The Dark Sky Observer

A publication of
The North Jersey Astronomical Group

Volume: 2 Number: 8 Oct/Nov 1989

Comet Okazaki - Levy - Rudenko is comming!

A new comet was independently discovered by three "Amateur" astronomers. Kiyomi Okazaki photographed Comet 1989r on August 24th with a 10-inch Schmidt camera. Veteran comet hunter David Levy of Arizona swept it up visually with his 16-inch reflector the following night, and Michael Rudenko of Massachusetts did the same with a 6-inch refractor working at 30 power on August 26th. Comet Okazaki-Levy-Rudenko (OLR) was visible to club members as a

Minutes

September 6th:

The September meeting of the North Jersey Astronomical Group was called to order at approximately 8:15 P.M. by President Glenn Burke. The minutes from the previous meeting were accepted as read. The Treasurer reported that there is $564.14 in the club treasury. The proposed constitution and by-laws, were voted upon, and accepted.

The Astrophotography Committee reminded the members about the Astrophotography Contest that will take place in December. Also members were reminded that a lunar eclipse astrophotogrphy contest would be held following the October business meeting.

The Computer Committee reported that the hard drive is not functional.

As prescribed by the just passed by-laws, John Miksits was officially appointed NJAG Librarian by President Glenn Burke.

There bein no more business, the meeting was adjourned.

October 11th:

The October meeting of the North Jersey Astronomical Group was called to order at approximately 8:15 P.M. by President Glenn Burke.

The minutes from the previous meeting were accepted as read. The Treasurer reported that there is $448.71 in the club treasury.

The spending limit for the executive committee was set at $100.00, as prescribed by the new bylaws. The Education committee reported that the Fall class has begun. The club will recieve $176.00 from Wayne Adult School for conductin the class. This year the class is being held at Wayne Hills High School, therefor, all proceeds will benefit the NJAG, rather than the Observatory.

The Astrophotography Committee reminded members about the contest coming up in December. Also, members were reminded that Lunar eclipse photos would be judged after the meeting. The lunar eclipse astrophotography contest was held following the meeting. There were only 3 entrants; Alan Koenig, Angelo Restivo and Mike Lynch. Angelo won and Mike came in second.

There being no more business, the meeting was adjourned.

Astronomy Course Begins

Eleven people signed up for the Astronomy course offered by the N.J.A.G. through the Wayne Adult School. The first class began on October 3rd at Wayne Valley High School. There was a bit of confusion the first night because in previous years we were always assigned a room in Wayne Hills High School. It seems the new Director thought Wayne Valley was a better observing location....wrong!

So we got the class changed back to Wayne Hills and are looking foward to some nice observing from behind the school following each class. Any member wishing to join us please bring your scope on Tuesday nights.

CORRECTOINS

The editor wishes to extend his sincerest apologies to the members of the NJAG for the mess that was called the September 1989 Dark Sky Observer. It was riddled with errors, extremely late and sometimes misdirected.

The newsletter was not proof-read by Ginger Payne. Her name was listed in the credits prematurely. It was proofread by myself, the editor.

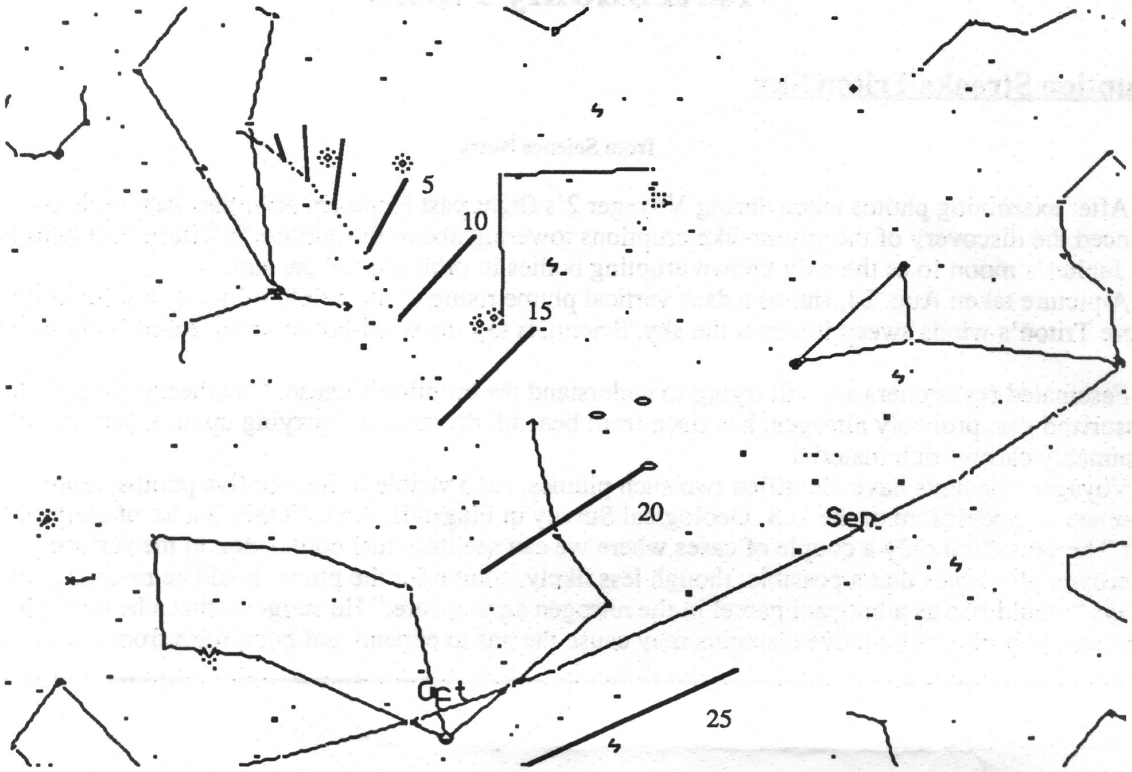
At the time I was suffering from a mild case of pneumonia and usually under the influence of some pretty potent cough medicine.

(insert violins here).

On the final page of the newsletter was a large blank space. If you are wondering why, it was meant for a comic strip that was to be cut and pasted in. In the rush to get the newsletter out before the following month's issue was due, I completely forgot.

Finally, several address additions and changes were not made to the mailing list. They have now been corrected (I hope).

Hang me,
Roger



10th-magnitude tailless glow in Bootes in October's evening sky, but after it rounds the Sun in November and becomes a morning object, it could brighten to 4th magnitude and on the 24th of that month it will pass very near the Moon. An occultation may even be visible from some parts of the world. The best time for observation will be from November 10th thru 20th. The comet should be brightest as it passes through the ecliptic on the 22nd but the moon will be nearby to ruin the show. On the 27th the comet will be only 1.5 degrees from the moon. At this time it will be .72 A.U. from the sun and .52 A.U. from the earth.

A good time for observation and photography will be the period of the 10th thru the 12th. the nearly full moon will be setting in the west as the comet rises in the east giving a window of opportunity from 5:30 A.M. till dawn.

This comet is in a parabolic orbit, which means this is a one shot deal! It has never been seen before and it will not return, so positions and magnitude values are best estimates.

Based on preliminary orbital elements from the IAU's Central Bureau for Astronomical Telegrams, here are equinox 2000 positions for Comet Okazaki-Levy-Rudenko also given is the Altitude above the horizon line at 7:30 P.M.(W) and 5:30 A.M.(E) as well as some lunar altitudes.

DATE	R.A.	Dec	Mag	Alt	Moon Alt
10/21	14 h 16.6m	28 21	6.4	9 W	
10/29	13 h 58.0 m	25 16	5.3	0 W	
11/5	13 h 51.0 m	22 00	5.1	19 E	
11/10	13 h 39.3 m	17 36	4.7	17 E	
11/15	13 h 27.3 m	10 49	4.4	22 E	
11/20	13 h 15.0 m	1 00	4.2	24 E	58
11/27	12h 58 .0 m	-20 15	4.2	24 E	23

Astronomy News

Eruption Streaks Triton Sky

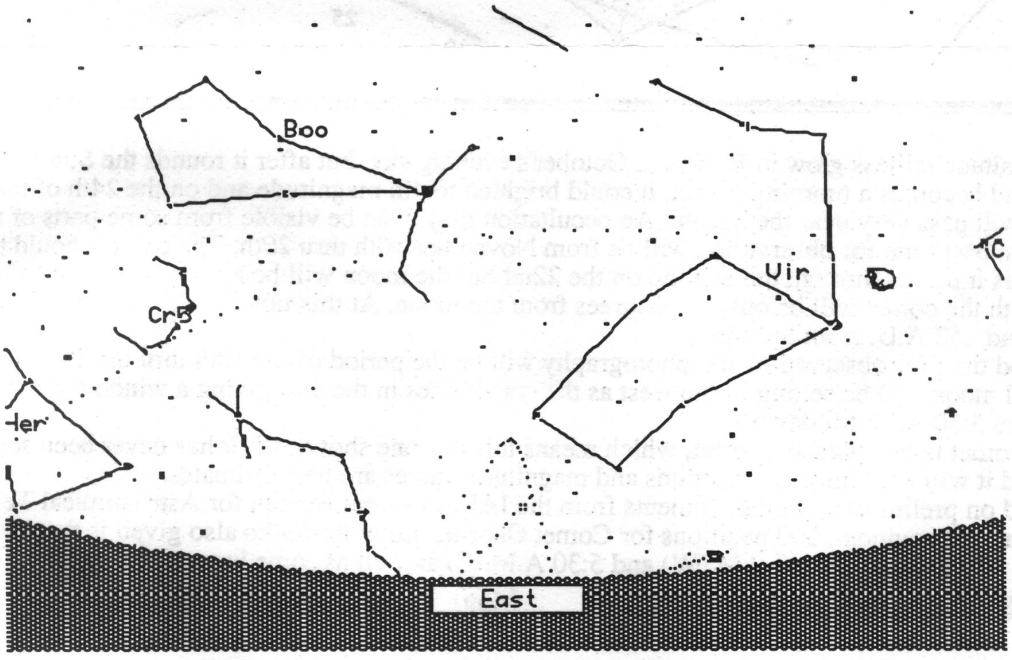
from Science News

After examining photos taken during Voyager 2's flight past Neptune, scientists last week announced the discovery of the geyser-like eruptions towering above the surface fo Triton thus joins Earth and Jupiter's moon Io as the only known erupting bodies in orbit around the sun.

A picture taken Aug. 24, shows a dark vertical plume rising to the height of nearly 8 kilometers before Triton's winds sweep it across the sky. Scientists say the wind-borne streak extends about 150 km.

Fascinated researchers are still trying to understand the eruption's cause. One theory suggests that a pressurized gas, probably nitrogen, has risen from beneath the surface, carrying up dark particles of presumably carbon-rich material.

Voyager scientists have identified two such plumes, each visible in four or five photos, reports Laurence A. Soderblom of the U.S. Geological Survey in Flagstaff, Ariz. "There's a lot of stuff that's aloft," he says, "but only a couple of cases where we can see its actual connection to the surface." Soderblom also notes that a possible, though less likely, source for the plume could be methane, which he says "would rise as a buoyant parcel in the nitrogen atmosphere." He suggests that a heat source such as the sun or buried radioactive elements may cause the gas to expand and burst forth from the surface.



What you see here is a picture of the path of Comet OLR (dotted line) as it looks relative to our local horizon at 5:30 in the morning. The star positions have shifted eastward in the time, more than a month, of the plot. Notice that in the finder chart on page 3 the comet is above Arcturus!

The position of the moon and stars are shown on Nov 24th when it will be less than one degree away from the comet. Most importantly take note that the maximum altitude above the horizon occurs on the 18th. So the best time for making observations will be between the 10th and the 20th of November.

HOW TO MAKE YOUR OWN TELESCOPE FROM SCRATCH.... NO PRESERVATIVES ADDED

Part II - BACK TO THE OL' GRIND

by Glenn Burke

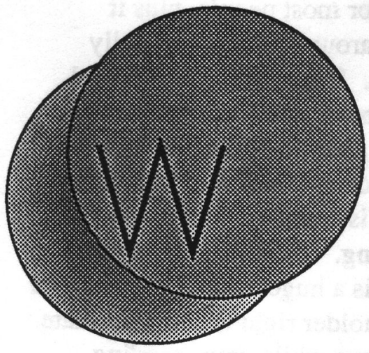
Now that you've had time to figure out what focal length telescope you want to grind, we can go on to the grinding procedures. I will detail the steps for grinding a 6" f/8 mirror. Steps for grinding slightly larger or smaller sizes would be nearly the same. To start with you will need an area that will become your "grinding shop". It can be your basement, garage, kitchen, or any unused corner of your house. The best area is one in which you can leave your stuff set up all the time. It also should be fairly clean, dust and dirt can fall from basement ceilings or be kicked up from the floor, scratching your fine ground mirror. Once you have begun however, make sure that over conscientious house cleaners don't enter your area to "tidy up". This is another way that dirt and grit can travel and cause scratches in your mirror.

After you have ordered your mirror grinding kit, you'll need to procure a grinding stand. The stand should be at a comfortable height. If your stand is too high or to low you will not be able to get the proper grinding action, plus your back will be in extreme pain. Usually, a 55 gallon drum works just fine. It is of a height perfect for most people, plus it allows you to walk around the mirror easily while your grinding. If you can't get a barrel, you can make a wooden stand, or use a small table. An excellent alternative I have found is using a Black & Decker workmate. It's height is adjustable, and it is small enough to walk around while grinding. It also has the added benefit that it's top is a huge vise. This way you can clamp the tool holder right to the workmate so that it doesn't move while your grinding. Other things you'll need are containers for holding the various grits, a spray bottle for water, a plastic pan like that used for doing dishes, straight edge, vernier calipers, and a tool holder. The tool holder is made by taking a piece of 3/4 plywood and cutting it into a square about 4" wider than the diameter of the mirror your grinding. Using a compass, inscribe a circle in the center of the square that is the same diameter as your mirror. This is where you will place your tool when you begin grinding. Then cut small pieces of wood to make three cleats which will butt up against the tool and hold it in place. Of course, these three cleats should be thinner than the thickness of your mirror so that they will not be in the way while grinding. Nail them around the circle at 120 degrees apart from each other. One of the cleats should be slightly farther away from the circle. This way when you put the tool between the cleats you can wedge a thin piece of wood between this cleat and the tool so that the tool is tightly held.

After your mirror kit arrives take a look at the grits which come with it. Their should be a course forming grit such as #60 or #80 carborundum and then successively smaller grit sizes such as #120, #220, #320, #500 and lapping powders such as 12 and 5 micron. Some kits may omit the #60 and replace the #500 with #400 or exchange the 12 and 5 micron lapping powder with # 305 emery. It really doesn't matter as long as you grind coarsest grit first then successively finer and finer grits. Your kit should say in which order to grind. The kit will also have a polishing compound such as rouge or cerium oxide. At this point you are ready to start grinding. You should already have calculated the depth of the curve or Sagitta (see part 1 of this series) to get the particular focal length you want. Now with your kit, you should have received two glass disks. If both are the same you have a choice as to which one will be the mirror and which one will be the tool. Some kits will specify which is which. If you have a choice, the disk which is used for the mirror should have no bubbles or or other flaws in it near the surface which is being ground. Bubbles deep in the disk are o.k.. Take the tool and place it in the holder. Fill your plastic pan with water and place the mirror blank in it. You are now going to form the curve. This will use the coarsest grit the kit comes with, for a 6", usually #80 carborundum. Put the #80 in one of

the containers you have collected (baby food bottles work fine) and sprinkle some on the tool. This should be about half a teaspoon of grit. Now you take the mirror blank out of the water and place it on top of the tool. The water clinging to the blank from the water pan should be enough to wet the grit enough to give a smooth grind but if it seems to dry, add a little water from the spray bottle. In forming the curve you will be using a full stroke, that is the mirror blank will move from a position centered on the tool forward till it overhangs the tool by 1/2 its diameter then back to the centered position and back till the other end overhangs the tool by 1/2 its diameter. For example a 6" mirror blank would be pushed forward till it overhung the tool by 3 inches on the one side and back till it overhung the same amount on the other side. 3 inches + 3 inches = 6 inches or one Full stroke. You would do this stroke 3 or 4 times in one direction then take a step to the left and turn the mirror blank a little to the right and repeat 3 or 4 full strokes in this direction. Stepping left or right doesn't matter as long as you turn the mirror blank the opposite way that you step. You continue in this fashion till you hear the growl of the grinding compound lessen as it turns to mud. You will know when it is no longer cutting. At this point you dunk the mirror in your pan of water and wipe of the tool. Recharge the abrasive and begin the cycle again. This cycle is called a "wet". In the early stages of grinding a wet lasts less than a minute, but as you go along the wets last longer and longer. After a few wets clean of the mirror and lay a straight edge across it. You should see light coming underneath it at the mirror's middle. The curve is forming! Try sticking little things underneath the straight edge and see what fits. When you find something that fits, measure the item with calipers and see what its size is. This is how you will check your sagitta. You already know what sagitta you want so try finding something that measures near that size. Things like small wire, small nails, and pins work well. When you can fit this item under the straight edge you'll know you have reached your required sagitta.

Once you have achieved the desired sagitta, which for a 6 inch takes about 2 hours, you start smoothing the curve. The curve your trying to generate is spherical, but what you got with the long stroke is deep enough in the center but not the middle or edges. To get a sphere you switch to a 1/3 stroke continuing with #80. In the one third stroke you go back and forth overhanging by 1/3 a diameter of the mirror. For a 6 inch that would be a 1 inch overhang on both sides, 1/3 x 6 inch = 2 inches, one inch forward one inch back. You simply continue the grinding procedure as before using the new stroke. The curve will be spherical when both mirror and tool are in perfect contact. You can tell this by watching the bubbles between the mirror and tool. If after a minute or so of grinding there is a large bubble in the center of the mirror that remains there, the disks are not in perfect contact. If bubbles are scattered uniformly between the disks you should have a spherical surface. Smoothing the curve should take about another hour and a half. After this your ready to move down to the next grit which in most cases will be #120. You now have a spherical surface, but it can not yet be used as a mirror because in grinding it out the #80 has left thousands of pits which ruin its surface. With the #120 you will remove these pits but leave behind the pits the #120 makes and so on and so forth as you work your way down the grits. From now on you will be grinding with a new stroke, the 1/3 " W " stroke. This stroke works just the way it sounds. You work the mirror across the tool in a W pattern up and down overhanging the sides still by one inch. This stroke will blend irregularities in the mirror's surface. The rest of the grinding cycle will remain the same. More on fine grinding and polishing next month. ☆



ASTROPHOTOGRAPHY CONTEST '89

The club's annual Astrophotography contest is coming up. Here are the official rules:

1. Photographs must be astronomical in nature.

2. They may be 5 by 7 or 8 by 10, color or black and white.

3. Up to 2 pictures may be entered, each in separate categories; Deep Sky, Wide Field, Solar System and General.

4. Entries must be received by the December 13th business meeting.

5. Winners will be judged by all those present at the January business meeting.

6. There will also be a judging for the best of show. The best of show winner will receive free NJAG dues for the following year. The winners in each category as well as the best in show will have their names entered upon the plaque of past winners that is hanging in the Observatory.

....one unofficial rule:

Please do not show your contest entries to other members of the club, as they may influence the judging and also scare away competition.
Bring your best shots up. The more entries, the better the contest.

Also remember that this is a friendly competition designed to encourage effort. Please feel free to ask for opinions and advice. Dumb looks are still.... free.

☆

Looking Ahead

The next Business meeting of the North Jersey Astronomical Group will be held on Wednesday November 8th at 8:00 P.M. at the Rifle Camp Park Observatory in West Paterson, New Jersey. Business meetings are open to the public so bring a friend.

After the November Business meeting Glenn Burke will give a talk entitled: " The Chemistry of Black and White Photography" . In it he will delve into such esoteric areas as, re-coprocity failure of Tech Pan 2415, resolving power in lines per millimeter and the effect that various gasses have on Silver Halide micro-grains, otherwise know as hypering.

The last public night of the year will take place on Friday November 3rd. Don't miss it or the planned festivities afterwards !

There will be no regular Wednesday meeting on the following dates:

November 22nd
December 20th
and December 27th.

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The Dark Sky Observer is a publication of the North Jersey Astronomical Group. All members are invited to write articles for the newsletter. Anyone interested in writing for the DSO, please contact the editor at a meeting or through the mail.

Editor
North Jersey Astronomical Group
P.O. Box 4021, Allwood Station
Clifton New Jersey 07012

Editor.....Roger Sudol
Publication.....Simon Jacob
Typesetting.....Jim Beirne

Contributors.....Jim Beirne
....Glenn Burke
....Roger Sudol

The North Jersey Astronomical Group
P.O. Box 4021, Allwood Station
Clifton, NJ 07012

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