



The WASP 1979



the Warren Astronomical Society

WASP

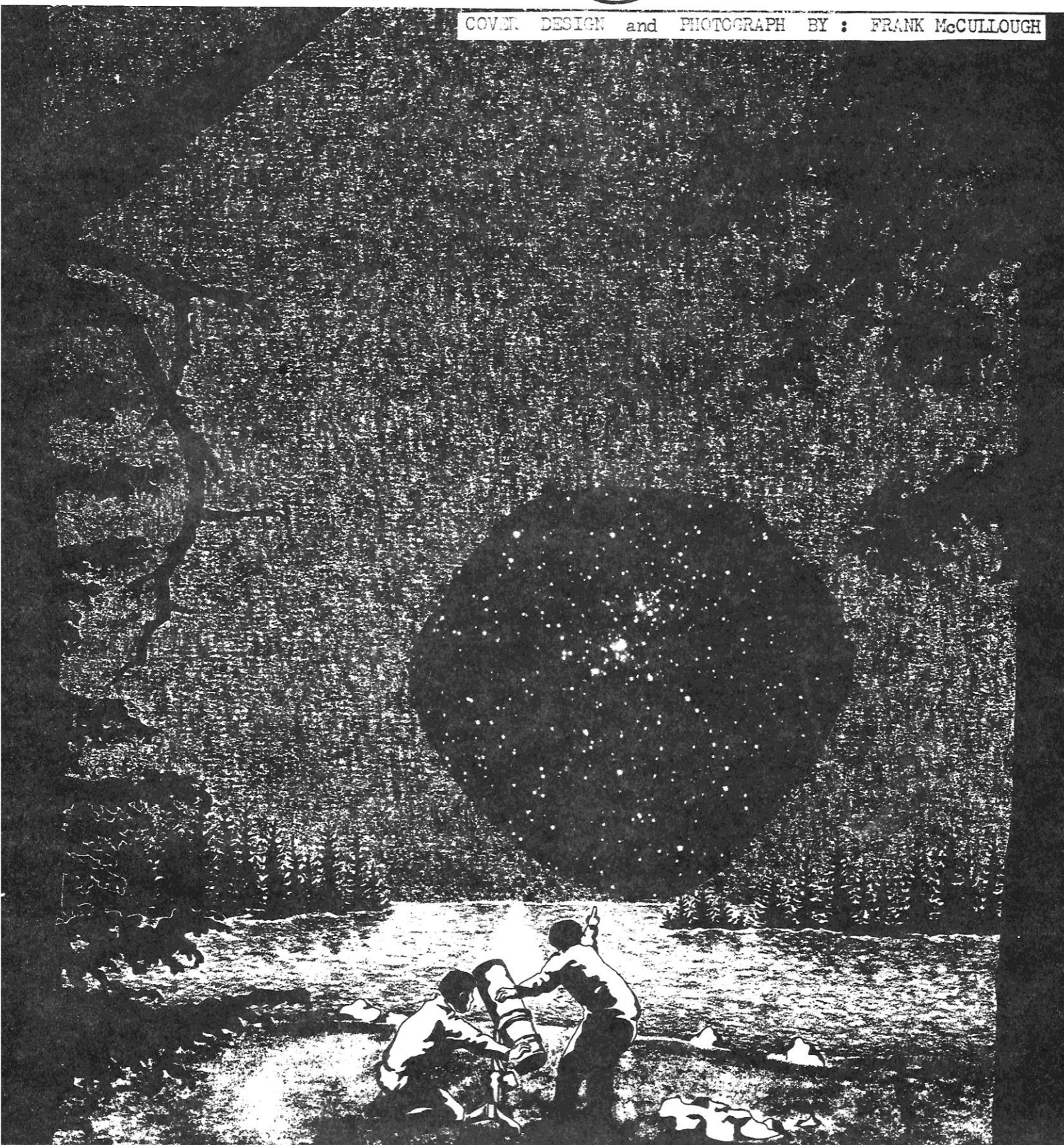
P.O. BOX 474

EAST DETROIT, MICHIGAN 48021



NOVEMBER

COVER DESIGN and PHOTOGRAPH BY : FRANK McCULLOUGH



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 E Building 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, 723-4736

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:

Nov. 2/3	Dave Harrington
Nov. 9/10.....	Pete Kwentus
Nov. 16/17	Paul and Judy Strong
Nov. 23/24	Frank McCullough

WAS Exchange

FOR SALE . . .Cavo 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 call. Price - \$75.00.

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 517-835-5548; 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 SEPTEMBER 23TH MEETING OF THE WARREN ASTRONOMICAL SOCIETY.

The meeting was opened at 8:20 p.m. by our President, Dave Harrington, who promptly then reviewed the program for the evening. The treasury stands at \$212.06, said Robin Bock. Ray Bullock announced that Friday, October 5 from 8 to 10 p.m. is member's night at Cranbrook and urged all to cooperate and participate by bringing their telescopes. A list was circulated for members to sign. Larry Kalinowski brought a light moment to the meeting by disclosing that Dr. Paul Strong had won the world title for pipe smoking which was held at Flint. The picture clip and story were delightful and applause followed, naturally! Other announcements concerned the coming occultations in the Hyades Cluster on Oct. 12 and the final occultation of the Aldebaran set for Monday, November 5th. A writing contest sponsored by the University of Texas and under the direction of Ms. Julie Strong is open to all. Cash prizes will be awarded and popular type astronomy articles are being sought. Copies of Ms. Strong's letter were duplicated by Loretta Caulley in order that all members could cooperate with this worthwhile project.

Frank McCullough, co-chairman of the Messier Observing Group, took the floor to remind all members that there would be a star gazing session at Stargate on October 12 and possibly October 20, depending on viewing conditions.

A group trip to Stellafane last July 26th was then given a feature presentation by Gary Boyd and Peter Kwentus. Stellafane, Vermont is the site dedicated to amateur telescope making. See Sky & Telescope, Oct. 1979. The group narrated and produced their own travel documentary and the party was made up of Peter and Ginger Kwentus, Donald Mission, Louis Faix, Douglas and Robin Bock and Gary Boyd.

The winners of the Messier Contest held in conjunction with, the Perseid Meteor Shower Camp-out were made known by Frank McCullough. First place, Douglas and Robin Bock; Second place, Richard and Delores Hill; Third Place, Jeff Stanek and Mr. Eschnaitz; and Fourth, Marty Kunz. Doug Tracy offered unique pictures of Jupiter taken during Voyager 11. The newly discovered ring and close-ups of the Jovian moons were included in the new collection. A class in Astro-photography to be held at Cranbrook Oct. 24 to Nov. 14 and again from November 21 to December 12 was then offered to members and friends. Larry Kalinowski, Louis Faix, and Peter Kwentus will be the instructors. Cost has been set at \$24 for nonmembers and \$21 for general membership.

After the break, Frank McCullough showed his films of the recent lunar eclipse plus his recent Messier slides. The Society enjoyed a good balance of astronomy and humor. The raffle then took place and winners would be announced at a later date, since first and alternate candidates could not be located. Louis Faix gave a preview of the Oct. meeting which will discuss Black Holes vs. Amateurs. Don Misson ran a NASA film on Orbiting Satellites which will help in conserving and detecting our resources. The meeting came to an end at 10:20 p.m. and members retreated to Denny's restaurant for further discussion.

Respectfully submitted,



Loretta D. Caulley, Secretary

Letter from the

Editor

As of this issue, I have accepted responsibility as editor of the Warren Astronomical Society Paper. I am privileged to serve the club in this fashion and will do all I can to make sure that this paper reflects the quality and enthusiasm of the Warren Astronomical Society. During the last 11 years that I have been a member of the club, I tried to remain active and serve the interests of the club to the best of my ability. Unfortunately, the 5 years I spent at Michigan State University prevented me from running for any office. The only time I have ever served the club as an officer was during the presidency of Frank McCullough, when I became vice-president by default.

When Dave Harrington accepted my offer to serve as editor, I began to analyze the purpose and direction of the paper. I see the paper as a structured by relatively informal newsletter reflecting the activities of the club and its members. During the coming months, I will be working closely with the club's officers to make sure that future meetings and activities are announced well ahead of time.

As director of the Wyandotte Planetarium, I have access to numerous media and printing centers. As a result, I believe that I can help keep the cost of the paper down to a minimum. At the suggestion of Dave Harrington, I looked into the possibility of printing the paper's cover and feature photographs in color. It may be possible using a Ronneotronic copier without increasing the current cost by more than 3 times. More research will be done on this.

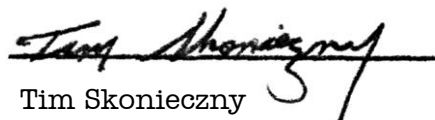
One major change regarding the production of the paper will be that the paper will be stabled and completed prior to the meeting. This is necessary because my distant location will make it difficult for me to attend the meetings before they begin. Therefore, I must receive all articles and notices at least one week before the meeting to insure inclusion into the paper. All correspondence with me can be made at the following address:

Tim Skonieczny
Wyandotte Planetarium
540 Eureka Ave.
Wyandotte, MI 48192
(313) 284-3100
(313) 675-0108 (home)

The success of any club newspaper depends largely on member support and involvement. This is your paper. Let us know what you're doing. Are you grinding a new mirror? Did you finally see the Owl Nebula? Whatever you're doing, we're interested! Any advice, comment, suggestion, or criticism will be appreciated.

(The rumor that I accepted this position, started by Dave Herihntohn and Frank Maccollogh, only to make sure that my name is correctly spelled in this paper, is NOT true!)

Sincerely,


Tim Skonieczny

THE AMATEUR OBSERVER'S CALENDAR

An Explanatory Guide

By: Brian Vorndam

The Amateur Observer's Calendar, a monthly feature in the MSUAC newsletter Out of Focus, was developed for amateur astronomers who would like to view astronomical phenomena and for serious amateurs who would like to contribute useful data to the science of astronomy. Basically, I have taken information concerning these phenomena from the Observer's Handbook, published by the Royal Astronomical Society of Canada; the British Astronomical Association Handbook; the Graphic Timetable of the Heavens; the American Ephemeris and Nautical Almanac; the Sky Calendar, published by Abrams Planetarium; and Astronomy and Sky and Telescope magazines. I then determine whether the phenomena can be viewed from the Great Lakes area. If so, I then calculate the best time to observe the phenomena and the direction (altitude and azimuth) to look (if it is not easy to locate). Finally, I pull all of this information together into an easy-to-handle calendar format.

The format of the calendar is similar to a standard wall calendar except that it is divided up into 17-3 week periods per year. The time period covered by the calendar can be found immediately following the title at the top. The rest of the page is divided up into twenty one 4cm x 6.5cm. blocks with the date at the extreme upper right of each block. (enclosed by a small square). All phenomena occurring on a particular day are listed in chronological order in Eastern Standard Time or Eastern Daylight Time (whichever is in effect) in military format (i.e.: 09:32 is nine thirty-two a.m., 22:59 is ten fifty-nine

p.m.). These times are underlined for easy reference and each is followed by an explanation of designation of what phenomenon is occurring. Usually all phenomena occurring on a particular day can be placed inside its designated block by using abbreviations of designations for some of the phenomena (these will be discussed below). However, if too many phenomena occur on one day, they will be listed on the preceding or following day with an abbreviation of the day they occur on (in parentheses) next to the time of occurrence.

The phenomena listed on the Calendar include:

1. LUNAR OCCULTATIONS – Lunar occultation timings can contribute useful data to the study of the shape and motion of the moon currently being investigated at the Royal Greenwich Observatory and the U.S. Naval Observatory. To do this, the observer must have access to a moderate-sized telescope, an accurate time signal (preferable WWV), and a tape recorder and/or a stopwatch. Observations must be accurate to a tenth of a second to be of any value. For more information concerning occultation timings, contact the International Occultation Timing Association (IOTA) at P.O. Box 590; Tinley Park, Ill. 60477

In cooperation with IOTA, I have determined (to the nearest tenth of a minute) when the disappearance or reappearance of any star brighter than 7.5 magnitude (visual) will occur for the location of the MSU Observatory (42.7° North Latitude, 84.5° West Longitude). Note that these times are accurate only for the Observatory's location. However, the times are usually accurate to +/- minutes for the locations within a 200-mile radius of the Observatory with the accuracy decreasing as the distance from the Observatory increases. In fact, the occultation may not be visible for locations more remote due to the altitude of the Sun and/or the moon or in many cases, because the star passes north or south of the moon. When this occurs, the dividing line results in a graze, which can be very spectacular visually and can provide very useful data

if timed. Whenever the graze of a bright star occurs in the Great Lakes area, it will be mentioned on the calendar along with the exact latitude and longitude of two points along the graze line.

Getting back to total occultations, the format that I use to designate an occultation look somewhat like this due to the limited space for each day:

01:15.9 / 1. Img.
 ZC 692 (Aldebaran)
 R / P.A. 90 -350

The first set of numbers is, of course, the time of occurrence (in this case, one fifteen and fifty-four seconds a.m.). A slash mark separates the time from the magnitude of the star (mg.) to the nearest tenth. On the second line is the Zodiacal Catalog (ZC) number of the star, followed usually by its proper name in parentheses. On the third line, the "R" designates that this is a reappearance (D-disappearance, G-graze). Another slash mark follows, separating the "R" from the letters "P.A." which means position angle. The P.A. is measured in degrees counterclockwise from the North point of the moon's disk (which is found by drawing an imaginary line from the center of the moon directly to Polaris). This makes finding the star much easier. Following the P.A. (for reappearances only) is a minus sign followed by another angle. This second angle is the apparent position of the true North Pole of the moon to the North point. When this angle is subtracted from the P.A. (add 360 if the result is negative), it gives the actual position of the star to the North Pole at reappearance. Since most good maps of the moon have the North Pole marked, the exact point of reappearance can be found by comparing the map to the lunar features seen through a telescope.

2. PHENOMENA OF JOBIAN AND SATURNIAN SATELLITES - these timings provide useful data for refining the satellites' orbital motions and the study of Saturn's rings. Titan (8.4mg.), Rhea (9.8mg.j), Tethys (10.3mg.) and Dione (10.4mg.) are the only moons of Saturn that are detectable enough in amateur telescopes to

provide any useful data. Jupiter's bright satellites are designated by the symbols: I - Io, II-Europa, III-Ganymede, IV-Callisto. Symbols designating the phenomena are: E-eclipse, O-occultation, D-disappearance, R-reappearance, T-transit (appears to be on planet's disk), S-shadow transit, i-ingress (fades onto planet's disk), e-egress (reappears off of planet's disk). The format I use on the calendar looks something like this:

02:15 Rhea Ei
02:47 I OR

The first is an eclipse ingress of Rhea, the second is an occultation reappearance of Io. On rare occasions, mutual phenomena of Jupiter's satellites may be seen. This occurs when one of Jupiter's moons appears to pass in front of another. These passes may be either occultations (O), or eclipses (E), which may be total (T), partial (P) or annular (A). It should be noted here that all phenomena of Jovian or Saturnian satellites occur exactly at the time listed on the calendar (unlike occultations) due to the nature of the phenomena, although some may not be seen by Western (PST) observers due to twilight or low altitude of Jupiter at the time of occurrence.

3. VARIABLE STARS — the systematic observation of variable stars is an area in which an amateur can make a valuable contribution to astronomy, because their variability is a result of phenomena occurring inside a star that is not completely understood by astronomers. For amateurs who are inexperienced variable star observers, the approximate time of maxima or minima of certain well known short period variables, is given continuously throughout its season of visibility regardless of whether the star is visible at that time, because they are to be used as checkpoints to determine accuracy in magnitude estimation of the star made at

some time during that period. For example; Delta Cephei at maximum -am on Wednesday, and the beginner made a magnitude estimation that it was near minimum on Tuesday -pm. Accuracy is needed for the peculiar long period variables: The stars listed regularly are:

<u>NAME</u>	<u>MAX</u>	<u>MIN</u>	<u>PERIOD</u>	<u>SEASON OF VIS.</u>	<u>TYPE</u>
Beta Persei (Algol)	2.1	3.3*	2.86 days	July - May	Eclipsing
U Cephei	6.7	9.8*	2.49 days	Year-round	"
Lambda Tauri	3.5	4.0	3.95 days	Sept. - April	"
Beta Lyra	3.4	4.3	12.9 days	March - Nov.	"
T Monocerotis	6.4	8.0	21.02 days	Oct. - April	Delta Cepheid
Zeta Geminorum	4.4	5.2	10.15 days	Sept. - May	" "
Eta Aquilae	4.1	5.2	7.17 days	March - Oct.	" "
Delta Cephei	4.1	5.2	5.40 days	Year-round	" "

*Since it takes U Cephei and Algol only 5 and 4½ hours respectively to dim to minimum and likewise to return to maximum, they will be listed only when this phenomena can be seen from the United States.

Also listed on the calendar are long period variables currently being studied. They are mentioned on the date of their expected maximum, along with their approximate magnitude at maximum. Other irregular variables that should be observed are:

<u>NAME</u>	<u>MAX</u>	<u>MIN</u>	<u>SEASON</u>	<u>TYPE</u>
R Coronae Borealis	5.8	14.8	Jan. - Sept.	R Cor. B
Rho Persei	3.3	4.0	July - May	Semi Regular
Eta Geminorum	3.1	3.9	Sept. - May	" "
Alpha Herculis	3.0	4.0	Feb. - Oct	" "
R Scuti 6.3	8.6	May - Sept.	RV Tauri	
RR Lyrae 6.9	8.0	March - Nov.	RR LYre	

Most estimates can be made with the unaided eye, although binoculars are recommended~ Maps showing comparison stars can be obtained from the American Association of Variable Star Observers (AAVSO). 187 Concord Ave, Cambridge, Mass. 02138.

4. METEOR SHOWER MAXIMA -- all major meteor showers are mentioned on the date of maxima, along with the extent (in days) and the average frequency of meteors per hour. Minor meteor showers are mentioned on the first day they may be seen,

the date of maxima, or at the beginning of a new issue of the calendar, if they can still be seen, but are past the maxima date.

5 EXTREMELY YOUNG OR OLD MOONS -- this very pretty phenomena is mentioned whenever the exact time of a New Moon allows a crescent moon of ± 36 hours to be seen from the United States. Since this extremely thin crescent is usually hard to locate, altitude and azimuth are also mentioned. Notes the world record is currently 16t hours - less than 1~ hours cannot be seen.

6. CONJUNCTIONS - (the apparent close approach of two or more celestial bodies). These are often very pretty sights, especially if a crescent moon is involved. They are mentioned both at the time of closes approach and at the best time to view the phenomena, (for the MSU observatory's location) since many close approaches occur during the daylight hours or while the celestial bodies involved are below the horizon. Minimum separation (in degrees) is given along with altitude and azimuth if they are hard to locate. Note observers who want more precise information for their location, may do so by multiplying their difference in longitude (in degrees) by a factor off four and adding (for west) or subtracting (for east) the result (in minutes) from the time used on the calendar, to get the correct time for their location. Observers north of the observatory's location can expect to see the object at little south (lower) of the predicted altitude and azimuth, and observers south of the observatory can expect to see the object north (higher of the predicted location often within a few degrees.

7. MISCELLANEOUS ASTRONOMICAL INFORMATION - this includes the exact time of the lunar phases (1st Quarter, Full Moon, 3rd quarter, New Moon) or when the moon is at the same celestial longitude as the naked-eye planet. Also mentioned are the solstices and equinoxes (beginning of a season), all planetary configurations opposition, greatest elonga- (continued on 2nd page of NIGHT WATCH)

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>02:00 Change clocks back to 01:00. (Daylight time no longer in effect). All times listed on calendar now in EST.</p> <p>08:06 First Qr. Saturn's rings on edge until Nov. 17</p>	<p>28</p> <p>03:08 II OR 07:26- 07:28 - I E II P 11:00 Mercury at greatest elongation (E) 24°. It may be located tonight at 18:00 at Alt 3.5°, Az. 234°. Also at 8:00 Venus at Alt 3°, Az. 241°</p>	<p>29 (Monday cont.)</p> <p>18:51.3 (Mo) 6.1mg. ZC3196 (151B Capricorni) D/PA 33°</p> <p>16:48- 21:36 U Cephei dims 21:36- 02:24 (We) U Cephei brightens</p>	<p>30</p> <p>04:13 III Si 07:14 III Se 08:04 I Si</p> <p>Beta Lyra at min-midday</p>	<p>Nov. 1</p> <p>00:45.4 6.1mg. ZC3514 (24 Piscium) D/PA 57°</p> <p>05:13 I ED 08:37 I OR</p>	<p>2</p> <p>Eta Aquilae at max-am L.P.V. R Cygni at max. mg. 7.5</p> <p>02:33 I Si 03:40 I Ti 03:58 IV Si 04:50 I Se 05:57 I Te 08:38 IV Se</p> <p>22:22.6 6.4mg. ZC249 (Nu Piscium) D/PA 137°</p>	<p>3</p> <p>Lambda Tauri at r -am 03:06 I OR 05:35 II Si 07:49 II Ti 08:25 II Se</p> <p>Zeta Geminorum at max-midday Delta Cephei at min-midday 18:00 Venus at Alt 2.6°, Az 23° and Mercury at Alt 2.5°, 234°</p>
<p>14</p> <p>Taurid meteor shower maximum 15 per hour 00:47 Full Moon 02:25 III OR</p>	<p>15</p> <p>L.P.V. T Ca-melopardolis at max. mg. 8.0 05:50 II OR 19:52.4 4.6mg. ZC661 (71 Tauri) R/PA 208° - 345° 20:07.7 4.0mg. ZC669 (Theta Tauri) D/PA 74° 20:08.4 3.6mg. ZC671 (Theta Tauri) D/PA 95° 21:02.7 ZC671 R/PA 235° - 345°</p>	<p>16 (Monday cont.)</p> <p>21:04.5 ZC669 (Theta Tauri) R/PA 255° - 345° 22:01.5 4.8mg. ZC677 (264B Tauri) R/PA 276° - 346° 23:46.9 1.1mg. ZC692 (Aldebaran) D/PA 62°</p> <p>01:01.1 ZC692 R/PA 268° - 347° 20:30.8 5.1mg. ZC806 (111 Tau-</p>	<p>17 (Tuesday cont.)</p> <p>01:45.2 5.3mg. ZC814 (115 Tauri) R/PA 321° - 356°</p> <p>Lambda Tauri at min-am 00:30- 05:00 Algol dims 08:11 III Si</p>	<p>18</p> <p>07:06 I ED 15:00 Mercury 2° S. of Venus 18:00 Venus at Alt 2.5°, Az 237° Mercury at Alt 1°, Az 236°</p>	<p>19</p> <p>Delta Cephei at min-am 04:26 I Si 05:36 I Ti 06:43 I Se 07:53 I Te</p> <p>Eta Aquilae at max-am 20:24- 01:12 (Se) U Cephei br. 21:20- 01:50 (Se) Algol dims</p>	<p>10</p> <p>00:06.8 6.1mg. ZC1238 (?) R/PA 271° - 13° 01:50- 06:20 Algol brighten 01:34 I ED 05:02 I OR 05:40 Titan Te 08:09 II Si</p>
<p>11</p> <p>Lambda Tauri at min-am 01:12 I Se 01:48 III ER 02:22 I Te 02:59 III OD 04:25 IV OR 06:34 III OR 11:24 Last Qr. T Monoceres at max-midday 18:24 (Sunset) Venus 4° N. of ANTARES at ALT. 7.8°, Az. 239°</p>	<p>12</p> <p>03:11 II ED 05:00 Mars 3° N. of Moon 08:30 II OR 10:00 Regulus 1° N. of Moon at Alt. 44°, Az. 240° 18:10- 22:40 Algol dims 22:40- 03:10 (T) Algol brightens</p>	<p>13</p> <p>North Taurid meteor shower maximum (visible Sept. 19- Dec. 1)</p> <p>02:00 Jupiter .8° N. of Moon at Alt. 8°, Az. 85° Beta Lyrae at min-midday Zeta Geminorum at max-midday</p>	<p>14</p> <p>00:16 II Se 02:38 II Te 03:00 Uranus at in conj. with Sun 13:00 Saturn .3° N. of Moon. The pair can be seen at 06:45 at Alt 42°, Az. 136° or at 13:00? at ALT. 22.3°, Az. 253°</p>	<p>15</p> <p>Lambda Tauri at min-am 08:59 I ED</p>	<p>16</p> <p>Eta Aquilae at max-am 05:46.3 6.5mg. ZC1875 (48 Virgins) R/PA 303° - 25° 06:20 I Si 07:32 I Ti 08:37 I Se</p> <p>Eta Aquilae at max-midday 19:30- 23:59 ALGOL BRIGHTENS</p>	<p>17</p> <p>Leonid meteor shower maximum (15 per hour) 03:27 I ED 06:57 I OR 12:00 Mars 1.6° N. of Regulus The Pair can be seen at 06:45 at Alt 60°, Az. 172° 18:15 (SUNSET) VENUS AT ALT 9.2°</p>

NIGHTWATCH

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" refractor and it stood for a great while as a standard of selenography. Arglander spent a lifetime plotting the positions and brightness 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 Arglander 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 than 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 sizes 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 nebulosity 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 binoculars 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 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 eve 'X. 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.



THE AMATEUR OBSERVER'S CALENDAR
(Continued)

tions, inferior and superior conjunctions), and, of course, lunar and solar eclipses.

I apologize for the sometimes cramped conditions on the calendar or for any phenomena that are not understood by those who use the calendar. If anyone has any questions or suggestions for its improvement, please contact me C/O MSUAC ABRAMS PLANETARIUM, EAST LANSING, MI 48824.

THE MESSIER AND OBSERVING GROUP

A REPORT

At an executive meeting 6 months ago, it was decided we needed something more than general meetings or social groups. We needed some actual observing!

The only thing we found most of us had done lately is to go off and photograph eclipses of the sun. The old pros had fallen out of the observing routine. Within the last 2 to 3 years, only two people had obtained Messier certificates in the Great Lakes Region of the Astronomical League and both individuals belonged to the Warren Astronomical Society.

This incentive to complete the Messier catalogue prompts and individual to go out and observe. In his or her quest to complete the catalogue, one can't help but take a peek at the planets and stars and partake in General Astronomy.

So, in order not to exclude or improperly label the club's observing program, the group was named "The Messier and Observing Group." We have had four meetings of this group and we were clouded out once. All Gatherings have been at Star Gate Observatory.

At these star parties, members and non-members have been doing various projects. Larry Kalinowski has been using sky atlases with field finders and comparing the chart field with actual eyepiece field. Bob Wilson with his refractor has been conquering the Messier Catalogue along with Jim Yaks and Robin Bock. Jim came directly after work one night, when most people had left, and had excellent morning skies to view. Robin, along with a miniscule amount of help from Doug, is progressing rather well for a girl (she'll love that remark) with an 8" reflector. Marty Kunz has been knocking off a few Messier objects himself. Bill Whitney comes out with his double-barreled refractor and uses the time for astrophotography. Pete Kwentus was out at a couple gatherings and his constant chatter was heard around the campgrounds. The last session he was extremely helpful in showing new people the telescope and some of the nicer objects through it.

I was a little worried at first because we had no idea on how the group would react to our ideas and planning. You could say we took it for granted everyone knew how to use a telescope. This would leave us the responsibility of showing the people techniques on star hopping and finding objects and stars. Anyone else who was not interested in the program could do pretty much what they wanted. Later we would help people with lunar observing and photography.

The first session we encountered what we should have been prepared for. Many people did not know how to look through a telescope, let alone set one up. This group, in many cases, at this point was down to raw basics. Our group not only had a goal, as far as the Messier Catalogue and observing, but would also give people, who had come to general meetings, a chance to deal with the elements and instruments for the first time.

In short, the sub group looks to be a valuable service to not only the new people, but also to all the members who have unconsciously taken observing for granted (that definitely includes me). I believe it gives all of us an excuse to get out and observe. I got out at the last session and observed 15 or more Messier objects once again and seriously attempted and found the larger loop of the Veil nebula in a 4 1/4" RFT. Then Doug early found it in his 8" reflector and it was a marvelous view, as his longer focal length telescope increased the contrast between nebula and a darker sky background. Much to Doug's and my excitement, we had conquered a new object.

As the colder months move along, a feature I am looking forward to, our sub group will be moving to individual's homes. If the skies are clear, the observing will continue, but if the skies are cloudy, the group will continue to have its meeting. During the indoor meeting, we will discuss the numerous projects which transpired during the summer and early fall and hopefully, see some of the slides or pictures accumulated during these observing sessions. A bull session is almost inevitable before and after the discussions.

I'm sure Doug will agree with me how pleased we are with the results of "The Messier and Observing Group." At each outing, we have averaged 25 to 30 people, 1/5 doing Messier work, and the rest doing their own thing.

OBSERVATIONAL ASTRONOMY CONTINUES IN THE W.A.S.

Pleasurably submitted

A handwritten signature in dark ink, reading "Frank R. McCullough". The signature is written in a cursive, flowing style with a large, prominent "F" and "M".

Group Coordinators:

Frank McCullough- 725-4736

Doug Bock – 533-0898

PLANETARIUMS OF MICHIGAN

Abrams Planetarium
Science Road
Michigan State
University East Lansing,
MI 48823 (517) 355-
4673

Thru October 21st: "Archive Project"
Science fiction story of the first trip into a black hole.
Friday and Saturday 8.00 p.m. and 10.00 p.m.
Sunday 2:00 p.m. and 4.00 p.m.
Adults \$1.50.
Children over 5 \$.50.

October 26-November 18: "Illusions" Sound and light
show.

Friday, Saturday and Sunday.... 8:00 p.m., 10.00 p.m.
and midnight.

All tickets \$2.50.

Longway Planetarium
923 E. Kearsley St.
Flint, MI 48502
762-1181

October 19-November 18. "Across the Universe"
Black holes, colliding galaxies and exploding stars.
Friday 7:30 p.m.
Saturday and Sunday 1:00p.m., 2:30 p.m. and 4.00 p.m.
Students \$1.00.
Adults \$1.50.

McMath Planetarium
Cranbrook Institute of Science
500 Lone Pine Road
Bloomfield Hills, MI 48013
645-3225

October and November. "Our Galaxy and Beyond"
An examination of the objects visible in the current night
sky, how they helped us in understanding the nature of our
galaxy and a trip into the realm of the galaxies.
Wednesday 4:00 p.m.
Saturday 2:00 p.m., 3:00 p.m., 4:00 p.m. and 7.30p.m.
Sunday 2:00 p.m., 3.00 p.m., and 4,00 p.m.
Planetarium is included with museum admission.
Adults \$2.50.
Students aged 5-21 \$1.50.

Wyandotte Planetarium
540 Eureka Road
Wyandotte, MI 48192
284-3100

November 7-January 30th: "Footsteps"
Commemorates the 10th anniversary of the Apollo 11 moon
landing. Traces the evolution of the moon and historical
interest in the moon.
Wednesday 7.30 p.m.
other showings by special arrangement.
Adults \$1.00.
Children 5 and over and senior citizens \$.50.
WAS members admitted free with membership card

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>OCCULTATION OF ALDEBARAN Mon night Nov 5 for all of cont U.S. except far Northwest (see map Feb '79 <i>Sky and Telescope</i>, p 202). Moon rises about 1.6 hrs after sunset, then creeps ever closer to Aldebaran. Sample times (disappearance-reappearance): Los Angeles 8:13-9:06pm PST; Denver 9:27-10:26 pm MST; St. Louis 10:34-11:48 pm CST; Atlanta 11:34pm-12:52am EST; E Lansing 11:47pm-1:01am EST; Washington, DC 11:52pm-1:13am EST. From Northeast U.S., begin watching by 8pm EST for disappearance of wide double Theta Tauri.</p>	<p>2½ hrs after sunset: 4</p>	<p>2½ hrs after sunset: 5</p>	<p>Early evening: Mercury 2½° from Venus. Antares 4.3° from Mercury. Use binoculars for Mercury and Antares.</p>	<p>Early evening: Mercury & Venus closest tonight, 2.0° apart. Antares 4½° from Mercury. Use binoculars.</p>	<p>Morning (45 min before sunrise): Locate brilliant Jupiter high in SE. Note Regulus 6.4° and Mars 14° to Jupiter's upper right, and Saturn 18° to Jupiter's lower left. Mars to Regulus = 8°. Watch this distance shrink until Nov 18.</p>	<p>Full Moon in opposition to sun tonight. Watch moon rise at sunset or shortly afterward. Moon remains above horizon for rest of night, and sets shortly after sunrise tomorrow.</p>
<p>Morning: Mars, Regulus, Jupiter, Mars-Regulus 3.7° apart.</p>	<p>Monday 12 Morning: High SE to SSE. Mars, Regulus, Jupiter, Saturn, Mars-Reg 3.3°</p>	<p>Tues 13 Morning: Regulus, Jupiter, Moon, Saturn, Mars-Reg 2.9°</p>	<p>Wed 14 Morning: Mars, Regulus, Jupiter, Moon, Saturn, Mars-Reg 2½°, Reg-Jup 8°</p>	<p>Thurs 15 Morning: Jupiter, Saturn (high in SE), Moon</p>	<p>Morning: Moon, Spica, ESE</p>	<p>Morning: Moon, Spica, ESE</p>
<p>Morning: Spica, Old moon, ESE</p>	<p>19 New Moon at 1:04 pm EST (10:04 am PST), not visible. There is no eclipse today, because the moon passes 5° north of the sun. Look for the young moon tomorrow evening.</p>	<p>Tues 20 Morning: Mars, Regulus, Jupiter, Saturn, Venus, Moon, ESE</p>	<p>Evening: Note "earthshine" on moon's dark side tonight and next few evenings. Moon, Venus, SW</p>	<p>Evening: Moon, Venus, Spica, SW</p>	<p>Morning: Mars, Jupiter, Regulus, Saturn, Mars-Regulus 2.6° apart, high in south.</p>	<p>Venus, in Ophiuchus tonight, moves into Sagittarius by tomorrow. About 1 hour after sunset tonight, 3rd-mag star marking top of Teapot is 11° upper left of Venus. On Dec 2 and 3 Venus will be 1° from that star.</p>
<p>Also on Nov 18: Mars 1.5° N of Regulus, Jupiter, Saturn</p>	<p>26 First Quarter (evening half moon). Evening: Fomalhaut 20° below the moon.</p>	<p>27 Morning: High in southern sky: Regulus, Mars, Jupiter, Saturn, Reg-Mars 4°, Mars-Jup 6°</p>	<p>28 Mercury, now visible in morning, gets higher, brighter each day. In tomorrow's diagram, it is 7° above horizon and easy to see. Evening: As darkness falls, moon is about 5° E of Vernal Equinox, the point the sun will pass on Mar 20.</p>	<p>Thurs 29 Morning: Mercury 26° lower left of Spica.</p>	<p>Morning: Jupiter high in S. Mars, Jupiter, Saturn, Reg-Mars 5°, Mars-Jup 5°, Jup-Sat 17°</p>	<p>Diagrams labeled Morning or Evening show sky during mid-twilight, about 45 min before sunrise or 45 min after sunset, respectively, from latitude 40° N. Early evening diagrams for Nov 1, 7, 8 are for end of civil twilight, about ½ hr after sunset.</p>

Warren Astronomical Society
Library

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1. All books, information, etc. must be checked out at a club meeting, (or gathering where librarian will be present).
2. Check-out period will be one month, with a one month renewal period.
3. Please handle library items with care. These items belong to the club members and are for everyone's use.

Thank you,

Robin L. Bock
Treasurer-Librarian

1979 Library List

Books

An Introduction To Astronomy
Baker and Fredrick

Amateur Astronomy
Patrick Moore

American Ephemeris and Nautical
Almanac
US. Naval Observatory

Best Stories of H. G. Wells, The
H. G. Wells

Beyond Stonehenge
Gerald S. Hawkins

Cosmology + 1
Scientific American

Elements of Astronomy
J. Norman Lockyer

Exploration of The Moon
Franklin H. Branley

Exploration of The Universe
George Abell

Frontiers of Astronomy
Fred Hoyle

Fun With Astronomy
Mae and Ira Freeman

Has the Earth a Ring Around It?
Frank G. Back

Heavens Above, The
A Rationale of Astronomy
J. B. Sidgewick

Life on Other Worlds
H. Spencer Jones

Making Friends With The Stars
Arthur J. Zadde

Making Your Own Telescope
Allyn J. Thompson

National Aeronautics, and Space
Administration (NASA)
Richard Hirsch and Joseph John
Trento

Nine Planets: Astronomy for the
Space Age
Alan E. Nourse

Other Worlds Than Ours
Richard Proctor (1870)

Perspective Universe, The
James P. Calk

Photomultiplier Manual
RCA

Science and the Modern World
A. N. Whitehead

Scientific Study of Unidentified
Flying Objects
Dr. Edward U. Condon

Sky Observer's Guide, The
Mayall and Wyckoff

Stars: Steppingstones Into Space
Irving Adler

To the Edges of the Universe – Space
Exploration in the 20th Century
Don DeNevi

Library List (cont.)

Heritage of Copernicus, The
Ed. By Jeray Nemas

Universe and Dr. Einstein
Lincoln Barnett

How to Make a Telescope
Jean Taxereau
J. E Bodes Sternatlas

War of the Worlds
H.G. Wells

We Are Not Alone
Walter Sullivan

Willy Ley's For Your Information
On Earth and In The Sky
Willy Ley

Weather On The Planets
George Ohring

World of Copernicus, The
Angus Armitage

Pamphlets, Maps, Etc.

Building a Condenser Enlarger
Edmund Scientific

NASA Mariner 10 Photos

Celestial Sphere
Lang Mfg. Co.

NASA Lunar Photos

K-Mart Focal Telescope
Instruction Book

NASA Maps and Charts; Moon,
Saturn V, Apollo, Gemini Pictorial,
The Spectrum

The Kodak Darkroom Kit
Information

Preparing & Presenting A Paper
Astronomical League

Kodak Technical Information

A Professional Guide To
Photographing The Sun
Carson

Mariner V Press Releases and
Ranger Information

Suddenly Tomorrow Came
IBM

National Geographic Maps
Moon and Mars

Universal Map of Outer Space

NASA Facts and Information

Sky & Telescope

1970 Complete

1975 Complete

1971 Missing Jan. - Feb.

1976 Complete

1972 Complete

1977 Complete

1973 Complete

1978 Complete

1974 Complete

1979 Jan. - Feb. only

1979 Library List

Scientific American

1973 December

1975 September (the Solar System)

Astronomy

1974 June – December

1976 January – October

1975 Complete

1979 January – April

The Amateur Astronomer Oct - Dec 1971

1972 3 issues

1974 3 issues

1973

4 issues 1975 1 issue

WASP

1970 December only

1975 Missing June, Oct.

1971 Missing Mar, Apr, May

1976 Complete

1972 Missing Mar, June, Oct.

1977 Missing Feb, July

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