Indian Summer Night

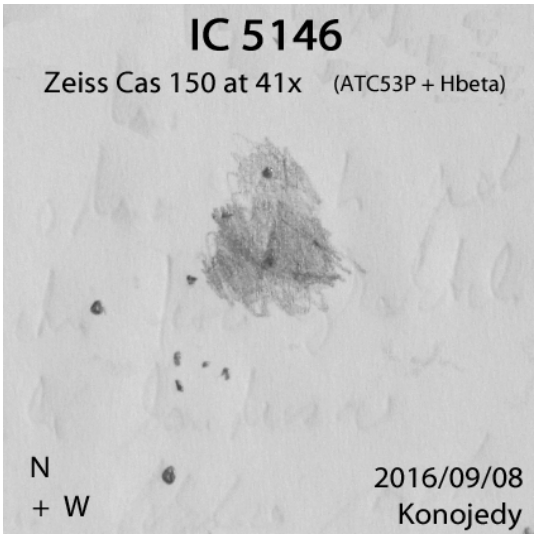
Telescope: **Zeiss Cassegrain 150/2250**
Eyepieces:
ATC53P - ATC Plossl, f=53mm, (42×, 53′)
ATC40K - ATC Kellner, f=40mm, (56×, 44′)
A-16 - Zeiss Abbe Ortho, f=16mm, (141×, 20′)

Time: 2016/09/08 19:30-22:40UT
Location: Konojedy - old airport
Weather: Clear sky with light haze
Seeing: Good
Mount: Zeiss 1b
Accessories: Baader/Zeiss T2 prism

Unprecedent weather with hot days and clear sky continued still in the begining of September. This was the last night before Moon started to be too bright for observing deep sky objects (DSO) and I made an effort and drove to the place with darker sky. The plan was to study in more detail Galaxy in Triangulum (M33). I'm happy when I can identify this galaxy from our backyard. In this place, I was able to see clearly its spiral structure in previous sessions. And I wanted to record it. The rest of the plan was to check some fainter nebulae in the opposite side of Moon, i.e. around Cepheus and Cassiopeia. At the spot, I decided to check with this larger telescope some Arp's galaxies in addition.

I started with Moon. The view at 42× was beautiful. Moon had nice yellow golden color as it was setting down. It was nicely sharp almost three dimensional look. When I switched to 141×, it was clear that optics is not good enough to support it.

The first DSO was Cocoon Nebula **IC 5146** (10′). I made several attempts this summer trying to spot it. None of them was convincing. This night, I thought that I have finally saw it without doubt. There was a hint of faint nebular halo around two medium bright stars at 42×. With Hβ filter, the faint nebular patch was still there though it was still difficult object. It looked like two rounded halos centered on the stars. The halo around the southern star was more intense and larger. This star was also a little bit brighter. Then I noticed a brighter V-shape line with vertex on the south star and opened to the north. See the crude sketch from the logbook at the bottom of this page. To my surpripse, I have found out at home that images show no rounded nebulosity around the south star. Both halos I saw where still probably of the atmospheric origin. However, the V-shaped line corresponds to the southern edge of the nebula. So at the end, I saw the nebula although it was somewhat different from what I thought at the time of observing.



Next target was small planetary nebula **Minkowski 64** ($V = 13.3$, $17''$) in Lyra. I was hunting it without success last year with 63mm Telementor from our backyard. Also the attempt with 150mm Cassegrain from the previous night from the same place was not succesful. The darker sky was real help. I have glimpse it already at 42×. It was very difficult, just around my detection threshold. The OIII filter was not of great help. Situation changed at 141×. With averted vision, a small, faint but still distinct nebular disc started to appear for short moments. Very lovely sight.

The setting Moon was still affecting the brightness of the sky western parts and I switched to east. I have decided to visit after 5 years the only known starburst galaxy in our Local Group, galaxy **IC 10** ($V = 10.4$, $6.8' \times 5.9'$). At 42× and 56×, IC10 was very faint glow elongated at PA∼ 0°. Higher magnification of 141× revealed a faint star on the galaxy's eastern edge.

Reflection nebula **vdB 1** ($5'$) is another object I have my doubts about seeing it in the past. This night, there was a trio of three bright stars at 42× burried into faint halo. Again, it was hard to tell, if it is just an atmospheric effect or real nebulosity. I switched to 141× trying to identify some irregularities. If I would be pressed, I would guess that the halo around the norhern star was slightly excentric with the center north of the star. Also it seemed that there was some brightening east of the bright pair. It seems that none of the features is pressent on images. I concluded at home that I saw again probably just an atmospheric halo.

Then I decided to visit Bubble Nebula. On the way, I have quickly looked at open clusters NGC 7795, NGC 7790, and pair M52 with Czernik 43.

NGC 7795 ($10'$) is non-existent accroding to RNGC. I have to agree. There was nothing in the field of view at 42× that would be resembling open cluster. Just a neat chain of fainter stars forming half ring around the brightest star in the field.

NGC 7790 ($V = 8.5$, $5'$) was pleasant stop. At 42×, it was milky and dotty patch elongated at PA∼ 90°. There was a tip at the east end, while the west end was wider and contained the brightest stars.

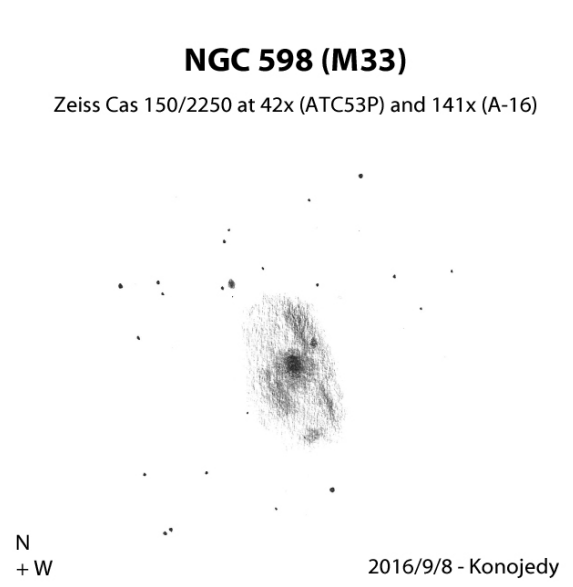
NGC 7654 (M52) ($V = 6.9$, $16'$) was beautiful and rich cluster in 150mm reflector. It was a nice example of the class, dense and full of fainter stars which created intense milky background. In the same field of view (42×), there was another obvious cluster, **Czernik 43** ($V = 9.8$, $6'$). It was standing out very well with averted vision and together with M52 they formed nice pair. I still remember an exceptional night from three years ago, when Cz 43 looked in 110mm refractor almost as intense as M52.

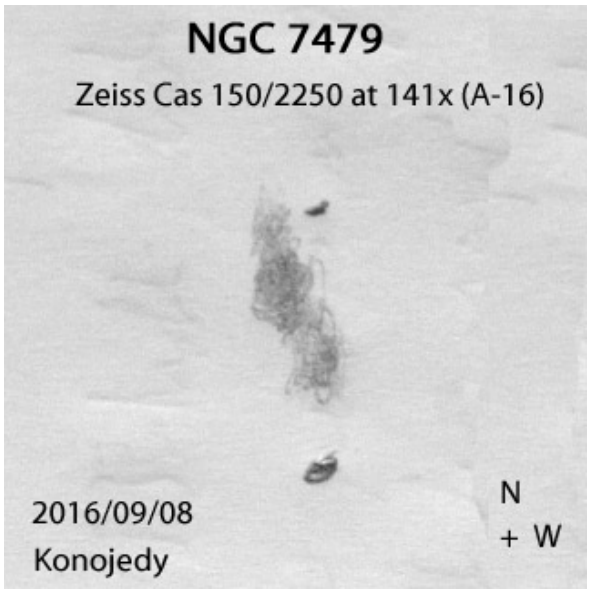
Finally, I got to the Bubble nebula **NGC 7635** ($15' \times 8'$). There was a triangle of bright stars at 42×. The middle one (in east-west direction) looked suspicious. At 141×, there was indeed a tiny and strongly elongated nebula at PA∼ 90° centerned on the star. With OIII filter, there was no doubt about the nebulosity.

It was time to switch to the main target now. I was waiting till the end of the session, so that **NGC 598 (M33)** ($V = 5.8$, $71' \times 42'$, PA23°) was as high as possible. Galaxy was quite a complex object at 42×. There were several brighter patches in the main body, pieces of arms. I noticed at this power also bright and small emission nebula **NGC 604** ($1.9' \times 1.2'$). There was another almost stellar patch at 141× NW from the galaxy center. I have identified it later at home as **NGC 595** ($0.5'$). I have tried to capture all those feature in a sketch.

At that moment, the alarm on my phone told me it was time to pack the equipment. I was not ready to go home yet as the night was quite worm with nice dark sky. Probably the last pleasant deep sky night in this year. I have decided to stay and to visit some fainter galaxies in the area, including some galaxies from the Arp's catalog.

The first galaxy I have picked up from Interstellarum Deep Sky Atlas was nearby **NGC 777** ($V = 11.4$, $2.5' \times 2.0'$, PA155°). I have noticed it already at 42×. Larger power of 141× was showing the galaxy clearly with averted vision. There was tiny





nebular spot without central brightening. It seemed slightly elongated but it was difficult to estimate the position angle. Something stellar showed on very short moments occasionally.

Next target was a tight pair of galaxies **NGC 750** ($V = 12.0$, $1.7' \times 1.3'$) and **NGC 751** ($V = 12.2$, $1.4'$) listed in the Arp's catalog under the number **Arp 166**. It was just a tiny nebular spot visible at 42× already. Power of 141× revealed and interesting object. With averted vision, there was a clear fuzzy patch strongly elongated at PA$\sim 0°$ with two bright cores jumping in for short moments with averted vision. I was not expecting to see both galaxies that nicely. Quite an interesting view.

Another Arp's galaxy was **NGC 7625** ($V = 12.1$, $1.6' \times 1.4'$), **Arp 212**. I have not notice it at 42×, while at 141×, it was quite distinct nebular spot slightly elongated at PA$\sim 90°$.

I have not found at 141× neither **NGC 7578** ($V = 13.9$, $0.8'$), **Arp 170** from Hickson galaxy group 94 nor the nearby galaxy **NGC 7602** ($V = 14.4$, $0.5'$).

I have missed **NGC 7448** ($V = 11.5$, $2.7' \times 1.2'$, PA170°), **Arp 13**, at 42×. It was an easy target at 141×. Averted vision showed that the galaxy was quite large and strongly elongated at PA$\sim 160°$. From a nearby pair NGC 7465 and NGC 7563, I have noticed at 141× only **NGC 7465** ($V = 12.4$, $1.2' \times 0.7'$, PA42°). It was just a fuzzy, almost stellar spot. I missed completely **NGC 7563** ($V = 13.4$, $0.8'$).

Finally, I arrived to a relatively bright galaxy **NGC 7479** ($V = 11.0$, $4.1' \times 3.1'$, PA25°). It was easily noticable at 42× as strongly elongated milky spot at PA$\sim 20°$. The view got more interesting at 141×. The galaxy was thick bright line between to stars, see the rough sketch from the logbook above. Closer and fainter star was located just north of it, almost touching the galaxy. In short glimpses I have noticed a little bit wider part corresponding to the central bulk. I have not noticed any strongly curved arcs that would correspond to distinct arms so well visible on images.

Three hours of intense observing run quickly. I would love to stay more but it was definitely time to drive home and go to the bed.

Alexander Kupčo