

THE WASP

OCT 1979



The Warren Astronomical Society

P.O. Box 474

East Detroit, Michigan 48021

This month's cover photograph
contributed by Lou Faix.



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SOCIETY INFORMATION

The Warren Astronomical Society (W.A.S.) is a local, nonprofit organization of amateur astronomers. The Society holds meetings on the first and third Thursdays of each month. The two meeting locations are listed below:

1 st Thurs.	Cranbrook Institute Of Science 500 Lone Pine Road Bloomfield Hills, MI	3 rd Thurs.	Macomb County Community College – South Campus K Building 14500 Twelve Mile Road Warren, MI
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Membership is open to those interested in astronomy and its related fields. Dues are as follows and includes a year subscription to Sky & Telescope Magazine:

Student - \$11.00	College - \$13.00	Senior Citizen - \$15.50
Individual - \$18.00	Family - \$23.00	

STARGATE LECTURE SCHEDULE

Chairman- Frank McCullough-725-4736

Lectures are given at Stargate Observatory each weekend. The lecture will be either Friday or Saturday night, depending on the weather and the lecturers' personal schedules. If you cannot lecture on your scheduled weekend, please call the Chairman as early as possible so he may arrange for a replacement. Those wishing to use Stargate must call by 9:00 p.m. on the evening they plan to go out. The lecturers for the coming month are as follows:

Oct 5/6Don Mission, 727-9083
Oct 12/13Ray Bullock, 879-9458
Oct 19/20Bob Dennington, 779-6345
Oct 26/27Lou Faix, 781-3338

WAS Exchange

FOR SALE. . .Cave 12½" transportable mounting with: slow motion on dec. (dec. motor needs replacement). Price - \$400.

10" f/4.9 mirror (needs final figuring) with: diag. (Coulter), tube & homemade cell. Price - \$75.

6" f/10 finished mirror. Price - \$20.

Fork for equatorial mount, laminated birch plywood, some holes. Price - \$15. Call Rik Hill, day 517-799-9390, nite 517-35-5548; or write 4503 E. Patrick, Midland, MI 48640.

FOR SALE- 6" reflector RV-6 Dynascope complete with four lenses- 30, 18, 12.5, 7mm; 2x Barlow, 6x30 finder, drive and setting circles.

Also . . .Tasco 50mm refractor with sun filter, two lenses, diagonal, and tripod.

Price \$210.00
Call Dave Harrold, 391-0124, or write
184 Hi-Hill Road
Lake Orion, MI 48035

The following are the minutes of the August 16, 1979 meeting of the Warren Astronomical Society:

Our president, Dave Harrington, called the meeting to order at 8:20 p.m. by welcoming all members and guests. He spoke of the successful campout at Camp Rotary, the week-end of August 10-12 and which was attended by between fifty and sixty members and friends. The clouds cleared at about 9:30 p.m., revealing clear skies which were conducive to the evening's activities. A resolution contest closed with a four-way tie of winners namely: Paul Strong, Bill Whitney, Robin Bock and Steve Binder. The Messier contest produced the following winners: first place, Doug and Robin Bock; second place, Rick and Delores Hill; third place, Jeff Stanek a member of the Livonia Astronomical Society. Because of the brightness of the moon, the Perseid Meteor shower watch was cancelled.

Peter Kwentus announced the upcoming raffle with winners to be drawn at the next general meeting. First prize will be a 12½ mirror cell while the second prize is a round hooked rug displaying the WAS logo. It was donated by Gary Boyd and Shirley Pantalone. Then, the roster list was passed around to the members for their verification.

Rick Hill said that he had two orthoscopic pieces for sale. He also announced a dedication party being held in Midland to commemorate the new observatory of the Sunset Astronomical Society. It will be held on Sunday, September 2 from 1:00 p.m. He encouraged the Members to bring their telescopes and join in the dedication festivities.

Frank McCullough stated that deep-sky observing with emphasis placed on astro-photography and lunar eclipse observing would be conducted on August 25th at 8:00 p.m. at Star Gate. Doug Bock will be present to encourage and assist anyone interested in furthering this phase of astronomy.

The program itself was begun with an interpretive reading by Gary Ross of "N Day" by Philip Latham. The story focused on an astronomer's prediction of the sun's involvement with an erupting nova.

After the break Russ Carroll delved into a discussion of current research underway using the mechanics of space astronomy. His topic, "Observation in X Ray", centered on his work of identifying X-Ray sources for the Naval Observatory. He said he was working independently to study the reasons why certain objects are emitting X-Rays and not others. Realizing that the sun's surface temperature of 5000 C was not capable of producing X Rays, scientists were astounded to learn that our sun was indeed emitting X-Rays. In further studies, they discovered that the sun's atmosphere has a temperature of 2,000,000 C and therefore does have the mechanics of producing these rays. Using this information, X Ray satellites have recorded other stars with this same capability, in particular Cygnus X-1, a possible black hole and the pulsar of the Crab Nebula. Russ' concentration of study is on the binary systems. His slides imaged the type of data received and the conclusions possible in this realm.

The meeting was adjourned by Dave at 10:00 p.m.

Respectfully submitted,

Pat
Patricia Krause, Secretary Pro-tem

THE APPRENTICE ASTRONOMER'S NOTEBOOK

Louis J. Faix

It was brought to the apprentice's attention that the last few articles have been about everything but astronomy. There have been articles about telescopes; articles about equipment; articles about history and historic people; articles about observing techniques;-- but, nothing about astronomy - the stuff out there! Let's correct that oversight.

Contrary to the belief of my associates, moss has not grown on the north side of Mount Washington telescope. With the coming of Autumn, we've had a chance to renew acquaintances with some old celestial friends. Two of those friends, well worth an evening's visit, are the Double Clusters in Perseus. (NGC 884 & 869). It is still an amazement to me that these galactic star clusters were excluded from Messier's list of comet like objects. To the naked eye, both appear as soft fuzzy balls reminiscent of the heads of comets. Either old C.M. was as blind as a bat or, the objects must have been hidden behind some billboard the night he surveyed that portion of the sky. Both objects excel many of the galactic clusters found in the "M" catalogue with regards to star counts, brightness and general grandeur. A plausible explanation for their absence from Messier's lists lies in the fact that these groupings were known from ancient times. Ptolemy (of the Earth centered universe fame) and Hipparchus both made note of the objects around 150 B.C. and classified them as cloudy nebulae. However, the same can be said for the Pleiades and Praesepe clusters which are included in Messier's list.

The best views of these heavenly show pieces are achieved with a 6" rich field telescope or some other large aperture instrument which can achieve a 1° field of view. Nevertheless, even a casual view with field glasses is a rewarding experience. These objects are well worth a detailed study as much can be learned about stellar evolution. A moonless night is needed to appreciate the fine detail as the star count increases sharply at fainter magnitudes. Within a half degree circle, I.S. Bailey found over 400 stars brighter than twelfth magnitude in NGC 869 & 300 in NGC 884. A photographic atlas composed by P. T. Oosterhoff of the Leiden Observatory doubled that count by recording stars as faint as sixteenth magnitude.

All of those stars are at least four times as brilliant as our sun. If viewed from the Double Cluster, old Sol would be an obscure 18.2 magnitude, undetectable to alien amateurs looking our way.

These clusters lie in the outer extremities of the Milky Way. At a distance of 7,000 & 8,000 light years, they repose in the next spiral arm out from the center of our galaxy. Still, there are ten stars with visual brightness more luminous than 8.5 magnitude. Spectography informs us that these are all A1-B8 type stars. A little out of focus star gazing confirms the lavender to blue-white coloration. Considering the amount of dust that lies between the lanes of the Milky Way, it is estimated that the Double Cluster appears darkened about 1.6 magnitudes (about 1/5 of the light is getting through).

Considering the abundance of fast evolving, very hot and very brilliant stars, these clusters must be quite young. Over a hundred early type O, A, and B stars have been classified. A study conducted at Yerkes Observatory and published in 1965 approximates the ages at 6.4 million years for NGC 869 and 11.5 million years for NGC 884. A little amateur observing supports this order of formation. Several conspicuously bright orange stars are visible in 884 while none can be seen in 869~ Now normal, main sequence orange stars are relatively small, cool and dim and probably not visible in the Clusters with telescopes smaller than 20" aperture. The bright orangish stars turn out be exactly what we'd expect - red super giants. These are rapidly evolving massive stars which have already consumed a large amount of their hydrogen fuel in a spendthrift fashion and have entered into the helium fusion stage. Their cool orange surface color belies the inferno of their cores. Knowing the age of the clusters, the fact that A & B stars are still visible and that some red super giants have already formed; we can deduce the stable, main sequence life times of the absent class O stars. It must be longer than 6.4 million years since some O stars are still found in NGC 869. It also must be shorter than 11.5 million years since the red super giants seen in 884 are evidence of a star's death throes. In essence, the Double Cluster brackets the stable life span of the most luminous stars at about 10,000,000 years.

One of the apprentice's pictures of the Double Cluster is shown on the cover of this journal. This picture has created an interesting puzzle. The Leiden Observatory photographic atlas (1934) shows three red super giants in NGC 884. The amateur photo (1979) shows four in the same area. Current stellar evolutionary theory does not allow a star to evolve into a red super giant in only forty-five years. Yet, the photographic evidence of some type of change persists. Other amateurs are invited to add their view and photographic evidence.

Old, as well as recent, astrophotos could provide an interesting evening of study.

In conclusion, the Double Cluster is an extraordinary object worthy of an evening of viewing. It is now conveniently placed in the early evening sky and will be visible throughout the Fall and Winter. Well known observers have described the sight thusly:

- "The field is simply sown with scintillating stars, the contrast in colors are very beautiful" — Burnham
- "Night after night the telescope may be employed in sweeping over its magnificent crowds of stars ..." — T. W. Webb
- "A field shot with diamond dust" C. E. Barns

NIGHT WATCH

Though many of us in WAS own large and formidable instruments of over 6" for reflectors and 4" for refractors, still the larger part of observing in the club is done with the more modest sized telescopes. This is true of amateur astronomy in general throughout history. Beer & Madler did the bulk of their work on the moon with only a 3¼" rfr and it stood for a great while as a standard of selenography. Argelander spent a lifetime plotting the positions and brightnesses of over 324,000 stars with only a three-inch f/8 refractor. Even today this catalog is used as a reference by the AAVSO for charts being more suited to their purpose in that the Bonner Durchmusterung (known as the BD) that Argelander made is a visual catalog whereas most of the catalogs since have been photographic.

Indeed, today the observational quality is not dependent so much on the instrument as on the intelligence behind it. There is a wide variety of telescopic instruments available to those of modest means in this day and age of mass production optics. Modern technological advances in optical procedures have allowed the quality to be improved over that which was available only ten years ago. Consider the 11 x 80 20 x 80 and other such binoculars that are being produced at under \$200.00 today that would have constituted a much larger investment only ten years ago. True the best optics still require the touch of the optician's hand, but still the techniques employed today have lowered cost and increased supply to the point where few mirrors can be made by the ATM for less that can be purchased commercially, including a cost on your own time which can be considerable for large optical surfaces.

But what of these modest sized instruments, be they binoculars or telescopes, of the higher quality available today. What makes them so special? Well take it from one who now has his main instrument in a shelter; portability makes them special, low power wide field makes them special, and most of all their size makes them special.

With what 12½" can an offending obstruction be overcome by merely moving over a few yards? Often I have missed viewing desired splendors in the sky because of the juxtaposition of observatory and tree, or observatory and building. Yet my little 2.4" and my 20 x 70's have never suffered from this malady. And what instrument can afford such a view as the binoculars? My own 20 X 70's give me views that are unmatched even in my 12½". Orion's Nebulosities filling the field with wisps and knots of gas and dust of pale green color, the galaxy in Andromeda a bluish oval extending out both sides of the field with its two faint attendants, the richness and splendor of the Scutum Star cloud with M11 at the helm can be more completely appreciated in these binocs. than in my telescope. But even more, the size of these smaller instruments makes them even more wonderful. It is the same sort of thing that you hear the Questar owners talk about, the smallness of the instrument gives a certain feeling of closeness with the instrument and with the universe. Because the instrument is small it doesn't dwarf us by its own size making us feel less significant and less a part in the observing. We are viewing the universe through an instrument small and compact that aids US in the observing and we don't feel as if we are aiding IT in the observing as so often seems the case with the larger and larger and more complex instrumentation of the modern amateur astronomer.

How comfortable it is to go out on a warm summer evening armed only with our binoculars or small telescope, to find those winking variable stars, darting asteroids, or any of a thousand objects and events visible to us. Even with the smallest binoculars you can pick out all the planets but Pluto so the optical aid will not limit you. Dozens of occultations each year are at your disposal with your humble equipment. Hundreds of multiple stars can be scrutinized at even 7X. All it takes is resolution, not of the instrument, but of character. Set a program for yourself, even if it's only one night a month and make it a date with your telescope. Take the observing page of the month from one of the many astronomical magazines and use it as a guide. I recommend the Monthly Stardome from ASTRONOMY magazine as a good guide to the user of small equipment. Other good guides are FIELD GUIDE TO THE SKIES by Olcott & Mayall which is geared to the binocular and small telescope user and ASTRONOMY WITH BINOCULARS by Jawes Muirden. But again the key to enjoyable observing is doing it. Set one night a month (at least) aside and make it your night out on the town...or rather the universe.

RK

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>16</p> <p>U Cephei at min-am 03:38.3 / 6.2 mg. ZC1198(2B Cancr) R / PA 253° - 11° 04:54.4 / 5.9 mg. ZC1210(5 Cancr) R / PA 244° - 11° 07:24 II ED 07:47 I OR</p> <p>20:00 Venus at Alt. 4°; Az 271°</p>	<p>17</p> <p>I Se 05:31 I Te 06:05</p> <p>17:00 Jupiter 2°N. of Moon. Jupiter east of Moon today & west of Moon to- morrow at 05:45</p>	<p>18</p> <p>04:47 II Se 05:23 III Si 07:44 III Ti</p> <p>North Taurid meteors can be seen today thru Dec. 1 (peak on Nov. 13)</p>	<p>19</p> <p>Eta Aquilae at max- am L.P.V. S Herculis at max. mg. 7.6</p> <p>South Piscid meteor shower maximum (some may be visible from Sept. 1 thru Nov. 2)</p> <p>06:45 Moon (22 hrs. before new) at Alt. 2.5°; Az. 84°. Also Saturn at Alt. 1°; Az. 82.5°</p>	<p>20</p> <p>05:47 New Moon</p> <p>U Cephei at min-am</p> <p>Delta Cephei at max-midday</p>	<p>21</p> <p>02:30 - Sunrise today & tomorrow Mars passes thru Beehive Cluster (M44) 03:21 III ED</p>	<p>22</p> <p>Beta Lyrae at min-pm</p>
<p>23</p> <p>07:51 I ED 11:17 Equinox (Autumn begins) 19:40(Sunset) Venus at Alt. 2.4°; Az 264°</p>	<p>24</p> <p>I Si I Ti I Se I Te</p> <p>L.P.V. Omicron Ceti (Mira) at max. mg. 3.4</p>	<p>25</p> <p>North Piscid meteors visible today thru Oct. 19 (peak on Oct. 12) Annual Andromedid meteors visible today thru Nov. 12 (peak on Oct. 3)</p> <p>01:20 - 05:50 (Algol dims) 04:31 II Si 05:16 I OR 05:51 II Ti 07:21 II Se 08:41 II Te</p>	<p>26</p> <p>L.P.V. V Coronae Borealis at max. mg. 7.5</p> <p>09:00 Jupiter .30N of Regulus. The pair can be found at 06:45 at Alt. 23°; Az. 94° Also at 06:45 Saturn at Alt. 4.5° Az. 86° 19:42.2 / 6.7 mg. ZC2352 D / PA 81°</p>	<p>27</p> <p>Delta Cephei at max-am</p> <p>03:42 II OR</p> <p>Eta Aquilae at max -midday</p>	<p>28</p> <p>22:10(Th.) - 02:40 (Algol dims) 02:40 - 07:10 (Algol brightens)</p>	<p>29</p> <p>L.P.V U Orionis at max. mg. 6.3</p> <p>06:01 III OR</p> <p>22:53.7 / 5.0 mg ZC2814(43 Sagit- tarii) D/PA 86° 23:13.46 / 6.8mg ZC2816 D / PA 72°</p>
<p>30</p> <p>04:45 IV Te</p> <p>U Cephei at min-pm 19:25(Sunset)</p> <p>Venus at Alt. 2.6°; Az. 259°</p>	<p>October 1</p> <p>I Si I Ti</p> <p>07:00 07:46</p>	<p>2</p> <p>I ED II Si I OR II Ti</p> <p>Delta Cephei at max-midday 19:56.87 / 5.4 mg. ZC3253(38 Aquarii) D / PA 100° 21:15.87 / 7.4 mg. ZC3255(135B Aquarii) D / PA 23°</p>	<p>3</p> <p>I Se I Te</p> <p>Annual Andromedid meteor shower max. (some may be seen from Sept. 25 thru Nov. 12)</p>	<p>4</p> <p>06:30 II OR Zeta Geminorum at max-am</p> <p>06:45 Saturn at Alt. 9.4°; Az. 91°</p> <p>Eta Aquilae at max-midday</p>	<p>5</p> <p>03:00 Venus 3°N. of Spica. Venus can be found at 19:15(Sunset) at Alt. 3.7°; Az. 257° Beta Lyrae at min-pm U Cephei at min-pm</p> <p>14:37 Full Moon</p>	<p>6</p>