## Astronomy Sketch Log

### Comet Lulin
- **Type:** C/2007 N3
- **Constellation:** Libra
- **Date:** 2/24/09
- **Time:** 9:12 P
- **Observing Location:** Broomfield, CO
- **Instrument:** 8" f/6 Newtonian, Aperture: 8"
- **EP/Mag:** 19 mm / 64x
- **Focal Length:** 49"
- **Conditions:** Good
- **Seeing/Transp.:** Good / Cloud
- **Notes:** See bright core that dims slowly into halo glow. Tail like FOV long

### Lunar Eclipse
- **Type:** Total
- **Constellation:**
- **Date:** 8/16/09
- **Time:** 11:10 P
- **Observing Location:** Tens Haute, TN
- **Instrument:** Naked Eye
- **Notes:** Cloudy at beginning but then got to watch it to end

### Mars
- **Type:** Planet
- **Constellation:**
- **Date:** 8/22/03
- **Time:** 10:37 P
- **Observing Location:** Poudre Grasslands, Colorado
- **Instrument:** 12.5" f/8 Newt., Aperture: 12.5"
- **EP/Mag:** 9 mm / 282x
- **Focal Length:** 100"
- **Conditions:** Good
- **Seeing/Transp.:** Good / Good
- **Notes:**
### Astronomy Sketch Log

#### Bowl of Stars
- **Type:** Asterism
- **Constellation:** Cassiopeia
- **Date:** 8/17/14
- **Time:** 11:30
- **Observing Location:** Pawnee Grasslands, CO
- **Instrument:** Telescope
  - **Aperture:** 8"
- **EP/Mag:** 32mm / 38x
- **Focal Length:** f/6
- **Conditions:** Seeing/Transp:
- **Notes:**

#### Saturn
- **Type:** Planet
- **Constellation:** Libra
- **Date:** 8/17/14
- **Time:** 8:20
- **Observing Location:** Pawnee Grasslands, CO
- **Instrument:** Telescope
  - **Aperture:** 8"
- **EP/Mag:** 6mm / 203x
- **Focal Length:** f/6
- **Conditions:** Seeing/Transp: [Observed]
- **Notes:**

#### Double Star
- **Type:** Double Star
- **Constellation:** Cygnus
- **Date:** 8/17/14
- **Time:** 9:35
- **Observing Location:** Pawnee Grasslands, CO
- **Instrument:** Telescope
  - **Aperture:** 8"
- **EP/Mag:** 6mm / 203x
- **Focal Length:** f/6
- **Conditions:** Seeing/Transp: [Observed]
- **Notes:**
# Astronomy Sketch Log

## Subject: Epsilon 1 & 2
- **Type:** Double Star
- **Constellation:** Lyr
- **Date:** 8/17/14  Time: 10:12
- **Observing Location:** Pawnee Grasslands, CO
- **Instrument:** Telescope  Aperture: 8"
- **EP/Mag:** 6mm / 203x  Focal Length: f/6
- **Conditions:** Seeing/Transp: Good/40%  
- **Notes:**

## Subject: M57 Ring Nebula
- **Type:** PN
- **Constellation:** Lyr
- **Date:** 8/17/14  Time: 10:18
- **Observing Location:** Pawnee Grasslands, CO
- **Instrument:** Telescope  Aperture: 8"
- **EP/Mag:** 6mm / 203x  Focal Length: f/6
- **Conditions:** Seeing/Transp: 
- **Notes:**

## Subject: Coelhangeo
- **Type:** Asterism
- **Constellation:** Vul
- **Date:** 8/17/14  Time: 11:36
- **Observing Location:** Pawnee Grasslands, CO
- **Instrument:** Telescope  Aperture: 8"
- **EP/Mag:** 52mm / 353x  Focal Length: f/6
- **Conditions:** Seeing/Transp: Good/60%  
- **Notes:**

---
### Astronomy Sketch Log

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<th>Subject:</th>
<th>Cassini</th>
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<tr>
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<tr>
<td>Date:</td>
<td>9/1/14</td>
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<td>20:02</td>
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<td>Newtonian</td>
<td>Aperture:</td>
<td>8''</td>
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<tr>
<td>EP/Mag:</td>
<td>10mm/122x</td>
<td>Focal Length:</td>
<td>f/6</td>
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<td>Conditions:</td>
<td>Good</td>
<td>Seeing/Transp:</td>
<td>Good/Good</td>
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<tr>
<td>Notes:</td>
<td>Nice</td>
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<table>
<thead>
<tr>
<th>Subject:</th>
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<tr>
<td>Constellation:</td>
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<tr>
<td>Date:</td>
<td>9/1/14</td>
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<td>20:10</td>
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<td>Seeing/Transp:</td>
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<tr>
<td>Notes:</td>
<td>Nice, Craters are hard to draw</td>
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<td>Notes:</td>
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</table>
**Astronomy Sketch Log**

**Subject:** Clavius  
Type: Crater

**Constellation:** Moon  

**Date:** 9/3/04  
**Time:** 20:04

**Observing Location:** Broomfield, CO

**Instrument:** Newtonian  
**Aperture:** 8"  
**EP/Mag:** 10mm/122x  
**Focal Length:** f/6

**Conditions:** Good  
**Seeing/Transp:** Good/Good

**Notes:** Just sunrise over this crater.

---

**Subject:** Sunspots  
Type: Sun

**Constellation:** Sun

**Date:** 2/27/04  
**Time:** 8:23

**Observing Location:** Boulder, CO

**Instrument:** Newtonian  
**Aperture:** 8"  
**EP/Mag:** 19mm/64x  
**Focal Length:** f/6

**Conditions:** OK  
**Seeing/Transp:** OK/OK

**Notes:** Used Baader white light filter  
High thin clouds

---

**Subject:** Conjunction  
Type: 

**Constellation:**

**Date:** 12/1/08  
**Time:** 18:23

**Observing Location:** Broomfield, CO

**Instrument:** Naked Eye  
**Aperture:**

**EP/Mag:**  
**Focal Length:**

**Conditions:** Good  
**Seeing/Transp:** Good/Good

**Notes:** Venus, Jupiter & Moon. Venus lower planet, Jupiter upper right one.
<table>
<thead>
<tr>
<th>Subject: NGC 2169</th>
<th>Type: OC</th>
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<tbody>
<tr>
<td>Constellation: Ori</td>
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<tr>
<td>Date: 1/2/06</td>
<td>Time: 21:24</td>
</tr>
<tr>
<td>Observing Location: Rural Colorado, E. of Lusenborn</td>
<td></td>
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<tr>
<td>Instrument: Newtonian</td>
<td>Aperture: 20&quot;</td>
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<tr>
<td>EP/Mag: 32mm/64x</td>
<td>Focal Length: 6/6</td>
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<tr>
<td>Conditions: Clear</td>
<td>Seeing/Transp: Good/Good</td>
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<tr>
<td>Notes: NGC 15 stars of 3-4 mag spiral with H 37. Very curvy. 6 stars form the 7 while the rest forms the 3</td>
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<thead>
<tr>
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<tbody>
<tr>
<td>Constellation: Fornax</td>
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<tr>
<td>Date: 1/15/15</td>
<td>Time: 8:13</td>
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<tr>
<td>Observing Location: Crawford, TX</td>
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<tr>
<td>Instrument: Newtonian</td>
<td>Aperture: 20&quot;</td>
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<td>EP/Mag: 17mm/149x</td>
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<tbody>
<tr>
<td>Constellation: Ori</td>
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<tr>
<td>Date: 2/9/15</td>
<td>Time: 6:18</td>
</tr>
<tr>
<td>Observing Location: Broomfield, CO</td>
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<tr>
<td>Instrument: Newtonian</td>
<td>Aperture: 8&quot;</td>
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<td>EP/Mag: 10mm/123x</td>
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<tr>
<td>Conditions: No.2</td>
<td>Seeing/Transp: OK/OK</td>
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<td>Notes:</td>
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</table>
### Astronomy Sketch Log

#### Subject: HR 1602 Type: V5
- **Constellation:** Leo
- **Date:** 2/8/15
- **Time:** 7:18 P
- **Observing Location:** Brownfield, Co
- **Instrument:** Newtonian
- **Aperture:** 8"
- **EP/Mag:** 10mm/122x
- **Focal Length:** f/6
- **Conditions:** Good
- **Seeing/Transp.:** OK / OK
- **Notes:** Seeing Poor. Law in South

#### Subject: HR 9044 Type: D5
- **Constellation:** Can
- **Date:** 2/8/15
- **Time:** 7:12 P
- **Observing Location:** Brownfield, Co
- **Instrument:** Newtonian
- **Aperture:** 8"
- **EP/Mag:** 10mm/122x
- **Focal Length:** f/6
- **Conditions:** Good
- **Seeing/Transp.:** OK / OK
- **Notes:** One is yellow (+brighter) & dimmer is blue.

#### Subject: M45 Type: O6
- **Constellation:** Taur
- **Date:** 2/8/15
- **Time:** 7:49 P
- **Observing Location:** Brownfield, Co
- **Instrument:** Newtonian
- **Aperture:** 8"
- **EP/Mag:** 32mm/38x
- **Focal Length:** f/6
- **Conditions:** Good
- **Seeing/Transp.:** OK / OK
- **Notes:**
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<tr>
<td>M31</td>
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<td>M1</td>
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<th>Time</th>
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<tbody>
<tr>
<td>Cen</td>
<td>2/8/15</td>
<td>8:00 P</td>
</tr>
<tr>
<td>Tau</td>
<td>2/8/15</td>
<td>8:10 P</td>
</tr>
<tr>
<td>Per</td>
<td>2/8/15</td>
<td>9:30 P</td>
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<th>Instrument</th>
<th>Aperture</th>
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<tbody>
<tr>
<td>Bromfield, CO</td>
<td>Newtonian</td>
<td>9&quot;</td>
</tr>
<tr>
<td>Bromfield, CO</td>
<td>Newtonian</td>
<td>8&quot;</td>
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<tr>
<td>Bromfield, CO</td>
<td>Newtonian</td>
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<thead>
<tr>
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<td>19 mm</td>
<td>f/6</td>
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<tr>
<td>10 mm</td>
<td>f/6</td>
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<tr>
<td>32 mm</td>
<td>f/6</td>
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<td>Good</td>
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<tr>
<td>Good</td>
<td>OK/OK</td>
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<tr>
<td>Good</td>
<td>OK/OK</td>
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Notes:

- "Very Faint"
### Subject: Jupiter  
#### Type: Planet

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<tr>
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<th>Time</th>
<th>Observing Location</th>
<th>Instrument</th>
<th>Aperture</th>
<th>EP/Mag</th>
<th>Focal Length</th>
<th>Conditions</th>
<th>Seeing/Transp</th>
<th>Notes</th>
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<tbody>
<tr>
<td>2/7/15</td>
<td>9:00</td>
<td>Broomfield, ID</td>
<td>Newtonian</td>
<td>8&quot;</td>
<td>10mm</td>
<td>f/6</td>
<td>OK</td>
<td>OK/OK</td>
<td>Saw moon shadow on disc</td>
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### Subject: HR 8816  
#### Type: VS

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<th>Instrument</th>
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<th>EP/Mag</th>
<th>Focal Length</th>
<th>Conditions</th>
<th>Seeing/Transp</th>
<th>Notes</th>
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<tbody>
<tr>
<td>2/18/15</td>
<td>6:35P</td>
<td>Broomfield, ID</td>
<td>Newtonian</td>
<td>8&quot;</td>
<td>19mm</td>
<td>f/6</td>
<td>Good</td>
<td>Good/Cool</td>
<td>Beautiful Red Star, Nice &amp; Bright</td>
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### Subject: NGC 457  
#### Type: OC

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<th>EP/Mag</th>
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<th>Conditions</th>
<th>Seeing/Transp</th>
<th>Notes</th>
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<tbody>
<tr>
<td>2/11/15</td>
<td>8:06P</td>
<td>Broomfield, ID</td>
<td>Newtonian</td>
<td>8&quot;</td>
<td>19mm</td>
<td>f/6</td>
<td>Good</td>
<td>OK/OK</td>
<td></td>
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</table>
### Subject: NGC 752  Type: OC
**Constellation:** And
**Date:** 2/11/15  **Time:** 8:10 PM
**Observing Location:** Brookfield, WI
**Instrument:** Newtonian  **Aperture:** 8"
**EP/Mag:** 32mm/100x  **Focal Length:** f/6
**Conditions:** Good  **Seeing/Transp:** OK/OK

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### Subject: NGC 1502 + Hubble  Type: OC/AST
**Constellation:** Cam
**Date:** 2/11/15  **Time:** 8:23 PM
**Observing Location:** Brookfield, WI
**Instrument:** Newtonian  **Aperture:** 8"
**EP/Mag:** 32mm  **Focal Length:** f/6
**Conditions:** Good  **Seeing/Transp:** DK/OK
**Notes:** Drew a bit more outside FOV

---

### Subject: M 34  Type: OC
**Constellation:** Per
**Date:** 2/11/15  **Time:** 8:30 PM
**Observing Location:** Brookfield, WI
**Instrument:** Newtonian  **Aperture:** 8"
**EP/Mag:** 19mm/100x  **Focal Length:** f/6
**Conditions:** Good  **Seeing/Transp:** OK/OK

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### Notes:

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### Astronomy Sketch Log

#### Subject: M39
- **Type**: OC
- **Constellation**: Aries, Auriga
- **Date**: 7/11/15
- **Time**: 8:43 PM
- **Observing Location**: Broomfield, CO
- **Instrument**: Newtonian
- **Aperture**: 8"
- **EP/Mag**: 19 mm / 64 x
- **Focal Length**: f/6
- **Conditions**: Good
- **Seeing/Transp**: OK / OK

#### Subject: M52
- **Type**: OC
- **Constellation**: Cassiopeia
- **Date**: 7/18/15
- **Time**: 6:14 PM
- **Observing Location**: Broomfield, CO
- **Instrument**: Newtonian
- **Aperture**: 8"
- **EP/Mag**: 10 mm / 125 x
- **Focal Length**: f/6
- **Conditions**: Very Good
- **Seeing/Transp**: Good / Good

#### Subject: NGC 7789
- **Type**: OC
- **Constellation**: Cassiopeia
- **Date**: 7/18/15
- **Time**: 6:35 PM
- **Observing Location**: Broomfield, CO
- **Instrument**: Newtonian
- **Aperture**: 8"
- **EP/Mag**: 19 mm / 64 x
- **Focal Length**: f/6
- **Conditions**: Good
- **Seeing/Transp**: Good / Good

### Notes:

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### Astronomy Sketch Log

**Subject:** IC 418  
**Type:** PN

**Constellation:** Leo

**Date:** 2/18/15  
**Time:** 11:05 PM

**Observing Location:** Bromfield, CA

**Instrument:** Newtonian  
**Aperture:** 8''

**EP/Mag:** 10mm / 122x  
**Focal Length:** C/6

**Conditions:** Good  
**Seeing/Transp:** Good/Good

**Notes:** Used 0.3, Filter, No, Smudged.

---

**Subject:** NGC 2392  
**Type:** PN

**Constellation:** Gem

**Date:** 2/18/15  
**Time:** 11:11 PM

**Observing Location:** Bromfield, CA

**Instrument:** Newtonian  
**Aperture:** 8''

**EP/Mag:** 10mm / 122x  
**Focal Length:** C/6

**Conditions:** Good  
**Seeing/Transp:** Good/Good

**Notes:** Used 0.3, Filter, New, Large, Bright.

---

**Subject:** NGC 2175  
**Type:** PN/DC

**Constellation:** Oph

**Date:** 2/18/15  
**Time:** 11:33 PM

**Observing Location:** Bromfield, CA

**Instrument:** Newtonian  
**Aperture:** 8''

**EP/Mag:** 10mm / 122x  
**Focal Length:** C/6

**Conditions:** Good  
**Seeing/Transp:** Good/Good

**Notes:** Used Deep Sky filter. Extremely faint.  
Veiled by upper left part of cluster.
### Subject: M66
- **Type:** OC
- **Constellation:** Pup
- **Date:** 2/18/15
- **Time:** 8:17 p.m.
- **Observing Location:** Brownfield, CO
- **Instrument:** Newtonian
- **Aperture:** 8"
- **EP/Mag:** 19mm / 64x
- **Focal Length:** f/6
- **Conditions:** Good
- **Seeing/Transp.:** Good / Good
- **Notes:**
  - Peculiar spiral, low in southeasterly sky, just west of M81.  Large, bright, well-defined spiral arms with 3 bright central stars.  Appears to be a barred spiral.  About 30% of light comes from the bar.

### Subject: NGC 2244
- **Type:** OC / BN
- **Constellation:** Mon
- **Date:** 2/18/15
- **Time:** 7:53 p.m.
- **Observing Location:** Brownfield, CO
- **Instrument:** Newtonian
- **Aperture:** 8"
- **EP/Mag:** 10mm / 122x
- **Focal Length:** f/6
- **Conditions:** Good
- **Seeing/Transp.:** Good / Good
- **Notes:**
  - Used Deep Sky Filter.  Nice, bright, diffuse nebulosity around bright central star.  Extremely faint glow extends from this.

### Subject: NGC 2262
- **Type:** OC
- **Constellation:** Cen
- **Date:** 2/18/15
- **Time:** 7:42 p.m.
- **Observing Location:** Brownfield, CO
- **Instrument:** Newtonian
- **Aperture:** 8"
- **EP/Mag:** 19mm / 64x
- **Focal Length:** f/6
- **Conditions:** Good
- **Seeing/Transp.:** Good / Good
- **Notes:**
### Subject: M93  Type: O/C
- **Constellation:** Pup
- **Date:** 2/18/15  **Time:** 8:13:31 p.m.
- **Observing Location:** Brownfield, TX
- **Instrument:** Newtonian  **Aperture:** 8''
- **EP/Mag:** 19 mm / 64x  **Focal Length:** 8"/6
- **Conditions:** Good  **Seeing/Transp:** Good / Good
- **Notes:**

### Subject: Struve 1659  Type: A4+ 
- **Constellation:** Cnc
- **Date:** 1/9/13  **Time:** 4:16:44
- **Observing Location:** Berthoud, CO
- **Instrument:** Newtonian  **Aperture:** 8''
- **EP/Mag:** 82 mm / 78x  **Focal Length:** 8"/6
- **Conditions:** Good  **Seeing/Transp:** Good / Good
- **Notes:** Starfade. Observed as part of the Astrolism observing program.

### Subject: NGC 7008  Type: PN
- **Constellation:** Cyg
- **Date:** 12/3/04  **Time:** 20:54
- **Observing Location:** Pawnee Grasslands
- **Instrument:** Newtonian  **Aperture:** 8''
- **EP/Mag:** 10 mm / 122x  **Focal Length:** 4"/6
- **Conditions:** Good  **Seeing/Transp:** Good / Good
- **Notes:** Used O3 filter. Saw central star pop in once in a while above center on glow.
### Astronomy Sketch Log

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<thead>
<tr>
<th>Subject</th>
<th>Type</th>
<th>Constellation</th>
<th>Date</th>
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<tr>
<td>M2359</td>
<td>Nebula</td>
<td>CMa</td>
<td>3/10/15</td>
<td>20:20</td>
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<tr>
<td>IC 405</td>
<td>E4N</td>
<td>Aur</td>
<td>3/10/15</td>
<td>21:18</td>
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<tr>
<td>M81/M82</td>
<td>Gal</td>
<td>UMa</td>
<td>2/18/15</td>
<td>21:27</td>
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#### Observing Details
- **Instrument:** Newtonian
- **Aperture:** 24"
- **Focal Length:** 6/4
- **EP/Mag:** 9mm/1782x
- **Conditions:** Warm, Clear
- **Seeing/Transp:** Good

#### Notes
- Nebula best seen near stars.
- Using DSF to really bring out nebula.
## Astronomy Sketch Log

<table>
<thead>
<tr>
<th>Subject</th>
<th>Type</th>
<th>Constellation</th>
<th>Date</th>
<th>Time</th>
<th>Observing Location</th>
<th>Instrument</th>
<th>Aperture</th>
<th>EP/Mag</th>
<th>Focal Length</th>
<th>Conditions</th>
<th>Seeing/Transp.</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>N3079</td>
<td>Gal</td>
<td>UMa</td>
<td>2/18/15</td>
<td>21:39</td>
<td>Ceremony, TX</td>
<td>Newtonian</td>
<td>20°</td>
<td>17mm/149x</td>
<td>0.5</td>
<td>Warm</td>
<td>Good/Cloudy</td>
<td></td>
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<tr>
<td>145, 196</td>
<td>Gal</td>
<td>Oph</td>
<td>2/18/15</td>
<td>21:45</td>
<td>Ceremony, TX</td>
<td>Newtonian</td>
<td>20°</td>
<td>35mm/146x</td>
<td>0.15</td>
<td>Warm</td>
<td>Good/Cloudy</td>
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</tr>
<tr>
<td>244-7</td>
<td>BU/OC</td>
<td>Pup</td>
<td>3/18/15</td>
<td>22:12</td>
<td>Ceremony, TX</td>
<td>Newtonian</td>
<td>20°</td>
<td>16mm/150x</td>
<td>0.15</td>
<td>Warm</td>
<td>Good/Cloudy</td>
<td></td>
</tr>
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Notes: &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&n...
### Astronomy Sketch Log

#### Subject: N2024
- Type: EJ
- Constellation: Oph
- Date: 3/18/15
- Time: 22:12
- Observing Location: Crawell, TX
- Instrument: Newtonian
- Aperture: 20”
- EP/Mag: 16mm/159x
- Focal Length: 8.15
- Conditions: Warm
- Seeing/Transp: Good/Cloud
- Notes: Very dim, seen w/DSF

#### Subject: N2026
- Type: EJ/RN
- Constellation: Men
- Date: 3/18/15
- Time: 22:17
- Observing Location: Crawell, TX
- Instrument: Newtonian
- Aperture: 20”
- EP/Mag: 16mm/159x
- Focal Length: 8.15
- Conditions: Warm
- Seeing/Transp: Good/Cloud
- Notes: Nice & Bright w/DSF

#### Subject: H65, M94, N3628
- Type: Gal
- Constellation: Leo
- Date: 3/18/15
- Time: 22:13
- Observing Location: Crawell, TX
- Instrument: Newtonian
- Aperture: 20”
- EP/Mag: 55mm/46x
- Focal Length: 8.15
- Conditions: Warm
- Seeing/Transp: Good/Cloud
- Notes:
### Astronomy Sketch Log

<table>
<thead>
<tr>
<th>Subject</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NGC 3115</strong></td>
<td><strong>C0</strong></td>
</tr>
</tbody>
</table>

**Constellation:** Sex  
**Date:** 4/12/15  
**Time:** 8:30 P  
**Observing Location:** Deer Trail, CO  
**Instrument:** Newtonian  
**Aperture:** 8"  
**EP/Mag:** 9mm / 135x  
**Focal Length:** f/6  
**Conditions:** Good/Clear  
**Seeing/Transp:** OK/OK  
**Notes:** Light wind from E making it feel cold

<table>
<thead>
<tr>
<th>Subject</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M84, M86</strong></td>
<td><strong>C0</strong></td>
</tr>
</tbody>
</table>

**Constellation:** Vir  
**Date:** 4/12/15  
**Time:** 8:45 P  
**Observing Location:** Deer Trail, CO  
**Instrument:** Newtonian  
**Aperture:** 8"  
**EP/Mag:** 9mm / 135x  
**Focal Length:** f/6  
**Conditions:** Seeing/Transp: OK/OK  
**Notes:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perseus</strong></td>
<td><strong>DS</strong></td>
</tr>
</tbody>
</table>

**Constellation:** Perseus  
**Date:** 3/18/15  
**Time:** 22:41  
**Observing Location:** Cuero, TX  
**Instrument:** Newtonian  
**Aperture:** 20"  
**EP/Mag:** 17mm / 149x  
**Focal Length:** f/5  
**Conditions:** OK  
**Seeing/Transp:** OK/OK  
**Notes:** Just above horizon, Bright, Easy to see
<table>
<thead>
<tr>
<th>Subject: NGC 490, NGC 185</th>
<th>Type: Gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constellation: CVn</td>
<td></td>
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<tr>
<td>Date: 4/1/15</td>
<td>Time: 8:56 P</td>
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<tr>
<td>Observing Location: Deer Trail, CO</td>
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<tr>
<td>Instrument: Newtonian</td>
<td>Aperture: 8&quot;</td>
</tr>
<tr>
<td>EP/Mag: 9mm/135x</td>
<td>Focal Length: f/6</td>
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<tr>
<td>Conditions: Clear, Wind Stopped, Seeing/Transp: OK/OK</td>
<td></td>
</tr>
<tr>
<td>Notes:</td>
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<table>
<thead>
<tr>
<th>Subject: NGC 695</th>
<th>Type: Gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constellation: CVn</td>
<td></td>
</tr>
<tr>
<td>Date: 4/12/15</td>
<td>Time: 9:03 P</td>
</tr>
<tr>
<td>Observing Location: Deer Trail, CO</td>
<td></td>
</tr>
<tr>
<td>Instrument: Newtonian</td>
<td>Aperture: 8&quot;</td>
</tr>
<tr>
<td>EP/Mag: 9mm/135x</td>
<td>Focal Length: f/6</td>
</tr>
<tr>
<td>Conditions:</td>
<td>Seeing/Transp:</td>
</tr>
<tr>
<td>Notes:</td>
<td>Mcp.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject: NGC 4028, NGC 4029</th>
<th>Type: Gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constellation: Cas</td>
<td></td>
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<tr>
<td>Date: 4/12/15</td>
<td>Time: 9:12 P</td>
</tr>
<tr>
<td>Observing Location: Deer Trail, CO</td>
<td></td>
</tr>
<tr>
<td>Instrument: Newtonian</td>
<td>Aperture: 8&quot;</td>
</tr>
<tr>
<td>EP/Mag: 9mm/135x</td>
<td>Focal Length: f/6</td>
</tr>
<tr>
<td>Conditions:</td>
<td>Seeing/Transp: 01c/01k</td>
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<tr>
<td>Notes:</td>
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</tbody>
</table>
Astronomy Sketch Log

Subject: M104
Type: Gal
Constellation: Vir
Date: 4/12/15   Time: 9:23 PM
Observing Location: Deer Trail, CO
Instrument: Newtonian   Aperture: 8"
EP/Mag: 9mm / 135x   Focal Length: f/6
Conditions: Seeing/Transp: OK/OK
Notes:

Subject: N4867, N4568
Type: Gal
Constellation: Vir
Date: 4/12/15   Time: 9:30 PM
Observing Location: Deer Trail, CO
Instrument: Newtonian   Aperture: 8"
EP/Mag: 9mm / 135x   Focal Length: f/6
Conditions: Seeing/Transp: OK/OK
Notes: Pretty Point

Subject: N4631, N4627
Type: Gal
Constellation: CVn
Date: 4/12/15   Time: 9:40 PM
Observing Location: Deer Trail, CO
Instrument: Newtonian   Aperture: 8"
EP/Mag: 9mm / 135x   Focal Length: f/6
Conditions: Seeing/Transp: OK/OK
Notes:
### Astronomy Sketch Log

#### Subject: M 51
- **Type:** Gal
- **Constellation:** CVn
- **Date:** 4/12/15  Time: 10:03 P
- **Observing Location:** Deer Trail, CO
- **Instrument:** Newtonian  Aperture: 8"
- **EP/Mag:** 9mm / 135x  Focal Length: f/6
- **Conditions:** Seeing/Transp: OK/OK
- **Notes:** No spiral arms seen, just a glimmer.
Subject: Kepler Type: Crater
Constellation: Moon
Date: 5/3/15 Time: 9:27 P
Observing Location: Broomfield, Co
Instrument: Newtonian Aperture: 8"
EP/Mag: 6mm/203x Focal Length: f/6
Conditions: Clear Calm Seeing/Transp: Good/Good
Notes: Many, lots of rays and bright rays around crater. Bright spot on crater. 6mm Moon filter made crater harder to see.

Subject: 17521 1350 Type: DS
Constellation: Psc
Date: 4/12/15 Time: 10:06 P
Observing Location: Deer Trail, Co
Instrument: Newtonian Aperture: 8"
EP/Mag: 15mm/21x Focal Length: f/6
Conditions: Seeing/Transp: OK/OK
Notes: Bright, better seeing. 4 brighter, companion bluerish.

Subject: Mare Imbrium Type: Crater
Constellation: Moon
Date: 5/3/15 Time: 10:06 P
Observing Location: Broomfield, Co
Instrument: Newtonian Aperture: 8"
EP/Mag: 6mm/203x Focal Length: f/6
Conditions: Clear Calm Seeing/Transp: Good/Good
Notes: Incredible. Ghost craters lot of shading. Didn't capture very well. The darkest markings are the brightest Maus filter made features harder to see.
### Astronomy Sketch Log

#### Subject: P14  Type: GC
**Constellation:** Scu
**Date:** 7/11/15  **Time:** 9:14 PM
**Observing Location:** Deer Trail, CO
**Instrument:** Newtonian  **Aperture:** 8"
**EP/Mag:** 15mm/81x  **Focal Length:** 8/6
**Conditions:** Clouds Drifting By  **Seeing/Transp:** Poor/OK
**Notes:**
- Lots of member stars seen.
- Very loose association.

#### Subject: M90  Type: GC
**Constellation:** Scu
**Date:** 7/11/15  **Time:** 9:15 PM
**Observing Location:** Deer Trail, CO
**Instrument:** Newtonian  **Aperture:** 8"
**EP/Mag:** 15mm/81x  **Focal Length:** 8/6
**Conditions:** Clouds Drifting By  **Seeing/Transp:** Poor/OK
**Notes:**
- Has small bright core & dim halo around it. No member stars seen.
- Just the glow.

#### Subject: N6210  Type: PN
**Constellation:** Her
**Date:** 7/11/15  **Time:** 10:14 PM
**Observing Location:** Deer Trail, CO
**Instrument:** Newtonian  **Aperture:** 8"
**EP/Mag:** 10mm/122x  **Focal Length:** 8/6
**Conditions:** Hazy  **Seeing/Transp:** OK/OK
**Notes:**
- w/o 3 filter, a bright central star w/a tiny bit of halo around it.
- It's a bright pale white star w/o 03 filter.
Astronomy Sketch Log

Subject: M27  Type: PN
Constellation: Vul
Date: 7/11/15  Time: 10:27 PM
Observing Location: Deer Trail, CO
Instrument: Newtonian  Aperture: 8"
EP/Mag: 100mm / 122mm  Focal Length: f/6
Conditions: Clear  Seeing/Transp: ok/ok
Notes: Nice bright central bow tie
       A light nebulous area above & below
       N. Nice.

Subject: NGC 251  Type: OC
Constellation: Sco
Date: 7/11/15  Time: 10:43 PM
Observing Location: Deer Trail, CO
Instrument: Newtonian  Aperture: 8"
EP/Mag: 15mm / 41x  Focal Length: f/6
Conditions: Clear  Raw  Seeing/Transp: ok/ok
Notes: Very low in south yet easy to see 30+ blue white stars of 5 magnitudes, Nice.

Subject: NGC 746  Type: Gal
Constellation: Vir
Date: 7/11/15  Time: 10:51 PM
Observing Location: Deer Trail, CO
Instrument: Newtonian  Aperture: 8"
EP/Mag: 10mm / 122mm  Focal Length: f/6
Conditions: Seeing/Transp: ok/ok
Notes: A nice thin edge on writing dim
       Tapered arms all brighter long
core & central much brighter
       Central core.
**Astronomy Sketch Log**

**Subject:** H20/21  
**Type:** D/C/EN

**Constellation:** Sgr

**Date:** 7/11/15  
**Time:** 11:07 PM

**Observing Location:** Deer Trail, CO

**Instrument:** Newtonian  
**Aperture:** 8"  
**EP/Mag:** 32mm / 5x

**Conditions:** Clear/Hazy  
**Seeing/Transp:** XII/OK

**Notes:**

---

**Subject:** M17  
**Type:** P, N

**Constellation:** Sgr

**Date:** 7/11/15  
**Time:** 11:15 PM

**Observing Location:** Deer Trail, CO

**Instrument:** Newtonian  
**Aperture:** 8"  
**EP/Mag:** 15mm / 5x

**Conditions:** Clear & Hazy  
**Seeing/Transp:** OK/OK

**Notes:**

- Lots of nebulae & stars.

---

**Subject:** M67/10  
**Type:** O/C

**Constellation:** Cig

**Date:** 7/11/15  
**Time:** 11:24 PM

**Observing Location:** Deer Trail, CO

**Instrument:** Newtonian  
**Aperture:** 8"  
**EP/Mag:** 15mm / 81x

**Conditions:** Clear & Warm  
**Seeing/Transp:** Good/Good

**Notes:**
<table>
<thead>
<tr>
<th>Subject: N6995</th>
<th>Type: SNR</th>
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<tbody>
<tr>
<td>Constellation: Cyg</td>
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<tr>
<td>Date: 7/11/15</td>
<td>Time: 11:35 PM</td>
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<tr>
<td>Observing Location: Dear Trail, CO</td>
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<tr>
<td>Instrument: 8&quot; Newtonian</td>
<td>Aperture: 8&quot;</td>
</tr>
<tr>
<td>EP/Mag: 15mm / 81x</td>
<td>Focal Length: f/6</td>
</tr>
<tr>
<td>Conditions: Clear &amp; warm</td>
<td>Seeing/Transp: 60%/100%</td>
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<tr>
<td>Notes: U/03 Filter</td>
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<th>Subject: N6960</th>
<th>Type: SNR</th>
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<tr>
<td>Date: 7/11/15</td>
<td>Time: 11:39 PM</td>
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<tr>
<td>Observing Location: Dear Trail, CO</td>
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<tr>
<td>Instrument: Newtonian</td>
<td>Aperture: 9&quot;</td>
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<tr>
<td>EP/Mag: 15mm / 81x</td>
<td>Focal Length: f/6</td>
</tr>
<tr>
<td>Conditions: Clear &amp; warm</td>
<td>Seeing/Transp: OK/OK</td>
</tr>
<tr>
<td>Notes: Used 03 very faint</td>
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<table>
<thead>
<tr>
<th>Subject: N6819</th>
<th>Type: OC</th>
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<tbody>
<tr>
<td>Constellation: Cyg</td>
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<tr>
<td>Date: 7/11/15</td>
<td>Time: 11:43 PM</td>
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<td>Observing Location: Dear Trail, CO</td>
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<tr>
<td>Instrument: Newtonian</td>
<td>Aperture: 9&quot;</td>
</tr>
<tr>
<td>EP/Mag: 10mm</td>
<td>Focal Length: f/6</td>
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<tr>
<td>Conditions: Clear &amp; warm</td>
<td>Seeing/Transp: OK/OK</td>
</tr>
<tr>
<td>Notes: A small dense dim cluster</td>
<td></td>
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<tr>
<td>There is a faint glow of Nebulas in the field</td>
<td></td>
</tr>
<tr>
<td>Slight glow at any filter but much better with Deep Sky filter. Very faint yet obvious</td>
<td></td>
</tr>
</tbody>
</table>