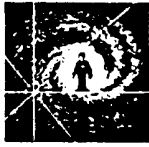
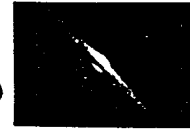


The Dark Sky Observer



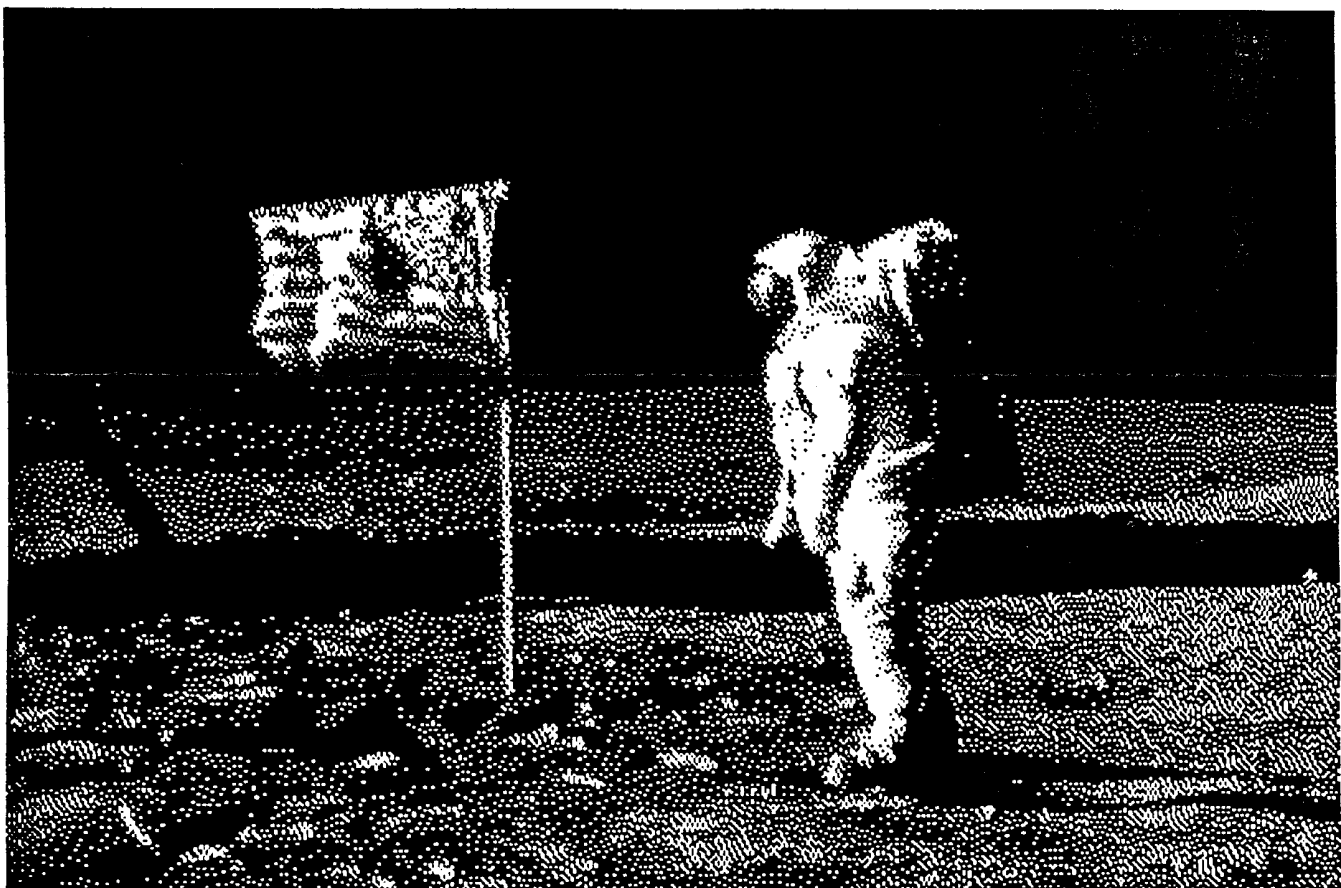
A publication of
The North Jersey Astronomical Group

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"That's one small step for man, one giant leap for all mankind." ... Neil Armstrong

MAN LANDS ON THE MOON



20 YEARS AGO, JULY 20TH, 1969

A NEW age began when man first stepped onto the moon at 10:56:20 P.M. (Eastern Daylight Time) on July 20, 1969. — Many of the millions who watched the televised image of Neil Armstrong setting foot on the lunar soil had a profound sense that the earth would never be the same again. Neither would the moon. The moon is no longer a disembodied orb, a subject of myth, an abstraction in the sky. It had been touched and is now a place. On July 20-21, Tranquility Base, as Mr. Armstrong and Col. Edwin E. Aldrin called the tiny moon patch they inhabited for 21 1/2 hours, became man's first temporary settlement in a new world. Apollo 11 was more than an epic voyage culminating in a dramatic landing on the moon. It was also, among other things, a new act of self discovery and a further extension of man's effort to learn more about himself and his universe. The gift of knowledge may be the greatest boon of the Apollo 11 mission. (continued on page 3)

Last Meeting

N.J.A.G. MINUTES

date: June 14, 1989

CALL TO ORDER:(PRESIDENT GLENN BURKE) The meeting was called to order at 8:10 p.m. by President Glenn Burke and was attended by 19 members.

RECORDING SECRETARY: (JULIE CONROY) A Motion to accept the minutes of the previous meeting.

CORRESPONDING SECRETARY:

(DENNIS KOENIG) Announced that thank you notices have been sent to those companies who donated literature for the Astronomy Day program. Literature is still available for interested members.

TREASURER:(RUTH KOENIG) Reported a balance of \$609.55.

VICE PRESIDENT:(GRACE CASALINO) Shared an article with the group regarding a man who was hit by a meteor.

COMMITTEE REPORTS

ASTROPHOTOGRAPHY:(CHAIRMEN ANGELO RESTIVO AND DON POLZO)

COMPUTER:(CHAIRMAN MIKE KOENIG) No report for either.

DARKROOM:(CHAIRMAN MIKE KOENIG AND ALLEN KOENIG) Any member wishing to qualify should see Alan Koenig.

EDUCATION:(CHAIRMAN JIM BEIRNE) No report.

MEMBERSHIP:(CHAIRMAN RUTH KOENIG) Current membership stands at 62.

NEWSLETTER:(CHAIRMAN ROGER SUDOL) Reported that this month's newsletter is late, but was unsure as to the holdup. Articles for the newsletter are much needed and all were urged to contribute.

OBSERVATION:(CHAIRMEN GLENN BURKE AND DENNIS KOENIG) Glenn reported on the most recent West Milford trip. He was able to confirm the siting of Pluto.

PROGRAM:(CHAIRMAN TERRY ANNIS AND ALICE BERMAN) Glenn Burke supplied the final details regarding the trip to the Hayden

Planetarium to be held on June 17. Ruth Koenig spoke about the club picnic to be held on June 25
PROJECT:(CHAIRMAN JOE VOLPE AND ROGER SUDOL) Roger reports that work continues on the 12-inch mirror. Due to an unfortunate accident, however, new supplies are needed to continue. A Motion to allocate \$50.00 to purchase the new supplies.

PUBLIC NIGHT:(CHAIRMEN GRACE CASALINO AND DON POLZO) Grace announced the next scheduled Public Nights. A SUN & STARS event will be held on July 8th. A thank you was extended to all those who helped out on Astronomy Day

OLD BUSINESS

Glenn reminded members about the annual Stellafane convention. He also asked members if they had any questions or comments about the proposed constitution. There were none. A vote should take place at the July meeting.

NEW BUSINESS

Ruth Koenig announced that a catalog of discount astronomy books has been received from Sky Publishing. All orders must be placed with Ruth as they must appear on club stationary. Also, a newsletter from the "shirt contact" in Wisconsin was distributed and feedback would be appreciated.

John Miksits announced the arrival of the Cambridge Atlas of Astronomy and 4 VHS tapes.

One of our members will be conducting a public viewing session at the Lodi Library on July 2nd to observe the occultation of a star by Saturn. If anyone would like to assist, see Glenn.

Phil Conroy then announced that the July 19th and 26th meetings would be cancelled as he will be on vacation. Phil also spoke to the group regarding rules for the use of the Nature Center. All members will receive a copy to keep. The bottom portion should be signed and returned to Phil. A copy of the rules will be filed following these minutes.

There being no further business, the meeting was adjourned at 8:35PM Respectfully submitted,

Julie Conroy, Rec. Sec. N.J.A.G.

Moon Landing – page 1

That was 20 years ago in the Sunday, August 3, 1969 New YorkTimes, Color Section, along with the first color photographs from the moon. To many it seems like only yesterday, to others it is a time that they never saw. Yet July 20, 1989 will be the 20th anniversary of the greatest achievement in the history of man's exploration of space.

The moon was visited by five more Apollo missions bringing back over 700 pounds of lunar rock and soil samples. The samples revealed the chemical make-up of the moon as being high in oxygen, silicon, aluminum, iron, magnesium and titanium, all which are useful materials.

Predictions were made that the moon would be mined, lunar space station would be built, lunar refueling stations would be built, among many other plans envisioned for the future of space travel. Unfortunately these ideas seem to have fallen to the wayside. The moon which was once the hottest subject in all of science seems to have been forgotten altogether. Now space exploration has been limited to shuttle missions and unmanned probes. Permanently manned lunar space stations were predicted to be built by the end of the century. We don't even have a permanent orbital station yet. In the 12 years between the first bleeps of sputnik and Neil Armstrong's small step, mankind has made a giant leap. In the past 20 since then we've slowed to a crawl. Maybe the final frontier doesn't seem as important as it used to.

☆☆☆☆☆☆☆☆☆☆

Astronomy News

Huge cloud banks found on Neptune

By Lee Siegel AP-Pasadena, Calif.-

The Voyager 2 space probe has found two huge, dark bands forming a collar around Neptune's south pole, and scientists said Wednesday that the bands might be 2,700 mile-wide belts of windblown clouds.

"They are somewhat like the jet streams on Earth," said Andrew Ingersoll, a planetary scientist at the California Institute of Technology. "But the real similarity is with [bands in

the atmospheres of] Jupiter, Saturn, and Uranus."

Unlike Earth's jet stream winds, which zigzag across various latitudes as they blow around the globe, the bands on Neptune, Jupiter, Saturn, and Uranus are straight belts encircling those planets.

Such bands probably are "patterns brought about by the circulating winds" in jet streams that flow along the edges of each band, said Rich Terrile, an astronomer at the National Aeronautics and Space Administration's Jet Propulsion Laboratory in Pasadena.

Neptune's bands form a collar around the planet from 50 degrees south latitude to 70 degrees south latitude, said Candice Hansen, a planetary scientist at the laboratory. That means each band is about 2,700 miles wide.

The dark bands were visible in what NASA called "the best color photo of Neptune taken so far by the Voyager 2 spacecraft."

The probe made the photograph June 22 at a distance of 57.2 million miles from the planet, and NASA released an enhanced version of the color picture on Wednesday

The spacecraft was 45.5 million miles from Neptune on Wednesday,, traveling at 42,203 mph as it headed for its Aug. 24 rendezvous with the Solar system's fourth largest planet.

Voyager was 2.67 billion miles from Earth, but it has traveled 4.38 billion miles along its curving path since it was launched 12 years ago.

THE TELRAD FINDER

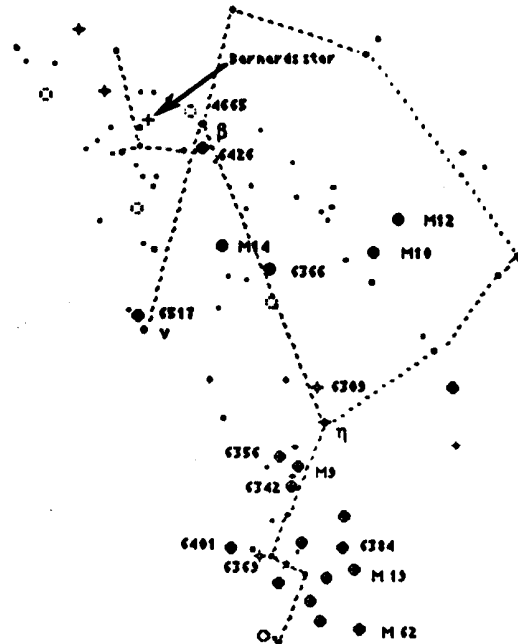
A review by Dennis Koenig

Many people new to astronomy will often ask, "What is a Telrad?". This little article will serve as an overview of a past article in one of our earlier Dark Sky Observers. A Telrad is a simple to operate, easy to use finder that can be mounted on all types of telescopes. Using no magnification, it is nothing more than a little black box that houses an illuminated reticle that looks like a bullseye or three target rings. The large outer ring is four degrees across and is equivalent to what is seen in a regular 8 x 50 finder scope. The smallest ring is 1/2 degree across and this area is what the observer sees in the eyepiece. Once a Telrad is properly mounted and aligned, observing becomes a matter of pointing and finding. (Cont'd on Pg 5)

Oh Ophiuchus!

Nestled snugly on the edge of the summer milky way lies the sprawling constellation of Ophiuchus the medicine man. To find Ophiuchus, look below the Keystone of Hercules. You should see a large group of stars shaped somewhat like a coffee urn. This is Ophiuchus. Ophiuchus has interesting mythology associated with it. To the Greeks, Ophiuchus was a powerful healer. In his two hands he held a serpent. Ophiuchus was supposed to have the power to return the dead to life. He used this power to restore the mighty Orion after he was stung to death by Scorpio the scorpion. Hades the god of the underworld complained to his brother Zeus, king of the gods, that Ophiuchus had returned Orion to life allowing him to leave the underworld. To prevent others from escaping the underworld as well, Zeus struck both Orion and Ophiuchus with lightning bolts killing them. But Ophiuchus is still remembered to this day. The symbol of the medical profession is a snake curled around a stick, just like the snake held by the mighty healer Ophiuchus.

Most of the objects visible in Ophiuchus are globular clusters. This is not surprising considering Ophiuchus' position relative to the milky way. Most globulars are located in a halo above and below the plane of the galaxy. But there are a few open clusters and planetary nebula within the reach of a small scope. Let's start with an open cluster that I stumbled upon while beginning the search for objects in Ophiuchus. IC 4665 is a large open cluster located above Ophiuchus' left shoulder. It is easily visible in binoculars shining at combined magnitude of 6. It contains about 20 stars. Burnham lists it as sparse, but I thought it looked pretty good and is worth a look. Below 4665 on the other side of Beta Ophiuchi we find our first globular cluster NGC-6426 at low power in the 14" I could only make it out as a dim hazy patch of medium size. I had a lot of problem locating it because it was rather dim. I swept over it several times without



realizing it. At higher power it still was only a large fuzzy oval with no hint of resolution. In Burnham's it is listed at 12th magnitude. Moving quite farther down to Nu Ophiuchi there lies another dim globular. NGC-6517 shines at 12th magnitude and lies near two dim stars. In the 14 at 125x I saw 6517 as having a condensed center with no resolution. Webb's confirms my observation calling it; "faint and small with a gradual brightening towards the center." Moving back up and to the west we encounter our first Messier object M-14. Although I did not get a chance to see it, Webb's calls it; "bright and moderately condensed." It is listed at 9th magnitude, and is larger than both globulars already mentioned. Below and to the right of M-14 lies yet another dim globular, NGC-6366.

The next object is the fine globular cluster M-10. It is located in the lower middle portion of the constellation. M-10 shines at 7th magnitude and is easily visible in the findercope. I saw M-10 in my 8" as large and well resolved at 100x. A slight condensation in a bar shape was seen in the middle of the cluster. Looking at a photo of M-10 in Burnham's I really couldn't see the bar shaped condensation that I had seen at the eyepiece. Although there are a few

brighter stars at the center that could give that impression in moments of bad seeing. To the west of M-10 is the globular M-12. M-12 is also very big and bright, even in low power. It is surrounded by bright foreground stars which give it a nice appearance. I observed M-12 as more condensed than M-10 although upon checking Burnham's I found the opposite in fact to be true. I will have to check these two again more carefully. M-107 is far south of M-12 and is located between the stars Zeta and Psi Ophiuchi. After having observed M-10 and M-12 I recorded this globular as small dim and uninteresting. This probably isn't fair because it certainly was better than some of those earlier globulars I mentioned, but not by much.

On the way to our last batch of objects, lets stop briefly at the planetary nebula NGC-6309. In the 14", 6309 was a dim little football shaped fuzz at 125x. At 180x two dim little stars were visible on either side of the oval shaped nebula. These little stars give the nebula the false football shape at lower powers. Burnham's lists the object at 11.9 magnitude. Below 6309 are a whole bunch of globulars. M-9 shows some resolution at the edges at 180x. According to Webb's, the cluster can be resolved at about 400x in a 10". Above and to the left of M-9 is NGC-6356. I could see some resolution at the clusters edges at 180x. The clusters magnitude is 8.5. Below and to the left of M-9 is the globular NGC-6342. This globular appears dimmer and smaller than 6356. It is also unresolved at 180x. Near the border of Ophiuchus to the left of 51 Ophiuchi is NGC-6401 this globular is 11th magnitude. I saw it as a medium sized globular, unresolved even at high power. Although, I could see one bright star at the center of the unresolved haze. Consultation with Webb's verifies this observation. Another planetary nebula, NGC-6369 also lies down in this area of Ophiuchus. It appeared in my 14" as a medium bright planetary with a circular shape.

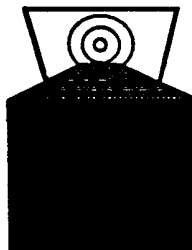
The last object I will finish with is M-19. This globular is down deep near the southern-most regions of Ophiuchus. Even though it was

low when I observed it, I put it in the league of M-10 and M-12. Its edges were somewhat dimmer than the center portion of the cluster, and it was resolved at 180x. Several other globulars are also visible down in this area, but because of their low altitude they were too low by the time I got around to them, and they slipped behind the trees unobserved. Ophiuchus also contains the 12th magnitude galaxy NGC-6384 and some other clusters and planetaries I didn't have time to get so take a look for them. And there is always Barnard's Star, the star with the fastest proper motion known, that is easily found. So this summer after looking at the Ring and M-13 stop to search through Ophiuchus.

☆☆☆☆☆☆☆☆☆☆

Telrad-

The procedure is easy and very often you'll amaze yourself at being able to point the lighted rings to an area of a known object and see it in the eyepiece on the very first try.



A set of Astro cards will make finding objects with the Telrad even easier. Once a Telrad is aligned it can be removed from the scope and does not need to be realigned when used again. The batteries will last a long time even if the Telrad is accidentally left on. This problem can be cured by placing a piece of scotch tape across the switch when it is stored.

The new Telrad features a built in dew cap so you don't have to use a soda bottle or get the old hanky out when moisture starts to settle.

A Telrad costs anywhere from around \$38 to \$48 depending on the supplier; however, in any case it is well worth the money and, more than likely, you'll never need another finder. If you want a quick foolproof method of finding objects, join the ranks of astronomers that have "seen the light" and buy a Telrad.

You'll thank yourself for doing so.



Back to Bohemia

(condensed from Discover magazine)

In 1980 a team led by Nobel Prize winning physicist Luis Alvarez and his geologist son, Walter, both at the University of California, Berkley, offered a controversial explanation for the mass extinction that occurred over 65 million years ago, which not only wiped out the dinosaurs but also about 70 percent of all known species living on Earth. They proposed that meteorite impacts threw up so much dust, that plant life and then animal life died out in a very short time. The fossil record shows older mass extinctions that some say occur roughly every 26 million years. This led to an idea that our Sun had a brown dwarf companion star that orbits in a fairly eccentric ellipse. When it is at perihelion it gravitationally effects the Oort cloud — the cloud of cometary material well beyond pluto — and a hail of comets enters the solar system increasing the chances for impacts on earth and other celestial objects.

This has lead scientists on a renewed search for terrestrial impact craters. A few have been easy to find, Meteor Crater in Arizona is a rather recent event and is out in the open. N.A.S.A. scientists are using satellite images in their search for craters that are hidden by vegetation, erosion or other geologic processes.

At a recent meeting of the American Geophysical Union, Micheal Papagiannis, an astronomer from Boston University, presented a paper entitled "The Praha Basin: A Circular Feature in Central Europe." Praha is the Czech name for Prague and the Praha Basin is what geographers call the Bohemian Plateau. Back in 1983 he saw a satellite photo of the area an inspection of a number of photos raised the possibility that the Bohemian Plateau could be a huge impact crater, 200 by 160 miles.

This was not the first time Bohemia had been linked with an impact crater. In the year 1610, Galileo wrote his famous booklet "The Starry Messenger". The current belief was that all heavenly bodies were perfectly smooth orbs moving in perfect circles, and that heaven and earth were very different places. But after looking through his telescope he reports that he has seen a moon that was "rough and uneven, covered everywhere, just like the earths surface, with huge prominences, deep vallys, and chasms."

Near the end of a passage in which he set out to prove that "the moon is not robed in a smooth and polished surface" he wrote —

"There is another thing which I must not omit, for I beheld it not without a certain wonder; this is that almost in the center of the moon there is a cavity larger than all the rest, and perfectly round in shape... As to light and shade, it offers the same apperance as would a region like Bohemia if that were enclosed on all sides by very lofty mountains arranged exactly in a circle."

Galileo had never been to Bohemia, but he had doubtless heard travelers' reports of the broad plateau around Prague and of the mountains that ring the plateau. What he could not realize was that his lunar cavity was actually a giant crater (now called Albategnius) excavated by the impact of a giant rock. It wasn't until 1803, when a shower of 2,000 meterorites rained down on the French village of L'Aigle, that scientists in general came to accept the notion, long accepted as folklore, that rocks could fall from the sky. And only in this century was it accepted that the lunar craters aren't just volcanos!

Nowadays impact craters are being used in theories explaining everything from mass extinctions to changes in the Earths magnetic field.

Is Bohemia and impact crater? "its and interesting idea" says Buck Sharpton of the Lunar and Planetary Institute, but he thinks its not much more. "There's really no substantial evidence for it being an impact basin other than that it forms a vaguely circular topographic feature. And many things on Earth do that."

To prove that a circular feature is an impact crater, one must find at least one of several diagnostic features: characteristic shock structures in the rock, for instance, or an excess of chemical elements, such as iridium, that are rare in the earths crust but abundant in meterorites. As it happens, Czech geologists have done some field work in the southern Bohemian Plateau and claim to have found an impact crater 30 miles across. Further research may yet document that the entire Bohemian Plateau is a huge impact crater. That would be exciting: there are only 120 well documented craters on Earth, and none is larger than 90 miles across. If Bohemia does turn out to be a record setter, then Galileo should deserve first credit for its discovery. ☆

Looking Ahead

The next business meeting of the North Jersey Astronomical Group will be held on July 12th, 1989 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.

There will be only one regular meeting/observing sessions this month on July 5th. Both July 19th and 26th are cancelled.

There will be one special feature public night on July 8th, 1989 at 1:00 P.M.. The feature will be "Sun and Stars".

There will be one Traditional public night on July 14th, 1989 at 8:30 P.M..

There will be a business meeting held on August 9th, 1989 at 8:00 P.M. at the Rifle Camp Park Observatory in West Paterson, New Jersey. As always business meetings are open to the public so bring a friend.

There will be four regular meeting/observing sessions on August 2nd, 16th, 23rd and 30th.

There will be a special feature public night scheduled on Wednesday, August 16th, 1989. This public night will feature an eclipse of the moon. The program will be cancelled in case of inclement weather.

There will be one traditional public night on September 8th, 1989. The program will be cancelled in case of inclement weather.

The club often observes on clear Saturday and Friday nights, check with the club answering machine to find out if any other members will be going. Also, any member can use the West Milford sitewhether or not other members will be present. Check with Glenn Burke or Dennis Koenig for instuction on getting permission.

Anyone interested in attending the Stelafane Amateur Telescope Makers' Convention in Springfield Vermont on August 4th, 5th and 6th should see Glenn Burke. A side trip to Cape Cod before the convention has been planned.



OUR CLUB PICNIC

By Ruth Koenig

On Sunday June 25 we had our annual picnic. The day started out being overcast and we were hoping it wouldn't rain. We started our fires and got things organized to eat because everyone was waiting to play in our Bocce tournament. We had lot's of food and everyone was enjoying the day. The sun came out so bright that we had to set up the dining canopy in order to make some shade.

Don Polzo started organizing teams for the Bocce games, but because of the heavy rain on the previous Friday we had to set up a court on the grass. It was a lot of fun and some new members who never played the game before did real well.

After everyone played, the winner of each team played in the play-offs. Our past champion Terry Malone was unseated by rookie Don Woodard.



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

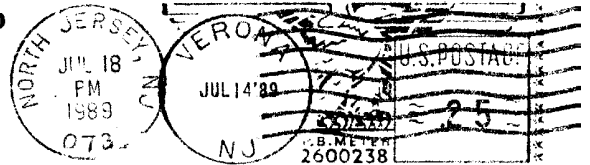
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