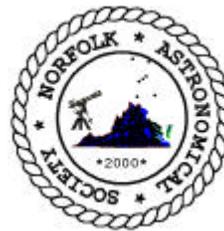




NORFOLK SKIES



The Official Newsletter of the new Norfolk Astronomical Society

Glendon L. Howell, Editor

Volume I; Number 9

September 2001

Meetings And Events For September 2001

Date	Activity
Mon., Sept. 10	NAS Regular Meeting , 7 PM, at MRO Computers & Astronomy, 1620 Cedar Rd, located at the intersection of Cedar Road and Dominion Blvd in Chesapeake. Plans to give a public telescope buying seminar at MRO and Chesapeake Planetarium will be discussed as well as the upcoming VAAS convention.
Tue., Sept. 11	Turbulent Combustion , free Sigma Series lecture given by Stephen B. Pope, 7:30 PM at the Virginia Air & Space Center, Hampton.
Fri., Sept. 14	NAS Observing Session , dusk until ? at Glen Howell's parents. Caravan down to Glen's parents for observing that evening, weather permitting.

Local Planetarium Shows

THE INVISIBLE UNIVERSE will be shown **Thursdays, September 6, 13, 20 and 27**, from 8 to 9 PM at the Chesapeake Planetarium, 300 Cedar Road. The program explores some of the distant objects found in the night sky using a small telescope. A star chart will be provided after the show. Telescope outing immediately after the show, weather permitting. Admission free. For reservations call 547-0153.

JOURNEY TO MARS (June 9 – Sept. 16) will be shown weekdays at 2:30 PM, and at 11 AM, 1:30 PM, and 3:30 PM Saturday, and at 1:30 PM and 3:30 PM Sundays at the Virginia Living Museum Planetarium, 524 N. J.Clyde Morris Blvd, in Newport News. The program discusses the planet through our mythology up to what we now know about it from space exploration, and projects ideas about what a future mission to the red planet might be like. Admission \$3.00. For information call 595-1900.

THE X-TRA TERRESTRIAL FILES (Sept. 22 – Nov. 11) will be shown weekdays at 2:30 PM, and at 11 AM, 1:30 PM, and 3:30 PM Saturday, and at 1:30 PM and 3:30 PM Sundays at the Virginia Living Museum Planetarium, 524 N. J.Clyde Morris Blvd, in Newport News. The program explores the theories and science behind the search for extra-terrestrial life in our vast universe. Admission \$3.00. For information call 595-1900.

Preminary Announcement: Virginia Association of Astronomical Societies (VAAS)

This year's Virginia Association of Astronomical Societies (VAAS) state-wide convention is set for **Saturday, October 13, 2001** in Roanoke, VA. Hosted this year by the members of the Roanoke Valley Astronomical Society (RVAS), the convention is set to be held in the Whitman Auditorium, located in the Business/Science Building of Virginia Western Community College.

Pre-register before September 22 at \$10.00 per adult (\$7.50 for students). A boxed lunch at \$7.50 each is also available only to those who pre-register. After October 4, registration increases to \$15.00 and lunch is on your own. Typical activities at VAAS conventions include astronomical talks, door prizes, vendors, and a star party, weather permitting. Information on this convention and past ones is available online at:

<http://rvas.home.att.net/vaas.html>

<http://members.tripod.com/vaas99.html>

Astrophotographic Contrast Enhancement

By Darrell Green

What is one major problem the astrophotographer faces with his/her photos? LOW CONTRAST! This is caused by several reasons, among them too short an exposure, poor sky conditions, too much light pollution, wrong choice of film, etc. Is there anything you can do to remedy this dilemma? Yes indeed! This week, guest author and Astronomy Forum member, Darrell Green, explains the process that he follows to get a great gain in contrast to his color photos. I have several of his prints in front of me and Darrell's technique works wonders from his site in Southern California. All his prints exhibit rich black backgrounds and deep saturated reds in emission nebulae and subtle blues in galaxies.---Greg Beach

This may sound a little crazy. Would you take a picture with slide film, develop it as a negative, and then re-photograph the negative to turn it back in to a slide (which you had in the first place)? Well if you do, don't tell your friends because they will think you are nuts! But, there just might be a very good reason for going through that involved process.

In deep-sky astrophotography we are often dealing with subjects which have very little intrinsic contrast. Consequently the astrophotographer is constantly striving to increase the contrast of his photos in order to make the details of the subject more pronounced.

I have been experimenting with a technique which does, indeed, increase the contrast of normally low contrast deep-sky objects. This technique, which was developed by Dr. Jack Marling of Lumicon, basically involves developing ALL *color* film as a negative and then converting the negatives into a *color* slide. The whole process works something like this.

You begin by shooting your astrophotos with the gas hypersensitized *color* film of your choice. You may use either film for prints or slides. But the important thing is ALWAYS develop the film as a negative, even the slide film. This usually requires the C-41 process. Using a LUMICON Model 600 hyper Kit at 50 degrees C. (film unrolled) and at 7psi, here are the times I use for hypering:

FUJICHROME 1600D 12 Hours
KONICA SR1600 14 Hours

The next step is to convert the negative back into a slide. This is where the greatest contrast enhancement is gained. The film of choice for this step of photographing the negative is KODAK 5072 VERICOLOR SLIDE FILM. This film is ideal because it has extremely fine grain, it has a high contrast, and it has a colorless base. Kodak 5072 is only available in 100 foot bulk reels. However, Kodak markets a 36-exposure cassette version under the name SO-279.

To perform this step I obtained a low cost slide duplicator (about \$80.00). The duplicator fits onto my 35mm camera in place of a lens. The *color* negative is inserted into the duplicator and the whole set-up is pointed at a bare light bulb which serves as the light source.

Dr. Marling recommends using a normal 100 watt light bulb. However, in my tests I found that unsatisfactory for two reasons. The relative low intensity of the light resulted in longer exposures; and the resultant slides have a strong blue tint. The light source I finally settled on was the General Electric B1 Photo Flood (BCA-No. 1). This blue light bulb is available in most photo stores. The B1 is a very intense light resulting in shorter exposures plus it yields a nice black background. I position the bare bulb about 5 inches away from the aperture of the slide duplicator.

Also through experimentation, I determined that the proper exposure was about one second. This could vary greatly depending upon many factors including f/ratio of the duplicator, the particular emulsions of both the negative and slide films, the light source, and any filters which are being used. It is only through extensive experimentation that the optimum exposure time will be determined. Remember, the longer the exposure, the DARKER the result.

This method also allows you to control *color* balance. In fact it requires it. Due to the *color* response of both the original film and the film used to make the slides, the *color* balance of the end product will be pretty wacky -- but this is where the fun comes in! You can now be in complete control of the resultant *colors*. What you need is a set of 2" x 2" *color* correcting filters. These filters are available

in "units" which designate the density of the particular *color*. You will probably need a 10, 20, and 40 of each of the *colors* of YELLOW, MAGENTA, and CYAN. They are designated CCuu; where CC is the "*color* correcting, uu is the density, and c is the *color*. For example a filter of 20 units of yellow would be CC20Y.

The filters are placed between the light source and the negative being photographed. Again, experimentation will be required to determine the proper filter "pack" for each negative emulsion you use.

COLOR TO REMOVE	ADD	or SUBTRACT
BLUE	CYAN + MAGENTA	YELLOW
RED	YELLOW + MAGENTA	CYAN
GREEN	CYAN + YELLOW	MAGENTA

(Note: If at all possible always SUBTRACT the filter. ADDing a filter increases density and therefore exposure. And, never have all three colors in the filter pack as this increases the neutral density and exposure.)

Once you have determined the proper filter pack for a particular negative type, write it down so you will have a good starting point next time. For KONICA SR1600 or FUJICHROME 400 color negatives and a B1 photo flood here are the filter packs I use:

GALAXIES - CC20C
NEBULAE - CC20C + CC10M

With a 100w white light bulb here are the starting filter packs used by Dr. Marling:

NEGATIVE	YELLOW	MAGENTA	CYAN
Konica SR1600	40	10	00
Kodak VR200	10	30	00
Kodak VR1000	00	00	20
Fujichrome RD100	30	10	00
Fujichrome 400	40	10	00
Fuji HR1600	00	00	00

Obtaining the correct color balance is probably the most difficult part of the whole process. It requires extensive trial and error testing. However, once you have established the correct filter pack for your particular configuration of films and lights you can get slides of celestial objects that look like you think they should look.

This technique may seem like a lot of work. And it is! But, if you want to obtain a near-black sky background and higher contrast photos this is the way to do it. I am convinced that this method results in substantially better astrophotos and I now use it exclusively. Even when I shoot astrophotos with slide film, I still develop them as a negative and then take them through the conversion process. The results are definitely worth the effort.

SUMMARY

- STEP 1: Hyper color film of choice.
- STEP 2: Photograph object.
- STEP 3: Develop film using C-41 process or equivalent -- BOTH slides and negatives.
- STEP 4: Re-photograph negative with Kodak 5072 or SO-279 using duplicator.
- STEP 5: During Step 4, balance color if necessary and record all data.
- STEP 6: Develop final result in C-41 and display PROUDLY!

NOTES

Hypersensitizing film (which will be covered at a later date) has two variables to account for -- moisture in the air and height above sea level of your location. Darrell lives on the California coast where humidity and low altitude may give different results than in the central plains. Keep this in mind when preparing your film. Also, your darkroom equipment and methods may differ. If using a color enlarger for duping (re-photographing) the film you may just dial-in the required filtration for correct color balance. Use the above as a starting point, and using Darrell's own words, BRACKET your exposures.

Q.) Does this method work for black and white film too?

A.) Sure does! The procedure remains the same except use Kodak TP2415 (unhypered) for the duping medium.

Q.) Do you need a darkroom to do all this fancy film work?

A.) No! All that is required is you have the equipment and film that Darrell lists above.

Uranus

By William N. "Chuckwagon" Gray
From "Between The Stars", May 1984

Six of the Sun's family of major planets, from Mercury out to Saturn have been known since antiquity. But the seventh, Uranus, was unknown until just over 200 years ago. And, contrary to what many people believe, it was not found by accident. It was found on the night of March 13, 1781 by William Herschel, who, at the time was making a systematic survey of the skies at his home in Bath, England. And, as Herschel stated, it was no accident that he found it on that particular night. In fact, he said, if he had not come upon it on that night, he most surely would have found it on some later date.

Through his 6-inch telescope, it appeared as a round, disc like object which meant that it could not be a star. And due to its very slight motion across the sky, he decided it could not be one of the nebulae. So he reasoned it must be the nucleus of a new comet. Yet some of the foremost astronomers of that time had trouble computing an orbit for it. They had assumed that it must be moving in a parabolic orbit as did most other comets.

But this object did not seem to follow such a course, as was clearly evident from the many observations made of it. In fact it seemed that its orbit would more nearly fit that of a circle. And, if this were true, it would have to have a radius that stretched out 19 times farther from the Sun than is the Earth.

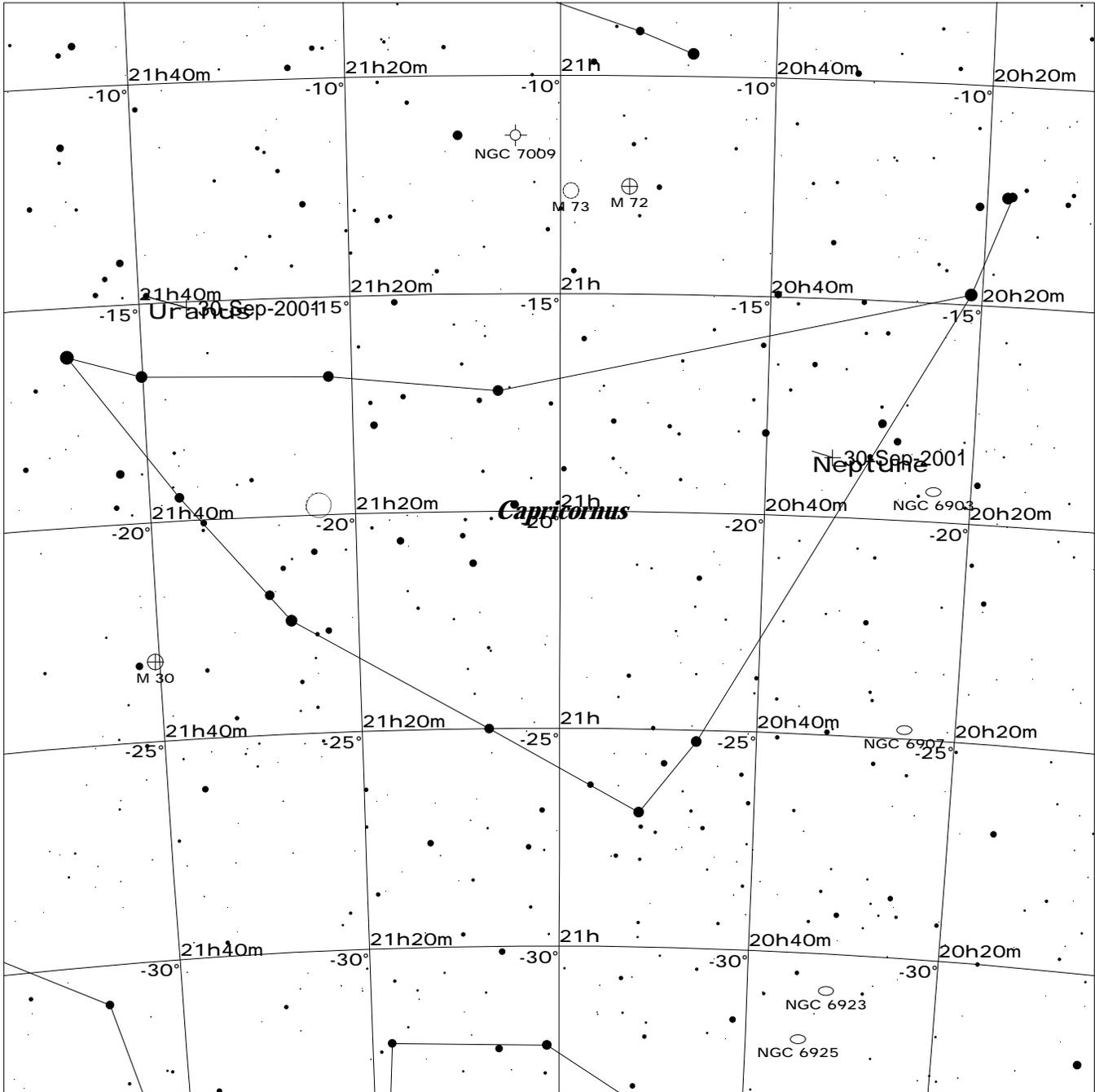
With such an orbit, this could only mean Herschel's object was not a new comet, but instead a new planet! Moving in such a path 900 million miles out beyond Saturn, it would take some 85 years for it to make just one revolution around the Sun (and since its discovery it has only made 2 1/2 such trips!).

This astounding discovery took the scientific world completely by surprise. No one had ever considered that there might be another planet out beyond Saturn. Still, one of the most astonishing things about it was why had it not been discovered sooner! And why was it not first found without a telescope since it is just a 6th magnitude object easily seen with the naked eye under dark skies!

But it seems it had been observed and recorded as a star many times in the past without anyone realizing its true nature. Flamsteed, the first Royal Astronomer almost a hundred years before Herschel, had marked it on his catalog of stars on 5 different occasions. And Le Monnier, the French Astronomer at the Paris Observatory had recorded it 8 times, just a dozen years before Herschel had found it. If either had taken the trouble to scrutinize this object just a little more carefully, its discovery would have been theirs!

Now all stars appear as just a point of light even in the largest of telescopes and that was exactly how Flamsteed and Le Monnier had observed and recorded it. Yet Herschel had reported it as a round disc like object. Now, you might ask how could this be? And the answer is simple --- Herschel had a better telescope!

Uranus And Neptune in Capricornus



<p>STARS</p> <p>● <2 · 7 ● 3 · >8 ● 4 ● 5 ● 6</p>	<p>SYMBOLS</p> <p>☄ Comet ☿ Asteroid ○ Galaxy ○ Open Cluster □ Bright Nebula</p> <p>⊕ Globular Cluster ☉ Planetary Nebula ⊞ Quasar ○ Other Object</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>URANUS</th> <th>NEPTUNE</th> </tr> </thead> <tbody> <tr> <td>09/01</td> <td>21h 39m -14d 50m</td> <td>20h 36m -18d 31m</td> </tr> <tr> <td>09/11</td> <td>21h 38m -14d 57m</td> <td>20h 35m -18d 34m</td> </tr> <tr> <td>09/21</td> <td>21h 37m -15d 03m</td> <td>20h 34m -18d 36m</td> </tr> <tr> <td>10/01</td> <td>21h 36m -15d 08m</td> <td>20h 34m -18d 38m</td> </tr> </tbody> </table>	DATE	URANUS	NEPTUNE	09/01	21h 39m -14d 50m	20h 36m -18d 31m	09/11	21h 38m -14d 57m	20h 35m -18d 34m	09/21	21h 37m -15d 03m	20h 34m -18d 36m	10/01	21h 36m -15d 08m	20h 34m -18d 38m
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Local Time: 00:00:00 1-Sep-2001 UTC: 23:00:00 31-Aug-2001 Sidereal Time: 21:30:39
 Location: 53° 27' 0" N 2° 31' 0" W RA: 21h01m05s Dec: -20° 50' Field: 25.0° Julian Day: 2452153.4583

Norfolk Astronomical Society Astronomical Calendar

August 2001							September 2001							October 2001						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
			1	2	3	4	2	3	4	5	6	7	8	7	8	9	10	11	12	13
5	6	7	8	9	10	11	9	10	11	12	13	14	15	14	15	16	17	18	19	20
12	13	14	15	16	17	18	16	17	18	19	20	21	22	21	22	23	24	25	26	27
19	20	21	22	23	24	25	23	24	25	26	27	28	29	28	29	30	31			
26	27	28	29	30	31		30													

All times are EDT

<http://groups.hamptonroads.com/NAS/>

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	31	1
						3:00 AM Uranus 3 degrees N of Moon 7:00 PM Moon apogee
2	3	4	5	6	7	8
5:43 PM Full Moon				4:47 AM Moon occults SAO 109895 (+6.6)		
9	10	11	12	13	14	15
2:51 AM Moon occults SAO 93615 (+7.2)	1:59 PM Last Quarter Moon 7:00 PM NAS meeting	7:30 PM Turbulent Combustion - Sigma series lecture at VASC	8:00 AM Jupiter 1.0 degrees S of Moon	2:55 AM Moon occults SAO 79621 (+7.4)	4:03 AM Moon occults SAO 80412 (+7.1)	3:00 AM Venus 3 degrees S of Moon
16	17	18	19	20	21	22
12:00 PM Moon perigee	6:27 AM New Moon	6:00 PM Mercury reaches elongation (27 degrees E)	8:09 PM Moon occults 94 Vir (+6.5)	4:00 PM Venus 0.5 degrees N of Regulus		12:00 AM VAAS Deadline 7:04 PM Equinox
23	24	25	26	27	28	29
7:52 PM Moon occults SAO 185674 (+7.3)	5:31 AM First Quarter 9:00 PM Mars 2 degrees S of Moon		11:13 PM Moon occults SAO 189345 (+6.1)	10:28 PM Moon occults SAO 190214 (+6.6)	7:47 PM Moon occults double star 29 Aqr (+6.4/+7.4)	2:00 AM Moon apogee
30	1	2	3	4	5	6