

The

W. A. S. P.
ARREN
ASTRONOMICAL
SOCIETY
APER

MAY 1969

CLUB NEWS

Meetings:

May 14th, 1969-- This meeting will feature a brief outline of rocket propulsion systems, with emphasis on new designs for the future. Concentrating on nuclear and electric propulsion, the intriguing talk will be complemented by two movies showing the development and necessity of these new concepts if we are ever to travel beyond our own room.

May 28th, 1969--The major subject of the meeting will be Mars, Soon reaching opposition; the planet will be in prime position for observation. How and what to look for on the planet's surface will be observed. Also to be mentioned are the results of the last probes sent to Mars and the aims of the ones which are now on their way.

Radio Telescope: Jim Trombly has received \$15 for the project, and work is under way.

Optical Flat: The optical flat is in Tucson, Arizona. Mr. Alyea will give us further details.

Camp Rotary: The grounds committee looked over designs for the building submitted by Mr. Alyea and Mr. Polus and seemed very much in favor of the project. It is possible that they will contribute money and materials to the cause, and they seem to desire a cement block domed structure. Final plans await our presentation to the Board of Directors of the Rotary Club.

QUESTION OF THE MONTH

In what area of the sky are there the most stars?

ANSWER OF THE MONTH

The upper part of the constellation Cygnus is the most densely populated area of the heavens.



CONSTELLATION OF THE MONTH: CANES VENATICI

Location Cor Caroli, the brightest star in this fairly inconspicuous constellation, can be easily found about 17° south of ϵ Ursae Majoris. It is of mag. 2.8 and lies below the handle of the Big Dipper. A line drawn from η Ursae Majoris extended through Berenices' Hair to Denebola, in Leo, passes through it.

Description Although Canes Venatici is a small, inconspicuous group of stars, with most of its members of mags. 5 and 6, it holds within its boundaries two of the most outstanding objects listed in the Messier catalogue, M3 and M51. Complementing these objects are a host of double stars along with the lesser known M63, M94, and M106.

The nebula M51 (NGC 5194) is the famous Spiral, a Whirlpool nebula of Lord Rosse. It is one of the most enjoyable Messier objects to observe, for it looks more like its photographs than most other deep space objects. This galaxy has been under extensive study by amateurs who are attempting to observe its spiral structure. (See June Sky & Telescope p. 367 and August issue p. 71)

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M51 is approximately 11' by 7' and has a total mag. of 8. Its companion, NGC 5194, is only 3' by 2' and about 1.5 mag. fainter. John H Mallas, noted co-writer of Sky and Telescope's "A Messier Album" describes M51 as impressive in his 4-inch at low powers. In this object, of which this author has had the opportunity to observe a few times, the central region gave an impression of having texture. It appeared as if the galactic arm, which forms the bridge between the two companion systems, could be discovered in an 8" reflector. This, however, might merely be the result of familiarity with photographs of this object.

M3 is an outstanding object, but it is not easy to locate because there are few bright stars in its immediate area. This author observed this object last summer with a 6" Newtonian reflector, and it appeared brighter than M13, the globular in Hercules. It could not be resolved at 100 power, but its large size makes it a beautiful object to see. Look for it on a line from Arcturus to Cor Caroli (Alpha C Ven.) and a little closer to the former.

Notable Facts Cor Caroli was named by the Astronomer Royal, Halley, in honor of Charles I of England. This star is on the meridian at 9 p.m., May 22. Out of one thousand stars in M3, 1/7 are variable.

Taken in part from William T. Olcott's, Field Book of the Skies.

NOTES FROM THE GRAPHIC TIME TABLE

Mercury reaches greatest eastern elongation May 5 and sets about 1½ hours after the sun. Mercury is now rapidly fading from view into inferior conjunction between the earth and the sun May 29.

Venus rises from 2 to 3 hours before the sun and reaches greatest brilliancy May 14. On May 12, the waning crescent moon is in conjunction with Venus. Venus is

close to the western limb in the U.S. during the early morning hours.

Mars reaches opposition May 31, rising at sunset and is visible the rest of the night in Ophiuchus. On May 31, the moon is 2 degrees south of Mars at 9 p.m., EST.

Jupiter is well up in the east at sunset before the stars of Virgo.

Saturn is too much in line with, and behind the sun to be seen, in Pisces.

Moon- Full moon, May 2; last quarter, May 8; new moon, May 31. Note that the moon reaches full phase twice in May. Moon at perigee, May 4; at apogee May 20. The moon passes through two close conjunctions with Antares in Scorpius this month.

Sun

RISES-	May 1-15	4:50 a.m.
		<u>4:31 a.m.</u>
SETS-	May 1-15	7:05 p.m.
		<u>7:22 p.m.</u>
RISES-	May 16-3	4:30 a.m.
		<u>4:17 a.m.</u>
SETS-	May 16-31	7:23 p.m.
		7:39 p.m.

Twilight

Day	<u>1st</u>	<u>11th</u>	<u>21st</u>
Begins	<u>2:55</u>	<u>2:33</u>	<u>2:12</u>
Ends	<u>9:03</u>	<u>9:23</u>	<u>9:44</u>

THE MARK of an AGE – Isaac Newton

Isaac Newton was born in 1642, the year of Galileo's death. His contributions in the fields of mechanics and dynamics consisted of fusing together the works of Copernicus, Kepler and Galileo, and with the addition of his own findings, transforming them into a structure that still stands today as one of the greatest achievements in science. So profound were his ideas and discoveries, that he was able to apply them to an astonishing number of phenomena, from the movement of the planets to the rise and fall of the tides.

OBSERVATIONAL ASTRONOMY

His efforts helped clear away much of the befuddlement in scientific circles concerning the universal laws governing the motion of the bodies and the application of the laws to the motion of the heavenly bodies. These laws helped Newton's development of planetary dynamics to such a degree that, for many years, scientists complained that nothing more could be done in this field nor could be accomplished by doing so.

To examine Newton's contributions to dynamics, one must state where his work did, in his pre-occupation with the motion of the moon. Newton knew that if no force acted on the moon, it would move in a straight line with a constant speed, but since the moon moved around the earth, a force must be present to accomplish this. It was Newton's first accomplishment to study and mathematically define the moon's accelerations toward the earth, which led him later to the development of his law of universal gravitation. This law and its applications will be the subjects of next month's column, "Physics in Astronomy".

Gene Francis

FUTURE ARTICLES WANTED!

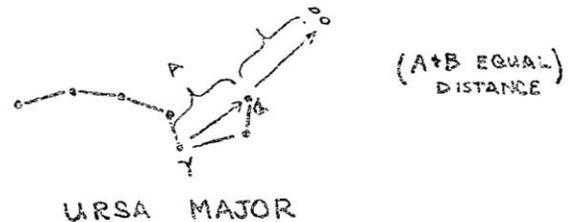
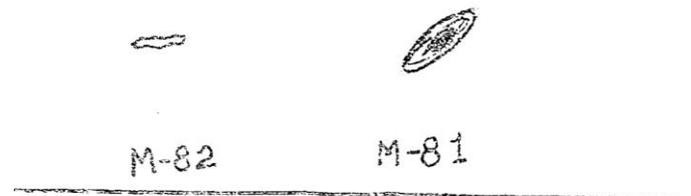
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SALUTE of the MONTH

Mr. Gerald Alyea gets the salute this month for his fine and hard work for the optical flat. He also put aside more time for members of the club than one could ask of a person. THANKS! Also we salute Mrs. Alyea for being married to him.

In the early morning hours after the Pleiades occultation at Camp Rotary, Gene, Dave and I went to help Martin find M81 & M82. Martin was looking for at least 20 minutes without success. I had never seen these objects before so I unlocked my hour and declination axis and hand guided my scope. It took me approximately 2½ minutes to find them. The sky was pitch black and as they drifted past my eyepiece they caught my eye immediately. I have to say I owe a lot of credit to Martin, Gene and Dave, because they had to lock my scope while I kept the objects in my eyepiece.



M-81 was a nice spiral galaxy in Ursa Major, and was I think a nicer looking galaxy than M-31. M-81 had a bright nucleus, with a bright, hazy cloud surrounding the nucleus.

I used a 4½ reflector at 43X I was just able to fit them both in my scope.

M-81 has a visual mag. of 7.

M-82 was the prettiest to me. It appeared as a slash of irregular bright light. M-82 is an irregular galaxy of mag. 8.4 but appeared to me brighter than its companion.

To find these draw an arrow from γ to α in Ursa Major and extend it out the same distance and same direction as the arrow in "A". In this area they should be found.

The co-ordinates are for M-81.

Declination- 69 degrees, 18 minutes;

Right Ascension- 9 hours, 51.7 minutes.

Co-ordinates for M-82. Declination- 69 degrees, 56 minutes; Right Ascension- 9 hours, 51.9 minutes.

Frank McCullough