Credit: Wikimedia Commons

Why Name a Marathon for Messier?

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Rappahannock Astronomy Club
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Charles Messier, Comet Runner

Credit: Wikimedia Commons

Late 1700s gentleman scientist (1730-1817).

In this era, most science was done by those rich enough to do it as a hobby.

Most gentlemen were scientist hobbyists.

Renaissance-era astronomers had established comets were more distant than the Moon.

Halley had established they had orbits like planets.

There were many more comets than planets.

So comets were like planets in some ways, but very different from in other ways.

They were the great mystery of the century: What made comets differ from planets?

Charles Messier, Comet Fiend

Messier‘s first serious professional effort in astronomy was looking for the predicted return of Halley‘s Comet.

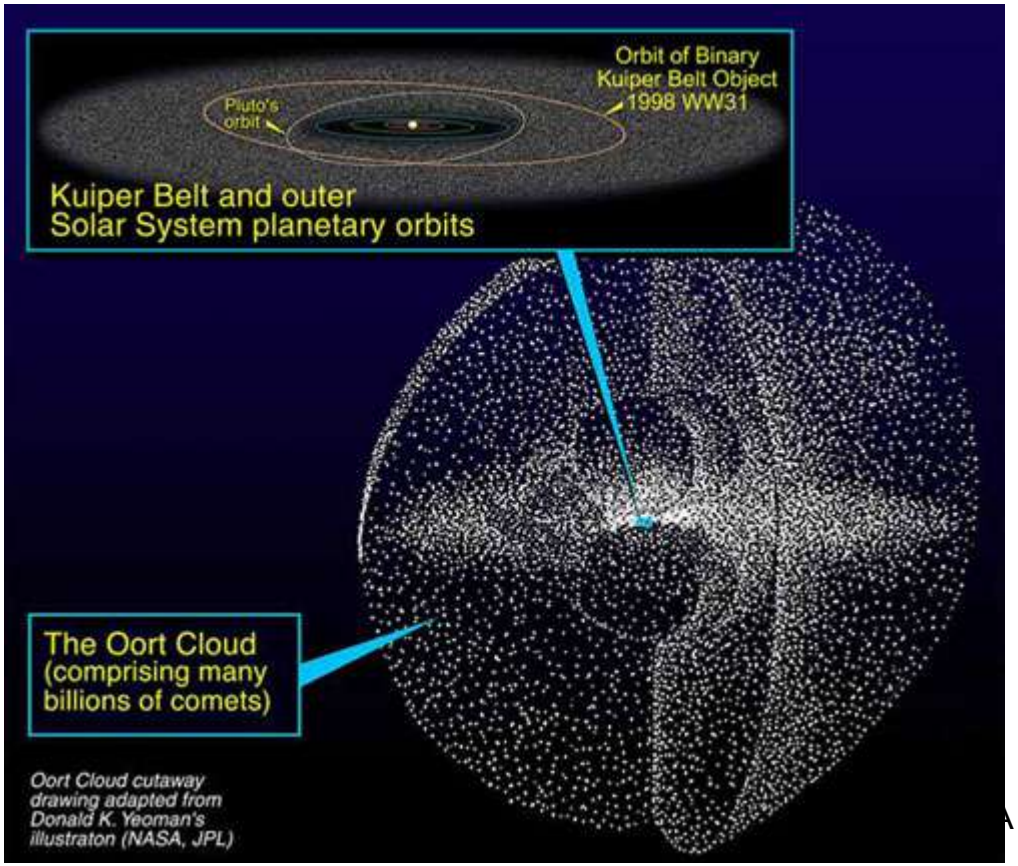
He is credited with discovering 13 comets.

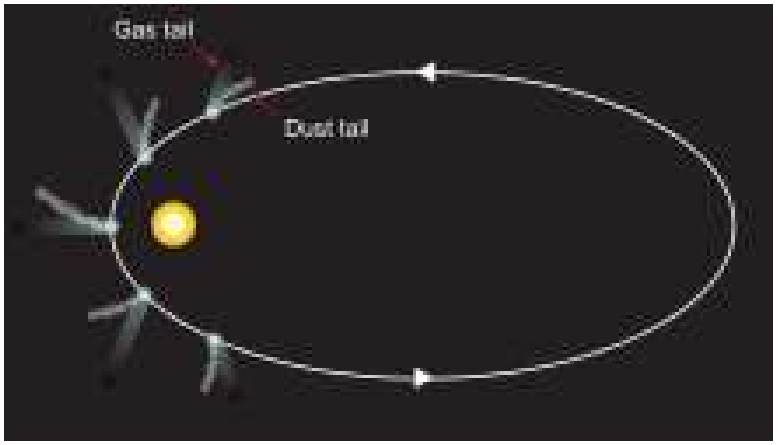
Some sources describe Messier as the first serious comet hunter, but he had competitors.

He became so intensely competitive that when, at the death of his wife, a friend consoled him on his loss, Messier replied “Ah! While I was nursing her, somebody else has discovered a comet that I missed!”

A Bit of Comet Behavior and Misbehavior

Most comets originate from a huge cloud of icy chunks left over from the formation of our Solar System.





When a comet‘s orbit brings it close to the Sun, it moves relatively quickly, becomes brighter, and shows a tail.

Messier detected comets by watching them move against the background stars night to night.

The Problem With Watching a Comet Move

Credit: Deep Sky Watch

In a telescope like Messier had, a comet looks like this.

Credit: Deep Sky Watch

There are a lot of other objects in the sky that look like this.

They are completely outside our Solar System, so we call them Deep Space Objects.

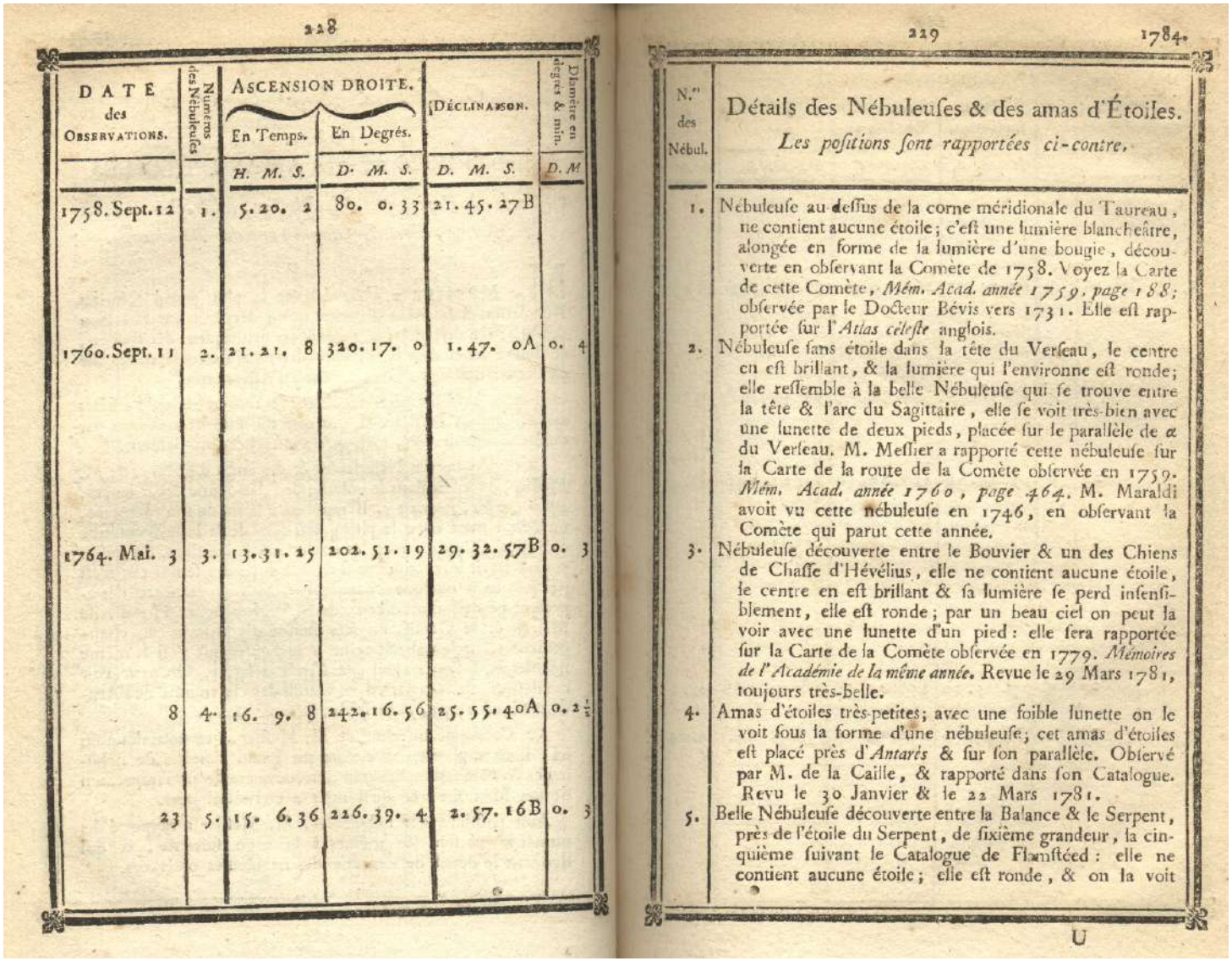
(When we are trying to find a difficult one at a star party, we call them faint fuzzies.)

Since they are not orbiting the Sun, they do not appear to move from one night to the next.

Messier would observe one of these for many nights before concluding it was not moving and was not a comet.

Listing the Unwanted Objects

Messier began to record the locations of these non-comets so he could recognize quickly when he was looking at one, not waste time on it, and get back to his search for comets.



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DATE des OBSERVATIONS.	Numéros des Nébuleuses	ASCENSION DROITE. En Temps.	ASCENSION DROITE. En Degrés.	DÉCLINAISON.	Diamètre en degrés & min.
		H. M. S.	D. M. S.	D. M. S.	D. M
1758. Sept. 12	1.	5. 20. 2	80. 0. 33	21. 45. 27 B	
1760. Sept. 11	2.	21. 21. 8	320. 17. 0	1. 47. 0 A	0. 4
1764. Mai. 3	3.	13. 31. 25	202. 51. 19	29. 32. 57 B	0. 3
8	4.	16. 9. 8	242. 16. 56	25. 55. 40 A	0. 2 1/2
23	5.	15. 6. 36	226. 39. 4	2. 57. 16 B	0. 3

229 1784.

N.° des Nébul.	Détails des Nébuleuses & des amas d'Étoiles. *Les positions sont rapportées ci-contre.*
1.	Nébuleuse au-dessus de la corne méridionale du Taureau, ne contient aucune étoile; c'est une lumière blancheâtre, alongée en forme de la lumière d'une bougie, découverte en observant la Comète de 1758. Voyez la Carte de cette Comète, *Mém. Acad. année 1759, page 188;* observée par le Docteur Bévis vers 1731. Elle est rapportée sur l'*Atlas céleste* anglois.
2.	Nébuleuse sans étoile dans la tête du Verseau, le centre en est brillant, & la lumière qui l'environne est ronde; elle ressemble à la belle Nébuleuse qui se trouve entre la tête & l'arc du Sagittaire, elle se voit très-bien avec une lunette de deux pieds, placée sur le parallèle de α du Verseau. M. Messier a rapporté cette nébuleuse sur la Carte de la route de la Comète observée en 1759. *Mém. Acad. année 1760, page 464.* M. Maraldi avoit vu cette nébuleuse en 1746, en observant la Comète qui parut cette année.
3.	Nébuleuse découverte entre le Bouvier & un des Chiens de Chasse d'Hévélius, elle ne contient aucune étoile, le centre en est brillant & sa lumière se perd insensiblement, elle est ronde; par un beau ciel on peut la voir avec une lunette d'un pied: elle sera rapportée sur la Carte de la Comète observée en 1779. *Mémoires de l'Académie de la même année.* Revue le 29 Mars 1781, toujours très-belle.
4.	Amas d'étoiles très-petites; avec une foible lunette on le voit sous la forme d'une nébuleuse; cet amas d'étoiles est placé près d'*Antarès* & sur son parallèle. Observé par M. de la Caille, & rapporté dans son Catalogue. Revu le 30 Janvier & le 22 Mars 1781.
5.	Belle Nébuleuse découverte entre la Balance & le Serpent, près de l'étoile du Serpent, de sixième grandeur, la cinquième suivant le Catalogue de Flamsteed: elle ne contient aucune étoile; elle est ronde, & on la voit

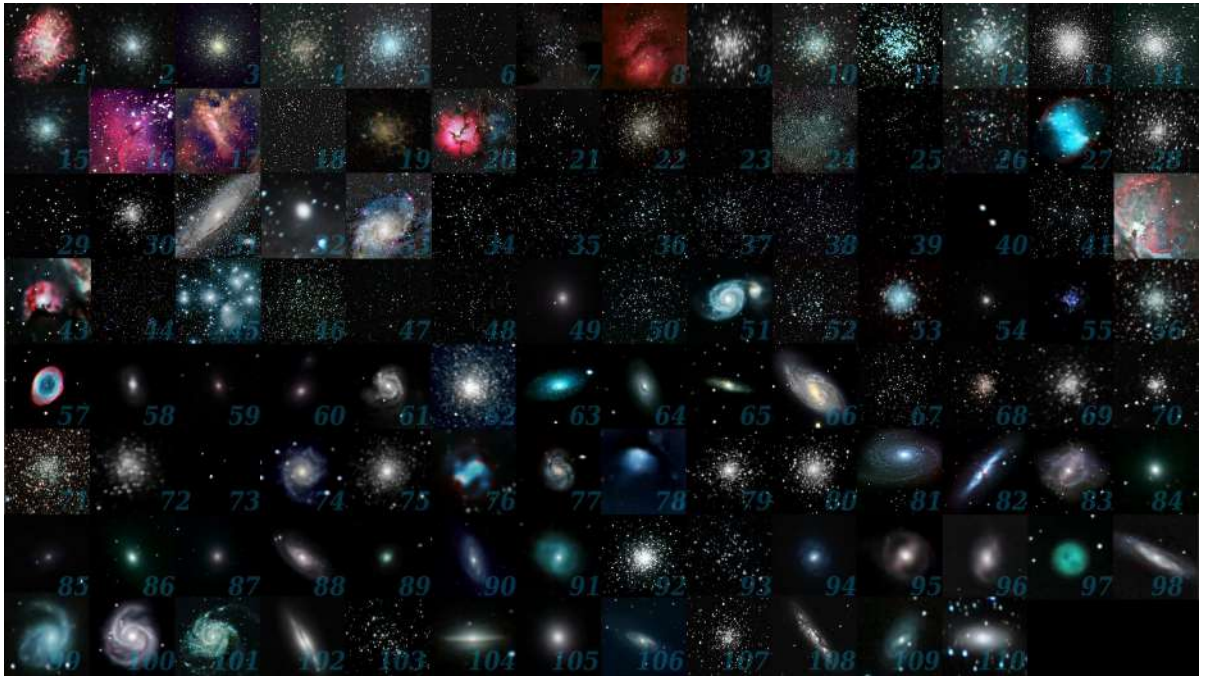
U

Are Messier's Discoveries Still Important?

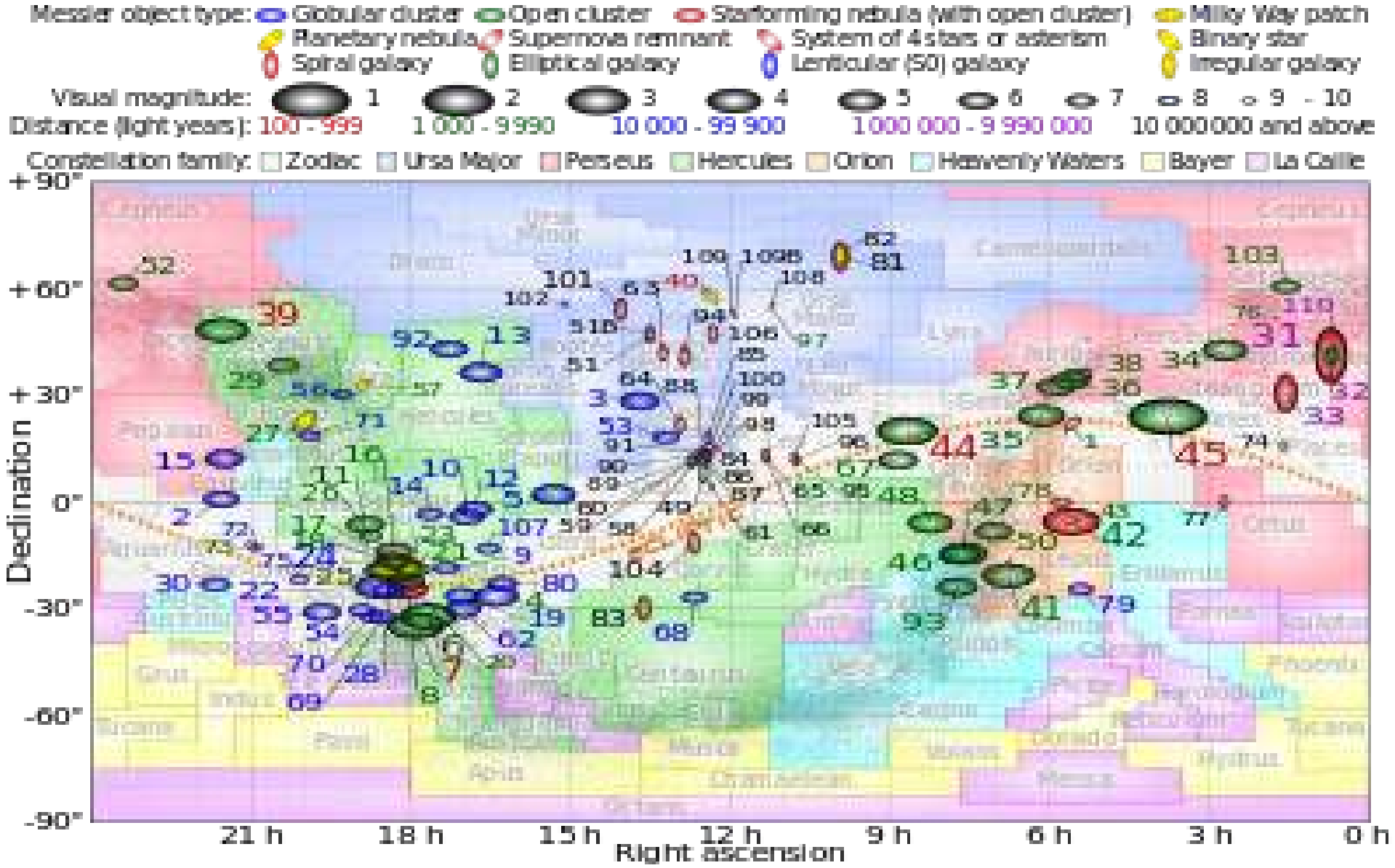
The state-of-the art telescope that Messier used in the 1770s was roughly the same quality as telescopes that amateurs use today.

So the objects that Messier discovered with his telescope make wonderful targets, opportunities to learn, and sometimes challenges for modern hobbyist astronomers.

The size of Messier's catalog (110 objects) make it an accomplishment to observe all of them.

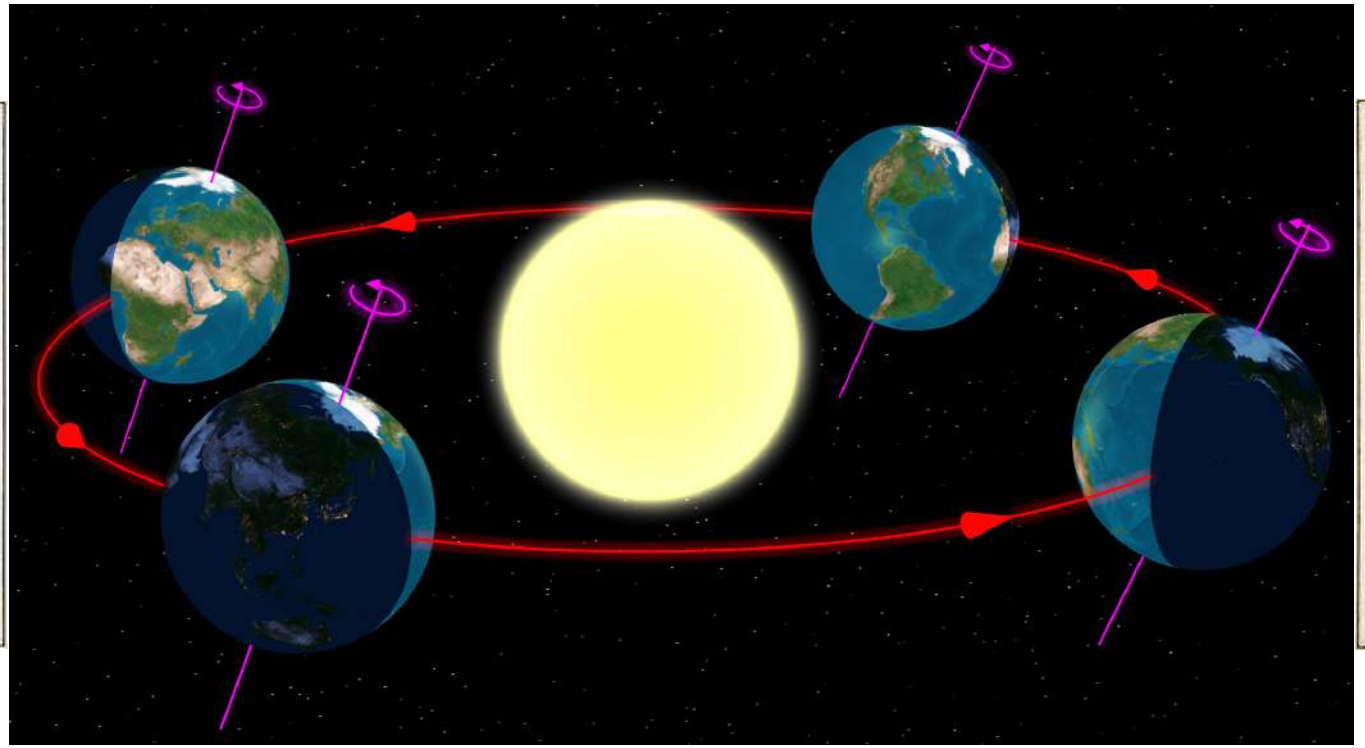


Why a Marathon?



The Messier objects are scattered all across the northern sky.

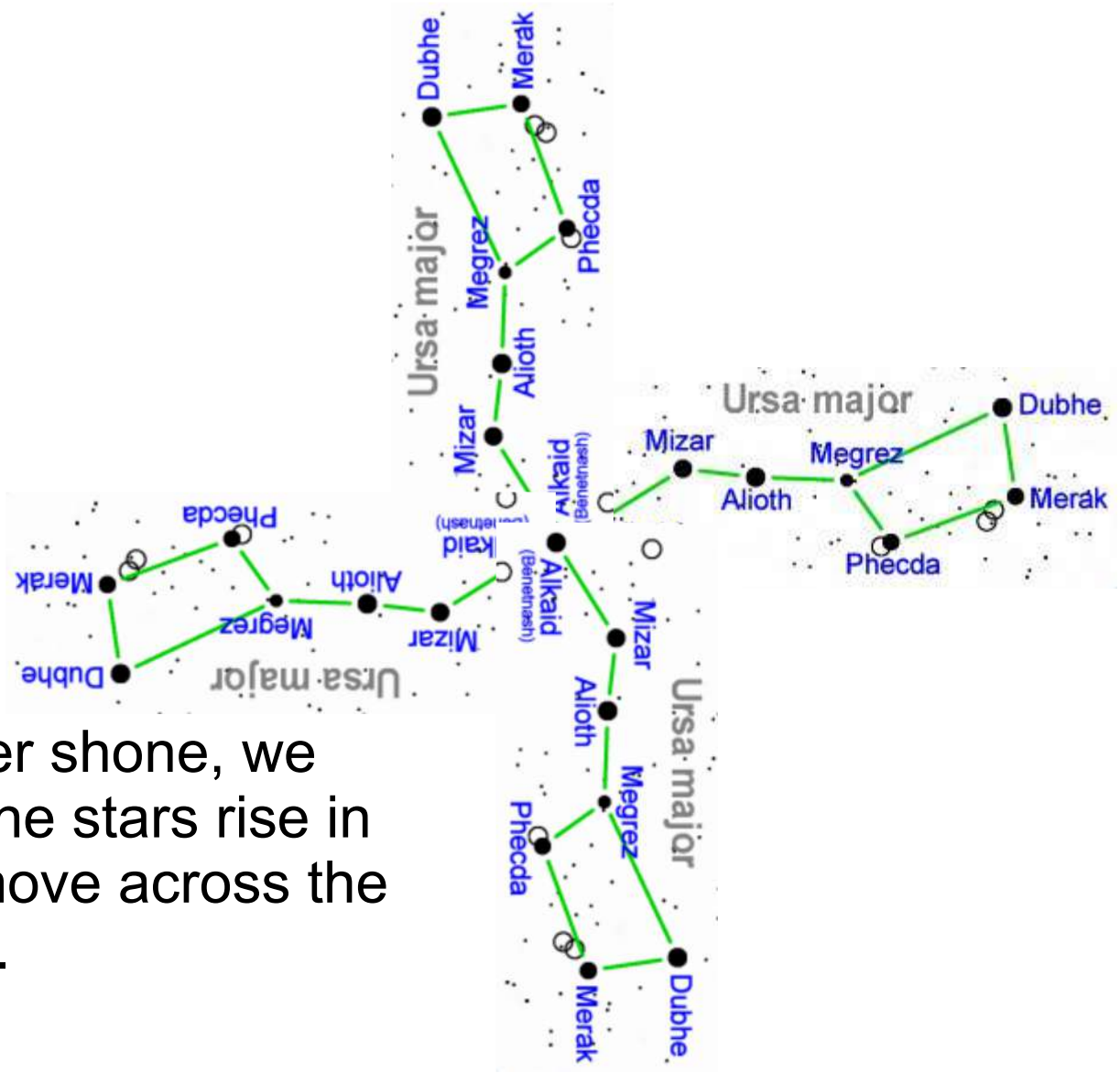
Seeing Through the Year



The objects we can see at night changes month to month, as the Earth orbits around the Sun.

Purely by chance, for a few weeks in mid March to early April, all of the Messier objects are visible in one night.

Seeing Through the Night



If the Sun never shone, we would see all the stars rise in the east and move across the sky each night.

Purely by chance, for a few weeks in mid March to early April, each of the Messier objects is somewhere in the sky, sometime during the night.

Seeing Through the Night

Name:_____ Astronomy Club: _____
Address: _____ City, State, Zip: _____
Number of Objects: _____ Optics: _____

Obsvd	M#	R. A.	Decl	CON	TYPE	Mag	Size	Urano	Comment
_____	M 77	02 42.7	-00 02	CET	GALXY	10.5	9'X8'	220	
_____	M 74	01 36.6	+15 48	PSC	GALXY	10.5	12'X12'	173	
_____	M 33	01 33.9	+30 40	TRI	GALXY	7	73'X45'	91	
_____	M 31	00 42.8	+41 16	AND	GALXY	3.5	178'X40'	60	
_____	M 32	00 42.8	+40 52	AND	GALXY	8.2	8'X6'	60	
_____	M 110	00 40.4	+41 41	AND	GALXY	8	17'X10'	60	
_____	M 76	01 42.3	+51 34	PER	PLNNB	11	163"X107"	37	
_____	M 34	02 42.0	+42 47	PER	OPNCL	5.2	35.0'	62	
_____	M 45	03 47.0	+24 07	TAU	CL+NB	1.2	100'	132	
_____	M 79	05 24.5	-24 33	LEP	GLOCL	8.4	8.7'	315	
_____	M 42	05 35.3	-05 23	ORI	CL+NB	4	66'X60'	225	
_____	M 43	05 35.5	-05 16	ORI	BRTNB	9	20'X15'	225	
_____	M 78	05 46.8	+00 04	ORI	BRTNB	8	8'X6'	226	
_____	M 41	06 47.0	-20 44	CMA	OPNCL	4.5	38.0'	318	
_____	M 93	07 44.6	-23 52	PUP	OPNCL	6.2	22.0'	319	
_____	M*47	07 36.6	-14 30	PUP	OPNCL	4.4	30.0'	274	NGC 2422
_____	M 46	07 41.8	-14 49	PUP	OPNCL	6.1	27.0'	274	
_____	M 50	07 03.2	-08 20	MON	OPNCL	5.9	16.0'	273	
_____	M*48	08 13.8	-05 48	HYA	OPNCL	5.8	54.0'	230	NGC 2548
_____	M 1	05 34.5	+22 01	TAU	PLNNB	8.4	6'X4'	135	
_____	M 35	06 08.9	+24 20	GEM	OPNCL	5.1	28.0'	136	
_____	M 38	05 28.7	+35 50	AUR	OPNCL	6.4	21'	97	
_____	M 36	05 36.1	+34 08	AUR	OPNCL	6	12'	97	
_____	M 37	05 52.4	+32 33	AUR	OPNCL	5.6	24.0'	98	
_____	M 44	08 40.1	+19 59	CNC	OPNCL	3.1	95.0'	141	
_____	M 67	08 50.4	+11 49	CNC	OPNCL	6.9	30.0'	186	
_____	M 65	11 18.9	+13 05	LEO	GALXY	9.6	9.5'X2.3'	191	
_____	M 66	11 20.2	+12 59	LEO	GALXY	8.9	9.0'X4.2'	191	
_____	M 95	10 44.0	+11 42	LEO	GALXY	11.2	8.5'X5.0'	190	
_____	M 96	10 46.8	+11 49	LEO	GALXY	10	7.5'X5.0'	190	
_____	M 105	10 47.8	+12 35	LEO	GALXY	9.6	3.8'X3.8'	190	
_____	M 81	09 55.6	+69 04	UMA	GALXY	8.1	26'X14'	23	
_____	M 82	09 55.8	+69 41	UMA	GALXY	9.2	13'X6'	23	
_____	M 97	11 14.8	+55 01	UMA	PLNNB	11	202"X196"	46	
_____	M 108	11 11.5	+55 40	UMA	GALXY	10.7	8.8'X2.2'	46	
_____	M 109	11 57.6	+53 23	UMA	GALXY	10.7	8.3'X4.6'	47	
_____	M*40	12 21.9	+58 06	UMA	2STAR	9		47	2 stars, Wnc 40
_____	M 106	12 18.9	+47 19	CVN	GALXY	9.6	22.0'X9.0'	74	
_____	M 94	12 50.9	+41 08	CVN	GALXY	8.7	14.0'X12.0'	75	
_____	M 63	13 15.8	+42 02	CVN	GALXY	9.7	15'X9'	75	
_____	M 51	13 30.0	+47 11	CVN	GALXY	8.8	9'X7.5'	76	
_____	M 101	14 03.3	+54 22	UMA	GALXY	8.7	28'X28'	49	
_____	M*102	15 06.5	+55 45	DRA	GALXY	11.1	6.5'X3.0'	50	NGC 5866
_____	M 98	12 13.9	+14 55	COM	GALXY	11	9.9'X2.2'	193	
_____	M 99	12 18.9	+14 26	COM	GALXY	10.2	5.0'X4.7'	193	
_____	M 100	12 23.0	+15 50	COM	GALXY	10.6	6.8'X5.8'	193	
_____	M 85	12 25.5	+18 12	COM	GALXY	10.2	7.4'X5.5'	148	
_____	M 84	12 25.1	+12 54	VIR	GALXY	10.8	5.0'X4.0'	193	
_____	M 86	12 26.3	+12 57	VIR	GALXY	10.9	12.0'X9.0'	193	
_____	M 87	12 30.9	+12 24	VIR	GALXY	10.4	7.0'X7.0'	193	
_____	M 89	12 35.7	+12 34	VIR	GALXY	11.1	3.4'X3.4'	194	
_____	M 90	12 36.9	+13 10	VIR	GALXY	11.8	11.4'X4.7'	194	
_____	M 88	12 32.1	+14 26	COM	GALXY	10.6	6.7'X3.0'	193	
_____	M*91	12 35.5	+14 30	COM	GALXY	11.5	5.5'X4.5'	194	NGC 4548

The key to seeing all the Messier objects in one marathon night is to target them in the right order.

Start at sunset with objects that are about to set in the West.

Work your way East, ending before sunrise with objects that rose just before the Sun.

Bibliography

Charles Messier. https://en.wikipedia.org/wiki/Charles_Messier

Messier Marathon. https://en.wikipedia.org/wiki/Messier_marathon

Images of Messier‘s first (1781) publication of his catalog. http://www.messier.seds.org/xtra/Mcat/mcat1781.html

The Messier objects in order to observe, available at Suguaro Astronomy Club‘s All Arizona Messier Marathon page, http://www.saguaroastro.org/content/messier2017.htm