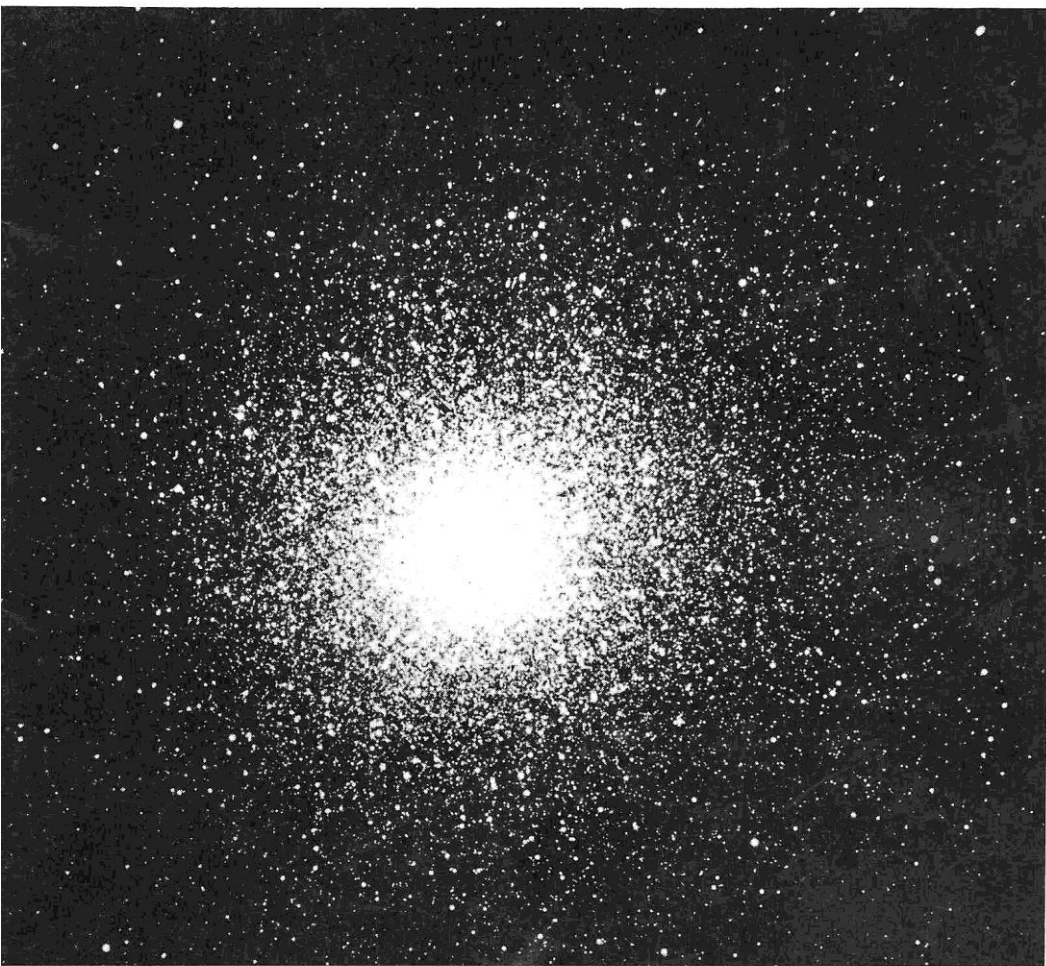


The WASP



M-13.



DECEMBER 1976

THE JOURNAL OF THE WARREN
ASTRONOMICAL SOCIETY



THE WARREN ASTRONOMICAL SOCIETY PAPER (W.A.S.P.)
IS PUBLISHED BY THE W.A.S., MONTHLY AS A PRIVILEGE
OF MEMBERSHIP. THE W.A.S. IS ALSO A CAMPUS CLUB OF
MACOMB COMMUNITY COLLEGE-SOUTH CAMPUS, WARREN MICH.

The Warren Astronomical Society (W.A.S.) is a local nonprofit organization of amateur astronomers. Membership is open to all interested persons. Annual dues are as follows: Student, K-12 \$9.00, College \$11.00, Senior Citizen \$13.50, Individual \$16.00, Family \$21.00. The fees listed here include a one year subscription to Sky & Telescope Magazine.

Meetings are held on the first Thursday at Cranbrook, and the third Thursday of each month at Macomb County Comm. College, in the student union bldg.

Subscriptions and advertisements are free of Charge to all members. Non-member subscriptions and advertisements are available upon arrangement with the Editor of the W.A.S.P. Contributions of any kind are always welcome and should be submitted to the Editor before the second Thursday of the month.

THE EDITOR: Roger A. Civic (775-6634)
26335 Beaconsfield
Roseville, Michigan 48066

The Editor of the W.A.S.P. will exchange copies of this publication for other Astronomy club publications on an even exchange basis.

The Warren Astronomical Society maintains contact, sometimes intermittent, with the following Organizations:

The Adams Astronomical Society
The Astronomical League
The Detroit Astronomical Society
The Detroit Observational and Astrophotographic Assoc.
The Fort Wayne Astronomical Society
The Grand Rapids Amateur Astronomical Society
The Kalamazoo Astronomical Society
The M.S.U. Astronomy Club
The Miami Valley Astronomical Society
The Oglethorpe Astronomical Society
The Orange County Astronomers
The Peoria Astronomical Society
The Saint Joseph County Astronomical Society
The Sunset Astronomical Society

Other Amateur Astronomical Clubs are invited to join this exchange of publications.

CLUB NEWS

The Christmas Banquet will be held Saturday, Dec. 18, 1976 at Sheppard's Inn- It will start at 7:30. Sheppard's Inn is located on Groesbeck Hwy. at Utica Rd. in Roseville Michigan.

The Cranbrook meetings have been getting larger as each month passes. The November 4th meeting was attended by about 30 people. I am sure this is due to the interesting programs that are displayed, keep up the good work Bill Whitney!

DECEMBER GENERAL MEETING ••••• Director, Lou Faix

The Dec. General meeting will feature an invited guest speaker from the Grand Rapids Astronomical Society. Mr. Gary Ross will review his graduate thesis, "Lunar Influences on Rainfall & Weather Cycles". Gary is well known to W.A.S. members and is one of the founders of the Detroit Observational & Astrophotographic Association, (DOAA). There will also be a NASA film updating recent lunar study programs.

Be sure not to miss the November 16th maximum of the Leonid meteor shower. The radiant is 10h.08m + 22°n. The best time for viewing is 11:30 to 2 a.m., the moon rising at 2 a.m. will interfere with seeing.

Our newest Lecturer at Stargate, Dennis Jozwik, after his Saturday nite with the Scouts on Nov. 6th, said the views of Jupiter in the 12.5" Cass. Were Fantastic! ! !

On October 12, 1977, there will be a total Solar eclipse. This will probably be the last good chance for most of us older folks to see such an event so close to the United States. There is a Pacific Cruise planned to see the Total Eclipse of about 2 minutes. For more information, contact Pete Kwentus or Chuck Meyer, All Travel Service- 573-4500.

MINUTES OF THE WARREN ASTRONOMICAL SOCIETY

October 21, 1976

Pete Kwentus called the meeting to order at 8:00 P.M. Don Misson gave the treasurer's report.

P. Kwentus made announcements regarding Cranbrook Institute of Science. Members were asked to set up their telescopes for Founder's Day, Friday, Oct 22, 1976. He also sought volunteers to help collect observatory tickets on clear Sat. nights in Nov. from 8:00 to 9:30.

Plans for the Christmas Banquet were discussed. It is to be held Dec. 18 at 7:30 P.M. at Sheppard's Inn (at 1312 Groesbeck). Members were asked to have their money at the Nov. meeting at MCCC.

A sign-up sheet was passed for the Halloween Party to be held at the home of Beverly Cort at 8:00 Oct. 29.

It was announced that the observatory locks have been changed. Those desiring keys should contact either Pete Kwentus or Roger Civic. Dennis Jozwik donated a seasonal star chart to Stargate.

Graduating students of the "Telescope Use and Maintenance" class received certificates of completion from Pres. Pete Kwentus.

Dianne McCullough gave a talk and presentation entitled "Mythology of Autumn Skies".

Dolores Hill began her talk on "Astronomical Spectroscopy".

The meeting was adjourned early due to a fire alarm.

Minutes respectfully submitted,

Dolores H. Hill

Dolores H. Hill, Sec'y.



FILMS FOR ASTROPHOTOGRAPHY

On September 17th, Louis Faix was the invited guest speaker at the monthly meeting of the Grand Rapids Astronomical Society. Lou's discussion took the form of a progress report on his study of the characteristics of seven different types of film as adapted to astrophotography. A total of sixty-three photos of a carefully selected target area in the constellation Cygnus were taken covering a range from one to sixteen minutes and in one stop increments between $f/2$ and $f/8$. The target area was selected for zenith position, proper meridian timings, a quantity of twenty known AAVSO reference stars from first to tenth magnitude, minimum light pollution and the presence of known emission and absorption nebula. The North American nebula and Cygnus nova of 1975 were included in the field. Each photo was measured and rated for resolution, minimum stellar magnitude, reciprocity failure, diffuse source detection, fogging, contrast and color balance fidelity. Statistical regression analysis was applied to the WID. Schultz method of photographic stellar magnitude determination and the results were graphically plotted to measure the reciprocity failure.

The talk was expanded to explain the basic nature of a film's "characteristic curve" and how this would affect its ability to record deep space images. An explanation of the nature and variability of reciprocity failure was also provided.

While an extensive series of conclusions were obtained from the data, the major points were:

1. ASA speed ratings have almost no correlation with long exposure, dim source and recording ability.

Continued ...

SKY CALENDAR DECEMBER 1976

Information for helping teachers and students observe the sky

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>Planets: Venus, the brilliant "evening star", sets in SW 2 3/4 hrs after sun Dec 1; by Dec 31 it sets in WSW 3 1/2 hrs after sunset. For information on current apparition of Venus, see Sept <i>Sky and Telescope</i>, page 197.</p> <p>One hour after sunset: Jupiter</p> <p>Moon</p> <p>Aldebaran</p> <p>One hour before sunrise: Regulus</p> <p>Saturn</p> <p>Moon</p> <p>Tonight Mercury reaches greatest elongation, 20° from sun, and sets 1.4 hours after sundown. Look for it 45 minutes after sunset, 6° above horizon and 24° lower right of Venus.</p> <p>Tonight and tomorrow night, note moon's position relative to Great Square of Pegasus. Tonight at dusk, moon is below western part of Square.</p>	<p>Jupiter, next in brilliance after Venus, is in the eastern sky at dusk. It is high in the south about 10:30 p.m. local time Dec 1, shifting gradually to 8:30 p.m. by Dec 31. Jupiter sets about 7 hrs after passing due south.</p> <p>Northernmost full moon of the year rises in ENE 1/4 to 1/2 hour after sunset tonight. Moon high in south in middle of night, and sets in WNW just after sunrise tomorrow.</p> <p>Geminid meteor shower reaches maximum activity tonight. Under favorable conditions observers might see 50 meteors per hour, but the Last Quarter moon, rising at local midnight, spoils shower somewhat.</p> <p>New Moon, not visible, sets with sun. Next several evenings, moon sets about 1 hr later each night. Use moon and Venus as guide to Mercury next 3 nights.</p> <p>First Quarter (evening half moon). As sky darkens, note moon is below the eastern side of the Square of Pegasus.</p>	<p>Saturn, the brightest "star" in Cancer, rises in ENE 9:30 p.m. local time Dec 1, shifting to 7:30 p.m. by Dec 31. Visible rest of night, Saturn is high in S 7 hrs after rising. For approx place among stars, see January map.</p> <p>Watch moon shrink from full to crescent in morning sky today thru December 19. Moon remains visible after sunrise. Note how moon's phase depends on its angular distance from the sun.</p> <p>Last Quarter (morning half moon). One hour before sunrise, note moon is nearly halfway from Regulus to Spica. Use map, <i>May Evening Skies</i>.</p> <p>Diagrams tonight and next 2 nights show SW horizon 45 min after sunset.</p> <p>1 1/2 hours after sunset tonight, note 3rd-magnitude star Deneb Algedi (the tail of the Goat) 1° to left of Venus. Look again next two nights to see how much Venus moves.</p>	<p>Tonight Aldebaran is 1 low in ENE at dusk, high in south in middle of night, and low in WNW at dawn. Aldebaran at <i>opposition</i> (180° from sun) each year around this date, as earth passes between it and the sun.</p> <p>Watch for the rising of Sirius (see this month's map and Dec 15). Extend Orion's belt downward to locate this star. Note Winter Triangle formed by Betelgeuse, Procyon, and Sirius (Orion's shoulder and 2 dog stars).</p> <p>Sirius rises just before Altair sets (see this month's map). 11 stars of first magnitude or brighter will then be up, including both Summer and Winter Triangles. Can you see all 11 stars? See list on map.</p> <p>Venus</p> <p>Tonight, 3rd-magnitude star Deneb Algedi is 1° to lower left of Venus. In 1 day, Venus moved 1.1° eastward (to upper left) in relation to background stars of Capricornus.</p>	<p>Use binoculars to see Ganymede, Jupiter's brightest satellite, nearly 0.1° east of Jupiter tonight. Since this satellite's orbital period is close to 7 days, it appears farthest east of Jupiter each Thurs in Dec.</p> <p>Waning gibbous moon rises 3 hours after sunset tonight:</p> <p>Castor</p> <p>Pollux</p> <p>Moon</p> <p>One hour before sunrise: Moon & Spica</p> <p>Moon tomorrow morning</p> <p>Venus</p> <p>Tonight, look for 3rd-magnitude Deneb Algedi 2° below Venus.</p>	<p>Jupiter's 4 bright moons are visible in binoculars and small telescopes. Look for #4 farthest east of planet on Dec 6, 7, 22, 23, and 24, and farthest west on Dec 14, 15, 16, 31, and Jan 1.</p> <p>Mercury now sets in SW about 1 hr after sun. It is only bright "star" 25° lower right of Venus. Look 45 min after sunset. It is easier to see next two weeks.</p> <p>Sun enters Sagittarius around 12 noon E.S.T. today. On the 21st, sun reaches December solstice, the southernmost point in its annual path. Event marks beginning of winter in northern hemisphere.</p> <p>45 minutes after sunset:</p> <p>Moon</p> <p>Venus</p> <p>One hour after sunset:</p> <p>Jupiter</p> <p>Moon</p> <p>Aldebaran</p>	<p>One hour after sunset: Moon & Jupiter</p> <p>Aldebaran</p> <p>One hour before sunrise:</p> <p>Regulus</p> <p>Saturn</p> <p>Moon</p> <p>On solstice date, midday sun will be lowest of year, 26.5° above horizon as seen from latitude 40°N. For several weeks sun's midday altitude changes very little, hence solstice, "sun stands still".</p> <p>Which star chart to use? One hour after sunset tonight, use last month's map, <i>November Evening Skies</i>. 3 hours after sunset, use this month's map.</p> <p>As 1977 begins, only 3 naked-eye planets are visible. They all can be seen 3 1/4 hrs after sunset: At that time, Jupiter is high in south, Venus is about to set in WSW, and Saturn has just risen in ENE.</p>

Magnitudes of the Planets: Venus -3.6 to -3.9; Jupiter -2.4 to -2.2; Saturn +0.4 to +0.3. Mercury fades from -0.5 (December 10) to +0.4 (December 27), then fades rapidly. Planets against star background: Venus goes 36° eastward, from Sagittarius into Capricornus (see Dec 28-30). Jupiter retrogrades (goes west) 2.9°, crossing from Taurus into Aries and ending the month 9.5° SW of Pleiades. Saturn retrogrades 1° in Cancer, ending 9° east of Beehive and 14° west of Regulus.

East Lansing Sunrise: December 1 7:49 a.m.; December 16 8:02 a.m.; December 31 8:09 a.m. EST
Sunset: December 1 5:05 p.m.; December 16 5:05 p.m.; December 31 5:13 p.m. EST

FILMS FOR ASTROPHOTOGRAPHY (Cont'd.)

2. Exposures of constant time and source intensity, $(f/)^2/t=k$, do not reveal the true extent of reciprocity failure. The true failure is probably dependent on the source intensity as well as time.
3. Commercial black and white films (e.g. TRI-X) have superior spatial resolution compared to any of the color films.
4. Color films are generally superior for nebula detection as tonal values may be too subtle for visual detection on black and white films limited contrast range.
5. Sky glow is panchromatic and could not be effectively controlled with broad band filters.
6. For maximum resolution and maximum stellar recording ability, TRI-X is preferred.
7. Fujichrome rated best of all five color films evaluated and excelled in color fidelity and minimum reciprocity failure.
8. Resolution and halation were particularly poor with 103aF and it is recommended that this type of film only be used for its intended purpose of spectrography.
9. GAF 200 and GAF 500 films displayed nearly equal sensitivity to dim stars and were both resolution limited by severe graininess.

OBSERVATORY SCHEDULE

Lectures for the coming month are listed below.

Dec. 3/4 ••••• Don Misson ••••• 776-0424

Dec. 10/11 ••••• Pete Kwentus ••~•••• 771-3283

Dec. 17/18 ••••• Kim Dyer ••••••••• 835-2037

Dec. 24/25 ••••• Merry Christmas •••••••••

Dec. 31/ Jan. 1 ••••• Happy New year •••••••••

The lecturer may select either the Friday or Saturday depending on the weather and their personal schedule.

W.A.S. members wishing to be instructed on the operation of observatory and telescope controls should contact the lecturers directly. Additional lecturers and assistants are needed to lessen the load on these faithful old time members. Thank you.

Observatory Report: Roger Civic, Observatory Chairman.

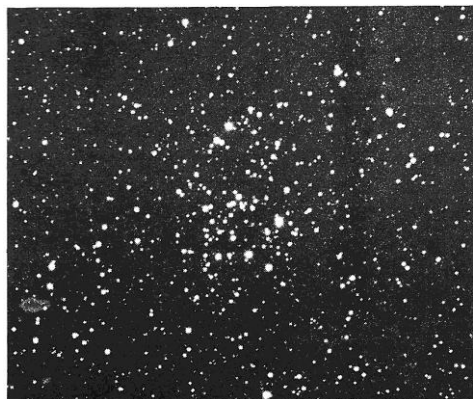
Any W.A.S. member is entitled to use Stargate Observatory by appointment. Call Pete Kwentus or Roger Civic.

The activity at Stargate has picked up a lot with the advent of cool weather- the nights are clear and cold but the viewing is getting much better. Kim Dyer has had regular groups of young people at the observatory whenever the sky is clear and they can get together.

During the past few weeks there has been some very interesting work being done by the team of McEldery & Kelly. They are attempting to get light change readings on some minor planets, such as Geographos. They appear on the scene with some fairly complex electrical equipment: a photometric device that shows the minute light changes of very faint objects, 10th to 14th mag. The light sensing pick-up device is placed at the focus of an 8" Celestron and then pointed at the object to be observed. I don't know how successful they have been but I wish them lots of luck.

Messier Objects~

Reprinted from Sky & Telescope

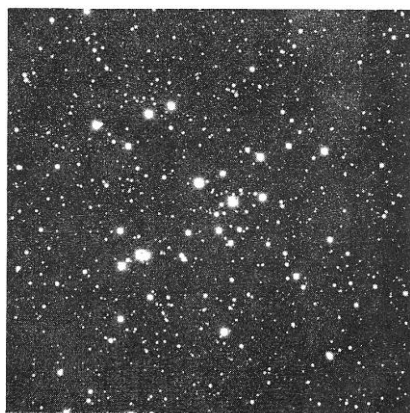


M50 NGC 2323 7^h 00^m.5 -8° 16'
Galactic cluster in Monoceros

Basic data. Charles Messier discovered this cluster on April 5, 1772, while observing the comet of that year.

About 50 cluster members are found inside a circle with half the diameter of M48. Lying about 3,000 light-years away, M50 has a linear diameter of 13 lightyears.

NGC description. remarkable cluster, very large, rich, pretty compressed, elongated. The stars range from 12th to 16th magnitude.

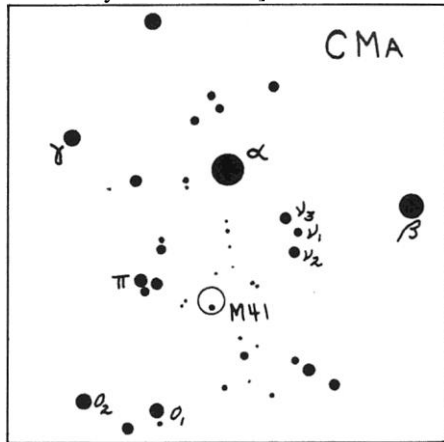
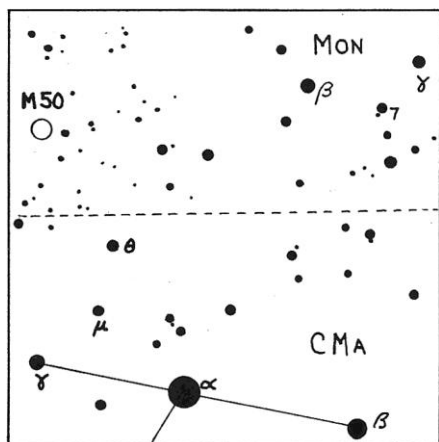


M41 NGC 2287 6^h 44^m.9 -20° 42'
Galactic cluster in Canis Major

Basic data. About 4° south of Sirius this bright stellar grouping has a 6th magnitude star (12 Canis Majoris) near its southeastern edge. Though authorities disagree, the total visual magnitude is approximately 5.2.

Messier 41 is about 2,400 light-years distant from us, according to a thorough study published in 1954 by A. N. Cox at Goethe Link Observatory.

NGC description. Cluster, very large, bright, little compressed, stars of 8th magnitude and fainter. [The *New General Catalogue*, although correctly stating that this cluster was observed by Flamsteed and Le Gentil before Messier, incorrectly calls it M14.]



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6" R.F.T. Reflector Telescope, tube only. Coulter mirror, Parks fiberglass tube, diagonal holder by Novak, spiral focus eyepiece holder. Only \$100.00, FIRM. Contact: Bill Whitney 588-1073.

The L.F.K. Astrophotographic guide. Special price to all club members, \$1.00. Other guides not as complete are priced at \$4.00 & \$6.00. Contact: Larry Kalinowski, 776-9720.

Camera lens- perfect condition, like new-55mm f/1.7 Rexatar automatic, straw coated lens, Pentax threads. Only \$30.00. Contact: Roger Civic-775- 6634.

For Sale: Tasco 2.4" f.13 refractor. Alt-Azimuth head 3 eyepieces, erector lens star prism, wooden case. Metal 3 leg tripod, Good condition. Only \$65.00. Call Mike Grellman, 264-0745.

For sale: Beautifully sculptured full relief models of the Moon's central section, 30" square. Full color plaster castings- 4"X4"X1½" thick. Great for framing. Special price for all club members, \$6.00, Contact: Roger Civic, 775-6634.

PLACE

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For Sale; A 10"- f/7.2 Newtonian telescope. Factory mirror, yoke equatorial mount, portable, 70 power eyepiece. Only \$300.00 Also a 40 mm Polaris finder telescope-12 power, \$25., 18mm Kellner eyepiece- \$18. All good condition. Call Doug Tracy ,882-4499.

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