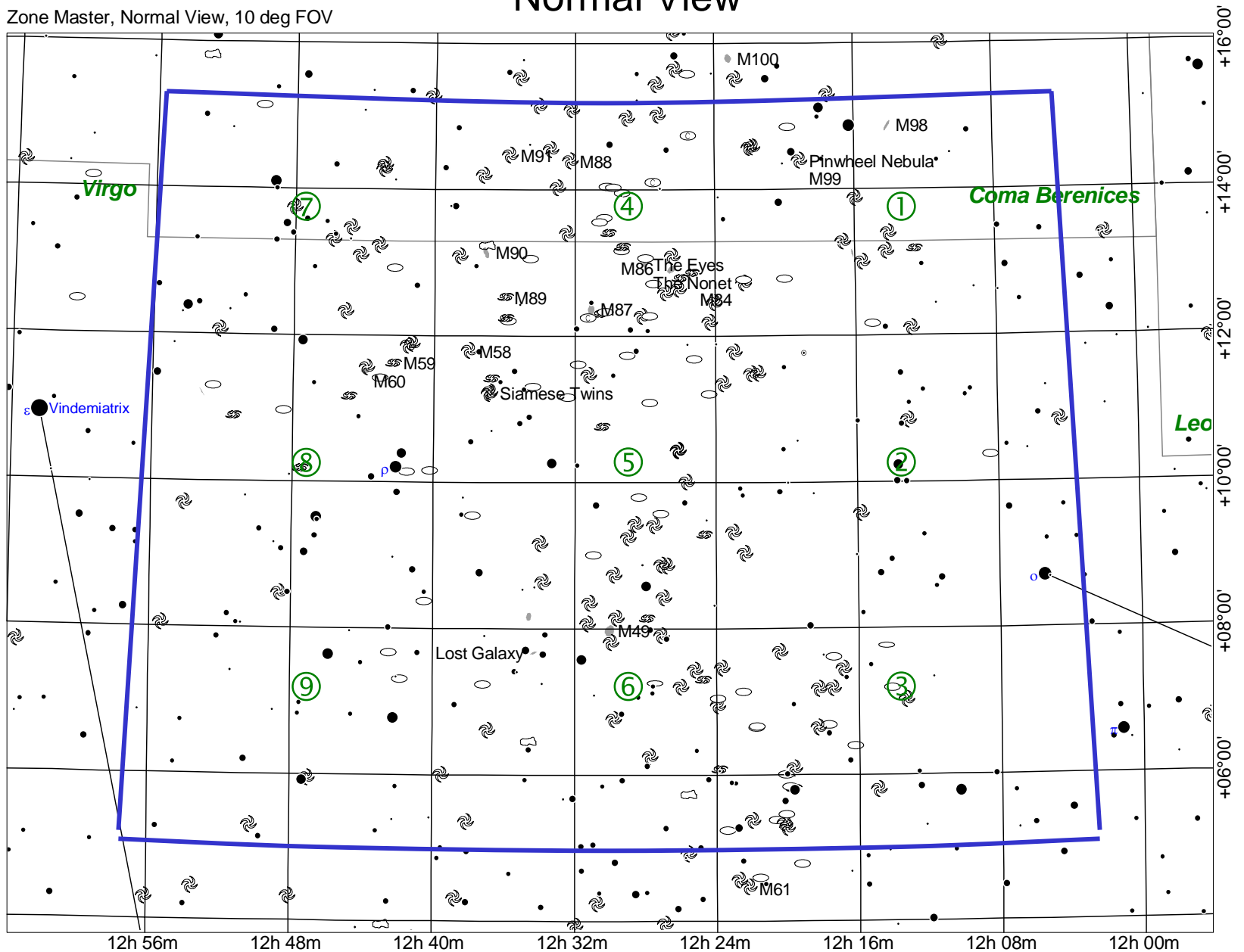


# Zone 166, Master Map

## Normal View

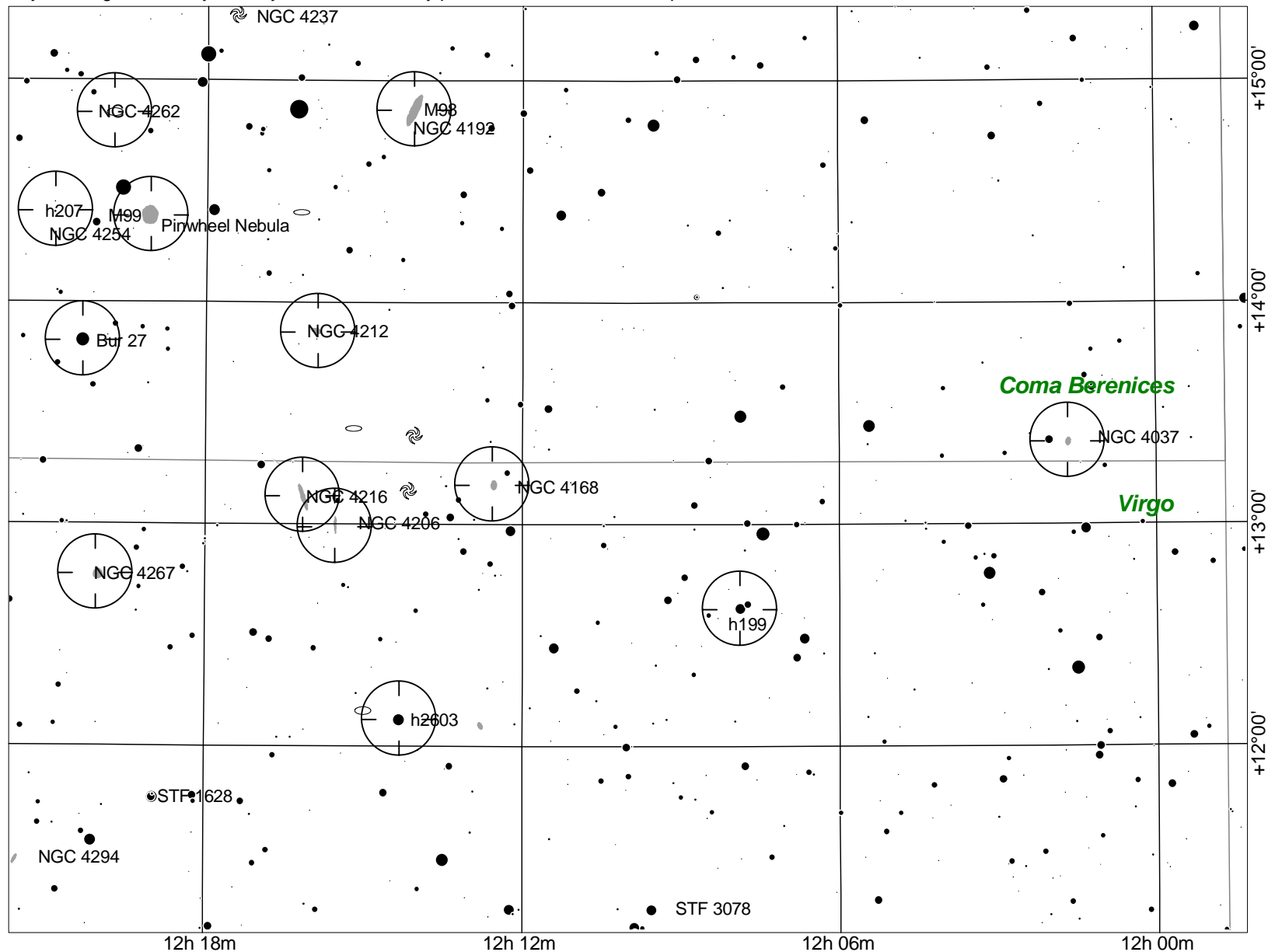
Zone Master, Normal View, 10 deg FOV



# Zone 166, Map 1

## Normal Image

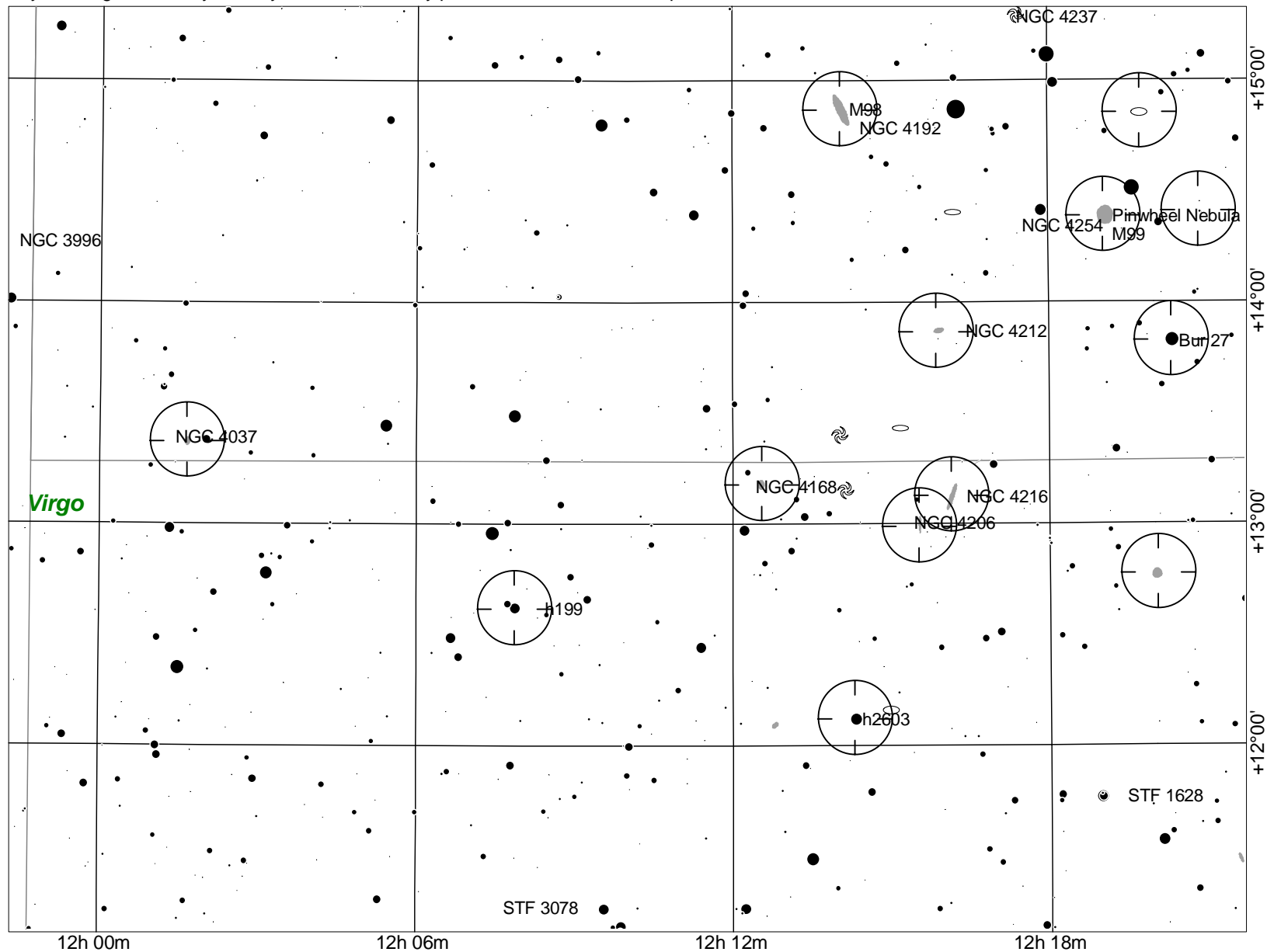
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 1

## Mirror Image

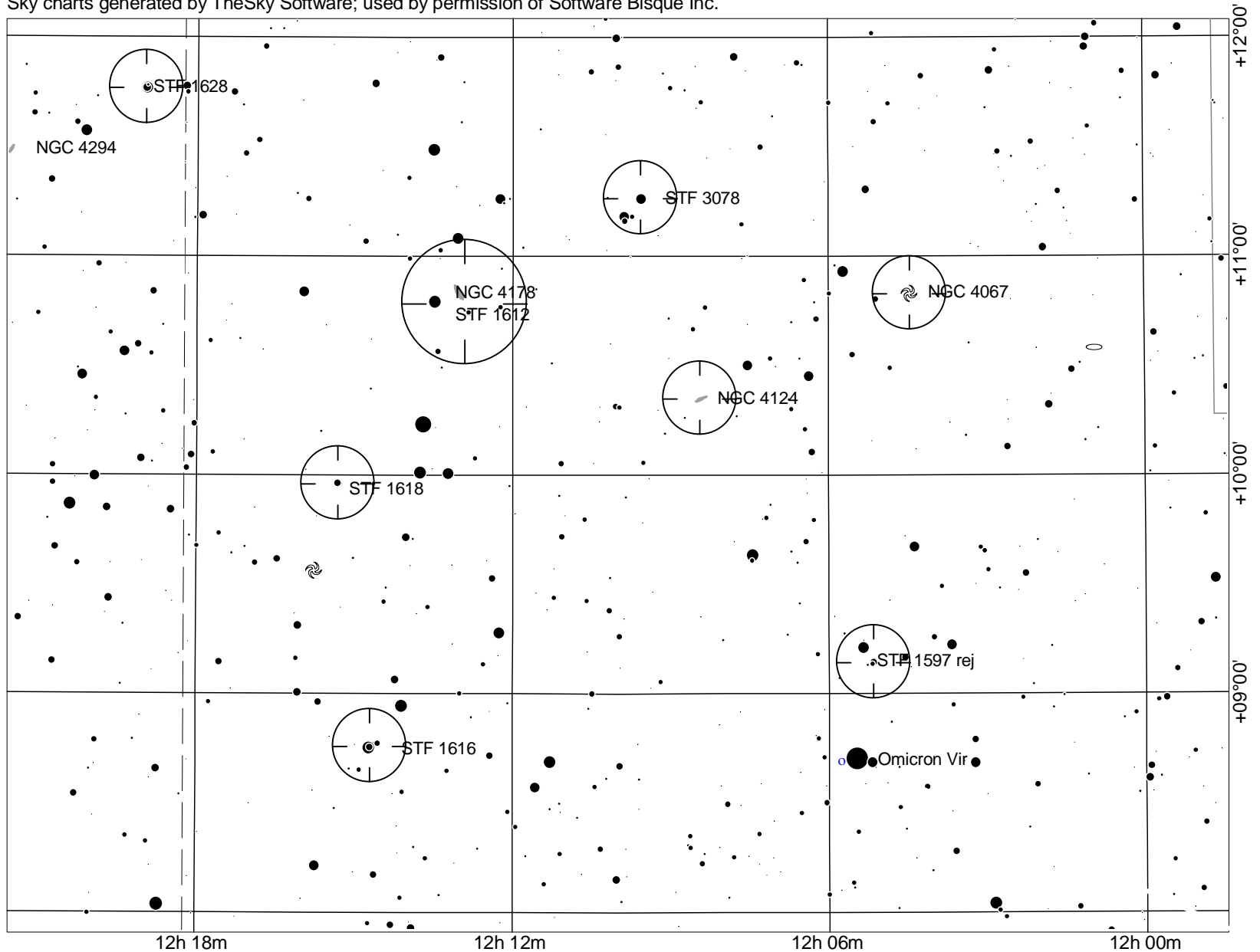
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 2

## Normal Image

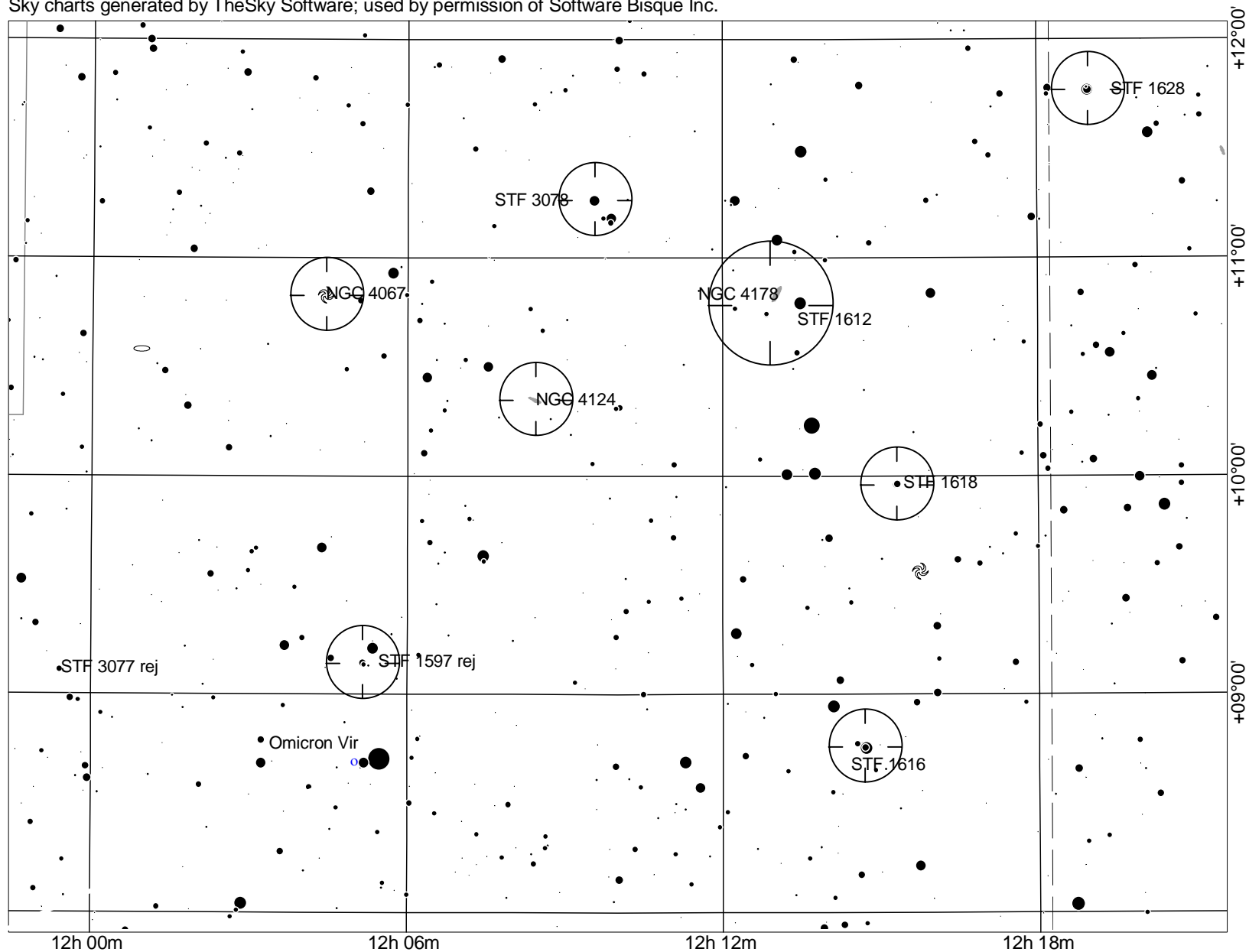
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 2

## Mirror Image

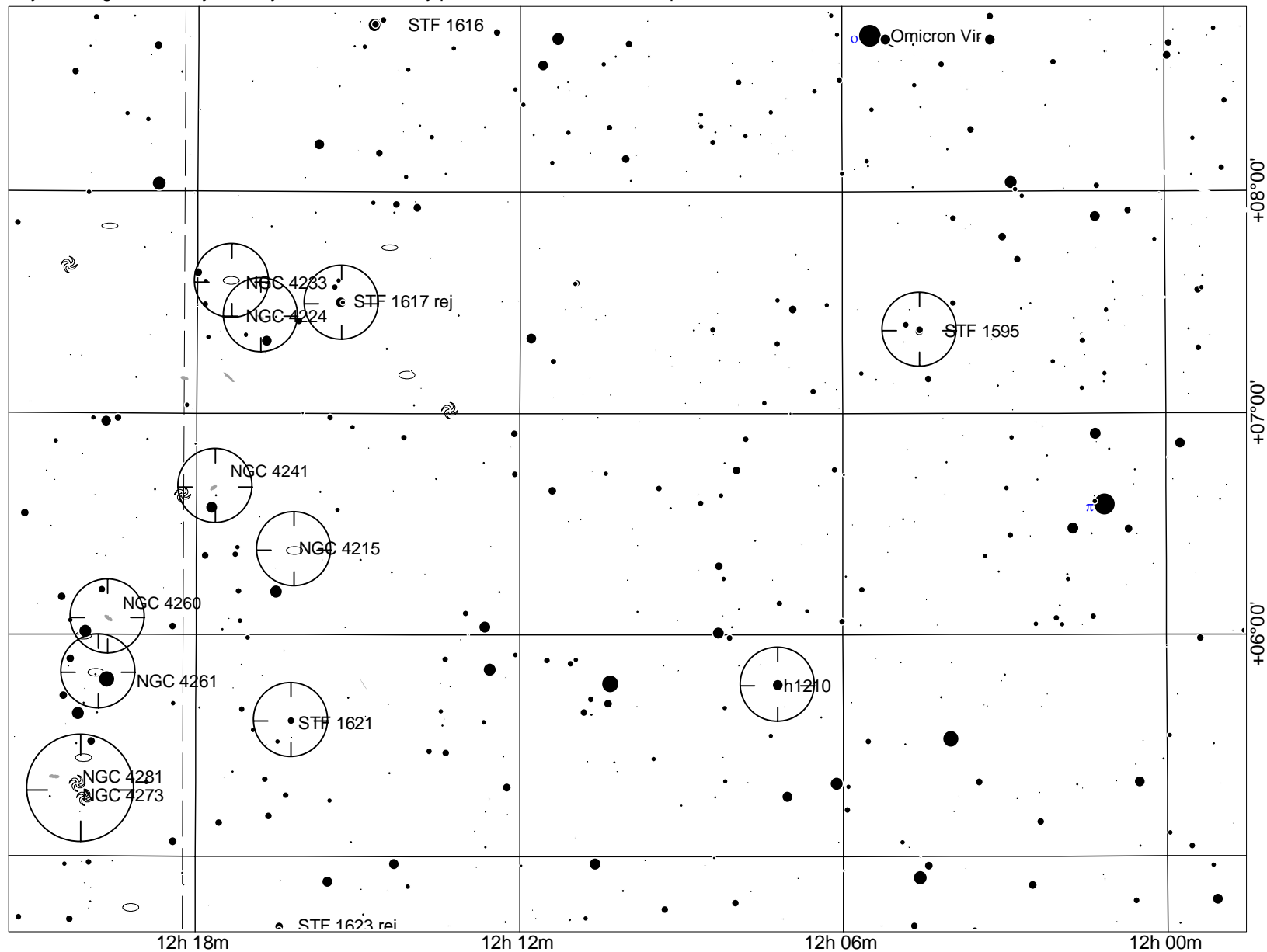
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 3

## Normal Image

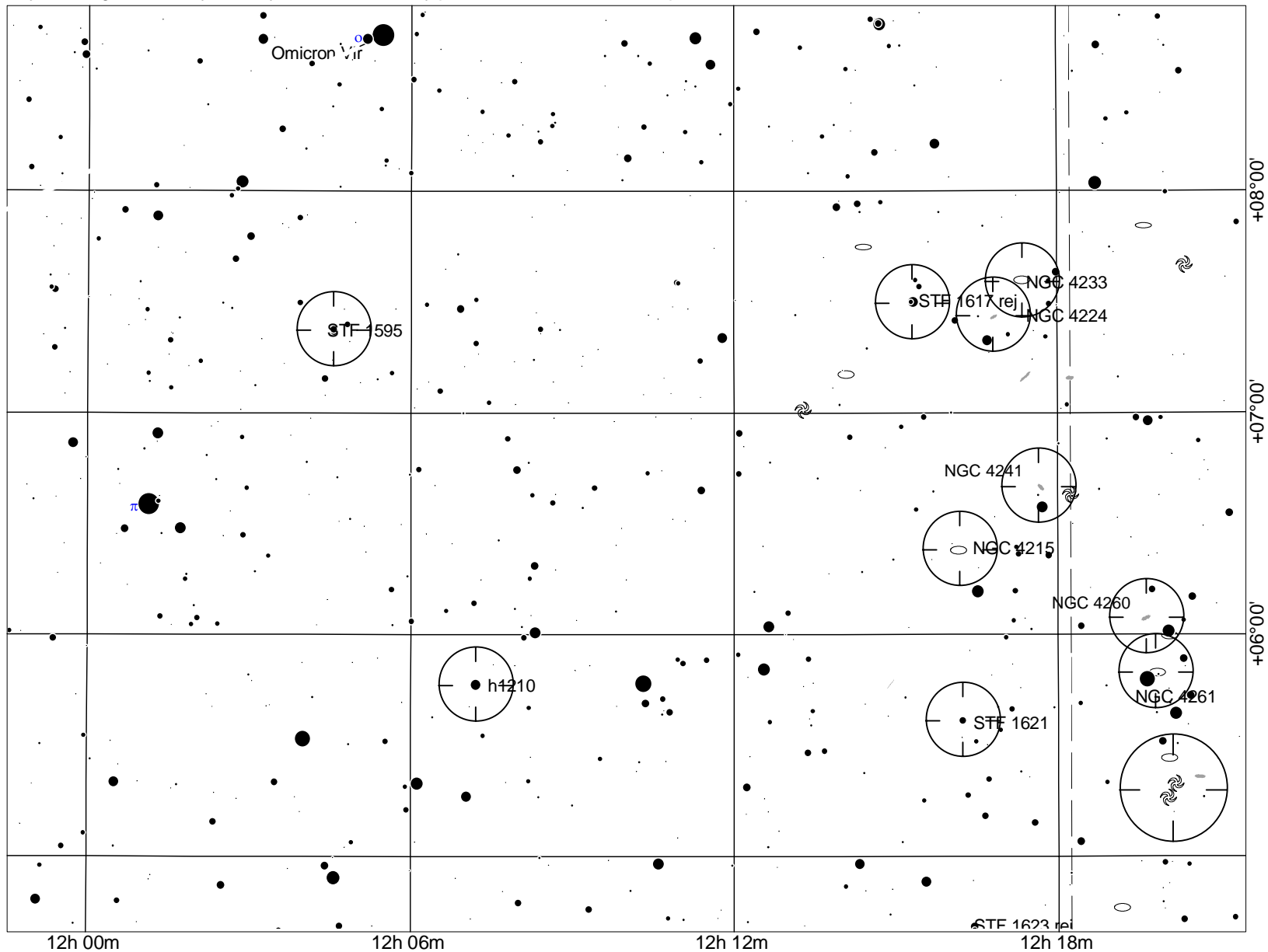
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 3

## Mirror Image

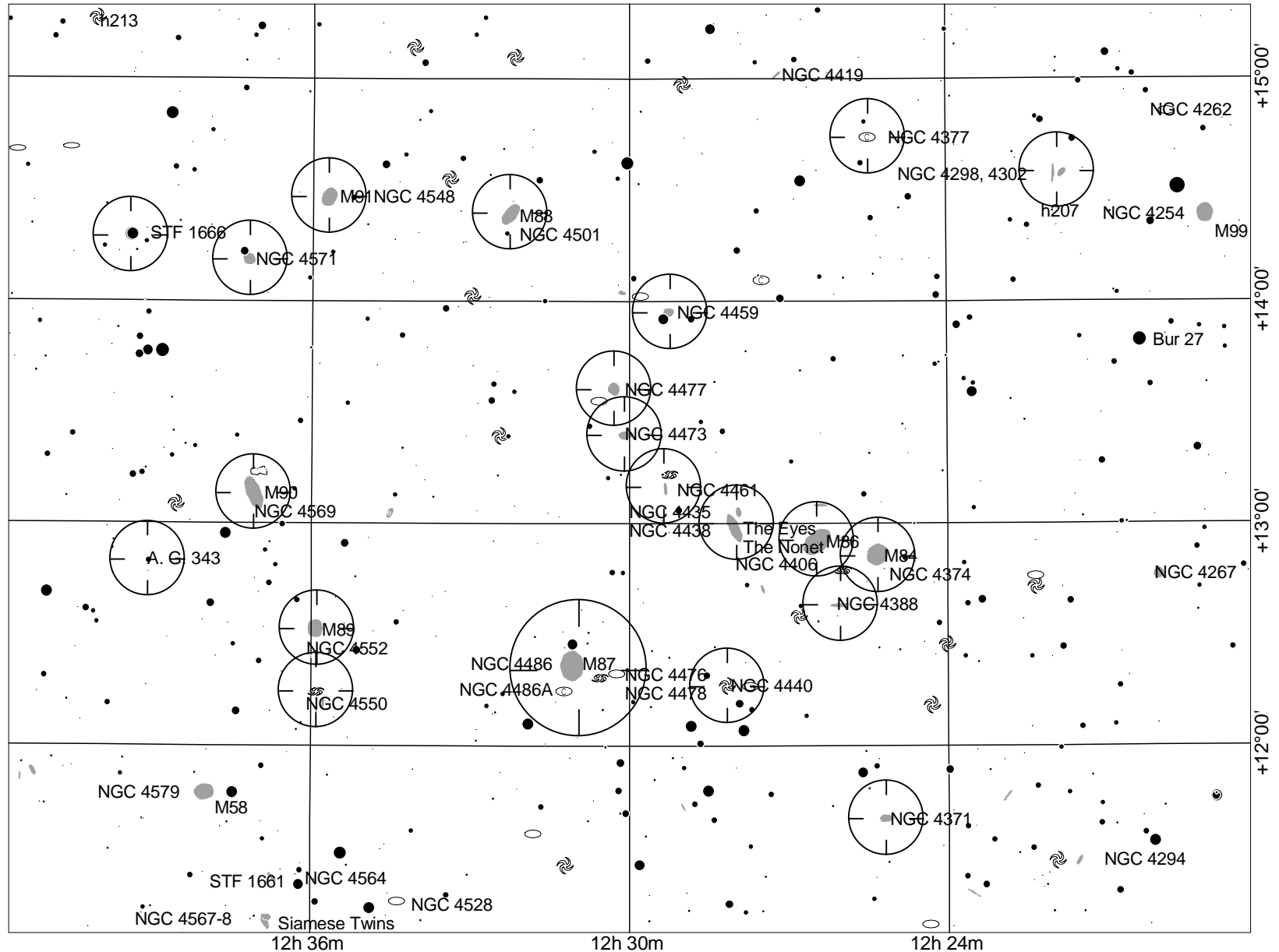
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 4

## Normal Image

Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.

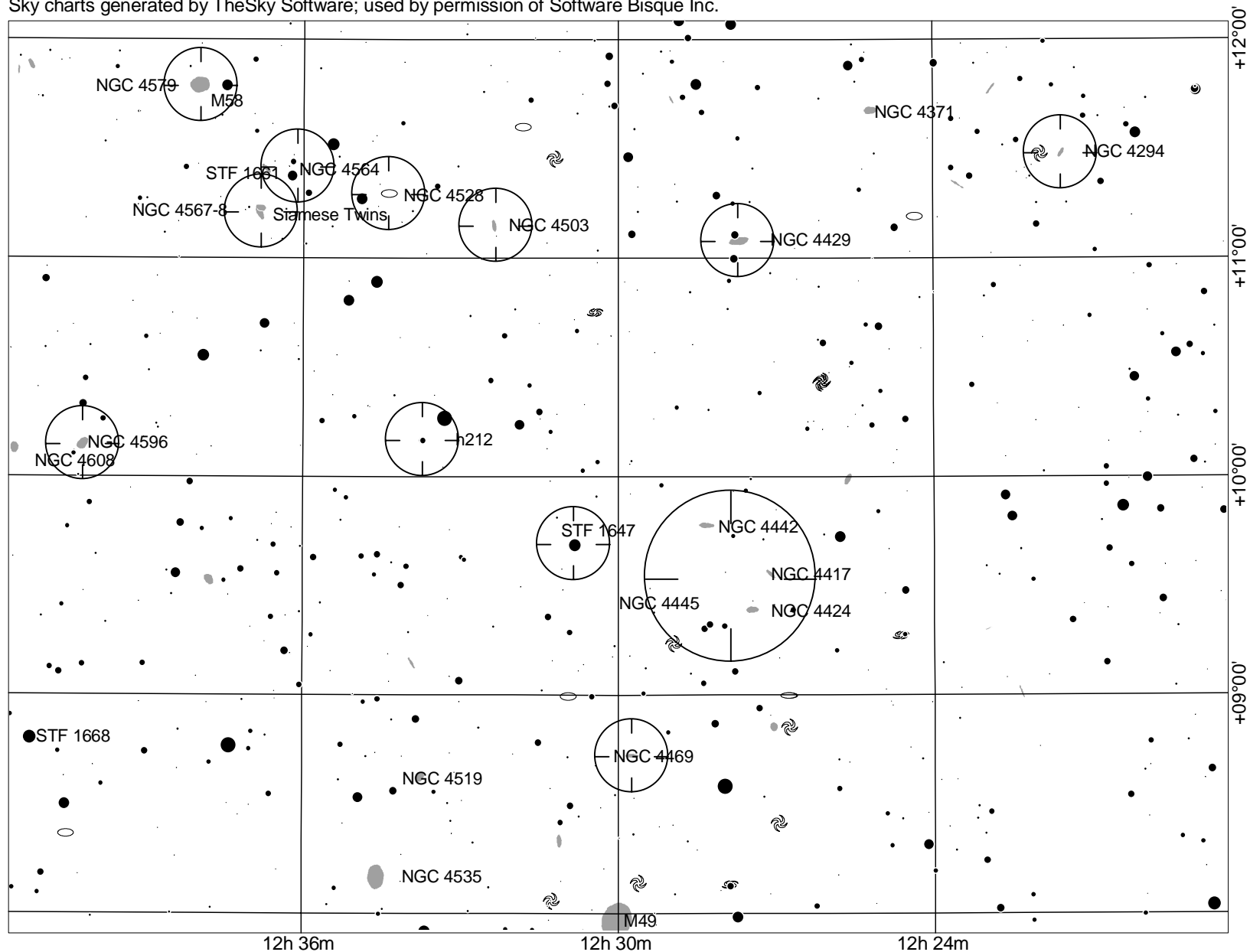




# Zone 166, Map 5

## Normal Image

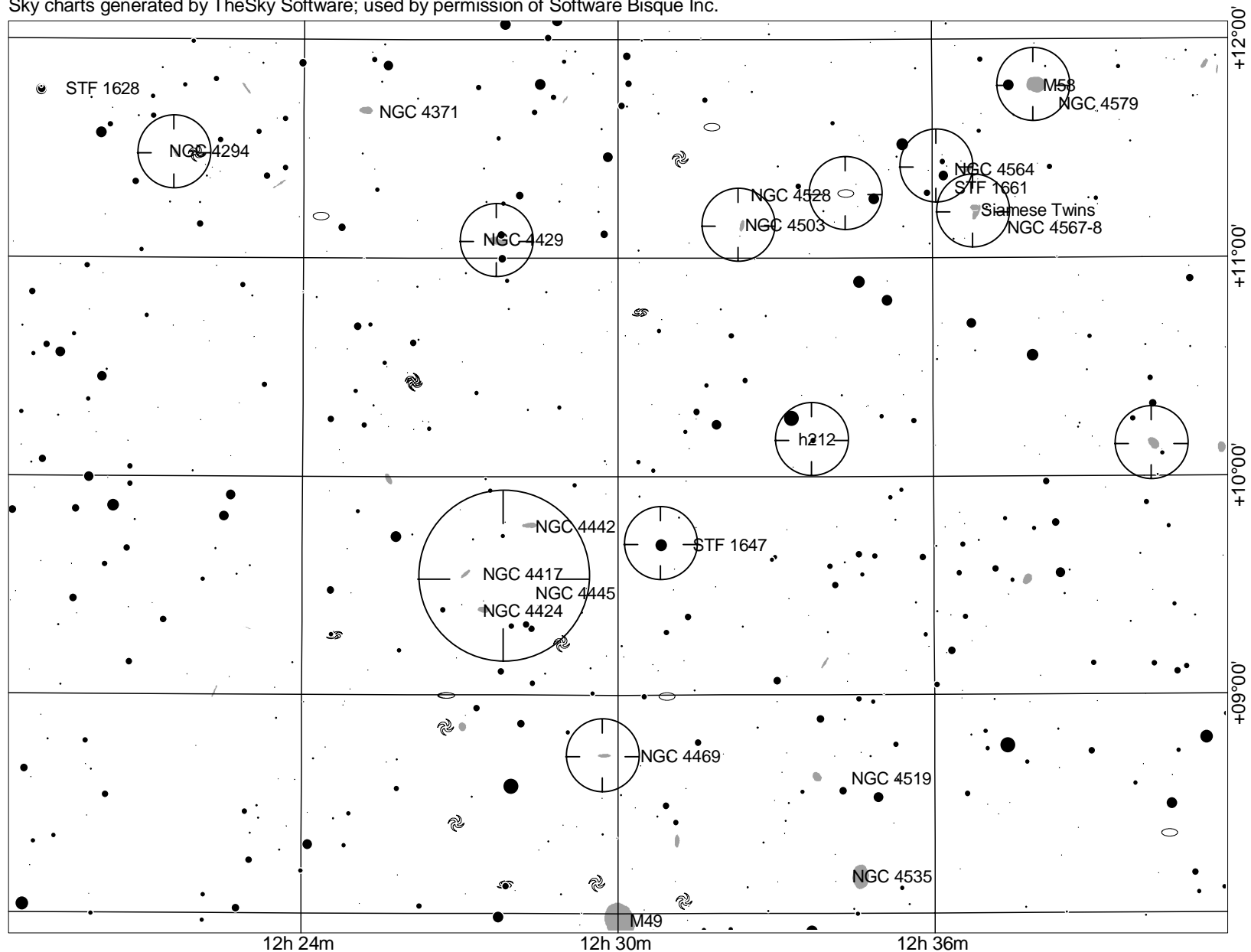
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 5

## Mirror Image

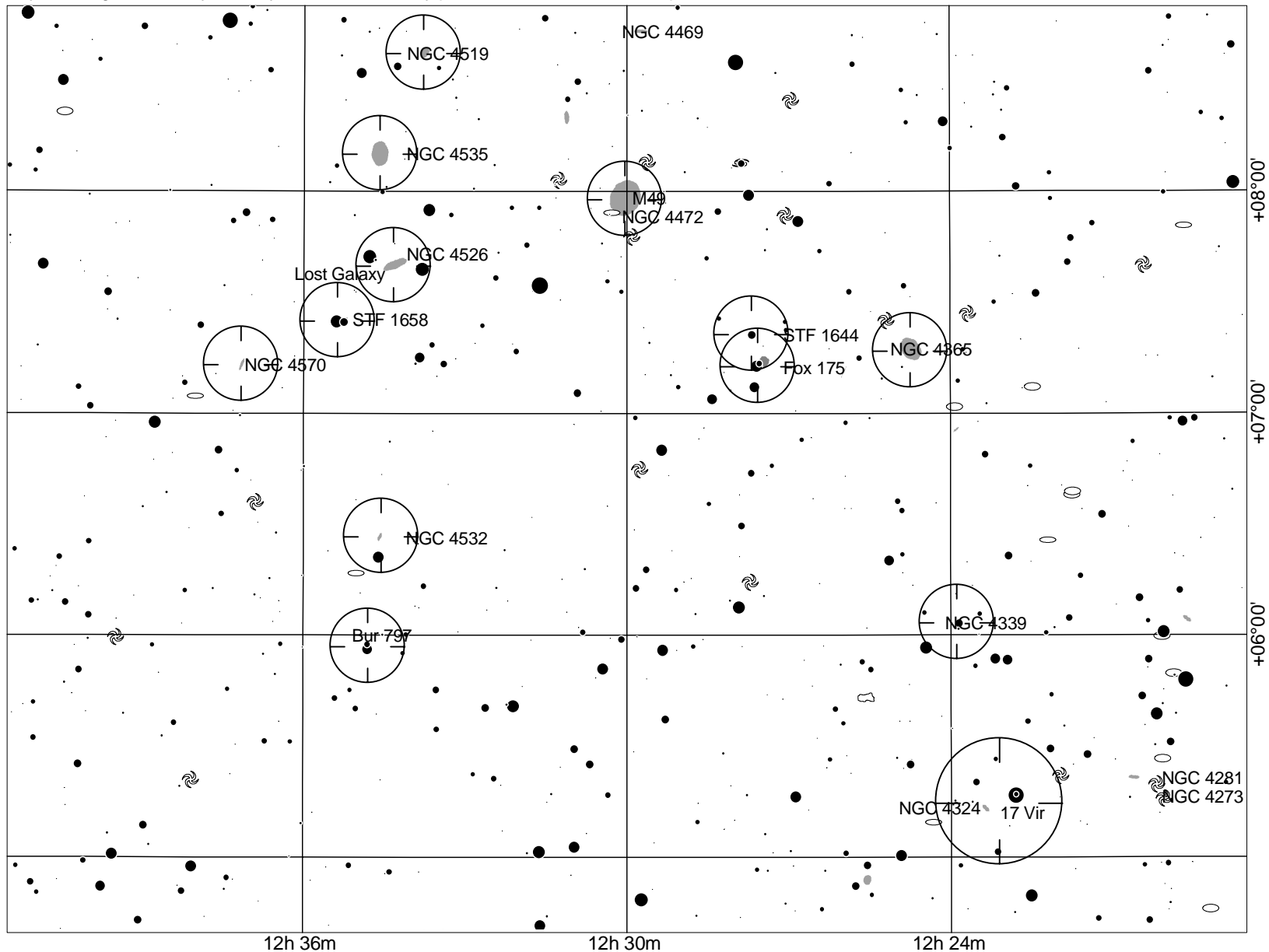
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 6

## Normal Image

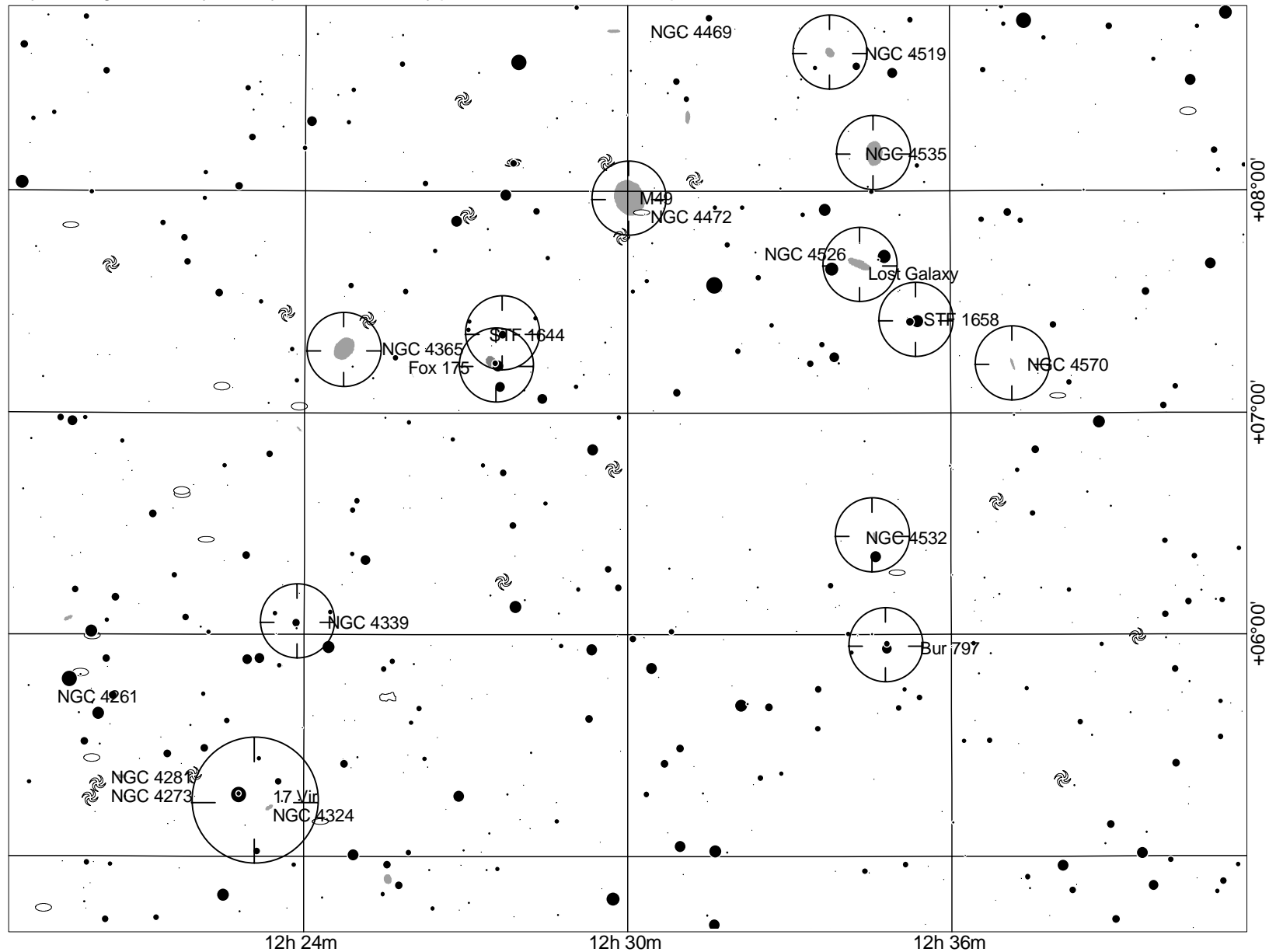
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 6

## Mirror Image

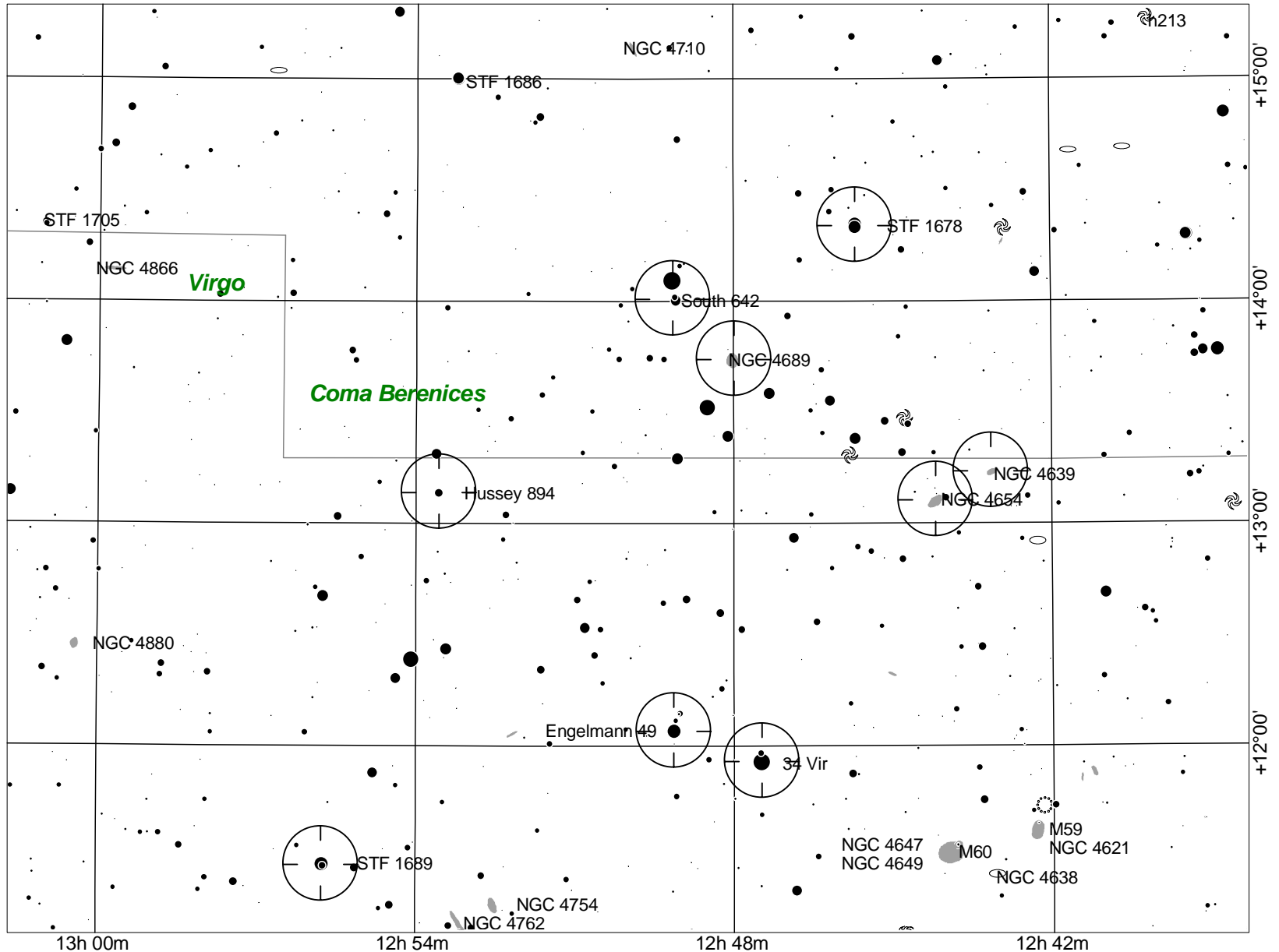
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 7

## Normal Image

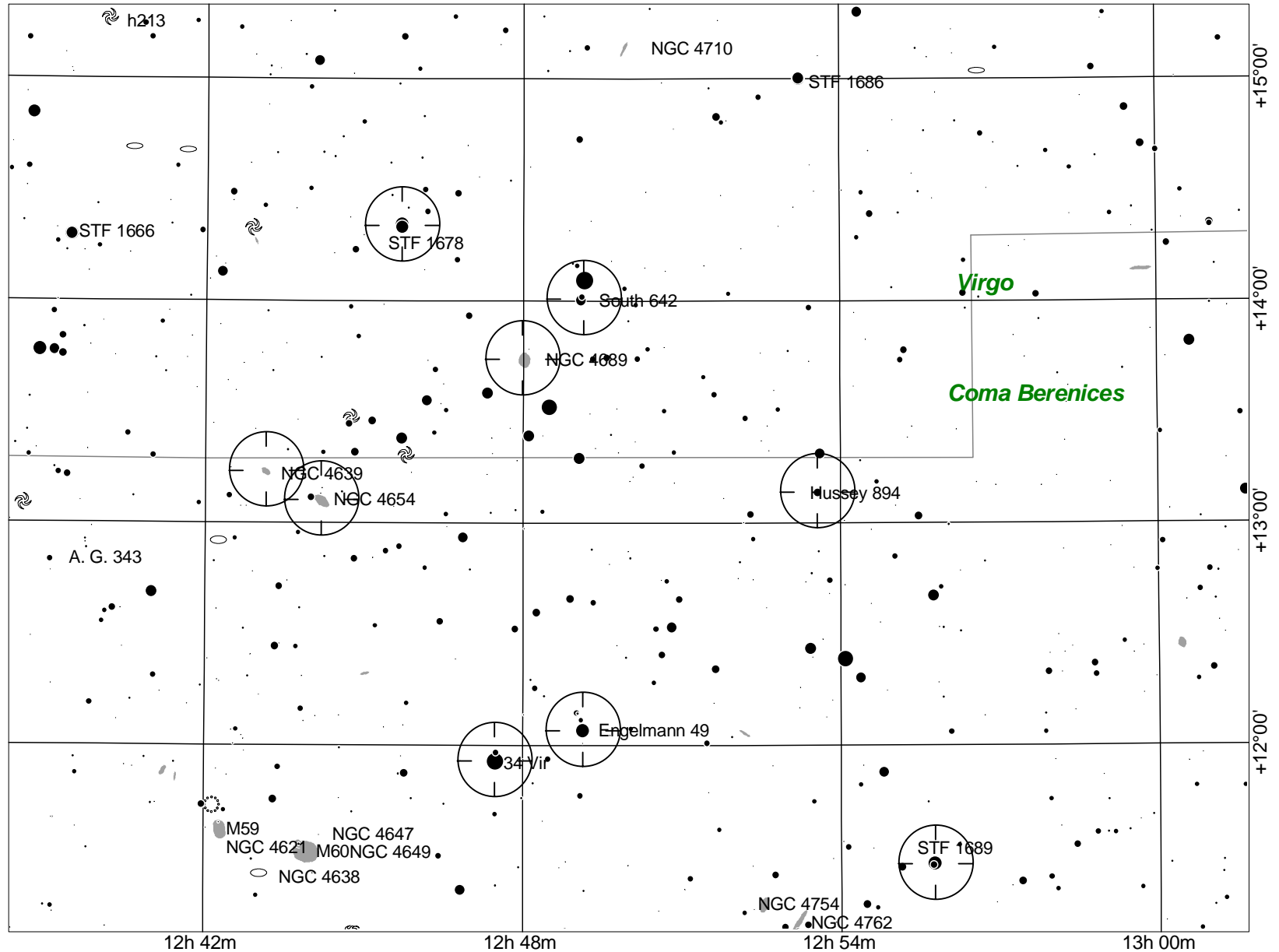
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 7

## Mirror Image

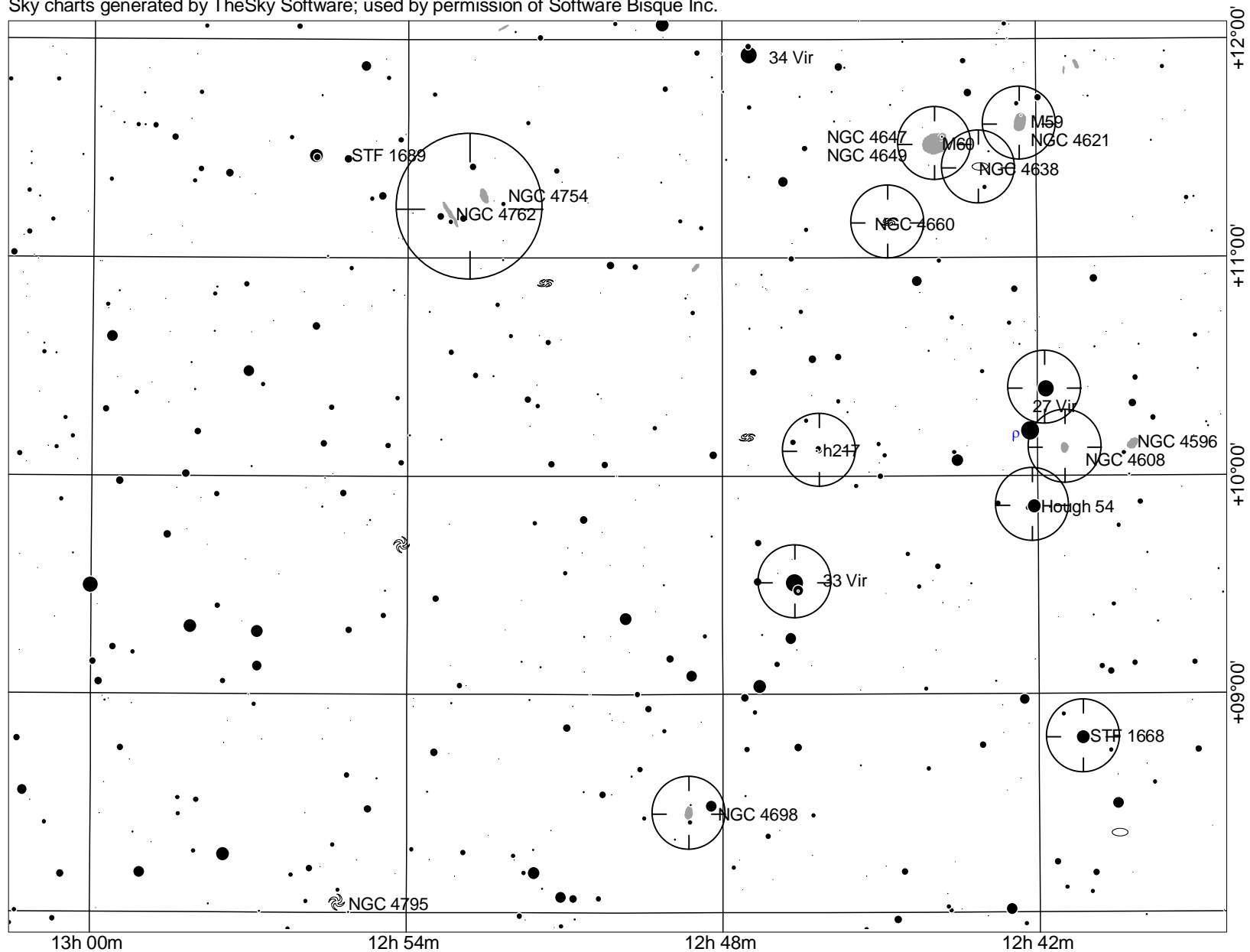
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 8

## Normal Image

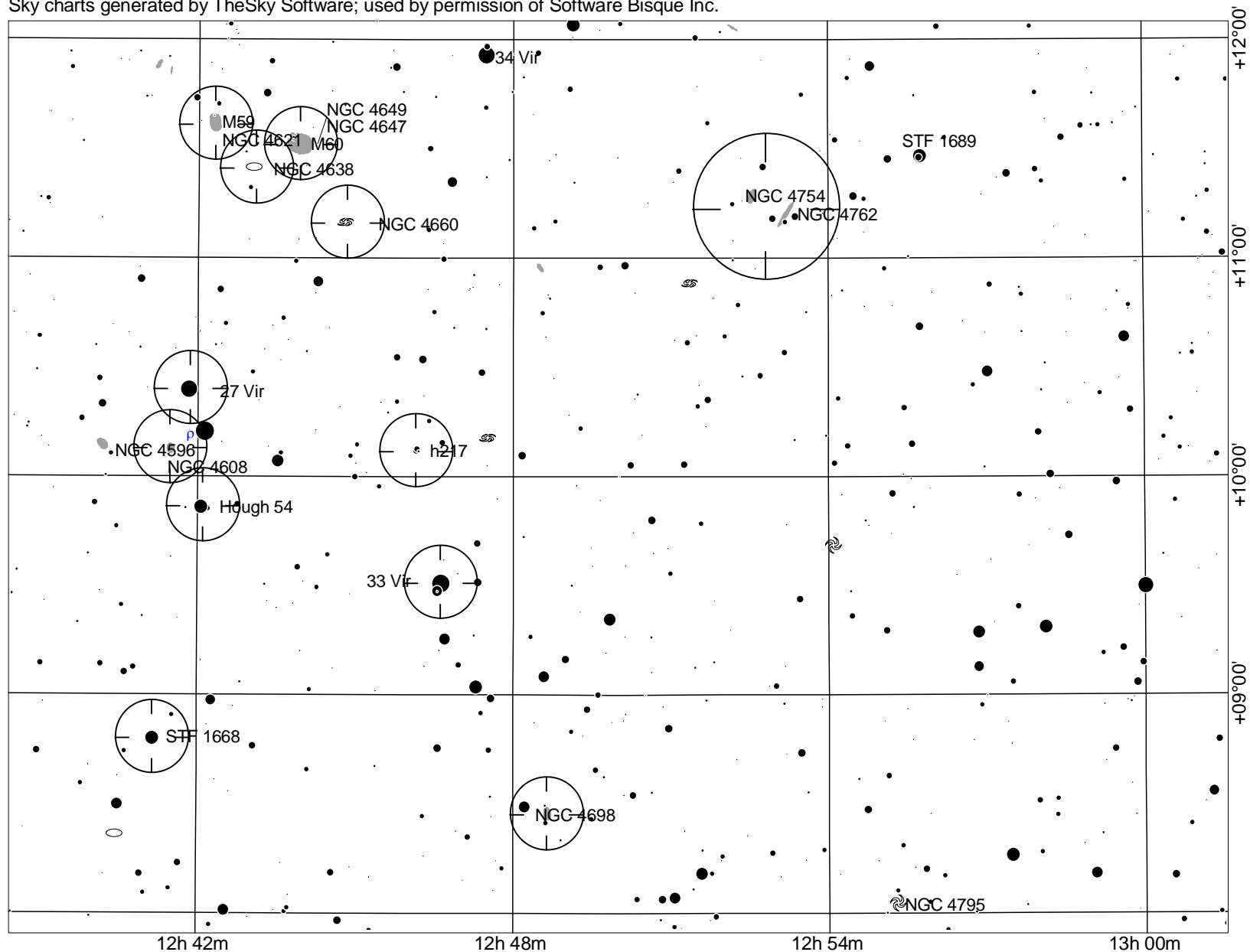
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 8

## Mirror Image

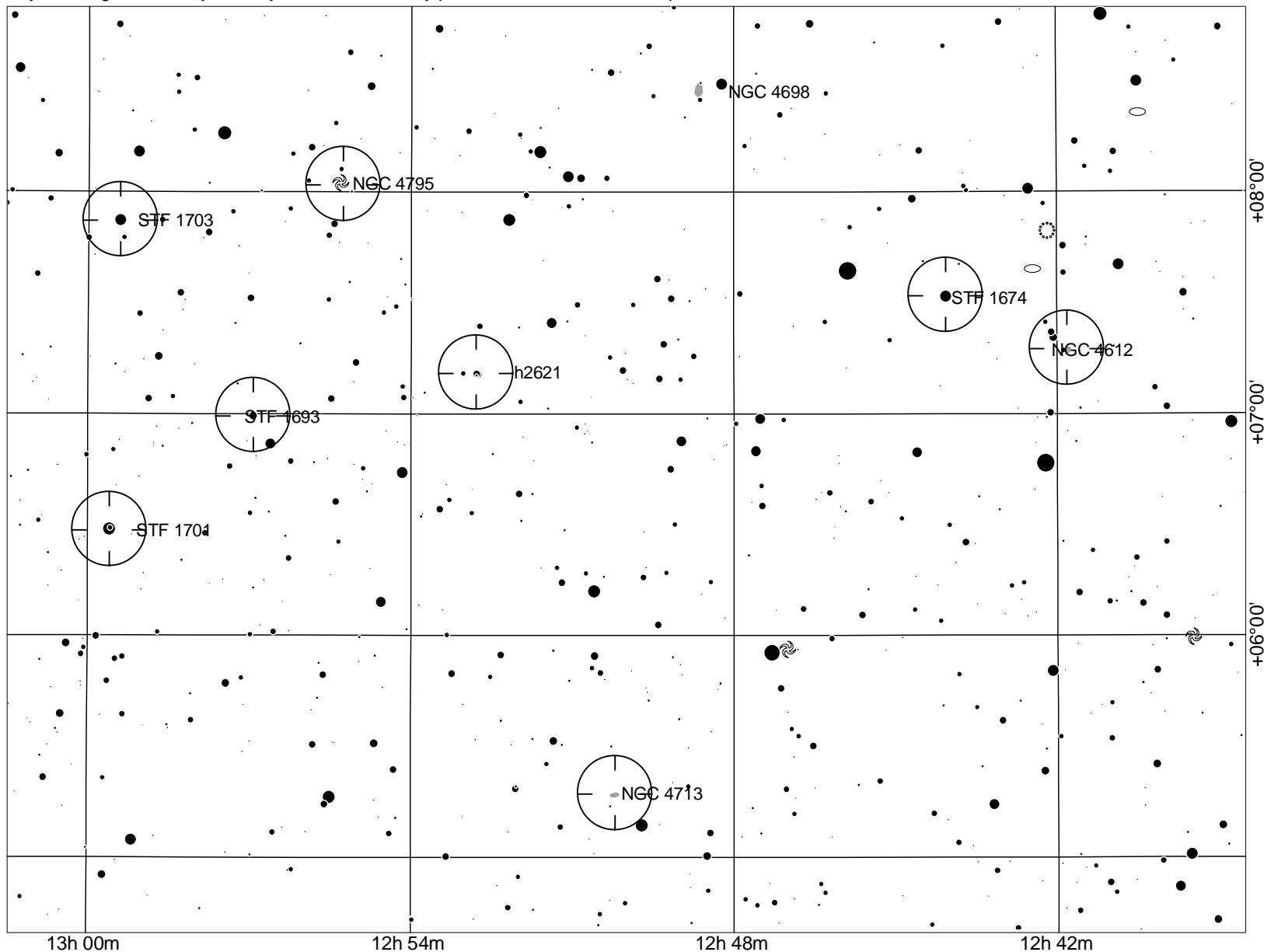
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 9

## Normal Image

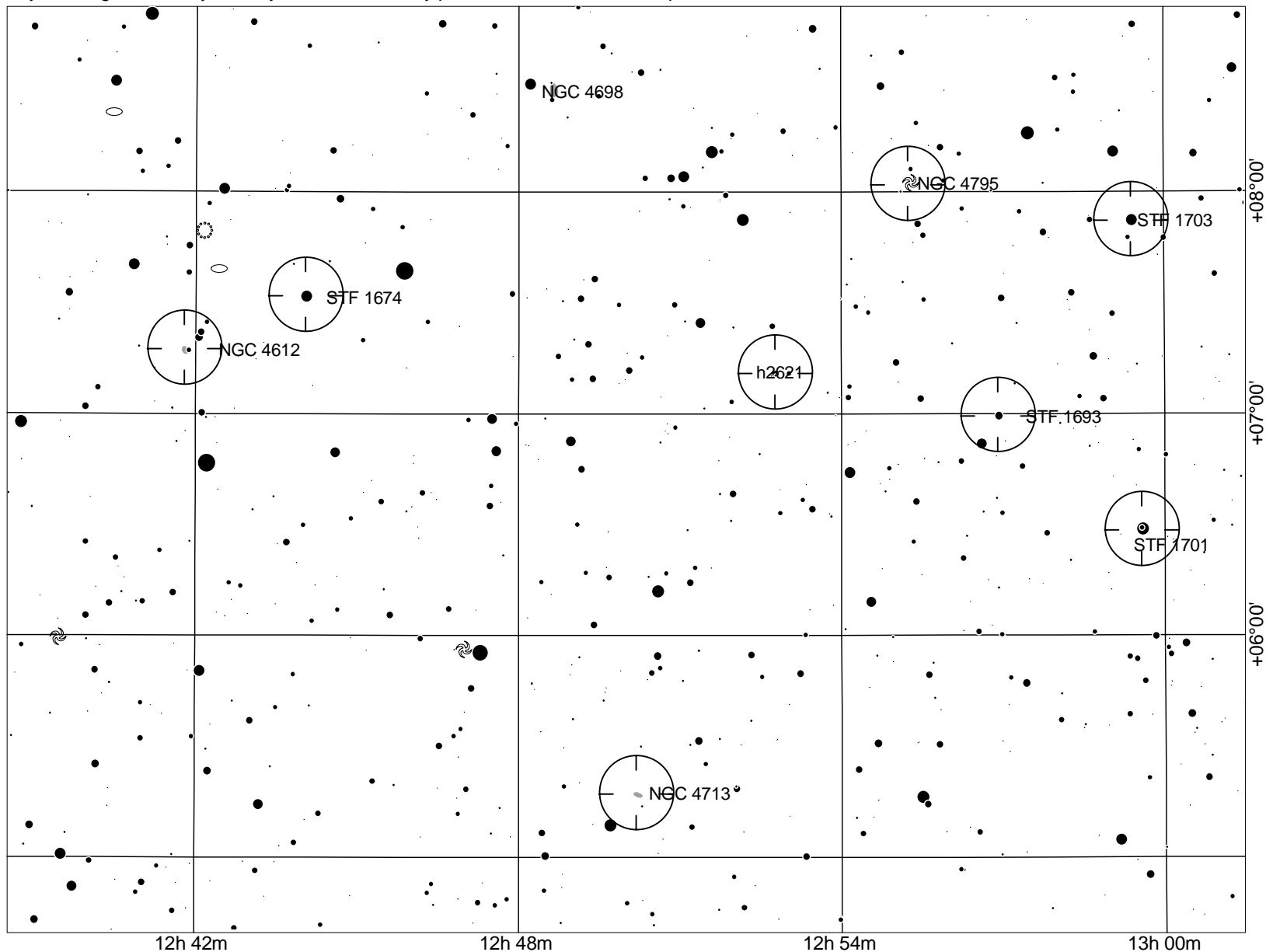
Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166, Map 9

## Mirror Image

Sky charts generated by TheSky Software; used by permission of Software Bisque Inc.



# Zone 166

1 Reference Star, 40 Double Stars, 80 Galaxies

## *Flamsteed*

17 Vir .....	51
27 Vir .....	66
33 Vir .....	65
34 Vir .....	61

## *A*

A. G. 343 .....	23
-----------------	----

## *B*

Bur 27 .....	4
Bur 797 .....	52

## *E*

Engelmann 49 .....	62
--------------------	----

## *F*

Fox 175 .....	52
---------------	----

## *H*

h1210 .....	17
h199 .....	3
h207 .....	3
h212 .....	41
h217 .....	67
h2603 .....	4
h2621 .....	75
Hough 54 .....	65
Hussey 894 .....	62

## *N*

NGC 4037 .....	8
NGC 4067 .....	14
NGC 4124 .....	15

NGC 4168 .....	8
NGC 4178 .....	15
NGC 4192 .....	6
NGC 4206 .....	9
NGC 4212 .....	9
NGC 4215 .....	18
NGC 4216 .....	7
NGC 4224 .....	19
NGC 4233 .....	20
NGC 4241 .....	21
NGC 4254 .....	5
NGC 4260 .....	21
NGC 4261 .....	19
NGC 4262 .....	10
NGC 4267 .....	9
NGC 4273 .....	21
NGC 4281 .....	20
NGC 4294 .....	45
NGC 4298, 4302 .....	39
NGC 4324 .....	58
NGC 4339 .....	57
NGC 4365 .....	55
NGC 4371 .....	35
NGC 4374 .....	23
NGC 4377 .....	36
NGC 4388 .....	30
NGC 4406 .....	25
NGC 4417 .....	45
NGC 4424 .....	48
NGC 4429 .....	43
NGC 4435 .....	33
NGC 4438 .....	34
NGC 4440 .....	36

NGC 4442.....	46	NGC 4654.....	63
NGC 4445.....	49	NGC 4660.....	70
NGC 4459.....	34	NGC 4689.....	64
NGC 4461.....	32	NGC 4698.....	70
NGC 4469.....	49	NGC 4713.....	77
NGC 4472.....	54	NGC 4754.....	73
NGC 4473.....	37	NGC 4762.....	71
NGC 4476.....	37	NGC 4795.....	76
NGC 4477.....	35		
NGC 4478.....	32	<b>O</b>	
NGC 4486.....	26	Omicron Vir.....	16
NGC 4486A.....	36		
NGC 4501.....	28	<b>S</b>	
NGC 4503.....	49	South 642.....	61
NGC 4519.....	58	STF 1595.....	16
NGC 4526.....	56	STF 1597 rej.....	12
NGC 4528.....	47	STF 1612.....	14
NGC 4532.....	57	STF 1616.....	11
NGC 4535.....	59	STF 1617 rej.....	17
NGC 4548.....	38	STF 1618.....	11
NGC 4550.....	38	STF 1621.....	18
NGC 4552.....	30	STF 1628.....	13
NGC 4564.....	50	STF 1644.....	51
NGC 4567, 4568.....	44	STF 1647.....	41
NGC 4569.....	33	STF 1658.....	53
NGC 4570.....	59	STF 1661.....	42
NGC 4571.....	39	STF 1666.....	22
NGC 4579.....	47	STF 1668.....	67
NGC 4596.....	46	STF 1674.....	74
NGC 4608.....	69	STF 1678.....	60
NGC 4612.....	77	STF 1689.....	60
NGC 4621.....	72	STF 1693.....	76
NGC 4638.....	71	STF 1701.....	74
NGC 4639.....	63	STF 1703.....	75
NGC 4647.....	72	STF 3078.....	12
NGC 4649.....	68		

**Zone 166, Map 1****Double Stars***Easy***h207****Rating: 5 E****Position: 1221+1426**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	11.18	—	—	—		W
B	10.95	24.4 +	100 =	1991		W

**Notes:**

1899: 23.3 @ 100. 7 measurements.

**Observations:**

C8 at 104x. It is faint and blown away by a 9m star 10 min W.

*Moderate***h199****Rating: 5 M****HD 105322; SAO 99954****Position: 1208+1239**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	8.77	—	—	—	F2	W
B	12.83	17.6 +	75 -	1925		?

**Notes:**

1904: 17.4 @ 77. 3 measurements.

**Observations:**

C8 at 104x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 12.2 inches.

Separation: AB = X=65.9 miles.

Distance (LY): 2,400

Total luminosity (Suns): 103

**h2603****Rating: 5 M****HD 106349; SAO 100002****Position: 1214+1209**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	7.99	—	—	—	K0	Y
B	13.86	24.8 +	16 -	1989		W

**Notes:**

1904: 24.0 @ 17. 4 measurements.

**Observations:**

C8 at 104x.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 24.3 inches.

Separation: AB = 24.0 miles.

Distance (LY): 620

Total luminosity (Suns): 20.08

*Difficult***Bur 27****Rating: 4 D****ADS 8514; HD 107288; SAO 100048****Position: 1220+1351**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	6.94	—	—	—	K0 III	Y
B	10.80	3.6 +	108 -	2000		?

**Notes:**

1875: 3.5 @ 111. 26 measurements.

**Observations:**

C8 at 280x.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 46.2 inches.

Separation: AB = 2.67 miles.

Distance (LY): 477

Total luminosity (Suns): 32

<b>Deep Sky Objects</b>
-------------------------

*Moderate*

<b>NGC 4254</b>	<b>Rating: 3 M</b>
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Other Names: Pinwheel Nebula; UGC 7345, M99  
 Astronomical League Program: Messier Club

**Position: 1219+1425**

Type: Gal	Class: SA(s)c I-II	Magnitude: 10.4
Surface brightness: 13.0	Dimensions: 5' x 4'	

**Notes:**

It was discovered by P. Mechain on March 15, 1781, the same year Messier added it to his catalog (April 13). (Mechain also discovered M98 that same night.)

It is 95,000 light years in diameter and has about 50 billion solar masses.

This galaxy produced supernova SN 1967h.

It is a member of the Coma-Virgo Cluster and has one of the largest redshifts of any of its members.

**Observations:**

C8 at 65x. Large and faint, with a bright foreground star too close for comfort. Some 8-inch users have claimed to see spiral structure with averted vision, but I have never been so fortunate.

**Model (where the Sun is a baseball):**

Its diameter would be 30 million miles.

Distance (LY): 65,000,000	Luminosity (suns): 22,900,000,000
---------------------------	-----------------------------------

Radial velocity (km/sec): +2,408
----------------------------------

**NGC 4192****Rating: 2 D**

Other Names: UGC 7231, M98

Astronomical League Program: Messier Club

**Position: 1214+1454**

Type: Gal

Class: SAB(s)ab II

Magnitude: 11.0

Surface brightness: 13.2

Dimensions: 8' x 2'

PA: 155

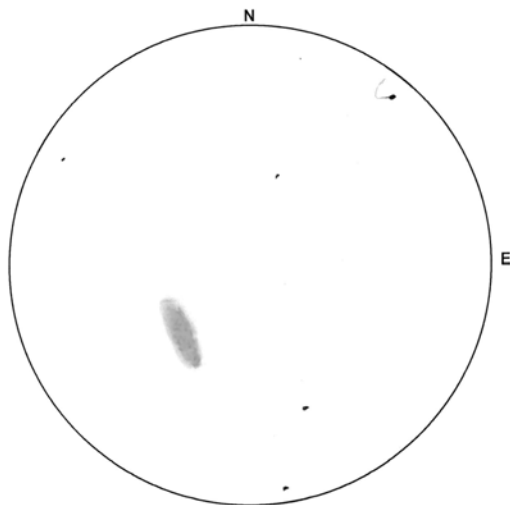
**Notes:**

P. Mechain first noted it on March 15, 1781, and Messier added it to his catalog on April 13.

It is 185,000 light years in diameter and is enshrouded in a cloud of dark gas. The mass is 130 billion suns.

This is one of the few galaxies in the Coma-Virgo cluster that does not show a red shift but rather a blue shift. In fact, it is not part of the Virgo system at all. (The Coma-Virgo cluster lies at an average distance of 65 or 70 million light years.)

It is a Seyfert galaxy.



NGC 4192 (M98)  
Galaxy (SAB(s)ab II)  
Observed with C8 on 5/20/95  
Magnification: 100x

**Observations:**

C8 at 65x. Large but dim, with a NW-SE axis and some curving. The nucleus is star-like.

**Model (where the Sun is a baseball):**

Its diameter would be 26 million miles.

Distance (LY): 35,000,000

Luminosity (suns): 3,900,000,000

Radial velocity (km/sec): -202

**NGC 4216****Rating: 2 D**

Other Names: UGC 7284; H I 35

Astronomical League Program: Herschel 400 Club

**Position: 1216+1309**

Type: Gal

Class: SAB(s)b:

Magnitude: 10.9

Surface brightness: 12.6

Dimensions: 7' x 1'

PA: 19

**Notes:**

Virgo Cluster member and a Seyfert galaxy.

NGC 4216 is an edge-on spiral galaxy located not far from the center of the Virgo Cluster of galaxies. If the redshift of this galaxy was used to calculate the distance to it- the distance would be much smaller than expected. This is due to the internal motions of galaxies inside the Virgo Cluster.

NGC 4216 is one of the most famous galaxies in the sky because it is often used in textbooks to illustrate the bulge, disk, dust content, and spiral pattern of typical luminous galaxies near the middle of the Sb classification sequence.

**Observations:**

C8 at 104x. Faint and long, running NE-SW. At high powers (200x or so) there seems to be a dust lane. A pretty faint star (13m) lies 1 min E.

**Model (where the Sun is a baseball):**

Its diameter would be 26 million miles.

Distance (LY): 40,000,000

Luminosity (suns): 5,500,000,000

Radial velocity (km/sec): +121

**NGC 4037****Rating: 4 D**

Other Names: H III 77; UGC 7002

**Position: 1201+1325**

Type: Gal

Class: SB(rs)b:

Magnitude: 11.9

Surface brightness: 13.7

Dimensions: 2.8' x 2.5'

**Observations:**

C8 at 83x. A large, soft glow with no discernible nucleus. I picked it up with averted vision and tube movement.

Distance (LY): 37,000,000      Total luminosity (Suns): 1,900,000,000  
 Radial velocity (km/sec): +932

**NGC 4168****Rating: 4 D**

Other Names: UGC 7203; H II 105  
 Astronomical League Program: Herschel II Club  
**Position: 1212+1312**

Type: Gal      Class: E2      Magnitude: 11.3  
 Surface brightness: 13.1      Dimensions: 3' x 2.5'

**Observations:**

C8 at 83x. Indistinct blur that forms a shallow triangle with a 10m and 11m star.  
 C11 at 98x. Fuzzy stellar nucleus and the tiniest of halos, but not much else.

Distance (LY): 100,000,000      Total luminosity (Suns): 23,700,000,000  
 Radial velocity (km/sec): +2,284

**NGC 4206****Rating: 4 D**

Other Names: IC3064; H II 165; UGC 7260

**Position: 1215+1302**

Type: Gal      Class: SA(s)bc:      Magnitude: 12.1  
 Surface brightness: 13.7      Dimensions: 5.8' x 0.9'      PA: 0

**Observations:**

C8 at 83x. It showed up as a ghostly streak (E-W) with no verifiable details.

Radial velocity (km/sec): +702

**NGC 4212****Rating: 4 D**

Other Names: UGC 7275; H II 108  
 Astronomical League Program: Herschel II Club

**Position: 1216+1354**

Type: Gal      Class: SAc:      Magnitude: 12.0  
 Surface brightness: 12.7      Dimensions: 2' x 1.5'      PA: 75

**Observations:**

C8 at 65x. Faint, with a E-W axis. The core is slightly brighter. A 10m star lies about 5 min S.

C11 at 98x. Small egg-shaped glow with a fairly strong middle. The brightness drops off very suddenly near the edge of the halo.

Radial velocity (km/sec): +2,047

**NGC 4267****Rating: 5 D**

Other Names: UGC 7373; H II 166

Astronomical League Program: Herschel II Club

**Position: 1220+1248**

Type: Gal

Class: SB(s)0-?

Magnitude: 12.0

Surface brightness: 13.6

Dimensions: 2'

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. Faint, it has a stellar nucleus.

**Model (where the Sun is a baseball):**

Its diameter would be 9 million miles.

Distance (LY): 48,000,000

Luminosity (suns): 3,000,000,000

Radial velocity (km/sec): +1,179

**NGC 4262****Rating: 5 D**

Other Names: UGC 7365; H II 110

**Position: 1220+1453**

Type: Gal

Class: SB(s)0-?

Magnitude: 11.5

Surface brightness: 12.7

Dimensions: 2.2' x 2'

**Observations:**

C8 at 65x. Very faint. It shares a field with NGC 4298 and 4302. It is the smallest of the three and is nearly stellar.

Radial velocity (km/sec): +1,359

**Zone 166, Map 2****Double Stars***Easy***STF 1616****Rating: 3 E****ADS 8473; HD 106423; SAO 119282****Position: 1214+0847**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	7.50	—	—	—	G0	Y
B	9.84	23.3 -	296 -	1991	K2	B
C	9.70	156.8 +	293 +	1921		B

**Notes:**

AB 1828: 23.4 @ 297. 15 measurements. The stars share common proper motion.

AC 1864: 149.5 @ 292. 5 measurements.

**Observations:**

C8 at 65x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 16.4 inches; B = 30.0 inches.

Separation: AB = 6.21 miles; AC = 41.8 miles.

Distance (LY): 171

Total luminosity (Suns): 2.6

<b>STF 1618</b>	<b>Rating: 3 E</b>
-----------------	--------------------

SAO 100008

Position: 1215+1000

	Magnitude	Separation	PA	Year	Spectra	Colors
A	9.41	—	—	—	F5	O
B	9.42	25.9 +	245 =	1992	F5	O?

**Notes:**

1829: 25.8 @ 245. 22 measurements. The stars share common proper motion.

**Observations:**

C8 at 65x.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 14.1 inches; B = 14.1 inches.

Separation: AB = 29.9 miles.

Distance (LY): 740

Total luminosity (Suns): 17

<b>STF 1597 rej</b>	<b>Rating: 4 E</b>
---------------------	--------------------

HD 104924; SAO 119208

Position: 1205+0911

	Magnitude	Separation	PA	Year	Spectra	Colors
A	9.50	—	—	—	G0	Y
B	10.60	30.7 -	146 +	1979		O

**Notes:**

1893: 30.8 @ 144. 10 measurements. The stars have different proper motions.

**Observations:**

C8 at 104x. It is the S star of a flat E-W triangle with a 9m star to the E.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 18.4 inches.

Separation: AB = 21.9 miles.

Distance (LY): 458

Total luminosity (Suns): 4

**STF 3078****Rating: 4 E****ADS 8438; HD 105568; SAO 99964****Position: 1209+1118**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.51	—	—	—	F5	W
B	11.17	9.4 =	304 -	1991		B

**Notes:**

1830: 9.4 @ 306. 19 measurements.

**Observations:**

C8 at 104x. A nice triangle of 8m-8m-11m stars is 15 min SE.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 13.4 inches.

Separation: AB = 5.55 miles.

Distance (LY): 379

Total luminosity (Suns): 4.34

**STF 1628****Rating: 4 E****h1216; ADS 8506; HD 107068; SAO 100032****Position: 1219+1148**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.88	—	—	—	G0	O
B	9.31	9.6 +	240 +	1991		W
C	11.30	45.6 -	346 -	1988		?

**Notes:**

AB 1828: 9.3 @ 239. 24 measurements. The stars show similar proper motions.

AC 1905: 47.5 @ 350. 7 measurements.

**Observations:**

C8 at 83x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 17.8 inches.

Separation: AB = 6.65 miles; AC = 31.6 miles.

Distance (LY): 444

Total luminosity (Suns): 8.46

*Moderate*

<b>STF 1612</b>	<b>Rating: 5 M</b>
-----------------	--------------------

**ADS 8461; HD 106115; SAO 99985**

**Position: 1213+1046**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	10.45	—	—	—	G0	W
B	10.97	5.7 +	8 =	1991		O

**Notes:**

1829: 5.7 @ 8. 21 measurements.

**Observations:**

C11 at 98x. It lies 10 min E of an 8m star.

<b>Deep Sky Objects</b>
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*Moderate*

<b>NGC 4067</b>	<b>Rating: 4 M</b>
-----------------	--------------------

Other Names: H III 37; UGC 7048

**Position: 1204+1052**

Type: Gal	Class: SA(s)b:	Magnitude: 12.5
Surface brightness: 12.2	Dimensions: 1.2' x 0.9'	PA: 35

**Observations:**

C8 at 83x. It is small with a sharp nucleus (or a very faint foreground star superimposed).

Distance (LY): 100,000,000	Total luminosity (Suns): 7,900,000,000
Radial velocity (km/sec): +2,425	

**NGC 4124****Rating: 4 D**

Other Names: IC3011; H I 331; UGC 7117

**Position: 1208+1023**

Type: Gal	Class: SA(r)0+	Magnitude: 12.5
Surface brightness: 13.5	Dimensions: 3.5' x 1'	PA: 114

**Observations:**

C8 at 104x. This galaxy is a faint E-W streak with sharp nucleus, framed by a pentagon of stars.

Radial velocity (km/sec): +1,679

**NGC 4178****Rating: 5 D**

Other Names: UGC 7215, IC3042

**Position: 1213+1052**

Type: Gal	Class: SB(rs)dm	Magnitude: 12.0
Surface brightness: 13.5	Dimensions: 4.5' x 1.5'	PA: 30

**Notes:**

This galaxy produced supernova SN 1963i (type I).

**Observations:**

C8 at 83x. It is oblong and faint, with a NE to SW axis.

Radial velocity (km/sec): +143

**Zone 166, Map 3****Reference Star****Omicron Vir (9 Vir; HD 104979; SAO 119213)**

Position: 1205+0844      Mag : 4.12      Spectrum : G8 III      Color : Y  
 Assumed distance: 171 light years      Assumed luminosity (suns): 53

**Notes:**

This star is an infra-red source.

**Double Stars***Easy***STF 1595****Rating: 3 E****HD 104830; SAO 119199****Position: 1204+0724**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	9.17	—	—	—	F8	W
B	9.83	27.6 +	329 -	1991	F8	W

**Notes:**

1825: 27.2 @ 330. 25 measurements. Hipparcos/Tycho data show different distances for these stars; they may be optical. However, the stars exhibit a small common proper motion.

**Observations:**

C8 at 104x. A 10.5m star is 2 min ENE, and adds a nice touch to the view.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 16.0 inches; B = 16.6 inches.

Separation: AB = 17.9 miles.

Distance (LY): 416

Total luminosity (Suns): 5

**h1210****Rating: 4 E****ADS 8426; HD 105219; SAO 119223****Position: 1207+0548**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.43	—	—	—	K0	O
B	10.78	6.9 -	115 +	1991		W

**Notes:**

1828: 7.0 @ 100. 20 measurements.

**Observations:**

C11 at 98x.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 25.0 inches.

Separation: AB = 1.53 miles.

Distance (LY): 143

Total luminosity (Suns): 0.757

**STF 1617 rej****Rating: 4 E****HD 106496; SAO 119284****Position: 1215+0732**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.75	—	—	—	K0	Y
B	11.14	31.9 +	265 +	1991		pB

**Notes:**

1905: 31.3 @ 262. 9 measurements. The stars have different proper motions.

**Observations:**

C8 at 104x. Two 10m stars lie 10 min N.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 25.4 inches.

Separation: AB = 105 miles.

Distance (LY): 2,100

Total luminosity (Suns): 117

**STF 1621****Rating: 5 D**

ADS 8486; SAO 119296

Position: 1216+0538

	Magnitude	Separation	PA	Year	Spectra	Colors
A	9.45	—	—	—	K8	O
B	9.96	1.2 -!	34 -!!	1999		O

**Notes:**

1830: 3.4 @ 124. 89 measurements. Orbit calculated. Period is 875years, semi-major axis of 2.93", motion direct.

**Observations:**

C11 at 634x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 38.1 inches.

Separation: AB = 792 feet.

Distance (LY): 84

Total luminosity (Suns): 0.149

**Deep Sky Objects****NGC 4215****Rating: 5 E**

Other Names: H II 135; UGC 7281

**Position: 1216+0625**

Type: Gal

Class: SA(r)0+:

Magnitude: 12.1

Surface brightness: 11.8

Dimensions: 1.6' x 0.6'

PA: 174

**Observations:**

C8 at 104x. Extremely bright nucleus but without a halo. Moderate field.

Distance (LY): 86,000,000

Total luminosity (Suns): 8,400,000,000

Radial velocity (km/sec): +2,073

**NGC 4224****Rating: 5 M**

Other Names: UGC 7292; H II 136  
 Astronomical League Program: Herschel II Club

**Position: 1217+0728**

Type: Gal	Class: SA(s)a:	Magnitude: 11.8
Surface brightness: 12.1	Dimensions: 2.4' x 1'	PA: 57

**Observations:**

C8 at 104x. Stellar nucleus with diffuse NE-SW halo. High powers show a hint of a dust lane.

**Model (where the Sun is a baseball):**

Its diameter would be 9.5 million miles.

Distance (LY): 42,000,000	Luminosity (suns): 2,600,000,000
Radial velocity (km/sec): +2,603	

**NGC 4261****Rating: 5 M**

Other Names: UGC 7360; H II 139  
 Astronomical League Program: Herschel 400 Club

**Position: 1219+0549**

Type: Gal	Class: E2	Magnitude: 11.7
Surface brightness: 12.9	Dimensions: 2'	PA: 160

**Notes:**

Virgo Cluster member.  
 This galaxy produced supernova 2001A (type Ia).

**Observations:**

C8 at 65x. The nucleus is stellar, and the halo is extensive. A bright foreground star makes seeing difficult.

Distance (LY): 91,000,000	Total luminosity (Suns): 13,600,000,000
Radial velocity (km/sec): +2,094	

**NGC 4281****Rating: 5 M**

Other Names: H II 570; UGC 7389; H II 573  
 Astronomical League Program: Herschel 400 Club

**Position: 1220+0523**

Type: Gal	Class: E5	Magnitude: 11.3
Surface brightness: 12.4	Dimensions: 3' x 1.5'	PA: 88

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. The nucleus is stellar, but the image has an E-W oval shape. A 9m chain of stars nearby is difficult on the vision.

Distance (LY): 110,000,000	Total luminosity (Suns): 28,700,000,000
Radial velocity (km/sec): +2,492	

*Difficult***NGC 4233****Rating: 4 D**

Other Names: UGC 7311  
 Astronomical League Program: Herschel II Club

**Position: 1217+0737**

Type: Gal	Class: S0 <sup>o</sup>	Magnitude: 11.9
Surface brightness: 12.4	Dimensions: 2.3' x 1'	PA: 174

**Observations:**

C8 at 104x. A featureless N-S glow 8 min W of 8.5m SAO 119311, and 3 min NW of a 10m star.

Radial velocity (km/sec): +2,371

**NGC 4241****Rating: 5 D**

Other Names: IC3102; H III 480; UGC 7333

Astronomical League Program: Herschel II Club

**Position: 1217+0641**

Type: Gal

Class: SA(s)o+

Magnitude: 11.9

Surface brightness: 13.3

Dimensions: 2.5' x 1.6'

**Observations:**

30-inch Newt w/ 40mm (94x). Very faint featureless bloblet at the end of a four-star jagged chain. Lots of absorption of the few photons it sends our way by the atmosphere at this low a viewing angle.

Distance (LY): 94,000,000

Total luminosity (Suns): 12,100,000,000

Radial velocity (k/s): +733

**NGC 4260****Rating: 5 D**

Other Names: UGC 7361; H II 138; UGC 7361

Astronomical League Program: Herschel II Club

**Position: 1219+0606**

Type: Gal

Class: SB(s)a

Magnitude: 11.8

Surface brightness: 12.5

Dimensions: 2.0' x 1.1'

PA: 58

**Observations:**

30-inch Newt w/ 40mm (94x). A very faint, amorphous blob in a very rich field. It was close to the horizon at this time so the atmosphere ate a lot of its feeble photons! No details could be seen other than a general hazy glow.

Distance (LY): 75,000,000

Total luminosity (Suns): 8,400,000,000

Radial velocity (k/s): +1,958

**NGC 4273****Rating: 5 D**

Other Names: UGC 7380; H II 569

Astronomical League Program: Herschel 400 Club

**Position: 1220+0521**

Type: Gal

Class: SB(s)c

Magnitude: 12.3

Surface brightness: 12.7

Dimensions: 2.3' x 1.5'

PA: 10

**Notes:**

This galaxy produced SN 1936a (type IIp).

It is a member of the Virgo Cluster.

**Observations:**

C8 at 65x. Very faint, with an axis that runs N-S.

Distance (LY): 95,000,000

Total luminosity (Suns): 8,500,000,000

Radial velocity (km/sec): +2,191

**Zone 166, Map 4****Double Stars***Easy***STF 1666****Rating: 4 E****ADS 8616; HD 110026; SAO 100195****Position: 1239+1420**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.01	—	—	—	A3m	W
B	10.41	7.3 +	191 +	1991	G	R

**Notes:**

1830: 7.1 @ 190. 15 measurements. The stars have different proper motions.

**Observations:**

C8 at 206x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 7.40 inches; B = 22.1 inches.

Separation: AB = 15.8 miles.

Distance (LY): 1,390

Total luminosity (Suns): 113

**A. G. 343****Rating: 5 E****Position: 1239+1252**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	10.02	—	—	—		W
B	10.90	8.4 +	324 -	1986		W?

**Notes:**

1894: 8.1 @ 326. 5 measurements.

**Observations:**

C8 at 206x.

Distance (LY): 175

Total luminosity (Suns): 0.344

**Deep Sky Objects***Easy***NGC 4374****Rating: 2 E**

Other Names: 3C272; UGC 7494, M84

Astronomical League Program: Messier Club, Urban Deep Sky Club

**Position: 1225+1253**

Type: Gal

Class: E1

Magnitude: 9.3

Surface brightness: 12.3

Dimensions: 5' x 4'

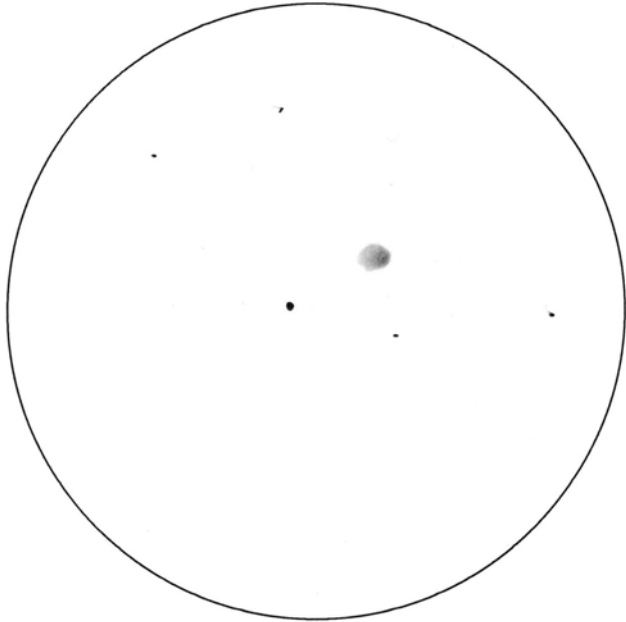
PA: 135

**Notes:**

Messier listed it on March 18, 1781.

It is 25,000 light years in diameter and has the mass of 500 billion suns. It is also a low-power radio source.

A Virgo Cluster member, it is at one end of Markarian's Chain, a chain of galaxies that comprise the core of the Virgo Cluster.

**Observations:**

C8 at 104x. Bright and round, but without details. The axis runs SE-NW.

M86 is 20 min SE and is the brighter of the two.

**Model (where the Sun is a baseball):**

Its diameter would be 30 million miles.

Distance (LY): 65,000,000

Luminosity (suns): 63,100,000,000

Radial velocity (km/sec): +880

NGC 4374 (M84)

Galaxy (E1)

Observed with C8 on 3/26/92

Magnification: 80x

<b>NGC 4406</b>	<b>Rating: 2 E</b>
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Other Names: UGC 7532, M86

Astronomical League Program: Messier Club, Urban Deep Sky Club

**Position: 1226+1257**

Type: Gal

Class: E3

Magnitude: 10.9

Surface brightness: 13.9

Dimensions: 12' x 9'

PA: 130

**Notes:**

Messier found it on March 18, 1781.

It is one of the few Virgo Cluster galaxies that is *approaching* the Milky Way.

**Observations:**

C8 at 104x. It looks large and bright, with fuzzy edges. It runs SE-NW.

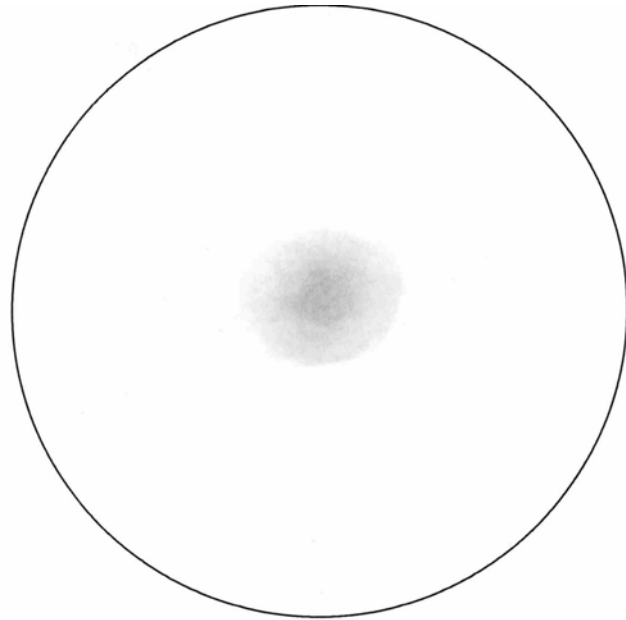
**Model (where the Sun is a baseball):**

Its diameter would be 56 million miles.

Distance (LY): 50,000,000

Luminosity (suns): 8,600,000,000

Radial velocity (km/sec): -452



NGC 4406 (M86)  
Galaxy (E3)  
Observed with C8 on 5/3/92  
Magnification: 80x

**NGC 4486****Rating: 2 E**

Other Names: 3C274; UGC 7654; Arp 152, M87

Astronomical League Program: Messier Club, Urban Deep Sky Club

**Position: 1231+1224**

Type: Gal

Class: E1

Magnitude: 8.6

Surface brightness: 12.7

Dimensions: 3'

**Notes:**

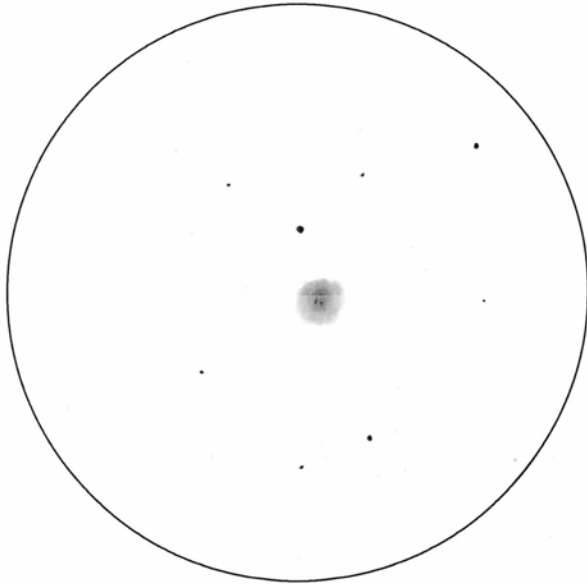
It was discovered by Messier on March 18, 1781 and is a member of the Virgo Cluster.

It is a giant Seyfert galaxy and emits both X-rays (ten times as much energy as the optical and radio spectra combined!) and a strongly polarized jet of material (discovered by Heber Curtis at Lick Observatory in 1918). The jet of material is 4,100 light years

long and 400 wide. It is not uniform, but appears to be a series of blobs, like pearls on a necklace.

Over 10,000 globular clusters have been counted! It has the mass of 3 trillion suns.

In 1994, the Hubble Space Telescope confirmed the presence of a black hole at its center. It found a spiral-shaped disk of hot gas at the center of the galaxy, rotating at 550 km/sec only 60 light years from the center. Only a black hole of 3 billion solar masses could do that! Curiously, the famous jet is seen in the Hubble images to be emerging from the center of this spiral and perpendicular to the accretion disk.



**Observations:**

C8 at 104x. Large and bright, round. No sign of the famous jet (but I really don't expect to see it in any small instruments!). Resembles a compact and unresolved globular cluster.

Model (where the Sun is a baseball):

Its diameter would be 13.5 million miles.

NGC 4486 (M87)  
Galaxy (E1)  
Observed with C8 on 5/3/92  
Magnification: 80x

Distance (LY): 55,000,000  
Luminosity (suns): 86,000,000,000  
Radial velocity (km/sec): +1,218

<b>NGC 4501</b>	<b>Rating: 2 E</b>
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Other Names: UGC 7675, M88

Astronomical League Program: Messier Club

**Position: 1232+1425**

Type: Gal

Class: SA(rs)b I-II

Magnitude: 9.5

Surface brightness: 12.6

Dimensions: 6' x 3'

PA: 140

**Notes:**

Messier found it on March 18, 1781. It is a member of the Virgo Cluster and a Seyfert galaxy.

It is 125,000 light years in diameter.

A little over  $1^\circ$  to the ESE lies M91, a "missing" Messier object that may have been, in fact, a comet. Others think that Messier merely double-listed a Virgo/Coma galaxy and simply mis-read its position.

**Observations:**

C8 at 65x. Large and bright, with a NW-SE axis. It looks lopsided, almost truncated on the NW end. A faint double lies 3 min away, and a faint pair brackets it N and S.

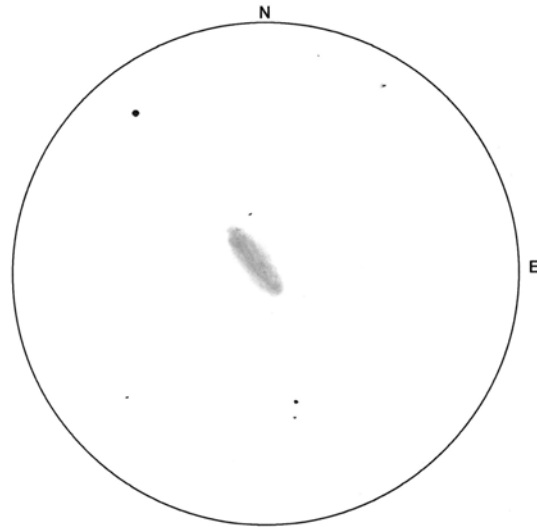
Model (where the Sun is a baseball):

Its diameter would be 36 million miles.

Distance (LY): 65,000,000

Luminosity (suns): 52,000,000,000

Radial velocity (km/sec): +2,060



NGC 4501 (M88)  
Galaxy (SA(rs)b I-II)  
Observed with C8 on 5/3/92  
Magnification: 80x

**NGC 4388**

**Rating: 4 E**

Other Names: UGC 7520; H II 168

**Position: 1226+1240**

Type: Gal

Class: SA(s)b: sp II-III

Magnitude: 11.1

Surface brightness: 13.3

Dimensions: 5' x 1'

PA: 92

**Notes:**

This is a Seyfert galaxy.

**Observations:**

C8 at 83x. Bright, but dwarfed by M84. It has an E-W axis. A 12m star is 1 min NE, and a 10m one is 3 min SE.

Model (where the Sun is a baseball):

Its diameter would be 26 million miles.

Distance (LY): 55,000,000

Luminosity (suns): 9,000,000,000

Radial velocity (km/sec): +2,524

Moderate

**NGC 4552****Rating: 2 M**

Other Names: UGC 7760, M89

Astronomical League Program: Messier Club

**Position: 1236+1233**

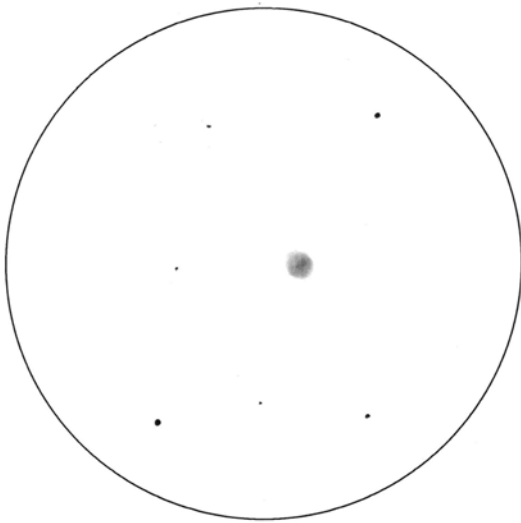
Type: Gal

Class: E0

Magnitude: 9.8

Surface brightness: 12.3

Dimensions: 4' x 4'



NGC 4552 (M89)  
Galaxy (E0)  
Observed with C8 on 5/3/92  
Magnification: 80x

**Notes:**

Messier first noted it on March 18, 1781. He said, "Its light is extremely faint and diffuse and it can be seen only with difficulty."

Virgo Cluster member.

**Observations:**

C8 at 104x. A bright core, but otherwise featureless. A small "M" shaped asterism lies nearby.

**Model (where the Sun is a baseball):**

Its diameter would be 24 million miles.

Distance (LY): 65,000,000

Luminosity (suns): 4,300,000,000

Radial velocity (km/sec): +210

**NGC 4461****Rating: 3 M**

Other Names: UGC 7613; H II 122

**Position: 1229+1311**

Type: Gal

Class: SB(s)0+:

Magnitude: 12.2

Surface brightness: 12.8

Dimensions: 2' x 1'

PA: 9

**Notes:**

Virgo Cluster member.

I have been told that in larger apertures, the ends of the galaxy trail arms that give it a rounded look. This may be why William Herschel described it as "round" in his notes.

**Observations:**

C8 at 83x. It shows a bright nucleus with N-S axis. NGC 4458 (fainter) shares the field to the W. 8.8m SAO 100120, 8 min SW, forms a tight triangle with these two galaxies. Moderate field.

Radial velocity (km/sec): +1,813

<b>NGC 4478</b>	<b>Rating: 3 M</b>
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Other Names: UGC 7645; H II 124

Astronomical League Program: Herschel 400 Club

**Position: 1230+1220**

Type: Gal

Class: E2

Magnitude: 11.2

Surface brightness: 12.2

Dimensions: 2' x 2'

PA: 140

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 83x. Bright and starlike, averted vision is a surprising help here.

Radial velocity (km/sec): +1,410

<b>NGC 4569</b>	<b>Rating: 3 M</b>
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Other Names: UGC 7786; Arp 76, M90

Astronomical League Program: Messier Club

**Position: 1237+1310**

Type: Gal

Class: Sb

Magnitude: 9.5

Surface brightness: 13.6

Dimensions: 10' x 5'

PA: 23

**Notes:**

Messier found it on March 18, 1781.

It is 80,000 light years in diameter and is a Virgo Cluster member and Seyfert galaxy.

**Observations:**

C8 at 104x. Large and faint, with a NE-SW axis. The arms appear mottled and high power (200x or more) suggests a dark lane on the N side.

**Model (where the Sun is a baseball):**

Its diameter would be 45 million miles.

Distance (LY): 48,000,000

Luminosity (suns): 28,600,000,000

Radial velocity (km/sec): -383

**NGC 4435****Rating: 4 M**

Other Names: UGC 7575; H I 28

Astronomical League Program: Herschel 400 Club

**Position: 1228+1305**

Type: Gal

Class: E4

Magnitude: 11.8

Surface brightness: 12.7

Dimensions: 1.4' x 1'

PA: 13

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. NGC 4438 lies 5 min S and is interacting with this galaxy. This one is the fainter of the two. It has a starlike nucleus and tiny halo. It runs N-S.

**Model (where the Sun is a baseball):**

Its diameter would be 5 million miles.

Distance (LY): 40,000,000

Luminosity (suns): 2,400,000,000

Radial velocity (km/sec): +796

**NGC 4438****Rating: 4 M**

Other Names: Arp 120; UGC 4438; H I 28

Astronomical League Program: Herschel 400 Club

**Position: 1228+1301**

Type: Gal

Class: SA(s)0/a pec:

Magnitude: 11.0

Surface brightness: 13.8

Dimensions: 4' x 1.5'

PA: 27

**Notes:**

Virgo Cluster member and Seyfert galaxy.

**Observations:**

C8 at 65x. It has a NE to SW axis. The nucleus is sharp and the halo is large.  
NGC 4435 is 5 min N and is the brighter of the two.

**Model (where the Sun is a baseball):**

Its diameter would be 15 million miles.

Distance (LY): 40,000,000                      Luminosity (suns): 5,000,000,000  
Radial velocity (km/sec): -105

**NGC 4459****Rating: 4 M**

Other Names: H II 161; UGC 7614; H I 161  
Astronomical League Program: Herschel 400 Club

**Position: 1229+1359**

Type: Gal                                      Class: SA(r)0+                                      Magnitude: 10.4  
Surface brightness: 12.7                      Dimensions: 4' x 3'                                      PA: 110

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. A nearby star (8.1m SAO 100121, 2 min SE) makes the seeing very difficult. It is bright and small. The axis runs E-W.

Distance (LY): 45,000,000                      Total luminosity (Suns): 11,000,000,000  
Radial velocity (km/sec): +1,042

**NGC 4477****Rating: 4 M**

Other Names: UGC 7638; H II 115  
Astronomical League Program: Herschel 400 Club

**Position: 1230+1338**

Type: Gal                                      Class: SB(s)0:?                                      Magnitude: 11.6  
Surface brightness: 13.1                      Dimensions: 2.5' x 2'                                      PA: 15

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. NGC 4473 is 10 min SW. It has a bright nucleus and is brighter than 4473. Its axis runs N-S.

Radial velocity (km/sec): +1,195

**NGC 4371****Rating: 5 M**

Other Names: UGC 7493; H I 22

Astronomical League Program: Herschel 400 Club

**Position: 1225+1142**

Type: Gal

Class: SB(r)0+

Magnitude: 11.8

Surface brightness: 13.2

Dimensions: 2' x 1'

PA: 95

**Observations:**

C8 at 65x. Faint and indistinct, it has a stellar nucleus. It seems a little oval in shape, maybe E-W axis.

Distance (LY): 39,000,000

Total luminosity (Suns): 2,300,000,000

Radial velocity (km/sec): +943

**NGC 4377****Rating: 5 M**

Other Names: H I 12; UGC 7501

**Position: 1225+1446**

Type: Gal

Class: SA0-

Magnitude: 11.9

Surface brightness: 12.4

Dimensions: 1.5' x 1.2'

PA: 177

**Observations:**

C8 at 104x. Very bright nucleus, but no other discernible details.

**Model (where the Sun is a baseball):**

Its diameter would be 11 million miles.

Distance (LY): 78,000,000

Luminosity (suns): 8,300,000,000

Radial velocity (km/sec): +1,375

<b>NGC 4440</b>	<b>Rating: 5 M</b>
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Other Names: UGC 7581; H II 173

**Position: 1228+1218**

Type: Gal

Class: SB(rs)a

Magnitude: 11.8

Surface brightness: 12.5

Dimensions: 2' x 1.7'

**Observations:**

C8 at 83x. It shows a stellar nucleus with faint halo.

Radial velocity (km/sec): +724

<b>NGC 4486A</b>	<b>Rating: 5 M</b>
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Other Names: UGC 7658

**Position: 1231+1217**

Type: Gal

Magnitude: 11.2S

Surface brightness: 11.3

Dimensions: 1.0' x 0.9'

**Observations:**

C8 at 104x. Compact, virtually stellar, with very small halo. An 11.7m star is nearby, and it is dwarfed by NGC 4486 just to the N.

Distance (LY): 55,000,000

Total luminosity (Suns): 86,000,000,000

*Difficult*

<b>NGC 4473</b>	<b>Rating: 3 D</b>
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Other Names: UGC 7631; H II 114

Astronomical League Program: Herschel 400 Club

**Position: 1230+1326**

Type: Gal

Class: E4

Magnitude: 11.3

Surface brightness: 12.4

Dimensions: 2' x 1'

PA: 100

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. Small and faint. The axis runs E-W.

NGC 4477 is 10 min NE, and several 10m stars dot the field.

Radial velocity (km/sec): +2,173

**NGC 4476****Rating: 3 D**

Other Names: UGC 7637; H II 123

**Position: 1230+1221**

Type: Gal

Class: SA(r)0-:

Magnitude: 10.0

Surface brightness: 12.7

Dimensions: 9' x 4'

PA: 25

**Notes:**

This galaxy is only 17,000 light years away from M87! What a sight *that* must be from 4476!

**Observations:**

C8 at 104x. Faint. It runs NE-SW and is the faintest of the galaxies in the field.

**Model (where the Sun is a baseball):**

Its diameter would be 40 million miles.

Distance (LY): 48,000,000

Luminosity (suns): 18,000,000,000

Radial velocity (km/sec): +1,970

**NGC 4550****Rating: 3 D**

Other Names: UGC 4550; H I 36

Astronomical League Program: Herschel 400 Club

**Position: 1236+1213**

Type: Gal

Class: SB0<sup>o</sup>

Magnitude: 12.6

Surface brightness: 12.8

Dimensions: 2' x 1'

PA: 178

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 83x. Faint and oblong (N-S).

**Model (where the Sun is a baseball):**

Its diameter would be 12 million miles.

Distance (LY): 65,000,000

Luminosity (suns): 3,300,000,000

Radial velocity (km/sec): +381

**NGC 4548****Rating: 4 D**

Other Names: UGC 7753, M91; H II 120

Astronomical League Program: Messier Club, Herschel 400 Club

**Position: 1235+1430**

Type: Gal

Class: SB(rs)b I-II

Magnitude: 10.2

Surface brightness: 13.3

Dimensions: 4' x 3'

PA: 150

**Notes:**

Messier gave a position *near* here for an "object dimmer than M90"; Harlow Shapley said it may have actually been a comet. Others think it is a duplicate observation of one of the other Messier objects in the area. (Owen Gingerich suggests M58.) NGC 4548 is the best probable candidate if this is not a duplicate observation.

A Coma-Virgo Cluster member, it is 100,000 light years in diameter.

**Observations:**

C8 at 65x. Low surface brightness; tough object. The galaxy has a NW-SE axis and has faint stars 4 min E and W. Averted vision shows a tiny but bright nucleus.

**Model (where the Sun is a baseball):**

Its diameter would be 24 million miles.

Distance (LY): 65,000,000

Luminosity (suns): 28,000,000,000

Radial velocity (km/sec): +372

**NGC 4298, 4302****Rating: 5 D**

Other Names: UGC 7412; H II 111

Astronomical League Program: Herschel II Club

**Position: 1222+1436**

Type: Gal

Class: SA(rs)c III-IV

Magnitude: 11.9

Surface brightness: 12.8

Dimensions: 3' x 1'

PA: 140

**Notes:**

NGC 4298 is a virtual twin of the Milky Way.

**Observations:**

C8 at 104x. Faint object with NW-SE axis. It is in the same field as NGC 4302 (which it appears to be touching) and NGC 4262. It is a little brighter than 4302, which shows as a N-S streak. An 11m star lies on one side and a flat triangle of field stars lies N of the entire complex.

C11 at 98x. Not much more to add from the C8 observation years earlier, except that at high powers (339x), 4302 shows a hint of a dust lane.

**Model (where the Sun is a baseball):**

Its diameter would be 20 million miles.

Distance (LY): 71,000,000

Luminosity (suns): 7,000,000,000

Radial velocity (km/sec): +1,135

**NGC 4571****Rating: 5 D**

Other Names: UGC 7788, IC3588; H III 602

Astronomical League Program: Herschel II Club

**Position: 1237+1413**

Type: Gal

Class: SA(r)d III

Magnitude: 12.2

Surface brightness: 14.0

Dimensions: 3' x 2.4'

PA: 55

**Notes:**

Discovered by William Herschel on January 14, 1787, who listed it as H III 602. It was proposed as possible candidate for M91 by John Herschel in his General Catalogue (GC), and consequently in Dreyer's NGC; we now know that M91 is very probably NGC 4548 (H II 120). Nevertheless, these two galaxies forms a beautiful pair.

This galaxy is a member of the Virgo Cluster of Galaxies. It has apparently a high peculiar motion toward us, as it is receding from us with only 282 km/sec, compared to the cluster's 1100 km/sec.

NGC 4571 came into discussion in summer 1994 when a group of astronomers at the Canada France Hawaii Telescope (CFHT) used observations of 3 Cepheids in this galaxy for a determination of the Hubble constant.

[Source: <http://www.seds.org/messier/xtra/ngc/n4571.html>]

***Observations:***

C8 at 65x. Faint and roundish, the axis runs NE-SW. 8.5m SAO 100177 lies 1 min N and is very tough on the view! A triangle of 9m stars lies 37 min SE.

**Model (where the Sun is a baseball):**

Its diameter would be 17 million miles.

Distance (LY): 60,000,000

Luminosity (suns): 3,700,000,000

Radial velocity (km/sec): +342

**Zone 166, Map 5****Double Stars***Easy***h212****Rating: 4 E****Position: 1233+1012**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	9.91	—	—	—	G5	W
B	10.07	21.7 =	264 -	1991		W

**Notes:**

1903: 21.7 @ 265. 13 measurements.  
The stars share common proper motion.

**Observations:**

C8 at 104x. It lies 10 min ESE of a 8.5m star.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 21.6 inches.  
Separation: AB = 5.14 miles.

Distance (LY): 152

Total luminosity (Suns): 0.4

*Difficult***STF 1647****Rating: 2 D****ADS 8575; HD 108875; SAO 119436****Position: 1231+0943**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	8.16	—	—	—	F2	W
B	8.41	1.3 +	244 +	1999		Y

**Notes:**

1830: 1.2 @ 202. L Over 100 measurements. The orbit may take 4,273 years (Hopmann, 1970).

**Observations:**

C8 at 280x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 11.8 inches.

Separation: AB = 2,904 feet.

Distance (LY): 275

Total luminosity (Suns): 7.7

**STF 1661****Rating: 3 D****ADS 8606; SAO 100165****Position: 1236+1125**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	9.29	—	—	—	G2 V	W
B	9.38	2.3 -	252 +	1997		W

**Notes:**

1828: 2.6 @ 226. Over 100 measurements.

**Observations:**

C8 at 206x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 3.30 inches.

Separation: AB = 5,122 feet.

Distance (LY): 273

Total luminosity (Suns): 4.9

<b>Deep Sky Objects</b>
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*Easy***NGC 4429****Rating: 2 E**

Other Names: UGC 7568; H II 65

Astronomical League Program: Herschel 400 Club

**Position: 1227+1107**

Type: Gal

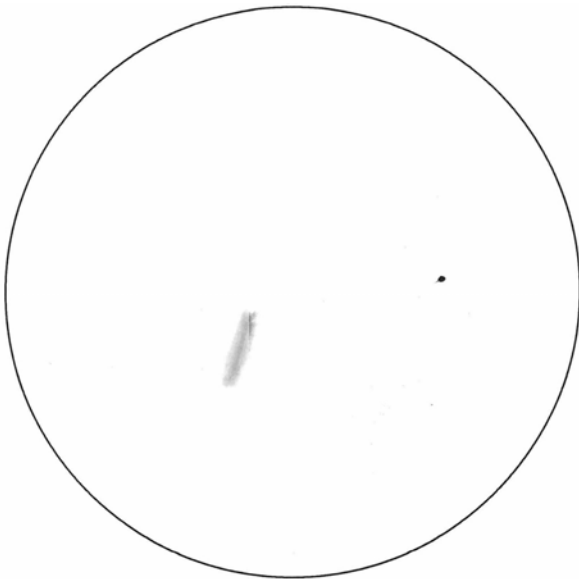
Class: SA(r)0+

Magnitude: 11.3

Surface brightness: 12.8

Dimensions: 3' x 1'

PA: 99

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 104x. It is very bright, with a W to E axis, and takes high power fairly well. It lies between two stars (8.7m and 8.9m).

There is a nice 10m star about 3 min NE too.

Distance (LY): 45,000,000

Total luminosity (Suns): 4,800,000,000

Radial velocity (km/sec): +1,027

NGC 4429

Galaxy (S0)

Observed with C8 on 5/3/92

Magnification: 80x

**NGC 4567, 4568****Rating: 4 E**

Other Names: UGC 7777 and 7776; The Siamese Twins; H IV 8 &amp; H IV 9

**Position: 1237+1115**

Type: Gal	Class: SA(rs)bc, SA(rs)bc	Magnitude: 12.0
Surface brightness: 13.1	Dimensions: 2' x 1.6'	PA: 85

**Observations:**

C8 at 83x. Round and bright; NGC 4568 lies 15 min N. They are "joined" in the E end and form a "V" that points to the W. 4567 runs E-W while 4568 runs N-S.

**Model (where the Sun is a baseball):**

Its diameter would be 13 million miles each.

Distance (LY): 71,000,000	Luminosity (suns): 6,300,000,000
Radial velocity (km/sec): +2,271	

*Moderate***NGC 4294****Rating: 4 M**Other Names: UGC 7407; H II 61  
Astronomical League Program: Herschel II Club**Position: 1221+1131**

Type: Gal	Class: SB(s)cd	Magnitude: 12.6
Surface brightness: 13.0	Dimensions: 2.4' x 0.9'	PA: 155

**Observations:**

C8 at 83x. It looks like a faint oval (NW-SE) smudge. Faint, moderate field.  
C11 at 98x. Very faint ellipse with a little brighter middle.

**Model (where the Sun is a baseball):**

Its diameter would be 16 million miles.

Distance (LY): 71,000,000	Luminosity (suns): 3,600,000,000
Radial velocity (km/sec): +359	

**NGC 4417****Rating: 4 M**

Other Names: UGC 7542; NGC 4437; H II 155

**Position: 1227+0935**

Type: Gal	Class: SB0:	Magnitude: 12.2
Surface brightness: 12.5	Dimensions: 2' x 1'	PA: 49

**Observations:**

C8 at 104x. It is a nice smudge that runs NE to SW.

Radial velocity (km/sec): +843

**NGC 4442****Rating: 4 M**Other Names: UGC 7583; H II 156  
Astronomical League Program: Herschel 400 Club**Position: 1228+0948**

Type: Gal	Class: SB(s)0 <sup>o</sup>	Magnitude: 10.5
Surface brightness: 12.6	Dimensions: 2' x 1'	PA: 87

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. It resembles a planetary nebula, with an E to W axis. A 12m star lies just E and another SW. A faint star lies about 4 min SE of the center.

Radial velocity (km/sec): +493

**NGC 4596****Rating: 4 M**Other Names: UGC 7828; H I 24  
Astronomical League Program: Herschel 400 Club**Position: 1240+1011**

Type: Gal	Class: SB(r)0+	Magnitude: 10.5
Surface brightness: 13.4	Dimensions: 4' x 3'	PA: 135

**Observations:**

C8 at 104x. Mottled with medium powers; but use averted vision to get the maximum benefit. A faint star lies 1 minSW, another 4 min SW. Moderate field.

Distance (LY): 24,500,000                      Total luminosity (Suns): 3,000,000,000  
 Radial velocity (km/sec): +1,870

**NGC 4528****Rating: 5 M**

Other Names: UGC 7722; H II 67

**Position: 1234+1119**

Type: Gal                                      Class: S0°:                                      Magnitude: 11.7  
 Surface brightness: 12.4                      Dimensions: 2' x 1'                                      PA: 5

**Observations:**

C8 at 104x. It has a stellar nucleus and faint N-S halo inside a 9m-10m-11m triangle.

Radial velocity (km/sec): +1,374

*Difficult***NGC 4579****Rating: 2 D**

Other Names: UGC 7796, M58  
 Astronomical League Program: Messier Club

**Position: 1238+1149**

Type: Gal                                      Class: SAB(rs)b                                      Magnitude: 9.8  
 Surface brightness: 13.0                      Dimensions: 4' x 4'                                      PA: 95

**Notes:**

Messier found it on April 15, 1779. He reported that it was so faint that "the least light used to illuminate the micrometer wires causes it to disappear."

It is 50,000 light years in diameter and virtually a twin of the Milky Way.

It is a member of the Virgo Cluster and a Seyfert galaxy.

**Observations:**

C8 at 104x. Large and faint, averted vision helps. It displays a prominent nucleus.

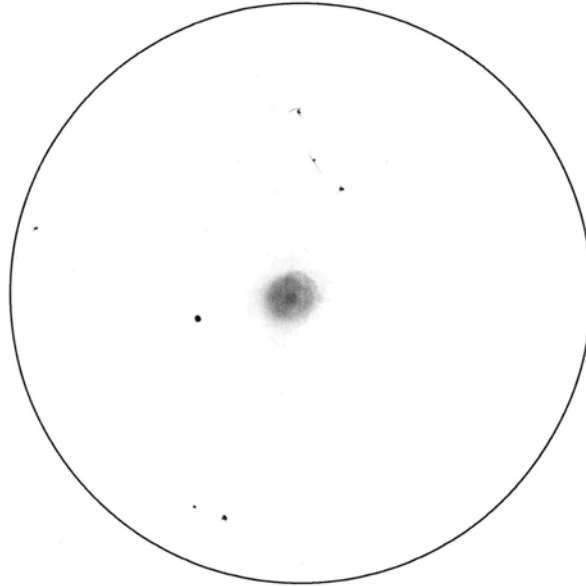
Model (where the Sun is a baseball):

Its diameter would be 18 million miles.

Distance (LY): 48,000,000

Luminosity (suns): 21,700,000,000

Radial velocity (km/sec): +1,679



NGC 4579 (M58)  
Galaxy (Sb)  
Observed with C8 on 5/3/92  
Magnification: 80x

**NGC 4424**

**Rating: 4 D**

Other Names: UGC 7561

**Position: 1227+0925**

Type: Gal

Class: Sb

Magnitude: 12.6

Surface brightness: 13.4

Dimensions: 3' x 1.5'

PA: 95

**Notes:**

This galaxy produced SN 1895a.

**Observations:**

C8 at 104x. It has an E-W axis, but no distinct nucleus. A 10m star is 20 min SW.

Radial velocity (km/sec): +439

**NGC 4445****Rating: 5 D**

Other Names: IC793; UGC 7587

**Position: 1228+0927**

Type: Gal	Class: Sab:	Magnitude: 12.8
Surface brightness: 12.6	Dimensions: 2.6' x 0.45'	PA: 106

**Observations:**

C8 at 104x. An extremely faint oval glow with no discernible details.

Radial velocity (km/sec): +360

**NGC 4469****Rating: 5 D**

Other Names: UGC 7622; H II 157

**Position: 1230+0845**

Type: Gal	Class: SB(s)0/a?	Magnitude: 12.5
Surface brightness: 12.2	Dimensions: 3' x 1'	PA: 89

**Observations:**

C8 at 83x. Faint and difficult, its axis runs E-W.

Radial velocity (km/sec): +508

**NGC 4503****Rating: 5 D**

Other Names: UGC 7680; H II 66

**Position: 1232+1111**

Type: Gal	Class: SB0-:	Magnitude: 11.1
Surface brightness: 12.9	Dimensions: 4' x 2'	PA: 12

**Observations:**

C8 at 104x. It looks like faint fuzz just N of a 10m star. It shows a N to S axis and a bright stellar nucleus.

Radial velocity (km/sec): +1,342

<b>NGC 4564</b>	<b>Rating: 5 D</b>
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Other Names: UGC 7773; H II 68

**Position: 1236+1126**

Type: Gal

Class: E6

Magnitude: 11.1

Surface brightness: 12.6

Dimensions: 2' x 0.8'

PA: 47

**Notes:**

This galaxy produced supernova 1961H (type Ia).

**Observations:**

C8 at 83x. Small and faint, its axis runs NE-SW.

Distance (LY): 41,000,000

Total luminosity (Suns): 4,800,000,000

Radial velocity (km/sec): +1,142

**Zone 166, Map 6****Double Stars***Easy***17 Vir****Rating: 2 E****STF 1636; ADS 8531; HD 107705; SAO 119360****Position: 1223+0518**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	6.46	—	—	—	F8 V	Y!
B	10.47	19.8 +	334 -	1991	K5 V	B!

**Notes:**

1832: 19.3 @ 337. 37 measurements.

The companion may be variable.

The stars share a large common proper motion.

**Observations:**

C8 at 65x. Some observers report both as W. Webb saw them as gW and ?. Ball reported pR and bW; Bird said W and B; Dembowski said Y and V; and Franks said Y and bW.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 3.60 inches; 39.3 inches.

Separation: AB = 3.00 miles.

Distance (LY): 97

Total luminosity (Suns): 1.82

**STF 1644****Rating: 3 E****ADS 8556; HD 108423; SAO 119406****Position: 1227+0723**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	9.20	—	—	—	A0	W
B	10.28	19.2 -	240 -	1991		R

**Notes:**

1827: 21.8 @ 249. 39 measurements. The stars have different proper motions.

**Observations:**

C8 at 104x. A 7.5 / 9.0 m pair (70" @ 330) lies 8 min S.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 6.57 inches.

Separation: AB = 32.7 miles.

Distance (LY): 1,090

Total luminosity (Suns): 35

**Fox 175****Rating: 4 E****HD 108424; SAO 119403****Position: 1227+0714**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.35	—	—	—	K0	Y
B	10.14	59.9 +	321 -	1991		O

**Notes:**

1907: 51.1 @ 324. 7 measurements.

May be optical because Hipparcos gives different distances (1,290 and 146 light years).

**Observations:**

C11 at 98x.

**Bur 797****Rating: 4 E****ADS 8598; HD 109427; SAO 119480****Position: 1235+0558**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.52	—	—	—	F5	W
B	9.37	0.6 -	145 -	1995		No
C	9.98	77.0 -	3 =	1991		bW

**Notes:**

AB 1881: 0.7 @ 171. 42 measurements.

AC 1881: 77.3 @ 3. 14 measurements.

**Observations:**

C8 at 104x. Star B looks more like 10m.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 13.5 inches.

Separation: AB = 1,796 feet; AC = 43.7 miles.

Distance (LY): 364

Total luminosity (Suns): 5

*Moderate*

<b>STF 1658</b>	<b>Rating: 3 M</b>
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**ADS 8601; HD 109499; SAO 119484**

**Position: 1235+0727**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	7.75	—	—	—	F8	W
B	9.17	2.7 +	17 +	1998	K2	O
C	9.70	124.1 +	265 +	1988		No

**Notes:**

AB 1830: 2.0 @ 342. Over 100 measurements. The stars share a large common proper motion.

AC 1865: 101.9 @ 257. 19 measurements. Optical.

**Observations:**

C8 at 280x. An 11m star was seen at 150" in pa 290.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 14.7 inches; B = 28.7 inches.

Separation: AB = 4,594 feet; AC = 40.1 miles.

Distance (LY): 207

Total luminosity (Suns): 2.9

<b>Deep Sky Objects</b>
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Easy

<b>NGC 4472</b>	<b>Rating: 2 E</b>
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Other Names: UGC 7629, M49

Astronomical League Program: Messier Club

**Position: 1230+0800**

Type: Gal

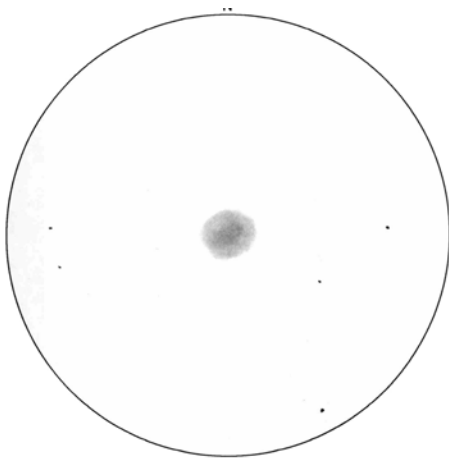
Class: E4

Magnitude: 8.4

Surface brightness: 12.7

Dimensions: 4' x 3.4'

PA: 155



NGC 4472 (M49)

Galaxy (E2)

Observed with C8 on 5/3/92

Magnification: 80x

**Notes:**

It was discovered by Messier on February 19, 1771.

It is 50,000 light years in diameter and is one of the most massive ellipticals known (at 5 times the Milky Way's mass). It contains very few blue giants.

Virgo Cluster member.

**Observations:**

C8 at 37x. It resembles an oblate globular cluster, with a bright center. It is even and shows no details at any magnification. The axis runs SE-NW. A 12m star lies 2 min W of the center.

**Model (where the Sun is a baseball):**

Its diameter would be 24 million miles.

Distance (LY): 65,000,000

Luminosity (suns): 145,000,000,000

Radial velocity (km/sec): +918

**NGC 4365****Rating: 5 E**

Other Names: UGC 7488; H I 30  
 Astronomical League Program: Herschel 400 Club

**Position: 1225+0719**

Type: Gal	Class: E2	Magnitude: 11.0
Surface brightness: 12.9	Dimensions: 2' x 1.5'	PA: 40

**Notes:**

Probably located slightly behind the Virgo Cluster, this large elliptical galaxy contains a kinematically distinct core (Bender 1988), which may indicate a past merger event.

Over 325 globulars have been counted in this galaxy!

**Observations:**

C8 at 65x. Bright— it looks a lot like an unresolved globular cluster. The axis runs NE-SW. A 12m star lies 8 min SE.

Distance (LY): 47,000,000	Total luminosity (Suns): 6,900,000,000
Radial velocity (km/sec): +1,069	

*Moderate***NGC 4526****Rating: 3 M**

Other Names: H I 38; UGC 7718; H I 31  
 Astronomical League Program: Herschel 400 Club

**Position: 1234+0742**

Type: Gal	Class: E7	Magnitude: 10.7
Surface brightness: 12.8	Dimensions: 4' x 1'	PA: 113

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. Bright, starlike core in a large oval (W-E). A 12m star lies 4 min S.

**Model (where the Sun is a baseball):**

Its diameter would be 18 million miles.

Distance (LY): 48,000,000      Luminosity (suns): 9,500,000,000  
 Radial velocity (km/sec): +357

*Difficult***NGC 4339****Rating: 4 D**

Other Names: UGC 7461; H II 143  
 Astronomical League Program: Herschel II Club

**Position: 1224+0605**

Type: Gal      Class: E0      Magnitude: 13.1  
 Surface brightness: 12.7      Dimensions: 2'

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 83x. Small, faint and round; an 11m star lies to the N. Also, an 8.0m star (SAO 119372) lies 11 minSE.

Distance (LY): 51,000,000      Total luminosity (Suns): 1,200,000,000  
 Radial velocity (km/sec): +1,173

**NGC 4532****Rating: 4 D**

Other Names: UGC 7726; H II 147

**Position: 1234+0628**

Type: Gal      Class: Irr      Magnitude: 12.1  
 Surface brightness: 13.1      Dimensions: 2.3' x 1'      PA: 160

**Observations:**

C8 at 83x. The axis runs SE-NW. 8.3m SAO 119478 is 6 min S and is tough on the view.

Distance (LY): 90,000,000      Total luminosity (Suns): 9,200,000,000  
 Radial velocity (km/sec): +2,012

**NGC 4324****Rating: 5 D**

Other Names: UGC 7451; Ho 388a

**Position: 1223+0515**

Type: Gal	Class: SA(r)0+	Magnitude: 12.5
Surface brightness: 12.3	Dimensions: 1.6' x 0.7'	PA: 53

**Notes:**

NGC 4324 is in the Virgo Cluster Catalog, but is near the West cloud (Sandage, Binggeli, and Tammann 1985b) and may not be a cluster member.

**Observations:**

C8 at 83x. It shows up as a small, faint smudge. Its axis runs NE-SW.

Distance (LY): 70,000,000	Total luminosity (Suns): 3,900,000,000
Radial velocity (km/sec): +1,605	

**NGC 4519****Rating: 5 D**

Other Names: UGC 7709; H II 158  
Astronomical League Program: Herschel II Club

**Position: 1234+0839**

Type: Gal	Class: SB(rs)d	Magnitude: 12.4
Surface brightness: 13.9	Dimensions: 3' x 2'	PA: 145

**Observations:**

C8 at 104x. Faint; averted vision is a big help here. The axis runs NW-SE.

**Model (where the Sun is a baseball):**

Its diameter would be 15 million miles.

Distance (LY): 54,000,000	Luminosity (suns): 2,500,000,000
Radial velocity (km/sec): +1,220	

**NGC 4535****Rating: 5 D**

Other Names: UGC 7727; The Last Galaxy; H II 500  
 Astronomical League Program: Herschel 400 Club

**Position: 1234+0812**

Type: Gal	Class: SAB(s)c	Magnitude: 9.8
Surface brightness: 14.0	Dimensions: 6' x 4'	PA: 0

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. Extremely faint, with a N-S axis. The nucleus is faint but starlike. A 13m star lies on the N end.

**Model (where the Sun is a baseball):**

Its diameter would be 29 million miles.

Distance (LY): 52,000,000	Luminosity (suns): 25,500,000,000
Radial velocity (km/sec): +1,843	

**NGC 4570****Rating: 5 D**

Other Names: UGC 7785; H I 32  
 Astronomical League Program: Herschel 400 Club

**Position: 1237+0715**

Type: Gal	Class: S0	Magnitude: 10.9
Surface brightness: 12.6	Dimensions: 3' x 0.7'	PA: 159

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 83x. Faint, with NW-SE axis. The nucleus is star-like. A faint star lies 5 min N.

Radial velocity (km/sec): +1,640

**Zone 166, Map 7****Double Stars***Easy***STF 1678****Rating: 2 E****ADS 8659; HD 110932; SAO 100236****Position: 1245+1422**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	7.22	—	—	—	B8 V	bW
B	7.72	36.3 +	173 -!	1996	G5	bW

**Notes:**

1832: 32.6 @ 212. 90 measurements. May be optical because Hipparcos gives different distances (790 and 191 light years).

**Observations:**

C11 at 98x.

**STF 1689****Rating: 3 E****ADS 8704; HD 112278; SAO 100337****Position: 1255+1130**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	6.91	—	—	—	M3 III	Y
B	9.45	29.4 +	220 +	1996	F5	G

**Notes:**

1823: 28.1 @ 199. 44 measurements. The stars have different proper motions.

**Observations:**

C8 at 65x. Webb saw them as yW and bW.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 1.05 inches; B = 14.2 inches.

Separation: AB = 18.8 miles.

Distance (LY): 409

Total luminosity (Suns): 25

<b>34 Vir</b>	<b>Rating: 4 E</b>
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**Bpm 145; HD 111164; SAO 100260**

**Position: 1247+1157**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	6.11	—	—	—	A3 V	W
B	9.92	139.4 +	2 -	1960		dB

*Notes:*

1909: 138.7 @ 4. 3 measurements. This pair may belong to the Sirius Group.

*Observations:*

C8 at 104x.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 8.10 inches.

Separation: AB = 52.9 miles.

Distance (LY): 243

Total luminosity (Suns): 17.8

<b>South 642</b>	<b>Rating: 4 E</b>
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**SAO 100278**

**Position: 1249+1402**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.65	—	—	—		W
B	9.98	65.2 +	23 -	1991		yO

*Notes:*

1825: 54 @ 36. 6 measurements. May be optical because Hipparcos gives different distances (410 and 60 light years).

*Observations:*

C11 at 98x. It is overpowered by a 6m star 5 min N.

<b>Engelmann 49</b>	<b>Rating: 5 E</b>
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**HD 111398; SAO 100279**

**Position: 1249+1206**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	7.07	—	—	—	G5 V	W
B	10.62	158.7 +	356 -	1919		W
C	9.60					W
BC		135.6 -	328 =	1918		

**Notes:**

AB 1893: 155.2 @ 358. 3 measurements. This pair may be optical because Hipparcos gives different distances (118 and 80 light years).

BC 1893: 136.7 @ 328. 3 measurements.

**Observations:**

C11 at 98x.

*Difficult*

<b>Hussey 894</b>	<b>Rating: 3 D</b>
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**ADS 8696; HD 112016; SAO 100319**

**Position: 1253+1310**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	9.06	—	—	—	G5	Y
B	9.07	1.1 +	144 -	1998		Y

**Notes:**

1905: 1.0 @ 147. 32 measurements.

**Observations:**

C11 at 634x.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 20.6 inches.

Separation: AB = 4,382 feet.

Distance (LY): 484

Total luminosity (Suns): 8.67

<b>Deep Sky Objects</b>
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Moderate

<b>NGC 4639</b>	<b>Rating: 4 M</b>
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Other Names: UGC 7884

Astronomical League Program: Herschel II Club

**Position: 1243+1315**

Type: Gal

Class: SAB(rs)bc

Magnitude: 12.2

Surface brightness: 13.3

Dimensions: 2' x 1'

PA: 123

**Notes:**

This galaxy produced supernova 1990N.

**Observations:**

C8 at 104x. This galaxy is a NW-SE streak, near a 12m star (S).

Model (where the Sun is a baseball):

Its diameter would be 8 million miles.

Distance (LY): 45,000,000

Luminosity (suns): 2,100,000,000

Radial velocity (km/sec): +1,010

<b>NGC 4654</b>	<b>Rating: 4 M</b>
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Other Names: UGC 7902, IC3708; H II 126

Astronomical League Program: Herschel 400 Club

**Position: 1244+1308**

Type: Gal

Class: SAB(rs)cd

Magnitude: 11.2

Surface brightness: 13.2

Dimensions: 4.5' x 2.5'

PA: 128

**Observations:**

C8 at 83x. Large, but not very bright. It has a SE to NW axis and a bright, star-like nucleus. (NGC 4639, a 12.5m galaxy, is just visible in the same field.) An asterism that looks like Orion is in the field.

Distance (LY): 42,000,000

Total luminosity (Suns): 4,600,000,000

Radial velocity (km/sec): +1,037

**NGC 4689****Rating: 5 D**

Other Names: UGC 7965; H II 128

Astronomical League Program: Herschel 400 Club

**Position: 1248+1346**

Type: Gal

Class: SA(rs)bc II-III

Magnitude: 11.7

Surface brightness: 13.5

Dimensions: 3' x 2'

***Observations:***

C8 at 104x. Faint; an 11m star lies over it, and two 11.5m stars lie to the N about 4 min. Its axis runs WNW to ESE. It takes high power well. It lies 26 min SW of 5m 29 Com. (This star is an A1V star that is 27 times brighter than the Sun and 260 light years away. It is a spectroscopic binary and a member of the Sirius Group.) 6.6m 28 Com is 14 min to the SSE. (It is also an A1V star that is 28 times brighter than the Sun and 390 light years away. It makes a good comparison to 29 Com, a similar star with similar luminosity.) A 12/12.5m pair lies 8 min NE.

**Model (where the Sun is a baseball):**

Its diameter would be 21 million miles.

Distance (LY): 74,000,000

Luminosity (suns): 9,000,000,000

Radial velocity (km/sec): +1,616

**Zone 166, Map 8****Double Stars***Easy***33 Vir****Rating: 3 E****OS 577; HD 111028; SAO 119580****Position: 1246+0933**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	5.67	—	—	—	K0 III	dY
B	8.66	166.6 -!!	193 +	1923		B

**Notes:**

1852: 192.5 @ 183. 7 measurements. The stars have different proper motions.

**Observations:**

C8 at 104x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 46.2 inches.

Separation: AB = 38.0 miles.

Distance (LY): 146

Total luminosity (Suns): 7.1

**Hough 54****Rating: 4 E****ADS 8631; HD 110412; SAO 100210****Position: 1242+0953**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	6.97	—	—	—	F0 V	W
B	10.80	118.9 -	102 -	1904		W

**Notes:**

1882: 120.1 @ 103. 2 measurements.

There are two companions to B, one of 10.5m at only 2.3 @ 141 (1999) and the other of 131.6m at 10.1 @ 57 (1906).

**Observations:**

C8 at 104x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 5.70 inches.

Separation: AB = 71.6 miles.

Distance (LY): 386

Total luminosity (Suns): 19.61

**27 Vir****Rating: 5 E****GG Vir; HD 110377; SAO 100207; H VI 81****Position: 1242+1025**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	6.22	—	—	—	A5 V	W
B	10.53	86	282	1936		W

**Notes:**

Star A is a spectroscopic binary and a Delta Sct variable.

**Observations:**

C8 at 104x.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 7.50 inches.

Separation: AB = 30.0 miles.

Distance (LY): 223

Total luminosity (Suns): 12.2

**h217****Rating: 5 E****SAO 100242****Position: 1246+1009**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	10.02	—	—	—	G5 V	W
B	10.20	33.2 -	28 -	1988		No
C	11.02	42.8 -	97 +	1988		W

**Notes:**

AB 1910: 34.0 @ 40. 8 measurements.

AC 1910: 42.9 @ 96. 8 measurements. The stars have different proper motions.

**Observations:**

C8 at 104x. A 9.5m star is 30" away in pa 15. Could this be "B"?

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 3.00 inches.

Separation: AB = 29.5 miles; AC = 38.1 miles.

Distance (LY): 570

Total luminosity (Suns): 5

*Difficult*

<b>STF 1668</b>	<b>Rating: 2 D</b>
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**ADS 8625; HD 110280; SAO 119530**

**Position: 1241+0850**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	7.8	0	—	—	F2 V	W
B	8.17	1.2 -	189 -	1997		W

**Notes:**

1830: 1.7 @ 197. 92 measurements.

**Observations:**

C8 at 697x. I think the separation may be less than 1.4"?

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 5.10 inches.

Separation: AB = 4,066 feet.

Distance (LY): 414

Total luminosity (Suns): 26

<b>Deep Sky Objects</b>
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*Easy***NGC 4649****Rating: 2 E**

Other Names: UGC 7898, M60

Astronomical League Program: Messier Club

**Position: 1244+1133**

Type: Gal

Class: E1

Magnitude: 8.8

Surface brightness: 12.8

Dimensions: 7' x 6'

PA: 105

**Notes:**

J. Koehler found it on April 11, 1779;  
Messier noted it on April 15, 1779.

It is 25,000 light years in diameter and  
has 5 times the mass of the Milky Way.

Virgo Cluster member.

**Observations:**

C8 at 104x. Large and bright, but no  
details. The axis runs E-W.

NGC 4647 lies just NE— almost  
touching M60.

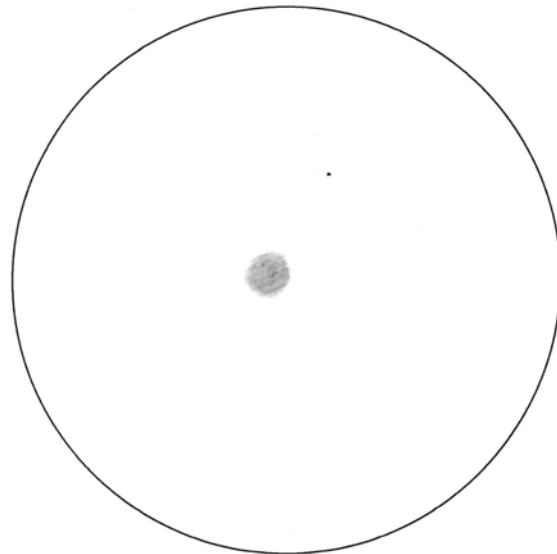
**Model (where the Sun is a baseball):**

Its diameter would be 42.6 million  
miles.

Distance (LY): 65,000,000

Luminosity (suns): 100,000,000,000

Radial velocity (km/sec): +1,321



NGC 4649 (M60)  
Galaxy (E1)  
Observed with C8 on 5/3/92  
Magnification: 80x

**NGC 4608****Rating: 3 E**

Other Names: UGC 7842; H II 69  
 Astronomical League Program: Herschel II Club

**Position: 1241+1009**

Type: Gal	Class: SB(r)0 <sup>o</sup>	Magnitude: 12.1
Surface brightness: 13.2	Dimensions: 2' x 1.4'	

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 83x. Bright, round and easy. Moderate field.

Radial velocity (km/sec): +1,864

*Moderate***NGC 4660****Rating: 4 M**

Other Names: UGC 7914; H II 71  
 Astronomical League Program: Herschel 400 Club

**Position: 1245+1111**

Type: Gal	Class: E5	Magnitude: 12.2
Surface brightness: 12.8	Dimensions: 1.3' x 0.6'	PA: 100

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 83x. Starlike with an E-W halo in a bleak field.

**Model (where the Sun is a baseball):**

Its diameter would be 8 million miles.

Distance (LY): 65,000,000	Luminosity (suns): 4,400,000,000
Radial velocity (km/sec): +950	

**NGC 4698****Rating: 4 M**

Other Names: UGC 7970; H I 8

Astronomical League Program: Herschel 400 Club

**Position: 1248+0829**

Type: Gal

Class: E5

Magnitude: 11.8

Surface brightness: 12.2

Dimensions: 3' x 1'

PA: 170

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. Round, small and washed out, but has a stellar nucleus. Flanked by two 10m stars, and 7.7m SAO 119597 lies 8 min W.

Distance (LY): 65,000,000

Total luminosity (Suns): 4,400,000,000

Radial velocity (km/sec): +955

**NGC 4762****Rating: 4 M**

Other Names: UGC 8016; H II 75

Astronomical League Program: Herschel 400 Club

**Position: 1253+1114**

Type: Gal

Class: SB(r)0<sup>o</sup> sp

Magnitude: 11.5

Surface brightness: 13.4

Dimensions: 4' x 0.5'

PA: 32

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. It has a bright center with soft halo and NE to SW axis. It is bracketed (E and W) by two 9m stars.

Distance (LY): 38,000,000

Total luminosity (Suns): 2,900,000,000

Radial velocity (km/sec): +805

**NGC 4638****Rating: 5 M**

Other Names: UGC 7881; H II 70

**Position: 1243+1126**

Type: Gal	Class: S0-	Magnitude: 11.3
Surface brightness: 12.9	Dimensions: 3' x 1.6'	PA: 125

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 104x. It has a starlike nucleus and E-W halo; M60 and NGC 4621 share the same low power field.

**Model (where the Sun is a baseball):**

Its diameter would be 18 million miles.

Distance (LY): 65,000,000	Luminosity (suns): 10,000,000,000
Radial velocity (km/sec): +1,011	

**NGC 4647****Rating: 5 M**

Other Names: UGC 7896; H III 144

Astronomical League Program: Herschel II Club

**Position: 1244+1135**

Type: Gal	Class: S0-	Magnitude: 12.0
Surface brightness: 13.1	Dimensions: 2.3' x 1.8'	PA: 125

**Observations:**

C8 at 83x. Faint, but with a bright nucleus. I found the "glare" from nearby M60 to be very difficult on the seeing. The axis runs SE-NW.

**Model (where the Sun is a baseball):**

Its diameter would be 14 million miles.

Distance (LY): 65,000,000	Luminosity (suns): 10,000,000,000
Radial velocity (km/sec): +1,379	

**NGC 4621****Rating: 5 D**

Other Names: UGC 7858, M59

Astronomical League Program: Messier Club

**Position: 1242+1139**

Type: Gal

Class: E3

Magnitude: 9.8

Surface brightness: 12.5

Dimensions: 5' x 3.4'

PA: 165

**Notes:**

J. Koehler discovered it in April 1779; Messier cataloged it on April 15, 1779.

It is 24,000 light years in diameter and has 250 billion stars, making it one of the densest galaxies known. (It has twice as many stars as our own Galaxy, but packed into 1/4 the space.)

Virgo Cluster member.

**Observations:**

C8 at 104x. It is a faint oval oriented NW-SE. Two faint stars lie to the W.

**Model (where the Sun is a baseball):**

Its diameter would be 30 million miles.

Distance (LY): 65,000,000

Luminosity (suns): 39,800,000,000

Radial velocity (km/sec): +339

**NGC 4754****Rating: 5 D**

Other Names: UGC 8010; H I 25

Astronomical League Program: Herschel 400 Club

**Position: 1252+1119**

Type: Gal

Class: SB(r)0-:

Magnitude: 11.8

Surface brightness: 13.1

Dimensions: 1' x 2.5'

PA: 23

**Notes:**

Virgo Cluster member.

**Observations:**

C8 at 65x. Small. Averted vision is a useful technique here. The axis runs NE-SW.

Radial velocity (km/sec): +1,398

**Zone 166, Map 9****Double Stars***Easy***STF 1701****Rating: 2 E****ADS 8724; HD 112815; SAO 119696****Position: 1259+0630**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.67	—	—	—	G5V	O!
B	9.28	36.0 +	82 -	1927		B!

**Notes:**

1831: 35.7 @ 83. 17 measures.

1829: 21.7 @ 307. 17 measures. The stars share common proper motion.

**Observations:**

C8 at 65x.

**STF 1674****Rating: 3 E****ADS 8646; SAO 119557; H N 143****Position: 1244+0733**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	8.22	—	—	—	G0	yW
B	8.89	2.3 -	174 =	1997		O

**Notes:**

1829: 2.4 @ 174. 52 measurements.

**Observations:**

C11 at 193x.

Scale model (in which the Sun is the size of a baseball):

Diameter: A = 17.1 inches.

Separation: AB = 2.29 miles.

Distance (LY): 640

Total luminosity (Suns): 25

<b>h2621</b>	<b>Rating: 4 E</b>
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**HD 111908; SAO 119641**

**Position: 1252+0713**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	9.36	—	—	—	K	O
B	9.48	33.3 -	87 +	1991		W
C	11.06	38.4 -	129 -	1991		?

**Notes:**

AB 1897: 34.7 @ 84. 10 measurements.

AC 1897: 38.7 @ 131. 8 measurements. The stars show a similar, but large, proper motion. May be optical because Hipparcos gives different distances (620 and 188 light years).

There is a 14.5m star at 20.3 @ 9 (1988).

**Observations:**

C8 at 104x. A 9m star lies 35" away in pa 90.

<b>STF 1703</b>	<b>Rating: 4 E</b>
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**ADS 8723; HD 112802; SAO 119692**

**Position: 1259+0754**

	Magnitude	Separation	PA	Year	Spectra	Colors
A	7.87	—	—	—	K0	yO
B	11.15	9.9 -!	266 -	1991		B

**Notes:**

1829: 22.7 @ 283. 22 measurements.

**Observations:**

C8 at 104x.

**STF 1693****Rating: 5 E****ADS 8712; HD 112448****Position: 1257+0701**

	<u>Magnitude</u>	<u>Separation</u>	<u>PA</u>	<u>Year</u>	<u>Spectra</u>	<u>Colors</u>
A	9.35	—	—	—	G	Y
B	9.96	8.6 +	332 -	1992		W

**Notes:**

1828: 8.4 @ 155. 18 measurements. Quadrant reversal in 1828.

**Observations:**

C11 at 98x. Looks fainter than the listed magnitudes.

**Scale model (in which the Sun is the size of a baseball):**

Diameter: A = 21.0 inches.

Separation: AB = 4.26 miles.

Distance (LY): 318

Total luminosity (Suns): 2.26

**Deep Sky Objects***Moderate***NGC 4795****Rating: 5 M**

Other Names: UGC 8037; H II 21

**Position: 1255+0804**

Type: Gal

Class: (R')SB(r)a pec:

Magnitude: 12.1

Surface brightness: 13.1

Dimensions: 1.6' x 1.5'

PA: 115

**Observations:**

C11 at 140x. Very bright stellar nucleus with no noticeable halo.

**Model (where the Sun is a baseball):**

Its diameter would be 24.4 million miles.

Distance (LY): 163,000,000      Luminosity (suns): 30,000,000,000  
 Radial velocity (km/sec): +2,781

*Difficult***NGC 4612****Rating: 5 D**

Other Names: UGC 7850; H II 148  
 Astronomical League Program: Herschel II Club

**Position: 1242+0719**

Type: Gal      Class: (R)SAB0<sup>o</sup>      Magnitude: 12.6  
 Surface brightness: 11.5      Dimensions: 1'      PA: 145

**Observations:**

C8 at 83x. Very faint. A faint star lies 1 minE.

Radial velocity (km/sec): +1,875

**NGC 4713****Rating: 5 D**

Other Names: UGC 7985; H I 140

**Position: 1250+0519**

Type: Gal      Class: SAB(rs)d      Magnitude: 12.3  
 Surface brightness: 13.4      Dimensions: 2.3' x 1.4'      PA: 100

**Observations:**

C8 at 65x. Very faint, with an E-W axis.

Distance (LY): 25,000,000      Total luminosity (Suns): 600,000,000  
 Radial velocity (km/sec): +574

## Zone 166 Mini-Catalog

## Double Stars

Designation	Position	Rating	Map	Component	Mag	Separation	PA
17 Vir	1223+0518	2E	6	A B	6.46 10.47	— 19.8 +	— 334 -
STF 1678	1245+1422	2E	7	A B	7.22 7.72	— 36.3 +	— 173 -!
STF 1701	1259+0630	2E	9	A B	8.67 9.28	— 36.0 +	— 82 -
STF 1595	1204+0724	3E	3	A B	9.17 9.83	— 27.6 +	— 329 -
STF 1616	1214+0847	3E	2	A B C	7.50 9.84 9.70	— 23.3 - 156.8 +	— 296 - 156.8 +
STF 1618	1215+1000	3E	2	A B	9.41 9.42	— 25.9 +	— 245 =
STF 1644	1227+0723	3E	6	A B	9.20 10.28	— 19.2 -	— 240 -
STF 1674	1244+0733	3E	9	A B	8.22 8.89	— 2.3 -	— 174 =
33 Vir	1246+0933	3E	8	A B	5.67 8.66	— 166.6 -!!	— 193 +
STF 1689	1255+1130	3E	7	A B	6.91 9.45	— 29.4 +	— 220 +
STF 1597 rej	1205+0911	4E	2	A B	9.50 10.60	— 30.7 -	— 146 +
h1210	1207+0548	4E	3	A B	8.43 10.78	— 6.9 -	— 115 +
STF 3078	1209+1118	4E	2	A B	8.51 11.17	— 9.4 =	— 304 -
STF 1617 rej	1215+0732	4E	3	A B	8.75 11.14	— 31.9 +	— 265 +
STF 1628	1219+1148	4E	2	A B C	8.88 9.31 11.30	— 9.6 + 45.6 -	— 240 + 45.6 -
Fox 175	1227+0714	4E	6	A B	8.35 10.14	— 59.9 +	— 321 -
h212	1233+1012	4E	5	A B	9.91 10.07	— 21.7 =	— 264 -
Bur 797	1235+0558	4E	6	A B C	8.52 9.37 9.98	— 0.6 - 77.0 -	— 145 - 77.0 -
STF 1666	1239+1420	4E	4	A B	8.01 10.41	— 7.3 +	— 191 +
Hough 54	1242+0953	4E	8	A B	6.97 10.80	— 118.9 -	— 102 -
34 Vir	1247+1157	4E	7	A B	6.11 9.92	— 139.4 +	— 2 -
South 642	1249+1402	4E	7	A B	8.65 9.98	— 65.2 +	— 23 -

Designation	Position	Rating	Map	Component	Mag	Separation	PA
h2621	1252+0713	4E	9	A	9.36	—	—
				B	9.48	33.3 -	87 +
				C	11.06	38.4 -	38.4 -
STF 1703	1259+0754	4E	9	A	7.87	—	—
				B	11.15	9.9 -!	266 -
h207	1221+1426	5E	1	A	11.18	—	—
				B	10.95	24.4 +	100 =
A. G. 343	1239+1252	5E	4	A	10.02	—	—
				B	10.90	8.4 +	324 -
27 Vir	1242+1025	5E	8	A	6.22	—	—
				B	10.53	86	282
h217	1246+1009	5E	8	A	10.02	—	—
				B	10.20	33.2 -	28 -
				C	11.02	42.8 -	42.8 -
Engelmann 49	1249+1206	5E	7	A	7.07	—	—
				B	10.62	158.7 +	356 -
				C	9.60	—	—
				BC	—	135.6 -	328 =
STF 1693	1257+0701	5E	9	A	9.35	—	—
				B	9.96	8.6 +	332 -
STF 1658	1235+0727	3M	6	A	7.75	—	—
				B	9.17	2.7 +	17 +
				C	9.70	124.1 +	124.1 +
h199	1208+1239	5M	1	A	8.77	—	—
				B	12.83	17.6 +	75 -
STF 1612	1213+1046	5M	2	A	10.45	—	—
				B	10.97	5.7 +	8 =
h2603	1214+1209	5M	1	A	7.99	—	—
				B	13.86	24.8 +	16 -
STF 1647	1231+0943	2D	5	A	8.16	—	—
				B	8.41	1.3 +	244 +
STF 1668	1241+0850	2D	8	A	7.80	—	—
				B	8.17	1.2 -	189 -
STF 1661	1236+1125	3D	5	A	9.29	—	—
				B	9.38	2.3 -	252 +
Hussey 894	1253+1310	3D	7	A	9.06	—	—
				B	9.07	1.1 +	144 -
Bur 27	1220+1351	4D	1	A	6.94	—	—
				B	10.8	3.6 +	108 -
STF 1621	1216+0538	5D	3	A	9.45	—	—
				B	9.96	1.2 -!	34 -!

## Deep Space

Object	Position	Rating	Map	Specifications		
				Type	Mag	Surface Br
NGC 4374	1225+1253	2E	4	Gal (E1)	9.3	12.3
NGC 4406	1226+1257	2E	4	Gal (E3)	10.9	13.9
NGC 4429	1227+1107	2E	5	Gal (SA(r)0+)	11.3	12.8
NGC 4472	1230+0800	2E	6	Gal (E2)	8.4	12.7
NGC 4486	1231+1224	2E	4	Gal (E1)	8.6	12.7
NGC 4501	1232+1425	2E	4	Gal (SA(rs)b I-II)	9.5	12.6
NGC 4649	1244+1133	2E	8	Gal (E1)	8.8	12.8
NGC 4608	1241+1009	3E	8	Gal (SB(r)0 <sup>o</sup> )	12.1	13.2
NGC 4388	1226+1240	4E	4	Gal (SA(s)b: sp II-III)	11.1	13.3
NGC 4567-8	1237+1115	4E	5	Gal (SA(rs)bc III, SA(rs)bc III)	12.0	13.1
NGC 4215	1216+0625	5E	3	Gal (SA(r)0+:)	12.1	11.8
NGC 4365	1225+0719	5E	6	Gal (E2)	11.0	12.9
NGC 4552	1236+1233	2M	4	Gal (E0)	9.8	12.3
NGC 4254	1219+1425	3M	1	Gal (SA(s)c I-II)	10.4	13.0
NGC 4461	1229+1311	3M	4	Gal (SB(s)0+:)	12.2	12.8
NGC 4478	1230+1220	3M	4	Gal (E2)	11.2	12.2
NGC 4526	1234+0742	3M	6	Gal (E7)	10.7	12.8
NGC 4569	1237+1310	3M	4	Gal (Sb)	9.5	13.6
NGC 4067	1204+1052	4M	2	Gal (SA(s)b:)	12.5	12.2
NGC 4294	1221+1131	4M	5	Gal (SB(s)cd)	12.6	13.0
NGC 4417	1227+0935	4M	5	Gal (SB0:)	12.2	12.5
NGC 4438	1228+1301	4M	4	Gal (SA(s)0/a pec:)	11.0	13.8
NGC 4442	1228+0948	4M	5	Gal (SB(s)0 <sup>o</sup> )	10.5	12.6
NGC 4435	1228+1305	4M	4	Gal (E4)	11.8	12.7
NGC 4459	1229+1359	4M	4	Gal (SA(r)0+)	10.4	12.7
NGC 4477	1230+1338	4M	4	Gal (SB(s)0:?)	11.6	13.1
NGC 4596	1240+1011	4M	5	Gal (SB(r)0+)	10.5	13.4
NGC 4639	1243+1315	4M	7	Gal (SAB(rs)bc)	12.2	13.3
NGC 4654	1244+1308	4M	7	Gal (SAB(rs)cd)	11.2	13.2
NGC 4660	1245+1111	4M	8	Gal (E5)	12.2	12.8
NGC 4698	1248+0829	4M	8	Gal (E5)	11.8	12.2
NGC 4762	1253+1114	4M	8	Gal (SB(R)0 <sup>o</sup> sp)	11.5	13.4
NGC 4224	1217+0728	5M	3	Gal (SA(s)a:)	11.8	12.1
NGC 4261	1219+0549	5M	3	Gal (E2)	11.7	12.9
NGC 4281	1220+0523	5M	3	Gal (E5)	11.3	12.4
NGC 4371	1225+1142	5M	4	Gal (SB(r)0+)	11.8	13.2
NGC 4377	1225+1446	5M	4	Gal (SA0-)	11.9	12.4
NGC 4440	1228+1218	5M	4	Gal (SB(rs)a)	11.8	12.5
NGC 4486A	1231+1217	5M	4	Gal	11.2	11.3
NGC 4528	1234+1119	5M	5	Gal (S0 <sup>o</sup> :)	11.7	12.4
NGC 4638	1243+1126	5M	8	Gal (S0-)	11.3	12.9
NGC 4647	1244+1135	5M	8	Gal (S0-)	12.0	13.1
NGC 4795	1255+0804	5M	9	Gal ((R')SB(r)a pec:)	12.1	13.1
NGC 4192	1214+1454	2D	1	Gal (SAB(s)ab II)	11.0	13.2
NGC 4216	1216+1309	2D	1	Gal (SAB(s)b:)	10.9	12.6
NGC 4579	1238+1149	2D	5	Gal (SAB(rs)b)	9.8	13.0
NGC 4476	1230+1221	3D	4	Gal (SA(r)0-:)	10.0	12.7

Object	Position	Rating	Map	Specifications		
				Type	Mag	Surface Br
NGC 4473	1230+1326	3D	4	Gal (E4)	11.3	12.4
NGC 4550	1236+1213	3D	4	Gal (SB0 <sup>o</sup> )	12.6	12.8
NGC 4037	1201+1325	4D	1	Gal (SB(rs)b:)	11.9	13.7
NGC 4124	1208+1023	4D	2	Gal (SA(r)0+)	12.5	13.5
NGC 4168	1212+1312	4D	1	Gal (E0)	11.3	13.1
NGC 4206	1215+1302	4D	1	Gal (SA(s)bc:)	12.1	13.7
NGC 4212	1216+1354	4D	1	Gal ((R)SAB0 <sup>o</sup> III)	12.0	12.7
NGC 4233	1217+0737	4D	3	Gal (S0 <sup>o</sup> )	11.9	12.4
NGC 4339	1224+0605	4D	6	Gal (E0)	13.1	12.7
NGC 4424	1227+0925	4D	5	Gal (Sb)	12.6	13.4
NGC 4532	1234+0628	4D	6	Gal (Irr)	12.1	13.1
NGC 4548	1235+1430	4D	4	Gal (SB(rs)b I-II)	10.2	13.3
NGC 4178	1213+1052	5D	2	Gal (SB(rs)dm)	12.0	13.5
NGC 4241	1217+0641	5D	3	Gal (SA(s)o+:	11.9	13.3
NGC 4260	1219+0606	5D	3	Gal (SB(s)a)	11.8	12.5
NGC 4262	1220+1453	5D	1	Gal (SB(s)0 -?)	11.5	12.7
NGC 4273	1220+0521	5D	3	Gal (Sc)	12.3	12.7
NGC 4267	1220+1248	5D	1	Gal (SB(s)0-?)	12.0	13.6
NGC 4298, 4302	1222+1436	5D	4	Gal (SA(rs)c III-IV)	11.9	12.8
NGC 4324	1223+0515	5D	6	Gal (SA(r)0+)	12.5	12.3
NGC 4445	1228+0927	5D	5	Gal (Sab:)	12.8	12.6
NGC 4469	1230+0845	5D	5	Gal (SB(s)0/a?)	12.5	12.2
NGC 4503	1232+1111	5D	5	Gal (SB0-:)	11.1	12.9
NGC 4519	1234+0839	5D	6	Gal (SB(rs)d)	12.4	13.9
NGC 4535	1234+0812	5D	6	Gal (SAB(s)c)	9.8	14.0
NGC 4564	1236+1126	5D	5	Gal (E6)	11.1	12.6
NGC 4571	1237+1413	5D	4	Gal (SA(r)d III)	12.2	14.0
NGC 4570	1237+0715	5D	6	Gal (S0)	10.9	12.6
NGC 4612	1242+0719	5D	9	Gal (S0)	12.6	11.5
NGC 4621	1242+1139	5D	8	Gal (E3)	9.8	12.5
NGC 4689	1248+1346	5D	7	Gal (SA(rs)bc II-III)	11.7	13.5
NGC 4713	1250+0519	5D	9	Gal (SAB(rs)d)	12.3	13.4
NGC 4754	1252+1119	5D	8	Gal (SB(r)0-:)	11.8	13.1