
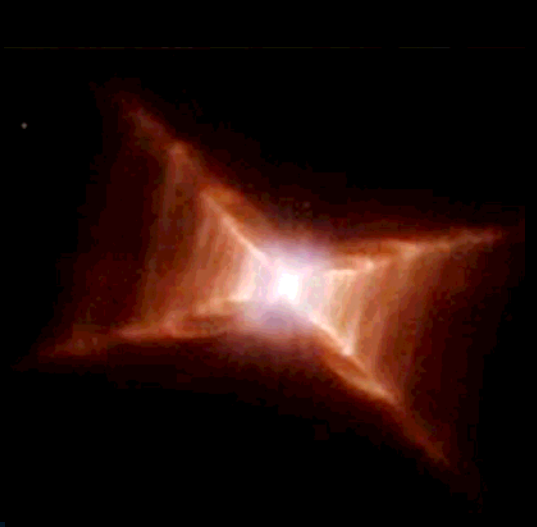


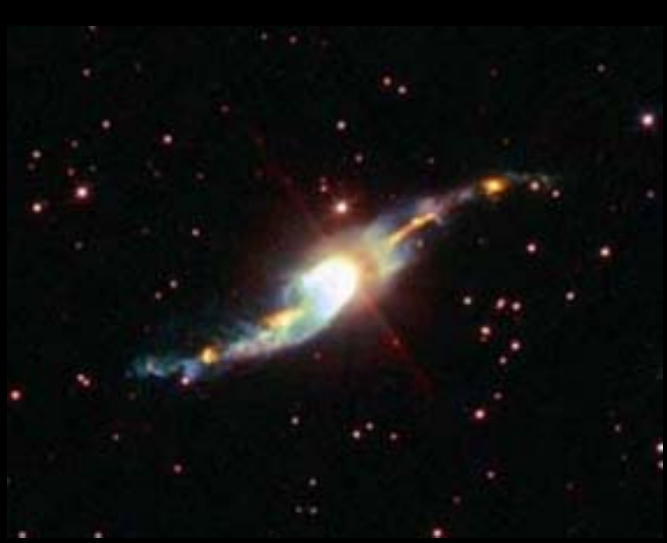
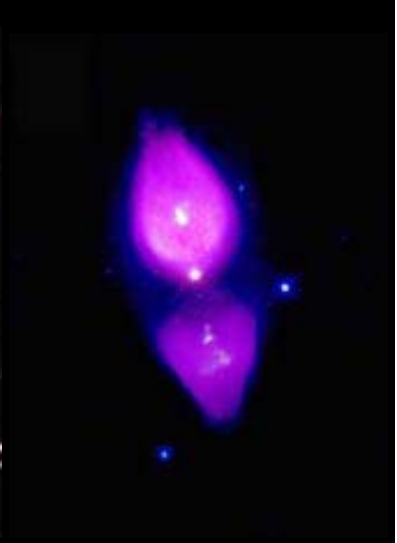

Proto-Planetary Nebula Observing Guide

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		RA	Dec	
CRL 618	Westbrook Nebula	04h 42m 53.6s	+36° 06' 53"	PK 166-6 1
HD 44179	Red Rectangle	06h 19m 58.2s	-10° 38' 14"	V777 Mon
OH 231.8+4.2	Rotten Egg N.	07h 42m 16.8s	-14° 42' 52"	Calabash N.
IRAS 09371+1212	Frosty Leo	09h 39m 53.6s	+11° 58' 54"	
CW Leonis	Peanut Nebula	09h 47m 57.4s	+13° 16' 44"	Carbon Star with dust shell
M 2-9	Butterfly Nebula	17h 05m 38.1s	-10° 08' 33"	PK 10+18 2
IRAS 17150-3224	Cotton Candy Nebula	17h 18m 20.0s	-32° 27' 20"	
Hen 3-1475	Garden-sprinkler Nebula	17h 45m 14. 2s	-17° 56' 47"	IRAS 17423-1755
IRAS 17441-2411	Silkworm Nebula	17h 47m 13.5s	-24° 12' 51"	
IRAS 18059-3211	Gomez' Hamburger	18h 09m 13.3s	-32° 10' 48"	
MWC 922	Red Square Nebula	18h 21m 15s	-13° 01' 27"	
IRAS 19024+0044		19h 05m 02.1s	+00° 48' 50.9"	
M 1-92	Footprint Nebula	19h 36m 18.9s	+29° 32' 50"	Minkowski's Footprint
IRAS 20068+4051		20h 08m 38.5s	+41° 00' 37"	
CRL 2688	Egg Nebula	21h 02m 18.8s	+36° 41' 38"	PK 80-6 1
IRAS 22036+5306		22h 05m 30.3s	+53° 21' 32.8"	
IRAS 23166+1655		23h 19m 12.6s	+17° 11' 33.1"	

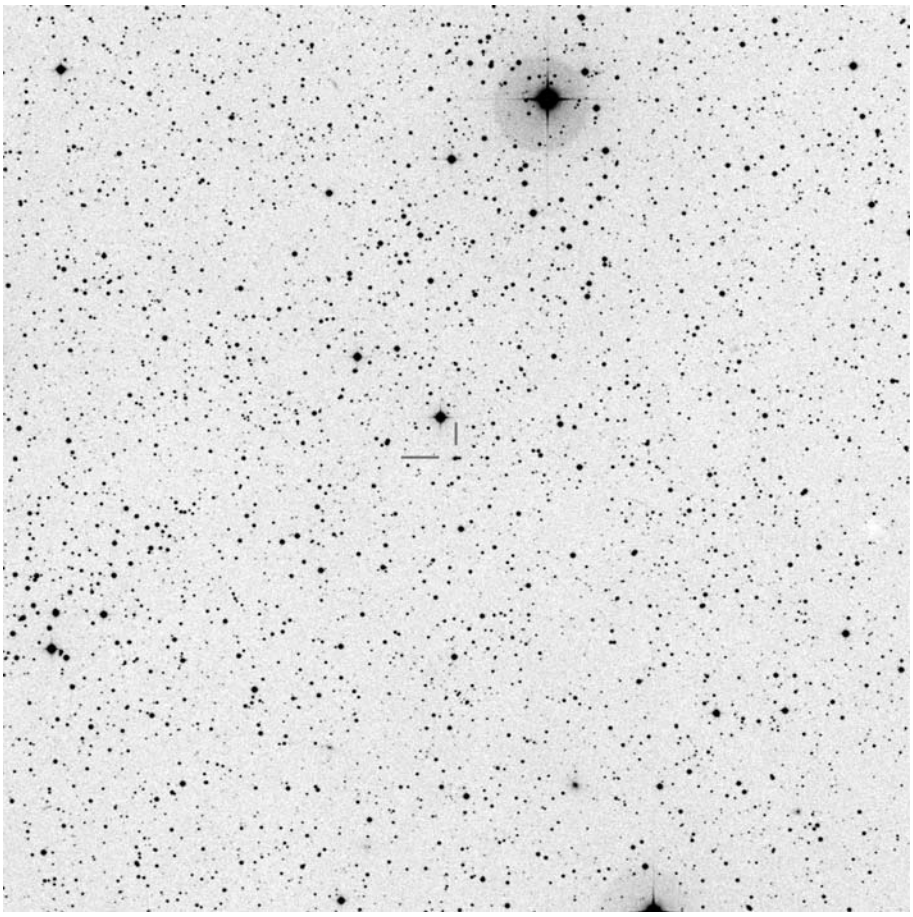
Southern Objects

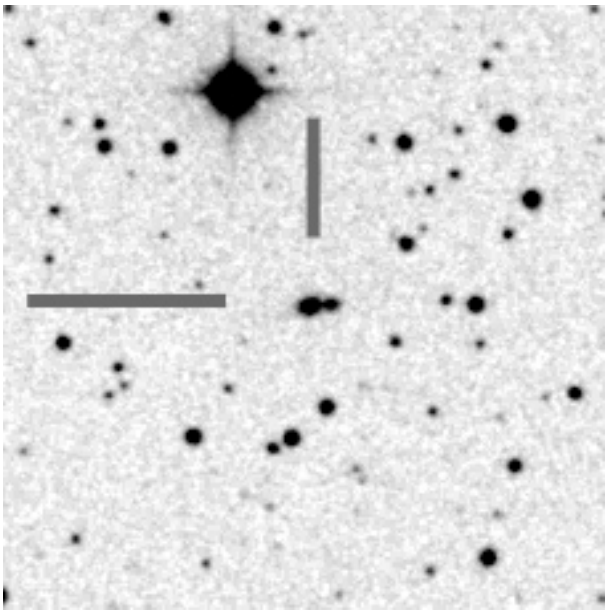
ESO 172-7	Boomerang Nebula	12h 44m 45.4s	-54° 31' 11"	Centaurus bipolar nebula
PN G340.3-03.2	Water Lily Nebula	17h 03m 10.1s	-47° 00' 27"	PK 340-03 1
IRAS 17163-3907	Fried Egg Nebula	17h 19m 49.3s	-39° 10' 37.9"	

Finder charts measure 20° (with 5° circle) and 5° (with 1° circle) and were made with *Cartes du Ciel* by Patrick Chevalley (*http://www.ap-i.net/skychart*)

Images are DSS Images (blue plates, POSS II or SERCJ) and measure 30’ by 30’ (*http://archive.stsci.edu/cgi-bin/dss_plate_finder*) and STScI Images (Hubble Space Telescope)

Westbrook Nebula in Perseus

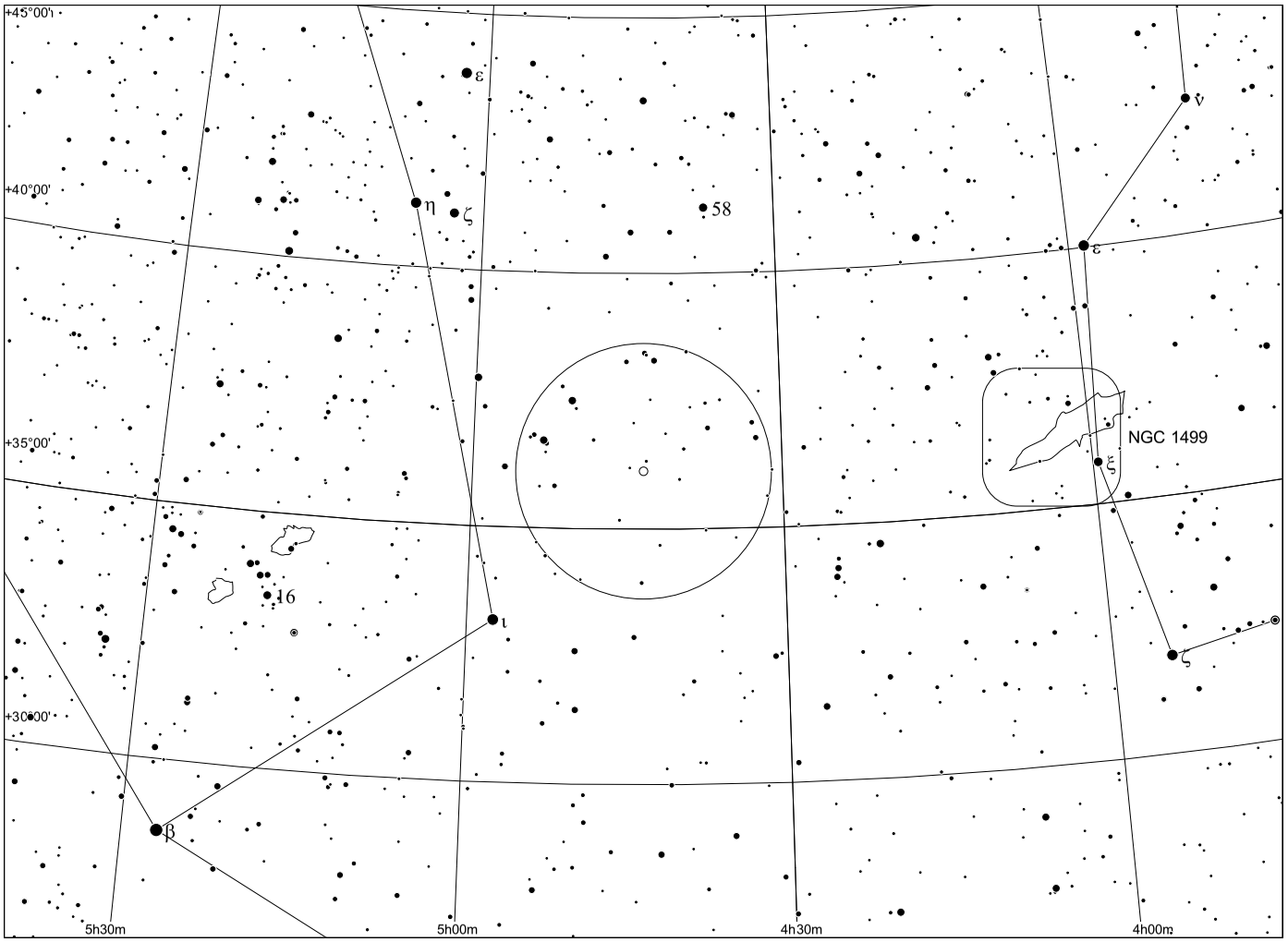


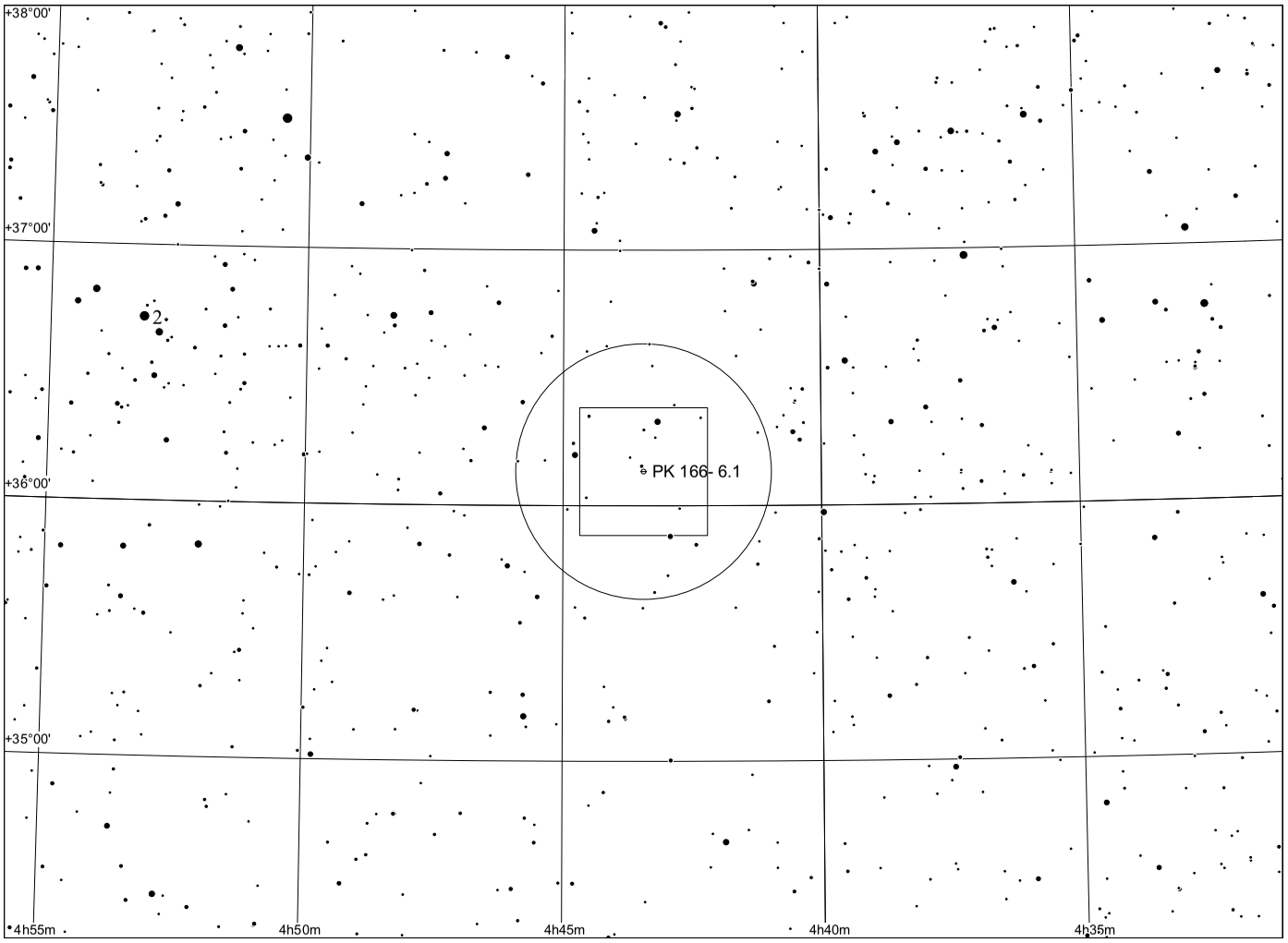


		RA	Dek	other names
CRL 618	Westbrook Nebula	04h 42m 53.6s	+36° 06' 53"	PK 166-6 1

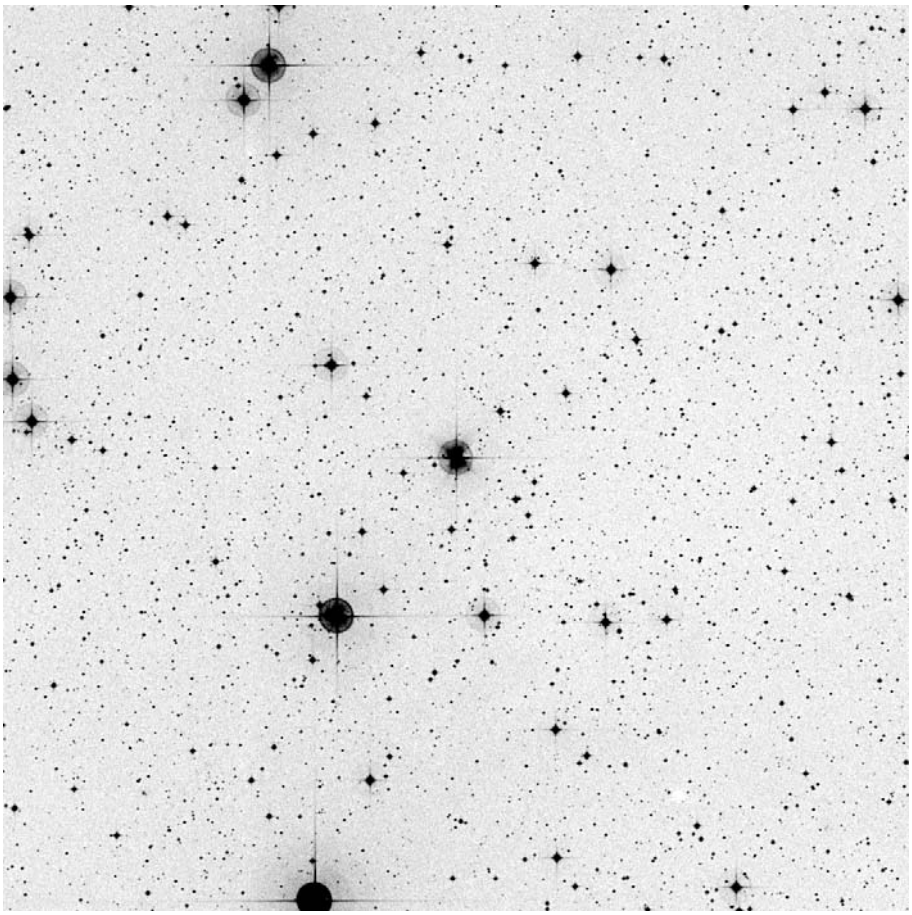
Observing notes:

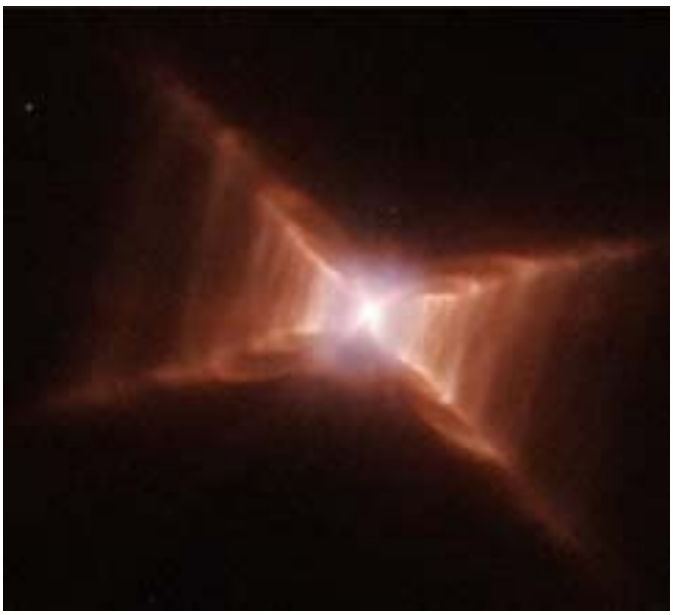
The Westbrook Nebula (CRL 618) is very faint and could be observed with 22" at 500x only intermittently with indirect vision. No details could be discerned.
Polarization of the emitted light could not be examined accurately due to the faintness of the object.

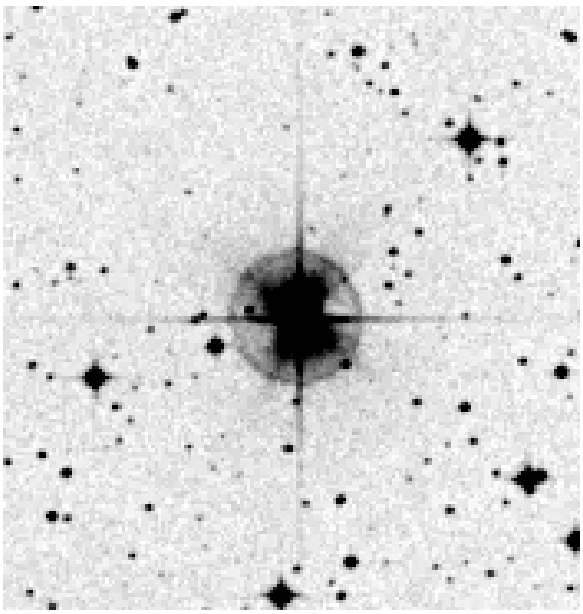

+45°00'
+40°00'
+35°00'
+30°00'
ε
η
ζ
58
ν
ε
NGC 1499
ξ
16
ι
ζ
β
5h30m
5h00m
4h30m
4h00m


+38°00'
+37°00'
+36°00'
+35°00'
2
PK 166- 6.1
4h55m
4h50m
4h45m
4h40m
4h35m

Red Rectangle in Monoceros



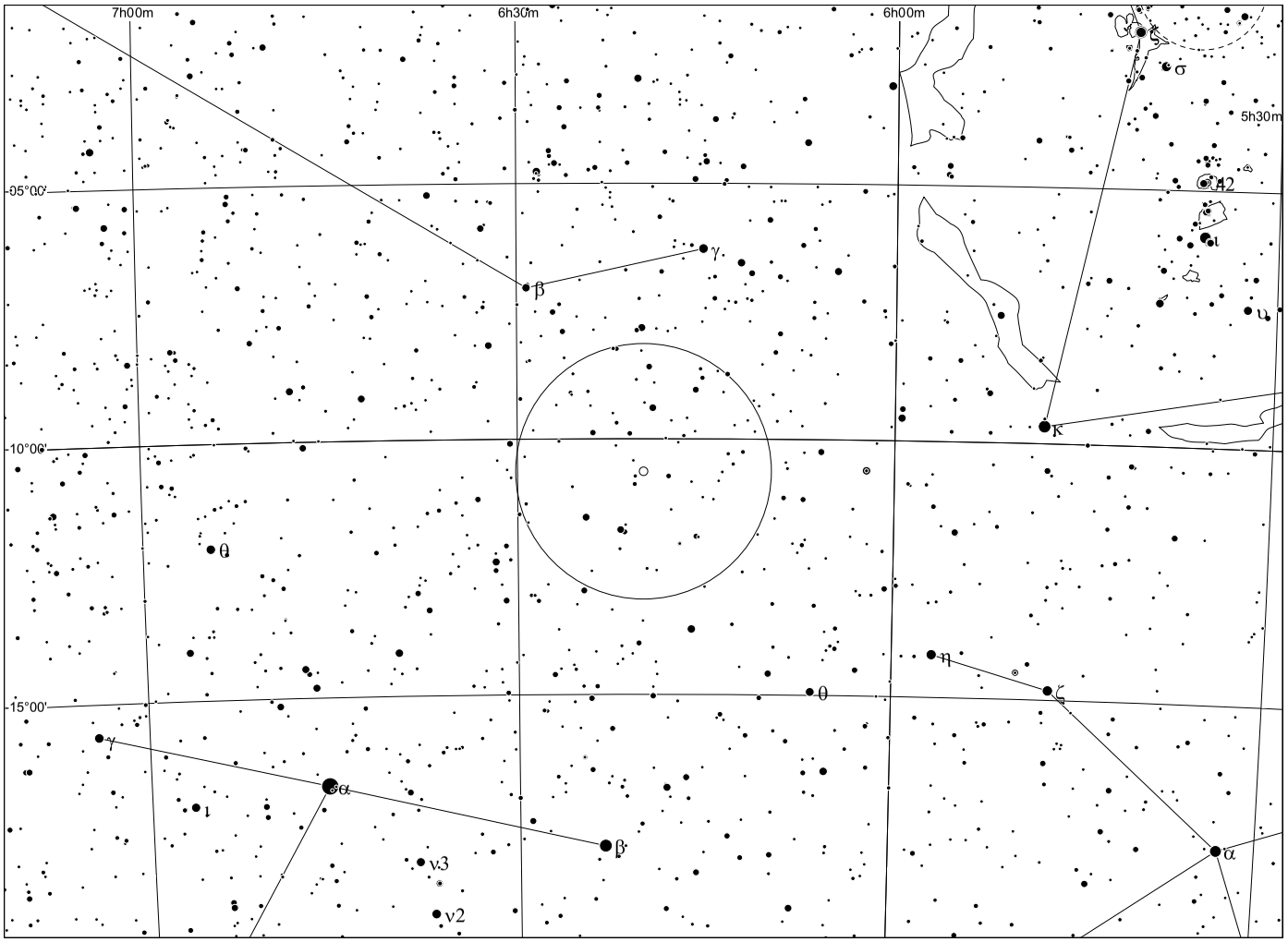


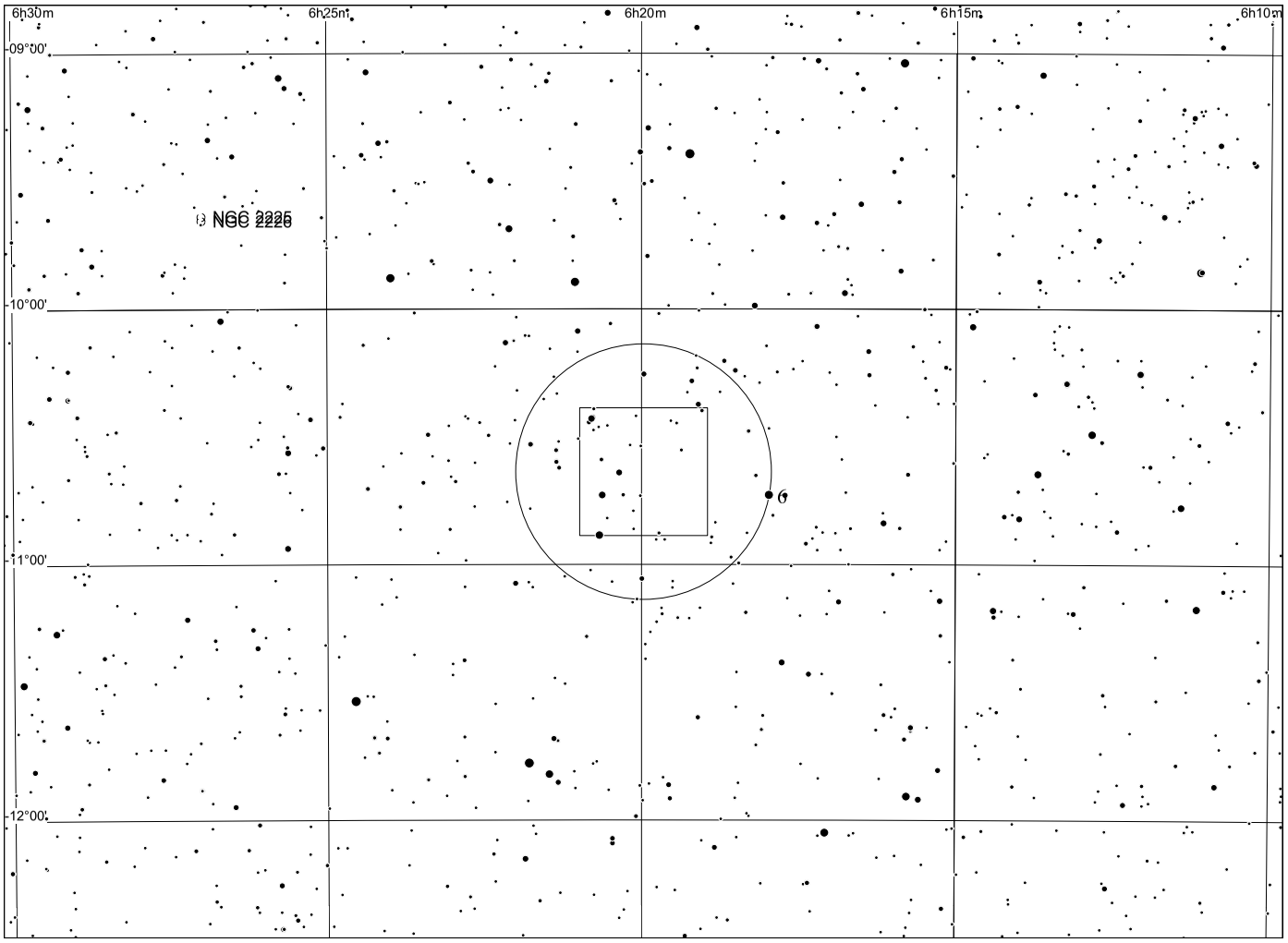


		RA	Dek	other names
HD 44179	Red Rectangle	06h 19m 58.2s	-10° 38' 14"	V777 Mon

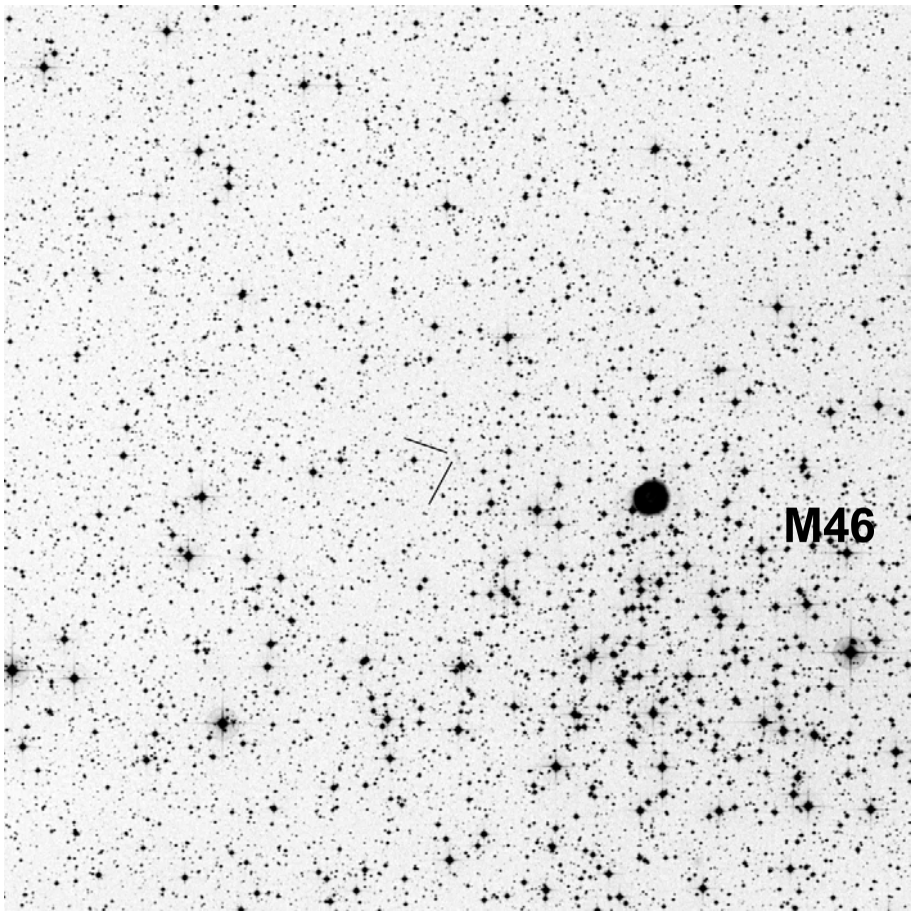
Observing notes:

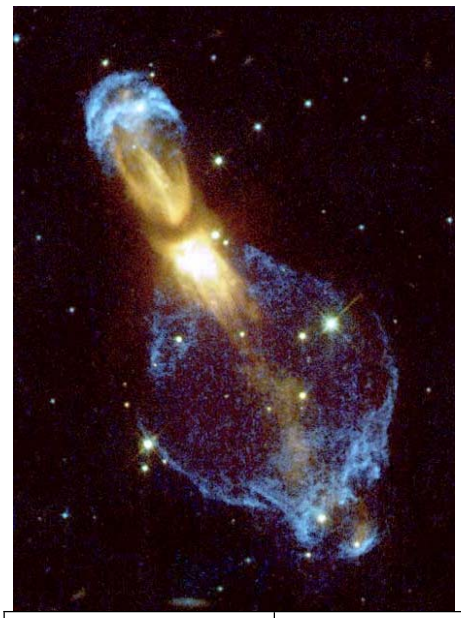
The central star is relatively bright, which makes the observation of the PPN even more difficult. After some time, the shape of the nebula could be discerned without filter, including the rays of the X. Elongated N/S. A nearby star at the E side helps in getting a feeling of the supposed size.

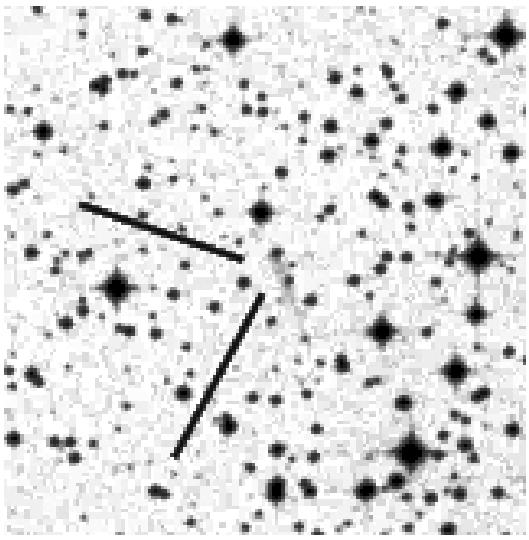

7h00m
6h30m
6h00m
5h30m
05°00'
10°00'
15°00'
σ
42
ι
γ
β
υ
κ
θ
η
ζ
θ
γ
α
ι
β
ν3
ν2
α


6h30m
6h25m
6h20m
6h15m
6h10m
09°00'
10°00'
11°00'
12°00'
NGC 2225
σ

Rotten Egg Nebula in Puppis

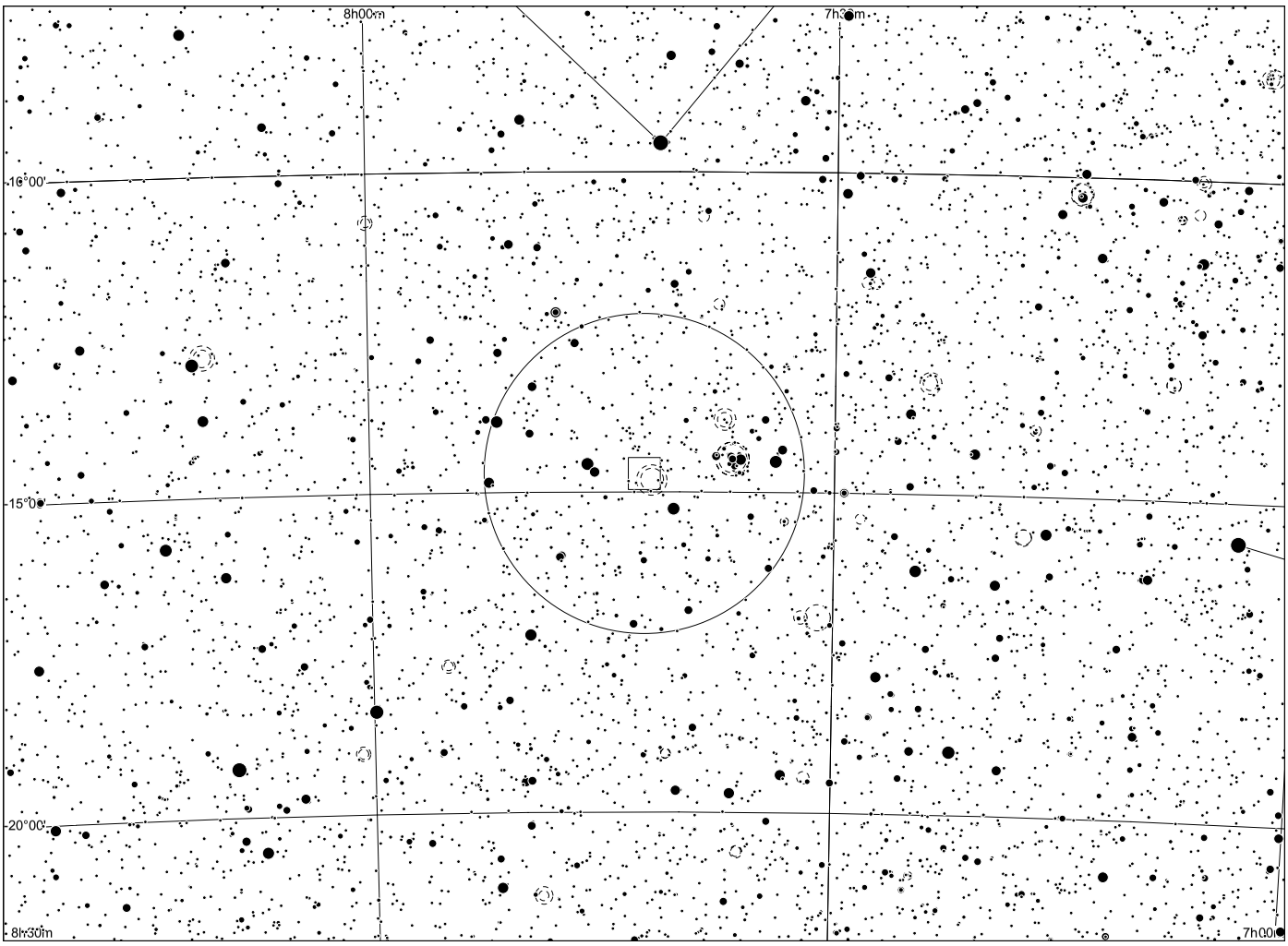


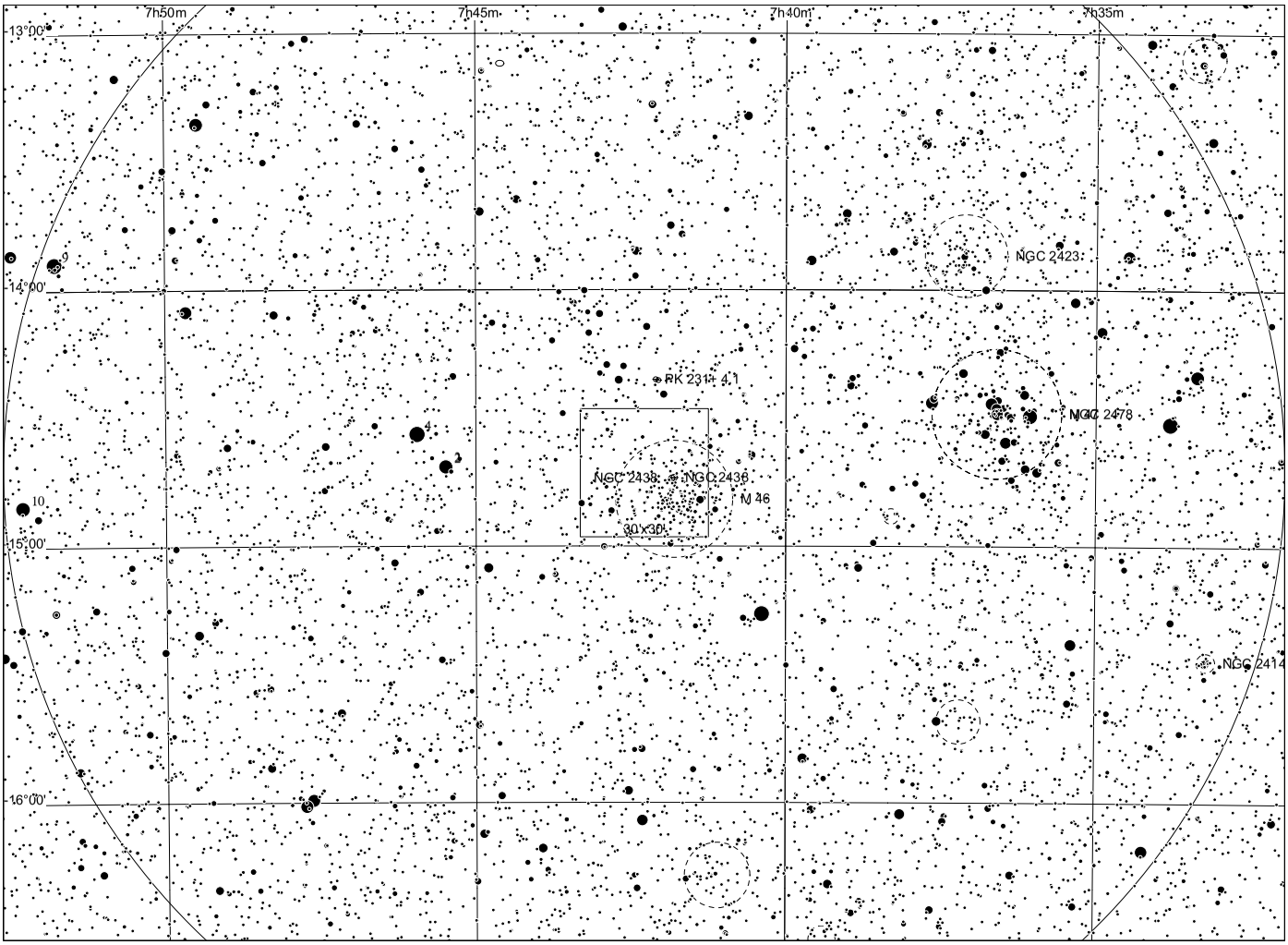




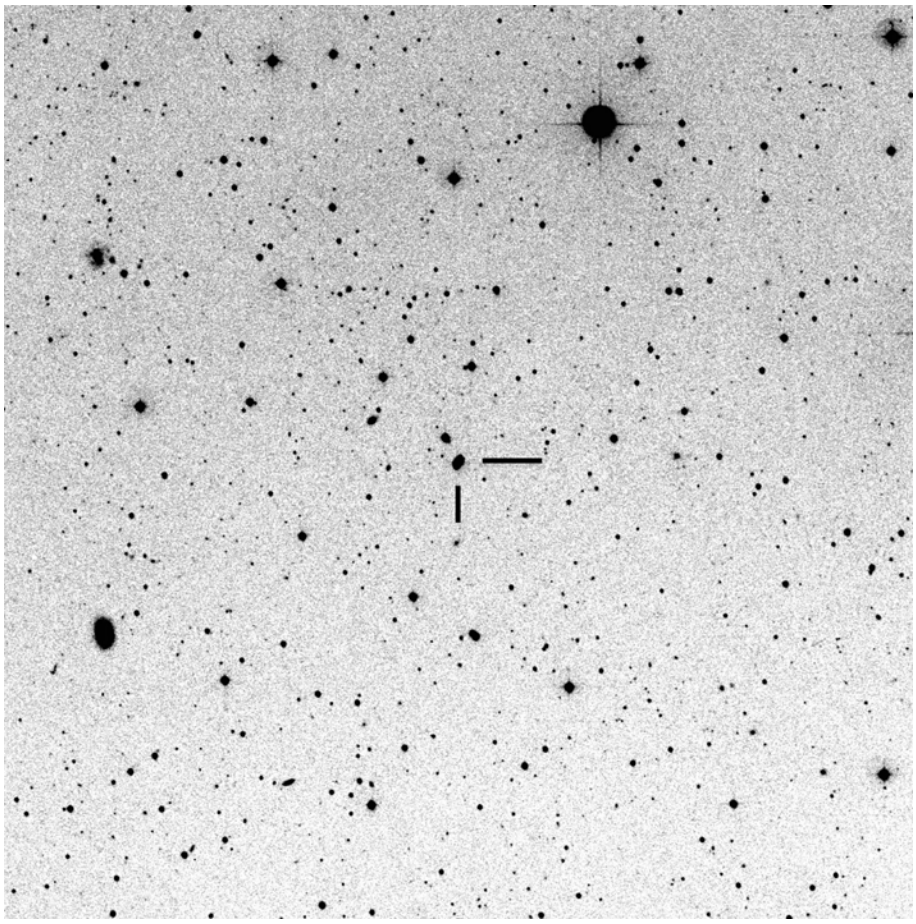
		RA	Dek	other names
OH 231.8+4.2	Rotten Egg N.	07 42 16.83	-14 42 52.1	Calabash N.

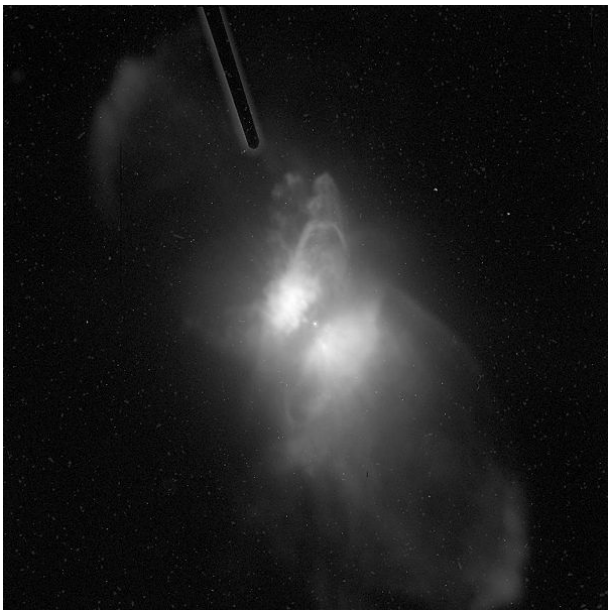
Observing notes:

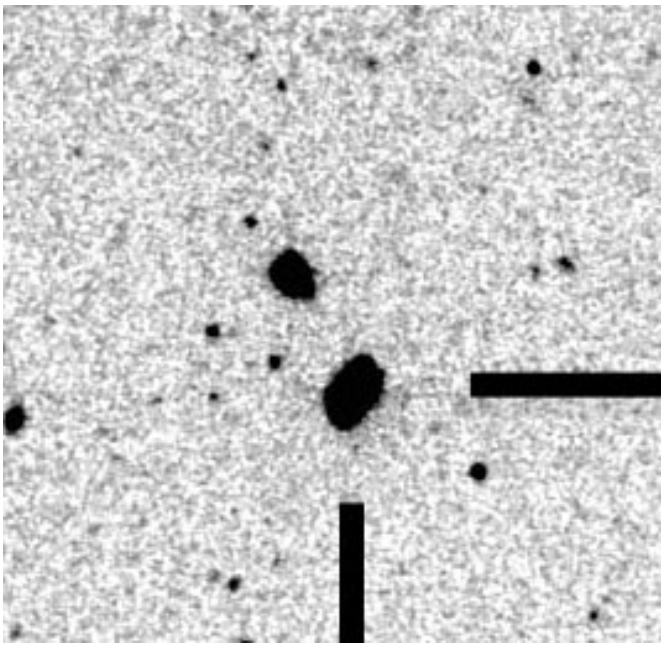

8h00m
7h30m
10°00'
15°00'
20°00'
8h30m
7h00m


7h50m
7h45m
7h40m
7h35m
13°00'
14°00'
15°00'
16°00'
NGC 2423
RK 231+ 4.1
NGC 2478
NGC 2438
NGC 2437
M 46
30'x30'
NGC 2414

Frosty Leo in Leo



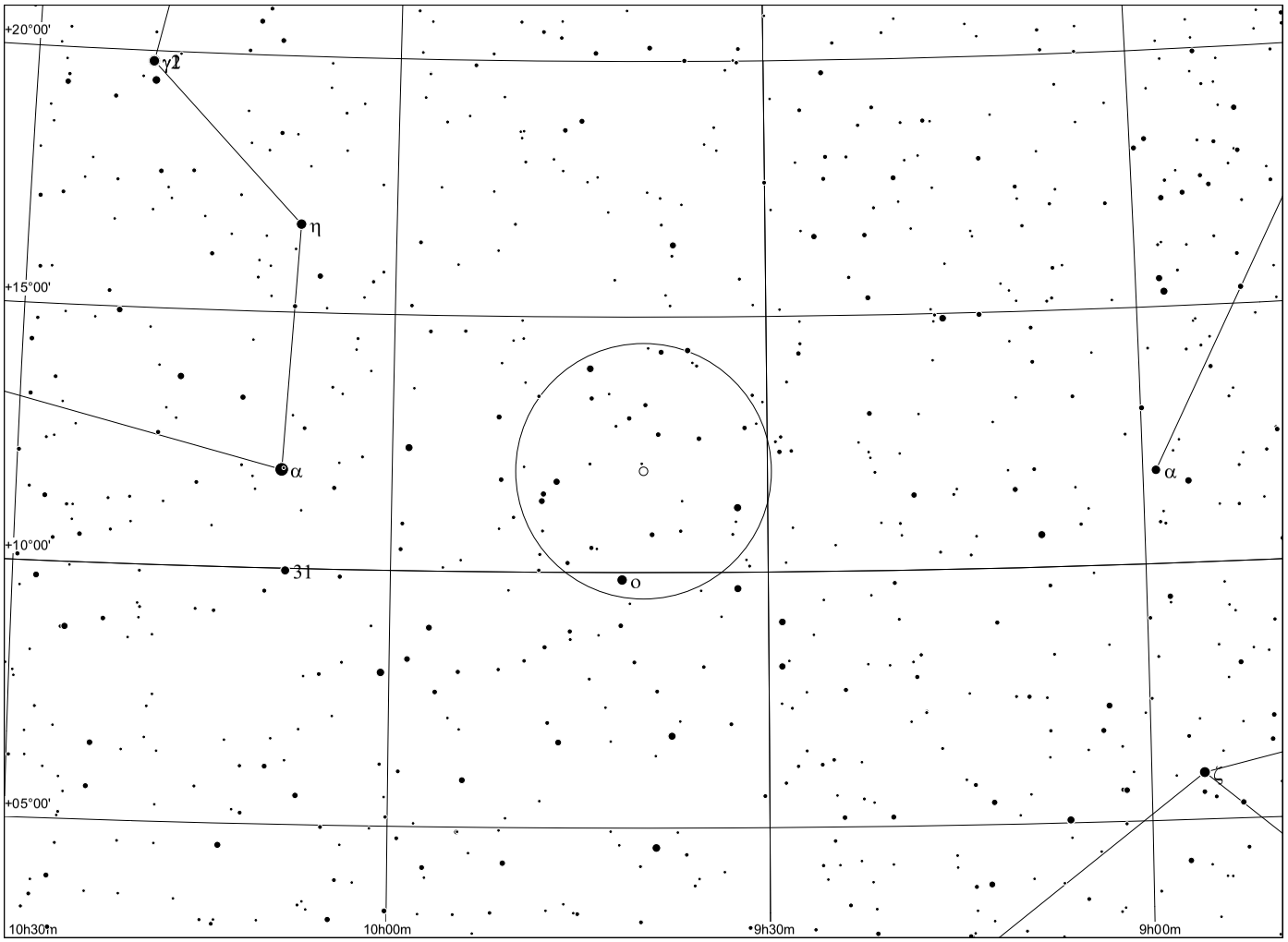


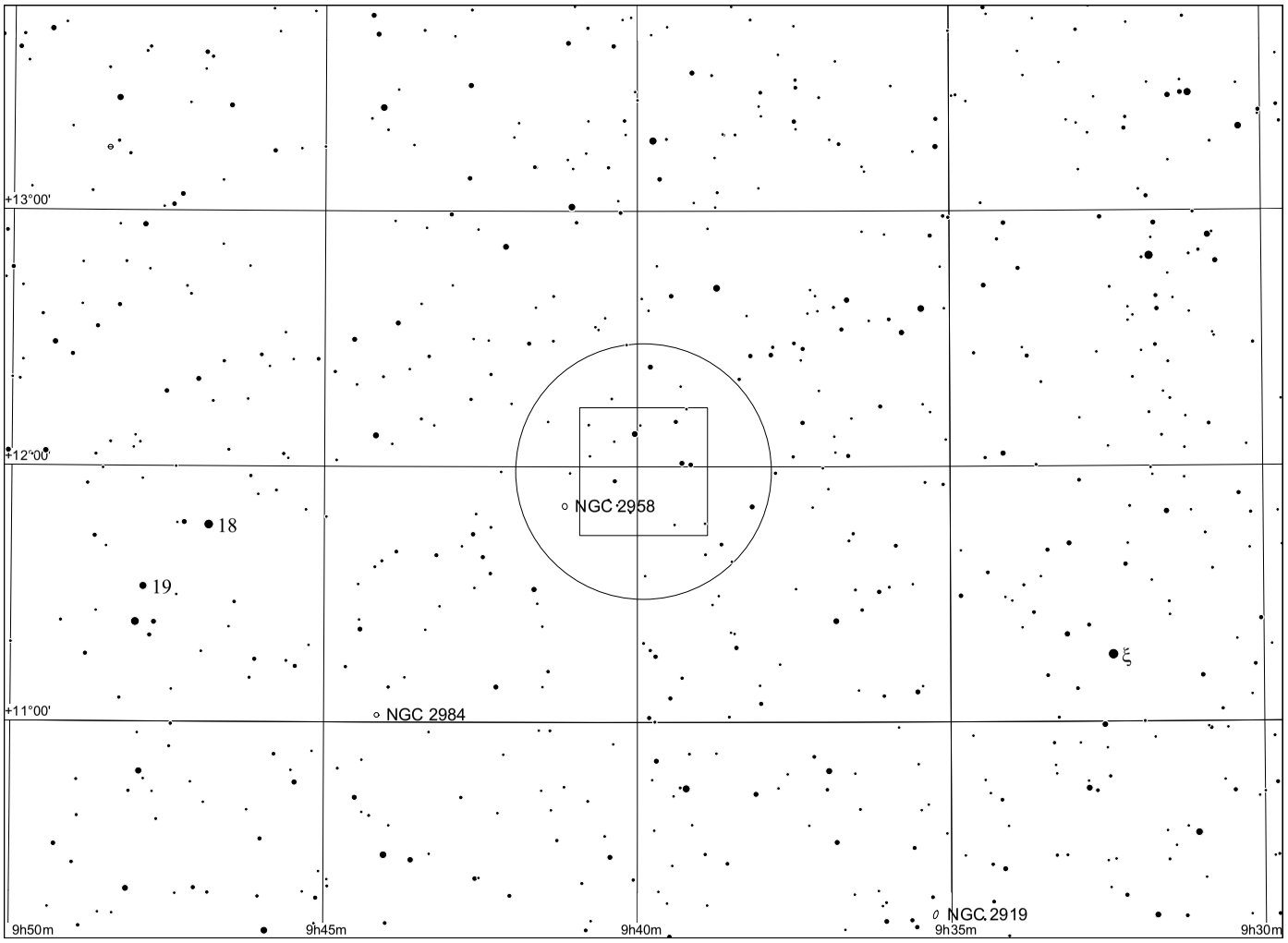


		RA	Dek	other names
IRAS 09371+1212	Frosty Leo	09h 39m 53.6s	+11° 58' 54"	

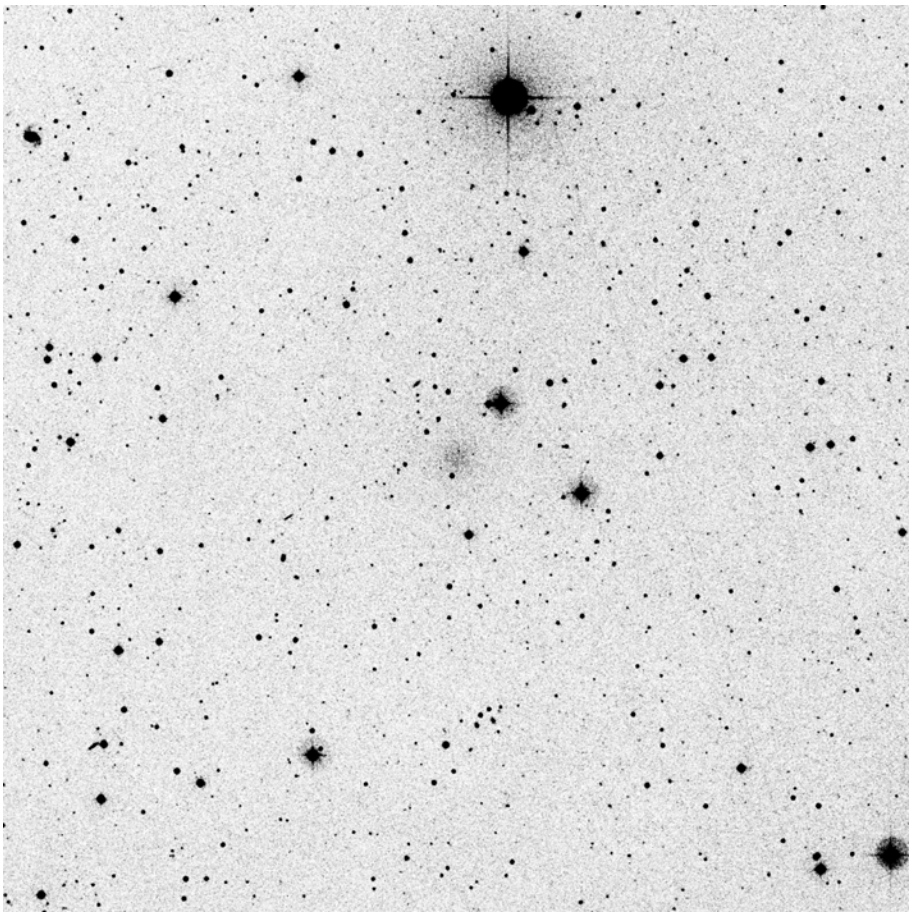
Observing notes:

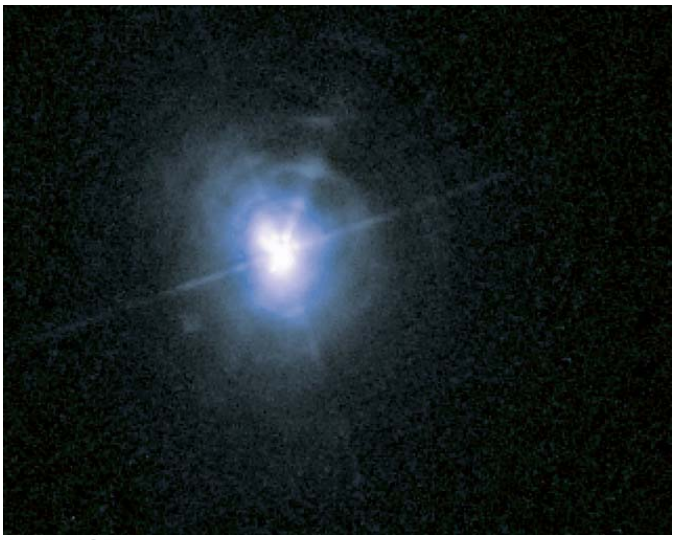
Frosty Leo (IRAS 17150+1212) revealed at 550x a very small elliptical disk elongated in NW/SE direction. During moments of steady seeing, there is a hint of the bi-lobal structure visible in the HST image.
As the nebula is relatively bright, I tested it for polarization. However, no clear angle-dependent attenuation of the nebula could be observed in comparison to the neighboring star.

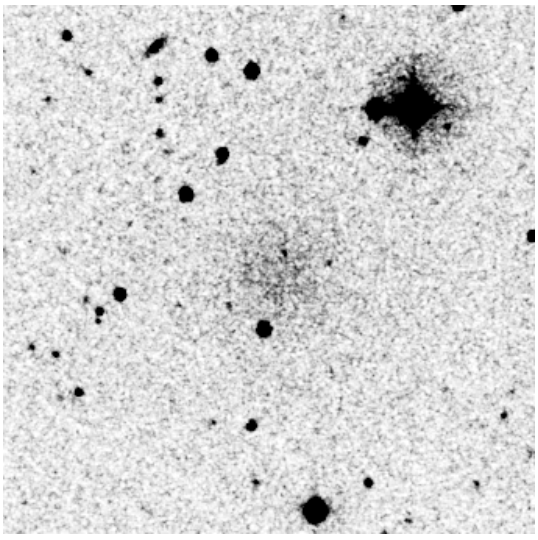

+20°00'
γ1
η
+15°00'
α
+10°00'
31
o
α
+05°00'
10h30m
10h00m
9h30m
9h00m


+13°00'
+12°00'
NGC 2958
18
19
+11°00'
NGC 2984
ξ
NGC 2919
9h50m
9h45m
9h40m
9h35m
9h30m

CW Leonis in Leo





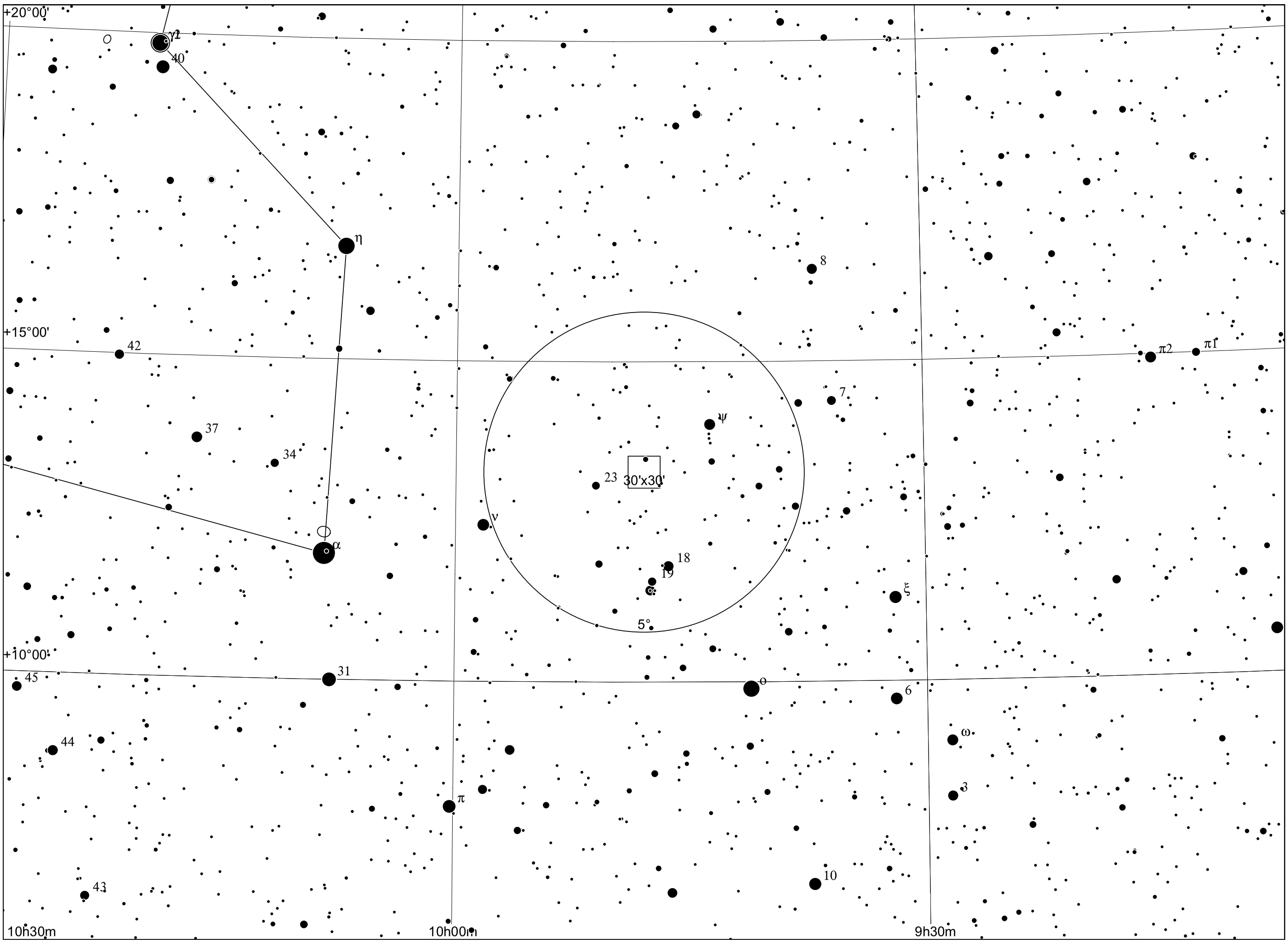


2.5" HST

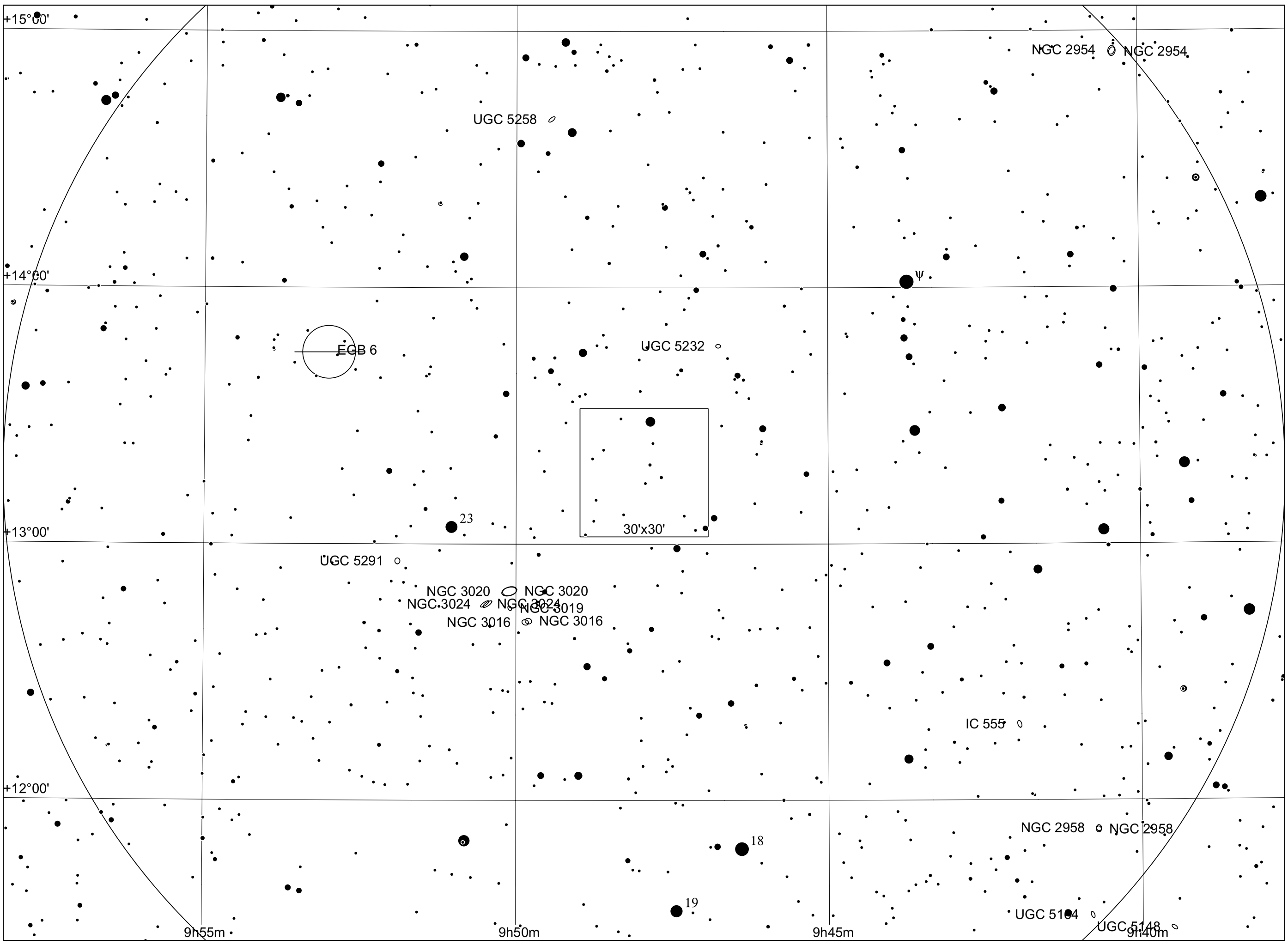
		RA	Dek	
CW Leonis	Peanut Nebula	09 47 57.43	+13 16 43.6	Carbon Star with dust shell

Observing notes:

This dust nebula around the carbon star CW Leonis (IRC +10216) appears at 200x w/o filter as a very faint diffuse brightening of approximately 1' diameter. It is situated approximately in the middle and offset to the outside of one side of a triangle of stars.
My observation from April 2011: Under very good conditions and with averted vision, a glow of approximately 1' diameter could almost be held steadily, but as expected no central star could be seen. At 350x, the nebula was still visible, though not as distinct as with 200x. Immediately S of the nebula is a faint star. The UHC filter proved to be useless. Under less than optimal conditions a few days before, the glow could only be suspected at times.
However, Alvin Huey has observed this one in a 48" and found it an extremely faint object with a much smaller diameter of 10", which makes my observation with 22" appear doubtful. This object certainly needs further observations.

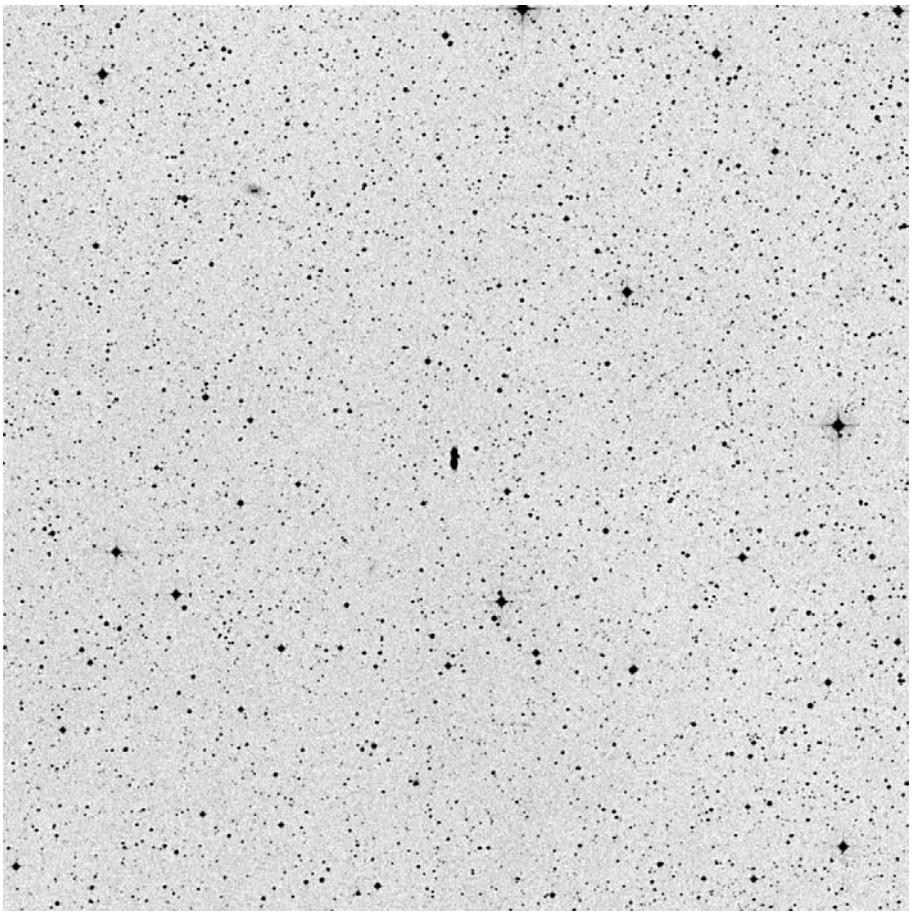


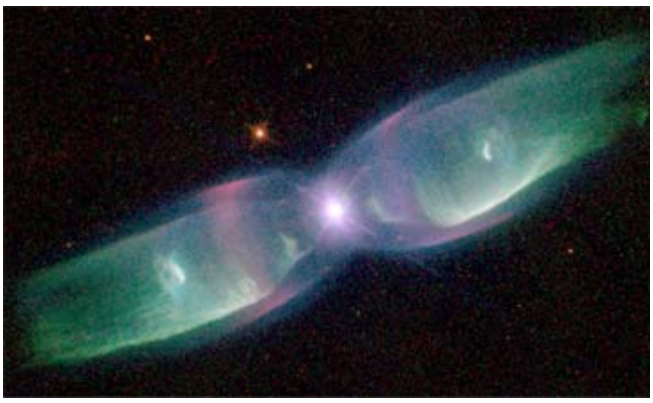
+20°00'
+15°00'
+10°00'
η
α
π1
π2
ψ
ν
ξ
ο
ω
π
23
30'x30'
18
19
5°
6
7
8
10
31
34
37
40
42
43
44
45
10h30m
10h00m
9h30m

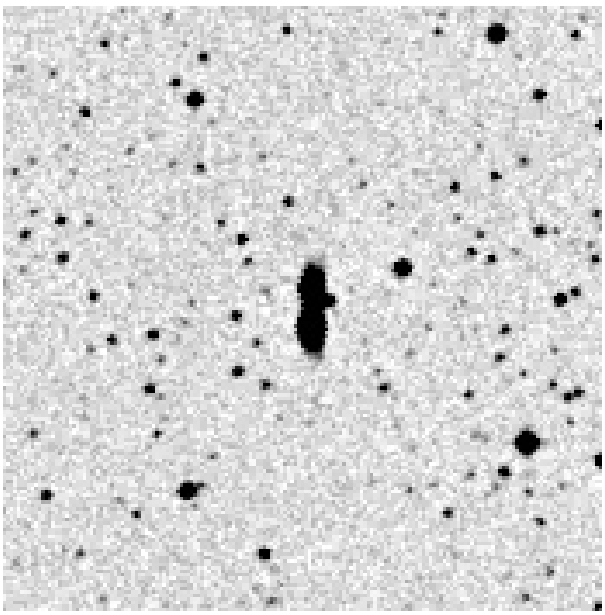


+15°00'
+14°30'
+13°00'
+12°00'
NGC 2954
UGC 5258
ψ
EGB 6
UGC 5232
30'x30'
23
UGC 5291
NGC 3020
NGC 3024
NGC 3019
NGC 3016
IC 555
NGC 2958
18
19
UGC 5164
UGC 5148
9h55m
9h50m
9h45m
9h40m

Butterfly Nebula in Ophiuchus



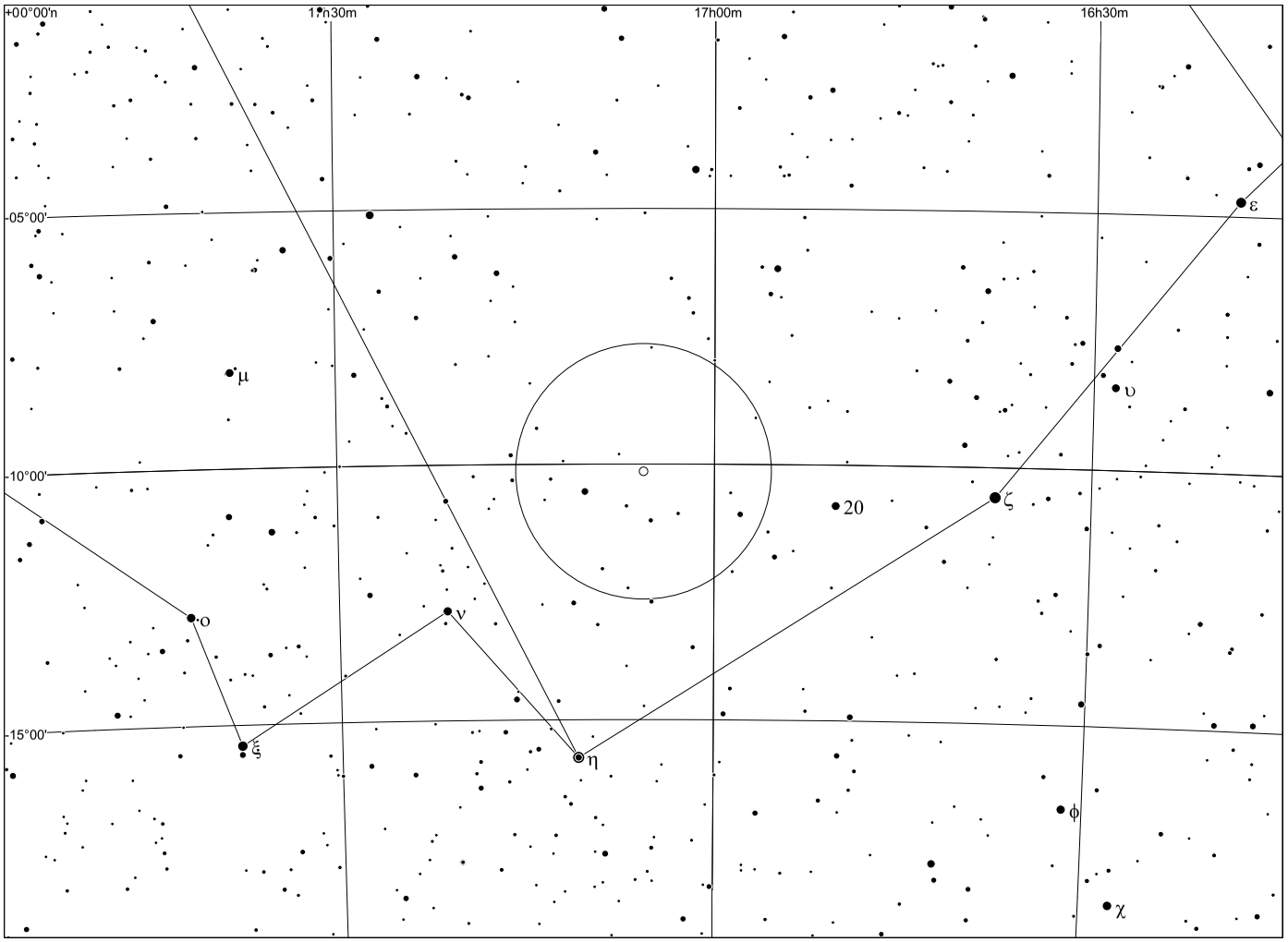


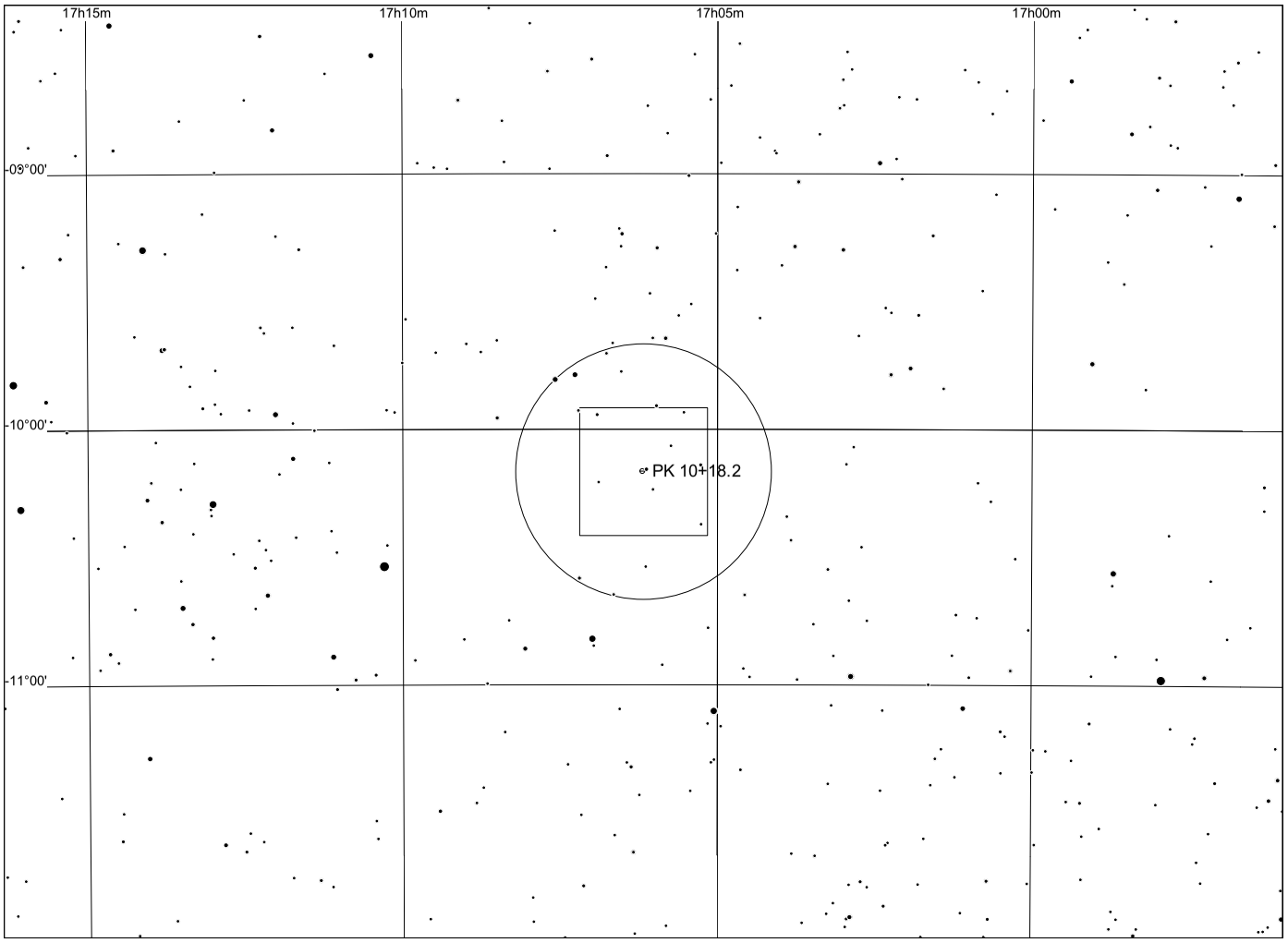


		RA	Dek	other names
M 2-9	Butterfly Nebula	17h 05m 38.1s	-10° 08' 33"	PK 10+18 2

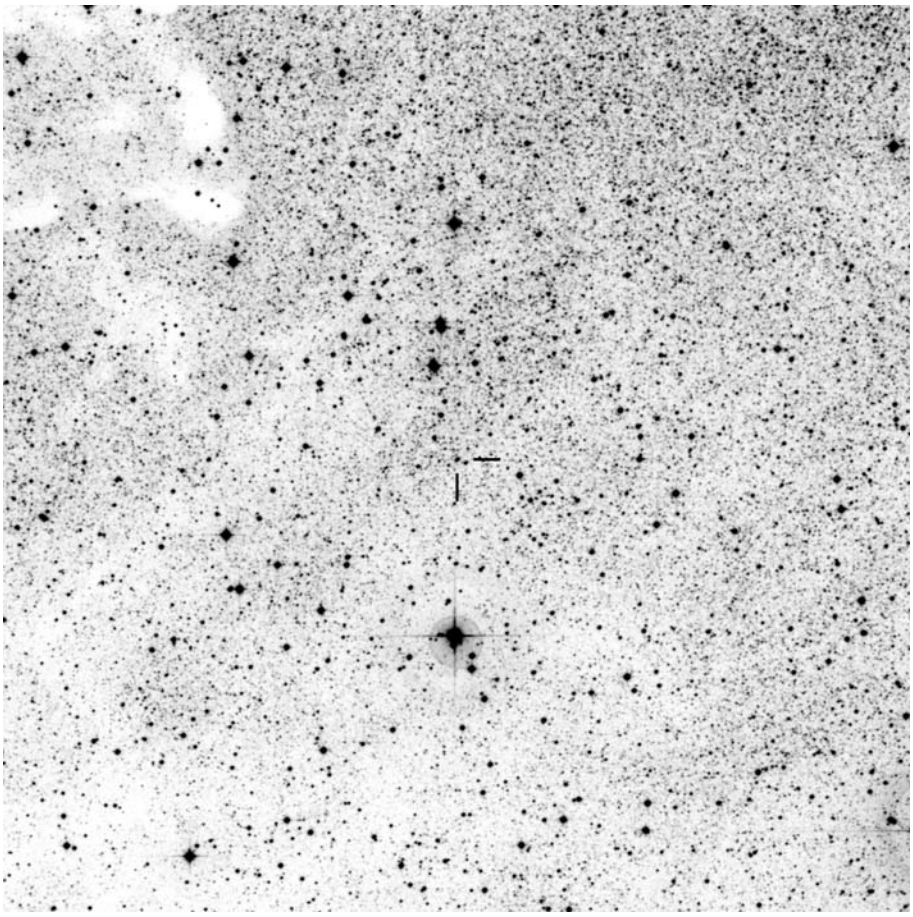
Observing notes:

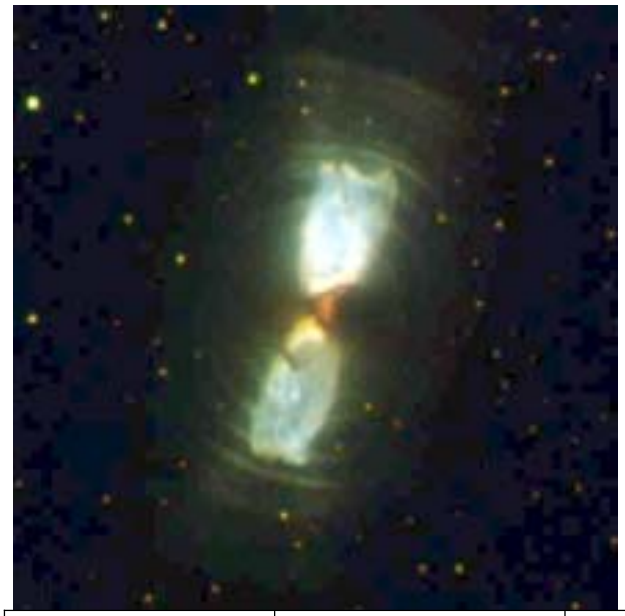
The Butterfly Nebula (Minkowski 2-9) was visible w/o filter as a small, faint, and elongated bipolar nebula around a relatively bright central star.
With a polarization filter, it responded somewhat to the polarization angle. The comparatively bright central star, however, interfered with a more thorough analysis of this effect.

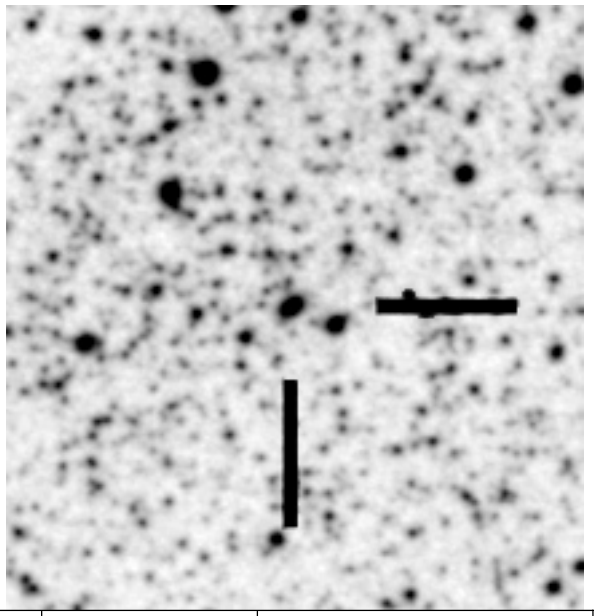

+00°00'n
17h30m
17h00m
16h30m
-05°00'
-10°00'
-15°00'
μ
ε
υ
20
ζ
ο
ν
ξ
η
φ
χ


17h15m
17h10m
17h05m
17h00m
-09°00'
-10°00'
-11°00'
PK 10+18.2

Cotton Candy Nebula in Scorpio

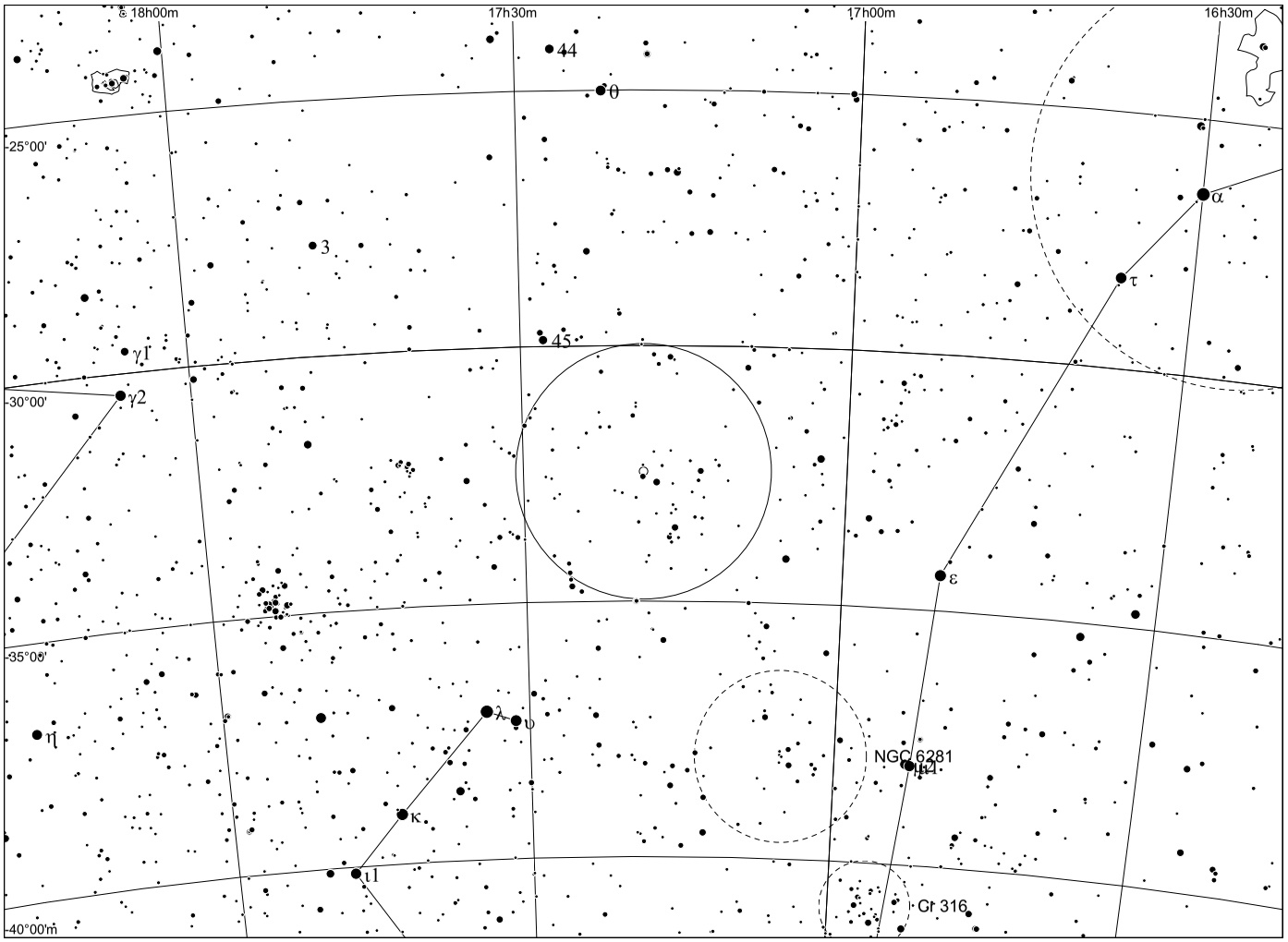


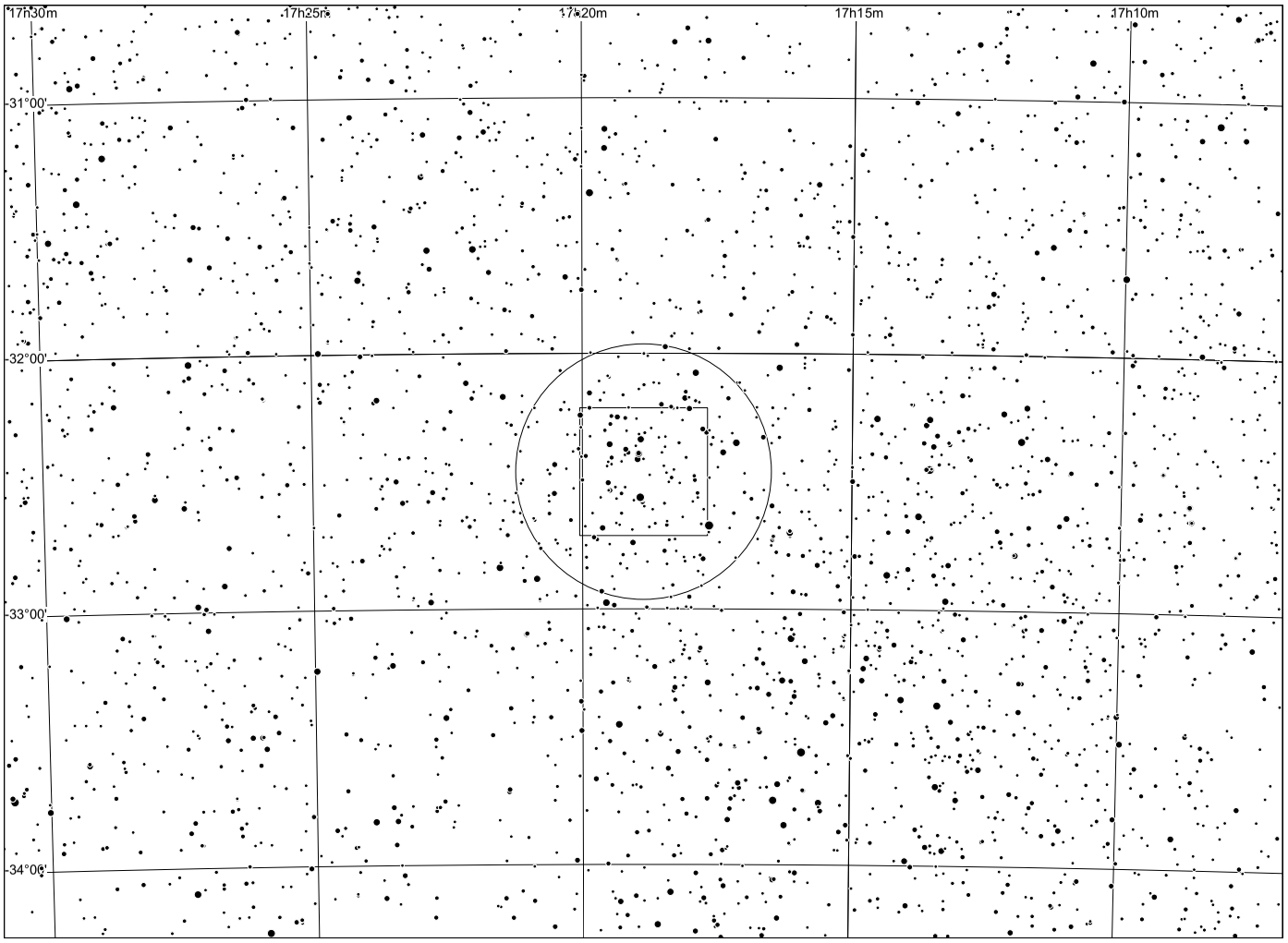




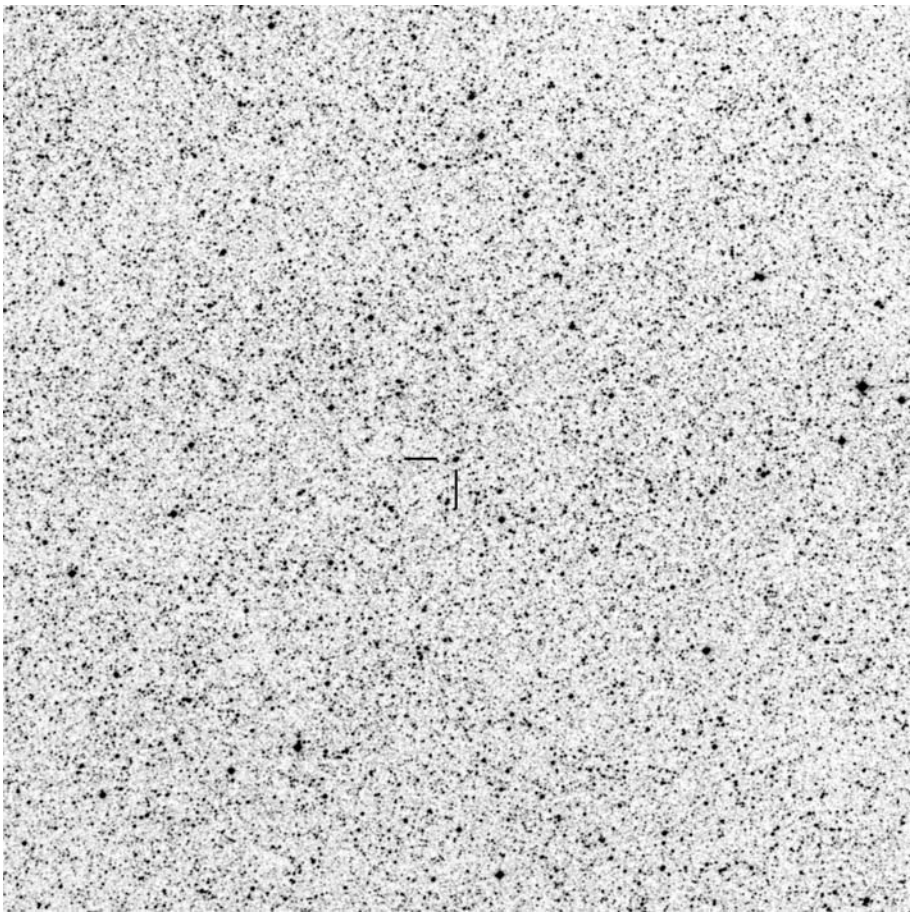
		RA	Dek	other names
IRAS 17150-3224	Cotton Candy Nebula	17h 18m 20.0s	-32° 27' 20"	

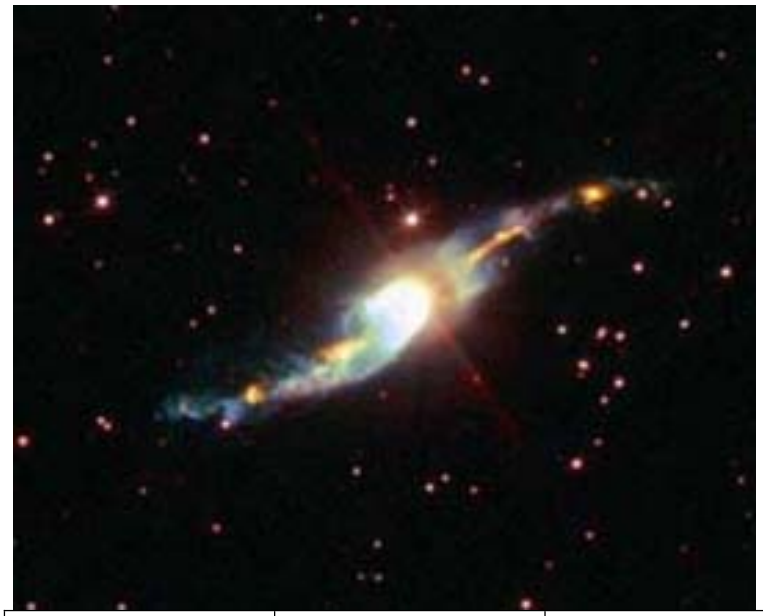
Observing notes:

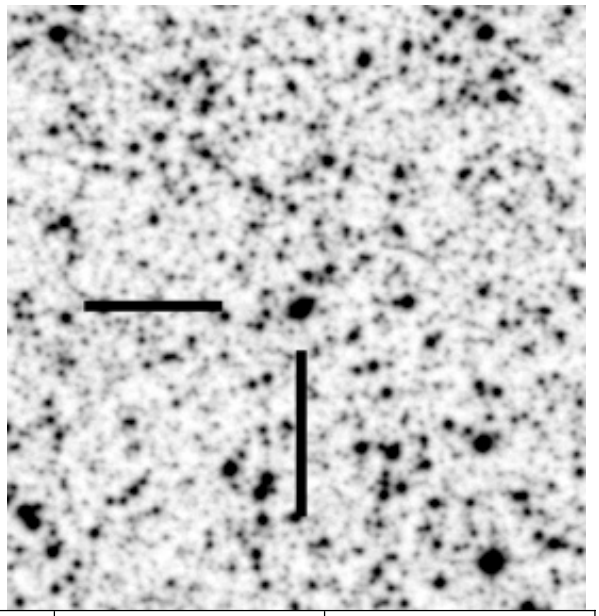

18h00m
17h30m
17h00m
16h30m
-25°00'
-30°00'
-35°00'
-40°00'
44
θ
3
45
γ1
γ2
α
τ
ε
η
λ
υ
κ
ι1
NGC 6281
μ1
Gr 316


17h30m
17h25m
17h20m
17h15m
17h10m
-31°00'
-32°00'
-33°00'
-34°00'

Hen 3-1475 in Sagittarius







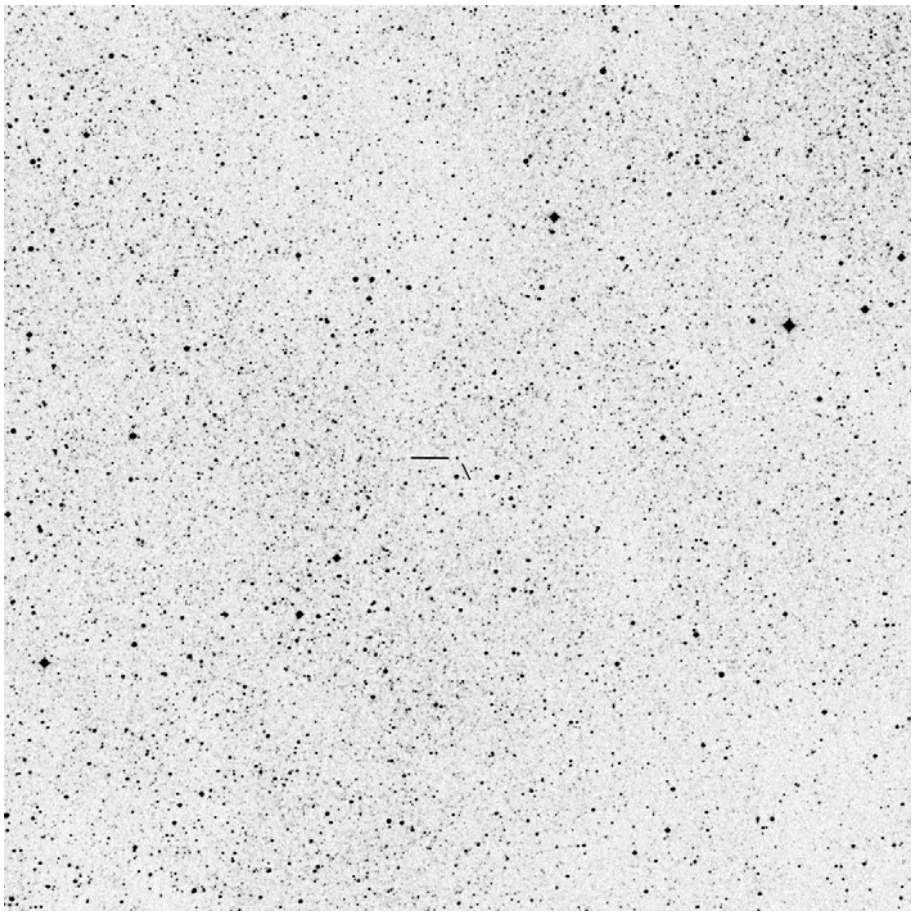
		RA	Dek	other names
Hen 3-1475	Garden-sprinkler Nebula	17h 45m 14.2s	-17° 56' 47"	IRAS 17423-1755

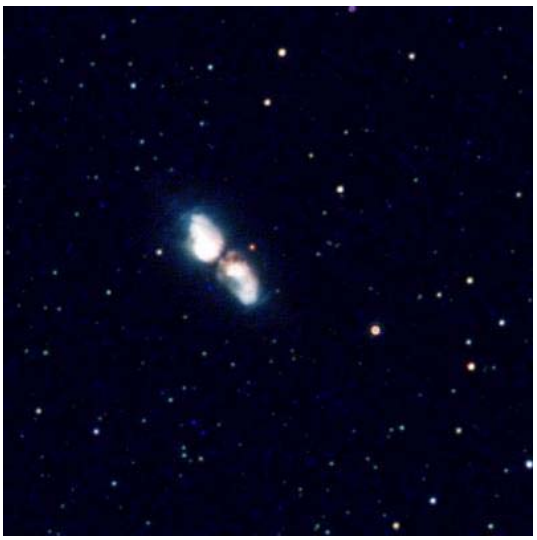
Observing notes:

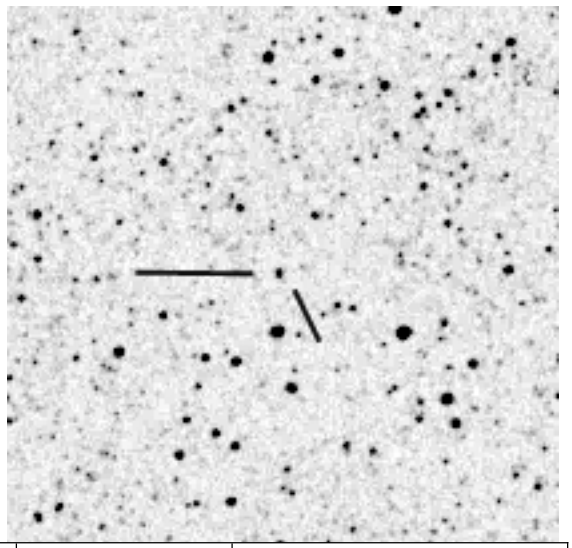
17h00m
17h30m
18h00m
18h30m
-10°00'
-15°00'
-20°00'
-25°00'
η
ν
ξ
ο
γ
ζ
μ
λ
θ
44

17h49m
17h45m
17h50m
17h55m
-16°00'
-17°00'
-18°00'
-19°00'

Silkworm Nebula in Sagittarius

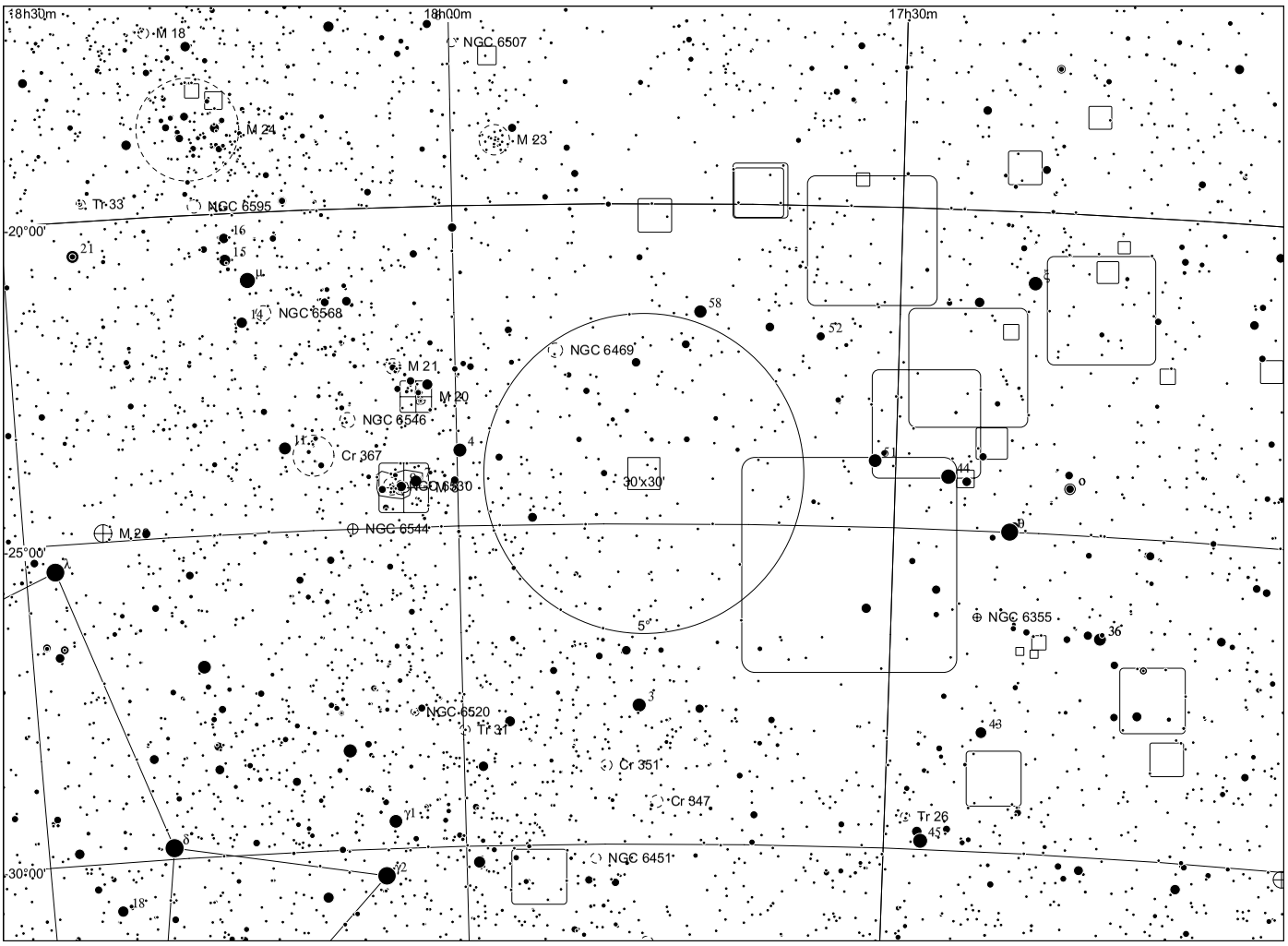


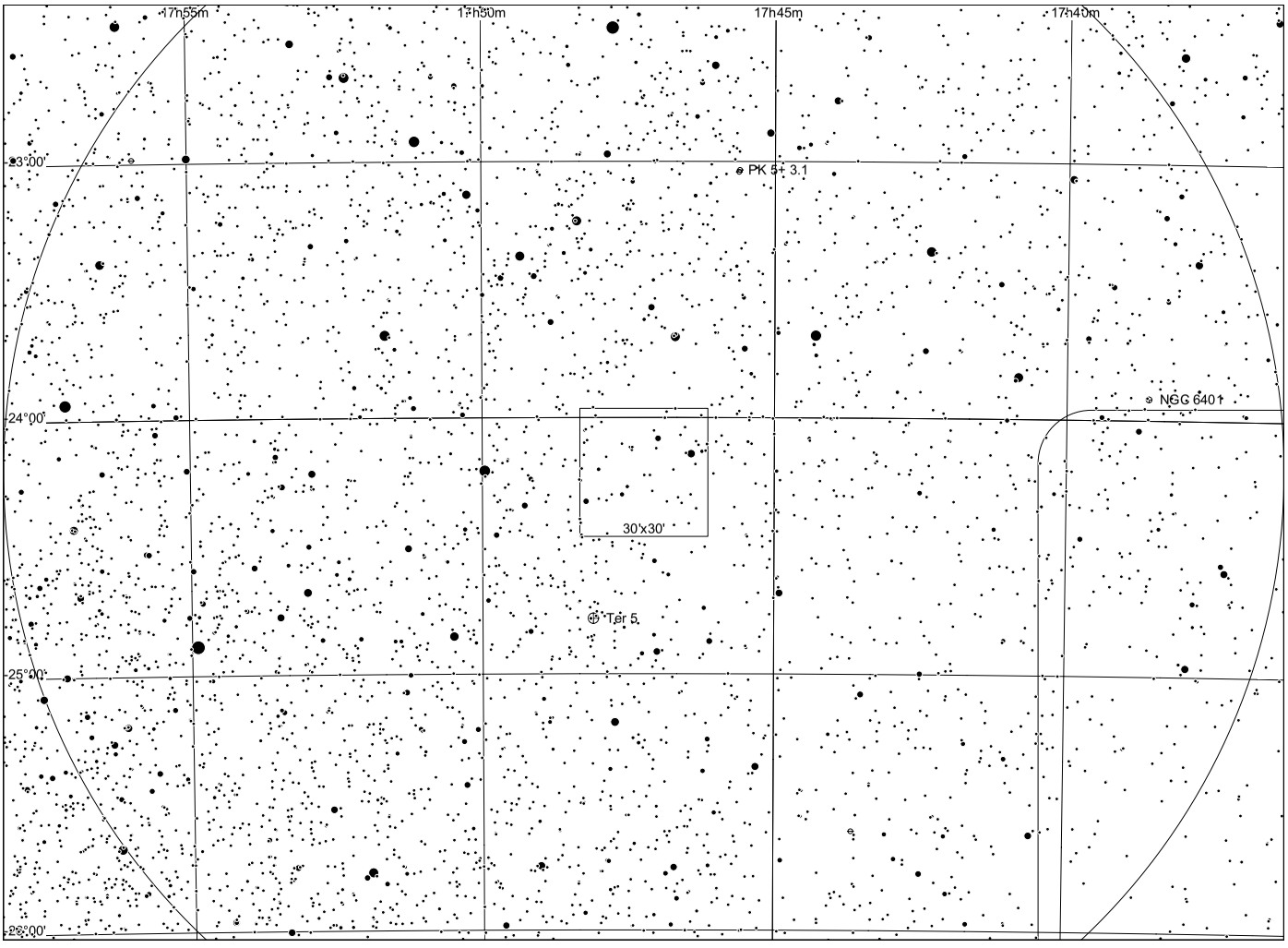




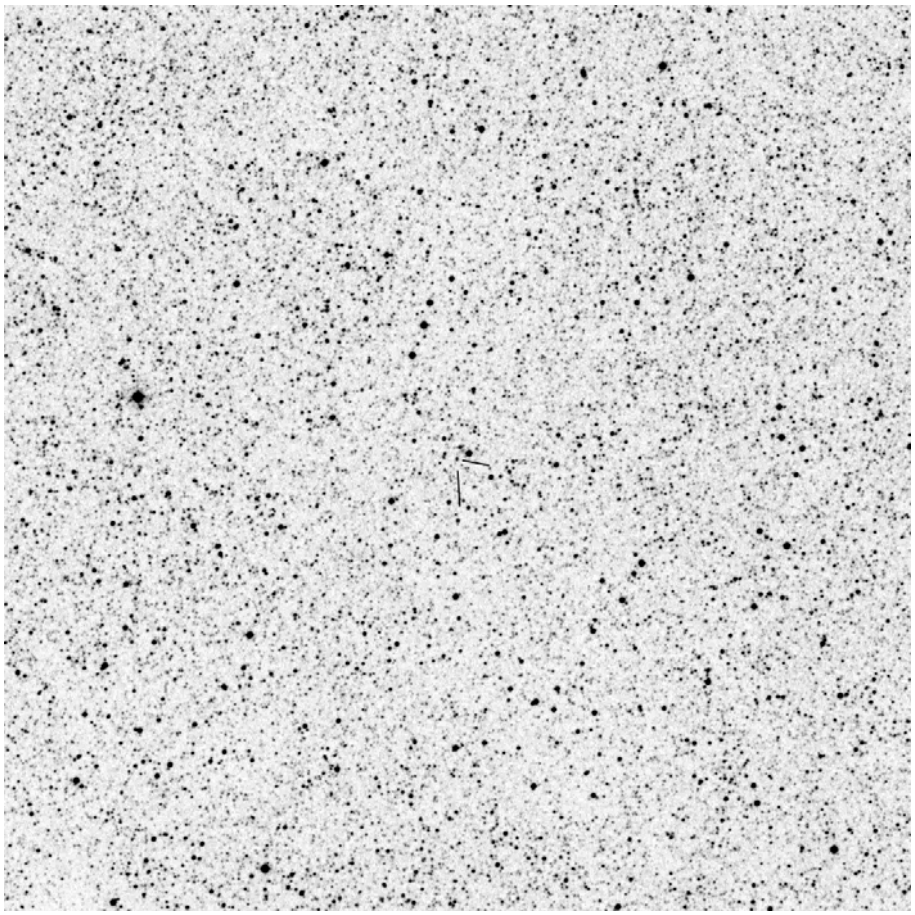
		RA	Dek	other names
IRAS 17441-2411	Silkworm Nebula	17 47 13.49	-24 12 51.4	

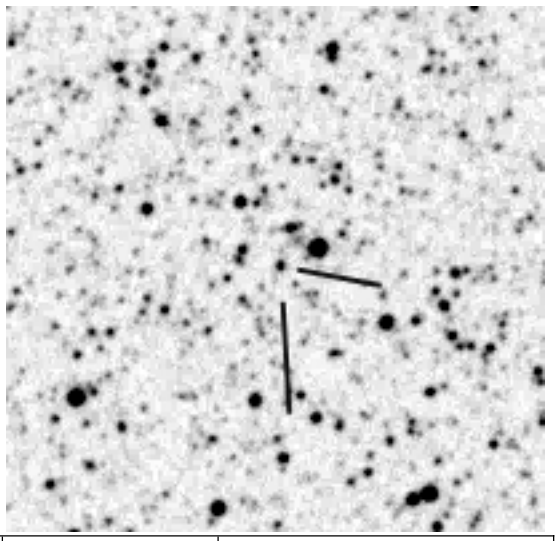
Observing notes:


18h30m
18h00m
17h30m
M 18
NGC 6507
M 24
M 23
Tr 33
NGC 6595
20°00'
16
15
21
14
NGC 6568
58
52
NGC 6469
M 21
M 20
NGC 6546
11
Cr 367
4
NGC 6530
30'x30'
44
M 2
NGC 6544
25°00'
5
NGC 6355
36
3
NGC 6520
Tr 31
43
Cr 351
Cr 347
γ1
Tr 26
45
δ
γ2
NGC 6451
30°00'
18


17h55m
17h50m
17h45m
17h40m
23°00'
PK 5+ 3.1
24°00'
NGC 6401
30'x30'
Ter 5
25°00'
26°00'

Gomez Hamburger in Sagittarius

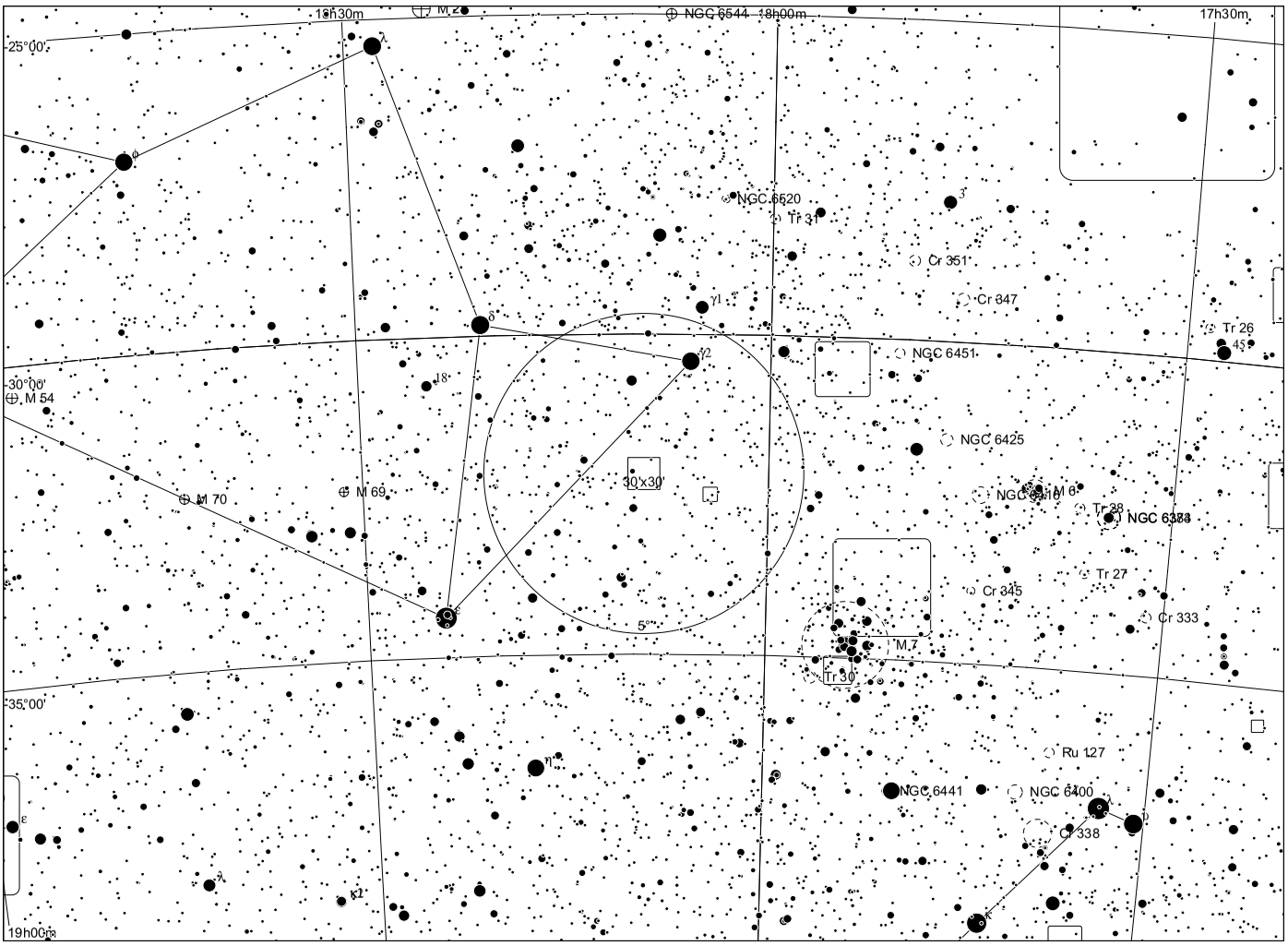


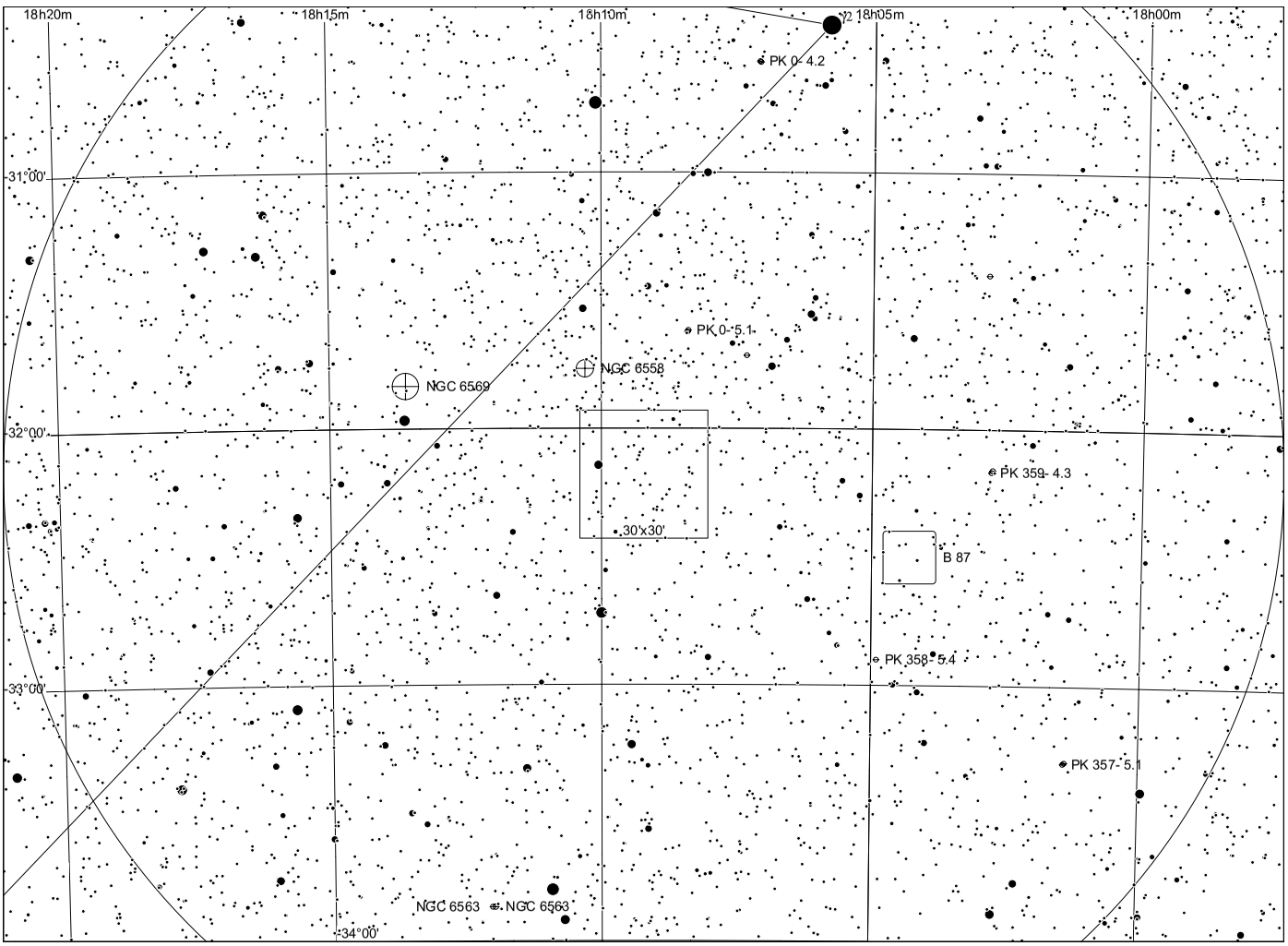


		RA	Dek	other names
IRAS 18059-3211	Gomez' Hamburger	18 09 13.30	-32 10 48.0	

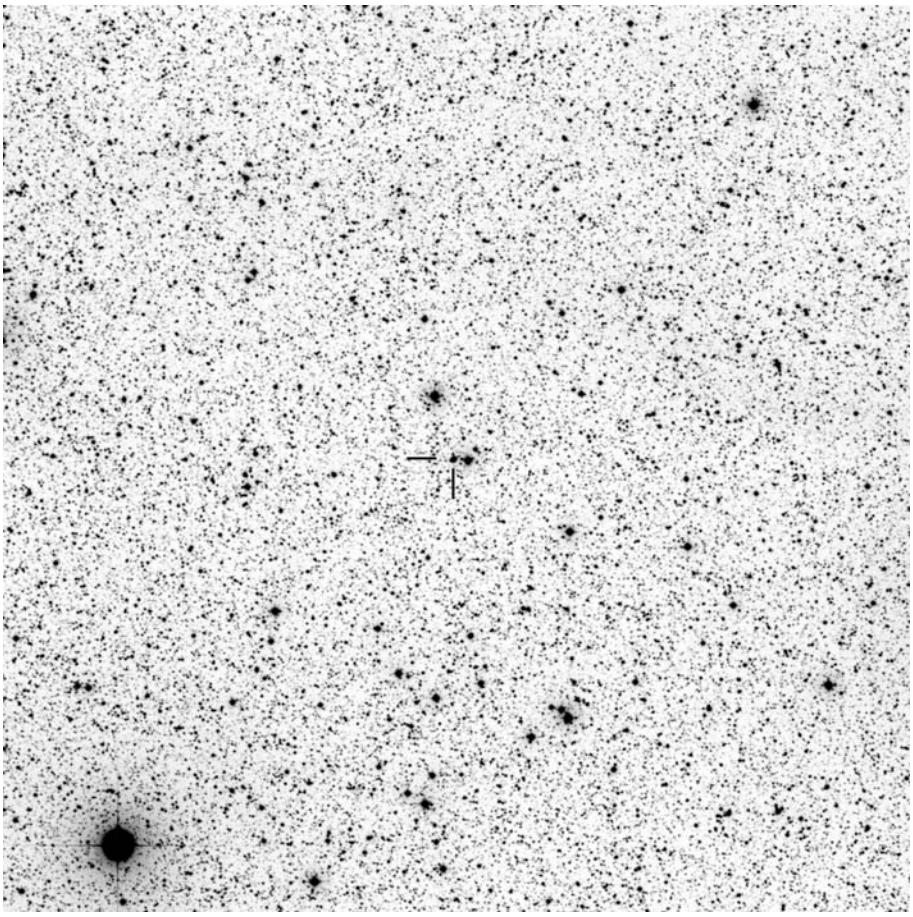
Observing notes:

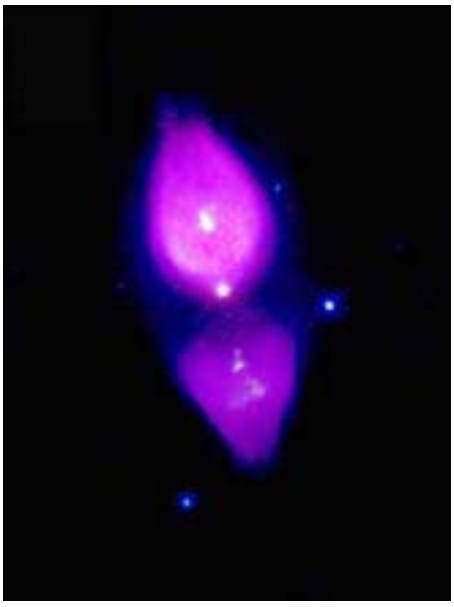
The assignment as a proto-PN is being debated. Probably this object is rather a YSO with protoplanetary disk ("protoplanetary" has two very different meanings in both object classes!).
I observed the Hamburger during a night with excellent transparency down to the horizon. The YSO could be seen several times with indirect vision as an extremely faint stellar object.

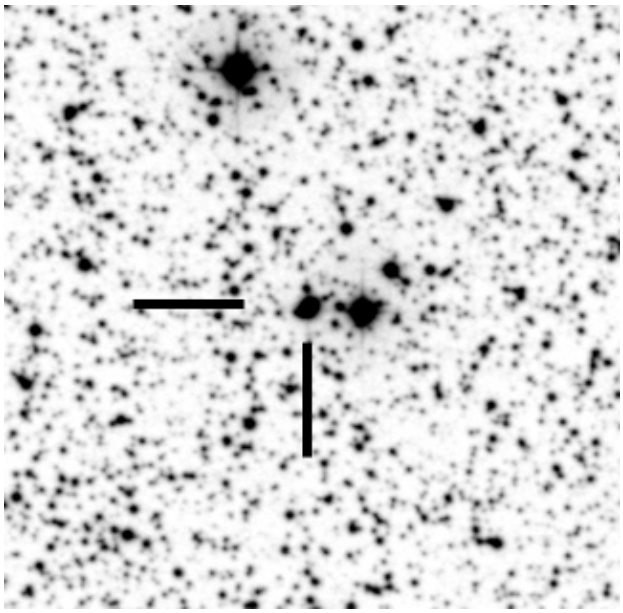

18h30m
M 2
NGC 6544
18h00m
17h30m
25°00'
NGC 6520
Tr 31
Cr 351
Cr 347
Tr 26
NGC 6451
30°00'
M 54
NGC 6425
M 70
M 69
30'x30'
NGC 6
M 6
Tr 28
NGC 6334
Tr 27
Cr 345
Cr 333
5°
M 7
Tr 30
35°00'
Ru 127
NGC 6441
NGC 6400
Cr 338
19h00m


18h20m
18h15m
18h10m
18h05m
18h00m
PK 0-4.2
31°00'
PK 0-5.1
NGC 6558
NGC 6569
32°00'
PK 359-4.3
30'x30'
B 87
PK 358-5.4
33°00'
PK 357-5.1
NGC 6563
NGC 6563
34°00'

Footprint Nebula in Cygnus





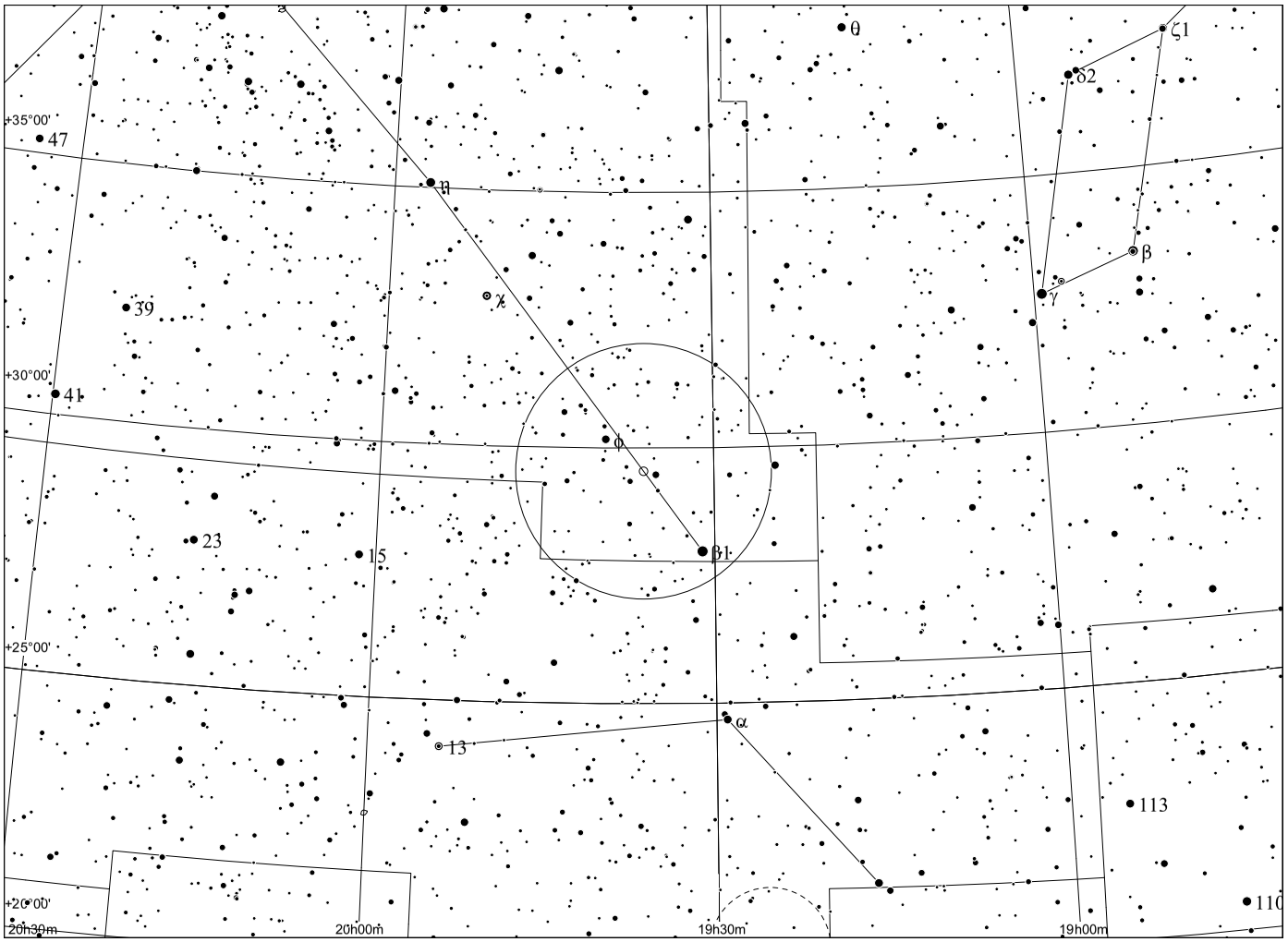


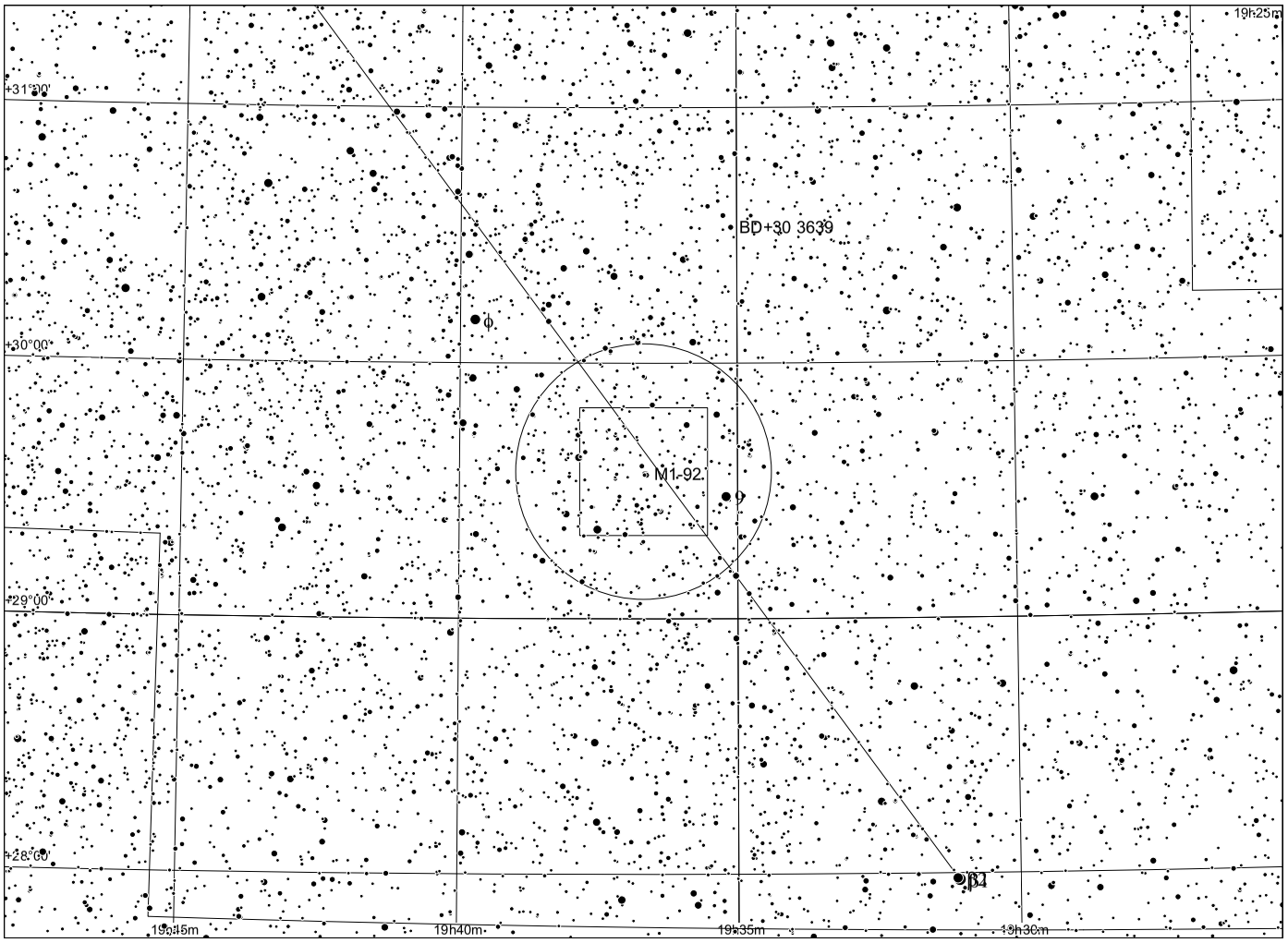
		RA	Dek	other names
M 1-92	Footprint Nebula	19h 36m 18.9s	+29° 32' 50"	Minkowski's Footprint

Observing notes:

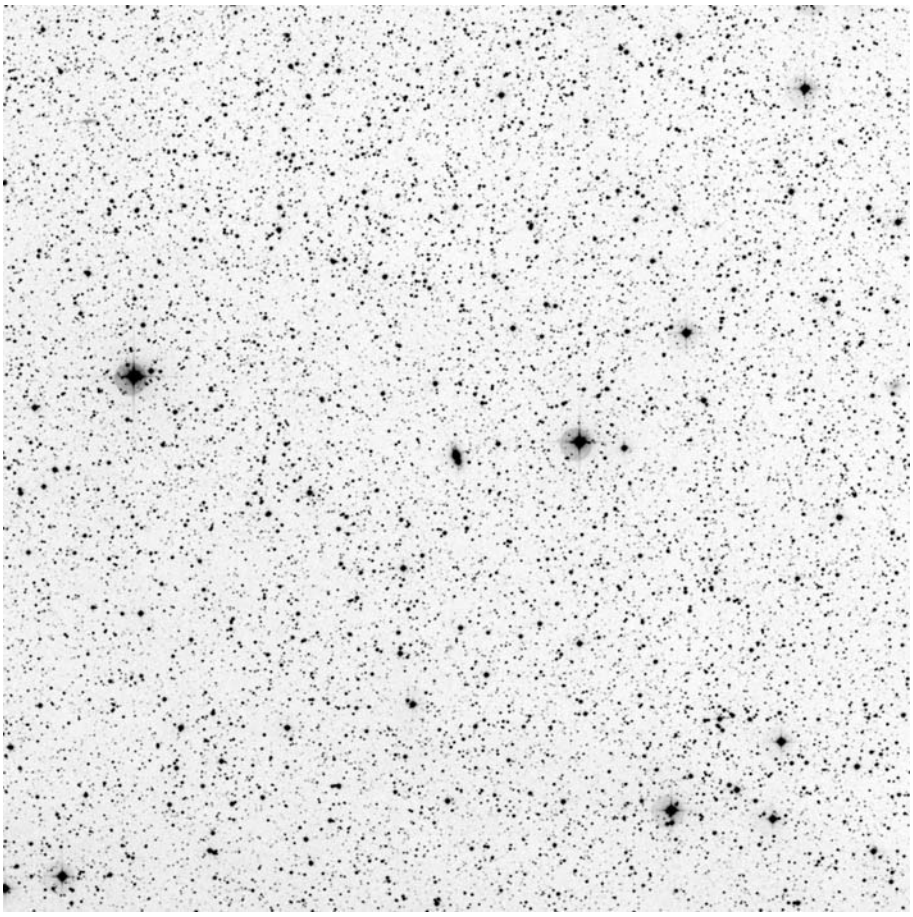
Minkowski's Footprint (Minkowski 1-92) showed in my 14" during good seeing conditions the drop shape of the brighter of the two lobes of the bipolar nebula. The "heel" of the footstep was not visible at that time. I could observe the latter during later observations und similarly good conditions with my 22" Dob.

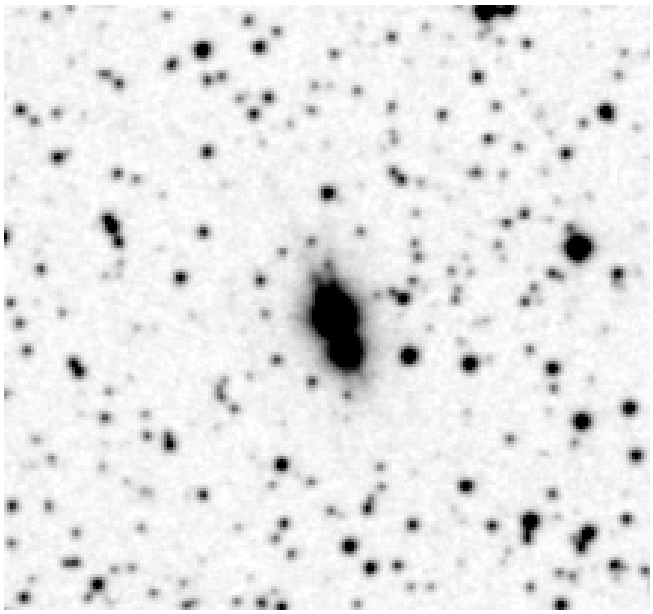
Despite spending some time on it, I could not observe any polarization-dependence of the brightness of the object, which is in agreement with Martin Schönball's observation (link above).


θ
ζ1
δ2
+35°00'
47
η
β
χ
γ
39
+30°00'
41
ϕ
23
15
β1
+25°00'
α
13
113
+20°00'
110
20h30m
20h00m
19h30m
19h00m


19h25m
+31°00'
BD+30 3639
ϕ
+30°00'
M1-92
ϑ
+29°00'
+28°00'
β1
19h45m
19h40m
19h35m
19h30m

Egg Nebula in Cygnus

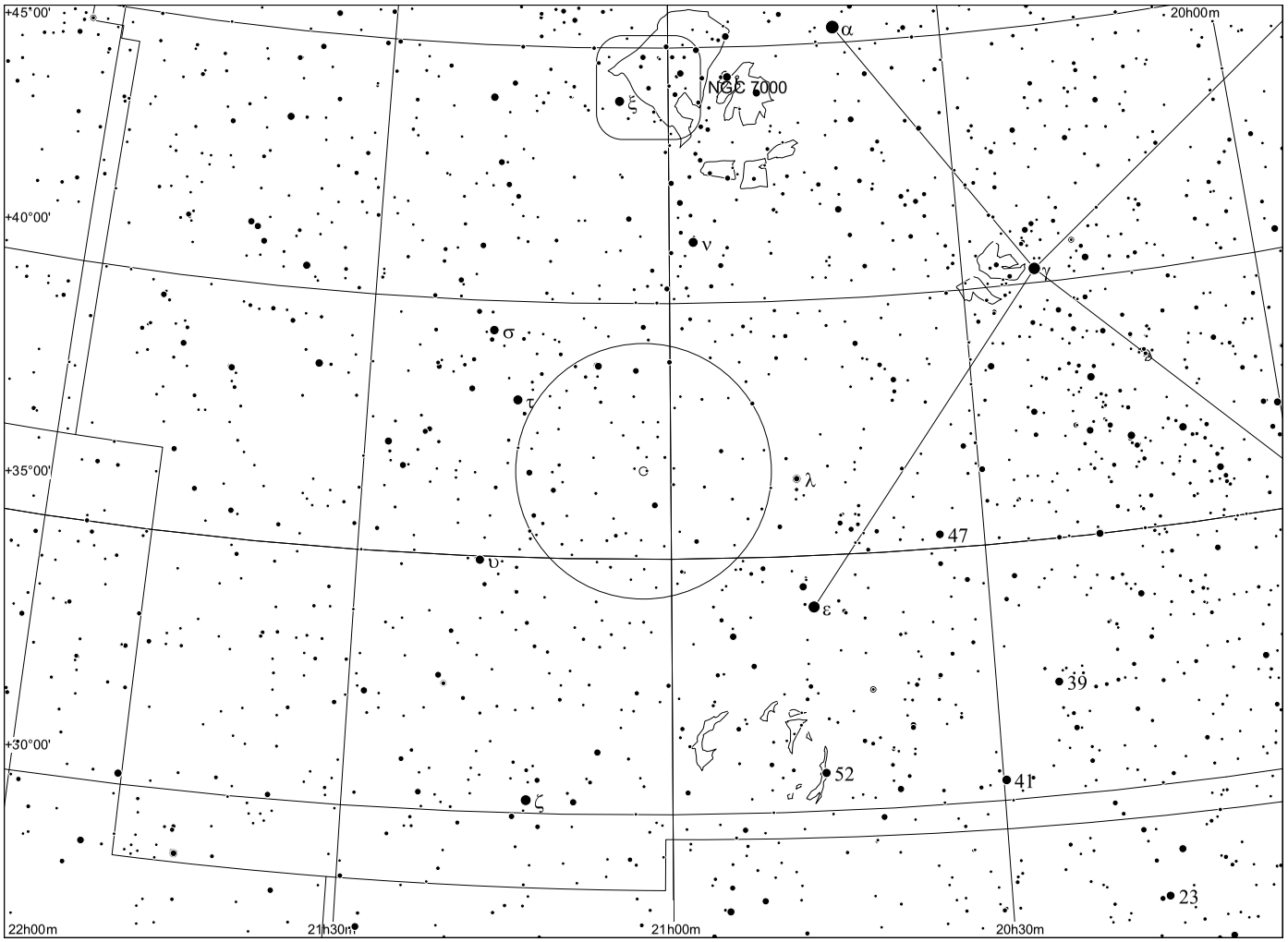


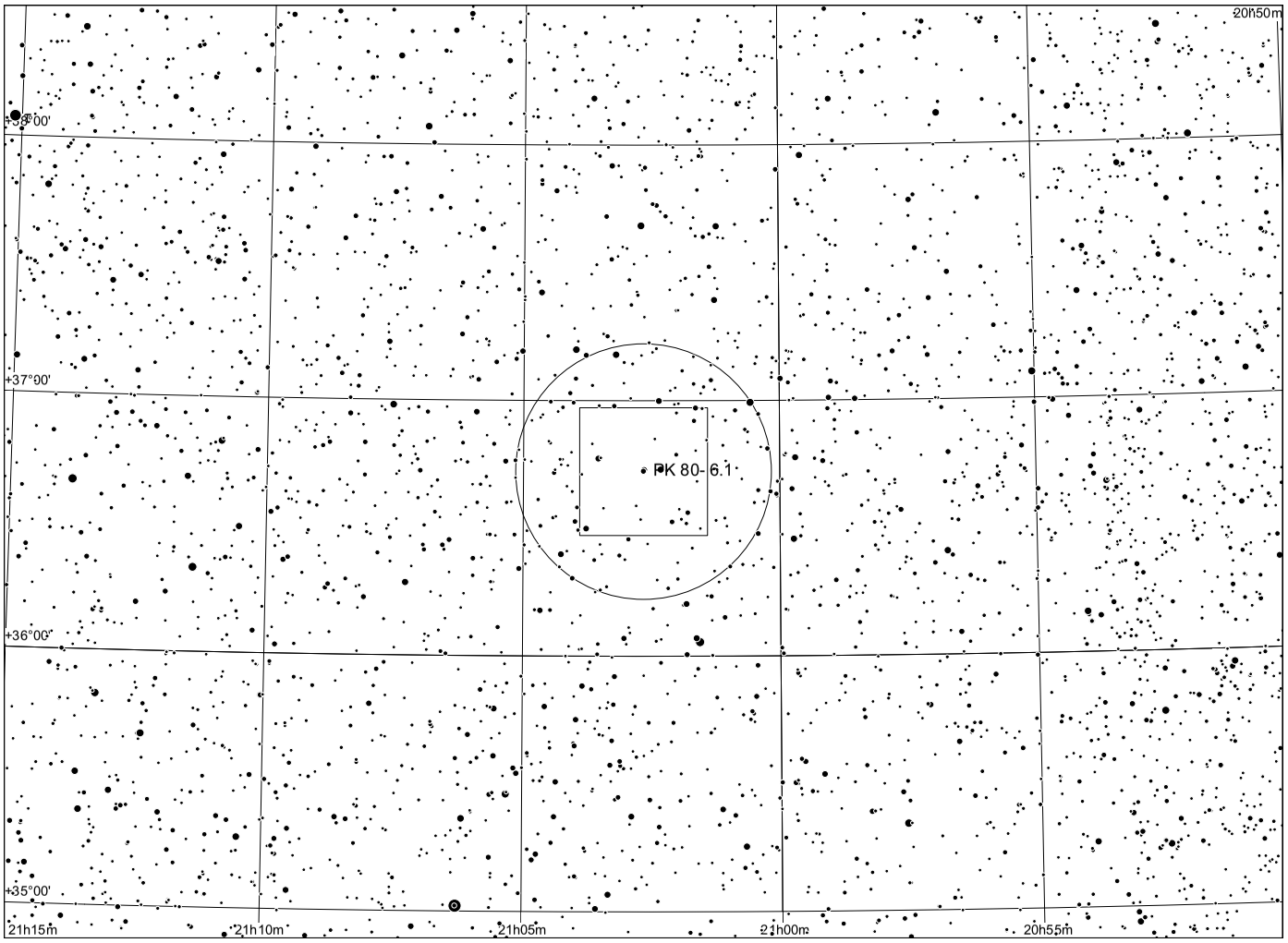


		RA	Dek	other names
CRL 2688	Egg Nebula	21h 02m 18.8s	+36° 41' 38"	PK 80-6 1

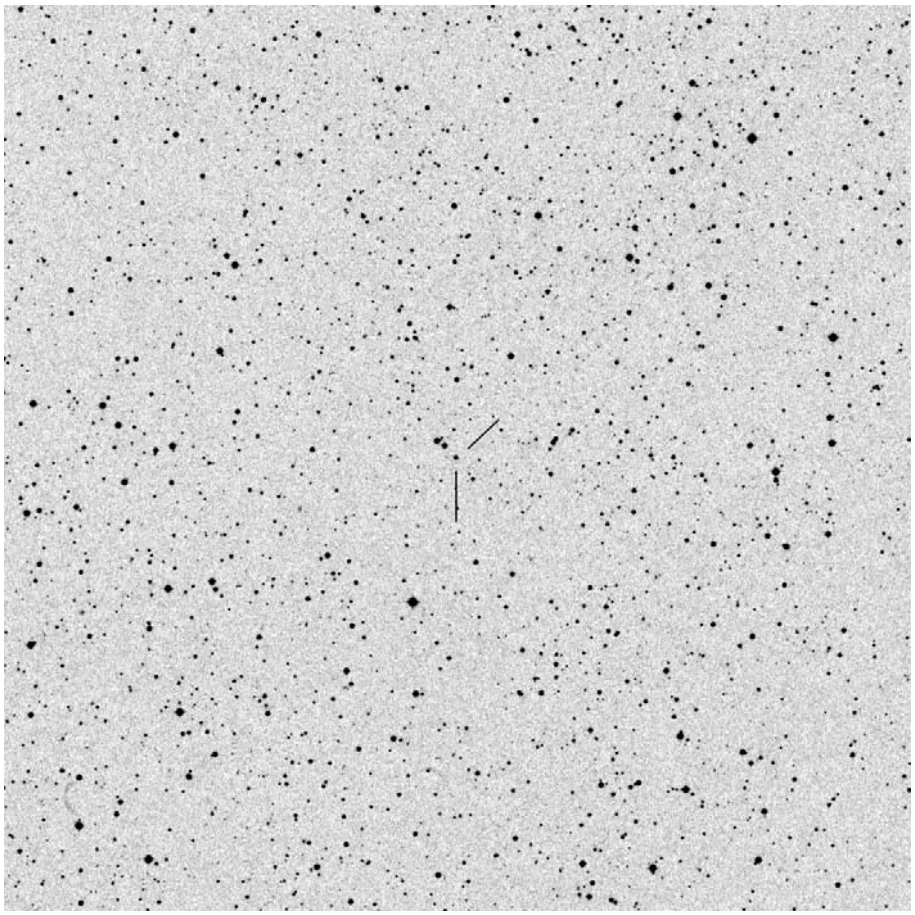
Observing notes:

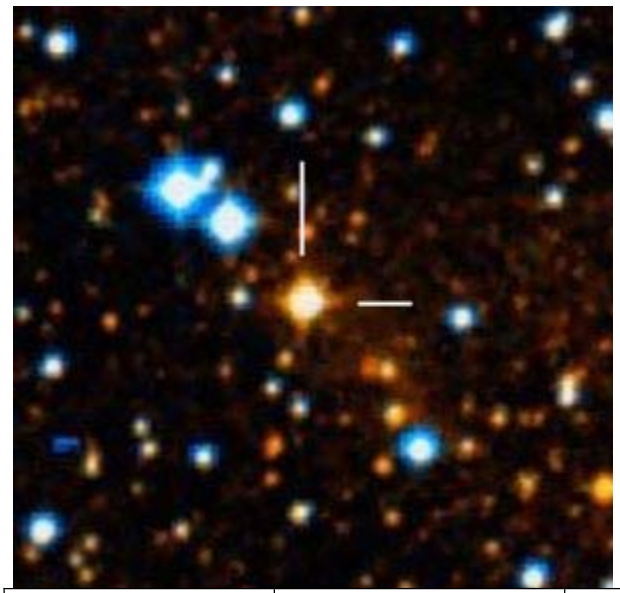
The Egg-Nebula (CRL 2688) is the paradigm for a proto-PN with polarized emission. The nebula shows under good seeing conditions already with 14" very distinctly its bipolar nature.
With 22" and good seeing, the brighter lobe already started to show its bifurcation.
At 500x, the nebula reacted strikingly on the position of the polarizing filter. Between the two extreme positions of the filter, the brightness was attenuated substantially to about 30%.


+45°00'
+40°00'
+35°00'
+30°00'
20h00m
22h00m
21h30m
21h00m
20h30m
NGC 7000
α
ξ
ν
σ
τ
G
λ
υ
47
ε
39
52
41
ζ
23


+38°00'
+37°00'
+36°00'
+35°00'
20h50m
21h15m
21h10m
21h05m
21h00m
20h55m
PK 80- 6.1

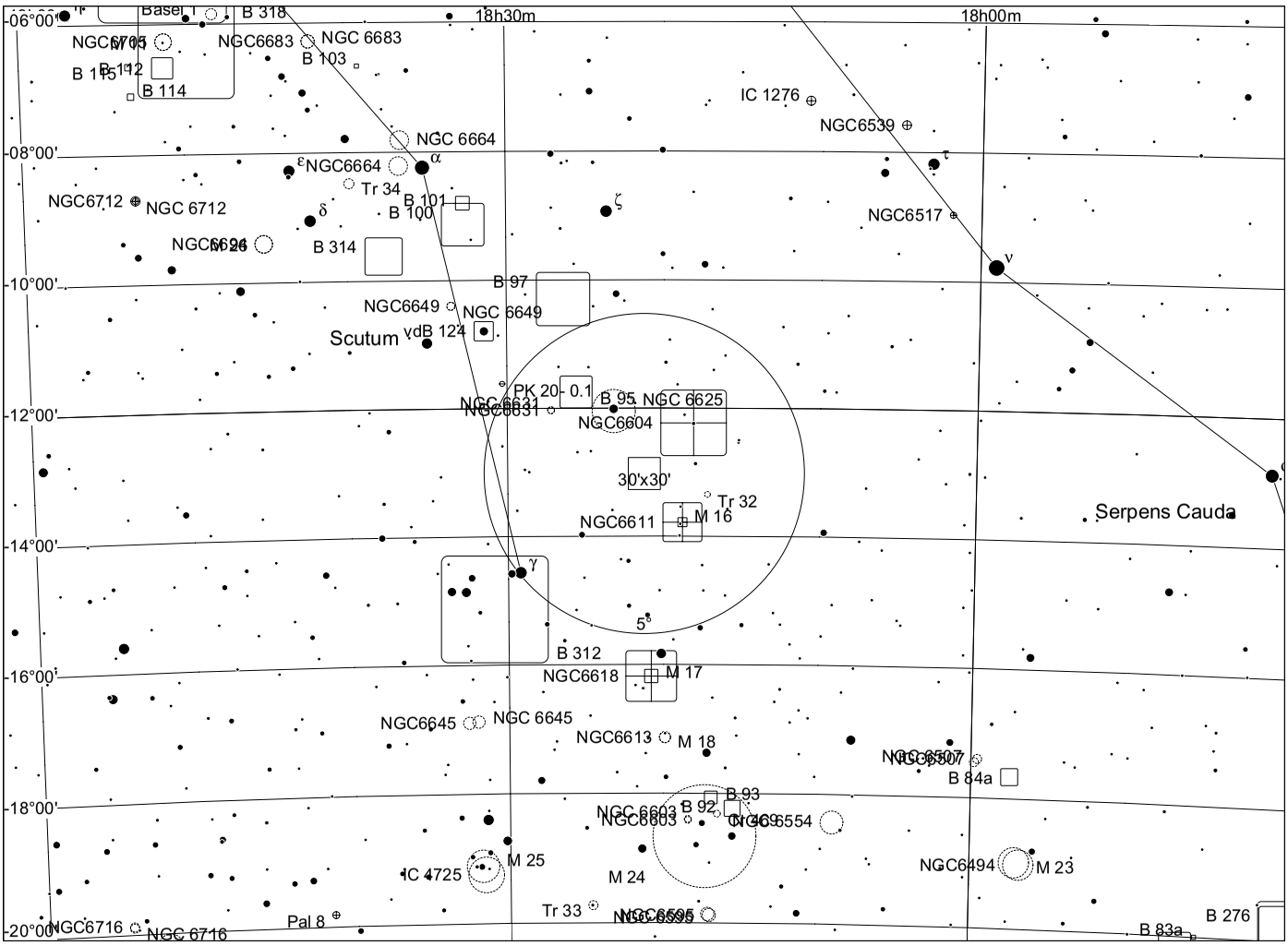
The Red Square Nebula in Serpens

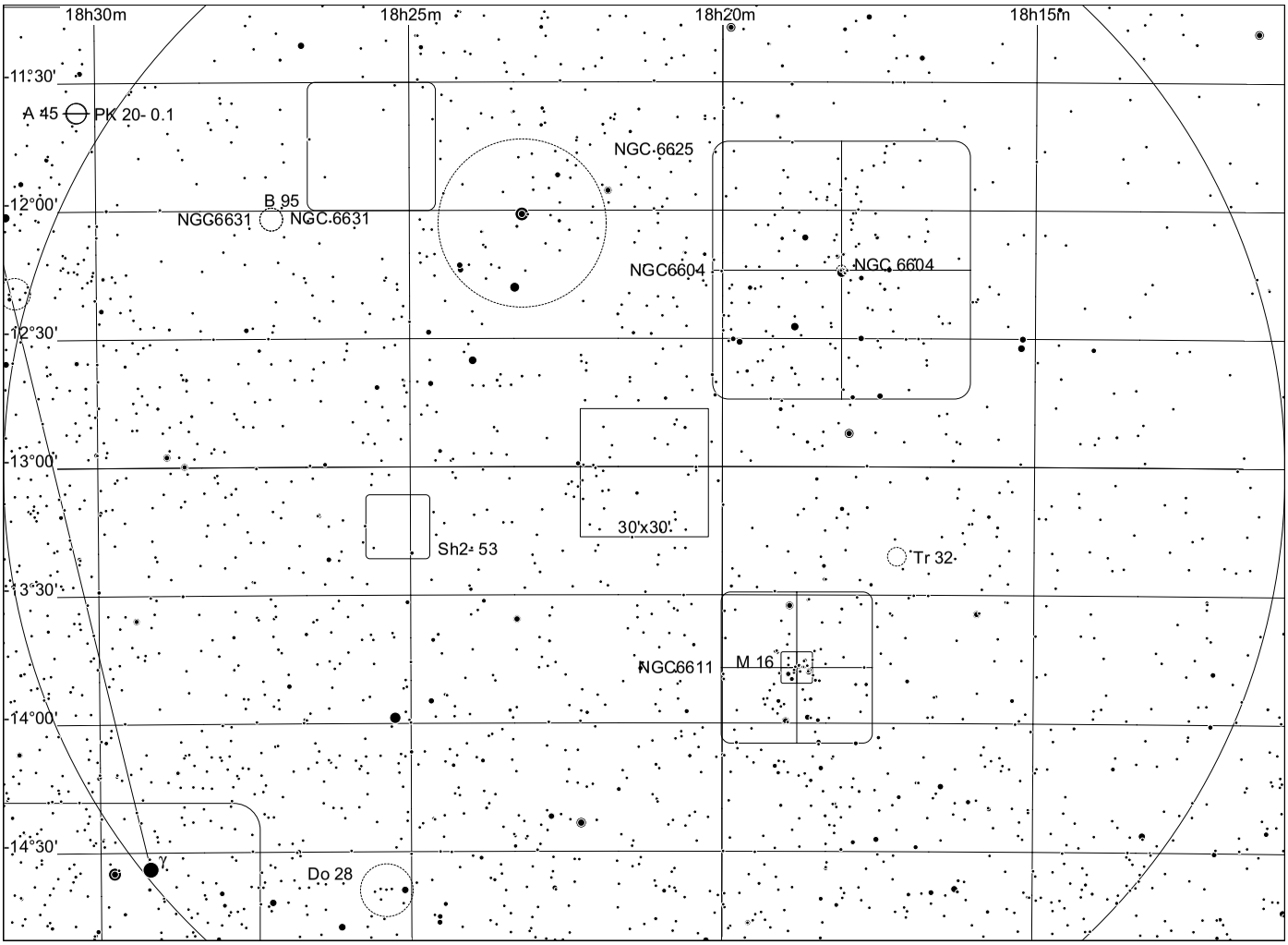




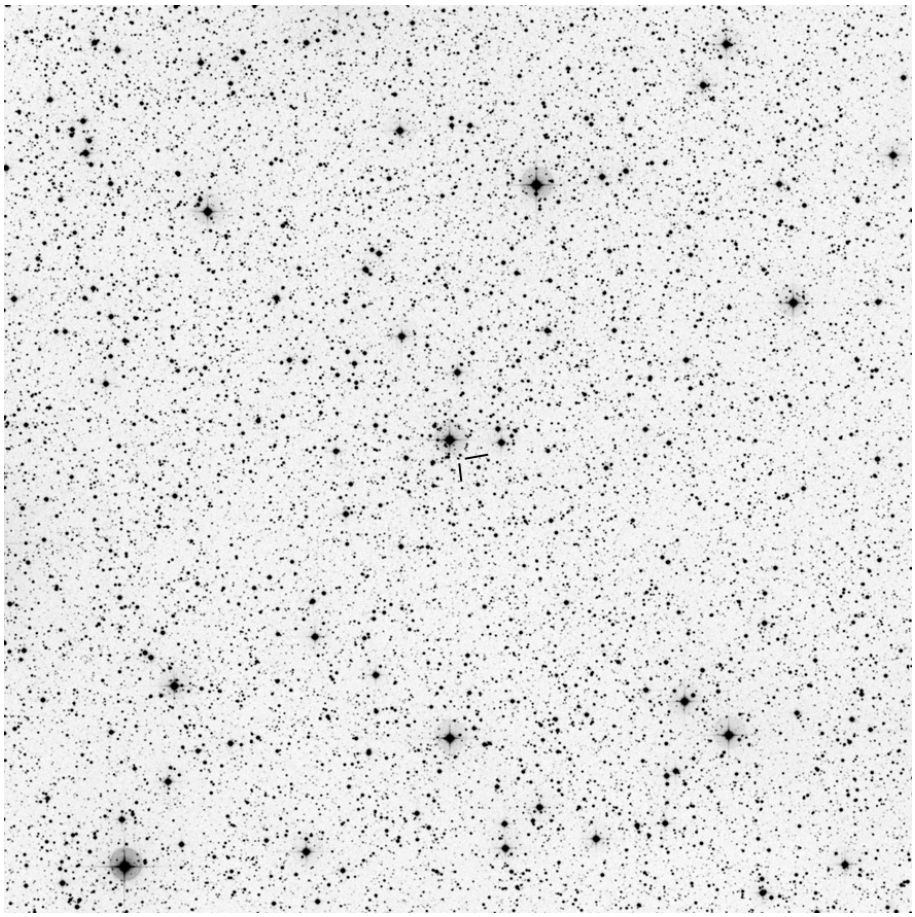
		RA	Dek	other names
MWC 922		18 21 15	-13 01 27	

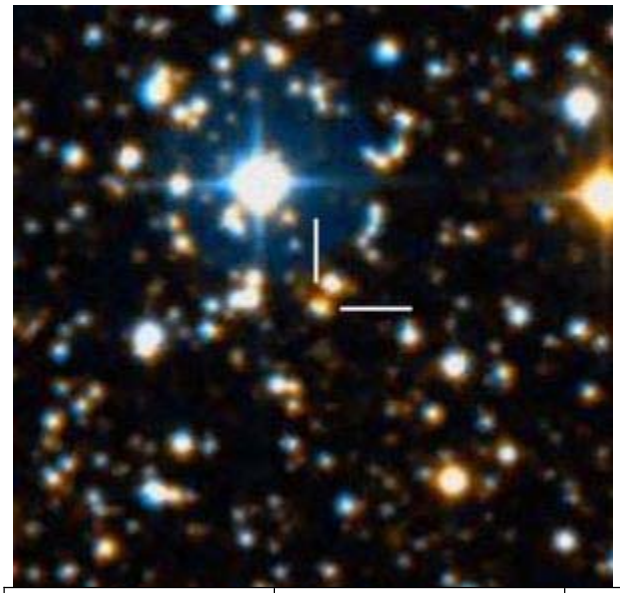
Observing notes:

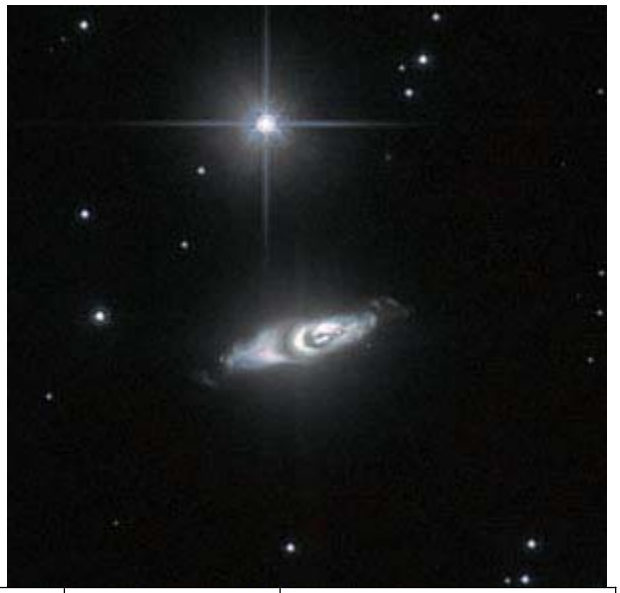

18h30m
18h00m
-06°00'
-08°00'
-10°00'
-12°00'
-14°00'
-16°00'
-18°00'
-20°00'
Basel I
B 318
NGC6705
NGC6683
NGC 6683
B 103
B 112
B 114
IC 1276
NGC6539
NGC 6664
NGC6664
Tr 34
B 101
B 100
NGC6712
NGC 6712
NGC6517
NGC6626
B 314
B 97
NGC6649
NGC 6649
Scutum
vdB 124
PK 20- 0.1
B 95
NGC 6625
NGC6631
NGC6604
30'x30'
Tr 32
M 16
NGC6611
Serpens Cauda
B 312
NGC6618
M 17
NGC6645
NGC 6645
NGC6613
M 18
B 84a
B 93
B 92
NGC6603
IC 4725
M 25
M 24
NGC6494
M 23
Tr 33
B 276
NGC6716
NGC 6716
Pal 8
B 83a


18h30m
18h25m
18h20m
18h15m
-11°30'
-12°00'
-12°30'
-13°00'
-13°30'
-14°00'
-14°30'
A 45
PK 20- 0.1
NGC 6625
B 95
NGC6631
NGC 6631
NGC6604
NGC 6604
30'x30'
Sh2- 53
Tr 32
NGC6611
M 16
Do 28

IRAS 22036+5306 in Cepheus

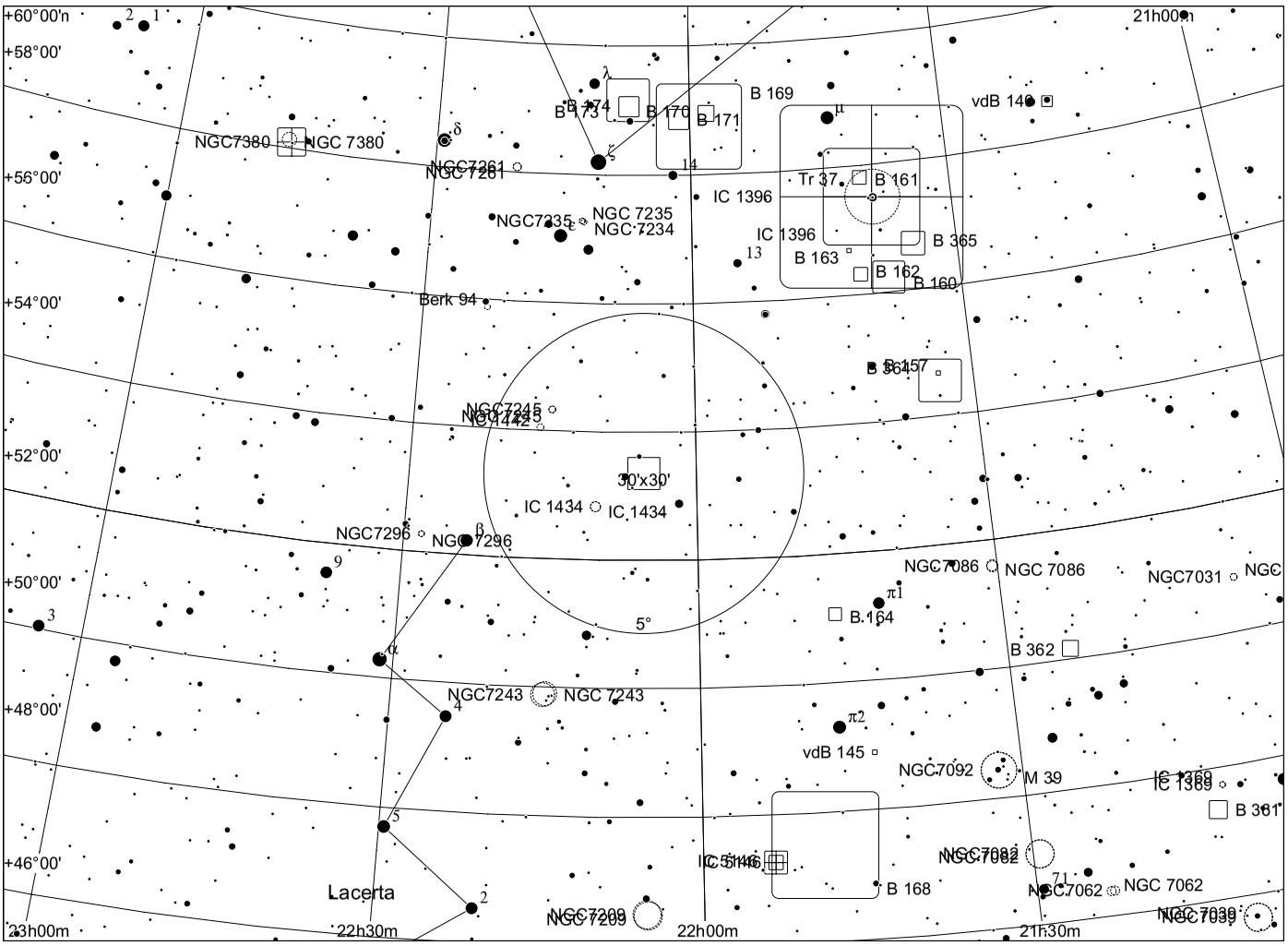


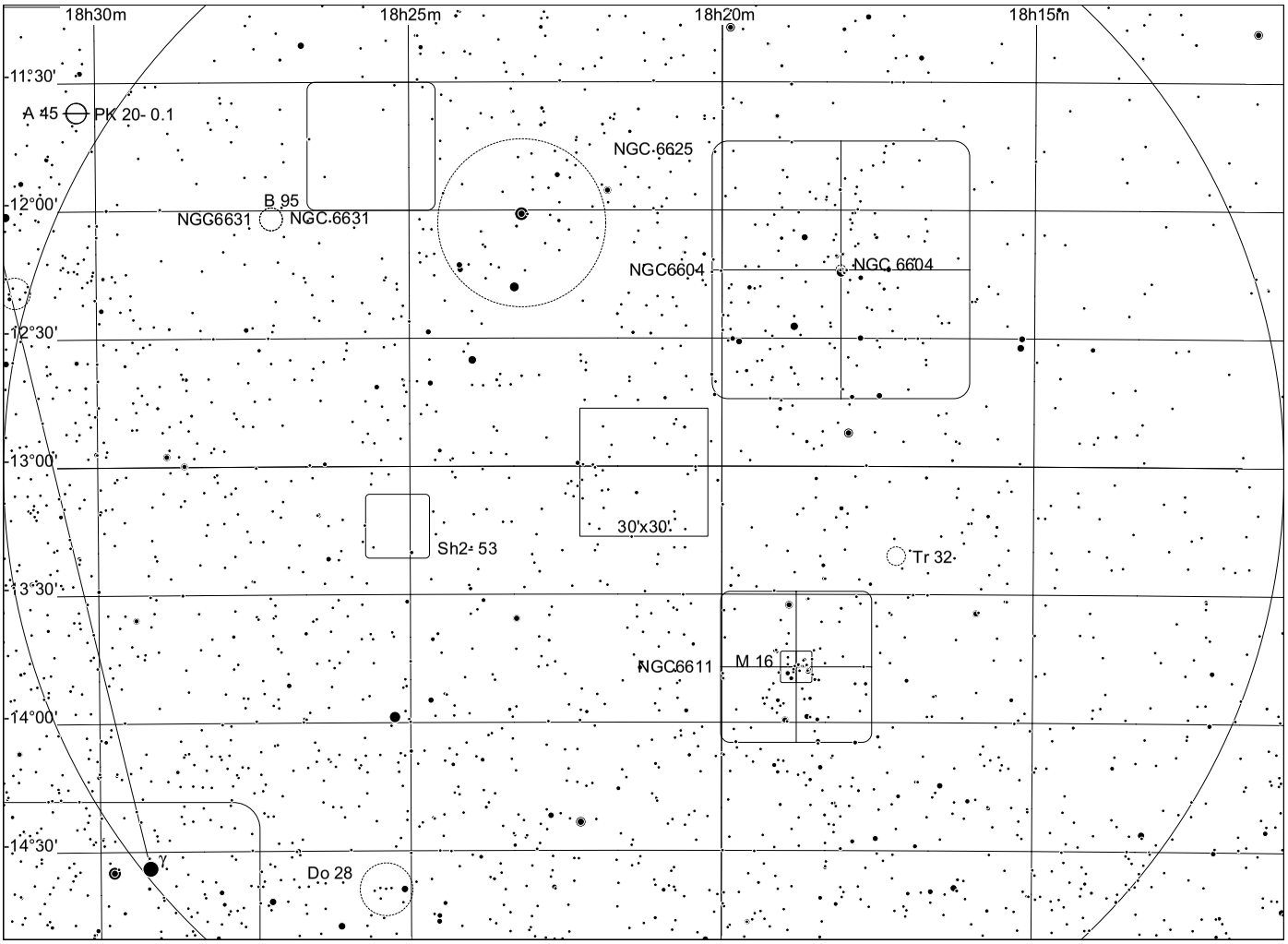




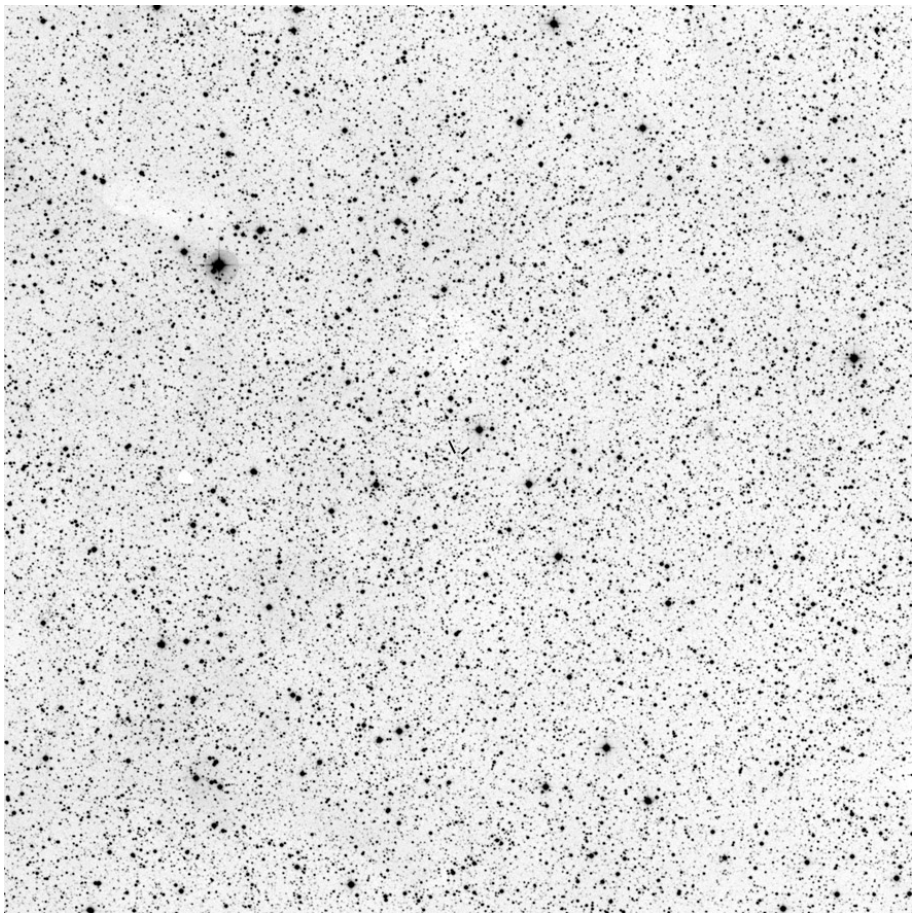
		RA	Dek	other names
IRAS 22036+5306		22 05 30.29	+53 21 32.8	

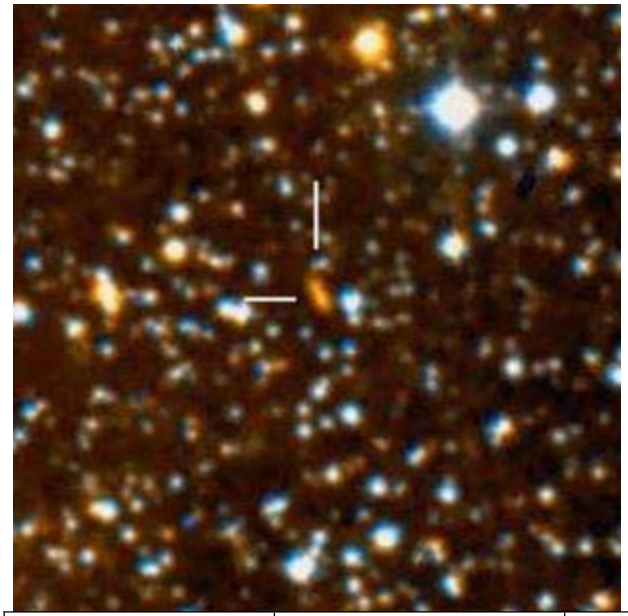
Observing notes:

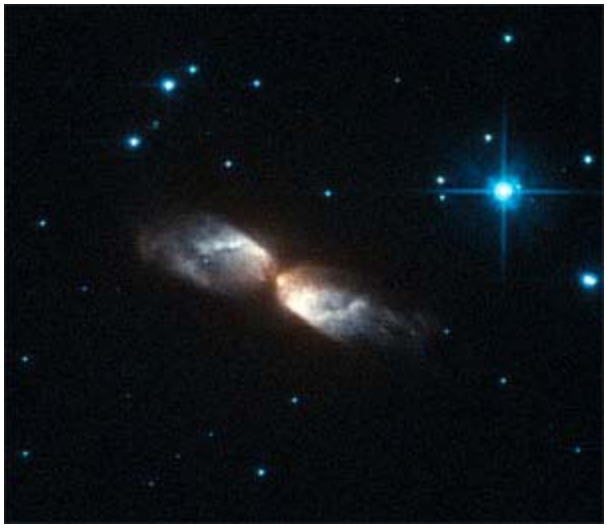

+60°00'n
+58°00'
+56°00'
+54°00'
+52°00'
+50°00'
+48°00'
+46°00'
23h00m
22h30m
22h00m
21h30m
21h00m
Lacerta
NGC7380
NGC 7380
NGC7261
NGC7235
NGC 7235
NGC 7234
Berk 94
B 174
B 173
B 170
B 171
B 169
vdB 140
Tr 37
B 161
IC 1396
B 365
B 163
B 162
B 160
B 364
B 157
NGC7245
IC1442
30'x30'
IC 1434
NGC7296
NGC7086
NGC 7086
NGC7031
B 164
B 362
NGC7243
NGC 7243
vdB 145
NGC7092
M 39
IC 1369
B 361
IC 5146
NGC7082
B 168
NGC7062
NGC 7062
NGC7209
NGC7039


18h30m
18h25m
18h20m
18h15m
-11°30'
-12°00'
-12°30'
-13°00'
-13°30'
-14°00'
-14°30'
A 45
PK 20- 0.1
B 95
NGC6631
NGC 6631
NGC 6625
NGC6604
NGC 6604
30'x30'
Sh2- 53
Tr 32
NGC6611
M 16
Do 28

IRAS 20068+4051 in Cygnus

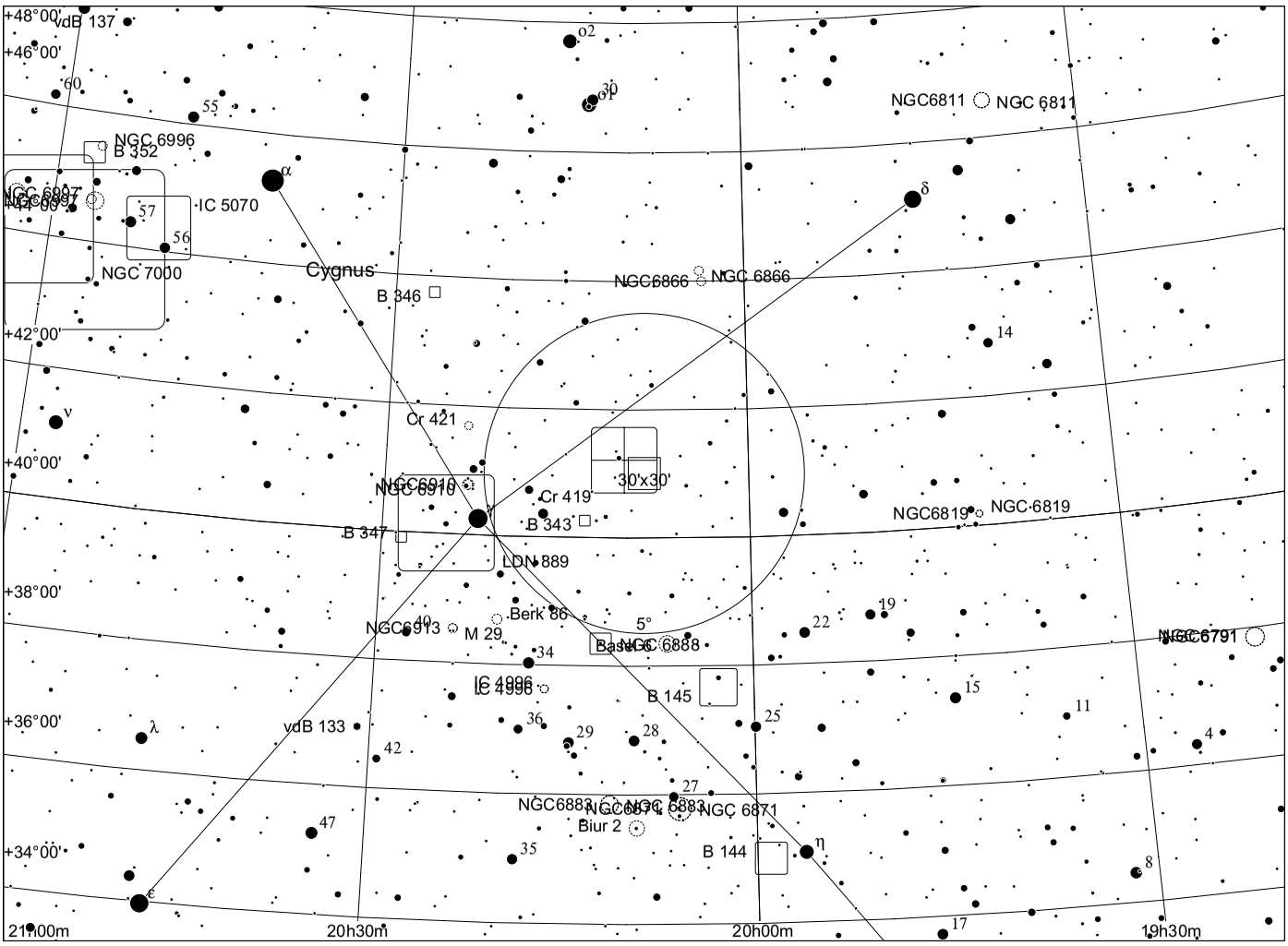


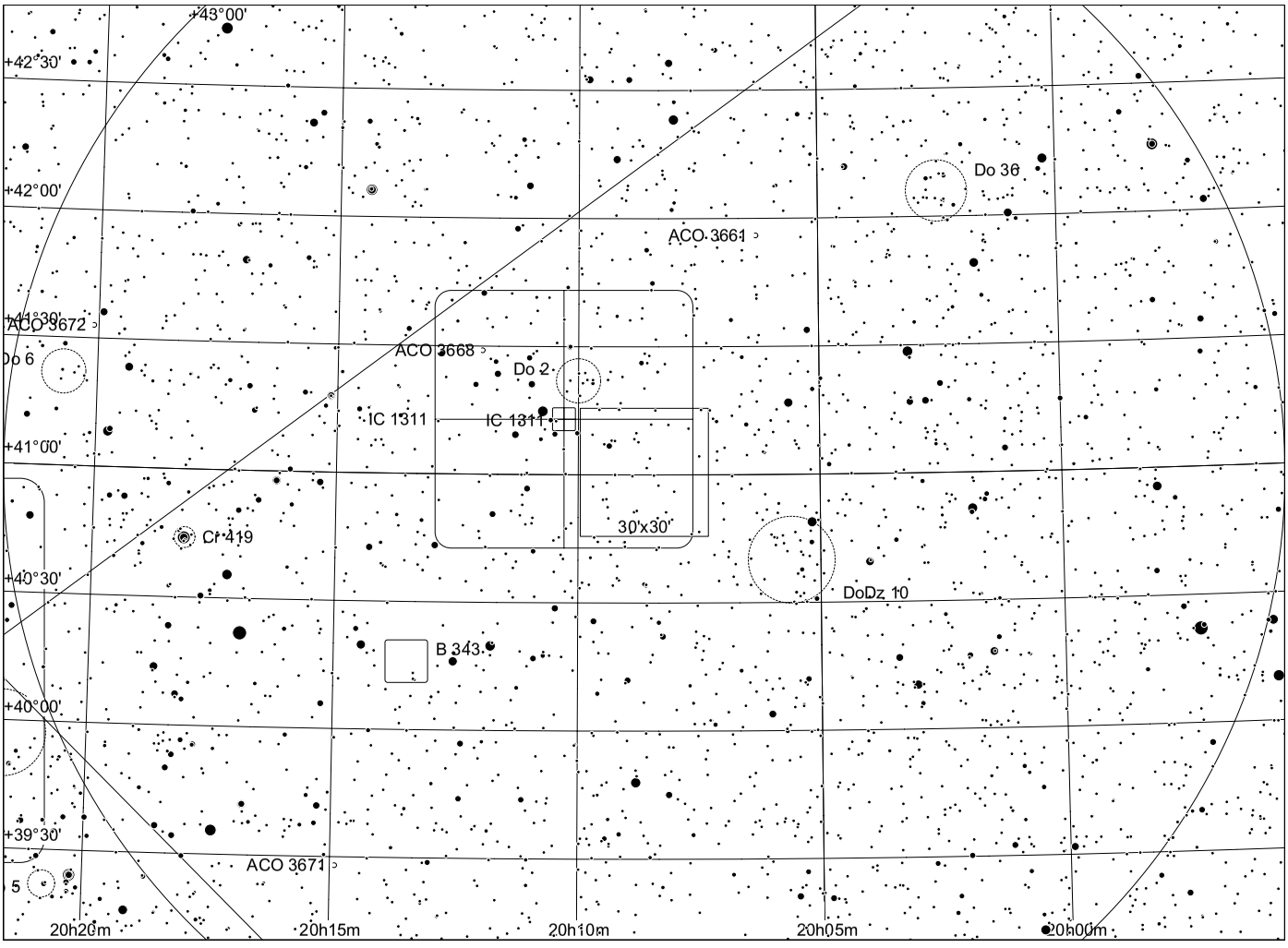




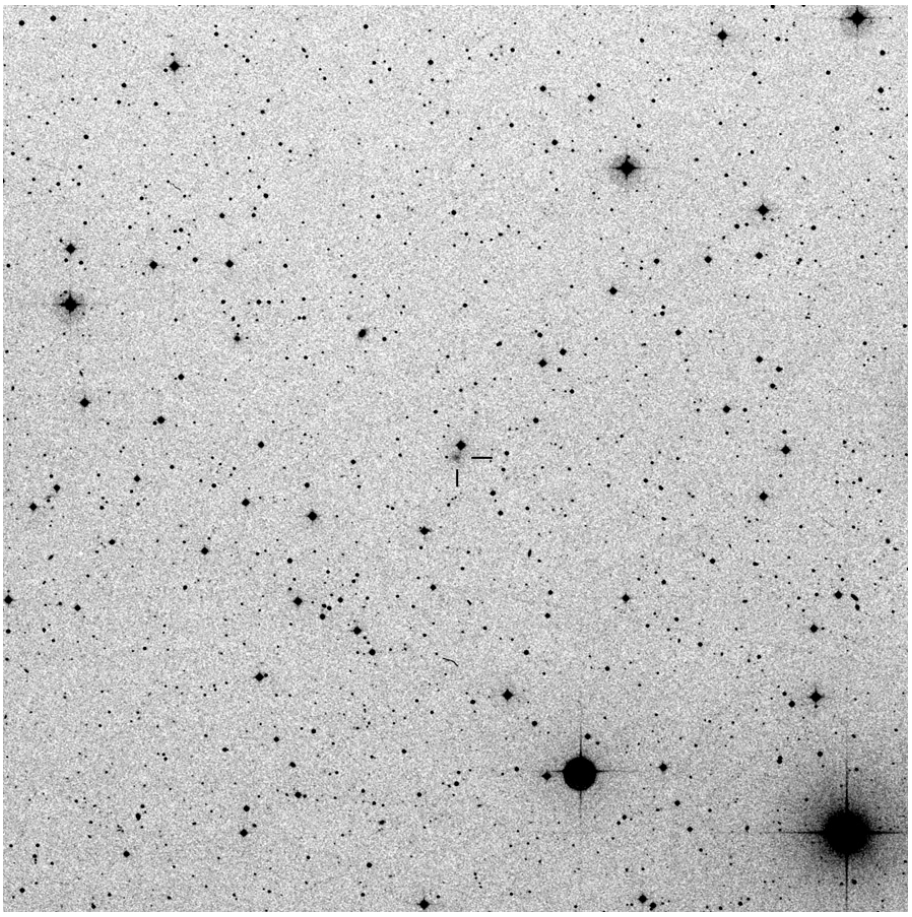
		RA	Dek	other names
IRAS 20068+4051		20 08 38.5	+41 00 37	

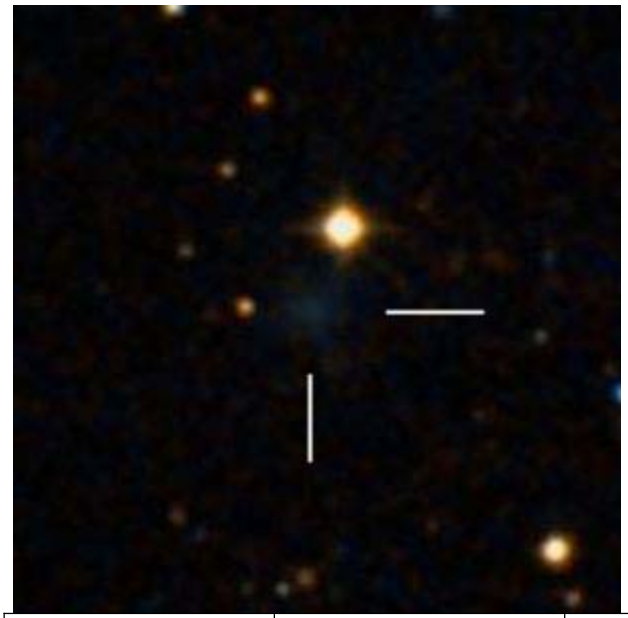
Observing notes:

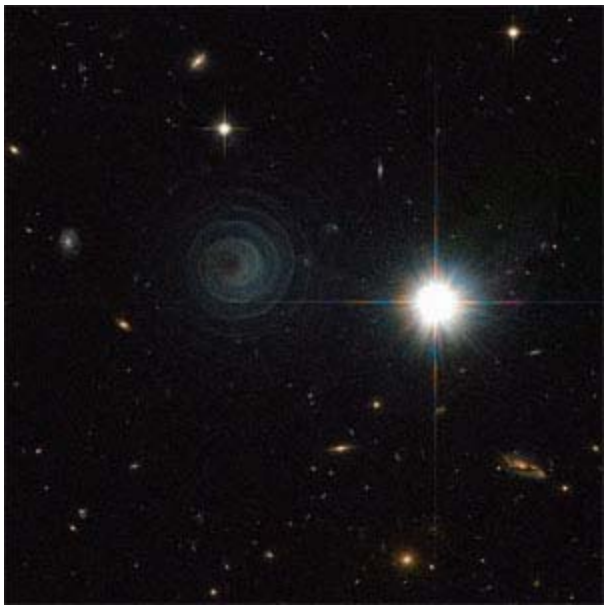

+48°00'
+46°00'
+44°00'
+42°00'
+40°00'
+38°00'
+36°00'
+34°00'
vdB 137
NGC 6996
B 352
NGC 6997
IC 5070
NGC 7000
Cygnus
B 346
NGC6811
NGC 6811
NGC6866
NGC 6866
Cr 421
NGC6910
Cr 419
30'x30'
B 343
B 347
LDN 889
NGC6819
NGC 6819
Berk 86
NGC6913
M 29
Basel 6
NGC 6888
NGC6791
IC 4996
B 145
vdB 133
NGC6883
NGC 6883
NGC 6871
Biur 2
B 144
21h00m
20h30m
20h00m
19h30m


+43°00'
+42°30'
+42°00'
+41°30'
+41°00'
+40°30'
+40°00'
+39°30'
Do 36
ACO 3661
ACO 3672
Do 6
ACO 3668
Do 2
IC 1311
IC 1311
30'x30'
Cr 419
DoDz 10
B 343
ACO 3671
20h20m
20h15m
20h10m
20h05m
20h00m

IRAS 23166+1655 in Pegasus

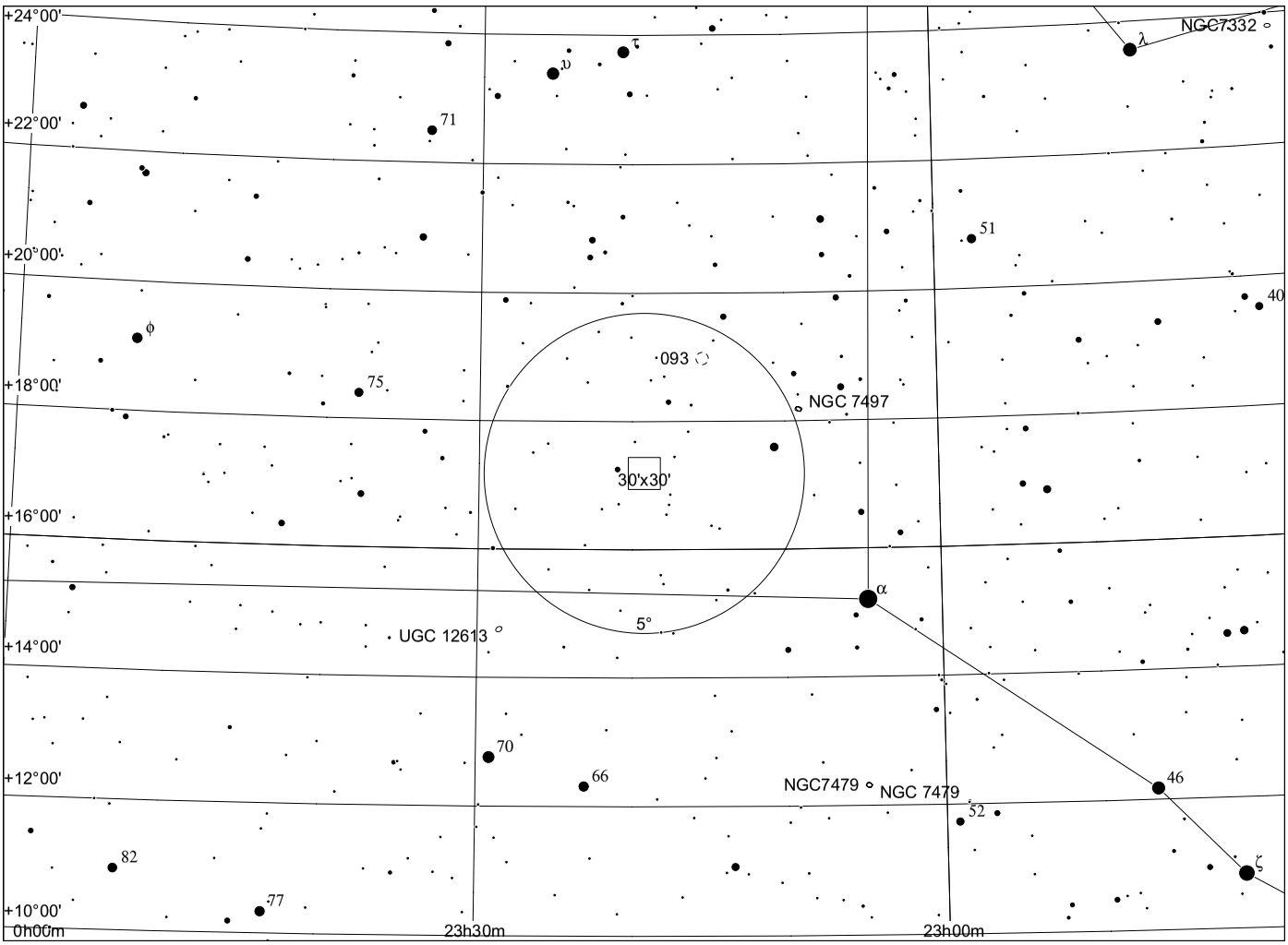


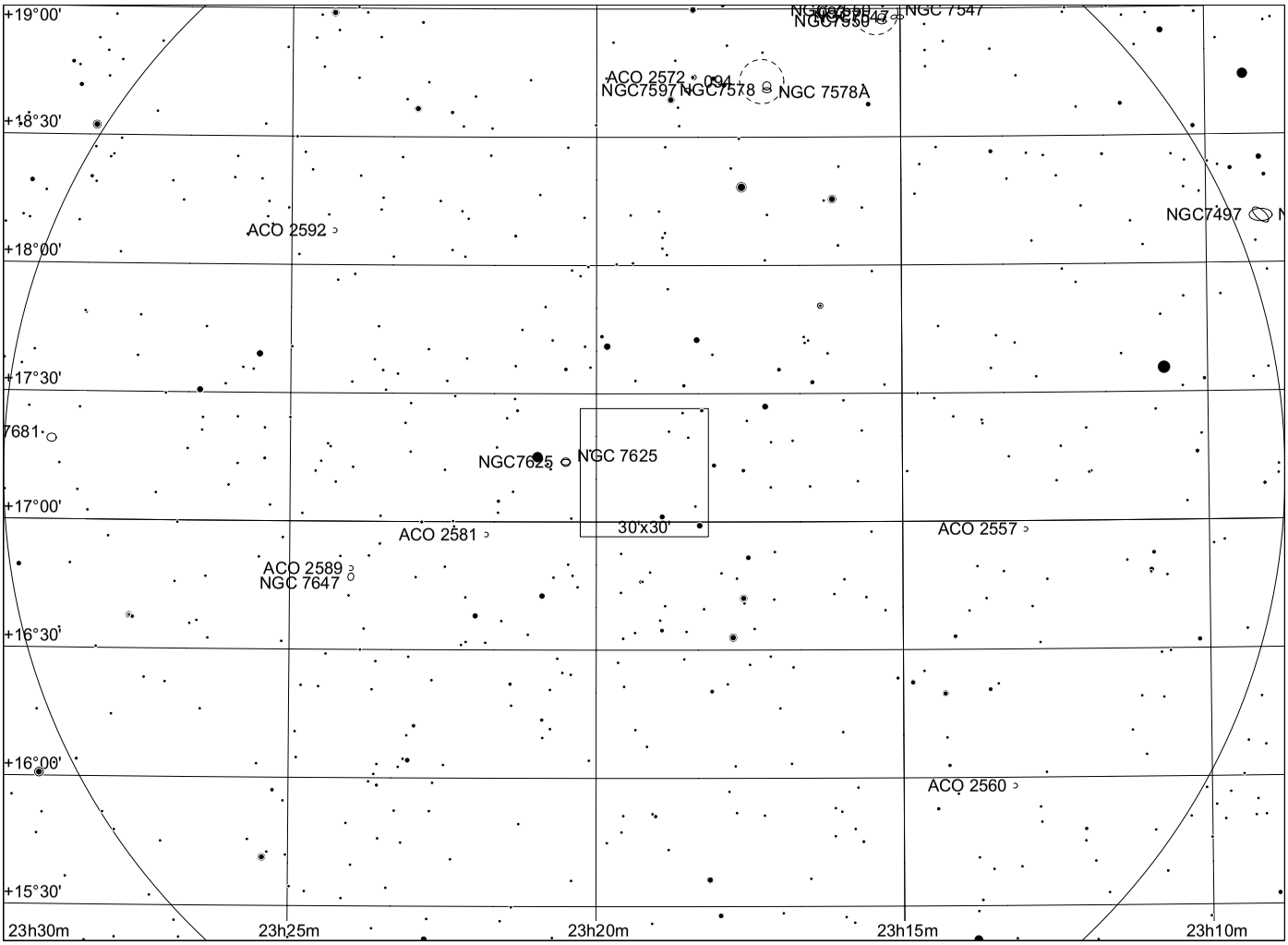




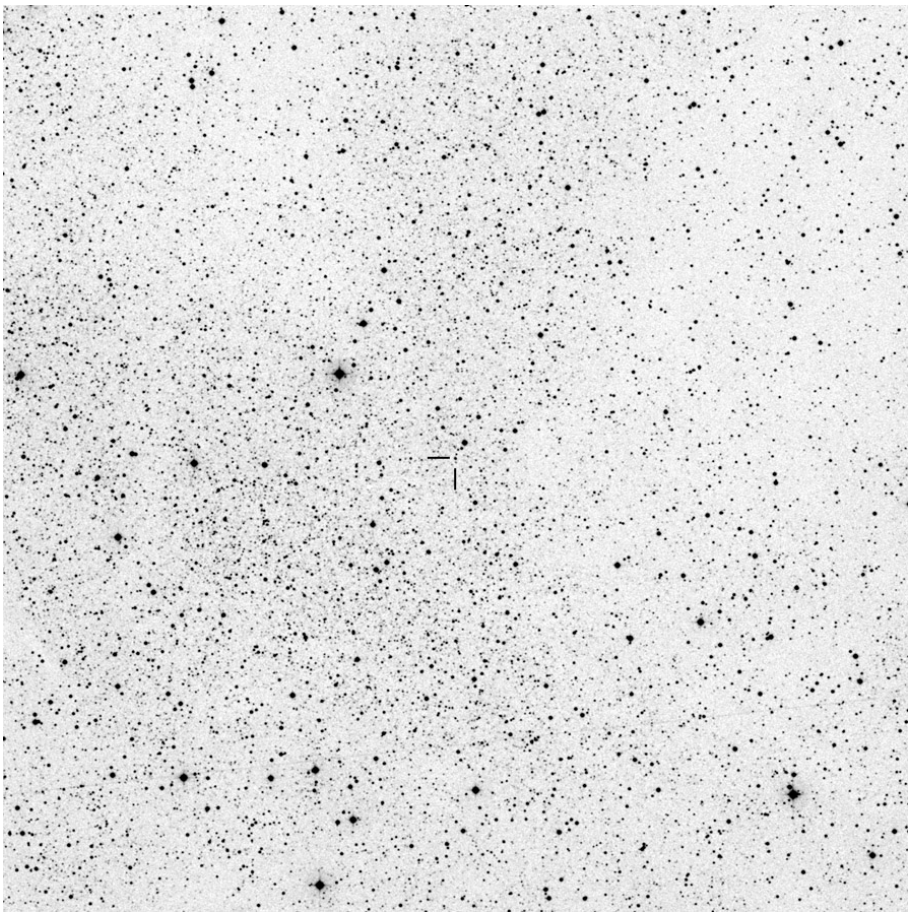
		RA	Dek	other names
IRAS 23166+1655		23 19 12.6	+17 11 33.1	

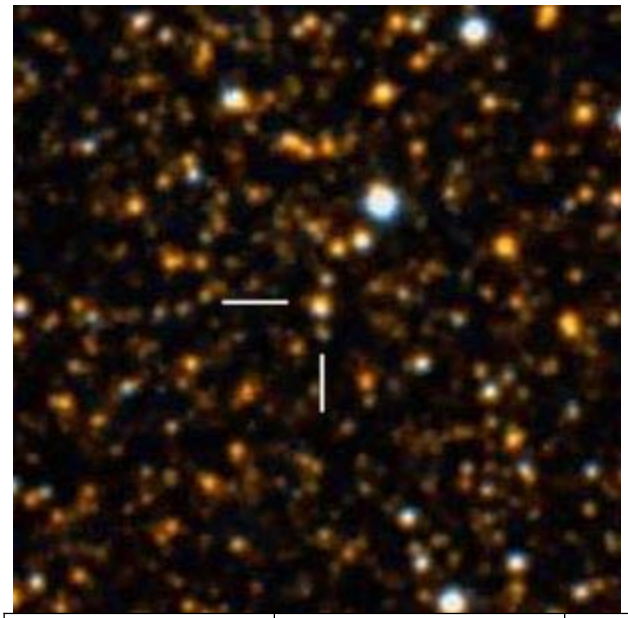
Observing notes:


+24°00'
+22°00'
+20°00'
+18°00'
+16°00'
+14°00'
+12°00'
+10°00'
0h00m
23h30m
23h00m
NGC7332
71
51
40
093
NGC 7497
75
30'x30'
5°
UGC 12613
70
66
NGC7479
NGC 7479
46
52
82
77


+19°00'
+18°30'
+18°00'
+17°30'
+17°00'
+16°30'
+16°00'
+15°30'
23h30m
23h25m
23h20m
23h15m
23h10m
NGC 7547
ACO 2572
094
NGC7597
NGC7578
NGC 7578A
ACO 2592
NGC7497
7681
NGC7625
NGC 7625
30'x30'
ACO 2581
ACO 2557
ACO 2589
NGC 7647
ACO 2560

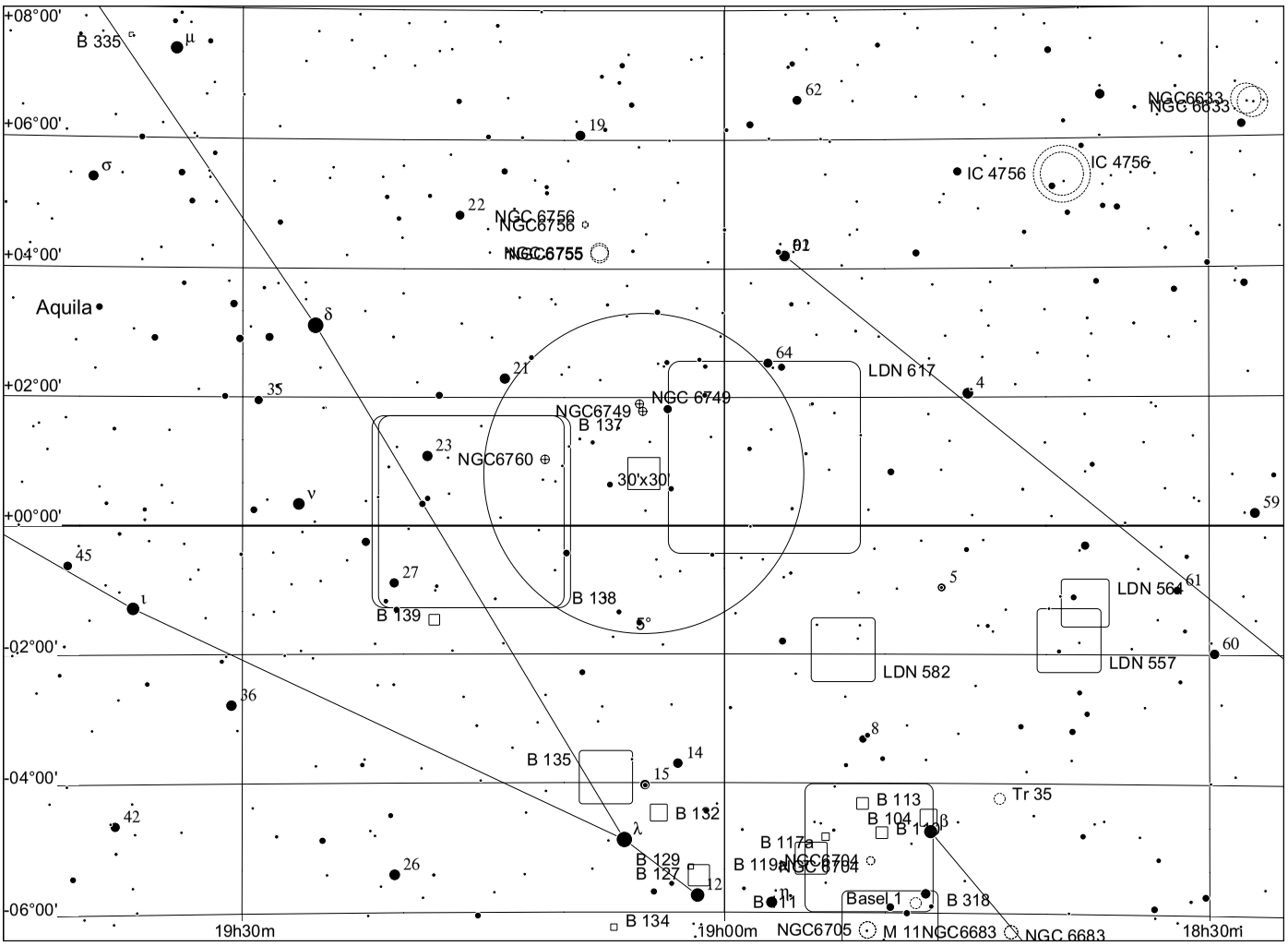
IRAS 19024+0044 in Aquila

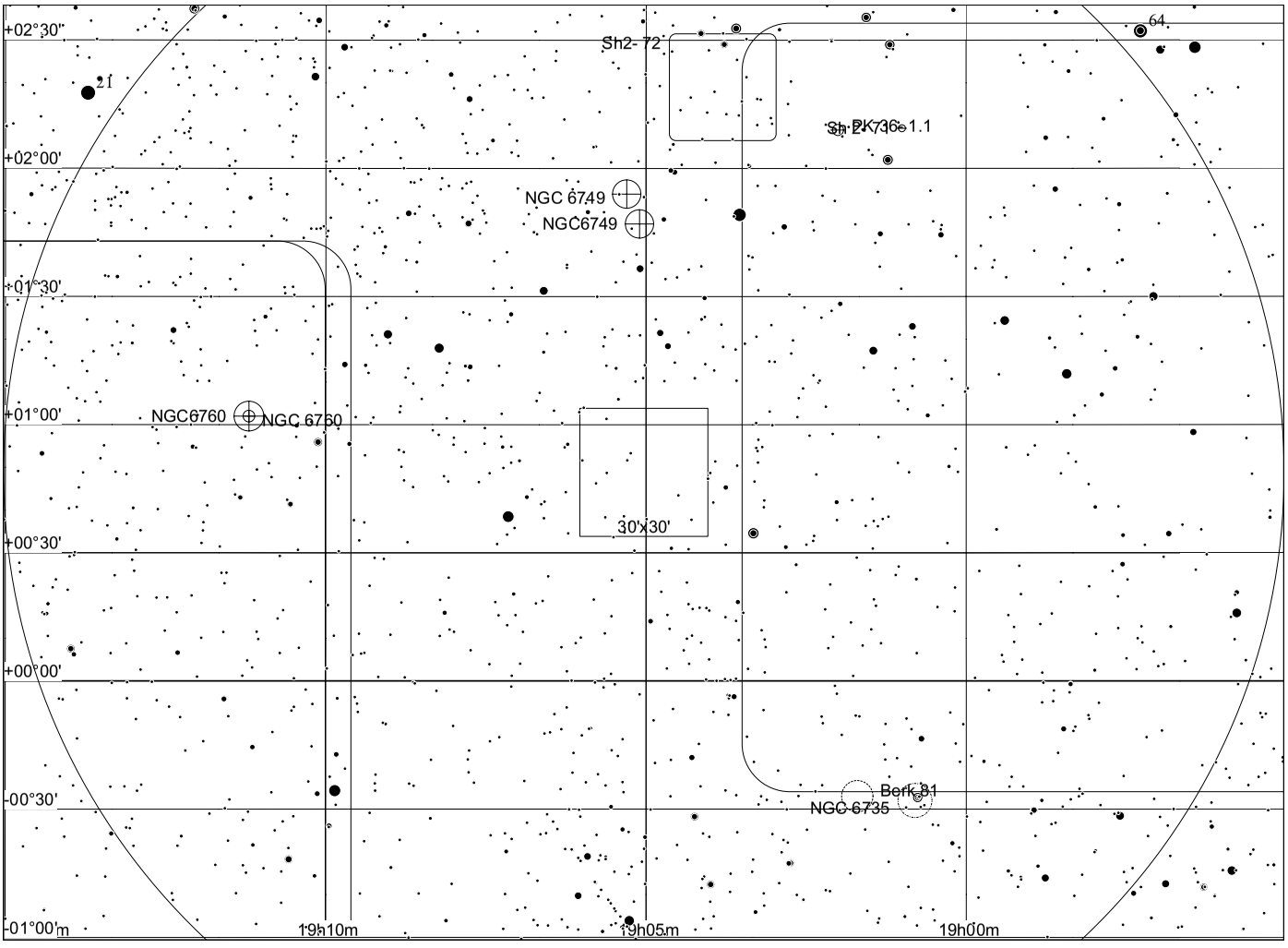




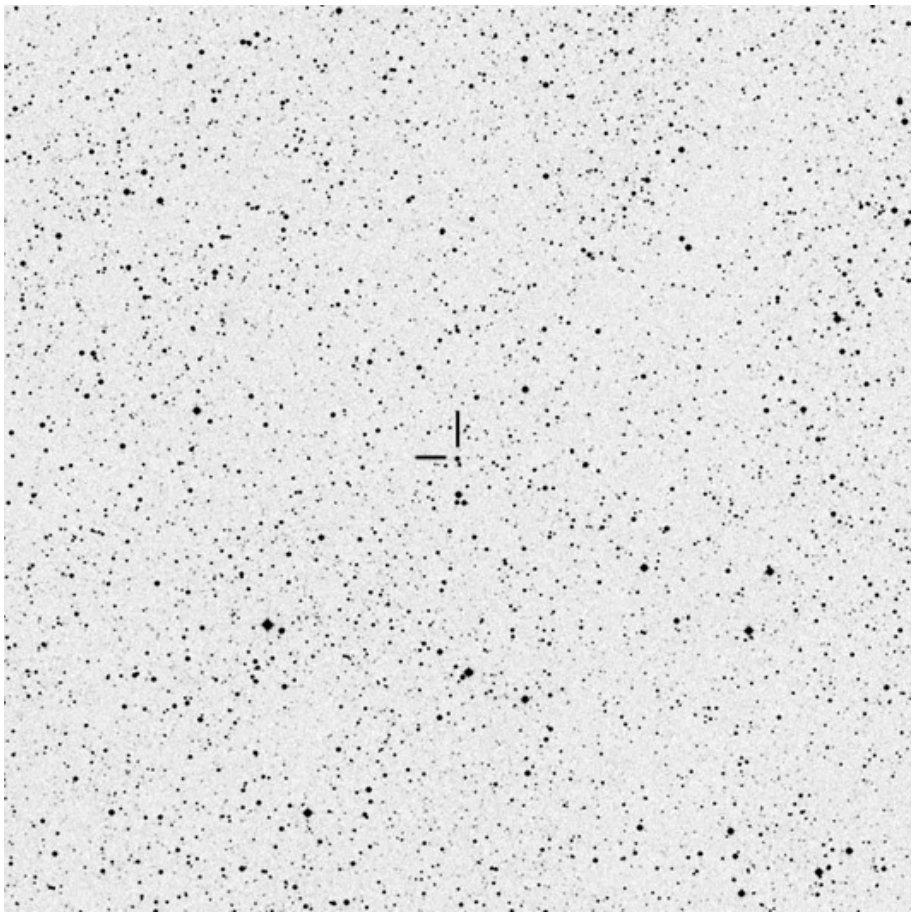
		RA	Dek	other names
IRAS 19024+0044		19 05 02.06	+00 48 50.9	

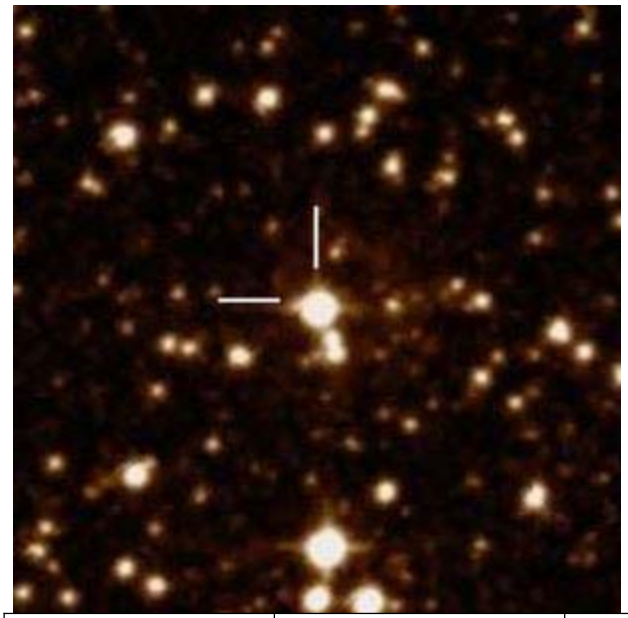
Observing notes:


+08°00'
+06°00'
+04°00'
+02°00'
+00°00'
-02°00'
-04°00'
-06°00'
19h30m
19h00m
18h30m
B 335
μ
σ
Aquila
δ
ν
ι
λ
62
19
22
NGC 6756
NGC6756
NGC 6755
NGC6633
NGC 6633
IC 4756
IC 4756
61
64
LDN 617
4
21
35
NGC6749
NGC 6749
B 137
23
NGC6760
30'x30'
59
45
27
B 139
B 138
5
LDN 564
LDN 582
LDN 557
60
36
8
B 135
14
15
B 132
42
26
B 129
B 127
12
B 134
B 113
Tr 35
B 104
B 117a
B 119
NGC6704
B 111
Basel 1
B 318
NGC6705
M 11
NGC6683
NGC 6683


+02°30'
+02°00'
+01°30'
+01°00'
+00°30'
+00°00'
-00°30'
-01°00'
19h10m
19h05m
19h00m
Sh2- 72
Sh 2-71
21
64
NGC 6749
NGC6749
NGC6760
NGC 6760
30'x30'
Berk 81
NGC 6735

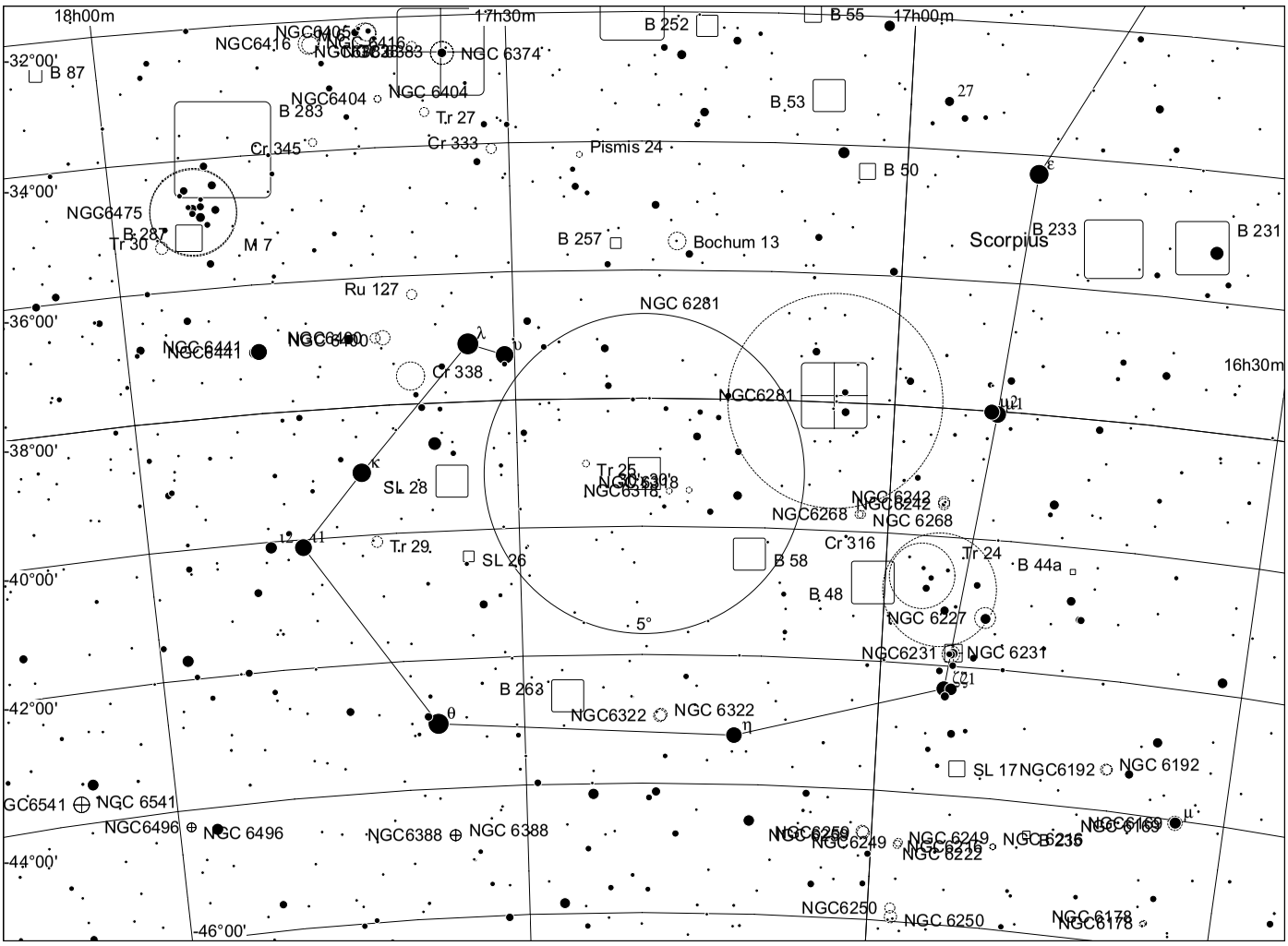
Fried Egg Nebula (IRAS 17163-3907) in Scorpio

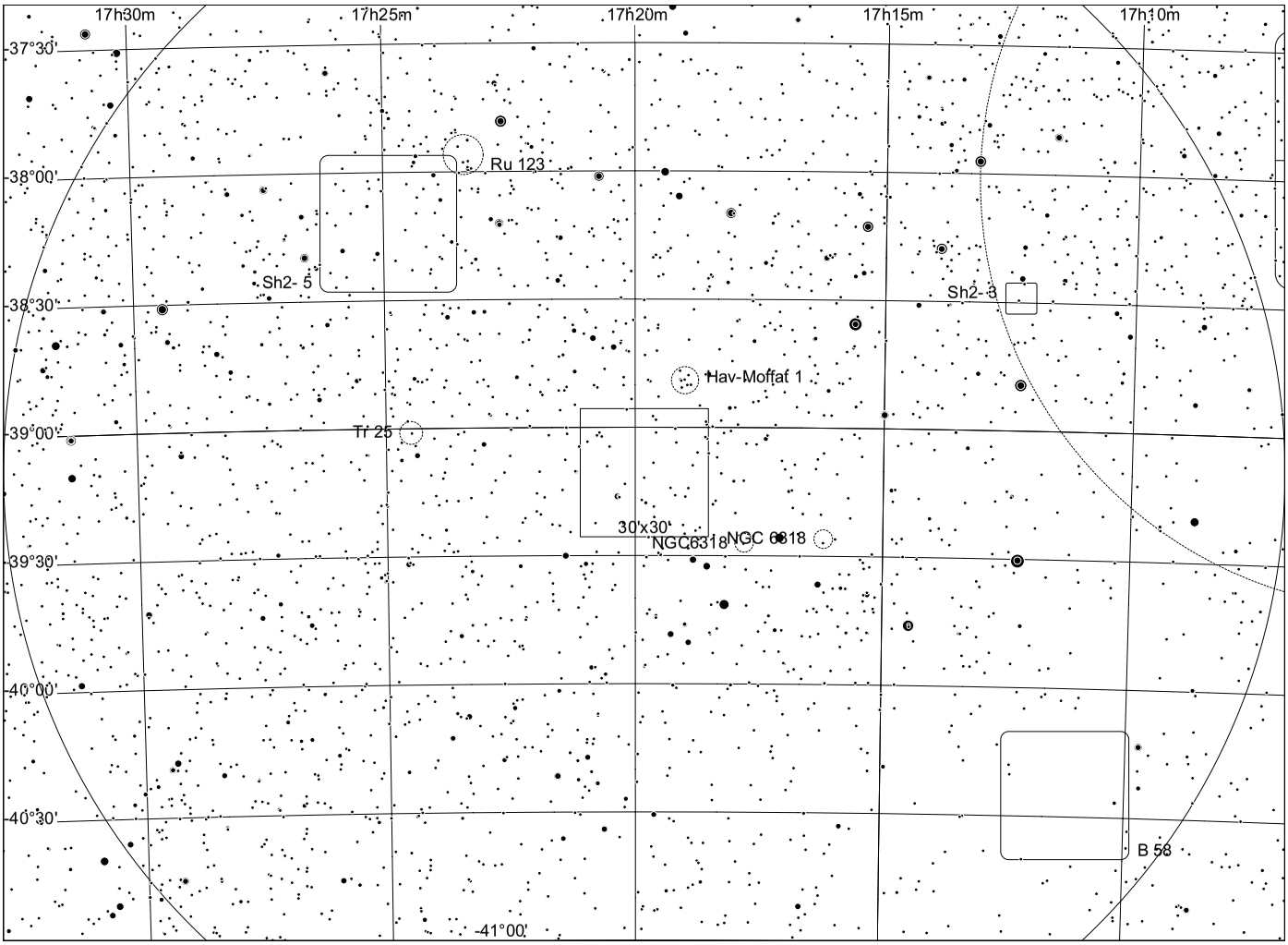




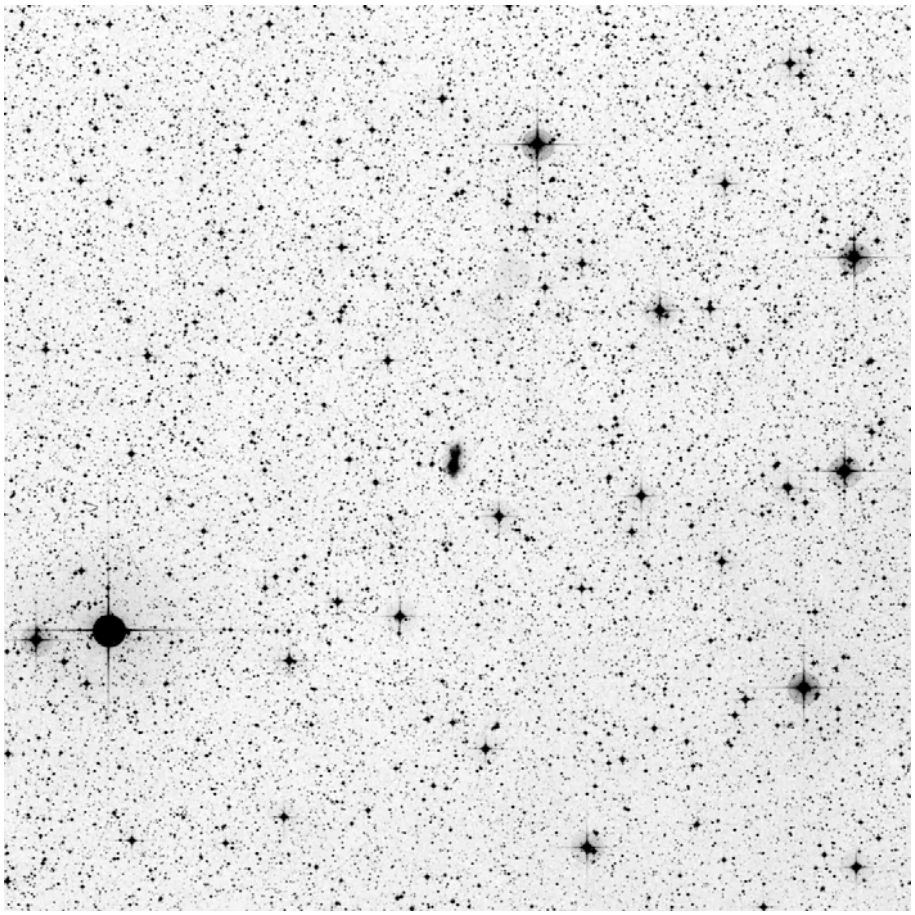
		RA	Dek	other names
IRAS 17163-3907		17 19 49.3	-39 10 37.9	

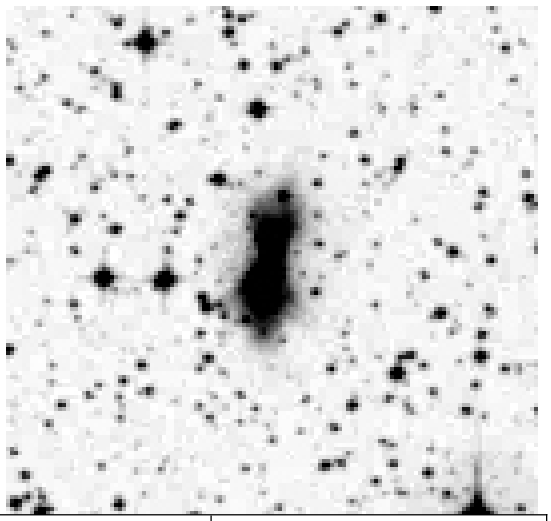
Observing notes:


18h00m
17h30m
17h00m
16h30m
-32°00'
-34°00'
-36°00'
-38°00'
-40°00'
-42°00'
-44°00'
-46°00'
B 87
NGC6416
NGC6405
NGC 6374
NGC6404
NGC 6404
B 283
Tr 27
Cr 345
Cr 333
Pismis 24
B 252
B 55
B 53
27
B 50
NGC6475
B 287
Tr 30
M 7
B 257
Bochum 13
Scorpius
B 233
B 231
Ru 127
NGC 6281
NGC6441
NGC6400
Cr 338
NGC6281
SL 28
Tr 25
NGC6318
NGC6242
NGC6268
NGC 6268
Tr 29
SL 26
B 58
Cr 316
Tr 24
B 44a
B 48
NGC 6227
5°
NGC6231
NGC 6231
B 263
NGC6322
NGC 6322
SL 17
NGC6192
NGC 6192
GC6541
NGC 6541
NGC6496
NGC 6496
NGC6388
NGC 6388
NGC6259
NGC6249
NGC 6249
NGC6222
NGC6169
NGC6250
NGC 6250
NGC6178


17h30m
17h25m
17h20m
17h15m
17h10m
37°30'
38°00'
38°30'
39°00'
39°30'
40°00'
40°30'
41°00'
Ru 123
Sh2- 5
Sh2- 3
Hav-Moffat 1
Tr 25
30'x30'
NGC6318
NGC 6318
B 58

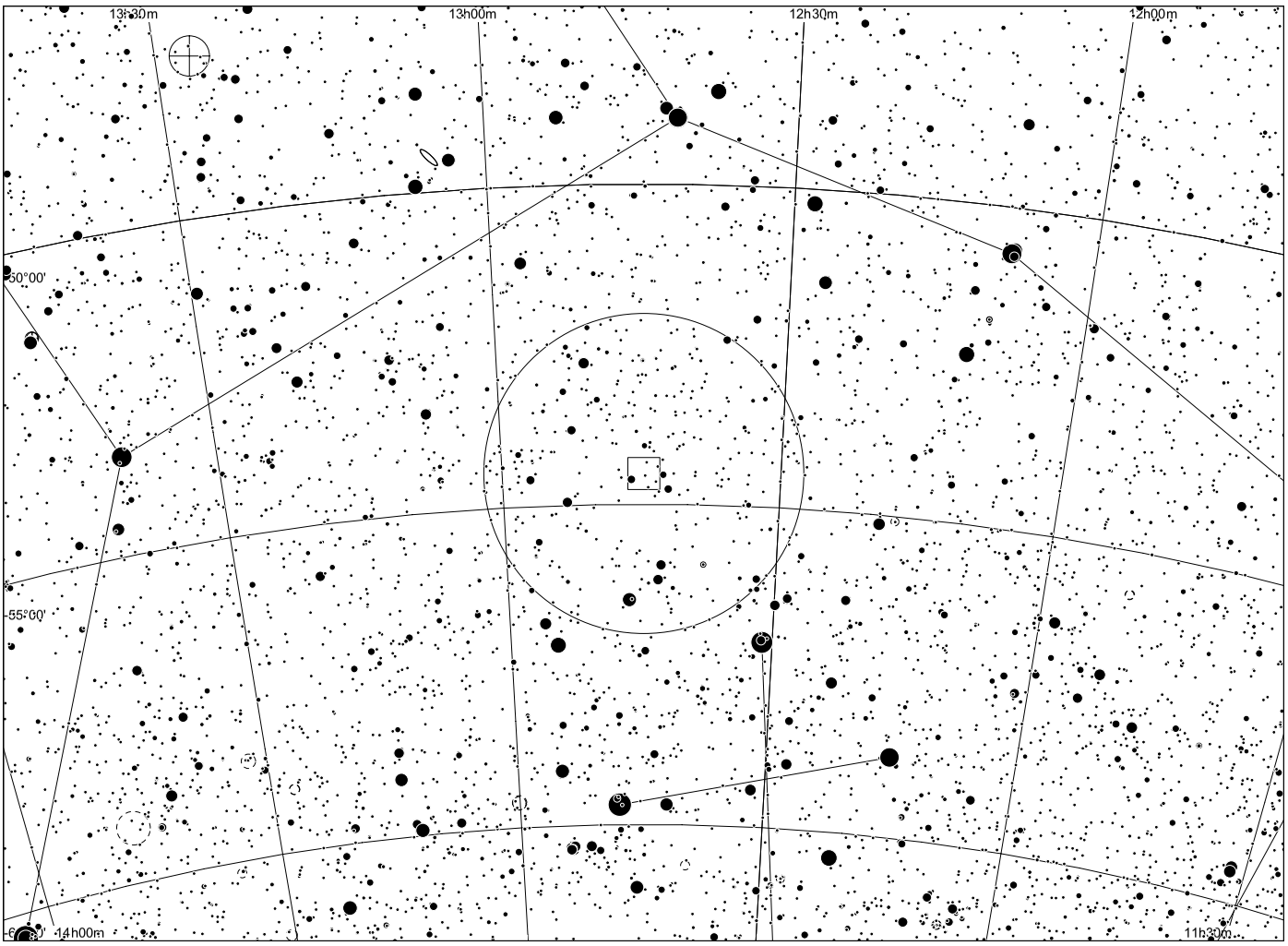
Boomerang Nebula in Centaurus

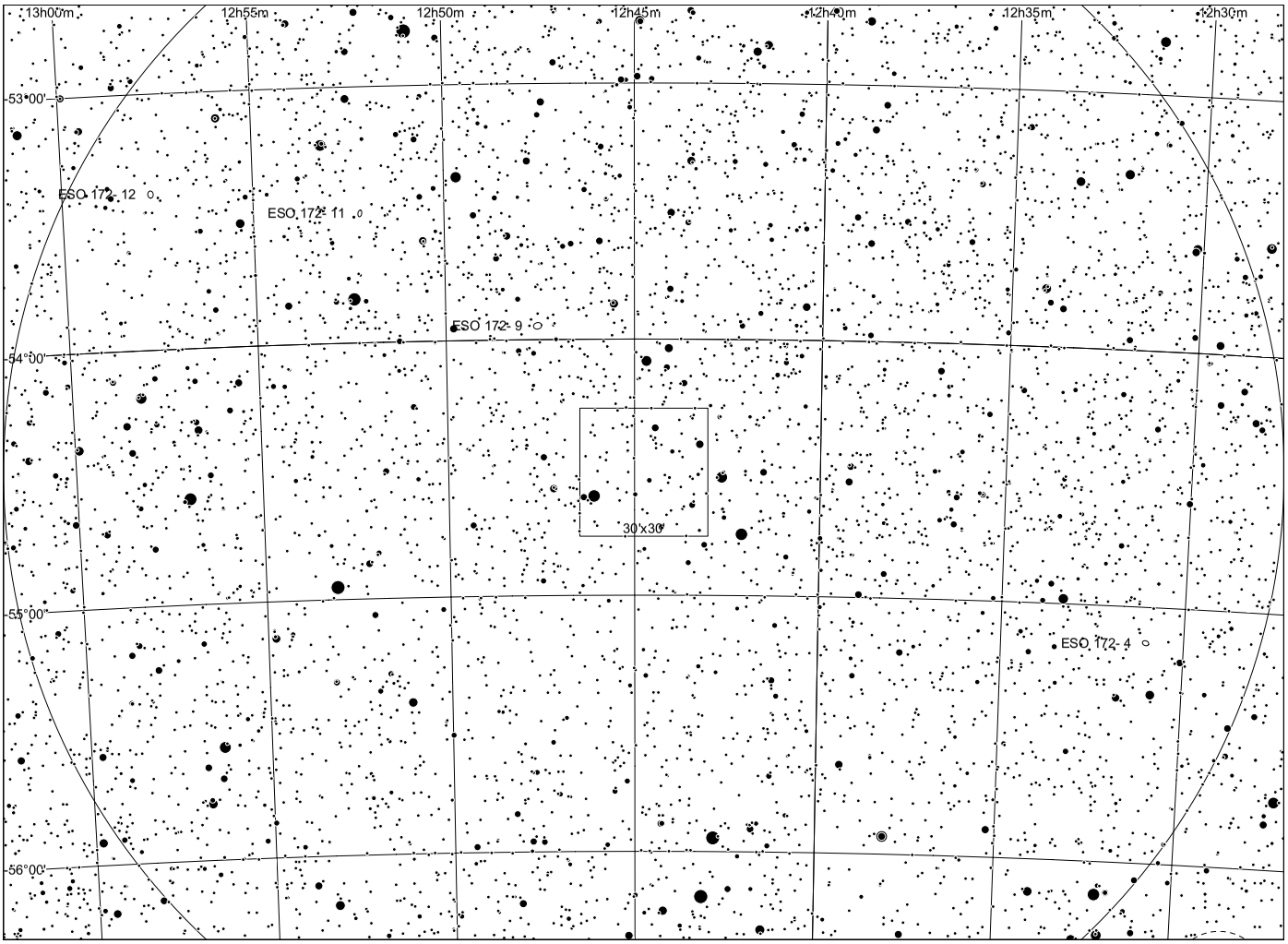




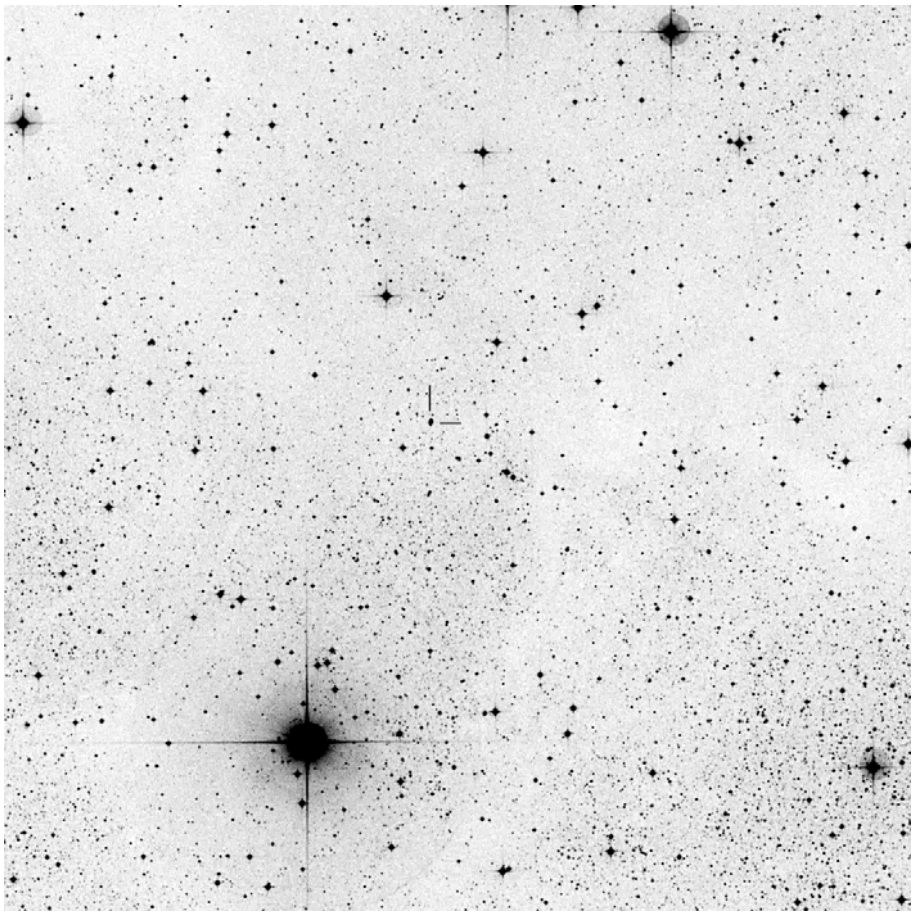
		RA	Dek	other names
Boomerang Nebula	ESO 172-7	12 44 45.45	-54 31 11.4	Centaurus bipolar nebula

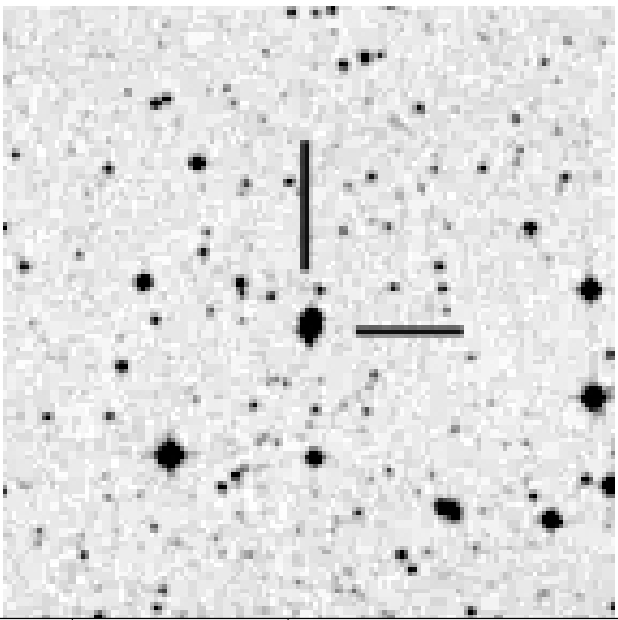
Observing notes:


13h30m
13h00m
12h30m
12h00m
50°00'
55°00'
14h00m
11h30m


13h00m
12h55m
12h50m
12h45m
12h40m
12h35m
12h30m
53°00'
54°00'
55°00'
56°00'
ESO 172- 12
ESO 172- 11
ESO 172- 9
30'x30'
ESO 172- 4

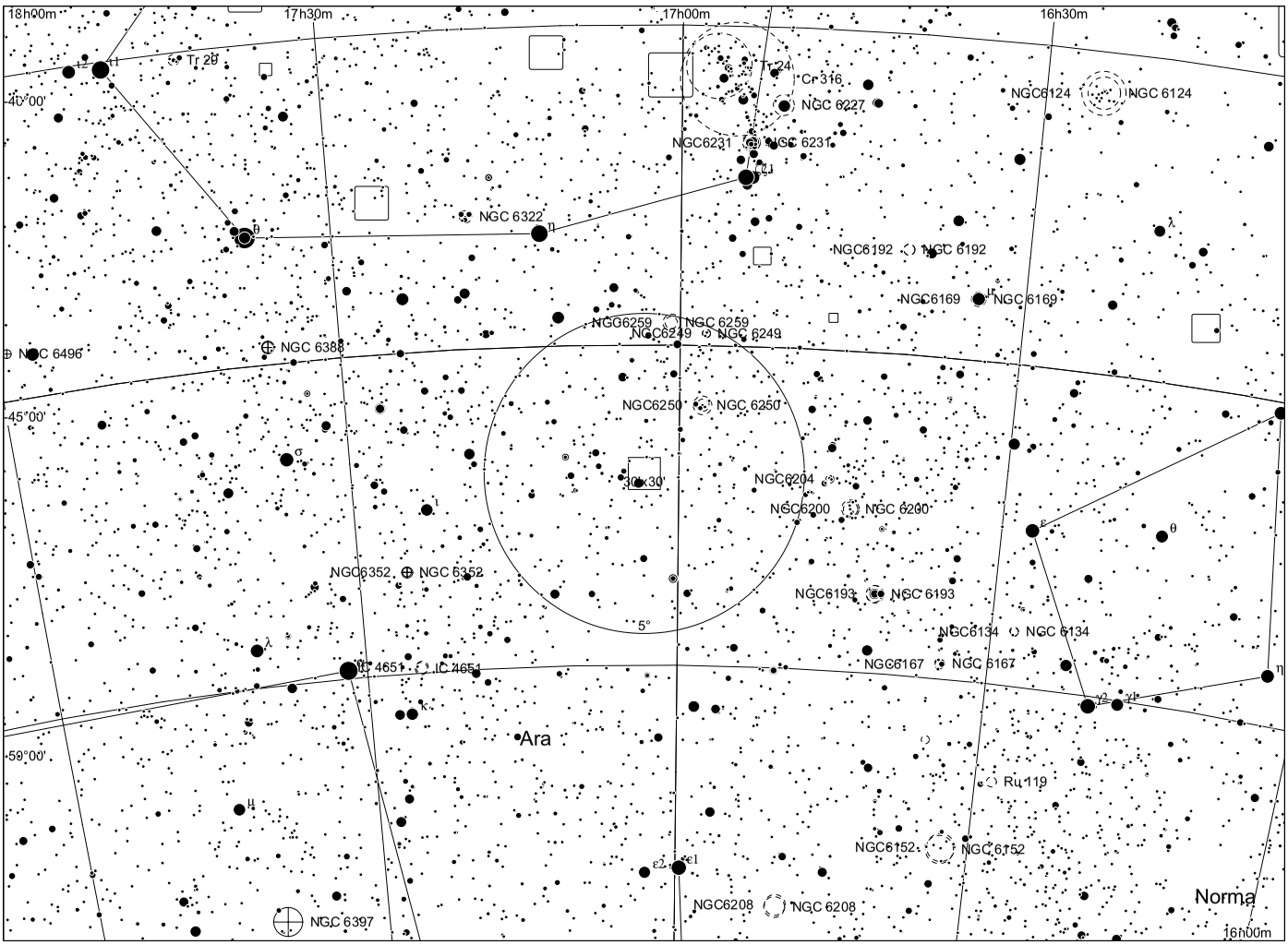
Water Lily Nebula in Ara

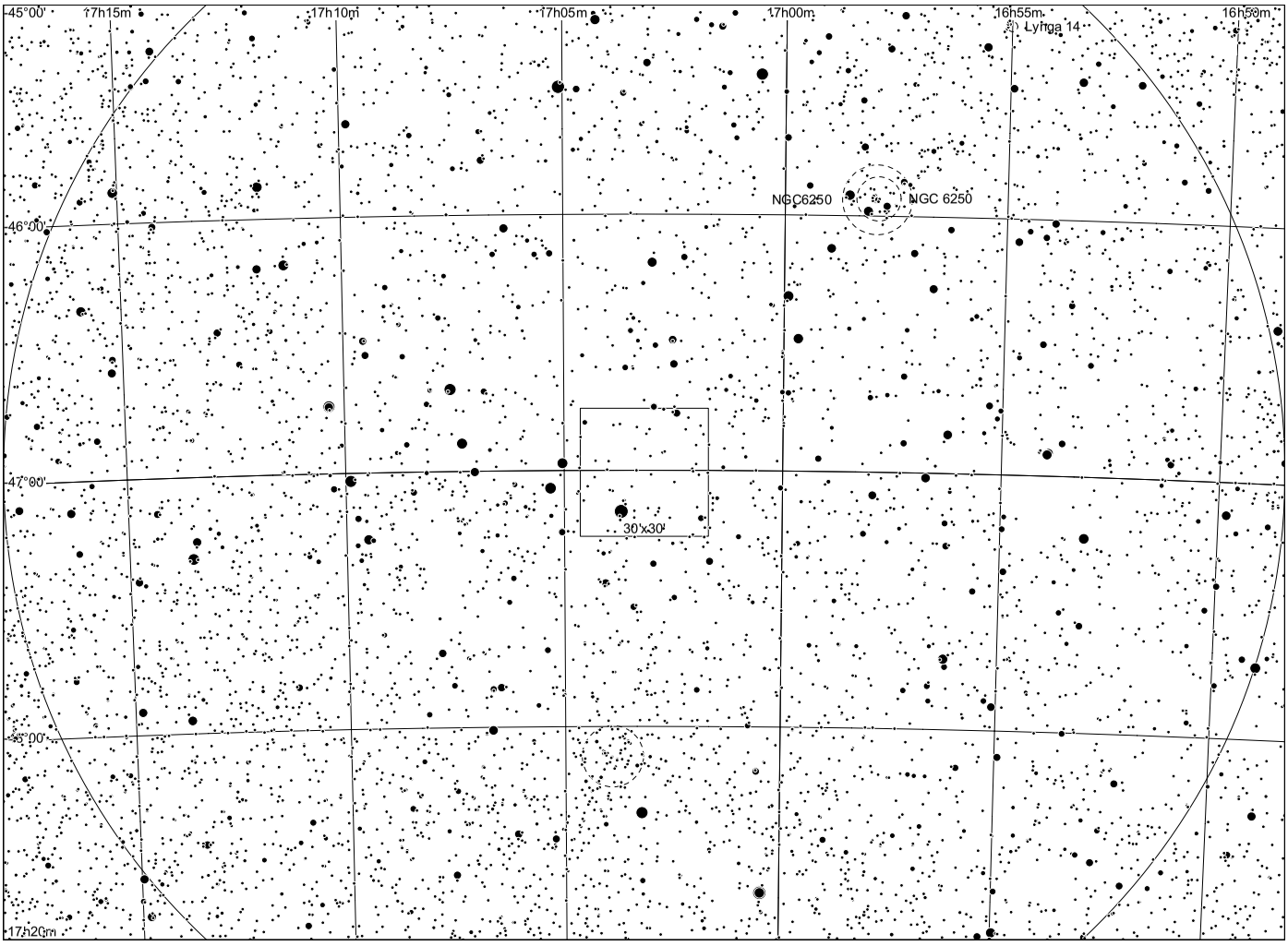




		RA	Dek	other names
Water Lily Nebula	PN G340.3-03.2	17 03 10.08	-47 00 27.7	PK 340-03 1

Observing notes:


18h00m
17h30m
17h00m
16h30m
-40°00'
Tr 20
Tr 24
Cr 316
NGC 6227
NGC6124
NGC 6124
NGC6231
NGC 6231
NGC 6322
NGC6192
NGC 6192
NGC6169
NGC 6169
NGC6259
NGC 6259
NGC6249
NGC 6249
NGC 6496
NGC 6388
-45°00'
NGC6250
NGC 6250
30' x 30'
NGC6204
NGC6200
NGC 6200
NGC6352
NGC 6352
NGC6193
NGC 6193
5°
NGC6134
NGC 6134
IC 4651
IC 4651
NGC6167
NGC 6167
Ara
-59°00'
Ru 119
NGC6152
NGC 6152
NGC6208
NGC 6208
Norma
NGC 6397
16h00m


-45°00'
17h15m
17h10m
17h05m
17h00m
16h55m
Lynga 14
16h50m
NGC6250
NGC 6250
-46°00'
-47°00'
30' x 30'
-48°00'
17h20m