WESTMINSTER ASTRONOMICAL SOCIETY
of Carroll County, Maryland

Newsletter for March 1985, Vol 2 No 3

March Meeting

Club member Mike Potter will describe plans for, and progress being made in, the construction of a 17.5" telescope. Mike and several colleagues and friends, including Blaine Roelke, plan to use the instrument for photometry and other serious research.

The meeting is scheduled for 7:30 p.m., March 27, in Rm. 111 of the Lewis Science Hall, WMC in Westminster.

President's Message

March brings with it a challenge for amature astronomers. In one night all but one or so of the objects in the 18th century catalog of Charles Messier can be observed.

The monthly star party on March 23-24 will feature a "Messier Marathon". For those willing to go for it, we will pull an all-nighter, observing for nearly nine hours. It is not required that you stay for the whole course. Stay just an hour or two and you will not leave disappointed.

Weather permitting, the star party will be at my home. A map is included elsewhere in the newsletter. Also some background information and a schedule are enclosed. In this year that Halley's comet returns we will honor the most celebrated comet hunter of all time, Charles Messier.

The marathon is on a Saturday night, so all day Saturday and Sunday are available for resting and recuperating. You do not need a telescope as there will be an assortment present. Don't miss this opportunity to see with your own eyes those things that until now you have seen only in photographs.

Curt Roelle

Halley Information 1: Comet Journal

Deep Skies for Comet Halley Journal is an informative quarterly newsletter that is filled with many facts and news of recent developments concerning the approaching comet. The goal of DSCH is "the idea of dimming or turning off unessential outdoor lighting for a while in many locales on the best nights of Halley's Comet". Without reducing the excess artificial light, millions of people located in and near large cities will not see Halley. DSCHJ is available for $4.00/year. The address is Fred Schaef, Editor, DSCH Journal, RD #2, Box 248, Millville, NJ,

08332.

Halley Information 2: Comet Guide

Sky Publishing Corp. has prepared a guide for observing Halley's comet entitled "Mr. Halley's Comet". This easy to read 32-page booklet contains much information including a timetable and charts for locating and tracking the comet. There is also a telescope/binocular viewing guide, and instructions on how to photograph the comet yourself.

The list price is $2.00. WAS can purchase them for only $1.00 each. A copy will be at the next meeting for your inspection. Not only will WAS members get 50% off, but we can raise money by selling them at our Astronomy Day booth.

March Star Party / Messier Marathon

The night of March 23-24 is the first annual WAS Messier Marathon. It will be held at 3481 Salem Bottom Road, Westminster, starting around 7:00 p.m.

A map is enclosed as well as general information and a marathon schedule. If you have questions or problems locating the observing site, call Curt Roelle at 848-6384.

Dress fairly warm as early spring temperatures can dip during the night. Bring your telescope or binoculars if you have one, flash light, paper for recording your observations, etc. Free coffee will be provided all night!

Gettysburg Planetarium

The Hatter Planetarium in Gettysburg will present "Cycles of Time" at 1:00 and 3:00 p.m. on Sunday, March 17. Person's interested in carpooling up for the 3:00 show will meet in the parking lot behind Lewis Science Hall at 2:15.

February's Star Party

February's star party at Blaine Roelke's was well-attended. The joint BAS-WAS star party featured the 17.5" Dobsonian mentioned in last month's news letter. Two of those present have since joined WAS, Dave Pasagno and Steve Rice. Dave is president of the Baltimore Astronomical Society. Steve has a brand new Celestron 8 telescope.

February's lecture

Dr. Laurence Marschall of Gettysburg College, February's guest lecturer, spoke on "Galaxies: The Biggest Things in The

Universe". This summary was prepared from the lecture and his presentation at the Hatter Planetarium, February 17.

On clear nights away from artificial outdoor lighting a band of light is seen crossing the sky. This was known to the greeks as "galaxias kyklos", or the milky circle. In acknowledgement to the greeks we call it the Milky Way. When Galileo turned his newly invented telescope toward this area he discovered it to be composed of innumerable stars too faint to be seen without aid.

Knowing how far away the stars are has always interested man. Dr. Marschall gave a general overview of the most useful methods for determining distances. One of the first methods, stellar parallax, was first used by Frederich Bessel in 1839. This method is useful out to about 100 light-years, and immeasurable at distances three times greater. Another method uses spectroscopy, or analyzing the spectrum of light from a star. The emission lines in a star's spectrum contain data from which assumptions can be drawn about a star's temperature and absolute brightness. Variable stars, in particular Cepheid types, are very useful tools in distance determination. The distance to a star cluster can be measured if it contains Cepheid variables that pulsate in a period proportional to their brightness.

Following the invention of the telescope in 1608 a number of objects called the "spiral nebulae" were discovered. It was uncertain whether these were part of our Milky Way system or not. It was observed that spirals are absent from regions of the sky in and near the Milky Way. This area has been dubbed the "zone of avoidance". It suggested that the spirals are more distant than the stars of the Milky Way, which block our view of the distant spirals.

In the 1920's Edwin Hubble discovered that the spirals were indeed at great distances beyond the Milky Way by analyzing their light. Their spectral lines were shifted toward the red, hence the phrase "red shift". The greater the red shift the faster the given galaxy is receding, or moving away, from us the observer. In addition the red shift gives an indication of distance: The greater the red shift the farther away the galaxy is. Finally, no galaxies (with the exception of local ones) are seen to posess blue shifts, or moving toward us. (Dr. Marschall brought some slides of Hubble taken during his days as a high school basketball coach!)

Almost overnight our perception of the size of the universe exploded when we were forced to see that ours is only one of many billions of other galaxies. (Dr. Marschall notes that Carl Sagan has virtually destroyed that word). A sky survey of one million galaxies revealed that galaxies tend to be grouped together into clusters. Dr. Marschall brought a poster size photograph of the survey, by P.J.E. Peebles of Lick Observatory.

Further inspection of such surveys reveals an even greater hierarchy. The clusters of galaxies also form groups or clus-

ters. These clusters of clusters of galaxies are now called "superclusters". Our galaxy is located in the Virgo Supercluster, the center of which is M87, an elliptical ball of stars estimated to be ten times larger than our galaxy. Most superclusters have similar supermassive elliptical galaxies at their centers. Smaller members of the supercluster that wander too close to these giants are cannibalized making the ellipticals ever larger. Some astronomers believe that at the center of the central galaxies lurk supermassive black holes of several million solar masses.

Superclusters of galaxies differ from the clusters of stars we observe with our telescopes. The latter are three dimensional collections of stars while the galactic superclusters are filament shaped or linear. They are like the threads in a ball of cotton. As in the analogy, voids have been observed between the filaments in which no galaxies are seen. Although they contain trivial ammounts mass if any, the "great voids" are larger in size than the superclusters they surround.

It is not known if there exists any organized mass greater than the superclusters. If so, we may be located in the midst of the next order of magnitude object, making observation difficult. Our own galaxy, the zone of avoidance, pollutes our view ringing us within its cloud of dust and obscuration. A possible super supercluster is suspected to be formed by the combined gravitation of the Hercules, Coma, Lynx, Ursa Major, Pisces, and Perseus superclusters. This is difficult to prove because we cannot see through our own galaxy. If these systems are truly bound, we have found the largest known object in the universe, with a diameter estimated to be 750 million light years and spanning half the sky. The following poem is from one of Dr. Marschall's papers in **Astronomy** magazine (April 1984):

> Great fleas have little fleas upon their
> backs to bite 'em,
> And little fleas have lesser fleas, and so
> ad infinitum...
> And the great fleas themselves in turn,
> have greater fleas to go on;
> While these in turn have greater still, and
> greater still, and so on...
>
> - Augustus De Morgan
> A Budget of Paradoxes

WAS Calendar

MAR 17	Field trip to Hatter Planetarium
20	Vernal Equinox - Spring begins 11:14 EST
21	New Moon
23-24	Messier Marathon at C. Roelle's
27	WAS March meeting - Western Maryland Col.

MESSIER MARATHON, 1985
Background and General Information

Why a Messier Marathon?

Around the time of the vernal equinox it is possible to observe nearly all of the objects in Charles Messier's famous catalog in one night. This year the moon also cooperates, being only three days old on Saturday night, March 23-24. The prepared schedule of risings and settings will aid in determining when to locate each object during revolution of the celestial sphere that night.

Charles Messier

Charles Meaaier (1730-1817) was a hunter, his quarry: comets. Equipped with a small telescope he carefully searched the skies for these occasional interlopers from his observatory in Paris. He soon became bothered by some of his discoveries that turned out not to be comets at all. Ordinary comets move among the background stars, some slower and some faster, but they all change position from one night to another. A number of the possible comets he found, never changed position; obviously these were not comets.

Determined not to be fooled again, Mr. Messier published a catalog of 103 "objects which could be confused with comets", in four installments in 1771, 1781, 1784, and 1786. A wide assortment of various objects make Messier's list the "greatest hits" of the deep sky. These open and globular star clusters, nebulae, and galaxies discovered some 200 years ago remain at the top of the list and close to the hearts of amature astronomers.

Ironically Mr. Messier is best remembered not for his cometary discoveries, but for his list of non-comet objects. Several turned up "missing" due to recording errors by Messier, but most have been recovered. Some additional objects have since been attributed to Messier bringing the total to 109. The list is numbered M1 - M110, with M40 being the only truely missing object. M40 consists of two stars in Ursa Major.

Besides his list of "fool's comets", Mr. Messier discovered 13 real comets. The seriousness with which he hunted his prey is recalled in a certain tale. Tragedy struck when his wife passed away. During those days a new comet appeared, but because Mr. Messier was busy with the funeral arrangements it was discovered by someone else. At the funeral he was heard to bemoan that his competitor had stolen his next discovery.

Observing the Messier Objects

Observing begins once darkness descends. Twilight will end at 7:47 p.m. EST on March 23rd; morning twilight comes at 4:27. Nature allots eight hours and forty minutes of darkness for completion of the list. The objects will be observed at an average rate of 12-13 per hour, and practicing before the marathon is advisable. The attached schedule can aid in preparation. Significant schedule data includes the rising, setting and culmination times of the messier objects. The Messier catalog is sorted by Right Ascension showing the correct order in which each object parades across the sky.

Marathon Schedule

The Messier schedule was pro-

ceased on a Columbia Data Systems Model 1600 personal computer. A TIM IV (Innovative Software Inc.) data base containing nearly 700 deep sky objects including Messier's was used as input. The Marathon schedule generator is written in Pascal. This section describes the listing format.

Column 1 is the original number assigned by Messier.

Column 2 is the New General Catalog number given by Johan Dreyer (1888). Two objects do not have NGC numbers. M45 is the Pleiades, and M25 is listed as IC4725, from the Index Catalogs of 1895 and 1908.

Column 3 is the common or popular name of the object. Few deep sky objects actually have names, but many of Messier's do.

Column 4 is the abbreviation of the constellation in which the object is located.

Columns 5 and 6 are the Right Ascension and Declination. Both R.A. and Dec. are for epoch 2000. These were obtained by precessing the 1975 coordinates of the Revised New General Catalog (Sulentic, Tifft). The entire list is sorted by R.A.

Column 7 is the object type:

IG - Irregular Galaxy
EG - Elliptical Galaxy
SG - Spiral Galaxy
BG - Barred Spiral Galaxy
DN - Diffuse Nebula
PN - Planetary Nebula
OC - Open star Cluster
GC - Globular star Cluster

Column 8 lists the magnitude, or apparent brightness.

Columns 9 and 10 give the rising and setting times (EST). The object can be observed between these times. As seen from our latitude a number of objects never set but appear to revolve about Polaris, the north star. These are designated as "North Circumpolar".

Column 11 is the time of culmination. Culmination occurs when the object transits or crosses, the meridian. The meridian is an imaginary arc that runs from north to south, including the zenith, the imaginary point directly above the observer. In other words at culmination, the object is seen at its highest point above the horizen and is best placed for observing.

NOTE: All rising, setting and culmination times are for March 24. Thus 4 minutes should be added to times before 0:00 to obtain true event times for March 23. On the other hand this 4 minute difference is negligible.

The schedule may also be used for days before and after March 23-24. For each earlier day, add 4 minutes to the rising, setting and culmination times. For each later day subtract 4 minutes.

THE FIRST ANNUAL MESSIER MARATHON SCHEDULE
March 23-24, 1985

Prepared by the Westminster Astronomical Society
Westminster, Maryland
Longitude = W. 77.0, Latitude = 39.5

M#	NGC	Common Name	CON	R.A.	Dec.	TY	Mag.	EST Rises	EST Sets	EST Culm.
		****** SUNSET ******	PSC	0h11.9m	1.3D				18:14	
M110	N.205	Satellite G. of M.31	AND	0h40.4m	41.7D	IG	10.0	3:32	21:51	12:39
M32	N.221	Satellite G. of M.31	AND	0h42.8m	40.9D	EG	9.0	3:41	21:46	12:42
M31	N.224	GREAT ANDROMEDA GAL.	AND	0h42.8m	41.3D	SG	4.0	3:38	21:50	12:42
M103	N.581		CAS	1h33.3m	60.7D	OC	7.0	N Cir-Polar		13:32
M33	N.598	TRI. OR PINWHEEL GAL	TRI	1h33.9m	30.7D	SG	7.0	5:37	21:32	13:33
M74	N.628		PSC	1h36.7m	15.8D	SG	11.0	6:43	20:32	13:35
M76	N.650/1		PER	1h42.0m	51.6D	PN	11.0	N Cir-Polar		13:41
M34	N.1039		PER	2h42.0m	42.8D	OC	6.0	5:23	0: 2	14:41
M77	N.1068		CET	2h42.7m	-0.0D	SG	9.0	8:42	20:44	14:41
M45	PLEIADES(SEE N.1435 FOR NEB)		TAU	3h46.9m	24.1D	OC	1.4	8:20	23:15	15:45
M79	N.1904		LEP	5h24.2m	-24.5D	GC	8.0	12:52	21:57	17:22
M38	N.1912		AUR	5h28.7m	35.8D	OC	7.0	9: 2	1:56	17:27
M1	N.1952	CRAB NEB W/ PULSAR	TAU	5h34.5m	22.0D	PN	10.0	10:16	0:53	17:33
M42	N.1976	GREAT ORION NEBULA	ORI	5h35.3m	-5.4D	DN	0.0	11:52	23:19	17:33
M43	N.1982	NE WING OF ORION NEB	ORI	5h35.5m	-5.3D	DN	0.0	11:52	23:19	17:34
M36	N.1960		AUR	5h36.2m	34.1D	OC	6.0	9:20	1:53	17:34
M78	N.2068		ORI	5h46.8m	0.1D	DN	0.0	11:46	23:48	17:45
M37	N.2099		AUR	5h52.3m	32.5D	OC	6.0	9:45	2: 0	17:50
M35	N.2168		GEM	6h 8.8m	24.3D	OC	6.0	10:40	1:37	18: 7
M41	N.2287		CMA	6h47.1m	-20.8D	OC	6.0	13:59	23:35	18:45
M50	N.2323		MON	7h 2.9m	-8.3D	OC	6.0	13:29	0:36	19: 5
M47	N.2422		PUP	7h36.6m	-14.5D	OC	5.0	14:24	0:48	19:38
M46	N.2437		PUP	7h41.9m	-14.8D	OC	9.0	14:31	0:52	19:44
M93	N.2447		PUP	7h44.6m	-23.9D	OC	6.0	15: 9	0:20	19:46
M48	N.2548		HYA	8h13.6m	-5.8D	OC	5.3	14:31	1:55	20:15
M44	N.2632	BEEHIVE OR PRAESEPE	CNC	8h40.0m	20.0D	OC	0.0	13:29	3:50	20:42
M67	N.2682		CNC	8h51.1m	11.8D	OC	7.0	14:10	3:31	20:53
M81	N.3031		UMA	9h55.7m	69.1D	SG	8.0	N Cir-Polar		21:57
M82	N.3034		UMA	9h55.9m	69.7D	IG	9.0	N Cir-Polar		21:57
M95	N.3351		LEO	10h43.9m	11.7D	SG	11.0	16: 3	5:23	22:45
M96	N.3368		LEO	10h46.7m	11.8D	SG	10.0	16: 5	5:27	22:48
M105	N.3379		LEO	10h47.8m	12.6D	EG	10.0	16: 4	5:30	22:49
M108	N.3556		UMA	11h11.6m	55.7D	SG	10.0	N Cir-Polar		23:13
M97	N.3587	OWL NEBULA	UMA	11h14.8m	55.0D	PN	11.0	N Cir-Polar		23:16
M65	N.3623		LEO	11h18.9m	13.1D	SG	10.0	16:33	6: 3	23:20
M66	N.3627		LEO	11h20.2m	13.0D	SG	9.0	16:35	6: 4	23:21
M109	N.3992		UMA	11h57.6m	53.4D	BG	11.0	N Cir-Polar		23:59
M98	N.4192		COM	12h13.9m	15.9D	SG	11.0	17:18	7: 8	0:15
M99	N.4254		COM	12h18.9m	14.4D	SG	0.0	17:28	7: 8	0:20
M106	N.4258		CVN	12h18.9m	47.3D	SG	10.0	14: 4	10:32	0:20
M61	N.4303		VIR	12h22.0m	4.5D	SG	10.0	18: 5	6:37	0:23
M100	N.4321		COM	12h23.0m	15.8D	SG	10.0	17:27	7:17	0:24
M84	N.4374		VIR	12h25.1m	12.9D	EG	10.0	17:40	7: 8	0:26
M85	N.4382		COM	12h25.5m	18.2D	EG	10.0	17:21	7:28	0:26
M86	N.4406		VIR	12h26.3m	12.9D	EG	10.0	17:41	7:10	0:27
M49	N.4472		VIR	12h29.8m	8.0D	EG	9.0	18: 1	6:56	0:31
M87	N.4486	VIR CLUSTER CENTER	VIR	12h30.9m	12.4D	EG	10.0	17:47	7:13	0:32
M88	N.4501		COM	12h32.1m	14.4D	SG	10.0	17:41	7:21	0:33
M91	N.4548		COM	12h35.5m	14.5D	BG	10.9	17:44	7:25	0:36
M89	N.4552		VIR	12h35.7m	12.6D	EG	11.0	17:51	7:18	0:37

M#	NGC	Common Name	CON	R.A.	Dec.	TY	Mag.	EST Rises	EST Sets	EST Culm.
M90	N.4569		VIR	12h36.9m	13.2D	SG	11.0	17:51	7:21	0:38
M58	N.4579		VIR	12h37.8m	11.8D	SG	10.0	17:56	7:17	0:39
M68	N.4590		HYA	12h39.4m	-26.7D	GC	8.0	20:19	5: 1	0:40
M104	N.4594	SOMBRERO GAL	VIR	12h39.9m	-11.6D	SG	8.0	19:21	6: 1	0:41
M59	N.4621		VIR	12h42.1m	11.6D	EG	11.0	18: 1	7:21	0:43
M60	N.4649		VIR	12h43.7m	11.6D	EG	10.0	18: 3	7:22	0:45
M94	N.4736		CVN	12h50.9m	41.1D	SG	8.0	15:45	9:54	0:52
M64	N.4826	BLACKEYE GAL	COM	12h56.7m	21.7D	SG	8.0	17:38	8:13	0:58
M63	N.5055		CVN	13h15.8m	42.0D	SG	10.0	16: 2	10:27	1:17
M53	N.5024		COM	13h12.9m	18.2D	GC	8.0	18: 8	8:15	1:14
M51	N.5194	WHIRLPOOL G.& N.5195	CVN	13h30.0m	47.2D	SG	9.0	15:17	11:40	1:31
M83	N.5236		HYA	13h37.1m	-29.9D	SG	9.0	21:32	5:44	1:38
M3	N.5272		CVN	13h42.3m	28.4D	GC	6.0	17:55	9:27	1:43
M101	N.5457	FAMOUS FACE-ON SPIR	UMA	14h 3.3m	54.4D	SG	8.0	N Cir-Polar		2: 4
M102	N.5866		DRA	15h 6.5m	55.7D	EG	11.0	N Cir-Polar		3: 7
M5	N.5904		SER	15h18.6m	2.1D	GC	6.0	21:13	9:25	3:19
M80	N.6093		SCO	16h17.1m	-23.0D	GC	7.0	23:40	8:55	4:17
M4	N.6121		SCO	16h23.6m	-26.5D	GC	6.0	0: 2	8:46	4:24
M107	N.6171		OPH	16h32.5m	-13.0D	GC	9.0	23:18	9:48	4:33
M13	N.6205	GREAT HERCULES CLUS	HER	16h41.7m	36.4D	GC	6.0	20:13	13:11	4:42
M12	N.6218		OPH	16h47.2m	-2.0D	GC	7.0	22:55	10:40	4:47
M10	N.6254		OPH	16h57.1m	-4.1D	GC	7.0	23:12	10:43	4:57
M62	N.6266		OPH	17h 1.3m	-30.1D	GC	7.0	0:56	9: 7	5: 1
M19	N.6273		OPH	17h 2.6m	-26.2D	GC	7.0	0:39	9:26	5: 3
M92	N.6341		HER	17h17.2m	43.1D	GC	6.0	19:57	14:38	5:17
M9	N.6333		OPH	17h19.2m	-18.5D	GC	7.0	0:24	10:14	5:19
M14	N.6402		OPH	17h37.6m	-3.3D	GC	8.0	23:49	11:26	5:36
M6	N.6405		SCO	17h40.0m	-32.2D	OC	6.0	1:46	9:34	5:40
M7	N.6475		SCO	17h54.0m	-34.8D	OC	5.0	2:14	9:34	5:54
M23	M.6494		SGR	17h57.0m	-19.0D	OC	7.0	1: 4	10:50	5:57
M20	N.6514	TRIFID N.	SGR	18h 2.3m	-23.0D	DN	0.0	1:25	10:40	6: 2
M8	N.6523	LAGOON N.,6530 IN IT	SGR	18h 3.1m	-24.4D	DN	5.0	1:32	10:35	6: 3
M21	N.6531		SGR	18h 4.6m	-22.5D	OC	7.0	1:25	10:44	6: 5
M24	N.6603		SGR	18h18.5m	-18.4D	OC	6.0	1:23	11:14	6:18
M16	N.6611		SER	18h18.7m	-13.8D	OC	7.0	1: 6	11:31	6:19
M18	N.6613		SGR	18h20.0m	-17.1D	OC	7.0	1:20	11:20	6:20
M17	N.6618	OMEGA OR HORSESHOE N	SGR	18h20.8m	-16.2D	DN	6.9	1:17	11:25	6:21
M28	N.6626		SGR	18h24.5m	-24.9D	GC	8.0	1:55	10:54	6:24
M69	N.6637		SGR	18h31.3m	-32.3D	GC	8.0	2:38	10:25	6:31
M25	IC4725		SGR	18h31.8m	-19.2D	OC	6.0	1:39	11:24	6:32
M22	N.6656		SGR	18h36.3m	-23.9D	GC	6.0	2: 3	11:10	6:36
M70	N.6681		SGR	18h43.2m	-32.3D	GC	9.0	2:49	10:37	6:43
M26	N.6694		SCT	18h45.4m	-9.4D	OC	8.0	1:18	12:13	6:45
M11	N.6705	FLYING GEESE CLUSTER	SCT	18h51.0m	-6.3D	OC	6.0	1:13	12:29	6:51
M57	N.6720	RING NEBULA	LYR	18h53.5m	33.0D	PN	9.0	22:45	15: 2	6:53
M54	N.6715		SGR	18h55.2m	-30.5D	GC	8.0	2:52	10:58	6:55
M56	N.6779		LYR	19h16.6m	30.2D	GC	8.0	23:23	15:10	7:16
M55	N.6809		SGR	19h40.1m	-30.9D	GC	5.0	3:39	11:41	7:40
M71	N.6838		SGE	19h53.7m	18.8D	GC	9.0	0:49	14:57	7:53
M27	N.6853	DUMBBELL NEBULA	VUL	19h59.6m	22.7D	PN	8.0	0:40	15:19	7:59
M75	N.6864		SGR	20h 6.2m	-21.9D	GC	8.0	3:24	12:48	8: 6
M29	N.6913		CYG	20h24.0m	28.5D	OC	7.0	0:38	16: 9	8:24
M72	N.6981		AQR	20h53.5m	-12.5D	GC	9.0	3:36	14:10	8:53
M73	N.6994	ONLY 4 STARS	AQR	20h59.0m	-12.6D	OC	0.0	3:42	14:15	8:59
M15	N.7078		PEG	21h30.0m	12.2D	GC	6.0	2:50	16: 9	9:29
M39	N.7092		CYG	21h32.2m	48.4D	OC	6.0	23: 0	20: 8	9:32
M2	N.7089		AQR	21h33.5m	-0.8D	GC	7.0	3:37	15:29	9:33
M30	N.7099		CAP	21h40.3m	-23.2D	GC	8.0	5: 3	14:16	9:40
M52	N.7654		CAS	23h24.2m	61.6D	OC	7.0	N Cir-Polar		11:23
		****** SUNRISE *****	PSC	0h13.7m	1.5D				6: 9	

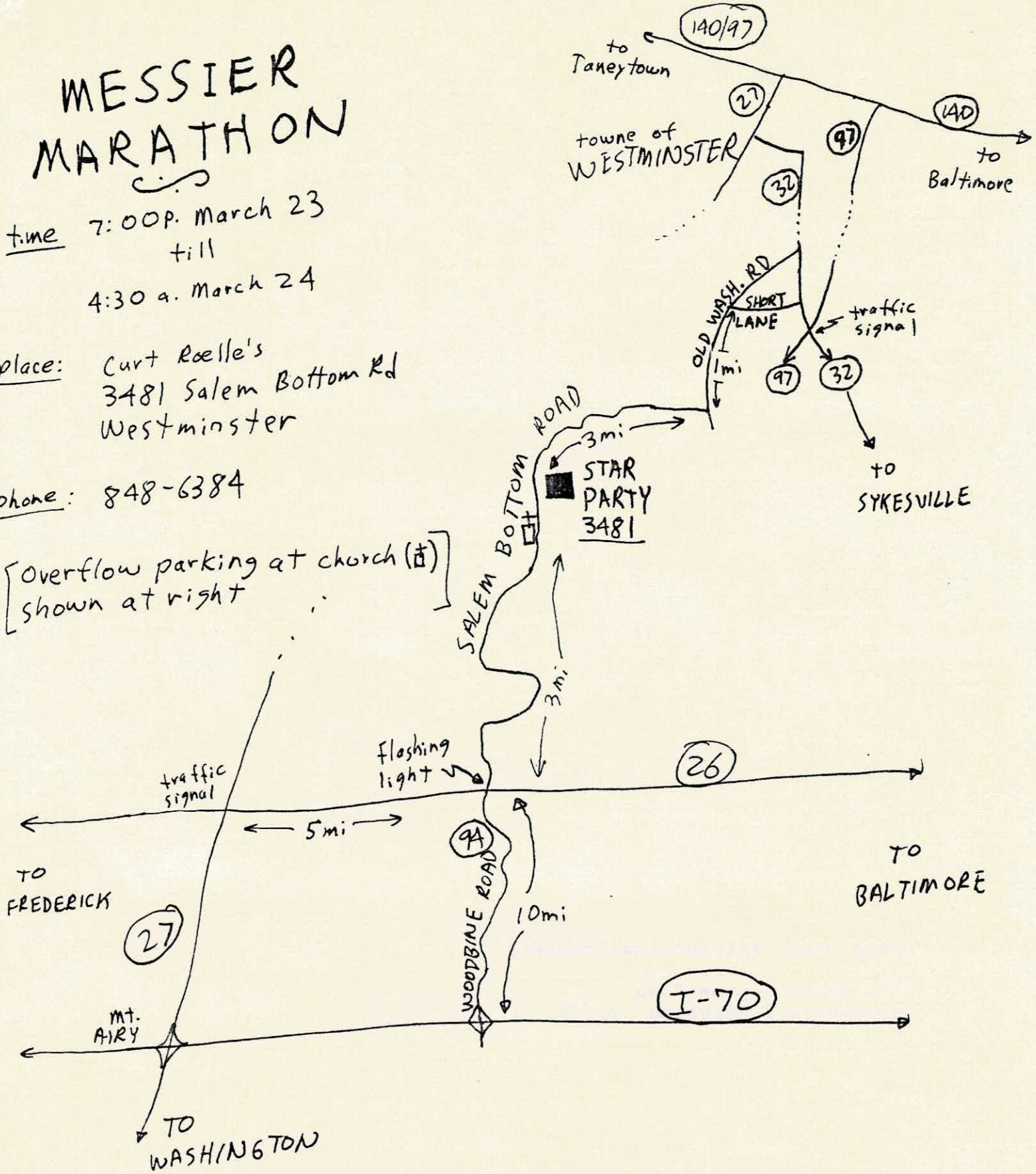
MESSIER MARATHON

time 7:00p. March 23
till
4:30 a. March 24

place: Curt Roelle's
3481 Salem Bottom Rd
Westminster

phone: 848-6384

[Overflow parking at church (⛪)
shown at right



Westminster Astronomical Society

3481 Salem Bottom Road
Westminster, Maryland 21157