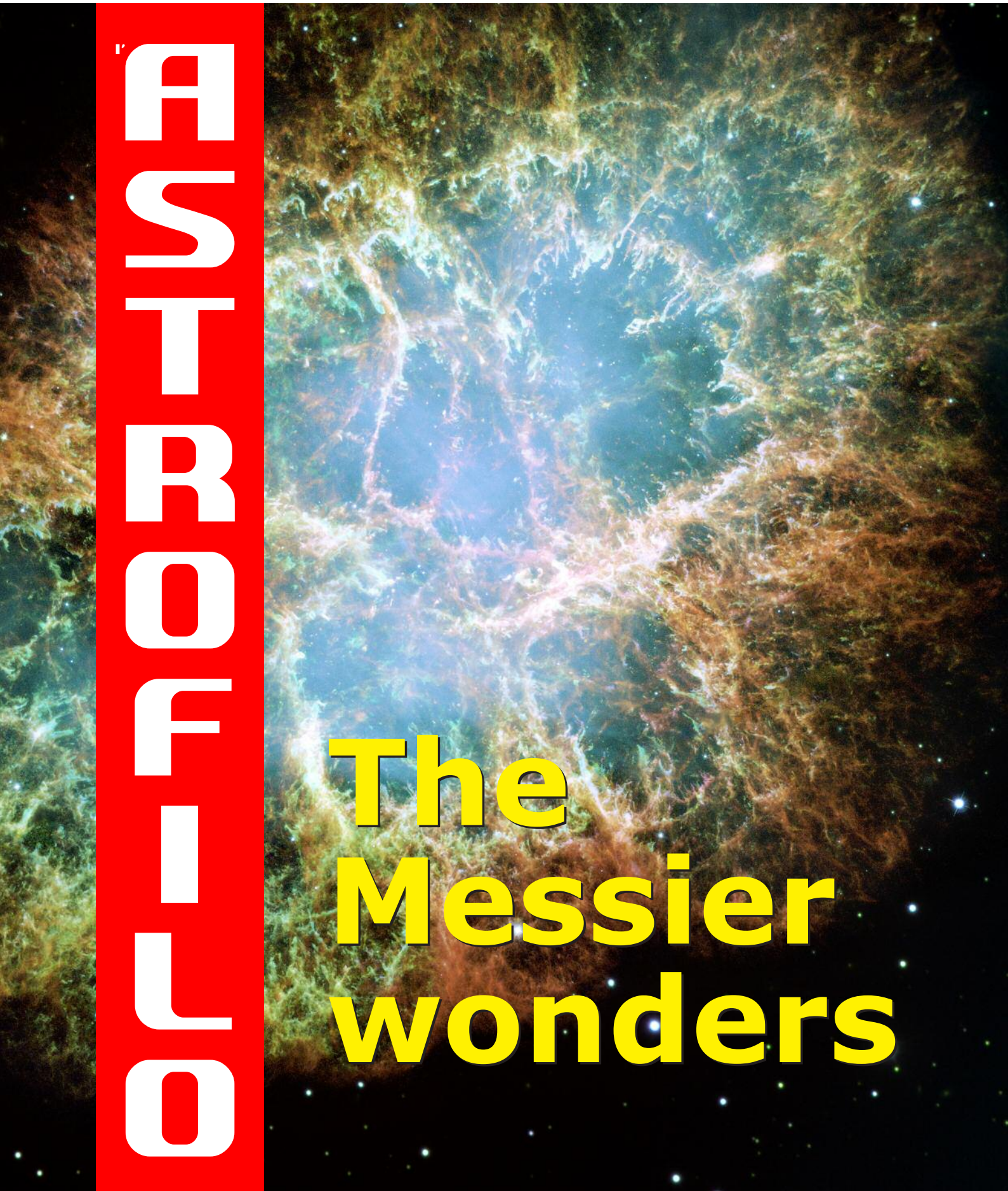
WINTER
2011

The free international astronomy webzine

L'ASTROFILO



The Messier wonders

ASTROFILO
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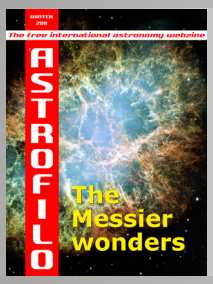
Publisher, editorial office, circulation, advertising
Astro Publishing di Pirlo L.
Via Bonomelli, 106
25049 Iseo - Bs - Italy
www.astropublishing.com
info@astropublishing.com

Internet Service Provider
Aruba S.p.A.
P.zza Garibaldi, 8
52010 Soci - Ar - Italy

Legal registration
Tribunal of Brescia - Italy
reference number 51
of the 19/11/2008



ON THE COVER
Magnificent image of the first object placed in Messier's celebrated catalogue. M1 is the most famous of all the supernova remnants. The star that produced the remnant exploded in 1054 AD. [NASA/ESA]

SPECIAL ISSUE

The Messier wonders

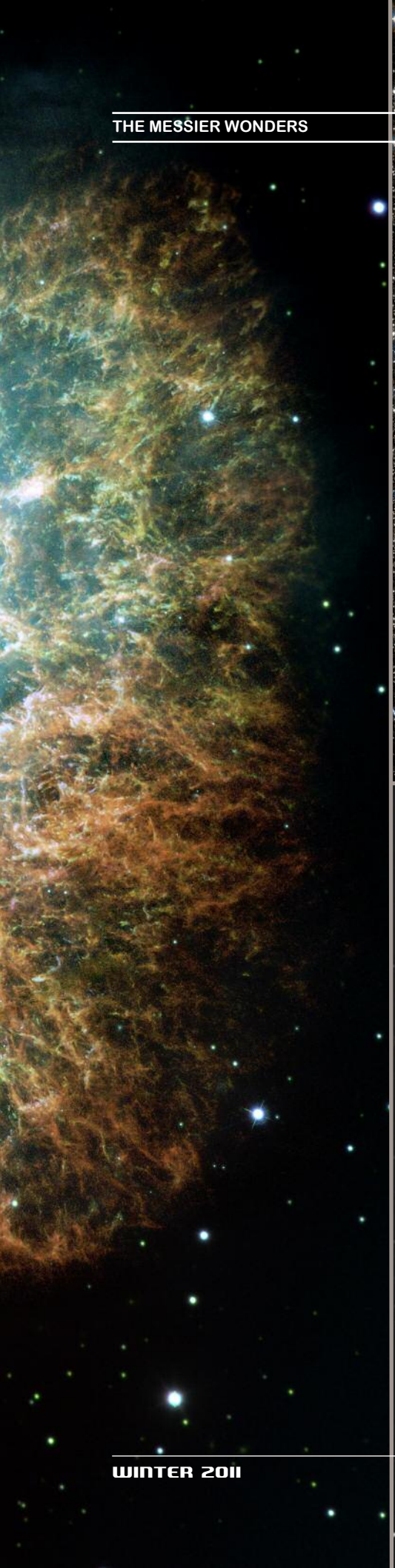
Foreword

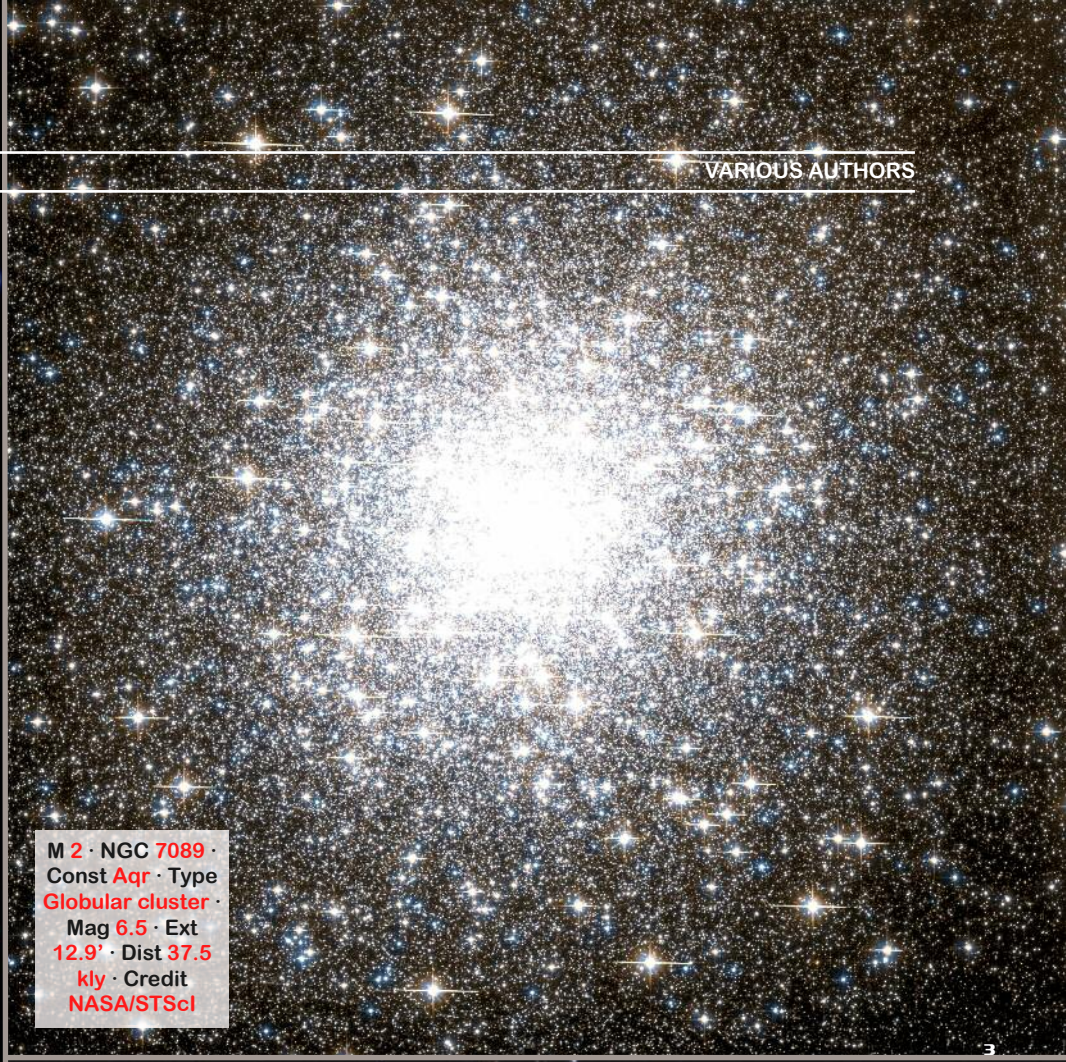
Messier's catalogue is without doubt the most celebrated of all the catalogues of celestial objects, perhaps because it's the most heterogeneous or perhaps because it contains many of the brightest and fascinating star clusters, galaxies and nebulae in the sky.
Many of the objects which Messier put in his catalogue are visible to the naked eye, and are spectacular if viewed with binoculars or a small telescope. In many cases, the greater the power of the instrument used the more their beauty is revealed.
In this special issue, for some of the objects we will see the very best of professional images, while for others we will show images that can be obtained by reasonably well equipped amateurs.
However well the catalogue is known, however, there are few observers that are familiar with all of its objects; rather there is a tendency to remember only the most famous and forget even the class of object to which the others belong. This special issue will help refresh your memory and provide a rapid data reference for all the 110 objects in the catalogue, useful when planning to observe or photograph them.

Michele Ferrara

The Messier wonders

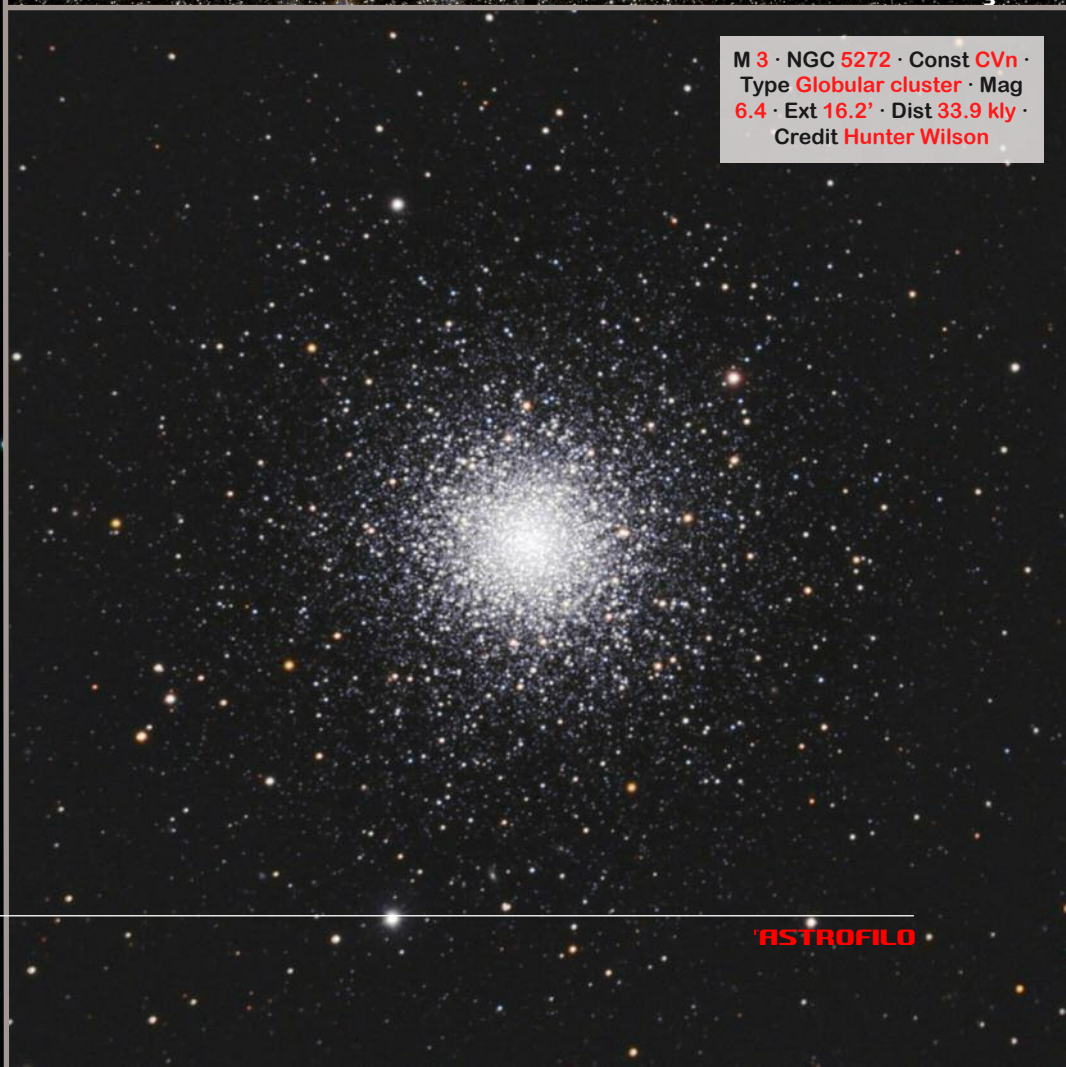
M 1 · NGC 1952 · Const Tau · Type Supernova remnant · Mag 8.4 · Ext 6x4' · Dist 6.5 kly · Name Crab Nebula · Credit NASA/ESA





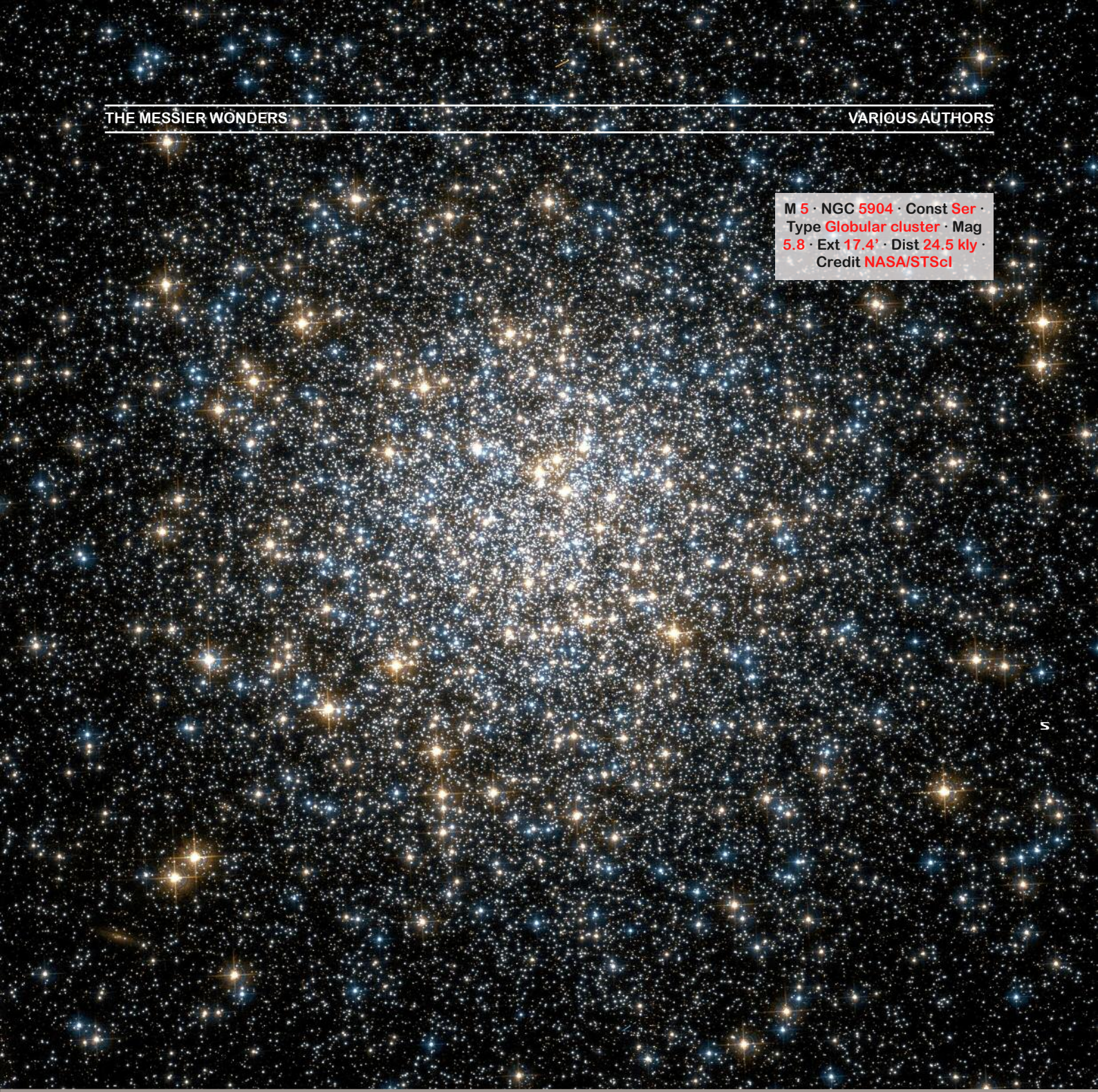
M 2 · NGC 7089 · Const Aqr · Type Globular cluster · Mag 6.5 · Ext 12.9' · Dist 37.5 kly · Credit NASA/STScI

3



M 3 · NGC 5272 · Const CVn · Type Globular cluster · Mag 6.4 · Ext 16.2' · Dist 33.9 kly · Credit Hunter Wilson

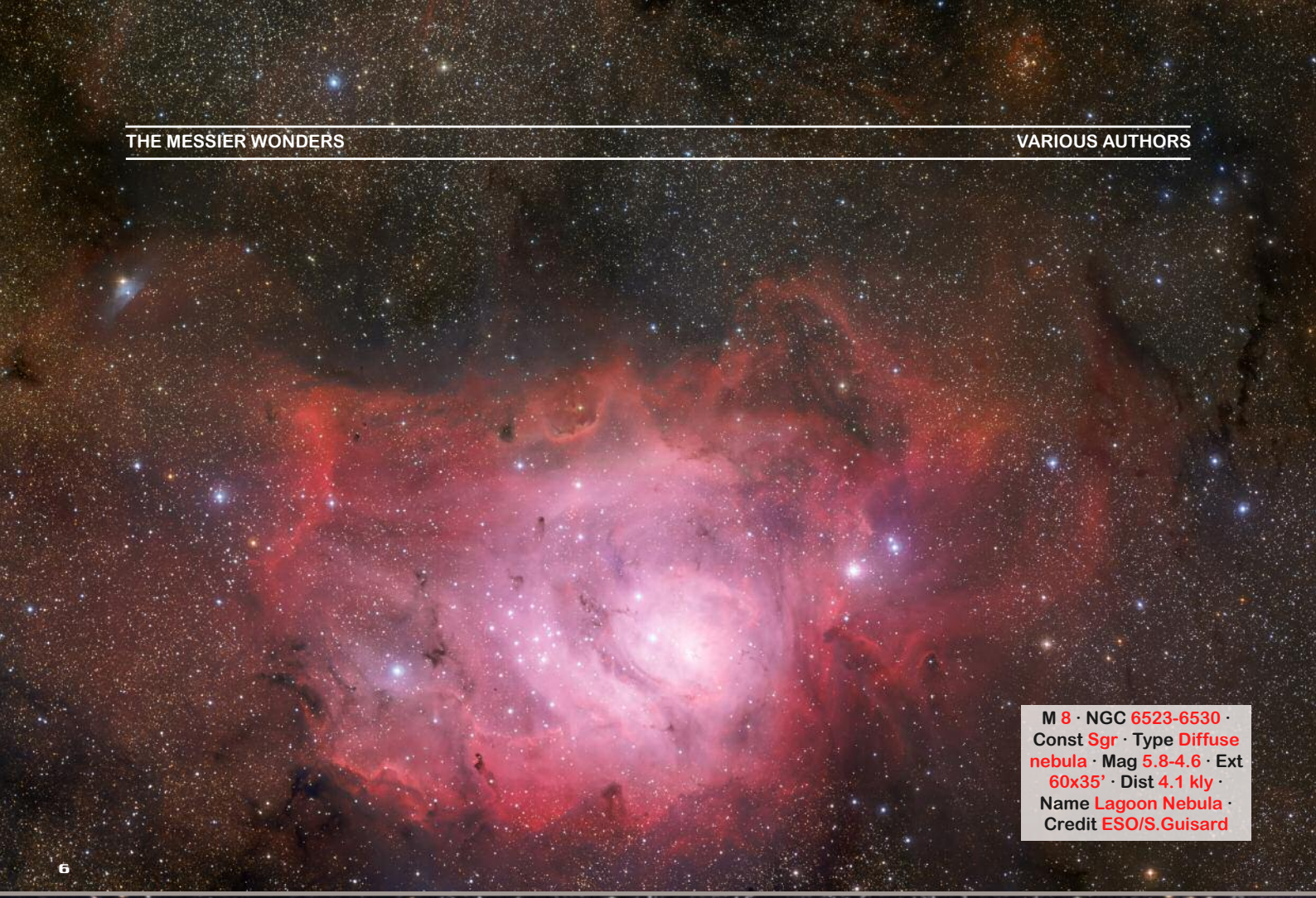
M 4 · NGC 6121 · Const Sco · Type Globular cluster · Mag 5.9 · Ext 26.3' · Dist 7.2 kly · Credit NASA/STScI



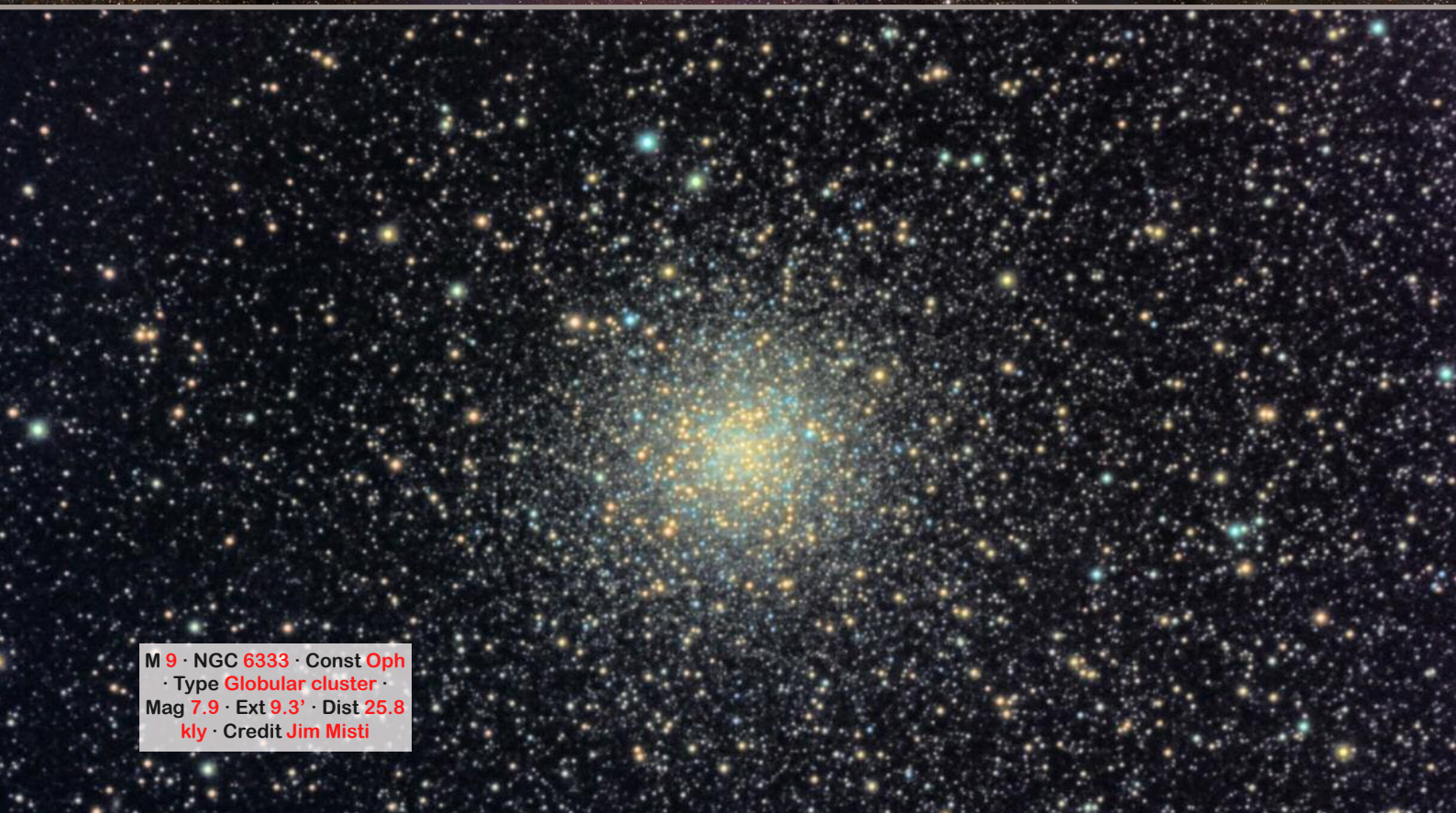
M 5 · NGC 5904 · Const Ser · Type Globular cluster · Mag 5.8 · Ext 17.4' · Dist 24.5 kly · Credit NASA/STScI

M 6 · NGC 6405 · Const Sco · Type Open cluster · Mag 4.2 · Ext 15' · Dist 1.6 kly · Name Butterfly Cluster · Credit Dean Jacobsen

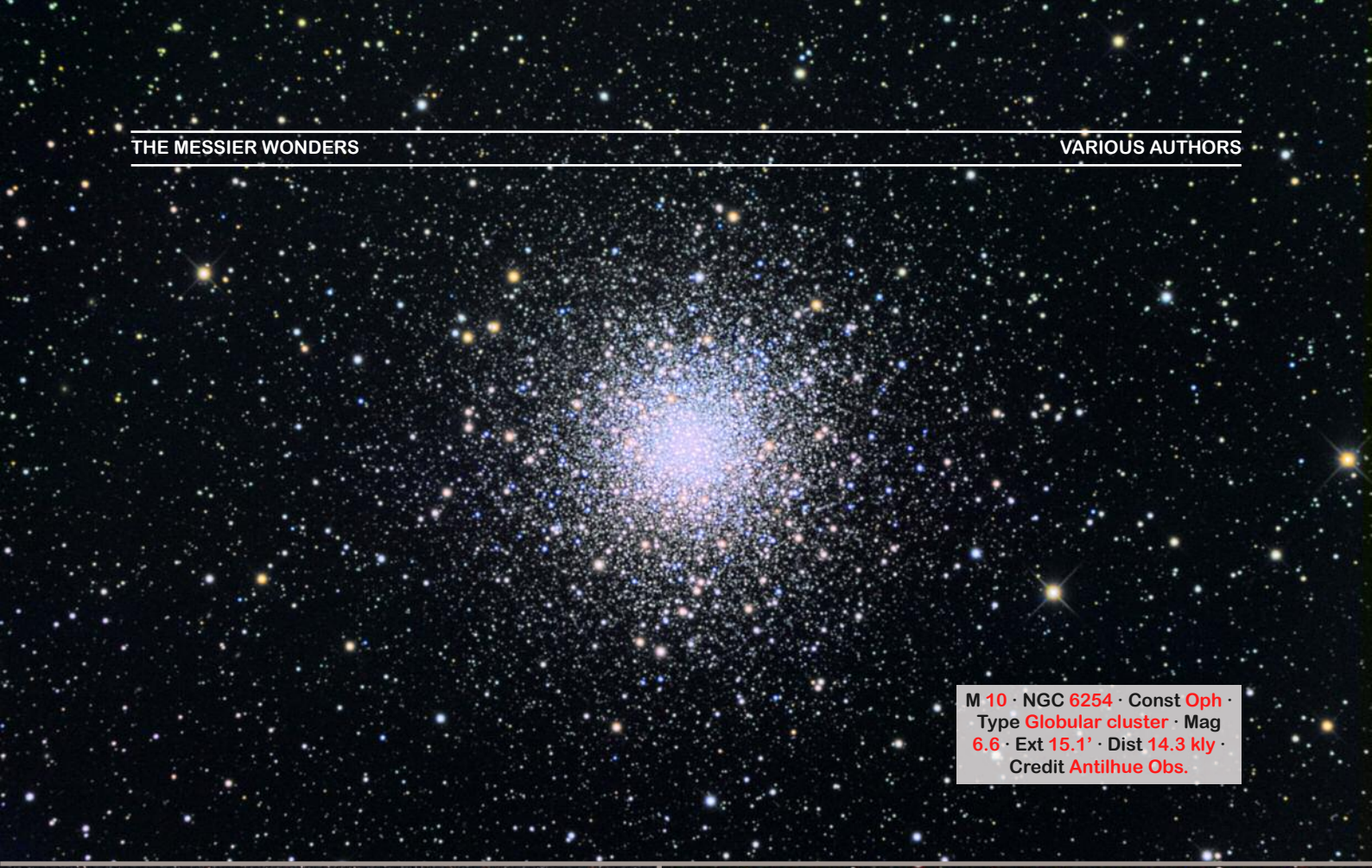
M 7 · NGC 6475 · Const Sco · Type Open cluster · Mag 3.3 · Ext 80' · Dist 800 ly · Credit Dean Jacobsen



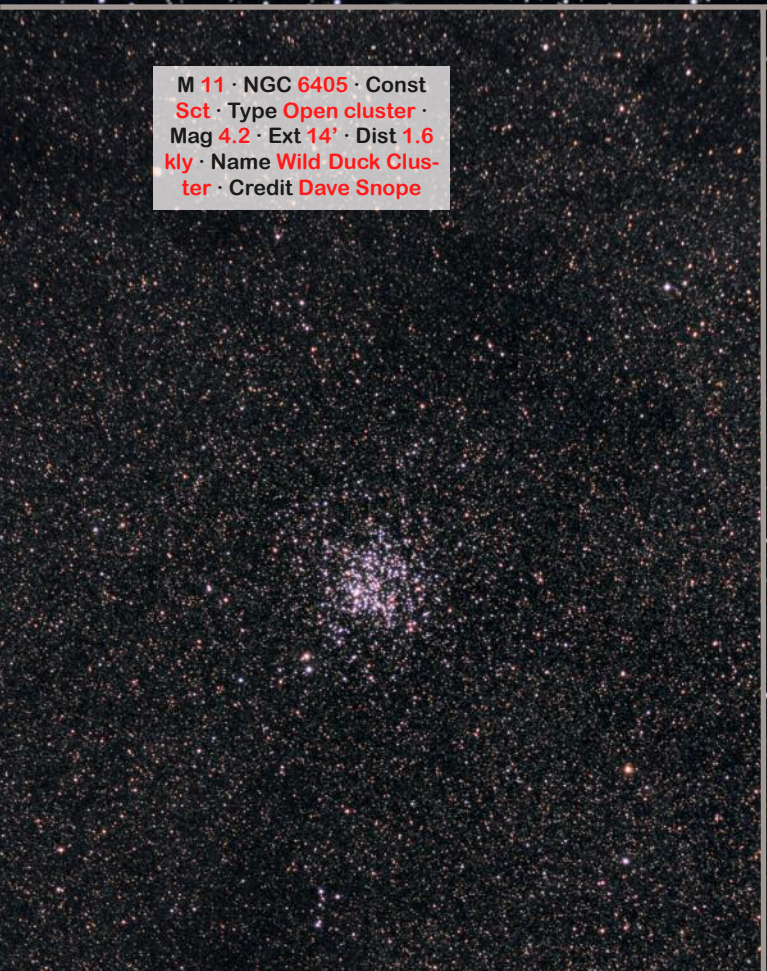
M 8 · NGC 6523-6530 · Const Sgr · Type Diffuse nebula · Mag 5.8-4.6 · Ext 60x35' · Dist 4.1 kly · Name Lagoon Nebula · Credit ESO/S.Guisard



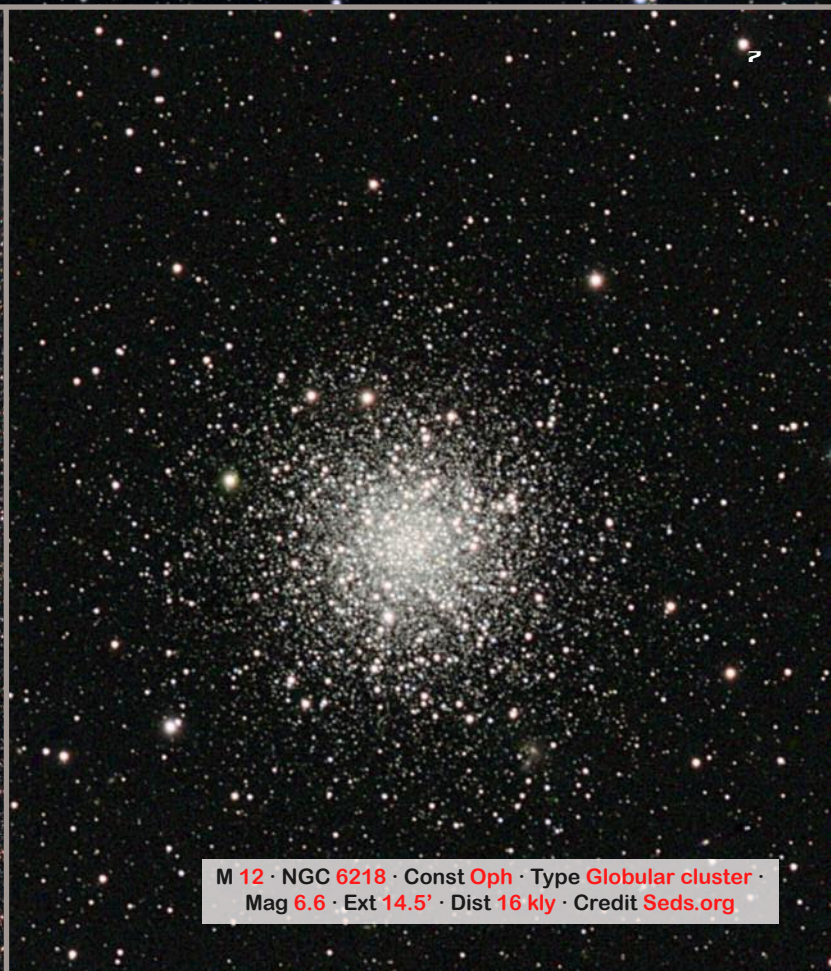
M 9 · NGC 6333 · Const Oph · Type Globular cluster · Mag 7.9 · Ext 9.3' · Dist 25.8 kly · Credit Jim Misti



M 10 · NGC 6254 · Const Oph · Type Globular cluster · Mag 6.6 · Ext 15.1' · Dist 14.3 kly · Credit Antilhue Obs.



M 11 · NGC 6405 · Const Sct · Type Open cluster · Mag 4.2 · Ext 14' · Dist 1.6 kly · Name Wild Duck Cluster · Credit Dave Snope

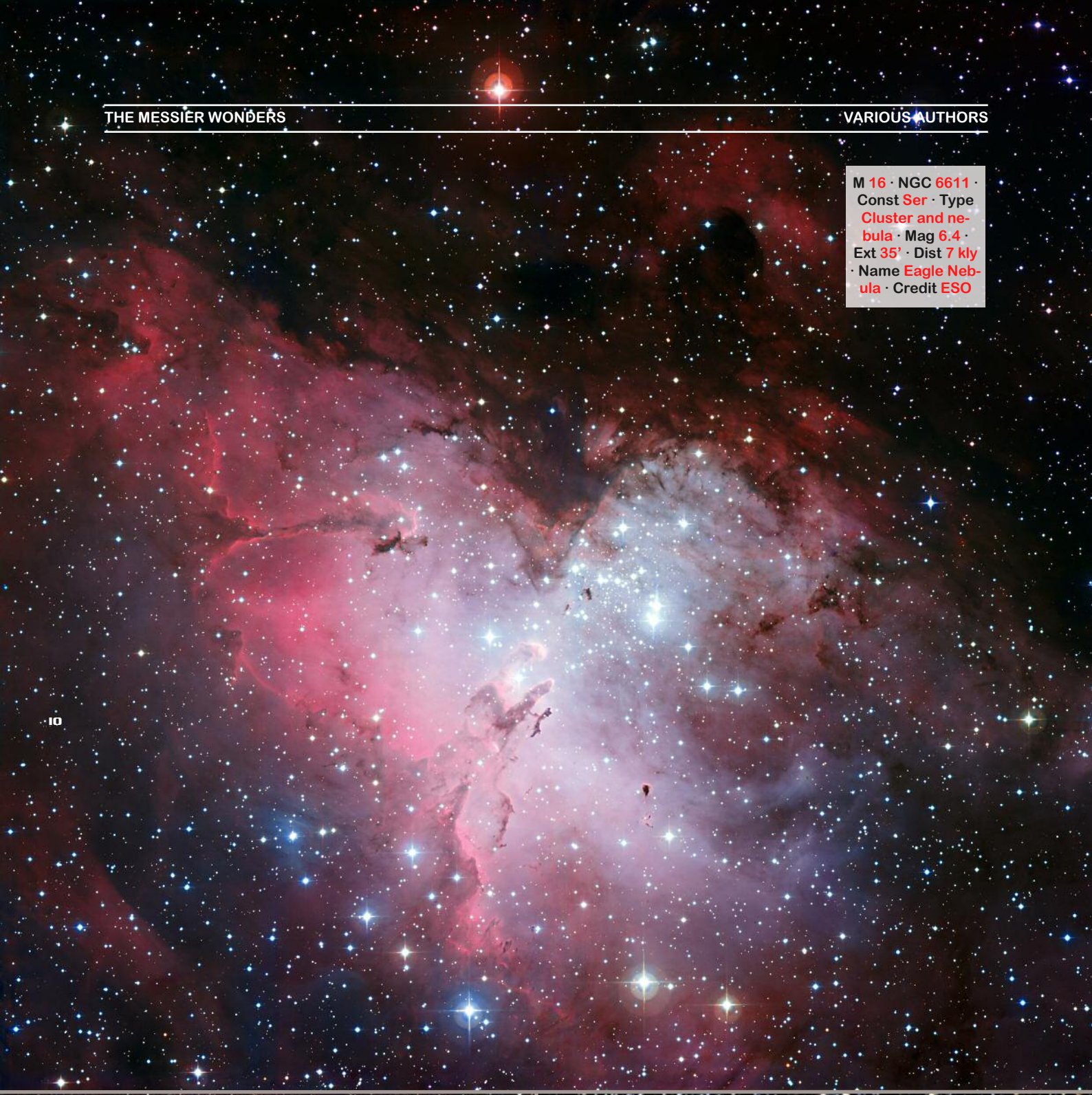


M 12 · NGC 6218 · Const Oph · Type Globular cluster · Mag 6.6 · Ext 14.5' · Dist 16 kly · Credit Seds.org

M 13 · NGC 6205 · Const Her · Type Globular cluster · Mag 5.9 · Ext 16.6' · Dist 25.1 kly · Credit NASA/ESA

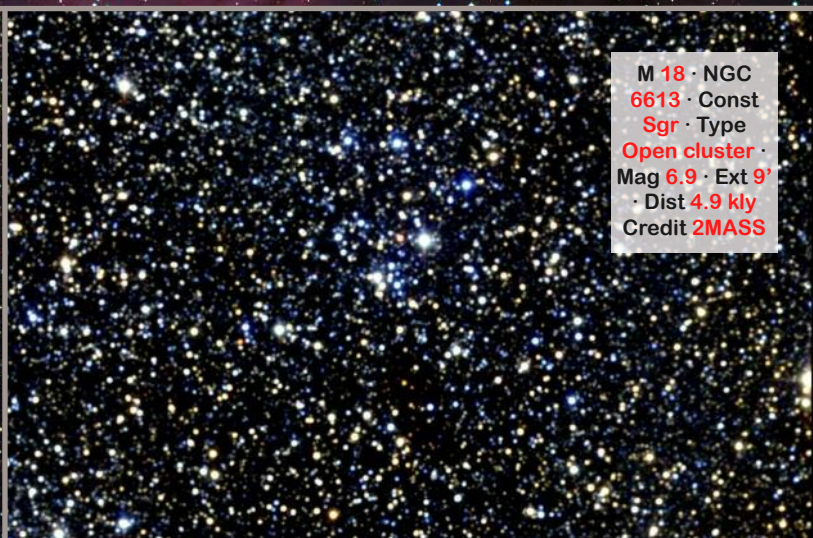
M 14 · NGC 6402 · Const Oph · Type Globular cluster · Mag 7.6 · Ext 11.7' · Dist 30.3 kly · Credit ncis

M 15 · NGC 7078 · Const Peg · Type Globular cluster · Mag 6.4 · Ext 12.3 · Dist 33.6 kly · Credit M.Tonincelli-AAS



M 16 · NGC 6611 · Const Ser · Type Cluster and nebula · Mag 6.4 · Ext 35' · Dist 7 kly · Name Eagle Nebula · Credit ESO

M 17 · NGC 6618 · Const Sgr · Type Cluster and nebula · Mag 7.0 · Ext 46' · Dist 5.5 kly · Name Omega Nebula · Credit Ole Nielsen



M 18 · NGC 6613 · Const Sgr · Type Open cluster · Mag 6.9 · Ext 9' · Dist 4.9 kly Credit 2MASS

M 19 · NGC 6273 · Const Oph · Type Globular cluster · Mag 7.2 · Ext 13.5' · Dist 28 kly Credit Doug Williams

M 20 · NGC 6514 · Const Sgr · Type Cluster and nebula · Mag 6.3 · Ext 29' · Dist 7.6 kly · Name Trifid Nebula · Credit NASA/ESA

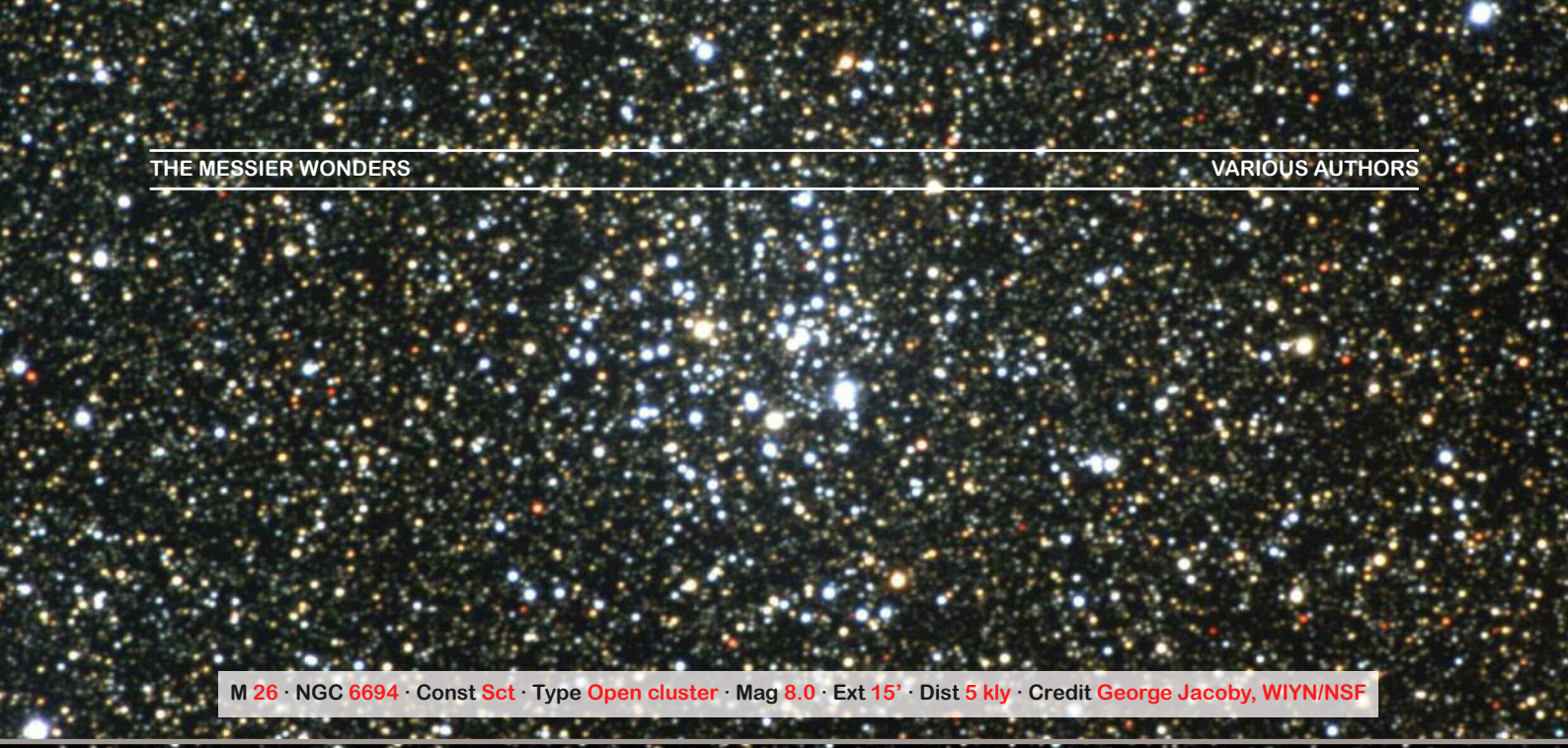
M 21 · NGC 6531 · Const Sgr · Type Open cluster · Mag 5.9 · Ext 13' · Dist 4.2 kly · Credit REU program/NOAO/AURA/NSF

M 23 · NGC 6494 · Const Sgr · Type Open cluster · Mag 5.5 · Ext 27' · Dist 2.1 kly · Credit N.A.Sharp, REU program

M 22 · NGC 6656 · Const Sgr · Type Globular cluster · Mag 5.1 · Ext 24' · Dist 11 kly · Credit ncis

M 24 · near NGC 6603 · Const Sgr · Type Starcloud · Mag -- · Ext -- · Dist 4.1 kly · Credit ncis

M 25 · IC 4725 · Const Sgr · Type Open cluster · Mag 4.6 · Ext 32' · Dist 2 kly · Credit H.Mathis, V.Harvey, REU program



M 26 · NGC 6694 · Const Sct · Type Open cluster · Mag 8.0 · Ext 15' · Dist 5 kly · Credit George Jacoby, WIYN/NSF

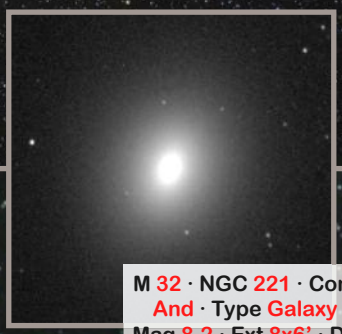
M 27 · NGC 6853 · Const Vul · Type Planetary nebula · Mag 8.1 · Ext 8.0x5.7' · Dist 1.3 kly · Name Dumbbell Nebula · Credit M.Tonincelli-AAS

M 28 · NGC 6626 · Const Sgr · Type Globular cluster · Mag 6.9 · Ext 11.2' · Dist 18.3 kly · Credit NOAO/AURA/NSF

M 29 · NGC 6913 · Const Cyg · Type Open cluster · Mag 6.6 · Ext 7' · Dist 4 kly · Credit 2MASS

M 30 · NGC 7099 · Const Cap · Type Globular cluster · Mag 7.5 · Ext 11' · Dist 26 kly · Credit Jim Misti

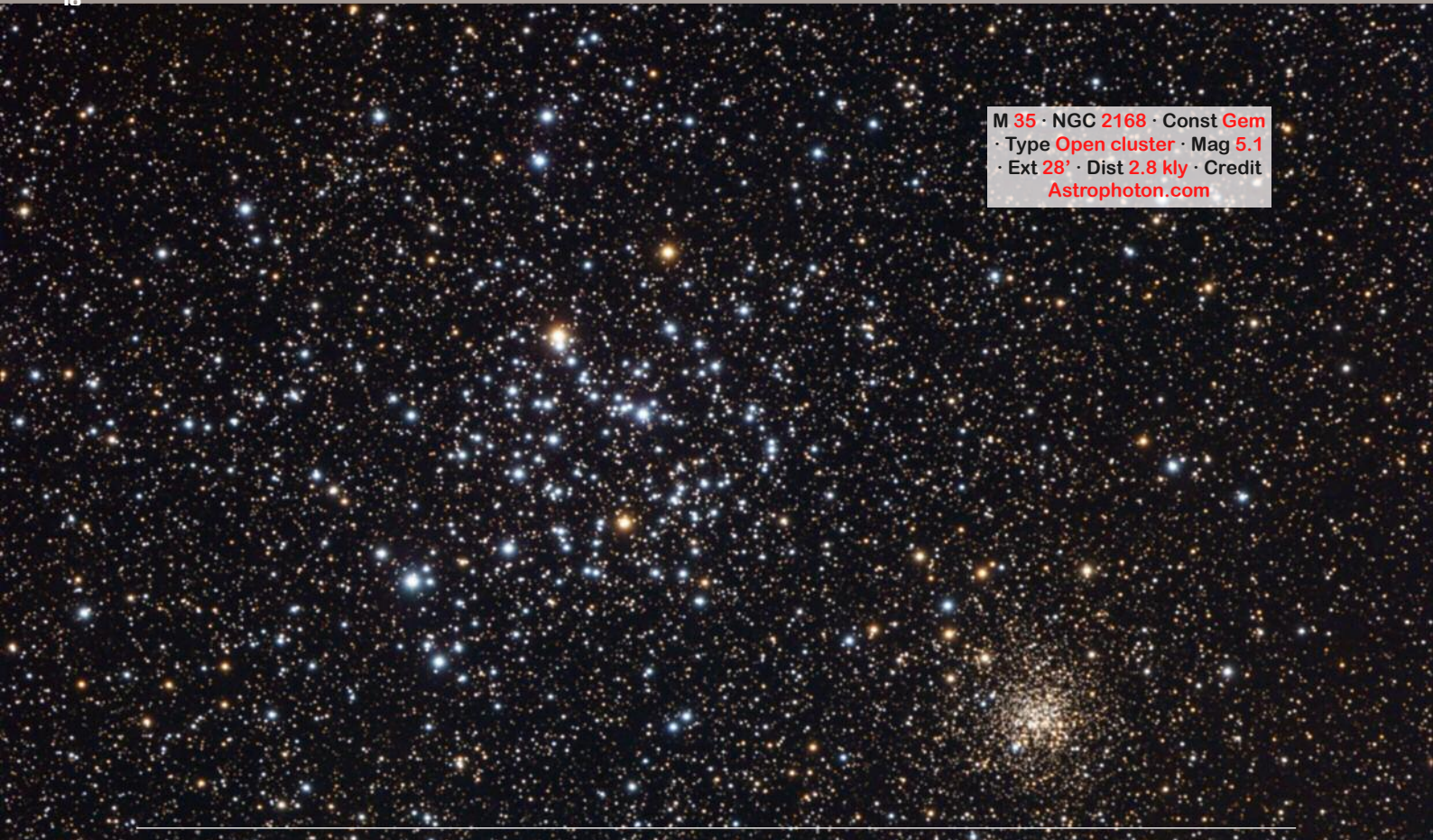
M 31 · NGC 224 · Const And · Type Galaxy · Mag 3.5 · Ext 178x163' · Dist 2,5 Mly · Name Andromeda Galaxy · Credit Tony Hallas



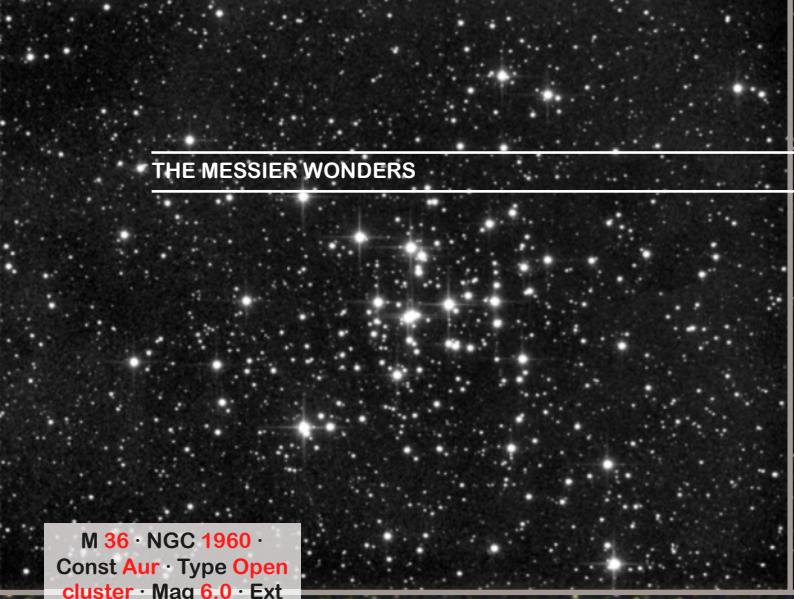
M 32 · NGC 221 · Const And · Type Galaxy · Mag 8.2 · Ext 8x6' · Dist 2,5 Mly · Credit Bill Keel

M 33 · NGC 598 · Const Tri · Type Galaxy · Mag 5.7 · Ext 73x45' · Dist 2,8 Mly · Name Triangulum Galaxy · Credit Mel Martin

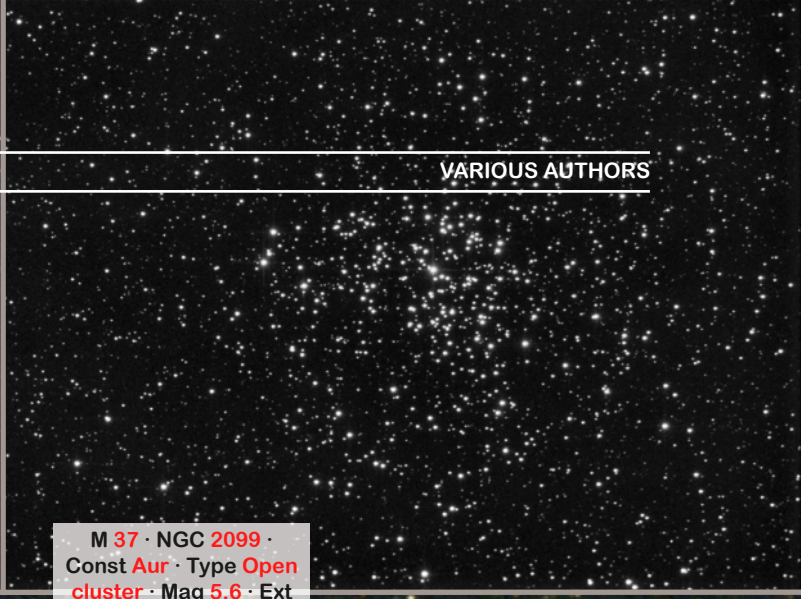
M 34 · NGC 1039 · Const Per · Type Open cluster · Mag 5.2 · Ext 35' · Dist 1.5 kly · Credit Bob Franke



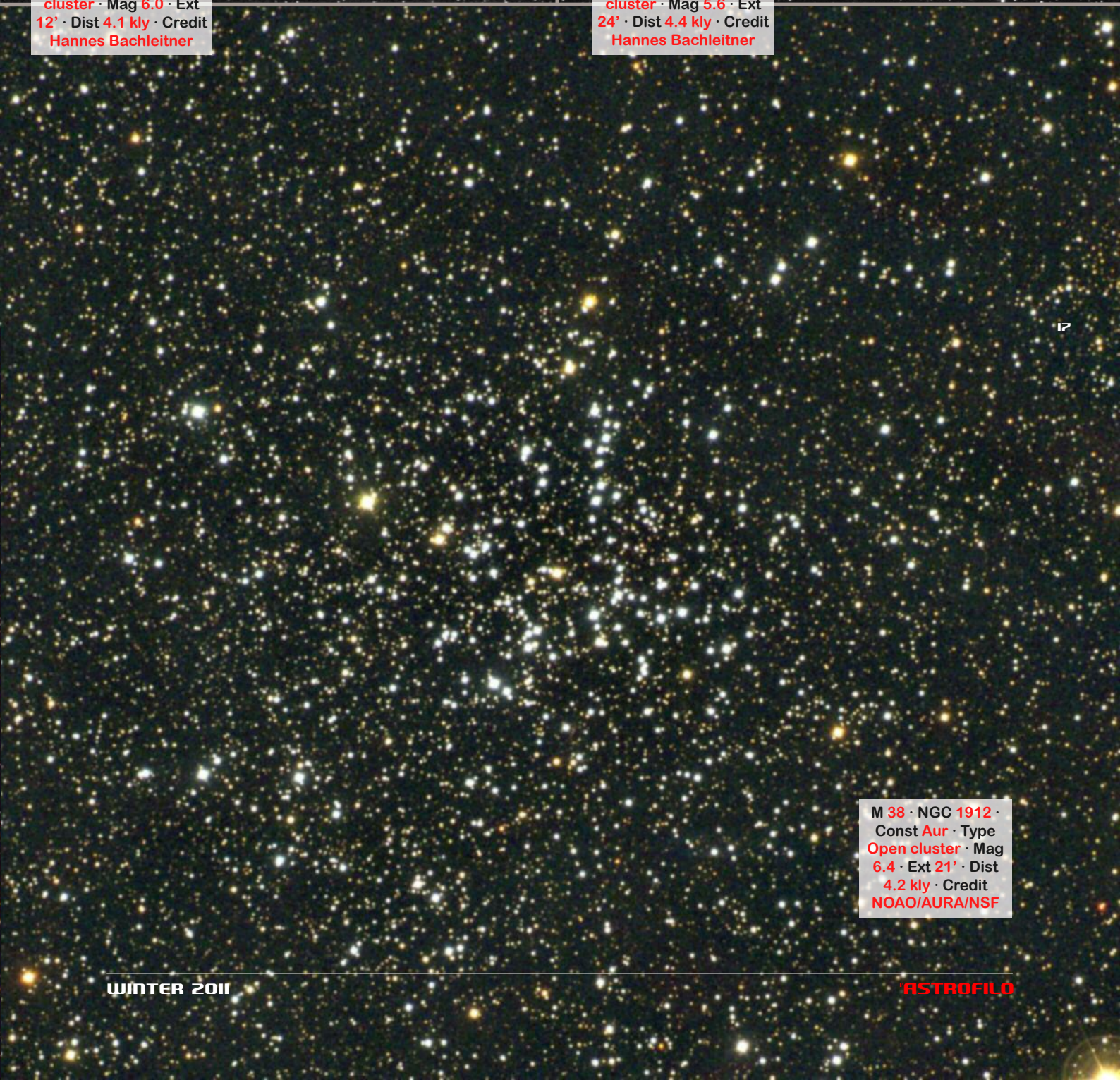
M 35 · NGC 2168 · Const Gem · Type Open cluster · Mag 5.1 · Ext 28' · Dist 2.8 kly · Credit Astrophoton.com



M 36 · NGC 1960 · Const Aur · Type Open cluster · Mag 6.0 · Ext 12' · Dist 4.1 kly · Credit Hannes Bachleitner



M 37 · NGC 2099 · Const Aur · Type Open cluster · Mag 5.6 · Ext 24' · Dist 4.4 kly · Credit Hannes Bachleitner



M 38 · NGC 1912 · Const Aur · Type Open cluster · Mag 6.4 · Ext 21' · Dist 4.2 kly · Credit NOAO/AURA/NSF

M 39 · NGC 7092 · Const Cyg · Type Open cluster · Mag 4.6 · Ext 32' · Dist 800 ly · Credit ncis

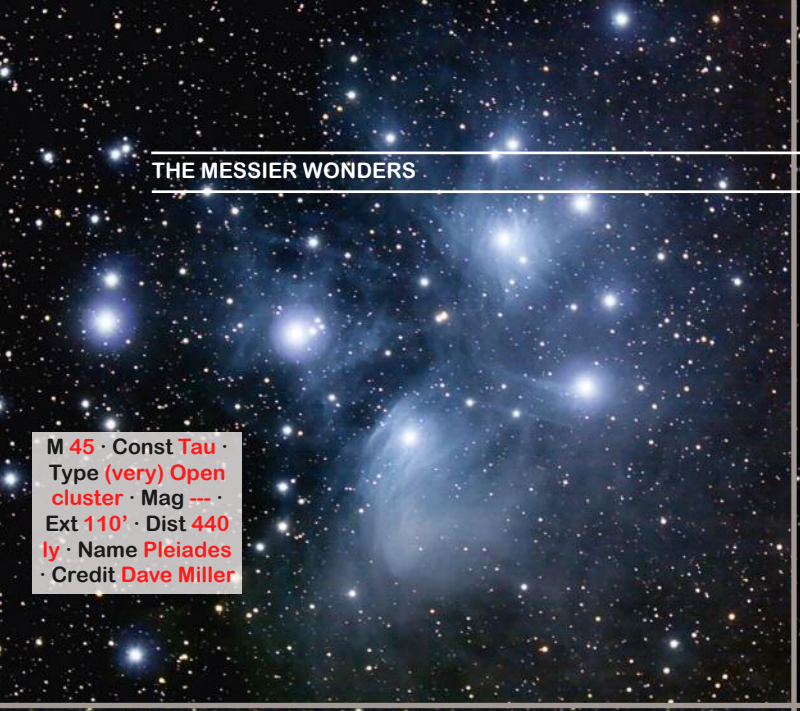
M 40 · WNC 4 · Const UMa · Type Pair of stars · Mag 10 · Ext 50" · Dist 510 ly · Credit ncis

M 41 · NGC 2287 · Const CMa · Type Open cluster · Mag 4.5 · Ext 38' · Dist 2.3 kly · Credit NOAO/AURA/NSF

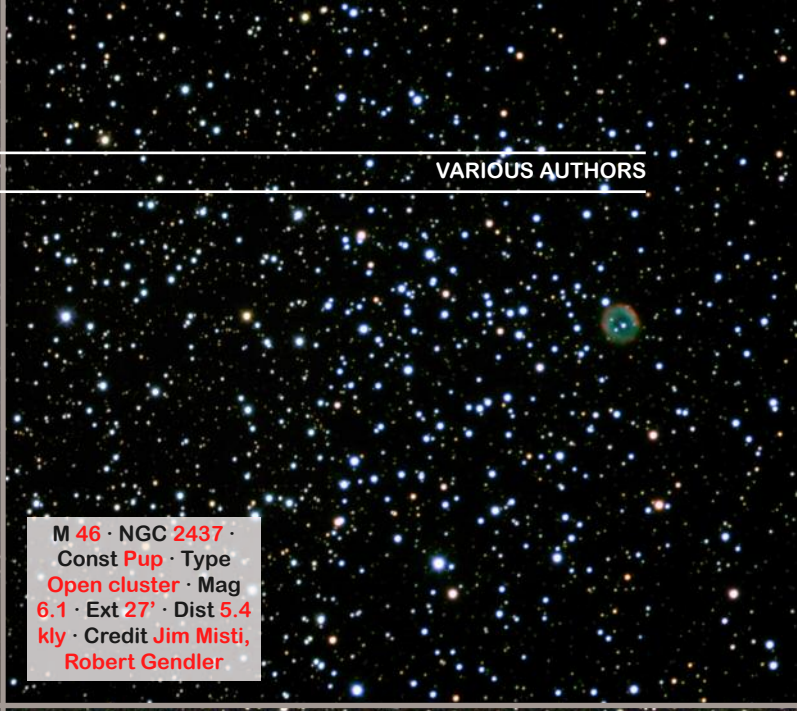
M 42 · NGC 1976 · Const Ori · Type Diffuse nebula · Mag 4.0 · Ext 85x60' · Dist 1.3 kly · Name Orion Nebula · Credit M.Tonincelli-AAS

M 43 · NGC 1982 · Const Ori · Type Diffuse nebula · Mag 9.0 · Ext 20x15' · Dist 1.6 kly · Credit NASA/ESA

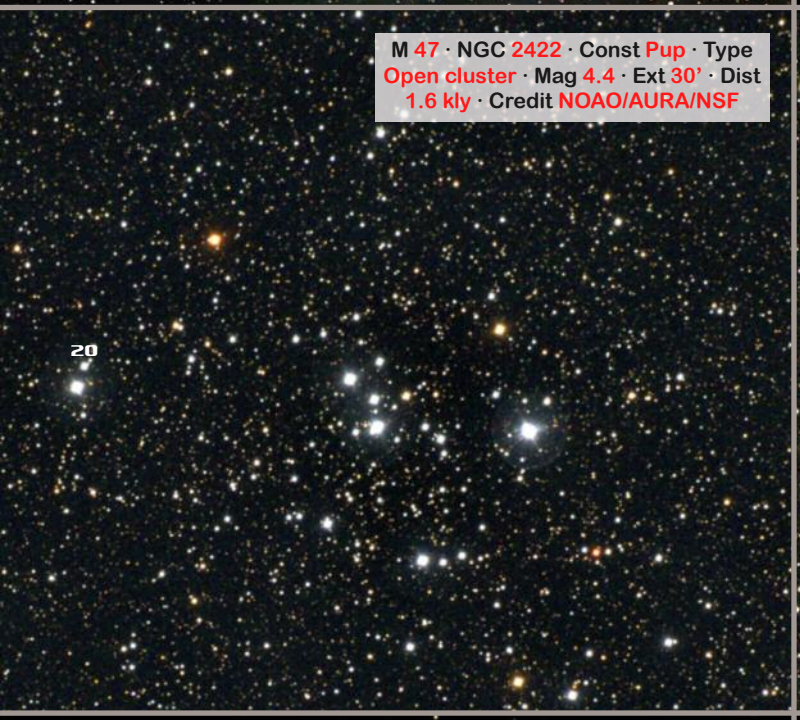
M 44 · NGC 2632 · Const Cnc · Type Open cluster · Mag 3.1 · Ext 95' · Dist 577 ly · Name Beehive Cluster · Credit Dogwood Ridge Obs.



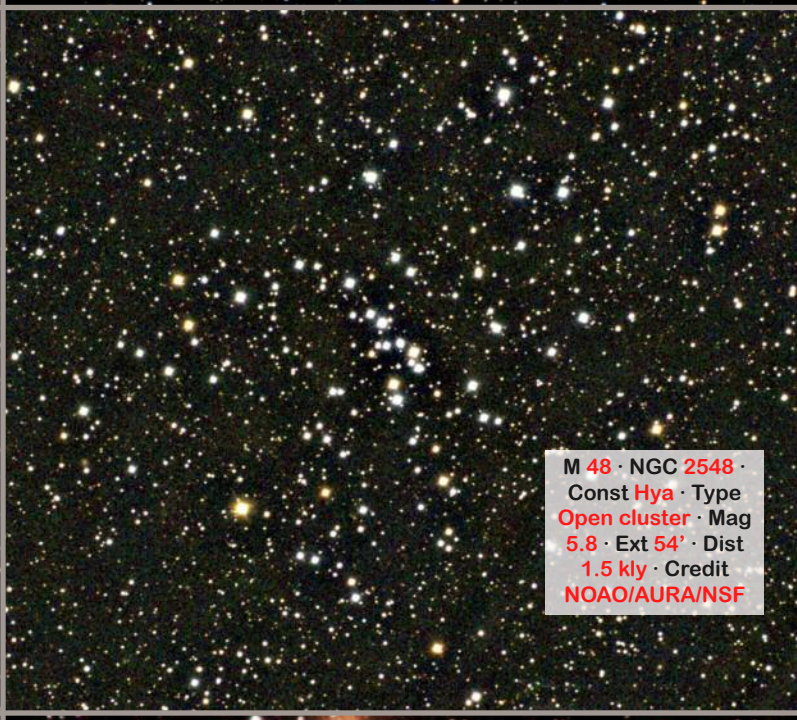
M 45 · Const Tau · Type (very) Open cluster · Mag --- · Ext 110' · Dist 440 ly · Name Pleiades · Credit Dave Miller



M 46 · NGC 2437 · Const Pup · Type Open cluster · Mag 6.1 · Ext 27' · Dist 5.4 kly · Credit Jim Misti, Robert Gendler

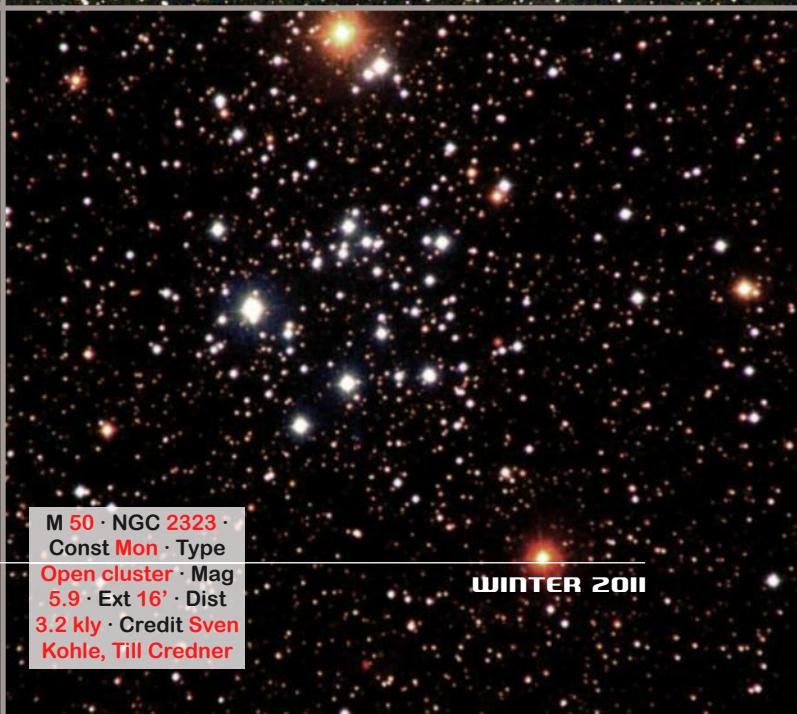


M 47 · NGC 2422 · Const Pup · Type Open cluster · Mag 4.4 · Ext 30' · Dist 1.6 kly · Credit NOAO/AURA/NSF



M 48 · NGC 2548 · Const Hya · Type Open cluster · Mag 5.8 · Ext 54' · Dist 1.5 kly · Credit NOAO/AURA/NSF

M 49 · NGC 4472 · Const Vir · Type Galaxy · Mag 8.4 · Ext 9x7.5' · Dist 56 Mly · Credit Sid Leach



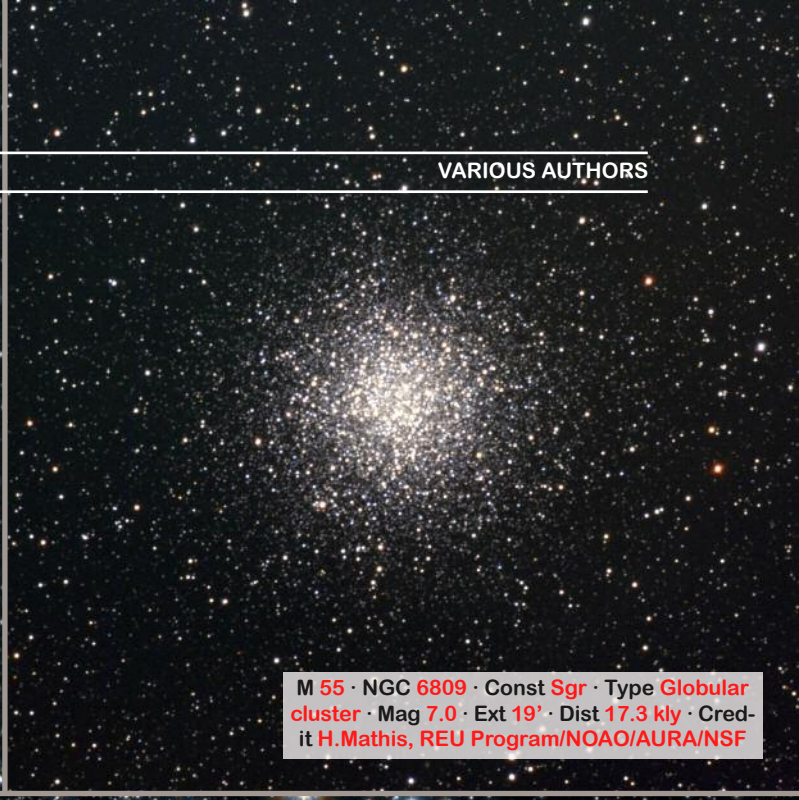
M 50 · NGC 2323 · Const Mon · Type Open cluster · Mag 5.9 · Ext 16' · Dist 3.2 kly · Credit Sven Kohle, Till Credner

M 51 · NGC 5194 · Const CVn · Type Galaxy · Mag 8.4 · Ext 11x7' · Dist 23 Mly · Name Whirlpool Galaxy · Credit M.Tonincelli-AAS

M 52 · NGC 7654 · Const Cas · Type Open cluster · Mag 6.9 · Ext 13' · Dist 5 kly · Credit Stuart Heggie

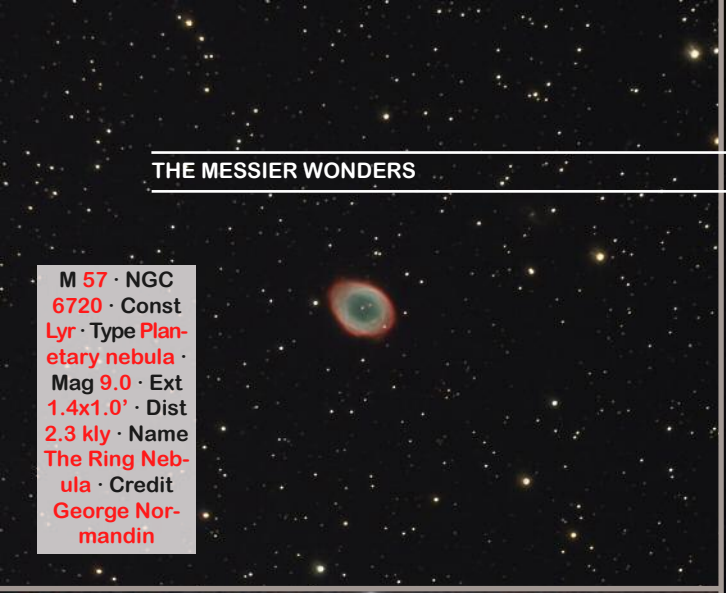
M 53 · NGC 5024 · Const Com · Type Globular cluster · Mag 7.7 · Ext 12.6' · Dist 58 kly · Credit NASA/STScI /WikiSky

M 54 · NGC 6715 · Const Sgr · Type Globular cluster · Mag 7.7 · Ext 9.1' · Dist 87.4 kly · Credit REU Program/NOAO/AURA/NSF



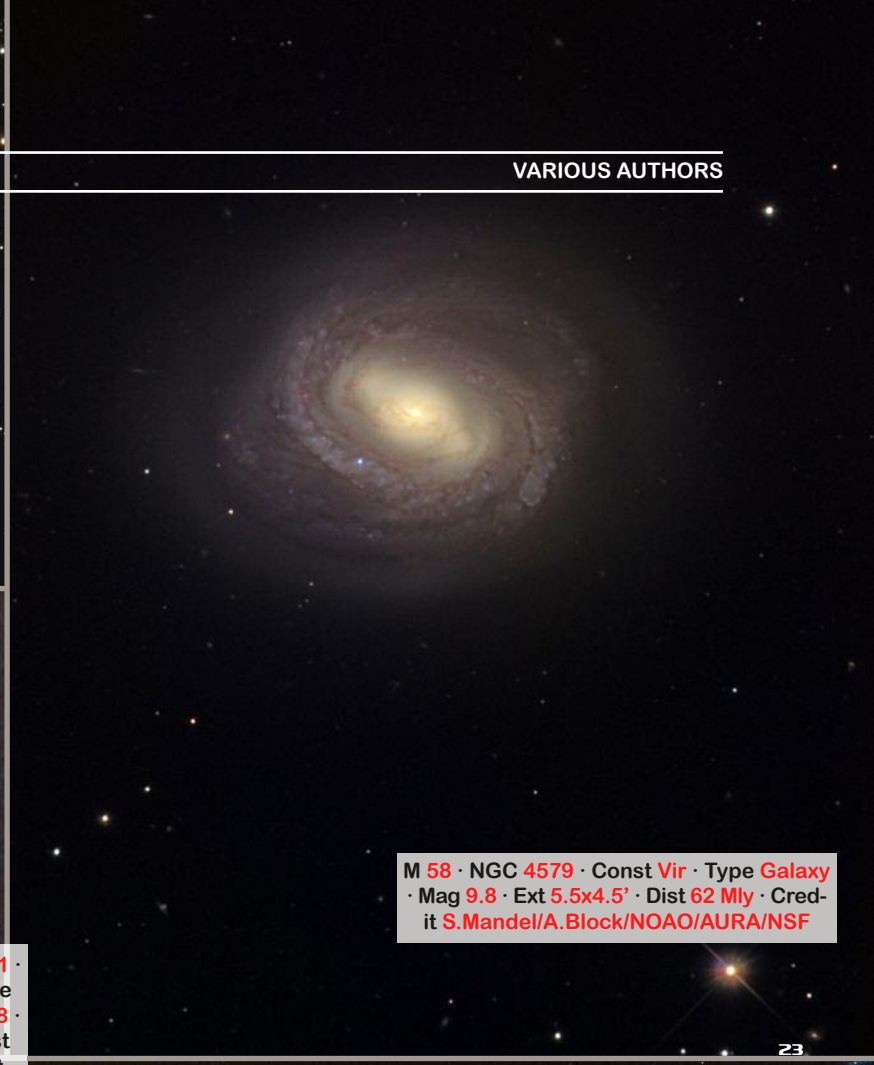
M 55 · NGC 6809 · Const Sgr · Type Globular cluster · Mag 7.0 · Ext 19' · Dist 17.3 kly · Credit H.Mathis, REU Program/NOAO/AURA/NSF

M 56 · NGC 6779 · Const Lyr · Type Globular cluster · Mag 8.3 · Ext 7.1' · Dist 32.9 kly · Credit NASA/STScI/ WikiSky



M 57 · NGC 6720 · Const Lyr · Type Planetary nebula · Mag 9.0 · Ext 1.4x1.0' · Dist 2.3 kly · Name The Ring Nebula · Credit George Normandin

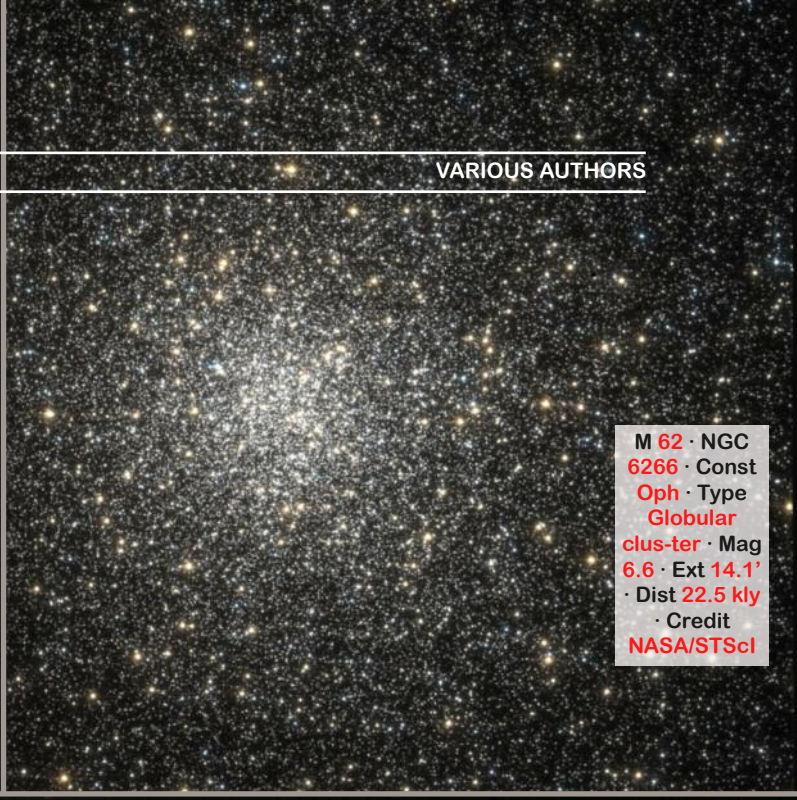
M 59 · NGC 4621 · Const Vir · Type Galaxy · Mag 9.8 · Ext 5x3.5' · Dist 60 Mly · Credit AURA/NOAO/NSF



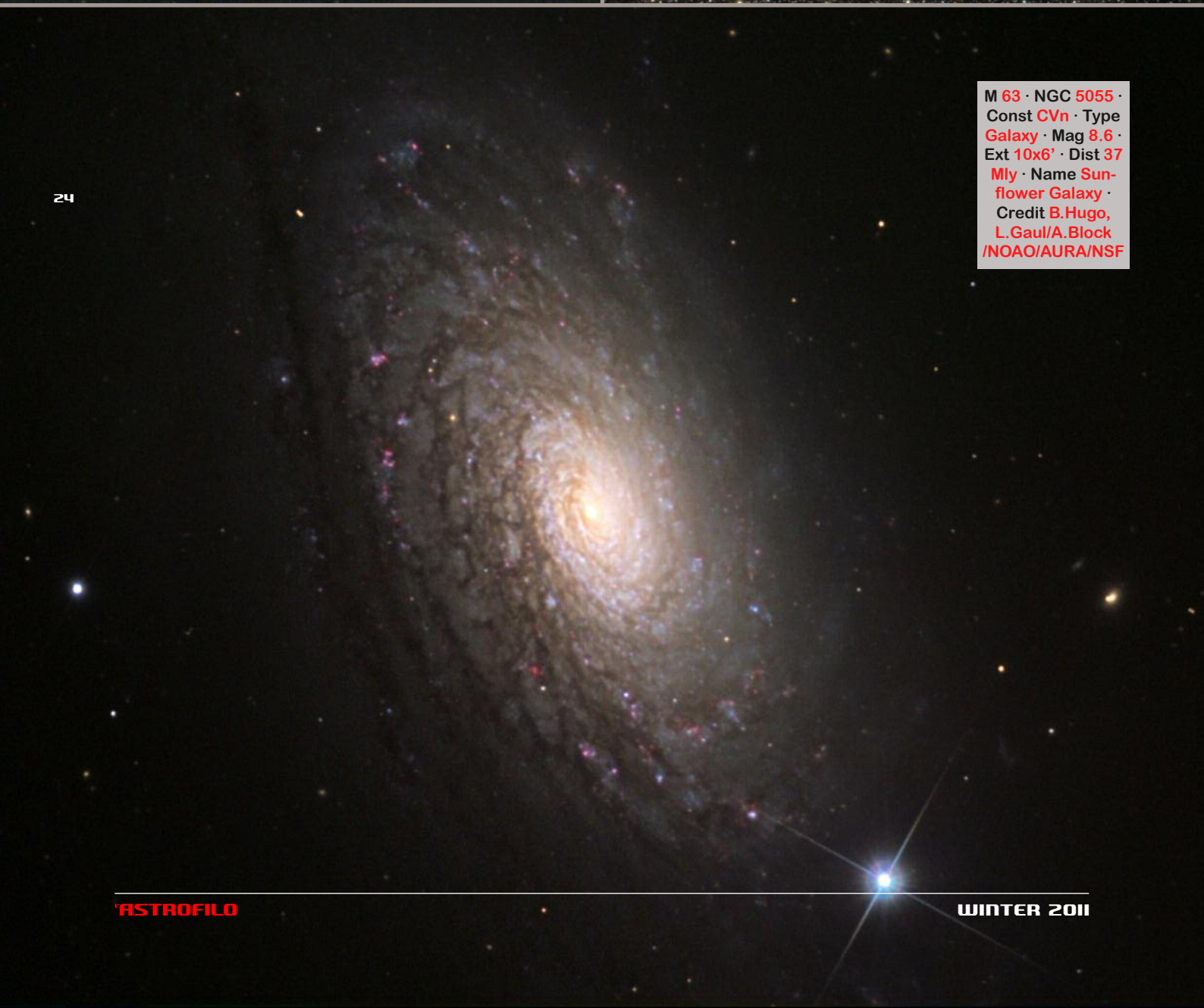
M 58 · NGC 4579 · Const Vir · Type Galaxy · Mag 9.8 · Ext 5.5x4.5' · Dist 62 Mly · Credit S.Mandel/A.Block/NOAO/AURA/NSF

M 60 · NGC 4649 · Const Vir · Type Galaxy · Mag 8.8 · Ext 7x6' · Dist 55 Mly · Credit NASA/STScI

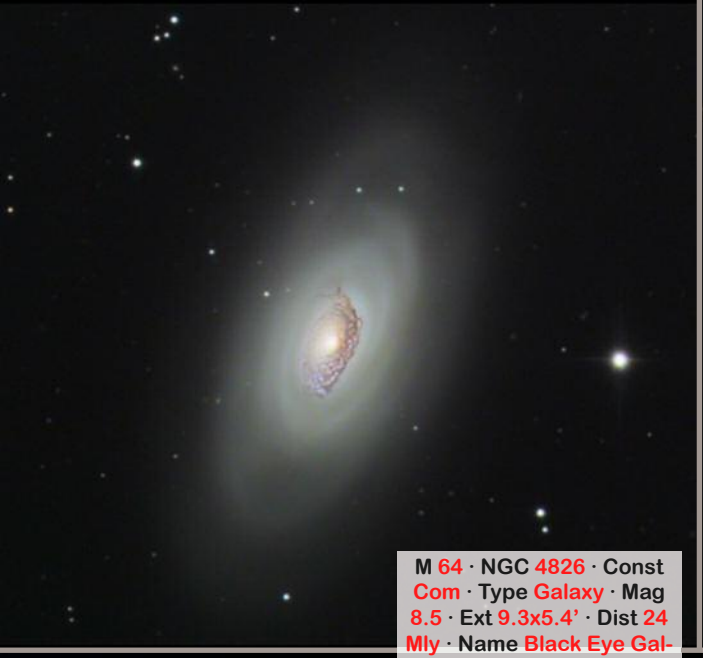
M 61 · NGC 4303 · Const Vir · Type Galaxy · Mag 9.7 · Ext 6' · Dist 52 Mly · Credit H.Mathis, N.A.Sharp/NOAO/AURA/NSF



M 62 · NGC 6266 · Const Oph · Type Globular clus-ter · Mag 6.6 · Ext 14.1' · Dist 22.5 kly · Credit NASA/STScI



M 63 · NGC 5055 · Const CVn · Type Galaxy · Mag 8.6 · Ext 10x6' · Dist 37 Mly · Name Sun-flower Galaxy · Credit B.Hugo, L.Gaul/A.Block /NOAO/AURA/NSF

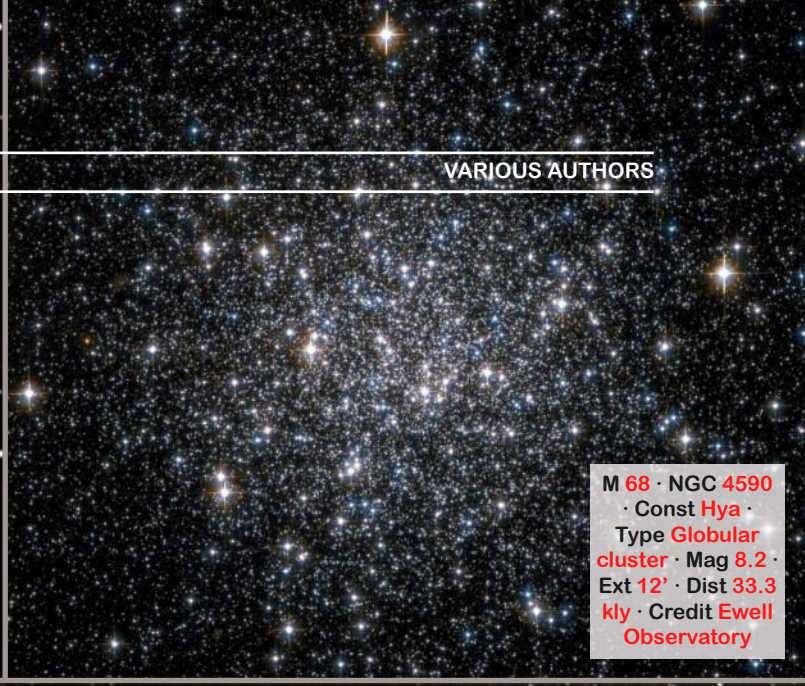


M 64 · NGC 4826 · Const Com · Type Galaxy · Mag 8.5 · Ext 9.3x5.4' · Dist 24 Mly · Name Black Eye Galaxy · Credit Philip Perkins

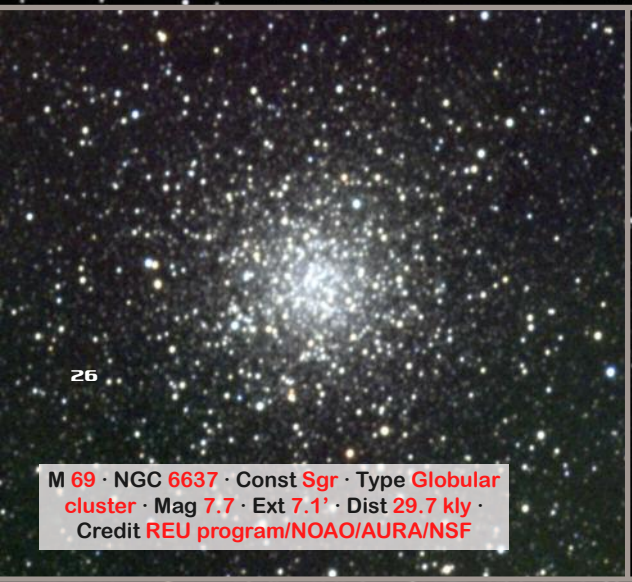
M 65 · NGC 3623 · Const Leo · Type Galaxy · Mag 9.3 · Ext 8x3' · Dist 35 Mly · Credit Ewell Observatory

M 66 · NGC 3627 · Const Leo · Type Galaxy · Mag 9.0 · Ext 8x4' · Dist 36 Mly · Credit Ewell Observatory

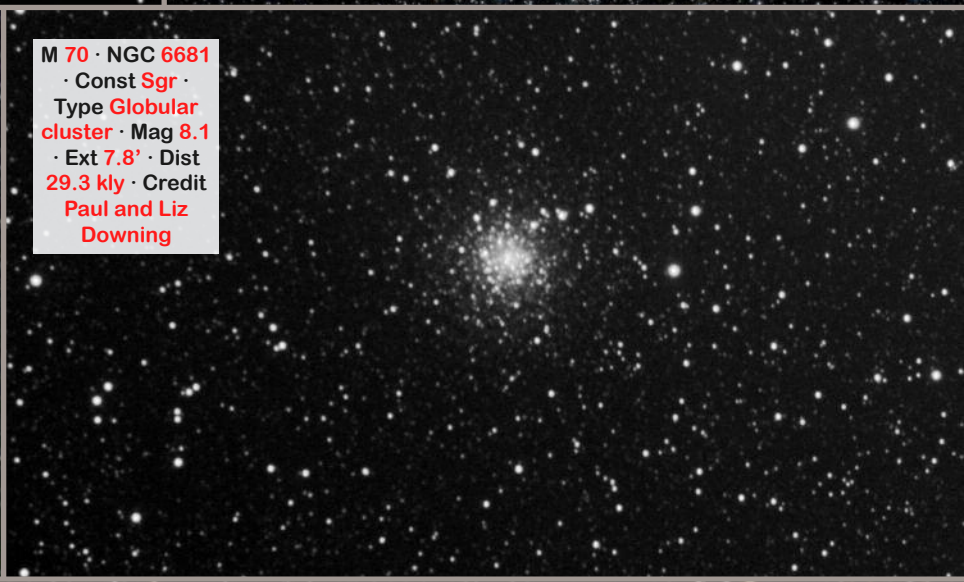
M 67 · NGC 2682 · Const Cnc · Type Open cluster · Mag 6.9 · Ext 30' · Dist 2.7 kly · Credit 2MASS



M 68 · NGC 4590 · Const Hya · Type Globular cluster · Mag 8.2 · Ext 12' · Dist 33.3 kly · Credit Ewell Observatory



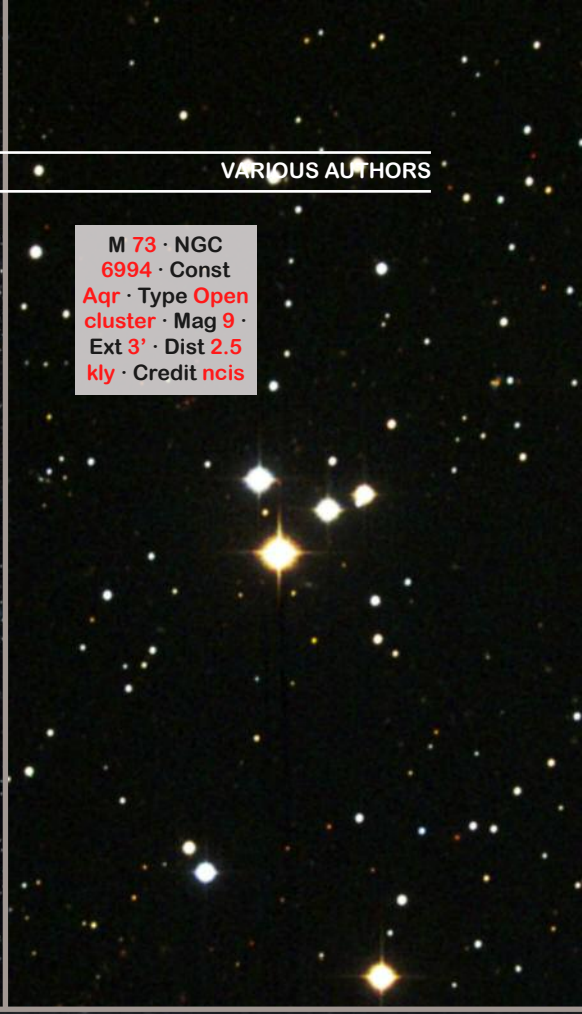
M 69 · NGC 6637 · Const Sgr · Type Globular cluster · Mag 7.7 · Ext 7.1' · Dist 29.7 kly · Credit REU program/NOAO/AURA/NSF



M 70 · NGC 6681 · Const Sgr · Type Globular cluster · Mag 8.1 · Ext 7.8' · Dist 29.3 kly · Credit Paul and Liz Downing

M 71 · NGC 6838 · Const Sge · Type Globular cluster · Mag 8.3 · Ext 7.2' · Dist 12 kly · Credit Jim Misti

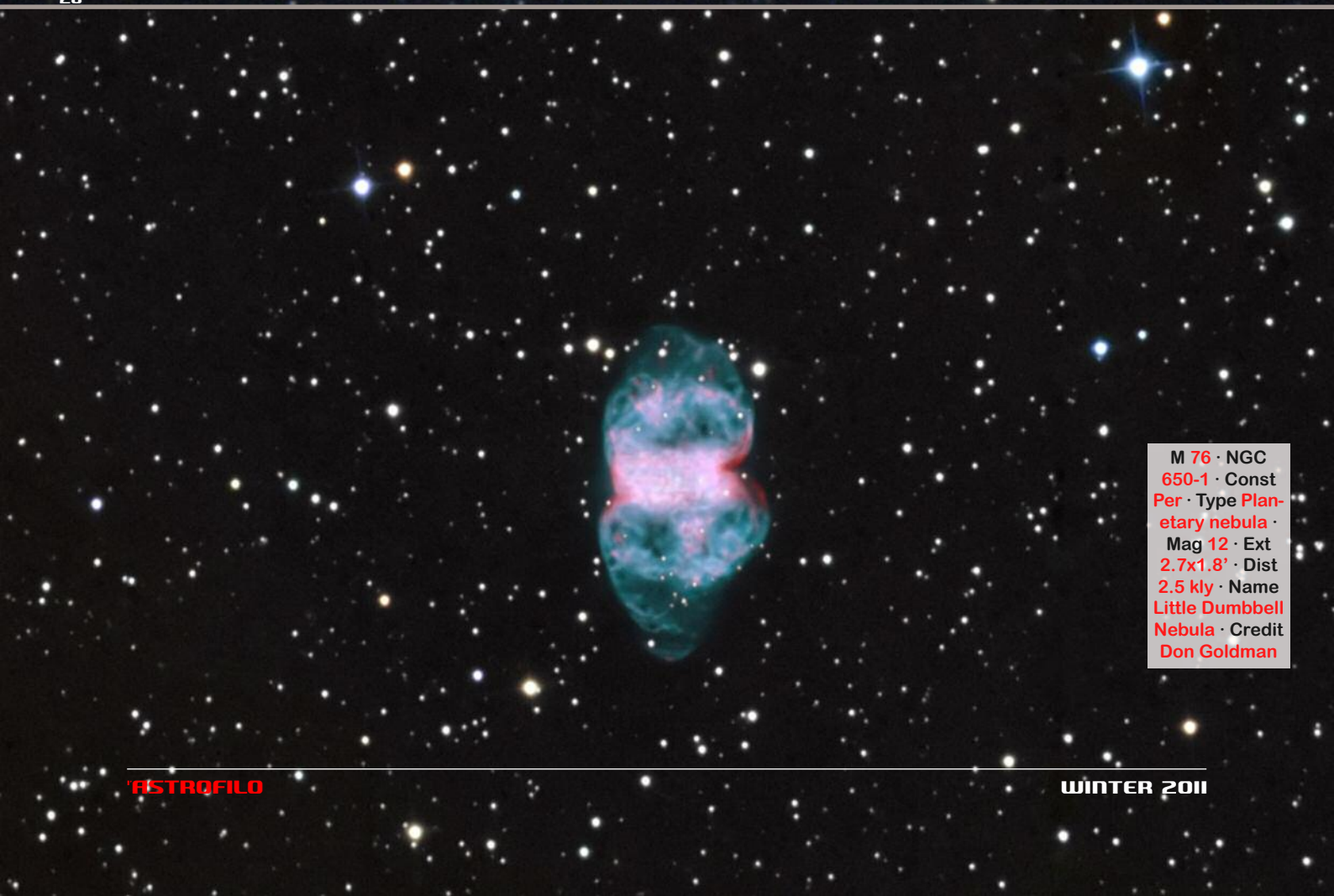
M 72 · NGC 6981 · Const Aqr · Type Globular cluster · Mag 9.4 · Ext 5.9' · Dist 58 kly · Credit NASA/ESA



M 73 · NGC 6994 · Const Aqr · Type Open cluster · Mag 9 · Ext 3' · Dist 2.5 kly · Credit ncis

M 74 · NGC 628 · Const Psc · Type Galaxy · Mag 9.2 · Ext 10.2x9.5' · Dist 30 Mly · Credit P.Mortfield, D.Kupke, F.Haase/NOAO/AURA/NSF

M 75 · NGC 6864 · Const Sgr · Type Globular cluster · Mag 8.6 · Ext 6' · Dist 67.5 kly · Credit NOAO/AURA/NSF



M 76 · NGC 650-1 · Const Per · Type Planetary nebula · Mag 12 · Ext 2.7x1.8' · Dist 2.5 kly · Name Little Dumbbell Nebula · Credit Don Goldman

M 77 · NGC 1068 · Const Cet · Type Galaxy · Mag 8.8 · Ext 7x6' · Dist 47 Mly · Name Cetus A · Credit François and Shelley Pelletier/A.Block/NOAO/AURA/NSF

M 79 · NGC 1904 · Const Lep · Type Globular cluster · Mag 8.0 · Ext 8.7' · Dist 41 kly · Credit A.Block/NOAO/AURA/NSF

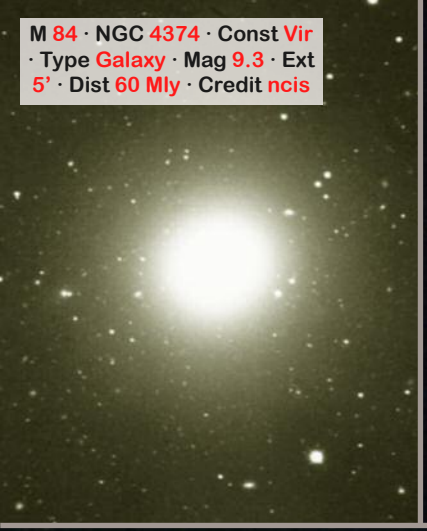
M 78 · NGC 2068 · Const Ori · Type Diffuse nebula · Mag 8 · Ext 8x6' · Dist 1.6 kly · Credit Mike Halderman

M 80 · NGC 6093 · Const Sco · Type Globular cluster · Mag 7.2 · Ext 8.9' · Dist 32.6 kly · Credit Jim Misti

M 81 · NGC 3031 · Const UMa · Type Galaxy · Mag 6.9 · Ext 21x13' · Dist 11.8 Mly · Name Bode's Galaxy · Credit M.Tonincelli-AAS

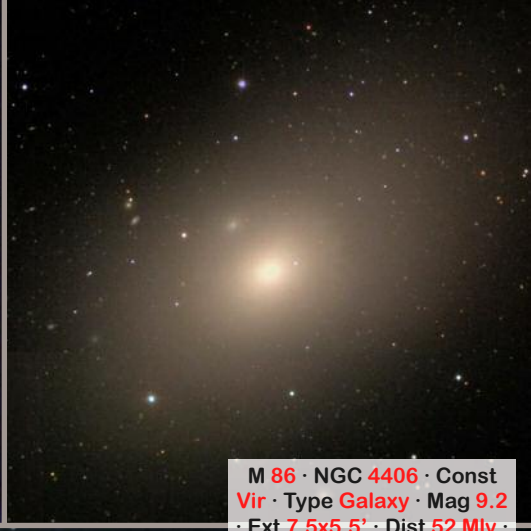
M 82 · NGC 3034 · Const UMa · Type Galaxy · Mag 8.4 · Ext 11x5' · Dist 11.5 Mly · Name Cigar Galaxy · Credit NASA, ESA, Hubble Heritage Team (STScI/AURA)

M 83 · NGC 5236 · Const Hya · Type Galaxy · Mag 7.6 · Ext 11x10' · Dist 14.7 Mly · Name Southern Pinwheel Galaxy · Credit ESO



M 84 · NGC 4374 · Const Vir · Type Galaxy · Mag 9.3 · Ext 5’ · Dist 60 Mly · Credit ncis

M 85 · NGC 4382 · Const Com · Type Galaxy · Mag 9.2 · Ext 6’ · Dist 60 Mly · Credit NOAO/AURA/NSF



M 86 · NGC 4406 · Const Vir · Type Galaxy · Mag 9.2 · Ext 7.5x5.5’ · Dist 52 Mly · Credit Courtney Seligman

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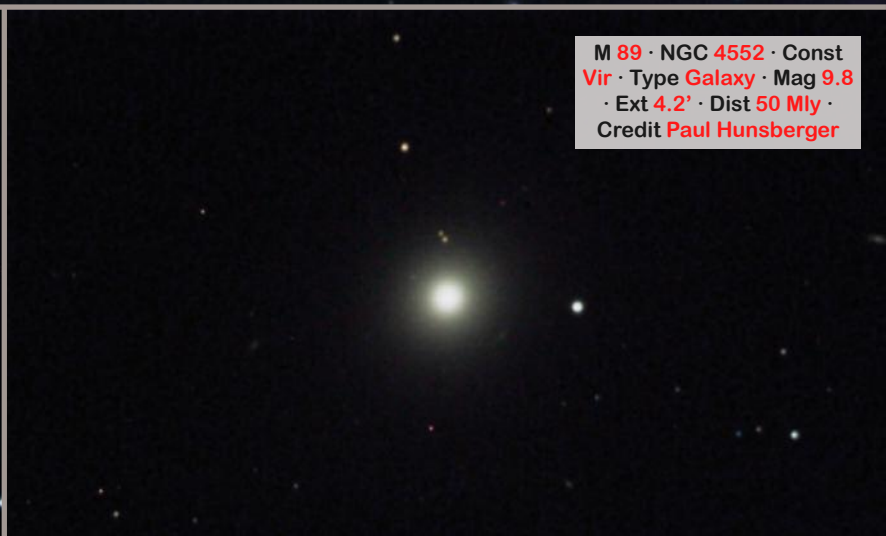
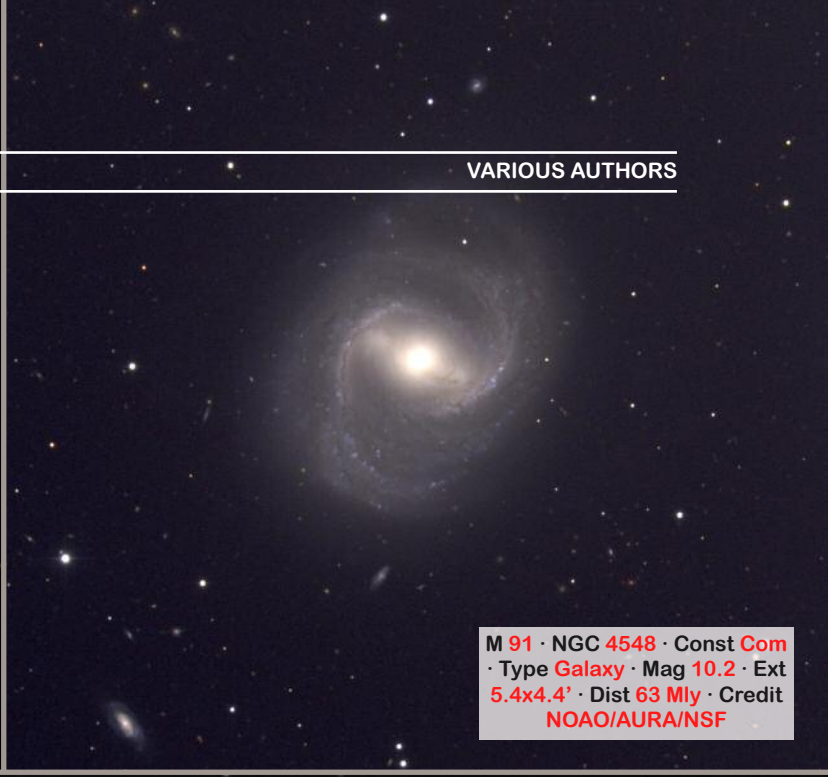
M 87 · NGC 4486 · Const Vir · Type Galaxy · Mag 8.6 · Ext 7.2’ · Dist 53 Mly · Name Virgo A · Credit Jim Misti

M 88 · NGC 4501 · Const Com · Type Galaxy · Mag 9.5 · Ext 7x4’ · Dist 47 Mly · Credit Doug Wheeland



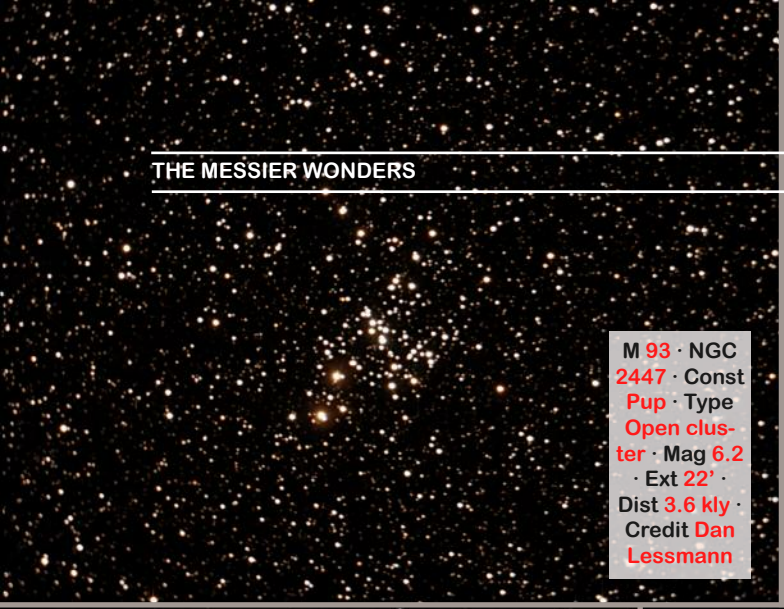
M 89 · NGC 4552 · Const Vir · Type Galaxy · Mag 9.8 · Ext 4.2’ · Dist 50 Mly · Credit Paul Hunsberger

M 90 · NGC 4569 · Const Vir · Type Galaxy · Mag 9.5 · Ext 9.5x4.5' · Dist 58 Mly · Credit The Grasslands Observatory

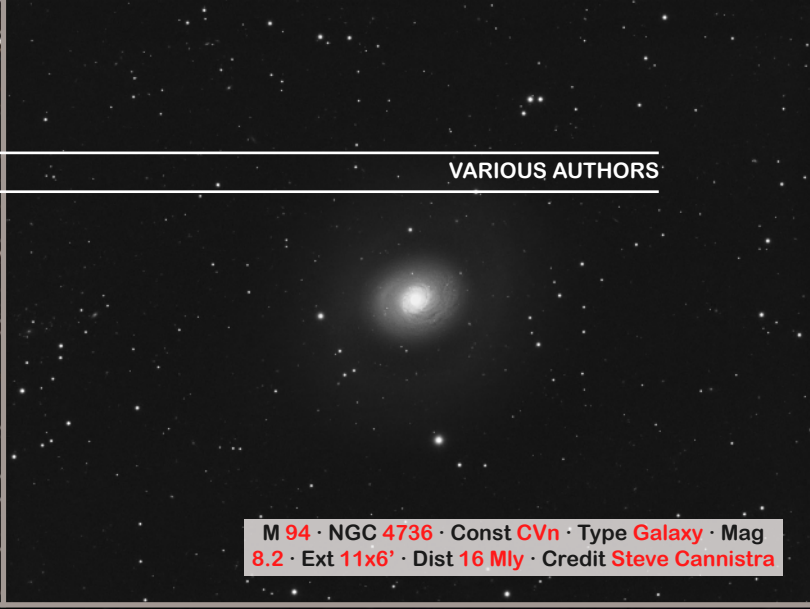


M 91 · NGC 4548 · Const Com · Type Galaxy · Mag 10.2 · Ext 5.4x4.4' · Dist 63 Mly · Credit NOAO/AURA/NSF

M 92 · NGC 6341 · Const Her · Type Globular cluster · Mag 6.5 · Ext 11.2' · Dist 26 kly · Credit Stuart Heggie



M 93 · NGC 2447 · Const Pup · Type Open cluster · Mag 6.2 · Ext 22' · Dist 3.6 kly · Credit Dan Lessmann



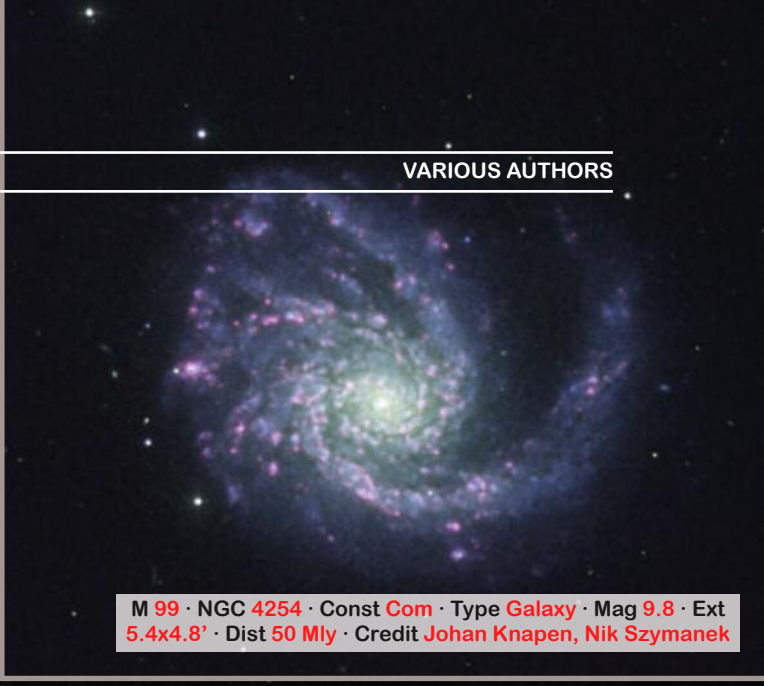
M 94 · NGC 4736 · Const CVn · Type Galaxy · Mag 8.2 · Ext 11x6' · Dist 16 Mly · Credit Steve Cannistra

M 95 · NGC 3351 · Const Leo · Type Galaxy · Mag 9.7 · Ext 7.4x5' · Dist 33 Mly · Credit The Grasslands Observatory

M 96 · NGC 3368 · Const Leo · Type Galaxy · Mag 9.2 · Ext 7.1x5' · Dist 31 Mly · Credit A.Block/NOAO/AURA/NSF

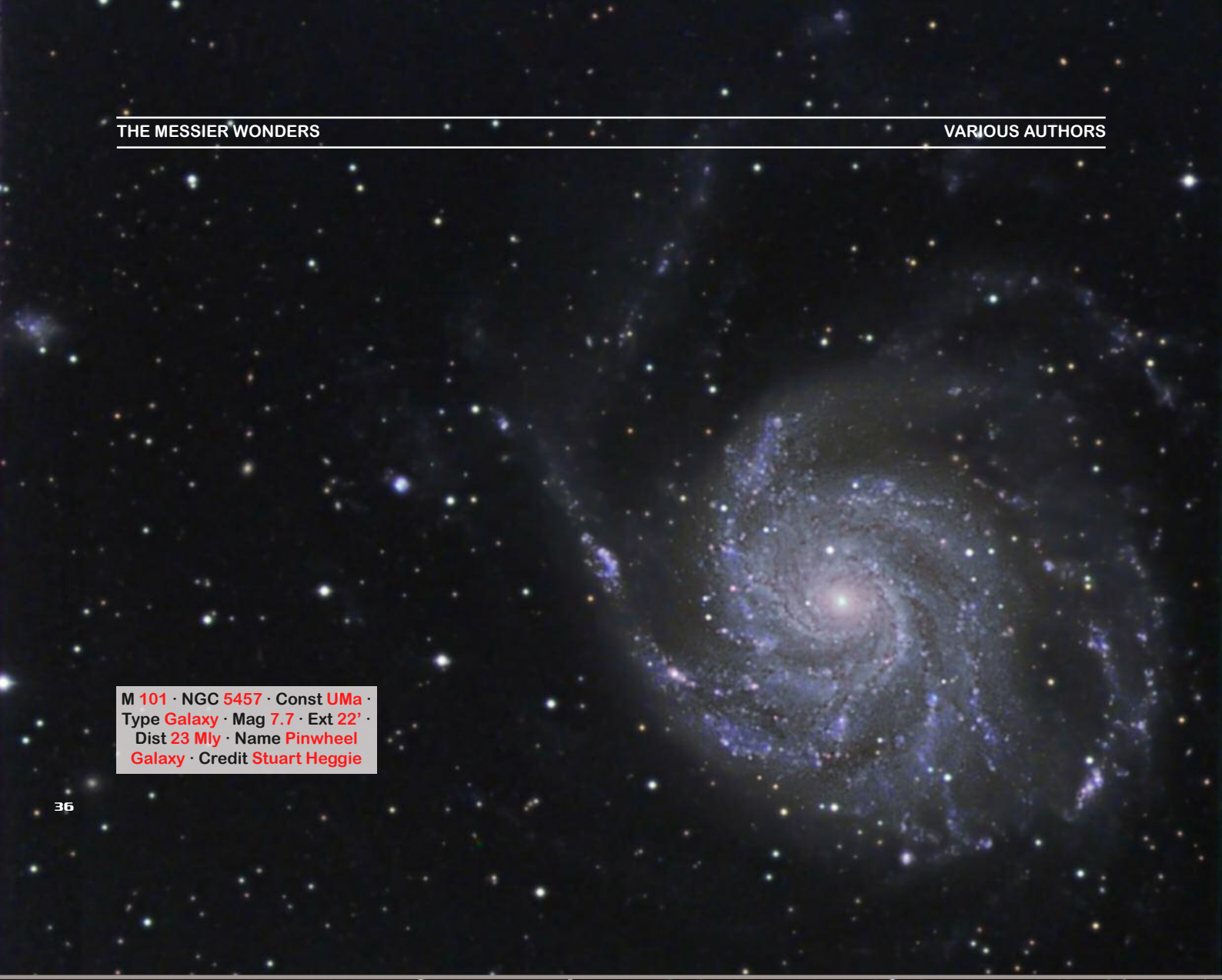
M 97 · NGC 3587 · Const UMa · Type Planetary nebula · Mag 11.2 · Ext 3.3' · Dist 2.6 kly · Name Owl Nebula · Credit ncis

M 98 · NGC 4192 · Const Com · Type Galaxy · Mag 10.1 · Ext 9.5x3.2' · Dist 54 Mly · Credit NOAO/AURA/NSF



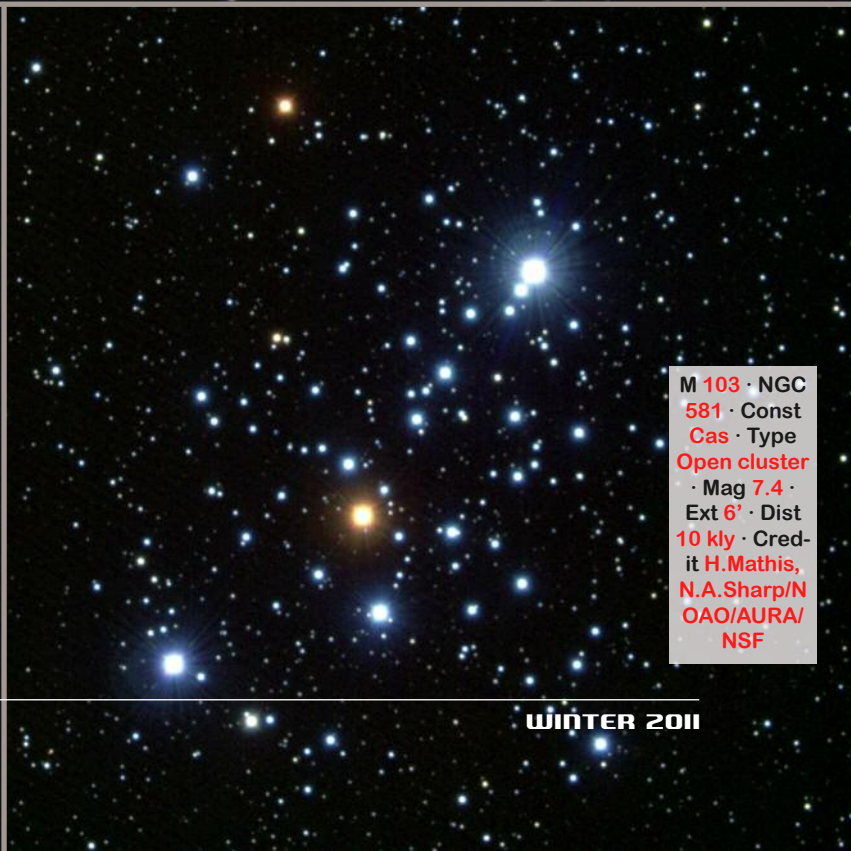
M 99 · NGC 4254 · Const Com · Type Galaxy · Mag 9.8 · Ext 5.4x4.8' · Dist 50 Mly · Credit Johan Knapen, Nik Szymanek

M 100 · NGC 4321 · Const Com · Type Galaxy · Mag 9.4 · Ext 7x6' · Dist 55 Mly · Credit ESO/IDA/R. Gendler, J.-E.Ovaldsen, C.C.Thöne, C. Féron



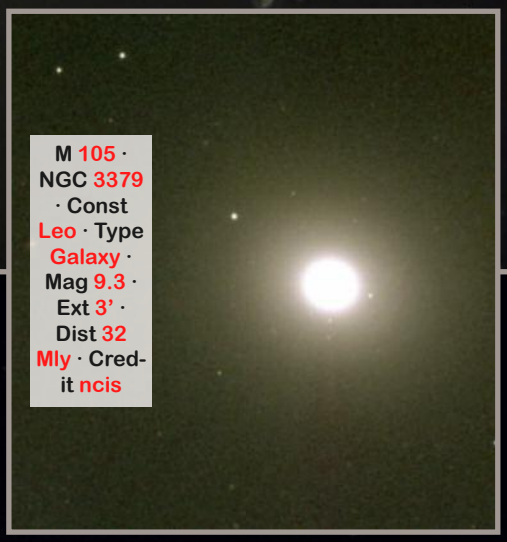
M 101 · NGC 5457 · Const UMa · Type Galaxy · Mag 7.7 · Ext 22' · Dist 23 Mly · Name Pinwheel Galaxy · Credit Stuart Heggie

M 102 · NGC 5866 · Const Dra · Type Galaxy · Mag 10.0 · Ext 5.2x2.3' · Dist 50 Mly · Name Spindle Galaxy · Credit NOAO/AURA/NSF



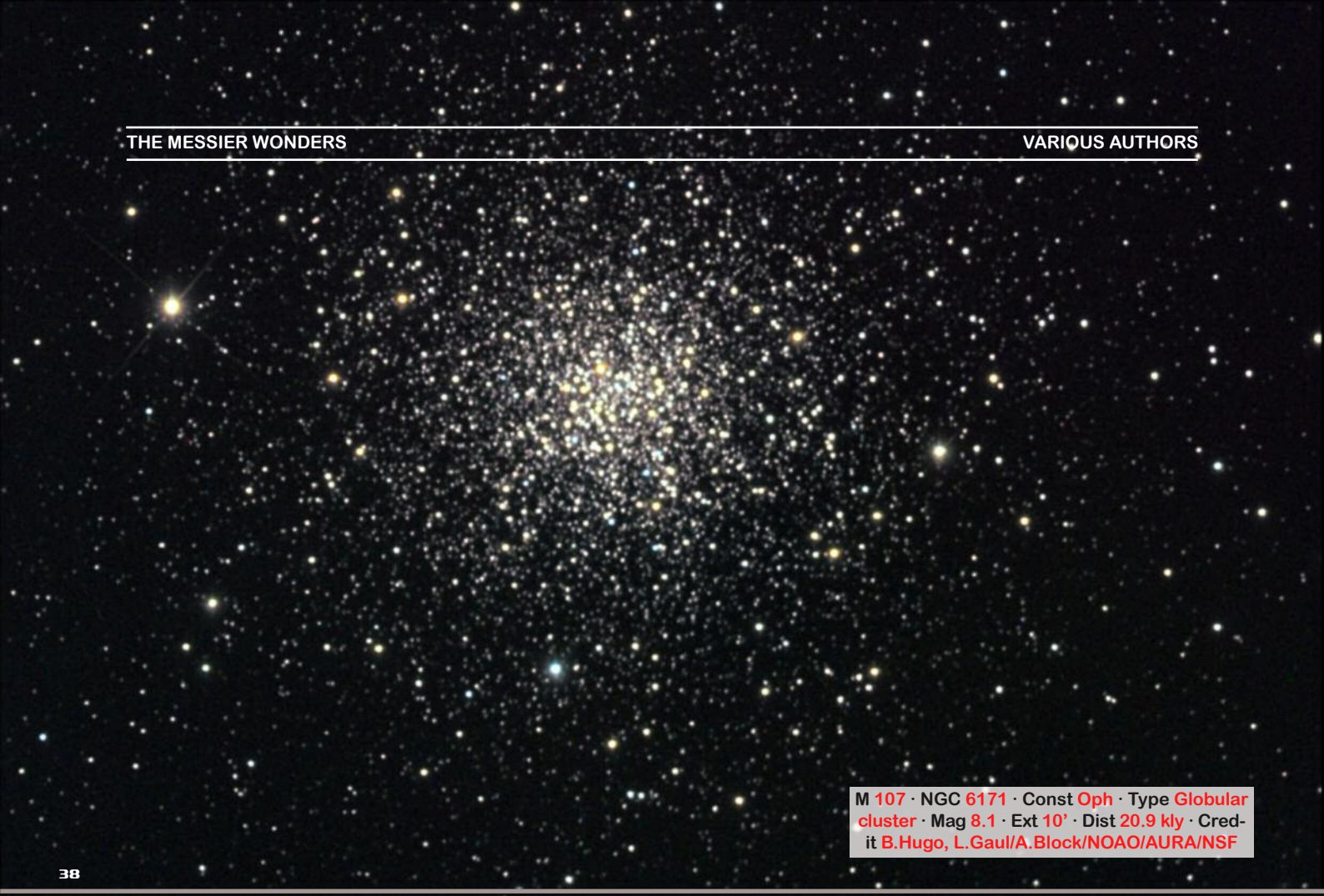
M 103 · NGC 581 · Const Cas · Type Open cluster · Mag 7.4 · Ext 6' · Dist 10 kly · Credit H.Mathis, N.A.Sharp/NOAO/AURA/NSF

M 104 · NGC 4594 · Const Vir · Type Galaxy · Mag 8.3 · Ext 9x4' · Dist 29 Mly · Name Sombrero Galaxy · Credit Jim Misti



M 105 · NGC 3379 · Const Leo · Type Galaxy · Mag 9.3 · Ext 3' · Dist 32 Mly · Credit ncis

M 106 · NGC 4258 · Const CVn · Type Galaxy · Mag 8.3 · Ext 19x9' · Dist 24 Mly · Credit A.Block/NOAO/AURA/NSF

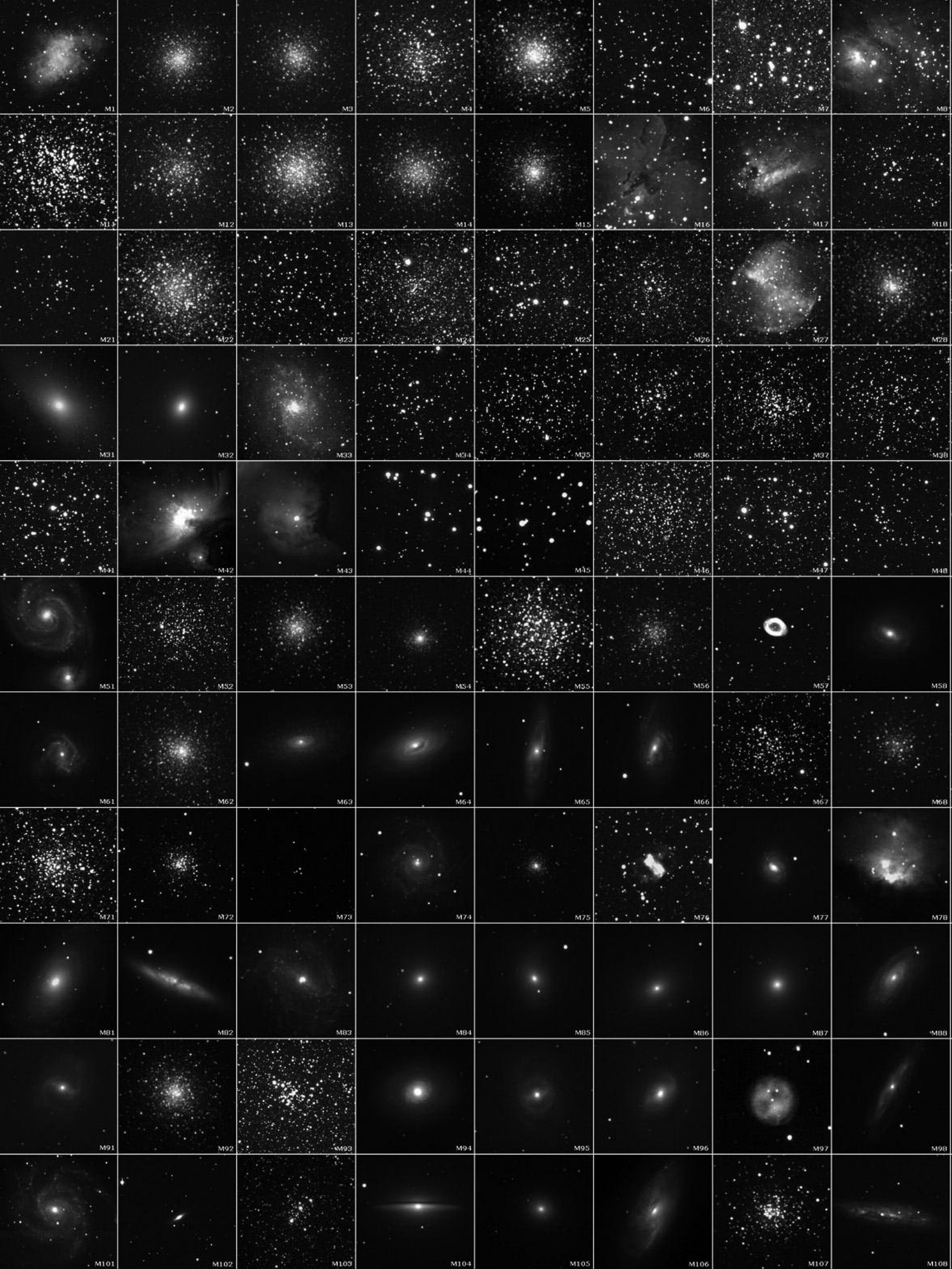


M 107 · NGC 6171 · Const Oph · Type Globular cluster · Mag 8.1 · Ext 10' · Dist 20.9 kly · Credit B.Hugo, L.Gaul/A.Block/NOAO/AURA/NSF

M 108 · NGC 3556 · Const UMa · Type Galaxy · Mag 10.1 · Ext 8x2' · Dist 46 Mly · Credit Ken Crawford

M 109 · NGC 3992 · Const UMa · Type Galaxy · Mag 9.8 · Ext 7x4' · Dist 83 Mly · Credit Jim Misti

M 110 · NGC 205 · Const And · Type Galaxy · Mag 8.0 · Ext 17x104' · Dist 2.7 Mly · Credit Johannes Schedler/Panther Obs.


M1
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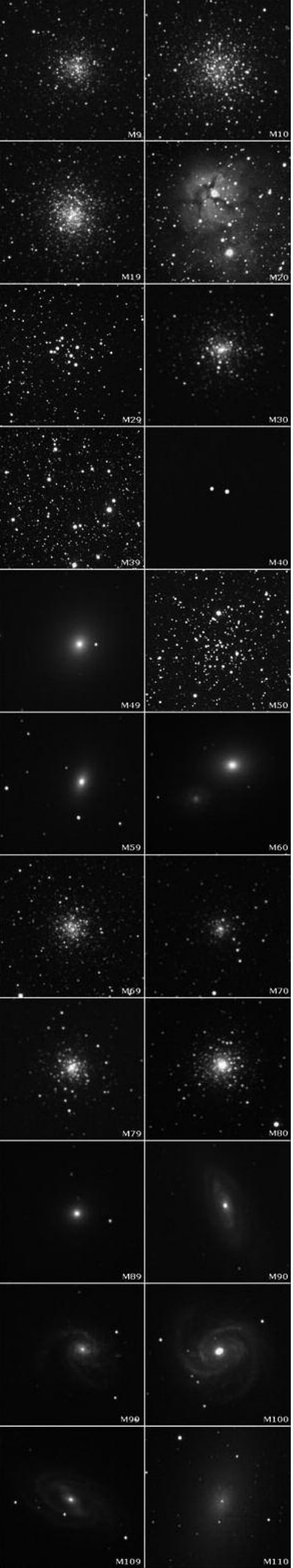

On the left a black and white summary of the Messier objects imaged by Pedro Ré

OBJECT	CONST.	R.A.	DEC.	MIDNIGHT CULMINAT.
M1	Tau	05:34.5	+22:01	Dec 14
M2	Aqr	21:33.5	-00:49	Aug 14
M3	CVn	13:42.2	+28:23	Apr 17
M4	Sco	16:23.6	-26:32	May 28
M5	Ser	15:18.6	+02:05	May 11
M6	Sco	17:40.1	-32:13	Jun 16
M7	Sco	17:53.9	-34:49	Jun 20
M8	Sgr	18:03.8	-24:23	Jun 22
M9	Oph	17:19.2	-18:31	Jun 11
M10	Oph	16:57.1	-04:06	Jun 5
M11	Sct	18:51.1	-06:16	Jul 4
M12	Oph	16:47.2	-01:57	Jun 3
M13	Her	16:41.7	+36:28	Jun 1
M14	Oph	17:37.6	-03:15	Jun 16
M15	Peg	21:30.0	+12:10	Aug 14
M16	Ser	18:18.8	-13:47	Jun 26
M17	Sgr	18:20.8	-16:11	Jun 27
M18	Sgr	18:19.9	-17:08	Jun 26
M19	Oph	17:02.6	-26:16	Jun 7
M20	Sgr	18:02.6	-23:02	Jun 22
M21	Sgr	18:04.6	-22:30	Jun 22
M22	Sgr	18:36.4	-23:54	Jun 30
M23	Sgr	17:56.8	-19:01	Jun 20
M24	Sgr	18:16.9	-18:29	Jun 26
M25	Sgr	18:31.6	-19:15	Jun 29
M26	Sct	18:45.2	-09:24	Jul 3
M27	Vul	19:59.6	+22:43	Jul 22
M28	Sgr	18:24.5	-24:52	Jun 27
M29	Cyg	20:23.9	+38:32	Jul 28
M30	Cap	21:40.4	-23:11	Aug 16
M31	And	00:42.7	+41:16	Oct 1
M32	And	00:42.7	+40:52	Oct 1
M33	Tri	01:33.9	+30:39	Oct 14
M34	Per	02:42.0	+42:47	Nov 1
M35	Gem	06:08.9	+24:20	Dec 23
M36	Aur	05:36.1	+34:08	Dec 15
M37	Aur	05:52.4	+32:33	Dec 19
M38	Aur	05:28.4	+35:50	Dec 13
M39	Cyg	21:32.2	+48:26	Aug 14
M40	UMa	12:22.4	+58:05	Mar 28
M41	CMa	06:46.0	-20:44	Jan 1
M42	Ori	05:35.4	-05:27	Dec 15
M43	Ori	05:35.6	-05:16	Dec 15
M44	Cnc	08:40.1	+19:59	Jan 30
M45	Tau	03:47.0	+24:07	Nov 17
M46	Pup	07:41.8	-14:49	Jan 15
M47	Pup	07:36.6	-14:30	Jan 14
M48	Hya	08:13.8	-05:48	Jan 24
M49	Vir	12:29.8	+08:00	Mar 30
M50	Mon	07:03.2	-08:20	Jan 6
M51	CVn	13:29.9	+47:12	Apr 14
M52	Cas	23:24.2	+61:35	Sep 11
M53	Com	13:12.9	+18:10	Apr 9
M54	Sgr	18:55.1	-30:29	Jul 5
M55	Sgr	19:40.0	-30:58	Jul 17

OBJECT	CONST.	R.A.	DEC.	MIDNIGHT CULMINAT.
M56	Lyr	19:16.6	+30:11	Jul 11
M57	Lyr	18:53.6	+33:02	Jul 5
M58	Vir	12:37.7	+11:49	Apr 1
M59	Vir	12:42.0	+11:39	Apr 2
M60	Vir	12:43.7	+11:33	Apr 2
M61	Vir	12:21.9	+04:28	Mar 28
M62	Oph	17:01.2	-30:07	Jun 6
M63	CVn	13:15.8	+42:02	Apr 10
M64	Com	12:56.7	+21:41	Apr 5
M65	Leo	11:18.9	+13:05	Mar 12
M66	Leo	11:20.2	+12:59	Mar 12
M67	Cnc	08:50.4	+11:49	Feb 2
M68	Hya	12:39.5	-26:45	Apr 1
M69	Sgr	18:31.4	-32:21	Jun 29
M70	Sgr	18:43.2	-32:18	Jul 2
M71	Sge	19:53.8	+18:47	Jul 20
M72	Aqr	20:53.5	-12:32	Aug 4
M73	Aqr	20:58.9	-12:38	Aug 6
M74	Psc	01:36.7	+15:47	Oct 15
M75	Sgr	20:06.1	-21:55	Jul 23
M76	Per	01:42.4	+51:34	Oct 17
M77	Cet	02:42.7	-00:01	Nov 1
M78	Ori	05:46.7	+00:03	Dec 18
M79	Lep	05:24.5	-24:33	Dec 12
M80	Sco	16:17.0	-22:59	May 26
M81	UMa	09:55.6	+69:04	Feb 18
M82	UMa	09:55.8	+69:41	Feb 18
M83	Hya	13:37.0	-29:52	Apr 16
M84	Vir	12:25.1	+12:53	Mar 28
M85	Com	12:25.4	+18:11	Mar 28
M86	Vir	12:26.2	+12:57	Mar 29
M87	Vir	12:30.8	+12:24	Mar 30
M88	Com	12:32.0	+14:25	Mar 30
M89	Vir	12:35.7	+12:33	Mar 31
M90	Vir	12:36.8	+13:10	Mar 31
M91	Com	12:35.4	+14:30	Mar 31
M92	Her	17:17.1	+43:08	Jun 10
M93	Pup	07:44.6	-23:52	Jan 16
M94	CVn	12:50.9	+41:07	Apr 4
M95	Leo	10:44.0	+11:42	Mar 3
M96	Leo	10:46.8	+11:49	Mar 3
M97	UMa	11:14.8	+55:01	Mar 10
M98	Com	12:13.8	+14:54	Mar 25
M99	Com	12:18.8	+14:25	Mar 27
M100	Com	12:22.9	+15:49	Mar 28
M101	UMa	14:03.2	+54:21	Apr 22
M102	Dra	15:06.5	+55:46	May 8
M103	Cas	01:33.2	+60:42	Oct 14
M104	Vir	12:40.0	-11:37	Apr 1
M105	Leo	10:47.8	+12:35	Mar 4
M106	CVn	12:19.0	+47:18	Mar 27
M107	Oph	16:32.5	-13:03	May 30
M108	UMa	11:11.5	+55:40	Mar 10
M109	UMa	11:57.6	+53:23	Mar 21
M110	And	00:40.4	+41:41	Oct 1