is an 82-inch Corning pyrex disk, 13 inches thick and with 13-inch hole for the Cassegranian focus. The prime focus is 320 inches. A 96-foot Cassegrainian focus will be used for low dispersion spectroscopic work. For higher dispersions a modified Coude' type, having a focal length of 160 feet, will be used. The modified Coude' will not be blind to certain regions of the sky as are other Coude' instruments.

Because a Newtonian flat introduces excessive light losses, a prime focus camera to be driven with eight or nine motors controlled by push buttons, was designed by Dr. Moffitt. A 6-inch Ross correction lens will be used with the camera.

The Milwaukee Astronomical Society has received the announcement of the appointment of Edward A. Halbach as regional adviser for the Wisconsin region of the AAVSO.

Herbert W. Cornell, president of the Milwaukee society, spoke on "Our Universe and Others" at a meeting of the Milwaukee group at the Public Museum Dec. 16. More than 500 persons heard his talk. L. E. Armfield, secretary of the society, spoke during the month at a meeting of the Edison club of the Milwaukee Electric Railway and Light Co. and the Oklahoma Avenue Lutheran church.

836 N. 14th Street,
Milwaukee, Wis.

passing through the sun's gravitational field. The prediction was confirmed by the results of observations made at Sobral, Brazil, where the duration of totality was more than five minutes, and at Principe off the coast of Africa. The maximum duration of this eclipse at sea was six minutes and 50 seconds.

The coming eclipse of June 8, 1937, will have a path extending nearly one-third of the distance around the earth in equatorial regions of the Pacific with a maximum width of 153 miles. It passes over no land except a few coral atolls of the Ellice and Phoenix groups, and a small strip of land in Peru just before sunset. The only favorable location within the path, on land, is Enderbury Island of the Phoenix group, 2½ miles long and one mile wide, where mid-totality occurs about 7:45 A.M. with the sun 22° above the horizon. The duration of totality will be a little over four minutes. A more barren and inaccessible site one could not imagine. The island is uninhabited and has scanty vegetation and no water, while landing is dangerous and anchorage unsafe.

On Nukufetau, of the Ellice group, the eclipse will occur about 50 minutes after sunrise. The duration will be over three minutes but the sun will be less than 15° high. Nukufetau is a much more attractive site for an expedition than Enderbury. It consists of a group of islets 24 miles in circuit inhabited by friendly natives living in villages with schools, churches and native teachers.

Christmas Island, one of the largest of the coral atolls and an excellent site in every respect, will be barely grazed by the southern limit of the path of total eclipse at the northernmost point. Here the duration will not be over a few seconds.

On the coast of Peru, near Chembote, and at Huaraz about 100 miles inland, among the mountains, the eclipse will occur about 35 minutes before sunset and the sun will be only about 8° above the horizon. The duration will be over 3 minutes 20 seconds but no astronomical observations of value may be expected with the sun so low.

This practically exhausts all the possibilities of observing this great eclipse on land. We venture to predict, however, that efforts will be made to observe it at sea and to obtain results of scientific value even under unfavorable conditions. A total eclipse of seven minutes duration is too rare a phenomenon to pass over the earth observed by no one.

U. S. Naval Observatory,
Washington, D. C.

Revision of AAVSO Star Atlas

D. F. BROCCHI

The AAVSO Star Atlas is no exception to the rule, but fortunately blue prints are quite suitable for alterations by careful use of blue and white inks or water colors.

Users of the atlas are, therefore, advised that the following corrections are in order:

Chart 1.—Change "12" to "2" at 8^h 26^m $+65°$ 29′.

Chart 2.—Change "52" to "32" at 1^h 5^m $+64°$ 29′.

Chart 5.—Delete boundary meridian between Coma and Canes Venatici at 13^h $11^m.2$ and replace at 13^h $16^m.2$; produce declination arc at $+31°$ 52′ to close gap and delete corresponding portion of arc at $+28°$ 22′.

Chart 8.—Delete "47" at 0^h 23^m $+9°$ 39′, but leave disk in place. Delete portion of graduation mark at $-16°$ in right hand declination scale.

Chart 10.—Change Epsilon to Kappa at 9^h 36^m $-15°$ 53′.

Chart 13.—Add "29" to disk at 18^h 44^m $-20°$ 26′. Delete "13" and disk at 20^h 43^m $+6°$ 38′ and replace both at 20^h 43^m $+5°$ 38′ (5mm due south).

Chart 15.—Add "56" to disk at 1^h 52^m $-23°$ 1′.

Chart 16.—Add open circle 3mm diam. designated by "RR" at 6^h $34^m.7$ $-62°$ 33′.

Chart 19.—Add Epsilon to disk at 18^h 4^m $-45°$ 58′.

Reports of additional errors found in the atlas will be highly appreciated.

4331 Thackeray Place,
Seattle, Wash.

Professor Earle G. Linsley kindly communicated the following interesting announcement: The Columbia Pictures Corporation has distributed for use in theatres using their films a film made in California last summer. The film is being presented under the announcement, Travelogue Pictures, Star Gazer's, Color and Talking. It is said to include Lick Observatory, Tauchmann's Amateur Observatory located in Berkeley (member of EAA), Mount Wilson Observatory, Santa Clara University and Los Angeles Planetarium. In cities where there are members of the AAAA or other associations, theatres using the film will notify them if requested. The film will be shown in Oakland Feb. 14-16, 1937.

Lunar Colors by Colongitudes

WALTER H. HAAS, Lunar Director

(Note: The following communication has been received from our Lunar Section Director. Readers will recall that "lunar colongitude", of which Mr. Haas writes, is a function of the angular height of the sun over any crater on the moon's surface; is roughly similar in magnitude to the age or phase of the moon, and is given in the American Ephemeris tables. See Planetary Reports in *Amateur Astronomy* for January, March, July and August 1936. E. M., Planetary Director).

This article is no detailed description, or even a brief discusson, of the 496 lunar color observations made by 25 observers in 1936. For contributed observations not made at Mount Union, the author is indebted to Ed. Martz and to James D. Buchanan, 481 Alameda Ave., Youngstown, Ohio. All that is attempted here is to set down some of the colors seen, and the times at which they are visible. The observations are arranged by colongitudes, first quarter being at 0°, full moon at 90°, and last quarter at 180°. As technique in lunar color observing, the author would recommend: color filters, use of low magnifications, making of observations as far from full moon as possible (until the observing eye becomes adapted to the full moon), and making the observations in as clear sky as possible.

Observations by Colongitudes

310°: Mare Crisium greenish. Furnerius floor greenish, except in southeast quadrant, where it is brownish. Stevinus shadow, previously lighter than Snellius shadow, now becomes darker than shadow. The two shadows differ slightly in color.

320°: Mare Crisium and Furnerius, gray.

330°: Brown tints appearing on floor and south wall of Stevinus.

0°: Eudoxus shadow brown. Distinct brown south of southern wall of Stevinus.

10°: Brown strip under east wall of Endymion fades to gray.

20°: Plato floor greenish, brownish under east wall. Stevinus brown fades to gray, but it may persist much later than this.

40°: Greenish tints in Mare Humorum.

50°: Brownish splotches appear on the green-brown floor of Plato. The brownish area at the east fades.

60°: Brown shadows in Phocydides, Vieta, and Pythagoras.

70°: Grimaldi floor greenish.

80°: Grimaldi walls becoming brownishgray. Ricciolli dark area purple and tone persists for a long time. Rocca-E purplish.

90°: The east side of Endymion becomes brown. The rest of the floor is increasingly greenish from now until sunset.

100°: Rocca becomes purplish. Purple tints are often seen on the Grimaldi walls at this time.

120°: Endymion very green.

140°: Rocca purple begins to fade.

150°: The green-brown tone of the Plato floor has darkened to an olive-green, the brown splotches fade, and the east end becomes greenish.

160°: Grimaldi floor almost gray instead of greenish. Julius Ceasar floor greenish.

170°: The green of the Grimaldi floor behaves irregularly beginning at this time, and lasting until it fades.

180°: The Plato floor is a distinct green-brown. The Rocca purple is gone.

190°: Greenish tints in Mare Humorum.

220°: Zuchius shadow brown.

230°: Grimaldi and Riccioli both fade to gray.

1842 S. Union Avenue,
Alliance, Ohio

The Stepped Rack

SCOTT HOUSTON

Amateurs experience much trouble in constructing rack and pinion devices for focussing because commercial racks now available do not have sufficient width to wear well and to work smoothly unless one employs too coarse a pitch. The best form of rackwork is the diagonal rack and twisted pinion but unfortunately it seems impossible to obtain it. Because of this difficulty many amateurs resort to spiral slots and similar devices. A compromise that may prove useful is described by Carpenter in his classic work on the microscope. The "stepped-rack", as he terms it, employs two straight parallel racks engaging the same pinion. One rack, however, is slightly displaced to take up the slack on the pinion. This rack-form provides the desirable extra width in addition to greater smoothness of workng resulting from the stepped arrangement.

807 E. Otjen Street,
Milwaukee, Wis.

siders that differences in relative magnifications used by different observers has much to do with their different delineations. Too much light from the planetary disk will drown out the half-tones. Thus, the absence of half-tones on all the Flagstaff drawings, where low magnification (500X-400X) in relation to the large 24-inch aperture used, will be explained when compared with drawings made in smaller instruments with the same magnifications which do show half-tones. Certainly, planets would have a different appearance in the 24-inch with a magnification of 1000X, if such a power is usable. The writer's work on Jamaica and elsewhere has also brought out this fact, as well as corroborating the importance which Jarry-Desloges places on long focal lengths and focal ratios in their influence on the type of planetary markings seen.

It is unfortunate that lack of space here prevents further consideration of this interesting subject. We may only mention the work of Douglass, Villiger and others on the various imperfections in the human retina (Singularitätskurven), giving rise to the psuedo-details and forms often apparent in observations of faint, difficult detail. The writer might also mention that it appears to him signficant that spots, lines, etc., are more likely to be influenced seriously by these ocular striations than are the diffuse areas of strong or faint contrasts observed by many planetary workers.

In conclusion, it may be said that our best possibilities for future work seem to lie in the accurate observation of the relative positions and changes in planetary markings, rather than in further controversies over the exact form and type of the markings.

International House,
University of Chicago,
Chicago, Ill.

The association is happy to receive the announcement of the appointment of James S. Andrews, regional organizer of the New York and New Jersey regions, to the post of Official Astronomer by the management of The Rockefeller Center Observation Roofs.

The attractive brochure issued by the management of the Rockefeller Center Observation Roofs announcing the appointment informs the patrons of the observation roofs that they may obtain information on astronomical subjects and make observations through Mr. Andrew's 8-inch reflecting telescope each evening, weather permitting. No charge is being made for the service rendered to the patrons.

The AAVSO Program For Guided Cameras

LYNN MATTHIAS

The AAVSO program of photographic work for guided cameras consists of the measurement by photographic means of the brightness of variable stars in a number of "AAVSO Fields." The "AA VSO fields" have been carefully chosen by Dr. Shapley and the Harvard College Observatory staff and include variables for which further data are important. Each field includes an area of 100 square degrees and contains on the average a half dozen variables brighter than the eleventh magnitude at minimum. The areas include cepheids, long period variables, irregular variables, and eclipsing types, having a range of a magnitude or more. The fields are well distributed in right ascension and declination to provide a continuous program for a number of observers. The 1855 centers of the fields are as follows:

1.	$1^h50^m+57°$	6.	$14^h23^m+29°$
2.	$5^h\ 0^m+40°$	7.	$16^h10^m+51°$
3.	$5^h10^m-\ 3°$	8.	$20^h15^m+34°$
4.	$6^h10^m+19°$	9.	$21^h40^m+44°$
5.	$8^h30^m+16°$	10.	$22^h20^m+55°$

Essentially, the work consists of the taking of photographs of an area and the measurement of the images of the known variables. The cameras must be equipped with good drives and be in accurate adjustment. It will, of course, be necessary to calibrate a comparison sequence in the area, using the North Polar Sequence or other stars of well determined brightness as standards. These comparison stars will then be used to determine the brightness of the variables in the area under investigation.

The length of the exposures will, of course, depend somewhat on the observers' equipment, but will range, in general, from 15 to 90 minutes. To insure accurate measurements all plates taken on one area should be centered on the same guide star; this will also make it possible to use the plates for the detection of unknown variables and other objects.

2121 East Capitol Drive,
Milwaukee, Wis.

The Zapotec Indians knew the Pleiades. They called them Pizaana-Cache, or "the seven boys."

AMS Meteor Notes

WISCONSIN-NORTHERN ILLINOIS REGION

L. E. ARMFIELD

The observations received are shown in two tables. Table I lists the Olivier-Hoffmeister program contributions and Table II lists the shower meteors.

Table I

OLIVIER-HOFFMEISTER PROGRAM CONTRIBUTIONS

Observer	Location		Minutes	Meteors
Abrahams	Milwaukee	(October Observations)	306	14
		(November Observations)	300	7
Diedrich	Milwaukee	(October Observations)	185	23
Kendall	Milwaukee	(October Observations)	2127	171
Keuziah	Milwaukee	(October Observations)	65	9
Trimmier, M. E.	Chicago	(September Observations)	1030	*39
5 Observers			4013	263

Table II

Shower Meteors

ORIONIDS

Observer	Location	Date	Minutes	Meteors Shower	Stray	Total
Diedrich	Milwaukee	Oct. 19-20	180	15	17	*22
Halbach	Milwaukee	19-20	75	9	....	* 9
Oakley	Milton	19-20	75	9	....	* 9
3 Observers			330	23	17	*40

LEONIDS

Observer	Location	Date	Minutes	Meteors Shower	Stray	Total
Cooke	Milwaukee	Nov. 15-16	220	....	2	* 2
Diedrich	Milwaukee	15-16	130	....	1	* 1
Halbach	Milwaukee	15-16	220	7	6	*13
Loepfe	Milwaukee	15-16	220	....	2	* 2
Needham	Milwaukee	15-16	128	....	....	**18
Oakley	Milton	15-16	220	15	24	*39
Strelitzer	Milwaukee	15-16	140	17	9	**26
Wight	Milwaukee	15-16	220	2	1	* 3
8 Observers			1398	41	45	104

*All Plotted **Counted Only

Totals: Tables I and II—Minutes 5741; Meteors 407

The AMS is indebted to Joseph E. Boehm and R. D. Cooke for the splendid articles contributed by them which appear below.

1410 N. Marshall Street,
Milwaukee, Wis.

COUNTING METEORS

JOSEPH E. BOEHM

It has probably occurred to many amateur astronomers, especially those whose activities have been confined to telescope building, to ask, "What pleasures are to be found in meteor observing?" The writer has often wondered that very thing and finally decided to find out. During 18 months of practical observing activities I have had many interesting experiences, both socially and astronomically. I like the dynamic characteristics of meteors and meteor observing, for, when observing meteors, anything can happen—and sometimes does.

For example, the habit amateurs have of dropping in at the most unexpected times, often arriving by sheer coincidence in groups, creating one of those impromptu and genuinely interesting observing parties. I like to recall one occassion last summer at Lake Geneva. While doing some quiet observing, a

couple of neighboring amateurs dropped in, followed soon after by a group from Chicago, another group from Milwaukee, and no less than a dozen local folks dropping in throughout the evening; all as unexpected as the meteors themselves. Yes, I like observing meteors, but I like "meteor party" better.

And I like the way meteors suddenly flash by without notice and the unexpected forms they take. I remember that rare treat—a "spiral" meteor—booked as a 1000 to 1 shot. Although I have observed some 500 meteors to date, the spiral appeared after the first 75, showing that while observing meteors, anything can happen. Incidentally, while observing the spiral meteor, I remember receiving a distinct *sensation* of a meteor, no doubt, was miles away at the time and could hardly have radiated the sound inasmuch as it was received simultaneously with the light. However, the sight of that odd spiral coming straight for me rather startled me, and that perhaps was the origin of the sound sensation. Which proves again that while observing meteors, anything can happen and occasionally does. "Have a loaded camera on hand while observing," pleaded Mr. Armfield of Milwaukee. But what chance had I to catch anything? So, no camera.

Then, there was that time when observing an unfamiliar section of the sky with another amateur. A meteor flashed overhead and we checked the stars and meteor maps for a plot. "Dern these faulty meteor maps" we groaned, "that bright star up there is poorly located on this map, it must be this small one here." Next morning we read in the newspaper of Peltier's nova—our trouble-some star! Discovered only 48 hours previously, we had independently observed it—and although we failed to recognize its significance, we came "close enough" to a discovery to get a genuine thrill. Which only shows that while observing meteors, anything can happen, and frequently does.

Now if you want something to test your patience and tenacity, try duplicate meteor plots with somebody 60 miles away. Doggedly plotting at pre-appointed times, sending in your reports and getting no luck! You keep on trying, begin to grow weary—and then you learn you scored a hit! Quite an achievment. If you don't think so, try it sometime.

And I will never forget the time while patiently guiding for a long exposure photograph with the telescope, I undertook to count meteors between squints at the eyepiece. A flashing meteor! Developing soon into a flaming, writhing ball of fire followed by an explosion of shadow-casting brilliance, and lo, a luminous cloud of second magnitude, majestically dominating the stellar void for seven minutes! And where was my camera? Yes, Mr. Armfield knew the truth —when observing meteors, anything can happen, and, by George, it does!

3511 N. Seminary Avenue,
Chicago, Ill.

THE LEONID METEORS OF NOV. 15-16, 1936
(Or Ten Little Injins)

R. D. COOKE

In the January issue of *Amateur Astronomy*, p. 6, mention was made of the observations for heights with two-way radio communication on the night of Nov. 15-16. Preliminary reductions have been completed from these observations, and the purpose of this note is to report the results.

As has been described previously, the two groups of observers, one at Wauwatosa and one at Milton, were in constant communication by radio. When a meteor was seen by either station and plotted it was given a serial number. Many of these were simultaneous and were assumed to be the same meteor. The data from both stations have been assembled and carefully checked. Of the 42 serial numbers recorded, 19 were found on both sets of data and were assumed at this stage to be duplicate plots

For the purpose of simplifying the ckecking of duplicates a celestial globe was used. The beginning and ending point of each meteor as seen from the two stations was plotted on the globe. If the observations were of the same meteor and if the plots were accurate, the two apparent beginning points and the two apparent ending points would lie on two great circles respectively, terminating in the horizon plane at two points whose azimuth or bearing was the same as the azimuth of the base line joining the two observing stations. The 19 duplicate plots were verified in this way and of these six were found to be in very poor agreement. Either the plotting had been inaccurate or the plots were not of the same meteor. Of the remaining 13, the altitude and azimuth of each beginning and ending point was read from scales on the globe.

From this point the beginning and ending heights were calculated by the method outlined in *Amateur Astronomy*, Jan. 1937, p. 6. Four were found not to be

plotted accurately enough to yield good results. Two yielded good ending points only and one a good beginning point. Six gave good results for both beginning and ending. These results are tabulated below.

It appears that the accuracy of plotting improved toward the end of the session. The last two on the list were in very perfect agreement.

1182 Kavanaugh Place,
Wauwatosa, Wis.

Serial No.	Time H.M.	Beginning Ht. (Km.)	Ending Ht. (Km.)
6	14 02	.....	60
11	14 20	154	73
13	14 39	127	81
14	14 43	.....	76
19	14 56	119	....
32	15 40	139	93
35	16 01	107	72
39	16 18	128	91
40	16 27	110	83

Variable Star Section

D. W. ROSEBRUGH

"What are these variable stars that you talk about? Are they stars that jump around from place to place?" This question is asked so often by friends after they have looked through the author's telescope that it seems best to answer it before venturing further afield.

Variable stars are not planets, comets or meteors as the question seems to imply, but are fixed stars, or remote suns, shining by their own light. Unlike the other 95% of the stars which are very nearly constant in brightness, variable stars vary several magnitudes in brightness from time to time. Eclipsing variable stars like Algol, Beta Lyrae and Zeta Aurigae are, of course, quite regular in their variations and the cause of their periodic dips in brightness is well known. The Cepheid type variables with periods from a few hours to about 50 days are also tolerably regular, and several different interesting theories have been advanced to explain their rhythmic pulsations in brightness. Long period variable stars like O Ceti and Chi Cygni go through their crescendos and diminuendos with more or less regularity every few months. Still other irregular variable stars like R Coronae Borealis and SS Cygni are so variable and jumpy that, like the stock markets, no one can predict their vagaries, let alone explain the causes. Observing these variable stars is full of thrills, for the unexpected is always happening.

It is hoped to explain briefly how amateurs locate and observe variable stars in the next monthly article, and thereafter it is planned to discuss in this column the different classes of variable stars and the various kinds of variations that they undergo. The underlying cause of these variations is a still more unknown subject but it is not beyond all speculation. When the causes are fully known, which will probably not be within our lifetimes, they will no doubt throw a great light upon astrophysics and perhaps upon the evolution of the stars and the cosmos.

In answer to the request in the Januarey issue, which is hereby repeated, some of our members have begun reporting the number of their observations of variable stars as follows:

JANUARY REPORT:

Name—	Variables Seen	No. of Observations
Hartmann, Long Island, N. Y.	149	326
Jones, Goffstown, N. H.	110	379
Rosebrugh, Poughkeepsie, N. Y.	28	88
Smith, Vineland, N. J.	1	3

We thank these observers for their reports, and ask them to continue and all others to start. Mr. Hartmann reports that Nova Lacertae is steadily waning, having reached 9.7 mag. on Julian Day 8531 (Dec. 28). Our veteran observing aces, the Rev. T. C. H. Bouton, St. Petersburg, Fla., and E. H. Jones, Goffstown, N. H., comment on the extreme irregularity of SS Cygni. A summary of the recent observations upon this star follows:

Julian Day	Mag.	Julian Day	Mag.
508	82	534	103
509	83	535	103
518	101	536	102
520	106	538	104
521	105	539	107
525	115	540	107
526	115	543	115
527	116	544	111
531	111	545	117
532	118	550	106
533	103	557	111

Mr. Jones comments that on Oct. 13 (Julian Day 2428455) SS Cygni was at 120, on the nineteenth he found it at 109 and on the twentieth at 114. These are astonishing changes in so short a time!

3 Yates Blvd.
Poughkeepsie, N. Y.

AAVSO Nova Program Notes

L. E. ARMFIELD

We welcome initial observations received from Edwin E. Friton, 6542 Smiley Avenue, St. Louis, Mo. Mr. Friton is assistant director of the Locksley Observatory of Webster Groves, Mo.

Observations of nova regions made during December are listed below.

Observers		Region		Magnitude of faintest star easily visible 7	6	5	4	3	2	Total Nights
Abrahams	(Nov.)	59	Milwaukee	....	10	4	1	....	....	15
	(Dec.)	59		....	9	2	....	....	....	11
	(Nov.)	56		....	6	....	....	....	....	6
	(Dec.)	56		2	4	....	....	....	....	6
Ballhaussen		12	Scarsdale	2	3	2	1	2	....	10
		33		2	2	2	1	2	....	9
		55		....	3	....	....	2	1	6
Cushman		16	Poughkeepsie	....	4	....	....	....	....	4
		56		....	1	....	....	....	....	1
Friton	(Nov.)	9	St. Louis	....	2	2	....	....	....	4
	(Nov.)	10		....	2	2	....	....	....	4
	(Dec.)	9		....	....	....	1	....	....	1
	(Dec.)	10		....	....	....	1	....	....	1
Halbach		49	Milwaukee	....	....	1	....	....	....	1
		50		....	....	1	....	....	....	1
Hanna		11	New York	4	2	....	....	....	....	6
		62		2	2	....	....	....	....	4
		84		3	3	....	....	....	....	6
Houston		18	Milwaukee	....	....	7	....	....	....	7
Jones		14	Goffstown	....	....	3	5	....	....	8
Kirkpatrick		92	New York	....	3	....	....	....	....	3
Loreta		17	Bologna, Italy	....	7	....	....	....	....	7
		112		....	1	2	....	....	....	3
Moore		26	Milwaukee	....	3	6	2	....	1	12
Rosebrugh		1	Poughkeepsie	4	2	....	1	....	....	7
		52		4	2	1	....	....	....	7
Thomas		3	Cambridge	....	....	....	2	12	1	15
Treadwell		47	Arlington, N. J.	....	....	4	4	....	....	8

13 Observers—22 Regions—2200 square degrees of sky reviewed.

Binoculars or low powered finders were employed by the following observers in reviewing their regions: Ballhaussen, Friton, Hanna, Kirkpatrick and Rosebrugh. 1410 N. Marshall Street, Milwaukee, Wis.

* * * * *

OBSERVATIONS OF SATURN IN 1936

By W. W. SPANGENBERG

The observation of Saturn in 1936 was most interesting with regard to the planet's ring, but due to lack of time and bad weather I could not observe the disappearance of the ring nor its reappearance. The first night I could observe the planet was August 27, but the conditions were not good. The ring's shadow was very dark and quite easily seen; the ring itself was already completely visible and broad. The most evident phenomenon was a cloudy-looking dark band on the northern hemisphere. Sometimes one or two white spots were visible, but they were uncertain and difficult to detect. The region of the south pole was somewhat darker than the north pole. On October 14, I found a dark intense band on the southern hemisphere. On Dec. 25 at $18^h\ 30^m$ G.M.T., the ring was visible only at some points. My small 2-inch telescope showed Saturn ringless. The right part of the ring was found to be only up to the region of the Cassini division; on the other side it was almost completely visible, with an interruption only at the Cassini division. The end of the left (East?) side of the ring was brighter than the middle part. This observation is similar to that of W. H. Haas on July 2, 1936, about which he reported in the September 1936 issue of *Amateur Astronomy*, and Mr. Martz observed the same phenomenon on Jamaica, the extremities of the ring being very bright. (Latimer J. Wilson also observed this phenomenon numerous times between July and September 1936.—Planetary Director) Other German observers could not make analogous reports in the summer of 1936. On Dec. 25 I saw a small white spot in the dark northern band or belt.

Schwerin Meckl.,
Steinstrasse 27,
Germany.

Milwaukee News Notes

MILWAUKEE ASTRONOMICAL SOCIETY
M. N. FISHER, Correspondent

The Milwaukee Astronomical Society will meet at the Public Museum at 8 P.M. Feb. 4 to hear Ralph Buckstaff of Oshkosh speak on Mars.

Edward A. Halbach, a member of the editorial staff of Amateur Astronomy and regional advisor of the AAVSO for Wisconsin, has been appointed to the teaching staff of Marquette University. He will teach mathematics and English. Mr. Halbach has been associated with R. D. Cooke as assistant chemist at the Rundle Manufacturing Co.

Prof. Arpad Elo, of Marquette University, spoke on spectroscopy and its relation to astronomy at a meeting of the Milwaukee society on Jan. 7.

Herbert W. Cornell, president of the society, spoke at the Parent-Teachers Association of the Emanuel Philipp School on Mon. Jan. 18 and to the students of that school on the 21st.

L. E. Armfield spoke at the Mothers' Club of Wauwatosa and the Men's Club of the Church of the Reformation and also at the Men's Club of Immanuel Reform Church.

836 N. 14th Street,
Milwaukee, Wis.

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Milwaukee Astronomical Society, Milwaukee, Wis.
New Jersey Astrophysical Society, Woodbridge, N. J.
Norwalk Astronomical Society, Norwalk, Conn.

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Calendar of Events

GEORGE DIEDRICH
(All time C.S.T)

FEBRUARY, 1937

Thu. 4 Quadrature of Mars and the sun.
Fri. 5 Venus at greatest elongation (46° 50′) east of the sun.
7-10 Alpha Aurigid meteors.
Sun. 7 Mercury at greatest elongation (25° 41′) west of the sun.
Mon. 8 Conjunction of Jupiter and the moon at 7:21 A.M. Jupiter 1° 59′ south.
Tue. 9 Conjunction of Mercury and the moon at 12:41 A.M. Mercury 2° 23′ south.
Thu. 11 New moon at 1:34 A.M.
Sun. 14 Conjunction of Venus and the moon at 2:50 P.M. Venus 2° 56′ south.
Mon. 15 Beta Ophiuchid meteors.
Wed. 17 First quarter at 9:50 P.M.
Sat. 20 Coma Berenicid meteors.
Thu. 25 Full moon at 1:43 A.M.

MARCH, 1937 (First Half)

Mon. 1 Venus at perihelion.
1-2 Alpha and Beta Perseid meteors.
Wed. 3 Conjunction of Mars and the moon at 5:25 P.M. Mars 3° 24′ north.
3-4 Tau and Beta Leonid meteors.
Fri. 5 Last quarter at 3:17 A.M.
Mon. 8 Conjunction of Jupiter and the moon at 3:11 A.M. Jupiter 2° 40′ south.
10-11 Zeta and Kappa Bootid meteors.
Thu. 11 Conjunction of Mercury and the moon at 9:53 P.M. Mercury 7° 43′ south.
Fri. 12 New moon at 1:32 P.M. Venus at greatest brilliancy.
Mon. 15 Conjunction of Venus and the moon at 7:38 A.M. Venus 2° 11′ north.

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Milwaukee, Wis.