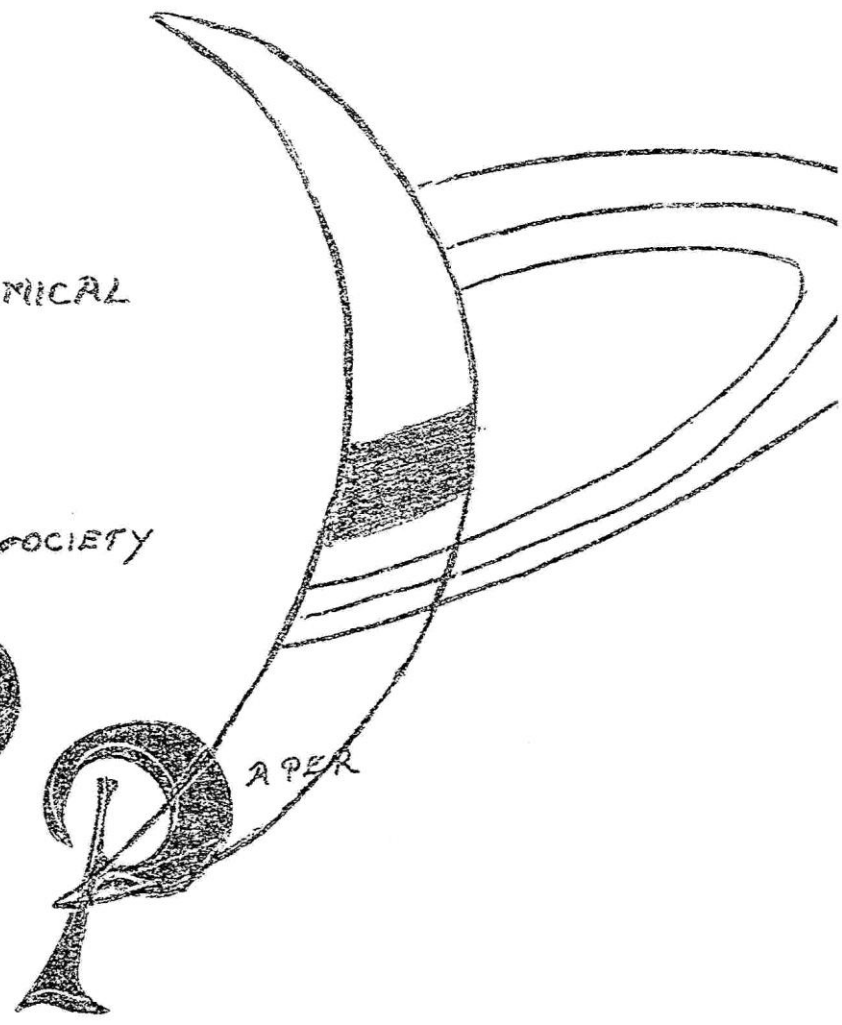


Sept. 69 3

The

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PAPER



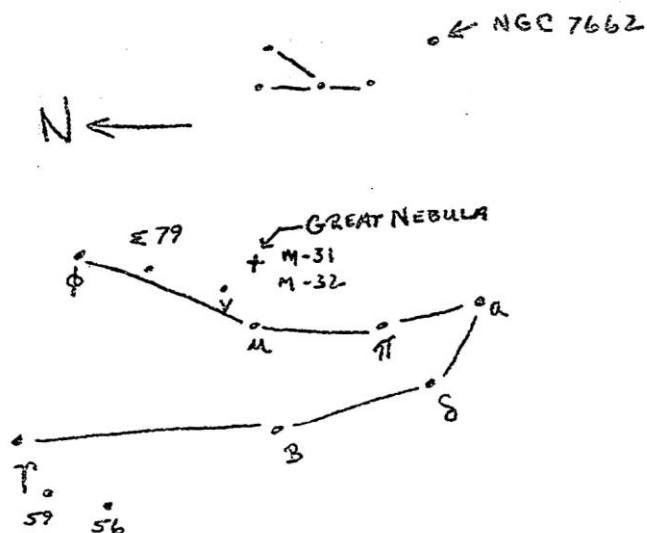
CONSTELLATION of the MONTH

Location-- The Great Square of Pegasus serves as a conspicuous landmark for locating Andromeda. An easy constellation to find, its major stars are of mag. 2, readily visible on even a hazy night. The star in the northeastern corner of the Great Square is α Andromedae. From it, and extending to the east, are two chains of stars containing four stars each (see diagram). This constellation is placed favorably for observation in the early evening hours of September, found approximately half way up the eastern horizon.

Description --For a very large number of astronomers, both amateur and professional, Andromeda contains the most beautiful astronomical object visible in mid-northern latitudes... the Great Nebula (M-31 NGC224). Though incorrectly named, as it is an external galaxy, its size and brightness make it a favorite object for photographic and visual observation. Of mag. 4, this object can be seen very easily in a dark sky with the naked eye, but it is with binoculars that one gains a sense of shape and orientation. Observed by this author on numerous occasions it appears to cover at least two fields of view (50X-6" F/8 Newtonian used). Containing a very bright nucleus region, the nebula's extremities are conspicuous in the city when the sky's transparency is above average.

M-31's companion galaxies, M-32 and NGC 205, are also very easy to locate in a low power field; M-32 can be seen with M-31. NGC 205 is slightly farther away, but a very large field will include it with the others.

Somewhat northwest of Andromedae is located a small Y-shaped asterism of stars known as "Frederick's Glory". Composed of stars of 4th and 5th mag., it is not extremely conspicuous, yet near it lies a beautiful planetary nebula, NGC 7662. About 30" of arc in diameter and of



approximately mag. 5.5, it is visible in a dark sky through a finder of 1" lens aperture. At 50x in a 6" Newtonian F/8 it is very easy to see, somewhat fuzzy and appears to have a donut-like shape with a dark central region, similar to the Ring Nebula. T. W. Webb, using a 9.33" silvered mirror describes NGC 7662 as "... a bluish disk with woolly border, and suspicion of dark center." Although the object is located on the constellation diagrams it is recommended that one use an accurate atlas when searching for this object, such as Norton's or the Skalnate Pleso Atlas.

Taken in part from Olcott's Field Book of the Skies.

Double Stars

<u>Double Star</u>	<u>Mag.</u>	<u>Sep.</u>
γ	2.3-8.1	10 sec.
μ	4.0-11.5	34 sec.
ϵ 79	6.0-7.0	8 sec.

Remarks

Yellow or Orange-Green; beautiful contrast; difficult test for a 3-inch. A fine pair.

MERCURY

Mercury reaches inferior conjunction on September 29th.

VENUS

Venus rises about 2½ hours ahead of the sun all month, shining at magnitude -3.4. By the 15th, the planet's waxing gibbous disk shrinks in apparent diameter to 12.5 seconds of arc (80-percent illuminated). On the morning of the 22nd, use binoculars to find Regulus about half a degree south of the planet, which will be some 100 times brighter than the star.

EARTH

Earth reaches heliocentric longitude 0° at 5:07 UT on the 23rd, the time of the equinox. Autumn begins astronomically in the Northern Hemisphere, spring in the southern.

THE MOON

A lunar eclipse of secondary importance takes place on September 25th, when the moon moves through the outer or penumbral shadow of the earth. Some dimming of the full moon will be discerned by observers in the Eastern Hemisphere and eastern South America. Mid-eclipse occurs at 20:10 UT, with about 93 percent of the moon's diameter inside the penumbra.

MARS

Mars finally moves away from Antares' vicinity, passing from Ophiuchus into Sagittarius. By month's end it will be very close to the orange star Lambda Sagittarii at the top of the Teapot. Due south at sunset, the red planet may be seen in the southwestern sky until well past midnight. Mars is of magnitude -0.1, with a disk diameter of 10" .5.

JUPITER

Jupiter sets at dusk, too close to the sun to be seen easily all month.

SATURN

Saturn, about half a magnitude fainter than Mars, is in Aries and rises about two hours after sunset. At midmonth, the planet shows a slightly flattened disk 17".5 in polar diameter, with the rings 44" across. The moon passes well to the north of Saturn on the 28th.

URANUS

Uranus moves into the morning sky on September 27th, and is too close to the sun to be seen this month.

NEPTUNE

Neptune remains an 8th-magnitude object in Libra, rather low in the southwest during early evening hours.

NIGHT of MAJESTY

Nature displays her beauty and majesty in many ways. A physicist may find it in his search for the fundamental laws of nature. A biologist may marvel at the process of evolution. To the astronomer, though, the heavens hold the greatest treasures of nature's beauty. Here occur events on an incredible scale, humbling not only man's accomplishments, but man himself...

...We* arrived at the field near Stoney Creek Park around 10:00 P.M. No one said very much, there was a farmhouse about a quarter of a mile away. There was another reason, though. One look at the sky!

Quickly and silently we unloaded the lawn chairs and sleeping bags. No telescopes tonight. This was August 11th, the night of the Perseids.

There was no noise. The night insects had long since stopped their assorted chirps and clicks. No cars, no airplanes. Just four individuals with a universe above them.

Huddled in blankets of warmth, our minds were free to concentrate on the events above. It was still before midnight, and, as is the case with meteor showers, we saw only a small number of these objects.

Then the aurora occurred. Like threads of green gold spun from the stillness of the northern sky, it brightened, expanded, and changed shape and location. A meteor appeared to the west of it. Passing away rapidly, it seemed to compete unsuccessfully for our attention. The aurora faded, shrank and was gone.

As the hours passed, meteors appeared in greater numbers. At times up to four would appear simultaneously, each

disappearing in a trail of light. And then...bright as a full moon it came, announcing its presence in veils of light. From Perseus through Cygnus, it remained as a single, incredible orb. Suddenly it fissioned, wheeling through the sky, still incredibly bright. Bright, dim- and then gone. Their trails faded quickly, the sky appeared unchanged, indifferent toward their transient presence. They left their mark, though. We had seen, we had awed, and we were humbled.

3:00 A.M. came quickly. The repacking began. And then, like a lost voice on an empty prairie, an automobile engine came alive. Now in gear, it swept the landscape with its lights as it turned to leave this desolate land. In minutes it was gone. The dust it had flung from the silent earth settled slowly back.

*METEOR GROUP- (author) Gene Francis, Gary Wither, Martin Butley, Chris Edsall of the Detroit Astronomical Society

SALUTE of the MONTH

The W.A.S.P. salutes MARTIN BUTLEY who has left for the University of Michigan. There is not enough we can say about this individual. Marty was one of the work horses of the club. He was sharp and intelligent and knew how to direct a conversation to the members and make a new member feel at ease among new faces. He helped line up star parties, movies, speakers, etc.

I wish Marty the best of luck at U. of M. and I'm sure the rest of the club wishes the same.

F.M.



INTRODUCTION TO ASTROPHOTOGRAPHY

By

Larry F. Kalinowski

Part I – FILM AND A.S.A. RATINGS

How many amateurs do you know that have built or bought a telescope but never spend much time using it? Probably too many. Chances are the telescope is sitting

Somewhere in a storeroom or a garage waiting for an inactive owner to put it to use. It is hoped that this will spur at least one of those owners into the fascinating world of astronomy and photography. The active amateurs are welcome to try a hand at it too.

First of all, let me answer a question that has been kicked around for quite some time. Whenever I find myself confronted by young amateurs who are tempted to try photographing the things they see in their telescope, their lack of income prompts them to ask ...what can I do with my Instamatic? Well, the truth is, not as much as a fully adjustable camera can do, but believe it or not, the moon was designed just for that piece of equipment. Don't think so? Then give it a try. The next time you're looking at the moon and it's between first quarter and last, drop a roll of black and film in that little camera, focus the eyepiece until it is sharp. hold the camera to the eye-piece and snap away. If you're using low power and you've got a steady hand, you'll be surprised at the results. One thing though, you've got to use a flash cube on the camera. Kodak designed their little wonder to change its shutter speed when a flashcube is in place. The new shutter speed is just about right for the moon. Another thing, the A.S.A. rating of the color film for that camera, is a little too low so don't use it ... which brings us to the main topic of this article.

One of the most basic pieces of information the budding astronomer must know is how to tell the difference between

all the film that is available to the camera user. The average snap-shooter will go into a drugstore and buy film just by asking for black and white or color in some certain size. Not so for the astrophotographer. he will ask for film by emulsion name (Tri-X, etc.) because he knows exactly what the film is capable of taking a picture of.

Any films ability to record an image can be determined by its A.S.A. (American Standards Association) rating. All film has such a rating and it can usually be found written on a little slip of paper packed inside of the film box. Ratings vary from near zero for the extremely "slow" film to about ten thousand for the ultra "fast" film. Kodak's Instamatic uses color rated at sixty-four A.S.A. and black and white at one hundred and twenty-five.

Suppose we have two rolls of film, one rated fifty A.S.A. and the other, two-hundred. What will that tell us? For one thing it tells us the faster film will need only one-quarter the light the slower film will need to get the same picture. The slow film is only one quarter as fast. Then you get into film that has very high ratings, such as Kodak's Tri-X (400 A.S.A.) it's easy to see why it becomes possible to take pictures in very low light. Polaroid takes very good advantage of their film (3000 A.S.A.) because its rating makes it possible to get pictures in almost any lighting situation, without flash.

Sounds great, that high speed film, doesn't it? Well all is not roses as the saying goes. Fast film has one great disadvantage and, that is the second thing that A.S.A. ratings can tell us. That second thing is image quality. Fast films can only be made fast by using larger pieces of silver. Unfortunately, these large grains of silver will show up very easily when a

print is made. Especially when an enlargement is made. As a result, if you want a sharp eight by ten picture, stay away from very fast film unless it becomes the only answer to getting your picture. There are some exceptions to the rule, such as Polaroid film, but the exceptions are few.

The next question that comes to your mind might be...How do I know how to set my camera when I use those fast films? Well, the truth is, the true astro camera doesn't have to have any kind of settings for most of the pictures it is capable of taking...only the astro has this distinction. Why? We'll talk about that in our next article when we discuss "F" stops and shutter speeds.

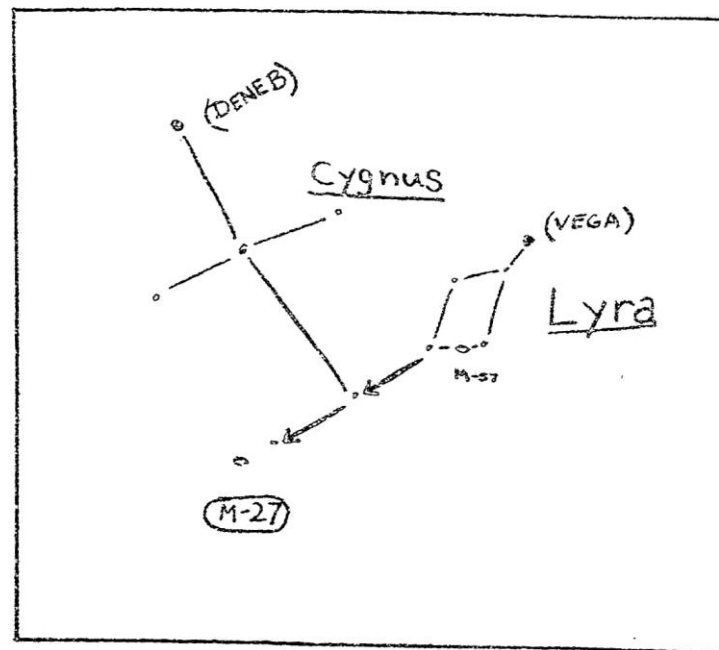
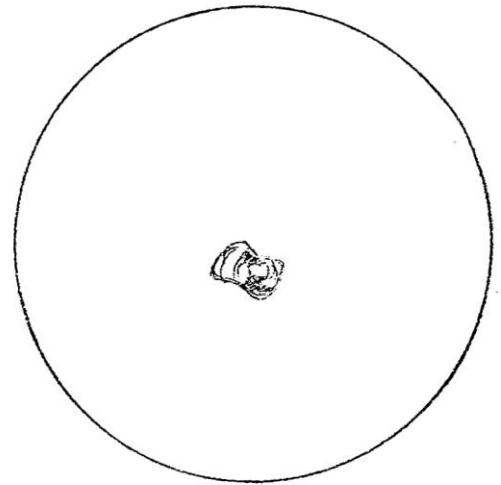
OBSERVATIONAL ASTRONOMY

M-27

For the past two years I have observed M-27, the Dumbbell Nebula. M-27 (NGC 6853) is a planetary nebula of 8th mag. Its R.A. is 19h 57m and declination is 22 35'. It is large and quite bright. On some nights M-27 can be as simple to find as locating the moon in your scope, but at other times it can be quite elusive as many other sky objects seem to be. M-27 is located at the 4th corner of the quadrilateral marked out by Epsilon, Gamma, and Beta Cygni.

M-27 shows as a wispy cloud with thick and shallow patches. It has an hour glass shape and can be one of the loveliest objects on a chilly autumn night.

I have found it easier to locate by drawing a line from stars shown on the chart which I have drawn. The end star in Vega to Albiro, to the first fainter star next in line. M-27 is just a little southeast of the star. I used a 4½" reflector at 45x to find this object.



Frank McCullough