Early autumn in Mendoza is a good time to drive to Los Andes Mountains to enjoy the stars from there. The temperatures are nice, and there are some places where you can find a dark enough sky to carry out detailed observations.

From this latitude, the famous and conspicuous Eta Carinae Nebula (NGC 3372) is clearly visible to the naked eye, among other bright objects in the same region, when you observe from a dark sky site. In March, you can see it very high on the sky in the evening as a bright spot immersed in the bright lane of our Milky Way. Also, some open clusters like NGC 3532, NGC 3114, IC 2602 (nicknamed “The Southern Pleiades”) and NGC 2516 are easily visible to the naked eye. But, is Eta Carinae the only nebula you can observe there?

Not really. There exist some other nebulae “hidden” between those objects which lie to the east and to the west of the “great nebula” as the map above indicates with green color.

Working with detailed sky charts and data from SIMBAD and other information from some specific web pages, I could make an observing program which contains up to 13 nebulae, all of them catalogued in the RCW (Rodger, Campbell, Whiteoak) catalogue. This is an expansion of the Colin Gum’s Catalogue, the first major survey of HII regions in the southern sky published in 1950s. All the objects in this observing project are situated in constellation Carina, surrounding the Eta Carinae Nebula. In fact, this is also an RCW object (RCW 53) but it is not included in my list.

In this first part I make reports about four RCW nebulae situated to the west of Eta Carinae Nebula, from RCW 46 to RCW 49. The map on the first page shows the distribution of RCW nebulae in the southern constellation Carina. This is a very rich part of the sky to observe even with binoculars. If you are a nebulae hunter you should keep in mind this area when you have a chance to visit the southern skies.

(Continued on page 9)
As I said, I observed four RCW nebulae (RCW 46, RCW 47, RCW 48 and RCW 49) on Saturday, March 21st, from a dark sky site where stars up to visual magnitude of 6.2 or 6.3 were visible.

If you see the map on the first page, surely you will agree with me that QY Carinae is a good star to use as “starting point” to find at least three of the four nebulae. This star has a visual magnitude of about 5.8 and is a faint star, but is visible from a dark sky site so you can identify it without any problem.

**The Faint Nebula RCW 46**

Situated at about 0.8 degree to the northwest of the star QY Carinae lies a faint nebula. This object does not appear in some planetarium software like Skymap Pro 6 (C. Marriot) or Skychart by P. Chevalley, and in guides like SkyAtlas 2000.0 (W. Tirion). This is for sure an object to try to observe using big mirrors. However, I wanted to aim my telescope and to have my own experience about the visibility of this nebula through an 8-inch telescope.

Using 42x I found the zone where this nebula is situated. I spent several minutes to find it. The eyepiece field is rich in stars and the brighter ones have a mean magnitude of 8.5. I could identify and I focused my attention on the zone surrounding the stars HD 88068 and TYC 8607-194-1 (indicated in the picture here) where images of RCW 46, specially the DSS image, show a more prominent nebulosity. The nebula was not visible with this magnification and without a filter. Even the use of the UHC filter did not help with the view and a higher magnification showed “nothing”. The H-Beta and OIII filters used at different range of magnifications did not help too. I hope to have a chance to aim a bigger telescope to this place.

**The RCW 47 Nebula**

This is the westernmost RCW nebula in this constellation. This object was about 62 degrees of altitude at the moment of the observation, 1 hour before its transit, so it was at good altitude in order to get a good view.

The nebula lies in a rich field where stars show interesting shapes. In the northern side of the 1 degree field of view (up in the first picture in next page) some stars form a shape that remind me a small version of constellation Scorpius (indicated with a red line). This helped to find the zone where the nebulosity should be. This is another faint nebula to observe with an 8-inch telescope. A bigger telescope would help with an easier observation.

Observing with low magnification (42x) and UHC filter, an extremely faint nebulosity appears to be in the zone indicated with A, both in the eyepiece field picture and in the DSS image.

Observing with higher magnification (78x) and using again the same filter, this nebulosity seems to surround the line of stars situated at the south end of the indicated zone. I got a similar view using the H-Beta filter.

(Continued on page 10)
This is by far the brightest nebula of the observed group. It is also included in the very well known NGC catalogue as NGC 3199 (also Gum 28). This nebula, discovered in 1834 by John Herschel, lies about 0.76 degrees east-northeast of the star QY Carinae. It is one of fifteen ring nebulae found to be closely associated with galactic Wolf-Rayet stars (Chu, 1981). You can read more about this nebula in “The Nature of the Wolf-Rayet Nebula NGC 3199” by M. J. Whitehead, J. Meaburn and C.D. Goudis (1987).

I observed this nebula about 11:15pm local time (UT-3 hours) when it was close to 64 degrees of altitude. It is visible even without a filter as a smooth cloud in a starry field, showing an elongated shape suggesting its curved shape showed in the picture to the left. For some observers it is the “kidney-shaped nebula”.

The view using low magnification (42x) and UHC filter a wonderful arc shape is revealed. Its southeast end (indicated by 1 in the picture) looks brighter and a faint star appears to be embedded there. Actually, if you see this region with higher magnification you can see the star to the side of the nebula. Moving to the northwest (right in the picture) the nebula looks wider and a little fainter when you observe it using averted vision. At 78x, a chain-shaped group of stars to the northeast appears surrounded by nebulosity. If you observe carefully the region indicated by 2 in the picture at high magnification (106x) and UHC filter, some dark small zones and filaments seem to be there.

The use of other nebular filters gave me different views. I got a bad view working with low magnification and H-Beta filter. This filter was useless, the nebula looked better without filter. On the other hand, at the same magnification (42x) but this time using the Orion Ultrablock filter, the view of the nebula was excellent (maybe a little better than that obtained with the UHC filter!!), the stars are visible a little better and the image was a little brighter.

The star indicated with the red arrow in the picture is HD 89358 (also WR 18), a Wolf-Rayet star exciting the nebula. It has a magnitude of about 10.6 so it should be visible even with smaller telescopes under good conditions.

The Star Forming Region RCW 49 and the Open Cluster Westerlund 2

RCW 49 is a luminous and massive HII region in our galaxy. Star formation is ongoing in this nebula (A Glimpse of Star Formation in the Giant HII Region RCW 49, B.A. Whitney et. al.). It lies in the east part of constellation Carina (R.A. 10h 23m 54.0s Dec. -57° 45' 00" J2000.0 – coordinates for the associated cluster). You can use the star QY Carinae to find it but even better is the 4.7 magnitude star HD 90772 (a circumpolar star from this latitude –32.9 degrees). You must aim your telescope just 0.5 degree to the west of this star to find this object associated with the open cluster Westerlund 2.

The Open Cluster Westerlund 2

According to the paper “Early-type Stars in the Core of the Young Open Cluster Westerlund 2” by G. Rauw et. al. (Dec 2006), this is a young stellar cluster situated in a blowout region of the HII region RCW 49. The stellar winds and ionizing radiation of the early-type stars in Westerlund 2 have evacuated the dust in the central part of RCW 49 and filled the cavity with very hot low density gas. The Trumpler classification is I,3,p,n and the magnitude of the cluster 10.5.
Carina Nebulae  *(Continued from page 10)*

This object (nebula and cluster) is an elusive target not because of its brightness but for its small angular size, the angular size of the open cluster is about 1.5 arc minutes. Thus, you must observe the zone carefully if you try to find them using low magnification.

The field surrounding RCW 49 and Westerlund 2 is very interesting. At 42x the open cluster IC 2581 (also Cr 222) is visible to the east-northeast in the field (see left hand picture bottom of previous page). Actually, the brighter star is HD 90772, the star I used to find RCW 49. Another stellar cluster is visible in the field, NGC 3247 (classified as II,2,p,n). It looks like a not very well detached group of stars with similar brightness. Once I identified these two clusters I moved my eye to the region where the nebula and the small cluster lie. Two very small and faint hazy spots are visible there. In the picture above I have indicated with an arrow the position of RCW 49. Very close toward the west you can see the cluster.

The nebula through an UHC filter at 42x appears like a fanshape smooth cloud with a faint star just in its vortex. Higher magnification is necessary in order to have a better analysis of its structure. At 78x plus UHC filter the real shape of the nebula is better viewed (more similar to the shape showed in pictures). A couple stars are visible embedded in the nebula. The red arrow in the picture to the right shows a dark region that was clearly visible through my telescope. On the other side of this region the cluster Westerlund 2 is situated, appearing like a defocused star surrounded by a very small nebulosity. The observation at the same magnification using the UltraBlock filter was very similar, however showed the two immersed stars a little better, and with a more contrasted dark lane.

Observing the cluster at 156x, I could see a very small aggregation of faint stars. A line of three stars is the more prominent feature (marked by the red circle in the picture on page 10).

*In a future issue of the Rosette Gazette: Part 2 – RCW 50, RCW 51, RCW 52 and RCW 54.*
Leo Cavagnaro, mcava@ciudad.com.ar
In part 1. “Identifying RCW Nebula in Constellation Carina”, published in the April 2009 Rosette Gazette, I included observing reports on four of the nebula, RCW 46 to RCW 49, with RCW 48 by far the brightest and easiest nebula to observe thus far.

The purpose of this project (the observation of non common nebulae in Carina) is to determine which of them are visible through an 8-inch telescope, observing under a normal dark sky (6.2 or 6.3 limiting magnitude) and which nebulae are invisible through this kind of instrument, thus needing bigger scopes to see them, or even to know if they are invisible at all and reserved for astrophotography or observations in other wavelengths only.

On April, 18th I went to the same observing site (Canota) with the idea of observing more nebulae of this catalogue. This time the objects are mostly situated in the immediate area of the “Mother of the Nebulae” Eta Carinae (NGC 3372, also RCW 53 and Gum 33). One of the sections of the RCW 54 complex (section b) is situated a few degrees east of NGC 3372 (see the map on this page).

I observed these nebulae under not excellent sky conditions even though the sky was good enough to carry out the observations. However, more observations under an even better sky would be necessary.

RCW 50

This nebula is situated about half a degree north of the 4.7 magnitude star HD 90772, so the zone was found easily using this naked eye star as a guide (see the map on this page).

At low magnification (42x) you can see a starry field where a small and round
“nebulosity” is visible in the zone indicated with A on the eyepiece field image previous page. Applying averted vision, a group of faint stars is visible there. It is not labeled as an open cluster by the charts I checked so maybe it is just an asterism.

Focusing on the search of RCW 50, the use of nebular filters like UHC or Orion Ultrablock do not help to see the nebula clearly. To the west, the stars within the red circle appear to be embedded in a very faint nebulosity (see image below).

Observing carefully at higher magnification (78x) a faint hazy patch is visible in the zone that I have indicated with a gray ellipse at the center of the eyepiece. Observing with averted vision a group of very faint stars populate the region.

The use of even higher magnification (106x) and the UHC filter make it possible to see the nebulosity a little better. Using the same magnification and the Orion Ultrablock filter, a “stream” of faint stars in a hazy environment is visible in the zone indicated by B in the eyepiece field.

Darker skies and bigger telescopes are necessary in order to get a better view of this faint nebula in Carina.

**RCW 51 and the Open Cluster NGC 3293**

RCw 51 is an HII region surrounding the stellar cluster NGC 3293. I observed it half an hour before its transit, so the altitude was very good (64 degrees).

At low magnification (42x) the zone surrounding the cluster shows a starry field with several stars of faint magnitude, also some faint hazy zones are visible. NGC 3293 (left) is a young open cluster with a visual magnitude of 4.6 and with a Trumpler classification of 1,3,3,r,n. It was discovered by Nicholas L. de Lacaille in 1751-52. Situated about 2 degrees northwest to the Eta Carina Nebula, it is a showpiece for observers in the southern hemisphere. It is a good example of an open cluster even for those owners of small telescopes.

If you observe this cluster with low magnification in order to have a wide eyepiece field (1.2 degrees for example) you will see, with direct vision and without a filter, a uniform nebulosity (1 on the picture below). The open cluster NGC 3324 lies there and also the yellowish star (the brighter in the field) V370, which is not visible in the DSS picture here. In the picture below north is up.

Doubtless RCW 51 is a challenging target for visual observers with telescopes like mine. Observing with averted vision, a very faint nebulosity surrounds NGC 3293 and a faint and short extension is also visible eastward (indicated with a circle).

I observed the zone again with the same magnification (42x) but this time using an UHC filter. The nebula surrounding NGC 3324 lies there, and short extension is also visible eastward (indicated with a circle). At 42x the outer part of the big nebula NGC 3372 is visible in the south edge of the eyepiece field as shown in the picture to the right where north is up. I could identify the pattern formed by the stars where RCW 52 lies (shown in the right hand picture above), including two stars indicated by arrows, the 9.9 magnitude star TYC 8626-142-1 (the brighter one) situated at the heart of the nebula and the 12 magnitude star GSC-8626-0002, expecting to see some of nebulosity connecting them.

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Working with a UHC filter at the same power the outskirts of NGC 3372 look brighter and sharper.

At 78x with nebular filters it was not possible to see RCW 52 clearly.

It is an extremely faint nebula, at least for an 8-inch telescope. You will see it appears in some star atlases (SkyAtlas 2000 by W. Tirion, the software Skymap Pro 6.0 and Skycharts) as Gum 32. Even the observation through a 16-inch telescope does not show nebulosity. This is a nebula to observe with even bigger mirrors or maybe it is invisible to all and a good target for advanced astrophotographers.

The sky in the eastern part of constellation Carina is home of RCW 54. This is an extended emission nebulae ionized by the stars of the Carina OB2 association. The nebula complex spans some degrees in the sky and in the few web sites where you can find information about it they talk about different sections of the nebula, labeled a,b,c,d.

The map upper right (north is up) shows where the different sections are situated in the sky. There are two sections labeled RCW 54b which have different numbers in Gum catalogue (Gum 34a and 34b).

For an observer in the U.S., this part of the sky is only visible at low altitude (less than 10 degrees) from a few places in south Florida.

**RCW 54b**

This section of the complex, the eastern-most of the RCW 54b sections (1 name it “eastern b”), also known as Gum 34b, is situated at about 11hs 4m of Right Ascension and a declination of -59.5 degrees (J2000.0), immediately to the west of the optical center of the Car OB2 association. According to the DSS images of RCW 54, this part is seemingly the bigger one.

To find it is easy because it lies about 1 degree south-southwest to the superb naked eye open cluster NGC 3532 (position angle of about 205 degrees).

At 42x and without a filter a zone with a lot of mostly faint stars is visible. The brighter stars are situated in the southeast region of the field (lower left in figure 2). I used some of the bright stars to identify the zone where the nebulosity should be.
visible. No nebulosity is visible in the eyepiece field. However, the faint stars in the northern part (up in the pictures) of the field appear to be embedded in a very faint and smooth nebulosity.

Using the UHC filter, nebulosity jumps to view. Two hazy lanes form a “tuning-fork” or “V”-shape structure that crosses the eyepiece field. The “branches” join together in the northern part. I had a similar view using this filter and 53x, but the upper zone in the eyepiece was observed a little better.

The UHC was the best filter to observe this HII region. With the H-beta filter I had the worst view.

In figure 2 I have indicated with B the zone where a dark patch is visible. Moreover, a little brighter patch of nebulosity is visible in C, embedding a line of 3 stars with magnitudes between 9.7 and 10.9, even if the entire nebula is faint. It would be good to make a new observation of this area from a darker sky or from a site at higher altitude.

At low magnification and without a filter, the emission and reflection nebula NGC 3503 is visible in the same eyepiece field. At 42x it looks very small, with a smooth appearance and elongated in shape. A star is visible very close to this nebula.

The use of higher magnification made possible a detailed observation. At 78x three very faint and close stars are visible when you use averted vision. They are separated about 8 arcseconds each other (I measured the distance on a picture of NGC 3503 using the software Aladin v2.0). A faint nebulosity surrounds the chain of three stars, this is better viewed when you observe at 156x and an UHC filter. Of course, averted vision is necessary to get this view and to discern the stars.

The blue supergiant stars HD 96248 and 96261 (shown in figure 2) are believed to belong to the Car OB2 association. Also, I have indicated with red color some of the earliest stars that are listed as members and possible members of Car OB2 in table 4 in the paper “A Study of the Interstellar Gas Surrounding Carina OB2”. The optical center of the association lies there (left edge in figure 2) and is given here in galactic coordinates (l=290.1 deg, b= +0.6 deg).

In part 3 of the article, “Identifying RCW Nebulae in Constellation Carina”, I will include reports about the other sections of the complex RCW 54 and the last five RCW nebulae in this constellation.
Part 3. RCW 54 Sections, RCW 55, RCW 56, RCW 57 and RCW 58

The map shows the positions in the sky of some RCW nebulae situated in the eastern part of the southern constellation Carina. The great Carina Nebula is highlighted in gray color. In addition, some stars (all brighter than magnitude 5.5) are indicated in the chart so the observer can use them as guides or starting points to find the different nebulae.

Some weeks after observing the faint nebulae close to NGC 3372 (Eta Carinae Nebula) I went to an observing site in Villavicencio on July 11th and to Canota on July 18th to work on the last group of RCW nebulae, all of them situated in the eastern part of constellation Carina, thus finishing the project about these not very well known objects.

A report on the biggest section of this complex (called by me “eastern b”) is included in part 2 of the RCW nebulae article. Here I have included reports about the other parts of this huge HII region. The map on page 3 in “Identifying RCW Nebulae in Constellation Carina - Part 2”, June 2009 Rosette Gazette, shows where the different sections lie in the sky to the east of Eta Carinae nebula.

**RCW 54a (Gum 35)**

**Date:** July 18, 2009. **Observing Site:** Canota, Mendoza

This is an HII region associated with the giant molecular cloud (GCB 88).13. This section of the RCW 54 complex lies about 1.8 degrees southwest of the 4.6 magnitude star HD 97534. In the 1.2 degree eyepiece field given by my telescope (42x) the open cluster Cr 236 is seen detached from the surrounding stars. This 7.7 magnitude cluster (Trumpler classification III,2,p) shows a few stars with magnitudes around 9.5 and several more faint stars can be detected using averted vision.

According to the DSS image of this nebula (figure 1, page 6), the brighter zone of this section lies about 6 arc minutes northwest of the 6.2 magnitude star HD 95324 (the brighter in the field) but no nebulosity is visible there without using a nebular filter. Using both the UHC and Orion Ultrablock filters and the same magnification, a smooth and very faint nebula is visible with averted vision.

(Continued on page 6)
of view of a telescope working at low magnification and about half a degree west from the “eastern b” section described in part 2 of this project. Also, you can use the naked eye open cluster NGC 3532 to find the zone where this nebula lies moving your telescope 1.5 degrees to the southwest.

RCW 54b is situated very close to the bright star U Carinae (visual magnitude 6.3) which is obviously the brighter one in a field where several faint stars are visible. Toward the northwest, on the edge of the eyepiece field, the open cluster Trumpler 17 (Tr17) is clearly visible like a hazy and round patch of smooth brightness. Its Trumpler classification of II,2,p matches well with the view at low magnification through my 8-inch telescope, several faint stars populate it. Do not expect to see much more there with telescopes of this size. The section was not visible at all at 42x and 78x, even using the UHC and OIII filters. This is the last object I saw that night, the Moon rose around 11pm local time (UT – 3hours) so after 3 hours of observation (beginning at local astronomical twilight which occurred at 8:12pm local time) the sky got too bright to carry out more deep and detailed observations.

RCW 54c

Date: July 11, 2009 Observing Site: Villavicencio, Mendoza

This is another section of the huge complex RCW 54, also known as Gum 37. This section “c” lies close to a group of open clusters situated about 1.75 degrees south of the naked eye cluster NGC 3532. You will be able to find this area easily using the 4.6 magnitude star HD 97534 (member of Cr 240?). At low magnification (42x) the field is very impressive showing open clusters with different Trumpler classifications and stars grouping in interesting shapes. “These open clusters form an extensive and almost continuous grouping of stars lying in a region where the Carina spiral feature is seen tangentially” (Clariá 1976). The naked eye star HD 97534 (indicated with an arrow in figure 3) is the brightest one in the 1.2 degree eyepiece field of my telescope. A group of a few sparse stars is visible (lower left in figure 3), Collinder 240 (Cr 240), a swarm of stars with a Trumpler classification of III,1,p,n and 25 arc minutes size. Superimposed on Cr 240 toward the northwest lies a smaller and more compact open cluster, NGC 3572 (Trumpler classification 1,2,m,n) situated at a distance of about 2.8 kpc. The stars of this cluster show similar brightness. NGC 3572 probably belong to the association Carina OB2 and its massive stars are seen in projection close to the geometrical center of the cavity of the overall HI distribution toward Car OB2.

Without a nebular filter no nebulosity was visible in the field, but using an UHC filter at the same magnification
(which gave me a sharper image than the Orion Ultrablock filter) I could observe a faint and smooth nebulosity indicated by 1 in the DSS image here (figure 3), involving also NGC 3572. If you want to see this section of RCW 54 you should keep your eye at the eyepiece for several minutes and explore the area carefully using averted vision as help. Seemingly, some of nebulosity is also visible embedding the line of three stars including the variable 7.7 magnitude star V353 Carinae (indicated in the picture). In the picture I have indicated with 2 a lane of faint nebulosity and with 3 a round and small hazy patch embedding a small group of a few stars.

Letter B in figure 3 indicates a dark zone visible in the eyepiece field where a very few faint stars are superimposed when you observe the zone without a filter. Observing through nebular filters this dark zone is clearly detected. Using averted vision I could see, for moments, a very faint extension of the nebula toward northwest (white ellipse) being a feature that was very hard to detect visually. If you see the 1 degree wide image you can download from the STScI DSS image web page: <http://archive.stsci.edu/cgi-bin/dss_form> this part of the nebula is clearly visible. I had a good view of the nebula using 53x and the UHC filter. Even if the entire nebula is faint, the region indicated by the gray circle near the center of figure 3 looks a little brighter and sharper at this magnification.

**RCW 54d**

**Date:** July 11, 2009  
**Observing Site:** Villavicencio, Mendoza

This rather small nebula (Gum 36) lies 45 arc minutes to the east of NGC 3532 so the zone is easily found using this cluster as a starting point.

The image above shows a nebulosity with an interesting shape. However, a very different shape when I observed through my 8-inch telescope. At 42x the area shows a rich starry field. The eastern edge of NGC 3532 is visible in a wide field with the star ER being the brightest there (see eyepiece field picture where North is up). The open cluster Stock 13 is also visible containing few stars not very well detached from the surrounding field. After identifying the pattern of stars (indicated by A in figure 4 and shown in detail in the right hand picture there) no nebulosity was visible at this magnification and without using a nebular filter. In the section indicated by B a lot of very faint stars are visible applying averted vision.

Using an UHC filter, I first used the star indicated by the arrow to the right to search for nebulosity but nothing was visible. Through this filter a very faint nebulosity seems to embed the open cluster Stock 13 and also the zones B and C. Higher magnification is necessary to search for RCW 54d because of it is a nebula with small angular size. Applying little higher magnification (78x) and using the UHC and Orion Ultrablock filters I made a detailed observation of the zone between the stars indicated by arrows, where this nebula lies, but I did not have results. At 148x without filter I could clearly see a group of faint stars including one of the guide stars (left arrow in figure 4). Working with the UHC and OIII filter this nebula did not jump to the view. This section, which has a distance comparable for the distance quoted for the HI shell2 associated with Car OB2 is another example of a challenging RCW nebula.

**RCW 55**

**Date:** July 18, 2009  
**Observing Site:** Canota, Mendoza

Half way between the variable star V371 and the naked eye open cluster IC 2602, known as Southern Pleiades, lies this nebula (see map in page 1). At low magnification (53x), using UHC filter and averted vision some of faint nebulosity, in fact the brighter part of RCW 55, seems to surround a line of 3 stars which are clearly identified from the surrounding field and which are also visible in the DSS image (1 in figure 5).
A brief observation at 78x made possible a better view of the stellar stream and I got a good view of the faint nebula and the stream at higher magnification (106x) using the UHC filter.

**RCW 56. A Very Small Nebula**

**Date:** July 18, 2009  **Observing Site:** Canota, Mendoza

The bright stars V371 and HD 96566 are visible in the same 1.2 degree eyepiece field of a telescope. Very close to the last one is situated RCW 56 (indicated by the arrow in figure 6). The field surrounding the position of this nebula has few stars. The light from HD 96566 made the search of this small hazy patch hard in advance. I scan the zone with high magnification trying to avoid the presence of HD 96566 in the field. As you can see in the picture, this nebula is very small in apparent size and very close to the star. Using 148x and the UHC filter and then 296x with the same filter nothing was visible through my 8-inch scope. Moreover, the altitude of the zone was not favorable for the observation (29 degrees in the southwest sky).

**RCW 57a & RCW 57b**

**Date:** July 18, 2009  **Observing Site:** Canota, Mendoza

These are nebulae that are easy to observe even without a nebular filter. They are situated about 20 arcminutes from each other so they are visible in the same field of view if you use low magnification. The observer can use the stars HD 96566 and V371 Carinae (visual magnitudes 4.6 and 5.2) to find them (see map in page 5). These HII regions are much brighter than others RCW nebulae in constellation Carina. In fact, they are two of the highest luminosity optically visible HII regions in our galaxy and they also have NGC numbers.

At 42x this HII region looks bigger than RCW 57b and elongated north-south (north is up in figure 7). On the other hand, RCW 57b (NGC 3603), situated at 20,000 light-years from us contains some 104 solar masses of ionized gas and may be (according to Eisenhauer et. al. 1998), the most massive HII region in the Milky Way aside from W94. It was viewed in my 8-inch telescope smaller and more compact than RCW 57a, showing a bright core that looks quasi-stellar at 42x. Other parts in the surrounding field seems to have nebulosity.

Working with an UHC filter the view is much more interesting. Both nebulae are clearly detached from the surrounding field. As figure 7 shows, NGC 3576 have some bright spots or regions. Observing carefully and using averted vision some of these regions are detected at this magnification. Two of them (NGC 3581 and NGC 3582) are situated very close each other and can be discerned using averted vision. They are the brightest part of the whole nebula. To the north I could see another region (NGC 3184), which is fainter than the other ones and is immersed in a wider and faint nebulosity (see bottom image in page above). A thin dark lane seems to cross between NGC 3184 and the two brightest spots.

RCW 57b looks bigger through the UHC filter. A bright central spot is visible like a little defocused star. It is the central cluster of strongly UV-radiating stars of type “O” and “B” (see figure 8 above) Higher magnification is necessary in order to carry out a more detailed analysis of the nebulae. It is elongated in shape and a few faint stars are superimposed. A lane of nebulosity is visible in the section indicated by 1.

At higher magnification (106x) and the same filter and using averted vision, I could identify the different sections of NGC 3576 better. With this filter, the zone NGC 3184 looks elongated and the round patch of nebulosity known as NGC 3579 is visible. Also, the faint sec-

(Continued on page 9)
tion NGC 3586 was glimpsed by moments but it was hard to see even with averted vision.

RCW 57b is clearly seen through the UHC filter at 106x, appearing as a smooth luminosity elongated East-West covering a section south of the central cluster (middle left in figure 8). A group of researchers concluded that in terms of density and stellar population NGC 3603 is a “galactic clone” of the cluster R136 in the 30 Doradus complex, in the Large Magellanic Cloud (see the paper “NGC 3576 & NGC 3603: Two Luminous Southern HII Regions Observed at High Resolution with the Australia Telescope Compact Array” by C. G. de Pree, Melissa C. Nysewander and W. M Goss).

I removed filters and applied even more magnification (296x). Then I aimed my 8-inch telescope to see the stellar cluster associated with the HII region NGC 3603 named HD 97950. I got a bad quality image but the small spot of light suggest a not smooth appearance. In figure 8 I have indicated the position of an evolved blue supergiant star (B1.5 Ia) named Sher 25 located 20 arcsecond north of the central cluster. A group of researchers compare this star to the progenitor of SN 1987A in the Large Magellanic Cloud.

RCW 58. An Annular Nebula

Date: July 18, 2009 Observing Site: Canota, Mendoza

The last nebula I observed in constellation Carina is RCW 58 which surrounds the 7.7 magnitude Wolf-Rayet star V385 (also known as WR40). I tried to observe this 7.0 x 7.0 arcminutes size nebula when it was about 28 degrees high so the altitude was not the best. I first observed it using low magnification to find the accurate position of the nebula. The star is easily identified because it forms a pattern (triangle) with other two stars with magnitudes of 8.1 and 8.9 that are not visible in the picture here.

According to the image above, one of the brightest portions of the nebula lies in the middle of the way between the stars V385 and HD 96448 (visual magnitude 10) and other “bright” section is situated diametrically opposite so I focused my attention in that parts of the field. The sections were not visible at all at low magnification and using the UHC and Orion Ultrablock filters as help.

A new try using higher magnification (78x and 106x) and the use of the UHC and the OIII filters did not give me a view of this nebula or any of its sections. Doubtless it is a very faint nebula for an 8-inch mirror. However, it is labeled in Skymap Pro 6.0. I think it is good to carry out more observations under different (better!) conditions and from different observing sites to have more information about the visibility of deep-sky objects like this.

Final remarks

For some months I have observed 12 of the 13 RCW nebulae situated in constellation Carina (except NGC 3372, the Carina Nebula, which appears in the RCW catalogue as RCW 53), including the five (5) sections of RCW 54 complex. Some of them were very hard to observe visually through an 8-inch telescope, others like RCW 58 were invisible at all. The objects RCW 48, RCW 57A and RCW 57B were by far the brightest nebulae of the sample and they were visible even without using nebular filters but needing them for a more deep and accurate analysis of the structures. Obviously these bright RCW nebulae have also a number in the very well known NGC catalogue (NGC 3199, NGC 3576 and NGC 3603 respectively).

1. A brief description of this cluster with nebulosity in part 2 of “Identifying RCW Nebulae in Constellation Carina”, June 2009 Rosette Gazette

2. Also, the HII regions RCW 54b and RCW 55 have similar distances and all of them are seen in projection on the same sky area where the HI expanding shell is observed.