

Deep Sky Observing; Restoring the Paradigm

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For about 10 years, CCDs have become more and more efficient for deep sky observations and some consider it as a new paradigm. Transparent skies and “light buckets” are said to be old fashioned and limited, particularly because city observers may find it more convenient to observe not far from home with a transportable telescope and CCD equipment giving the same results. That seems to mean that, for example, a Schmidt-Cassegrain of 20cm and a CCD camera might be the future standard equipment for deep sky observers: this kind of equipment could perform as well or better than the classical 40cm Dobsonian in a remote site. This article will try to give reasons not to give up too easily the old paradigm described by Richard Jacobs in DSO113.

First, everyone should be amazed by the recurrent attempts of CCD users to convince fellow amateurs to follow them in the midst of the wonders of CCD imaging. It often seems to me (it’s a personal opinion) that they even try to convince themselves of these feats... Of course, no one can deny the revolutionary light-sensitivity of these electronic detectors: large spectral response, continuous sensitivity (no reciprocity), image processing, etc. Surely enough, the “SCT20cm+CCD” combination has a superior detection power compared to the “Dob40cm+eye” one. So why am I not converted? It’s not lack of experience because I did some CCD observing sessions with quite an impressive equipment: a 62cm Cassegrain equatorially driven with a SBIG ST6 and even with a professional camera (Princeton Instruments, SITe 512x512 CCD, back-illuminated and MPP, -50°C, 16 bits). Being exclusively a visual observer, I enjoyed these sessions very much and I really believe that one day the visual observer in me could become a CCD imager. Of course these sessions can’t be compared with SCT ones but I met the basic

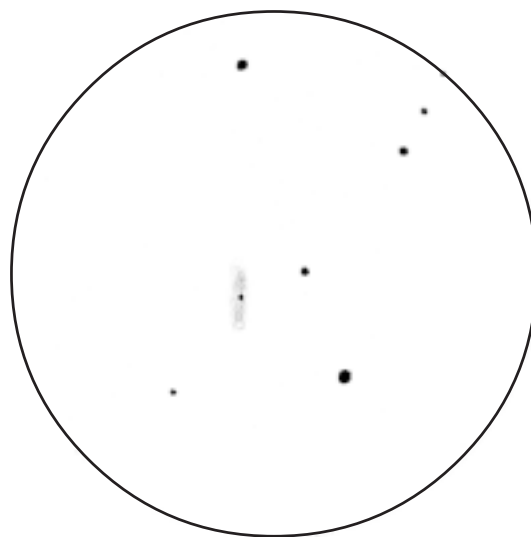


Figure 1.
PK010+18 2
(PN G 010.8+18.0);
instr.diam.=445mm, f/4.5,
400x+[OIII]; August 22,
1998, 22h 00m UT; La
Clapière (France), alt.1650m,
good transparency (6.3 stars
seen in UMi) and seeing
good (Antoniadi II).

CCD procedures anyway. But why am I not converted still? The major argument is that I can’t be convinced that CCDs are better for the deep sky when I am shown images of M31, M51, M42, M1, etc. Always the same objects imaged by newcomers or even veterans of CCD imaging are not the way to convince me (and a majority of visual observers I hope) of the superiority of CCD imaging. It’s too bad that silicone affects good ideas...

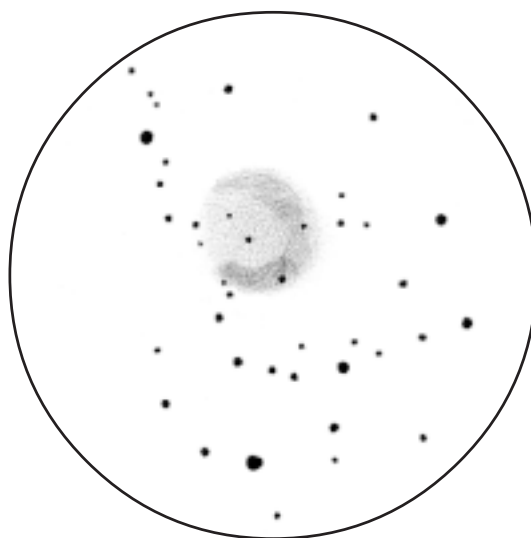


Figure 2.
PK104-29 1
(PN G104.2-29.6);
diam.445mm, f/4.5,
211x+[OIII]; August 2, 1995,
01h 00m UT; La Clapière
(France), alt.1650m, good
transparency (6.3 stars seen
in UMi) and seeing mediocre
(Antoniadi IV).

Figure 3.
PK198-06 1
(PN G 198/6-06.3);
diam.445mm, f/4.5,
211x+OIII; December 23,
1997;
21h 50m UT; La Clapière
(France), alt.1650m, good
transparency (6.4 stars seen
in Umi) and seeing mediocre
(Antonialdi IV).

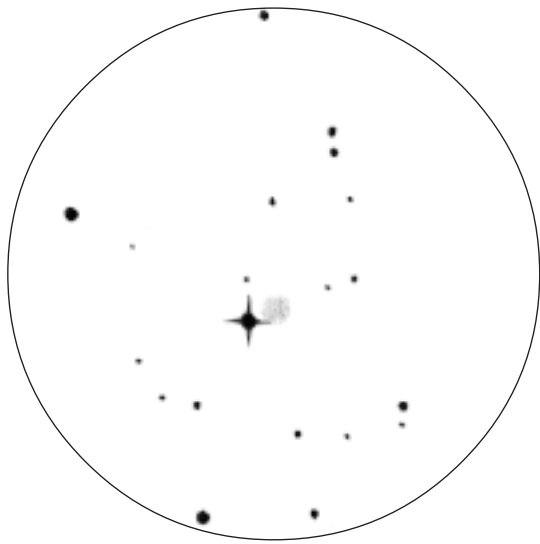
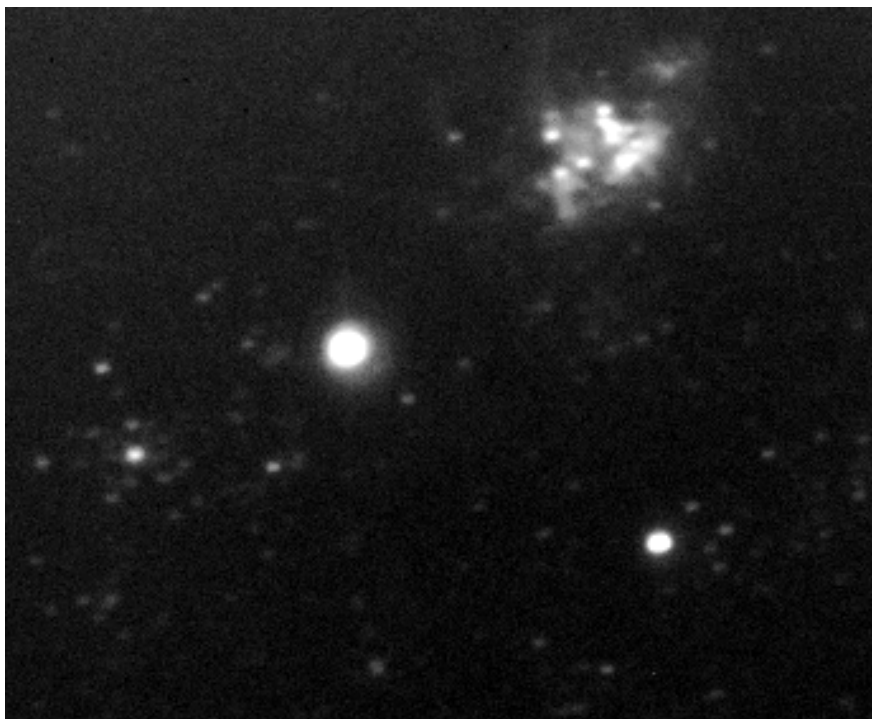


Figure 4
(Visual Observation - bottom
right)
PK303+40 1
(PN G 303.6+40.0);
diam.445mm, f/4.5,
74x+[OIII]; February 2, 1997,
02h 30m UT; La Clapière
(France), elev.1650m, good
transparency (6.4 stars seen
in Umi) and seeing mediocre
(Antonialdi III).

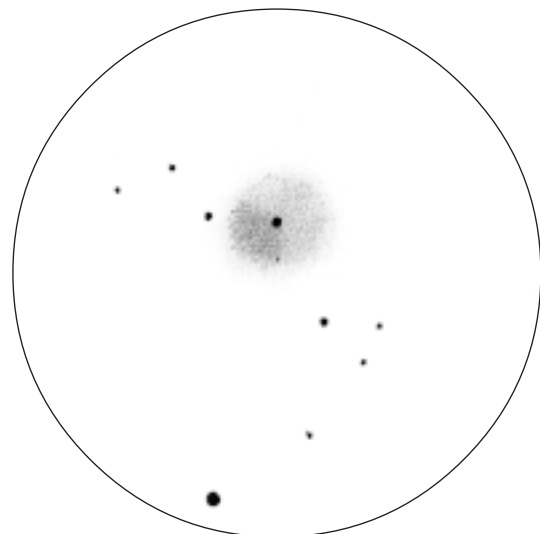
Figure 5 (below)
NGC 604 (in M33) and some
resolved stars in the galaxy;
diam. 620mm, f/15, 120sec.
exposure, CCD Princeton
Instr. (SiTe 512x512 pixels,
24x24 microns, "back-
illuminated" and MPP, 200-
1100nm sensitivity range,
-50° C., 16 bits);
August 1996; Pic de
Chateau-Renard Observatory
(France), elev.3000m, very
good transparency.



For me, deep sky observing is exploring the heavens, not shooting the same targets again and again; it's observing new objects (at least for me), finding catalog discrepancies, improving knowledge of objects off the beaten path. I just can't help but deplore that the formidable capabilities of CCDs are not investigated enough. Astrometry and photometry are the main advantages of electronic images, and not only for asteroids or variables stars, but even for deep sky objects. Among the countless galaxies, nebulae and clusters, there are a lot of mysteries to be solved: identities, brightnesses, shapes, positions, etc. So much could be done and shown with a "SCT20cm+CCD" but so little is produced. Supernovae and comet searching are proving the

CCDs superiority, so why not in the deep sky? A lot of clusters are awaiting UBV photometry to be better understood, a lot of HII regions in small galaxies are waiting to be mapped, and a lot of small nebulae (planetary or otherwise) are waiting to be imaged through various filters (here are some ideas but the professionals in the Webb Society can give you more...). Of course, there are a few exceptions as Pedro Re or Christian Buil but they are rare. A few more arguments: the "40cm+eye" combination is cheaper than the "SCT20cm+CCD". A 40cm Dobsonian has roughly the same price as a 20cm SCT, so in the latter combination, one has to consider the added price of the CCD camera (and associated computer if not already owned). So the new paradigm is somewhat more expensive.

Something I can't agree with is the alleged social interaction of CCD imaging. As only one person is needed for a CCD run (or maybe two if the telescope needs to be pointed), everyone else in a group finds themselves looking at the screen passively. It can become boring just to look at pictures, even when they come rapidly (and I know from experience that they don't come as quickly as we would like). In my opinion, I don't think that a "TV way of deep sky observing" could increase conviviality. On the contrary, I believe that an active participation of everyone is user-friendly and what is more social than exchanging visual impressions around a large Dobsonian? As to the "Wow" or "Amazing" of novice viewers looking at CCD images, my fiancée could tell you a lot about it. As we imaged M57 with the 62cm for about an hour, adding images, changing filters, admiring details and "wowing" between us (experienced observers), she gradually got bored



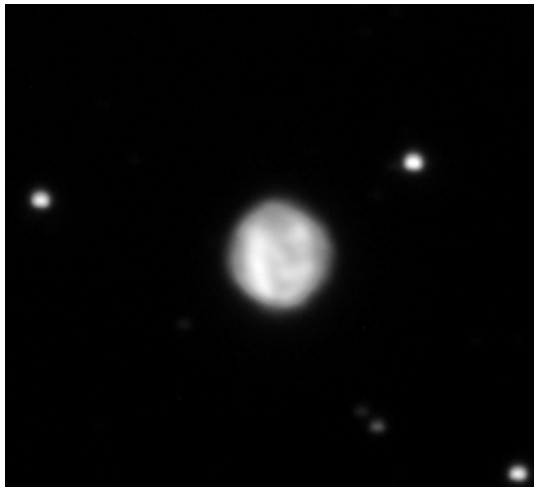


Figure 6 (far left)
NGC 6818 without filter,

Figure 7 (left)
with [OIII] filter (495.9 &
500.7nm),

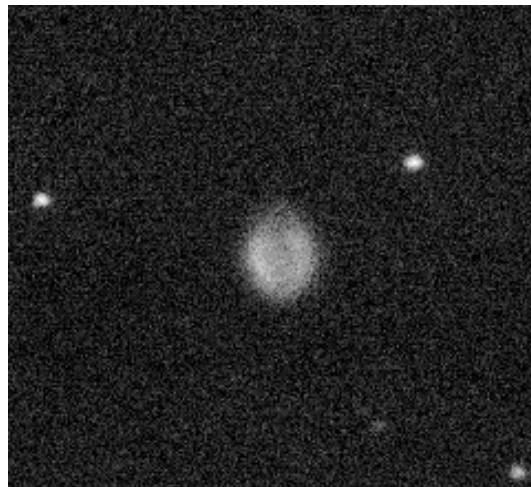


Figure 8 (far left)
with Hydrogen beta filter
(486.1nm) and
Figure 9 (left)
with pseudo-Helium filter
(468.6nm);

Data common to Figs. 6-9
diam.620mm, f/15, exposure
120sec., CCD Princetn Instr.
(SiTe 512x512 pixels, 24x24
microns, "back-illuminated"
and MPP, 200-1100nm
sensitivity range, -50°C., 16
bits); August 1996; Pic de
Chateau-Renard Observatory
(France), elev. 3000m, very
good transparency.

with it and now tells anyone that she can't stand a CCD session any more...

The fact I can't deny is that some skills are necessary for visual observing and the "That little fuzzy thing" impression from newcomers is and will always be present. But that's the way the Universe looks for our human eyes, without the

truncated views of electronics prosthesis...

I promise that I will become a pro-CCD when articles in "DSO" will be filled with electronic images showing MCG..., PGC..., PK... or more obscure objects but until then I prefer to continue to seek for challenging or unknown targets. That's my opinion in this never ending debate...

SN 1999bt

Webb member Tom Boles of Wellingborough, Northants. has notched up another SN discovery, this time in an anonymous galaxy. The position measured by Mark Armstrong using the discovery image is RA 17h 11m 37s.77; Dec +72° 25' 15".5 (2000.0). A spectrum taken at the F. L. Whipple

Observatory showed it to be a type-1a, past maximum light.

The discovery image was taken with a 0.14-m f/11 (+ AP7 camera) as part of the UK Nova/Supernova Patrol on April 9.12.

Further details on IAUC 7142.