

AMATEUR ASTRONOMY

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Ten Cents

William Tyler Olcott

(Professor Emeritus of Astronomy, Mount Holyoke College)

ANNE S. YOUNG

The passing of William Tyler Olcott, author of many popular works on astronomy, and Life Secretary of the American Association of Variable Star Observers, brought grief to men and women all over the country who have gained from his letters and books help and inspiration in their study of the stars. He was stricken with a heart attack on the evening of July 6 while giving a talk on astronomy at George's Mills, Lake Sunapee, New Hampshire, where he was spending the summer.

Mr. Olcott was born in Chicago in 1873, but his home from early boyhood was in Norwich, Conn. College days were spent in Trinity at Hartford, Conn., after which he studied law and was admitted to the bar, although he never really practiced law.

A course in astronomy, chiefly mathematical, taken in undergraduate days, had failed to arouse his enthusiasm, but in 1905 the revelations of a field-glass awakened his interest, and he became an indefatigable student of the heavens. He soon became so familiar with the sky that he could point his little telescope so as to find almost at once any object within its reach. With a fine literary background and endowed with a rare gift of happy expression, he was specially qualified for writing the popular books on astronomy so well-known all over the English-speaking world. "A Field Book of the Stars" was published in 1907. "In Starland with a Three-inch Telescope", "Star Lore of All Ages," "Sun Lore of All Ages", "The Book of Stars for Young People", and "A

Field Book of the Skies" appeared at various times, each meeting with a cordial reception from the public.

As a result of a visit to the Harvard Observatory in 1910, Mr. Olcott became interested in variable star observing. Realizing that there must be many owners of small telescopes who would gladly make regular observations if they knew that the result of their work would be of real scientific value, he offered to furnish information, instruction and charts to any one willing to undertake such work. Volunteers appeared immediately, and the AAVSO was the result. The rapid growth of this society was the source of great satisfaction to him, and in spite of continued frail health, and although many others were sharing in the labors involved in the carrying on of such an organization during all the years that have followed, Mr. Olcott has been finding new recruits for the work and has been helping them in their efforts.

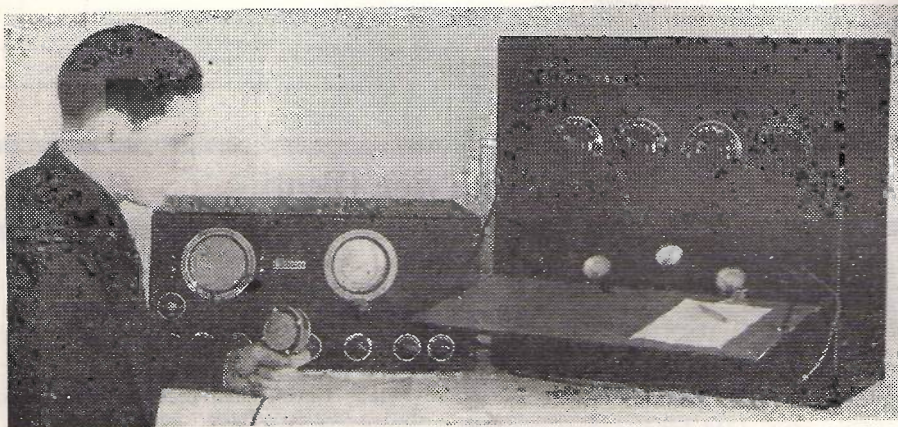
Only serious illness kept him from always attending the AAVSO meetings, and none of its banquets seemed complete unless the Secretary was present to give some humorous "quotations" from his voluminous correspondence or to read some of his exquisite verses.

Last May it was voted that at the October meeting of the AAVSO, the twenty-fifth anniversary of its founding, the special award of the Association should be given to Mr. Olcott in recognition of his 25 years of devoted service. This award was given, but the beloved Secretary was not there to receive it.

106 13th Street,
Winona Lake, Ind.

Coordinated Meteor Observations

EDWARD A. HALBACH



Joe Schmidt (W9AIQ) at the microphone

No doubt those who have made duplicate-height meteor observations have realized how few meteors can be definitely recognized from the assembled data as having been seen simultaneously. A few years ago, the writer, in making duplicate-height observations with members of the MAS, noted the inadequacy and uncertainty of the present system of recording time of occurrences to the nearest second.

Franklin W. Smith, in his meteor notes this month, stresses the value of duplicate observations and the matter of accurate timing by various methods. To this list might be added the recording timer constructed by the writer which will be fully described in *Amateur Telescope Making—Advanced*, a new book by Ingalls which is now in preparation. This instrument prints the time directly onto a paper strip. Through these methods of timing have greatly increased the timing accuracy, they are far short of an ideal setup. Scanning the records of observations in the past, one finds that only two to five in every 25 meteors plotted are seen in duplicate by both observers, a high mortality indeed!

Several years ago the University of Ohio made announcement of the appearances of meteors over its broadcasting station for the benefit of observers in that vicinity. Whether or not the test was successful or continued is not known by the writer. Why not use two-way short wave radio communication? That would be an ideal solution!

Several attempts were made to interest radio amateurs in the scheme, but

further than become interested they would not act to make it a reality. Since our cooperating observers are located in Madison, Lake Geneva and Chicago, radio amateurs would have to be obtained there also to complete a two-way network.

Early this summer, the writer chanced to meet C. F. Oakley of Milton, Wis., at the Washburn Observatory at Madison. Mr. Oakley mentioned his interest in astronomy and said he was also a radio amateur. After explaining the proposed radio system to him, he expressed his willingness to cooperate and requested that he be kept informed of further developments. This chance meeting was the beginning of a plan which resulted in complete success on the first tryout during the Orionid meteor shower on Oct. 19.

Shortly after the meeting with Mr. Oakley, Joseph Schmitz came to live with the writer. With his assistance, a 50-watt grid-modulated portable radio transmitter was constructed to operate in the 160-meter band, the most stable band for distances of less than 100 miles. A crystal keeps the transmitting frequency at 1995 kc. Since Mr. Oakley's transmitter is on 1845 kc., the frequency separation is great enough to permit operation in duplex, receivers and transmitters being on continuously and conversation carried on as on ordinary telephone circuits.

Our new transmitter which is shown in the right of the photograph above, was completed by Oct. 15 so it was set

up at the home of Raymond D. Cooke and a schedule arranged with Milton for Monday, Oct. 19, the night of the expected maximum of the Orionid shower.

Fortunately, the sky was clear and all was ready when the time came for the first trial. At midnight, contact was established with Milton and after some preliminary discussion about our procedure, microphones and headphones were taken outside. Immediately we had the surprise of a life time for the first five or six meteors to appear in the sky were seen simultaneously by both observers. Had the sky clouded at this point, we would not have felt disappointed for that was an experience worth all the effort to get the radio communicating system in operation. Plotting of meteors was then begun and in 66 minutes, nine duplicate plots were made. An additional 10 or 12 were seen in duplicate during this time but not plotted. Much of the observing time was spent in surmounting technical difficulties such as repairing Oakley's microphone cable and replacing or disconnecting high voltage condensers that failed on our new transmitter, so the full advantages or possibilities of the system were not realized.

At the Milwaukee station, the writer did the plotting, George Diedrich plotting for radiant point, R. D. Cooke counting, Joseph Schmitz (W9AIQ) and E. R. Cooke (W9UGE) operating the radio equipment, while Mrs. Cooke kept us warm and awake with hot coffee and lunch. All observations were made from a second story porch. At the Milton station, C. F. Oakley (W9KTN) did the plotting while Elston Loofboro (W9IQB) and Lawrence Hull (W9PCX) operated Oakley's transmitter.

The aerial distance between the two stations is about 50 miles.

Clouds interfered at 2:15 a. m. so the participants in this new venture went home feeling that a great contribution had been made to meteor observing methods. More duplicate plots were made in one hour than we ever succeeded in making in a whole night of work. The system has great possibilities and arrangements are being made to do more extensive work during the Leonid shower in November, when several observers will be plotting at each station.

2346 N. 47th Street.
Milwaukee, Wis.

Chicago and Milwaukee Amateurs Hear H. H. Nininger Lecture on Meteorites

H. W. CORNELL

On the evening of Oct. 21, 1936, a noteworthy lecture was given at the Adler Planetarium, Chicago, under the auspices of the Chicago Astronomical Society, by H. H. Nininger, secretary of the Society for Research on Meteorites and curator of meteorites in the Museum of Natural History at Denver. The subject was "The Stone-Pelted Earth." The lecture was attended by approximately 100 members and friends of the Chicago Astronomical Society, among the visitors being the president of the Milwaukee Geological Society and the president and a good-sized delegation of members of the Milwaukee Astronomical Society. Particular mention should be made of the attendance of Max Adler, whose public spirit and generosity led to the donation of the half-million dollars necessary for the construction of the Adler Planetarium. It was the first opportunity most of the visitors had had to meet this great man, who, more than anyone else in history, has provided the means to make America astronomy-minded. The presiding officer was Dr. Forrest Ray Moulton, noted astronomer, formerly professor of astronomy at the University of Chicago, who is president of the Chicago Astronomical Society.

Perhaps the most impressive statement

made by Mr. Nininger was that in most cases of meteorite falls, only a few fragments are recovered, whereas the earth's surface is well sprinkled with pieces, since most meteorites disintegrate in the upper atmosphere and come down in a shower of stones which may spread over several square miles. Intensive research has resulted in hundreds of small bits being found after all the pieces of an observed fall have been supposedly recovered. It is Mr. Nininger's method to go to places where there have been authentic falls and recoveries, and take with him samples of the different kinds of meteorites, call the local people together, especially school pupils, and explain to them what to look for and how to recognize a meteorite. While he would be bothered with a great amount of spurious material, still vastly greater results have been obtained than if he attempted the almost hopeless task of searching the area single-handed. The great amount which has been recovered by these means in the last few years proves two things: first, meteoritic material is much more common than was formerly supposed, and, second, the geological and astronomical importance of meteorites is much greater than has been previously recognized.

Regarding the vexed question of origin, Mr. Nininger with true scientific caution would not commit himself nor venture an opinion. He did say, however, that the age of meteorites has been fairly well established by the study of their radio-active minerals as about 2,600,000-000 years, which is approximately the age of the igneous rocks of the earth. Attempts to estimate their speed in flight have never resulted in deriving higher than a space-speed of 26.2 miles per second which is the parabolic speed at the earth's distance from the sun. This would seem to indicate that meteorites are not visitors from interstellar space but have their origin within the solar system, since, if interstellar, it would be reasonable to expect hyperbolic velocities. On the other hand it seems fairly well established that some of the stray meteors (not meteorites) do have

hyperbolic orbits and therefore come from outer space.

Mr. Nininger's statement that many alleged meteorites on display in museums are spurious occasioned no surprise, but he did amaze his audience with his assertion that there are actually cases where genuine meteorites are displayed under other titles. For example, in the museum of a midwestern state university there was until recently a supposed glacial boulder, which was displayed for the purpose of illustrating glacial scratches. Actually it hadn't a scratch on it, the supposed scratches being ridges in the glassy crust caused by the intense heating and rapid flight through the upper atmosphere. The supposedly unimportant glacial boulder was a highly valuable meteorite.

4117 N. 15th Street,
Milwaukee, Wis.

Transits of Titan Across the Disk of Saturn

We wish to take the liberty of making the following quotations from a letter received recently from our AAAA advisor for Mars, Jupiter, and Saturn observations, Latimer J. Wilson. Observers interested in further information, or reporting transit observations, please address Mr. Wilson at 1606 Woodland street, Nashville, Tenn. as soon as possible. (Ed. Martz, Jr., Planetary Director.)

"One of the rarest and most interesting observations was made here last night (September 29, 1936) when Titan crossed the disk of Saturn, and the shadow of this satellite was cast upon the planet. I thought that a telescope of large size would have been required to see the shadow, but it was distinctly visible with my 4.25-inch f.15 reflector. I did not see Titan, however, until it was well off the disk. Six drawings were made at the following intervals: 3:45, 4:45, 5:35, 5:51, 6:11, G.C.T. The shadow was seen steadily at times, at other intervals it was seen only in flashes, appearing very black, and again was quite invisible (evidently due to contrasts in background). I am enclosing a photo of two drawings, one of last night and one of June 14, 7:48, showing the condensation of the nearly edgewise ring. Note the brightness of ring B, brighter on the preceding than the following extension. The elliptical form of the ring on Sept. 30, 5:35 was suggested in rare glimpses, the minor axis being below the resolving power of my telescope. The passage of Titan and its shadow was predicted: 1936, Sept. 30; beginning of transit of Titan, 3:26; end, 3:58. Transit of shadow: beginning at

2:55; end, 8:03. Other future shadow transits occur on:

Date 1936	Beginning		Ending	
	Hr.	Min.	Hr.	Min.
Oct. 16*	1	59	7	27
Nov. 1	1	06	6	49
Nov. 17	0	14	6	08
Dec. 2-3	23	25	5	27
Dec. 18-19	22	37	4	44

*No transit of Titan across the disk, the satellite passing across the south and above the edge of the disk.

"You see, September 30 was the last transit of Titan itself across the disk of Saturn. I hope some of these shadow transits will be well observed, for they can be seen only at intervals of about 15 years. I used 120X, seeing (8) (10 best), 4-inch telescope. The seeing scale should be reduced for this small aperture, and at that rate would have been about (4), (5 being best). G. C. T. for all times mentioned above."

(Latimer J. Wilson)

Mr. Wilson writes further in regard to Jupiter, which is of interest:

"Walter Haas has written me that the longitude of the Great Red Spot this month is 151° on Sept. 8-9. This confirms the idea that the Red Spot is slowing down at present. A slight correction for transits across the central meridian of the illuminated disk, and the disk as viewed in the telescope will slightly alter the longitudes obtained at this time . . . The correction for phase on Sept. 8 is -0°.53. Even so, the Red Spot appears to have drifted backward during September."

Communicated by Ed. Martz, Jr., Oct. 11, 1936
Oak Park, Ill.

The Twenty Fifth Annual Meeting of the AAVSO

LYNN MATTHIAS

The twenty fifth annual meeting of the American Association of Variable Star Observers was held October 16 and 17 at Cambridge, Mass. This annual meeting was of particular importance since it celebrated the first quarter century's existence of the Association, and also because of the important meetings of astronomers that were held at the Harvard College Observatory during the summer.

An enthusiastic group of members assembled in the library of the Harvard College Observatory at 8:30 P.M. October 16 as guests of the Bond Astronomical Club and The Amateur Telescope Makers of Boston. Entertaining talks were given by members of the Harvard College Observatory staff describing the summer activities at the observatory. Drs. Bok and Menzel gave high lights of the American Astronomical Society meeting and the Harvard Astrophysical Symposia. The meeting was followed by a reception for the members of the Association. Refreshments were served and everyone busied themselves renewing acquaintances and making new ones during the remainder of the evening.

The following morning the members convened in the Observatory library for the business meeting. This included reports of the officers and of the various committees. One can appreciate the extent of the activities of the Association only by attending the annual business meeting. Approximately 50 members were present at this meeting which was conducted by the President of the Association, Dr. Shapley.

After adjournment of the business meeting Dr. and Mrs. Shapley received the members in the observatory residence. A delicious luncheon was served, and the time until the afternoon session passed all too quickly.

The afternoon session included technical papers on variable stars and related subjects by members of the Association and the Observatory staff. Among the individuals presenting papers were Dr. Sterne, Miss Harwood, the Dr. Gaposchkin, Mr. Kirkpatrick, Mr. Everest and many others. Mr. Pickering explained and displayed the Merit Award which was tendered to the late William Tyler Olcott, former secretary of the Association and one of its founders.

The annual dinner held at the Harvard Faculty Club was the occasion for a very enjoyable evening. Mr. Elmer as toastmaster introduced Dr. Boyce, one of the members of the eclipse expedition to the U.S.S.R. who gave a very entertaining illustrated account of the experiences of the party. Dr. Shapley gave an account of the more important advances in astronomy during the past year, and Mr. Pickering read a history of the Association written by the late William Tyler Olcott. It was brought out by the toastmaster that the five members from Milwaukee formed the largest delegation at the meeting from any community outside a 50-mile radius of Boston.

A picnic at the Oak Ridge Station the following day was attended by many of the members. The open air picnic lunch was enjoyed by all, after which the observatory equipment was open for inspection. An attractive recreation during this interval was a ride on the observing platform of the 60" reflector. Another center of interest was the group patrol cameras. After the inspection the remaining members separated with the expressed feeling that the meeting had been a complete success.

2121 E. Capitol Drive,
Milwaukee, Wis.

Occultations

R. D. COOKE

Prediction of occultations visible in the middle west, for November, 1936

Date	Star	Mag.	Immersion	Pos. Angle
Nov. 23	19 Piscium	5.3	7:10 P. M.	86°
24	136B Piscium	6.5	7:35 P. M.	50°
27	133B Tauri	5.9	10:45 P. M.	25°
28	32 Tauri	5.8	2:32 A. M.	0°
28	A Tauri	4.5	5:20 A. M.	115°
28	39 Tauri	6.0	5:38 A. M.	130°

1182 Kavanaugh Place,
Wauwatosa, Wis.

Surfaces Planetaires, Fasc. IV). In general, the dark markings on Mercury shown by Haas are narrow, dark arced, and straight lines, similar in type to those drawn by Lowell, W. L. Leonard, and Bolton. On the other hand, the markings as drawn by the writer are more nearly like those of Jarry-Desloges, Antoniadi, Pickering, and Schiaparelli. However, many markings on drawings by both Haas and Martz closely correspond in position and general form with those of Jarry-Desloges and with Antoniadi's map for 1927-29. Direct coordination with the exact markings on Lowell's 1896 map is very difficult, if not impossible, when comparing the observations of the two AAAA observers, and others. Antoniadi's *Horarum Vallis* and *Neptuni Vallis* (parallel dark lanes) certainly seem to be confirmed by Haas and Martz. Also, a small dark triangular shaped marking with its base along the terminator, shown by Jarry-Desloges in 1916, is definitely confirmed. This may possibly be identified with Antoniadi's *Solitudo Jovis*. This, as drawn by both Haas and Martz, did not move appreciably between May 7 and May 15, except for an appar-

ent motion in following the terminator eastward as it shifted, which was probably due to libration in longitude. The angle of libration as determined from these observations amounted to about 10° in the seven days, which agrees very well with the value found by Lowell, in excess of 1° motion per day (at about ten days after Dichotomy).

In some cases the marked changes often observed in certain markings in a day or two by Haas and Martz would seem to indicate a rotation period of less than 88-days, though materially longer than one day. However, the present observations are not definitive enough to make a qualitative examination of all the individual markings seem worthwhile or of sufficient value. It is easily possible that these more rapid apparent changes may be principally due to the action of obscuring clouds (in the thin Mercurian atmosphere), which have been postulated by Antoniadi as being composed of dust particles. (See: *La Planete Mercure Et La Rotation Des Satellites*, by E. M. Antoniadi; 1934.)

726 N. Elmwood Avenue,
Oak Park, Ill.

Nova Program Notes

L. E. ARMFIELD

We heartily welcome the fine list of observations submitted by J. Wesley Simpson, director of the Locksley Observatory, Webster Groves, Mo.

The following observations of nova regions during September are hereby gratefully acknowledged.

Observer	Region	Location	Magnitude of Faintest Star Visible							Total Nights
			7	6	5	4	3	2	1	
Ballhausen	57	Scarsdale	4	3	....	....	....	....	....	7
Halbach	99	Milwaukee	....	2	3	2	1	....	....	8
Houson	18	Milwaukee	8	....	....	1	....	....	....	9
Kirkpatrick	61	New York	3	3	....	....	....	....	....	6
Moore	26	Milwaukee	....	8	7	4	....	....	....	19
Rosebrugh	1	Poughkeepsie	6	4	1	....	....	....	....	11
	52		2	2	1	4	....	....	....	9
Seely	58	New York	....	1	2	3	....	....	....	6
	71		....	1	2	1	....	....	....	4
Simpson	19	Webster								
(July and Aug.)		Groves	....	13	5	....	....	....	....	18
	98		....	15	3	....	....	....	....	18
	99		....	15	3	....	....	....	....	18
	20		....	13	5	....	....	....	....	18

8 Observers — 13 Regions

Harvard Announcement Card 396 brings word of the discovery of another nova in Aquila by Mr. Nils Tamm of Bro, Sweden. This is the second nova discovered by Mr. Tamm within a month. The recent nova has the following position on Oct. 7, 1936: R. A. 19^h 23^m 30^s Dec. 7° 25', magnitude 7. The following estimates of the photographic magnitude of the nova have been made at the Harvard Observatory by S. Gaposchkin:

1936, Sept. 19.5 (13	1936, Sept. 25.5	6.4	1936, Oct. 6.5	7.5
20.5 11.5	Oct. 2.6	7.4	8.5	7.4
22.5 6.6	3.6	7.5	12.5	7.8

Visual magnitude as determined by Campbell and Gaposchkin on Oct. 20, 1936 was 8.1.
1410 N. Marshall St.,
Milwaukee, Wis.

Meteor Section

FRANKLIN W. SMITH

The following Olivier-Hoffmeister Program observations have been received:

Observer	Location	Region	Minutes	Meteors
Abrahams	Milwaukee	Wis.-N. Ill.	1200	110
Boehm	Lake Geneva	" " "	82	16
Diedrich	Milwaukee	" " "	181	16
Kendall	Milwaukee	" " "	2297	228
Keuziah	Milwaukee	" " "	421	37
Smith	Glenolden	Tri-State	302	29
6 Observers			Total	4483
				436

Last month we presented the heights of two meteors determined from observations made by Mary E. Trimmier, Joseph E. Boehm and Edward Mittendorf, but because of lack of space, there was no opportunity to discuss the question of height determination at that time. We hope that the success enjoyed by these members of the Chicago region will encourage other meteor observers to undertake similar work. Observations made for this purpose are of double value since they also may be used for the Olivier-Hoffmeister program (if made at a non-shower epoch) or for radiant determination. Moreover such duplicate observations furnish a useful check on the accuracy of the observer's work. The most suitable length for the base line is about 60 miles. If the observers are much nearer together the parallactic displacement will be too small to yield accurate results and if they are much further apart relatively few meteors will be seen from both stations. It is best for the observers not to face directly toward one another but rather to watch a region in space which is to one side or the other of the line connecting their stations. In choosing the directions it should be recalled that, on the average, meteors may be expected at a height of about 60 or 70 miles. After the observers have decided upon the directions in which they are to watch they must take care to maintain them while observing. There is a very natural tendency to look around in other directions as well, but this will result only in the loss of duplicate observations. The matter of accurate timing has been stressed, but it is so important that it may be worth mentioning again. Radio time signals are readily accessible so observers should have no trouble in setting their watches to exactly the same time; however, if for any reason it is not possible to utilize such signals, observers may synchronize their watches by setting them to the same time at some previously agreed upon announcement on any radio program which may be conveniently received by both. While observing, it is advisable, if possible, to have a timer who will determine the time upon a signal from the observer when the meteor appears. If, however, the observer must read the watch himself, he should count seconds from the time of appearance of the meteor and make allowance for this interval in his record.

While there is no reason to expect a conspicuous Leonid shower this year, some meteors from this stream will undoubtedly appear (on or about Nov. 16) and it is hoped that observers will watch at the time so that we shall know definitely what does take place. The attention of observers is also called to the Geminid shower which comes to a maximum about Dec. 12. This shower ranks with the Perseid in reliability and is worthy of more attention than it has received.

The writer has continued his experiments with meteor photography with a miniature camera (f3.5 lens of 50 mm. focal length) and has now photographed three meteors in a total exposure time of 27 hours. Single photographs of meteors are of interest chiefly for the check which they give on the accuracy of naked-eye observations. If the same meteor is photographed from two stations its height may be determined with great accuracy, and if, in addition, one of the cameras is provided with a rotating shutter driven preferably by a synchronous motor, the speed of the meteor may be determined as well. Very little work has been done in this field which, therefore, offers a real opportunity to the meteor observer who is also interested in photography.

A few more radiants are ready for publication. These were obtained from observations by B. S. Whitney of Norman, Okla., and the writer, as indicated.

Serial No.	Date 1936	R.A.	Dec.	No. of meteors	Length of Watch (minutes)	Total No. of Meteors	
13.	Aug. 9.7	298°	65°	4 or 5	183	52	BSW
14.	9.7	40°	55°	8 or 9	183	52	BSW
15.	17.7	345°	-12°	6	180	21	FWS

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Beyer-Graff Copies

ADDITIONAL NOTES
 SCOTT HOUSTON

Another satisfactory method of making copies of small areas of the Beyer-Graff charts, one that permits enlargements upon the original size, is to lay the chart face down over a piece of cut film, covering both with a window glass to hold the film in contact, and then flashing a 60 watt bulb at a distance of about three feet from the chart. Negatives made in this manner receive almost all the detail of the chart, and enlargements, made in the usual way from the film will produce excellent enlargements as much as six times the original chart size.
 807 E. Otjen Street,
 Milwaukee, Wis.

The AAVSO Photographic Program

LYNN MATTHIAS

An outstanding result of the fall AAVSO meeting in Cambridge was the development of a well organized program of photographic work. The work can be separated into three main divisions which are really determined by the equipment available to the observer. It will include small stationery hand cameras, small guided cameras and the larger guided cameras.

The stationary hand cameras are to be used to determine the times of minima of short period bright variables by the method of trails. This is very important work especially for those variables where there is a suspicion that the times of minima are also variable. Since the method requires practically no astronomical equipment almost anyone with a small hand camera is in a position to contribute extremely important observations.

The second portion of the work will utilize small guided cameras. These cameras are intended to be used for the measurement of the magnitudes of variables which are not fainter than the 11th magnitude at minimum. This will include small cameras with lenses of apertures up to 1½ or 2 inches.

The third division will employ larger cameras capable of recording with reasonable exposures stars fainter than the 11th magnitude and down to the 14th or 15th magnitude. The object of this group will be to measure the magnitude of the fainter variables.

The areas to be surveyed by the guided cameras will be known as the AAVSO selected areas or photometric fields. These fields are to be selected by the Harvard College Observatory through the cooperation of Dr. Shapley. Each of the fields will be approximately 10° square, will include a large number of variables, and will have a bright star near the center of the field for guiding purposes. The AAVSO selected areas will be arranged so as to tie in with the work at the Harvard College Observatory, and thus we will be cooperating in a very important program. Needless to say the plates taken on these areas will also be suitable for the patrol program. Dr. Shapley and Prof. Campbell deserve a great amount of credit for the organization of this definite program of photographic work, and we sincerely hope that the results of the year's work will justify their efforts.
 2121 E. Capitol Drive,
 Milwaukee, Wis.

Milwaukee News Notes

MILWAUKEE ASTRONOMICAL SOCIETY

M. N. FISHER, Correspondent

Two years ago M. J. W. Phillips, head of the Science Department of the West Allis, Wisconsin, High School, and the present vice president of the Milwaukee Astronomical Society, gave to the society an acre of ground on his farm situated in Waukesha County about seven miles south-west of the city of Milwaukee, for the purpose of erecting an observatory. At the time it did not seem possible to erect such a building, but it has lately been decided to make an attempt to raise the necessary money, and, with the aid of volunteer labor, build an observatory large enough to house a 13-inch reflecting telescope. The site is an excellent one—high, away from all interfering lights, situated on a quiet side road, yet readily accessible. The generous action of Mr. Phillips made a long-cherished dream seem possible of fulfillment.

Five members of the Society attended the fall meeting of the AAVSO this month at Harvard. They were Messrs. Luverne Armfield, Lynn Matthias, Walter Scott Houston, A. W. Peck and John Luczka, and were nicknamed the Milwaukee quintuplets. A detailed report of this meeting will be found earlier in this issue of Amateur Astronomy.

Dr. Ira Edwards, curator of Geology, Milwaukee Public Museum, presented a very educational lecture on the interesting subject of meteorites at the first regular fall meeting of the society on Oct. 1. Dr. Edwards, a former student of the late Dr. George P. Merrill, head curator of Geology, U. S. National Museum, Washington, D.C., exhibited the rare ability of presenting a rather difficult subject in a delightful manner. The society is grateful to Dr. Edwards for his excellent lecture as it was the initial presentation of the aforementioned subject.

While looking through the society's telescopes in groups, scores of Milwaukee school children have thrilled to the finest show of all—the richly starred "big top" of the world. A pair of eyes is the only price of admission. Milwaukee members have had a lively time all summer and fall as large groups of students squinted

through the telescopes. W. J. Hall, of North Division High School, took his science class of 80 students to the society's headquarters on Oct. 22 where the 13-inch, the 10-inch, and Richard Evans' 4½-inch were in continual and delighted operation for hours. In addition, R. D. Cooke manned Julius Mueller's 6-inch reflector. H. W. Cornell, the society president, described the constellations to the group; Joe Loepfe showed how to grind a mirror, and L. E. Armfield, secretary, and George Diedrich answered questions in a steady stream.

The general science class of 50 students of St. Sebastian's school also visited the society headquarters on Oct. 23. Brilliantly clear skies greeted the students who viewed the moon, Saturn, the double cluster in Perseus and other objects of interest. Transportation was arranged by H. M. Van Eweyk. Astronomy is being taught for a semester to 8th graders in all parochial schools in and around Milwaukee.

The nucleus of a new astronomical group at South Bend, Ind., is being formed by H. W. Grunwald, present advertising manager of Amateur Astronomy and formerly a member of the Milwaukee society. Mr. Grunwald's new home is at 719 Rex st., South Bend, Ind. Copies of our magazine have been placed in the library there. There is much interest in astronomy in South Bend, Mr. Grunwald writes, but it is as yet unorganized.

The society will meet Wednesday, Nov. 11, in the lecture hall of the Milwaukee Public Museum. The society is fortunate in securing, as a guest speaker for the occasion, Dr. William W. Morgan of the Yerkes Observatory, who will discuss "Recent Trends in Astronomical Research". The Yerkes Observatory has repeatedly in the past shown its big-brotherly attitude toward the society, and Dr. Morgan's kindness is one more evidence of this spirit of helpfulness. Dr. Philip Keenan of the Yerkes Observatory will visit the society with Dr. Morgan.

836 N. 14th Street,
Milwaukee, Wis.

Report of the Solar Observation Section

MRS. MAUDE S. WIEGEL, Director

A SOLAR TELESCOPE:—Do you wish to use your reflector as a solar camera? You may do so with a few simple changes or additions which may be removed in a moment's time, leaving your telescope always ready for visual work. Solar photography is quite different from other types of celestial photography, inasmuch as light must be decreased, and exposure as short as filter and plate (and shutter) speed will allow.

The first step is to make an adapter to hold the plate-holder or dark slide that is used in place of the eyepiece. Procure a short piece of tubing and solder it to a square plate of brass, in the center of which a hole of the same diameter as the tubing has been cut. Allow the tubing to protrude about one-eighth of an inch to act as a light trap. With screws fasten the plate to a light board as wide as the plate holder you intend using and one-half again as long, through which a hole has been cut to match the hole in the plate holder, placing black velvet around the hole to keep out stray light. Bend two strips of light metal into a right angle lengthwise. Nail these to the long sides of the board, taking care that the plate-holder slips in and out freely without jarring the telescope, but close enough so that light does not leak in and spoil the plate. Paint all a dull black. The adapter is now ready to slip in, in place of the eyepiece. Use a fine-ground glass or a spoiled plate for focusing. Cut the partition away in a plate-holder, similar to the one used to hold the dry plate. This is to allow the image to be focused correctly on the ground glass from behind. It is very important that the dry plate occupy the identical position that the ground glass plate did when it was in correct focus. (The photographic focus is the same as the visual in a reflector.)

Make a cap for the field end of the telescope tube. Fit it on, taking care that it is light tight and painted a dull black. Cut a hole off center in it eccentrically. Secure a camera shutter, minus the lens, over this hole by means of a matching threaded flange, or other means. Place the assembled cap and shutter over the end of the telescope tube with the shutter open to see that it is not directly over the prism, or flat, or its support. Exposure and focusing will need some experimenting to determine the right factors.

Avoid midday exposures unless using

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a filter. Alkaweld glass or other light filters (ultra-violet) may be used just in front of the plate if large enough. Late afternoon haze also acts as a filter, allowing an exposure of about 1/25 second. In using a filter, exposures of about 1/5 second may be made on the sun, depending on the density of the filter. The above exposures are adequate for a 5-inch reflector using lantern slide plates (with 1-inch eccentric hole). The image may be small if the sun is thus taken directly, but by the aid of a low power microscope the detail is nicely seen with fine grain plates, and the dark sun-spots can be seen without optical aid if of sufficient size.

Solar Activity in October, 1936

Activity on the sun during October was much the same as it was the preceding month. The high point of interest was the great spot streams passing in review as the sun rotated. Strong cyclonic action is apparent as smaller spots are absorbed by the larger ones. On Oct. 24 a pair of spots in the northern hemisphere, approaching the meridian, were outstanding, owing to the immense size of the preceding spot. On the north-east side of this spot, and very close to it, hung a great smoke-like cloud, enormous in size and well-defined. Since the minimum of late 1934 the spot polarity has reversed, so that now the preceding spot in the sun's northern hemisphere is of negative polarity, while those in the southern are of positive polarity.

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AAVSO Nova Program Notes

L. E. ARMFIELD

We heartily welcome initial observations from Edward Hanna, New York, Oscar E. Monnig, Fort Worth, Texas, and Christopher Phillips of Avon, Conn.

The following observations of nova regions during October are hereby gratefully acknowledged:

Observer	Region	Location	Magnitude of Faintest Star Visible					Total Nights
			7	6	5	4	3	
Abrahams	(Sept.)	Milwaukee	....	....	2	....	....	2
	(Sept.)		....	16	3	1	....	20
	(Oct.)		....	5	8	1	....	14
	(Oct.)		....	....	15	9	....	24
Ballhausen	12	Scarsdale	3	2	....	1	2	8
	33		3	2	....	1	2	8
	57		3	3	1	....	....	7
Gale	49	Ames	....	5	3	....	....	8
Hanna	11	New York	....	10	....	....	....	10
	62		....	4	....	....	....	4
Kirkpatrick	61	New York	2	1	....	....	....	3
	92		1	....	....	....	....	1
Keuziah	13	Milwaukee	....	....	....	....	13	13
	15		....	....	13	....	....	13
Loreta	17	Bologna	3	9	3	....	....	15
Monnig	100	Fort Worth	....	....	1	....	....	1
Moore	26	Milwaukee	....	4	6	8	....	18
Phillips	86	Avon, Conn.	....	....	3	2	....	5
Rosebrugh	1	Poughkeepsie	9	3	2	....	1	15
	52		7	4	2	1	2	16
Thomas	3	Cambridge	....	1	2	5	....	8
Trimmier	8	Chicago	10	4	....	....	....	14
	37		9	6	2	....	....	17

13 Observers—21 Regions—2100 square degrees of sky reviewed.

Miss Trimmier and Mr. Rosebrugh merit much commendation for the persistence with which they review their regions down to 7^m using low powered binoculars. Miss Trimmier extended the survey of her regions on some evenings down to 8^m.

1410 N. Marshall Street, Milwaukee, Wis.

AMS Meteor Notes

WISCONSIN-NORTHERN ILLINOIS REGION

L. E. ARMFIELD

The following excerpts taken from Joseph E. Boehm's letter describes an Orionid fireball which he observed at 12:53 A.M. on October 19-20, 1936, "I saw a beautiful Orionid fireball (12:53 A.M.) which exploded and left a luminous cloud for seven minutes! Most brilliant and spectacular meteor I have ever seen!"

Joe had no meteor map of the polar region so he sketched the constellation and path of the meteor free-hand at this point in the letter. Miss Trimmier attached the proper AMS map on which she had indicated the track of the meteor. Joe's further comments in regard to the meteor are as follows: "A bright meteor, leaving a ½ second trail of thirty degrees which finally exploded with shadow casting brilliance, leaving a luminous cloud of second magnitude, fading out in seven minutes. The cloud was ½ by 2½ degrees, drifting very slightly, ¼ degree, in the direction of travel."

Mr. Boehm deserves much credit for the completeness of the data which he submitted, particularly in denoting the slight drifting of the cloud. It was also rather amusing to read the manner in which Joe berated himself for not having had a loaded camera at his side for photographing the cloud. We wish him better luck next time, and, in view of his experience, it may not be amiss, for the benefit of others, who next may be privileged to witness such a rare phenomenon, to repeat a suggestion that all meteor and variable star observers keep a loaded camera within their reach at all times while observing. This convenient precaution may often prove the means of obtaining valuable photographs of fireballs, long enduring trains and bright meteors. In the case of long enduring trains, emphasis must be placed on the necessity of securing a photograph of the train each sixty seconds and accurately recording the time each exposure is taken.

NAS Star News

NORWALK ASTRONOMICAL SOCIETY
WARREN E. PREECE, Secretary

The Norwalk Astronomical Society held its second monthly meeting at 8 o'clock on Friday, November 27, 1936, at the Norwalk Inn. A fine group of people were present and an interesting meeting was carried on. The society was honored in having as a guest, Miss Ruth Fleischer, President of the Junior Astronomy Club which is associated with the Hayden Planetarium.

After the formal business had been disbursed with, the group convened to a larger room, where we heard an address by Richard W. Hamilton, past-treasurer and co-founder of the NAS. Mr. Hamilton has done much active work for the society besides having made a 9½-inch reflector and putting it to much good use. He left us this year only to enroll at Trinity College.

Mr. Hamilton gave a very interesting description of the fall meeting of the AAVSO. The lecture was illustrated with many fine photographs which he had taken, and chronologically arranged so that it seemed as though we were being taken on a trip from Trinity to Harvard and back again. He gave marvelous descriptions of the telescopes and buildings, as well as the astronomers at Harvard. There were fine snapshots of everything from a very astronomical picture of the Post telescope to a very un-astronomical picture of Dr. Shapley bouncing a ball off the roof of the cottage.

After the lecture was concluded, Mr. Hamilton was persuaded to tell us of his astronomical activities at Trinity. He informed us that things were a little slow, as at the present time, a fine lens was there but very little else. He took along his own 9½-inch and attached it to a portable mounting which was found to be too unsteady for doing much work.

The NAS is starting a Lantern Slide Library and while it was discussed at the meeting, more will be said about it in the next issue of Amateur Astronomy. The library was started with a few donations of books some time ago; since then, it has failed to grow. The society is not the richest group in the world, consequently, such things as a library move rather slowly. If other amateur groups having access to this magazine who have been in and overcome the positions we are in with respect to the development of a library would kindly contact the writer with suggestions it would be greatly appreciated.

2 Roland Ave.,
East Norwalk, Conn.

Milwaukee News Notes

MILWAUKEE ASTRONOMICAL SOCIETY
M. N. FISHER, Correspondent

Within the next few years all advances made in the study of the sun will be connected with the motion picture camera, Dr. William W. Morgan, of Yerkes Observatory, prophesied at a meeting of the Milwaukee society on November 11th in the society's new headquarters at the Milwaukee Public Museum. Dr. Morgan told his large audience that the day was not far distant when activities on the sun, photographed through the telescope and the motion picture camera, would be seen side by side with news reels in the theater. Dr. Morgan showed exquisitely colored photographs of the sun's prominences.

Compactly and interestingly, Dr. Morgan sketched the recent developments in astronomical history. He started with Sir William Herschel, whom he called the greatest astronomer who ever lived. He explained how Herschel made the telescope penetrate for the first time the vast, outer distances. He described, too, the work of Bessel (Friedrich W., 1784-1846). Bessel, he said, was the first person actually to measure star distances. Another notable advance in astronomy was the application of photography to astronomy, which had a tremendous impetus after the photographing of Halley's comet in 1882. Then, in the early nineteenth century, the spectroscope was invented. Dr. Morgan called spectroscopic study one of the most promising and fertile fields of the present. And, more recently, extraordinary sensitive red plates, which have been perfected in the last decade, reveal the images of stars that do not show at all, or only very faintly, on ordinary plates. He spoke of the present studies now being made at Yerkes with these red plates—"heat" photographs. Hetzler, who has done much of this work, is obtaining unusually interesting results with this method.

Just before Dr. Morgan addressed the general audience, members of the society met for a brief business session, presided over by Herbert W. Cornell, the society's new president. Lynn Matthias read excerpts from technical articles in local and foreign astronomical publications.

Dr. George W. Moffitt of the Yerkes Observatory will be the speaker at our December meeting on the 2nd, and he will describe the instruments to be installed in the new McDonald Observatory in Texas, under the supervision of the University of Chicago.

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