

THE PRAIRIE ASTRONOMER

Volume 17, Number 8

July 26, 1977

ON THE NASA AGENDA FOR THE MONTH: A SATELLITE TO PROBE THE SUPERCLUSTERS

A National Aeronautics and Space Administration satellite scheduled to be launched this month may provide more evidence of what appears to be "superclusters" of galaxies in the universe.

A previous space probe indicates the "superclusters", more than 150 million light years in diameter, are bound together by an "extremely hot", thin gas with a mass many times that of the galaxies themselves, according to the Smithsonian Astrophysical Observatory.

"The gas, primarily hydrogen and helium, is described as essentially primordial material, representing the remains of the initial explosion that created the universe," a Smithsonian newsletter said.

"If this gas exists in the quantities suggested by the observations, it could represent a significant percentage of the so-called "missing mass" needed to close the universe."

The observatory said X rays emitted by the gas indicate it is "more than 10,000 times hotter than the surface of the sun."

The initial data on the superclusters came from an Explorer satellite launched into orbit over the earth's equator in December, 1970.

Advocates of the "closed universe" theory suggest that the universe is expanding, but that expansion eventually will end due to gravitational

collapse and its matter will fall back on itself, possibly before expanding outward again.

"The amount of material observed by traditional optical and radio techniques has been insufficient to provide the evidence of gravitational attraction needed to 'close' the universe," the observatory said.

"The new observations... suggest the 'missing mass' may exist as vast amounts of extremely hot gas between the galaxies."

JULY MEETING TO BE HELD AT MUELLER PLANETARIUM ON 26TH

The July meeting of the Prairie Astronomy Club will be held at Mueller Planetarium, at the University of Nebraska-Lincoln, Tuesday night, July 26, at 7:30 p.m. Note the change in location for this month's meeting only, due to the unavailability of Olin Hall.

The program is one that Jack Dunn has been presenting to his regular planetarium customers (saving you the admission price.) It's called "How To Watch A Flying Saucer", and, quite unlike the title, it is actually about methods of observing and identifying astronomical objects.

DON'T FORGET--THE MEETING IS NOT AT OLIN HALL THIS MONTH.

PRESIDENT'S REPORT:

PLANS FOR CLUB STAR PARTY, NATIONAL CONVENTION, OBSERVATORY HIGHLIGHT MEETING

July has been a busy month and there is a lot to report. Progress is being made on the observatory building itself, and on the eight inch telescope. We are making plans for the upcoming national convention, and for the annual club star party-picnic. We will have a lot to discuss at this meeting.

The mirror makers received the new supply of pitch they were waiting for and are polishing again. Ron Veys has been working on the patterns to be used in casting certain parts for the eight-inch. I have been working on the mechanical parts of the tube assembly. Professor Moore and I have been working on the pedestal for the 14-inch Celestron. During the next month we will need additional help in planning, assembling, sanding, painting, and aligning the telescopes, so we will be recruiting volunteers at this month's meeting.

If you haven't been out to the observatory building recently, drive out and take a look. On the Fourth of July several club members took turns keeping an eye on the building just in case of vandalism or fire. Our thanks to those who helped.

By the way, that night I sighted along the side of the building at Polaris, then went home and looked up its position, and came to the conclusion that the building is aligned to true North within $\frac{1}{2}$ degree. Maybe someone in the club would like to make a more accurate sighting some night.

Jack Dunn has an interesting program for the meeting, and we will have some slides of the observatory construction. We will be voting on officers for the national Astronomical League positions, and will be making plans for the convention and picnic. Hope to see you there.

-- Larry Stepp

REMEMBER THE NATIONAL CONVENTION IN BOULDER--IT'S STILL TIME TO PLAN

The AL/ALPO/WAA/IOTA/NAA consolidated convention will be held in Boulder, Colorado August 10-13. Your editor pre-registered to get the packet of convention goodies,

which I will bring to the July meeting. From the look of it, the convention has been very well organized and should be an excellent excuse to vacation in Colorado.

THE PRAIRIE ASTRONOMER is published monthly by the Prairie Astronomy Club, and is free to club members. Yearly subscription without club membership is \$4.00. Regular membership (includes one-year subscription to Sky & Telescope, club newsletter, and four quarterly issues of the Astronomical League newsletter), is \$10.00. Family membership is \$12.00. Newsletter editor, Lee Thomas (489-3855). Articles and news for publication must be submitted no later than the Monday of the week prior to club meetings.

CHANGES ARE ANNOUNCED IN ASTRONOMICAL LEAGUE PUBLICATIONS POLICY

The Astronomical League has announced the inauguration of "The Observer's Package", a subscription service offering six publications for the amateur observer patterned after a similar program of the British Astronomical Association.

The package offers six publications of a type unavailable in this country or available now, only through individual purchase:

THE REFLECTOR, the popular quarterly journal of the League, will be available in a new form as a journal devoted strictly to publishing research and articles by subscribers and other amateurs.

THE PROCEEDINGS of the Astronomical League convention will publish scientific papers, articles and information presented at the annual national event.

An ASTRONOMICAL ANNOUNCEMENT SERVICE will contain up-to-date information for amateurs condensed from cards sent by the Central Bureau for Astronomical Telegrams of the IAU and other sources. Up to 15 rapid announcements of important, new astronomical events will come directly to subscribers.

The OBSERVER'S HANDBOOK of the Royal Astronomical Society of Canada, a comprehensive guide used by tens of thousands of amateurs and professionals will contain new information for U.S. latitudes.

The STELLAR HANDBOOK, a new publication of the League, will be updated every four or five years and will greatly expand the information available in the RASC HANDBOOK.

The GRAPHIC TIMETABLE OF THE HEAVENS, published yearly by the Maryland Academy of Sciences is a quick reference publication useful at the telescope or to plan the night's observing.

A choice of the League's well-known observe manuals, OBSERVE THE STARS, OBSERVE THE SUN, A GUIDE TO THE MESSIER OBJECTS and other planned volumes will be available in years the STELLAR HANDBOOK is not updated.

The current quarterly journal of the League, THE REFLECTOR, will be available only through the package or by direct subscription, beginning with the December, 1977 issue. The present REFLECTOR will be replaced by a new, six-page quarterly newsletter mailed to each League member with organization news and information useful to amateurs.

Subscriptions to the complete package are \$15/year for members -- you are automatically a League member if you are a member of the Prairie Astronomy Club--and the package is \$20/year for non-League members. THE REFLECTOR is available separate from the package to League members for \$2.00/year, to others for \$2.50 per year.

Send a check, or write for more information, to:

Astronomical League Subscription Service,
9-8 8301 Isle Avenue, S.
Cottage Grove, MN 55016

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OBSERVING CHAIRMAN'S REPORT....

This month, globular clusters and a few galaxies seem to dominate the evening sky. Near Beta Ursa Majoris are two of the faintest Messier objects, M97 and M108. M108 is a faint edge-on-spiral 1 degree south and $1\frac{1}{2}$ degrees east of Beta Ursa Majoris. M97, also known as the Owl Nebula, is a faint circular patch of light with a dark spot somewhat off center. It is located $1\frac{1}{2}$ degrees south and two degrees east of Beta Ursa Majoris.

A galaxy that should be looked at is M106, a large bright spiral $\frac{3}{4}$ degree south and 5 degrees east of Chi Ursa Majoris. Those who have large telescopes and good sky conditions should sweep this area since there are many faint galaxies in the region. Perhaps the best galaxy in

this area is M51. the Whirlpool Galaxy, located two degrees south and $2\text{-}3\frac{1}{4}$ degrees west of the star at the tip of the Great Bear's tail, Eta Ursa Majoris. This object is really two galaxies, and is visible with a 2.4 inch refractor under good conditions, although the spiral structure needs at least a six or eight inch telescope and good conditions in order to be seen.

Moving farther east, in Hercules, M13 and M92 are both good globular clusters. M13, located $2\frac{1}{2}$ degrees south and $\frac{1}{3}$ degree west of Eta Herculis is visible to the naked eye under good conditions, and is spectacular in telescopes larger than a six inch. M92, located $2\text{-}3\frac{1}{4}$ degrees south and $3\frac{1}{2}$ degrees west of Iota Herculis, is much denser than M13 although of similar magnitude.

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9/77

SKY CALENDAR AUGUST 1977

Information for helping teachers and students observe the sky

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>Evening Planets: Mercury can be found with binoculars in evening twilight during early August. Begin searching for it very low in W 30 to 40 min after sunset. Mercury sets just north of due west one hour after sunset.</p> <p>☾ Pleiades ☾ Moon</p> <p>♁ Aldebaran ♁ Mars</p>	<p>One hour before sunrise: ♃ Pleiades ☾ Moon</p> <p>♁ Aldebaran ♁ Mars</p>	<p>Tonight moon rises as evening twilight ends. Moon rises later each night, allowing dark skies. When sky darkens, follow the Milky Way's course through Cassiopeia, the Summer Triangle, Sagittarius, and Scorpius.</p> <p>♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>One hour before sunrise, Aug 9: ♃ Mars ☾ Moon</p> <p>♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>One hour before sunrise, Aug 10: ♃ Mars ☾ Moon</p> <p>♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>One hour before sunrise, Aug 11: ♃ Mars ☾ Moon</p> <p>♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>One hour before sunrise: ♃ Castor ♁ Venus</p> <p>☾ Moon ♁ Procyon</p>
<p>14 New Moon, not visible. Within a week, moonlight will begin to seriously interfere with Milky Way viewing. While evening skies are still dark, look for objects under August 2, 3, 6, 14, 15, 20.</p> <p>☾ Moon ♁ Aldebaran ♁ Mars</p>	<p>15 If sky is very clear low in south, look for 2 hazy patches in Milky Way (positions marked Mb and OCl on map). OCl is M7 in Scorpius, a star cluster 750 light-years away. Binoculars resolve it into stars.</p> <p>♁ Mars</p>	<p>16 With binoculars, try to find very thin crescent moon as early as you can. At sunset it is 8° up, 24° left of sun. From East coast Mercury is covered by moon just after sunset. Observers between Appalachians and Miss. R. can see it reappear.</p> <p>♁ Venus</p>	<p>18 Eastern sky, one hour before sunrise, Aug 17: ♃ Mars ♁ Jupiter ♁ Venus</p>	<p>19 One hour after sunset: ♃ Mars ☾ Moon ♁ Spica ♁ Moon</p>	<p>20 In the northeast, note Andromeda, a slightly curved line of 3 bright 2nd-magnitude stars. Alm bicoculars 6" above the middle one, and look for hazy patch (Glx on map). It is another galaxy, 2 million light years away!</p> <p>☾ Moon ♁ Procyon</p>	<p>21 Eastern sky, one hour before sunrise, Aug 22: ♃ Mars ♁ Jupiter ♁ Venus</p>
<p>21 One hour after sunset: ♃ Mars ☾ Moon ♁ Aldebaran ♁ Mars</p>	<p>22 Eastern sky, one hour before sunrise, Aug 22: ♃ Mars ♁ Jupiter ♁ Venus</p>	<p>23 From about Aug 10 to Sept 16 each year, the sun passes in front of Leo the Lion. On Aug 22 or 23 the sun passes very near Regulus. Within 3 weeks Regulus will be easy to find low in eastern morning sky. See Sept Calendar.</p> <p>♁ Castor ♁ Venus</p>	<p>30 Moon rises about an hour after sunset. September morning sky will feature two close planetary pairings: Mars-Jupiter, and Venus-Saturn. A fifth planet, Mercury, will also be visible. See Sept Sky Calendar.</p> <p>♁ Castor ♁ Venus ♁ Saturn</p>	<p>31 One hour before sunrise: ♃ Saturn ♁ Venus</p>	<p>3 One hour before sunrise: ♃ Mars ♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>4 The year's best display of "shooting stars", the Perseid meteor shower, occurs next week. Thursday night, Aug 11-12, is the best night. Expect up to 50 meteors per hour on Friday Aug 12, 2-4 hrs before sunrise.</p> <p>♁ Jupiter ♁ Venus</p>
<p>28 Tonight's full moon is above horizon all night, from sunset to sunrise. Moon, halfway around zodiac from sun, appears in Aquarius, making it difficult for us to see that constellation's faint stars.</p> <p>☾ Moon</p>	<p>29 Pollux ♁ Venus</p>	<p>30 Moon rises about an hour after sunset. September morning sky will feature two close planetary pairings: Mars-Jupiter, and Venus-Saturn. A fifth planet, Mercury, will also be visible. See Sept Sky Calendar.</p> <p>♁ Castor ♁ Venus ♁ Saturn</p>	<p>31 One hour before sunrise: ♃ Saturn ♁ Venus</p>	<p>1 One hour before sunrise: ♃ Mars ♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>2 Tonight moon rises as evening twilight ends. Moon rises later each night, allowing dark skies. When sky darkens, follow the Milky Way's course through Cassiopeia, the Summer Triangle, Sagittarius, and Scorpius.</p> <p>♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>5 Last Quarter (morning half moon). On clear dark summer evenings, look for the Great Rift, the dark lane of dust clouds dividing the Milky Way into two branches from Cygnus southward.</p> <p>☾ Moon ♁ Procyon</p>
<p>29 Tonight's full moon is above horizon all night, from sunset to sunrise. Moon, halfway around zodiac from sun, appears in Aquarius, making it difficult for us to see that constellation's faint stars.</p> <p>☾ Moon</p>	<p>30 Pollux ♁ Venus</p>	<p>31 One hour before sunrise: ♃ Saturn ♁ Venus</p>	<p>1 One hour before sunrise: ♃ Mars ♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>2 Tonight moon rises as evening twilight ends. Moon rises later each night, allowing dark skies. When sky darkens, follow the Milky Way's course through Cassiopeia, the Summer Triangle, Sagittarius, and Scorpius.</p> <p>♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>3 One hour before sunrise: ♃ Mars ♁ Aldebaran ♁ Jupiter ♁ Venus</p>	<p>6 Last Quarter (morning half moon). On clear dark summer evenings, look for the Great Rift, the dark lane of dust clouds dividing the Milky Way into two branches from Cygnus southward.</p> <p>☾ Moon ♁ Procyon</p>

Magnitudes of the Planets: Venus -3.6 to -3.5; Jupiter -1.6 to -1.7; Saturn +0.7; Mars +1.2 to +1.0; Mercury (Aug 1-8) +0.4 to +0.6. Notable during August: Venus 36° Mars 20°, Jupiter 5 1/2° (all eastward). Venus on Aug 1 is in "pan-handle" of Orion, 14° N of Betelgeuse and 2.4° from Jupiter. Venus enters Gemini on Aug 2, passes 3/4° S of 3rd mag Mu Gem Aug 7, 7° S of Pollux Aug 22, and enters Cancer Aug 26. Mars on Aug 1 is 5° N of Aldebaran; on Aug 22 it passes into Gemini Aug 19, and is 1/4° S of 4th mag I Gem in Auriga Aug 24.

Sunrise/Sunset East Lansing: Aug 1 6:29 a.m./8:59 p.m.; Aug 16 6:45 a.m./8:39 p.m.; Aug 31 7:01 a.m./8:14 p.m. (EDT)

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Subscription: \$2.00 per year from Avarus Planetarium

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