

VESPA

Latin, for WASP



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M-31

THE JOURNAL OF THE WARREN
ASTRONOMICAL SOCIETY

MARCH 1977



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: Students, K-12 \$9.00- College \$11.00, Senior Citizen \$13.50, Individual \$16.00, Family \$21.00, the membership 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 VESPA.

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 776-8735
26335 Beaconsfield
Roseville, Michigan 48066

Cover Photo:

The cover of this month's Vespa shows a very fine deep sky object. The Andromeda Galaxy or M-31. This shot was taken by Pete Kwentus. Pete used Kodak 103A film and made an exposure of 10 min. with a f-1.65 Schmidt camera of 5.5", 235mm fl.

OBSERVATORY SCHEDULE

Lectures for the coming month are listed below.

Mar •••4/5 •••••••• Dennis Jozwik •••••••• 754-2037
Mar ••11/12 •••••••• Frank McCullough ••••• 791-8752
Mar ••18/19 •••••••• Diane McCullough ••••• 791-8752
Mar ••25/26 •••••••• Kim Dyer •••••••••• 835-2037

The lecturer may select either the Friday or Saturday depending on the weather and their personal schedule. If the Lecturer wishes, they may call upon the four new assistant lecturers. They are Bob Dennington 779-6395, Dave Locke 335-8429, Doug Holmes 776-8797, and Joe Tocco 573-8547. If you want help, call.

MINUTES OF THE WARREN ASTRONOMICAL SOCIETY
JANUARY 20, 1977

President Pete Kwentus called the meeting to order at 8 P.M. He announced receipt of a letter from Regional Chairman T. Michael Flick. Nominations were solicited for national Astronomical League officers and the following were nominated: James Fox for president and Bob Wright for vice president. Mr. Flick also announced the formation of several committees. They include 1) awards (Hans Bauldorf, 2) Regional By-Laws, 3) Public relations-Light Pollution Campaign and 4) Star publication committee.

It was announced that the Great Lakes Regional convention, hosted by DOAA, will be held at Oakland University July 8-10. For further information, contact Jerry Persha or Gary Morin. The 1977 Astronomical League convention is to be held in Boulder, Colorado August 10-14.

The secretary's report was read by Dolores Hill and the treasurer's report was given by Don Misson.

Old business included a short discussion of improvements on the club's 12½" Cassegrain. At the request of several members the mirror was not removed from the telescope during the holidays. (It was to be re-aluminized).

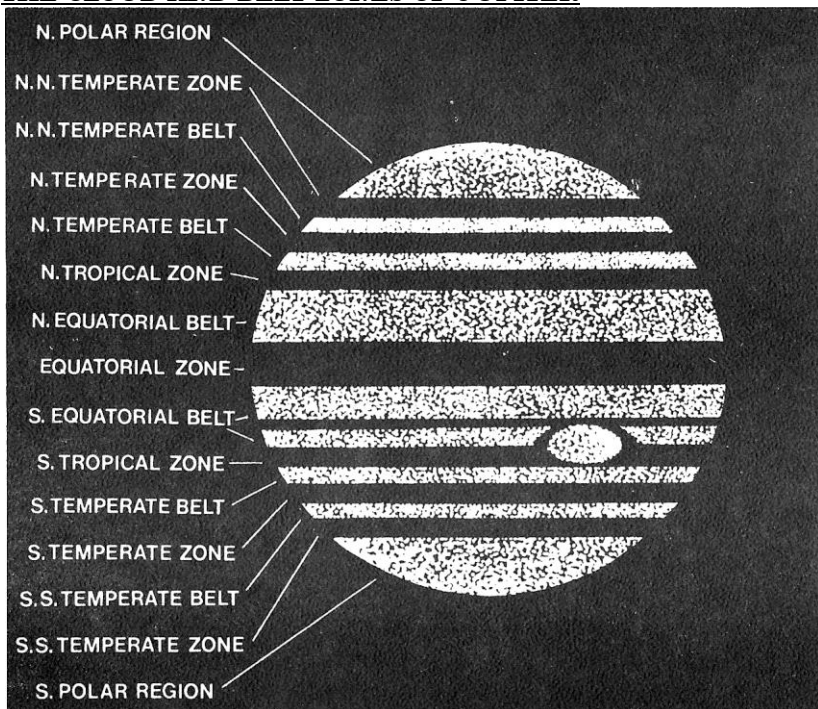
Dolores Hill announced the discovery of Nova Sagitta located just north of alpha. It is believed to be near or below mag. 8 and should appear to be quite red.

Louis Faix, program director, announced programs for next month's meetings.

The evening's program included a talk on Astronomical Spectroscopy by Dolores Hill and a joint talk by Pete Kwentus, Larry Kalinowski and Don Misson on Electric Drive Controls for Telescopes.

Minutes respectfully submitted,
Secretary.

THE CLOUD AND BELT ZONES OF JUPITER



Now is a fine time to view the planet Jupiter and/or its moons. The Planet can be viewed half the night.

Below, a typical view of Jupiter on a fine nite with an 8" or larger telescope.



ANALYSIS OF SOLAR ECLIPSES OF THE NEXT FIFTY YEARS

David L. Harrington

There are many items to consider in calculating the circumstances of solar eclipses. Computer programs can be written to determine the type of eclipse, as well as the date, time and location of the path. This has been done by numerous people, including the author. In some of these studies, the circumstances have been calculated for every solar eclipse that has occurred for the last 3100 years. I believe that it is fair to state that a very large percentage, if not all, of these studies have been conducted for scientific or historical reasons. These are certainly valid reasons, and, in fact, scientific interest was the basic reason that I began my solar eclipse analysis in the first place. However, it became increasingly obvious over the past six years that there are a large number of people, including myself and my wife, who enjoy chasing solar eclipses, but who are not equipped or inclined toward making scientific measurements during the eclipses. Hence the new phenomenon of the eclipse cruise, where the eclipse chasing is combined with a cruise vacation. It is for these people that I have analyzed all of the solar eclipses that will occur in the next fifty years (past eclipses and eclipses occurring after one is dead have little effect on one's vacations). I have analyzed the more than 100 eclipses and categorized them as to type, time of year, travel distance, local climate and site accessibility. The following eclipses were then rejected; all partial eclipses, all annular eclipses in the southern hemisphere, all total eclipses occurring in the non-tropical regions of the southern hemisphere during their winter, and all annular and total eclipses considered to be in inaccessible areas (Siberia, China, Arctic Ocean, etc.). The remaining eclipses were then further analyzed for merit based on either proximity to the United States or the vacation prospects for the eclipse path (eclipse cruise prospects). This final screening indicated that, for practical purposes, there are at most only 13 more solar eclipses available for viewing during our lifetime. These eclipses are listed below. This information should enable you to plan your eclipse chasing for the rest of your life. Good hunting!

<u>DATE</u>	<u>TYPE</u>	<u>PATH</u>	<u>COMMENT</u>
1977, Oct. 12	Total	Pacific Ocean, Bolivia	An excellent eclipse cruise possibility. The eclipse will probably be viewed in the Pacific, between Hawaii and Central America.
1979, Feb. 26	Total	N.W. United States, Canada, Greenland	Do not miss this one. This is the last total solar eclipse in the U.S. until 2017. However, go to Canada to see it!
1980, Feb. 16	Total	Atlantic Ocean, Africa, India	A good eclipse cruise possibility. The eclipse would probably be viewed off the west coast of Africa, as was done in 1973. This one would be viewed at 40° south of the equator.
1984, May 30	Annular	Pacific, Mexico, Southern U.S.	Do not miss this one. This eclipse is about as close to total as it can get without being total. It should be short but spectacular. Plan on going to Georgia.
1991, July 11	Total	Pacific Ocean, Mexico, South America	This should be a very good eclipse as viewed from southern Mexico. A cruise might be organized, but it is unnecessary to view this eclipse from offshore (except to stay cool and well-fed).
1992, Jan. 4	Annular	Pacific Ocean, Southern California	A fine vacation opportunity here. See a fine annular eclipse at sunset, and go to the Rose Bowl.

1994, May 10	Annular	Pacific Ocean, United States, Atlantic Ocean	It will be difficult to avoid seeing this one. The central line will cross the U.S. from coast to coast on a Tuesday, and may cross southeastern Michigan at local noon (I'm still plotting the exact path). It will pass the closest to Detroit of any solar eclipse until July 23,2093, and should be the most spectacular astronomical event visible from Michigan until Monday, Oct. 26,2144, when a total solar eclipse occurs in Michigan at noon.
1998, Feb. 26	Total	Pacific Ocean, Central America, Atlantic	This is the best eclipse cruise opportunity this century. This is a fine total eclipse, with the best viewing point in the world being not far from the Panama Canal. The eclipse there occurs at local noon with the sun nearly at the zenith.
1999, Aug. 11	Total	North Atlantic, Europe, India	An excellent summer vacation opportunity here. Fly to Paris, view a fine total eclipse not far from there, and tour Europe during its best weather until your money runs out. If you don't want to visit France, view the eclipse just before local noon from Germany or Switzerland.

2006, March 29	Total	Atlantic Ocean, Africa, Russia	An excellent eclipse cruise opportunity. This total eclipse would most likely be observed off the west coast of Africa. This would be viewed during midmorning at 8° North of the equator, whereas the 1973 eclipse was viewed at 19° north of the equator.
2013, Nov. 3	Total	Atlantic Ocean, Africa	An excellent eclipse cruise 'opportunity. As with the total eclipses of 1973, 1980 and 2006, totality would most likely be observed off the west coast of Africa. At the most favorable viewing location of 5° north of the equator, totality will occur with the sun nearly at the zenith.
2017, Aug. 21	Total	Pacific, Oregon to South Carolina, Atlantic Ocean	For the U.S., this will be one of the finest solar eclipses ever. On Monday, Aug. 21, the path of totality will sweep across the entire U.S. from coast to coast, with the sun high in the summer sky. The best place in the world to view this eclipse will be just outside Kansas City.
2024, April 8	Total	Pacific, Mexico, Texas to Massachusetts, Atlantic Ocean	Another fine eclipse for the U.S. The moon's umbral shadow will cross Mexico and move northward across the U.S. from Texas to the east coast. The local noon point will be near the border between Texas and Mexico.



The Diamond Ring effect, Photographed on Oct.3, 1976 in Australia. There two such opportunities to view such an effect, in every total Solar Eclipse, at the beginning of totality and at the end of totality.

•buy-sell-trade•

The L.F .K. Astrophoographic Guide. Special price to club members--- \$1.00 Contact Larry Kalinowski.

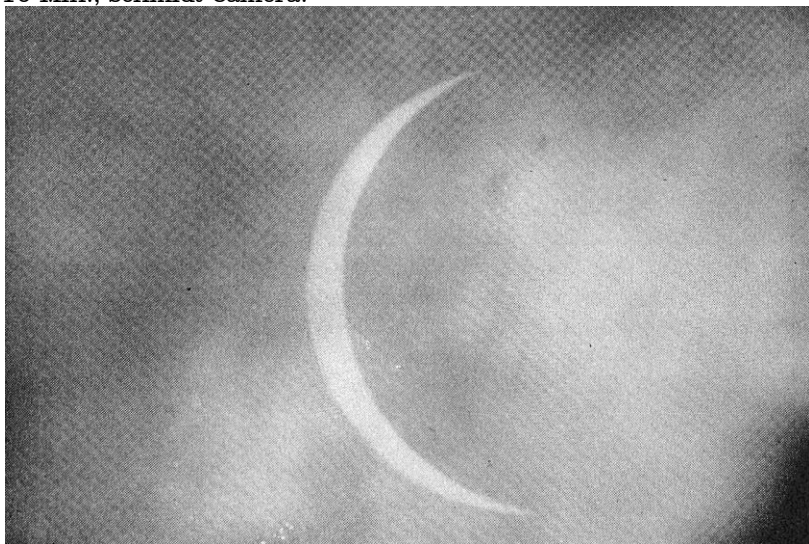
DO IT YOURSELF, DRIVE CORRECTOR. DC or AC operation. Build it with my circuit board. Instructions and parts list included, \$ 5.00. See Jan. S&T '75 pg. 50 for more details. Larry Kalinowski, 776-9720.

Tasco 2.4" f.13 refractor. Alt-azimuth head, three eyepieces, erector lens, star prism, wooden case. Metal 3 leg tripod. Good Condition. Only \$65.00. Contact Mike Grellman, 264-0745.

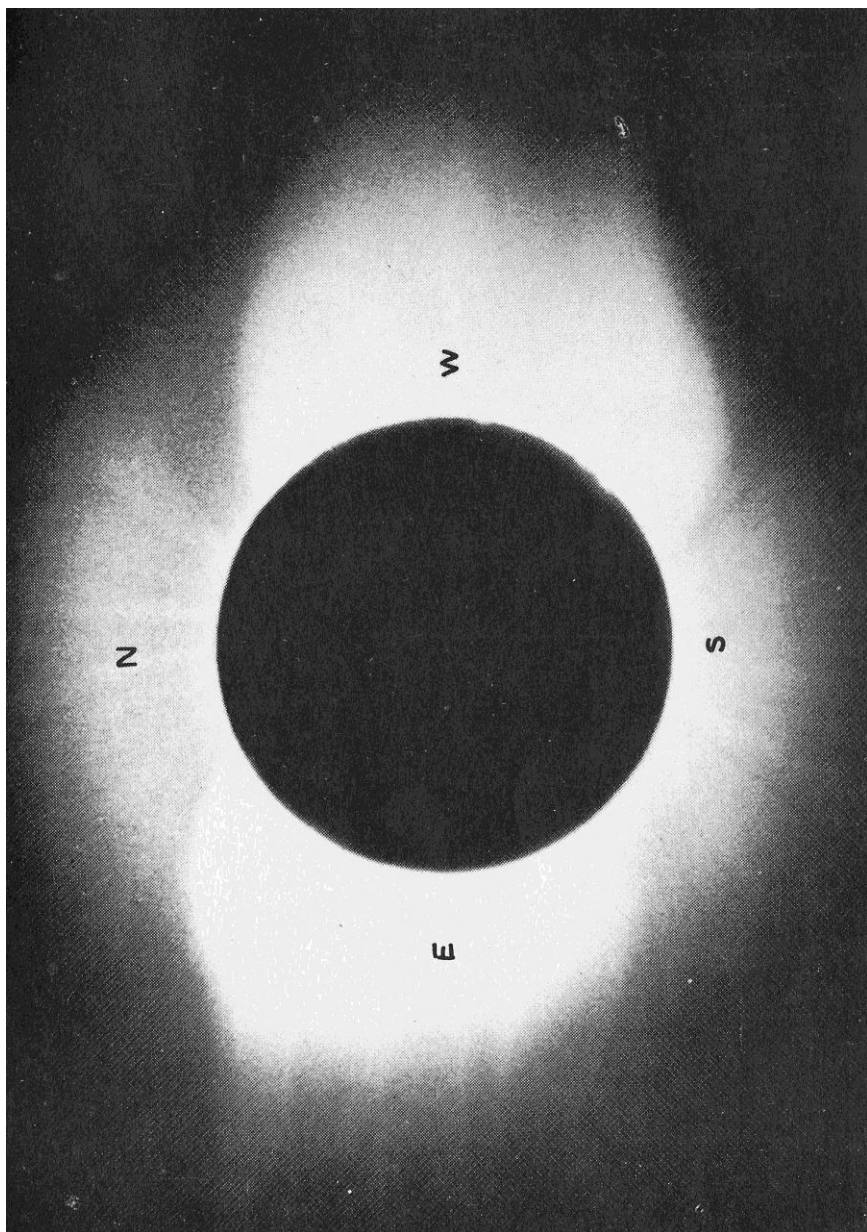
10" f.7 Newtonian telescope. Factory mirror, yoke equatorial mount, portable, 70 power eyepiece. \$300, also a 40mm Polaris finder telescope 12X, \$25., 18mm Kellner eyepiece, \$18. All good condition. Call Doug Tracy, 882-4499.



Deneb and the North American nebula. Taken 9-14-75 by Peter Kwentus and Donald Misson. Kodak 103AF, with Wratten filter #29 exposed for 10 Min., Schmidt Camera.



5-Minutes from a total eclipse, taken at prime focus of an 8" f-6 reflector, through clouds with NO filter by Roger Civic, July, 10 1972 in Canada.



This total eclipse, Oct. 3, 1976 as viewed from Australia is typical of a quiet Sun. The same type of Solar corona will be seen in Oct. of 1977.