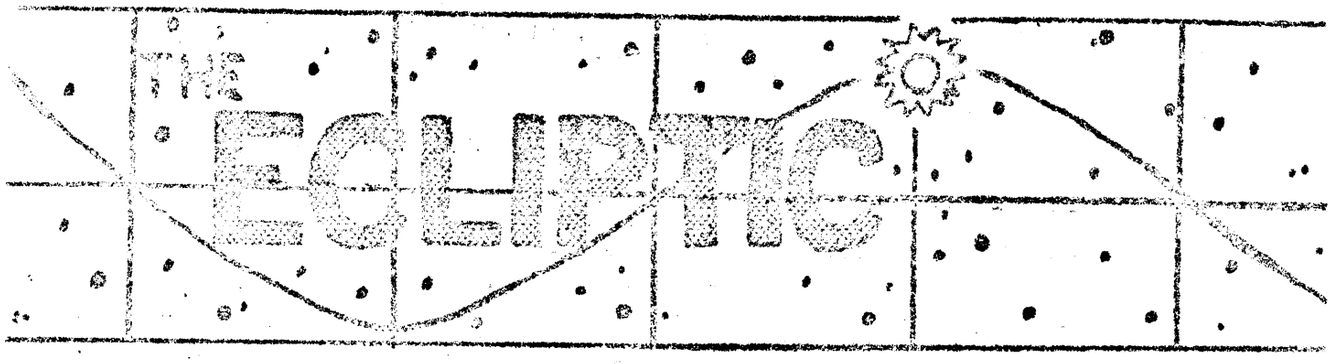

JOURNAL OF THE LACKAWANNA ASTRONOMICAL SOCIETY
KJC Observatory, Fleetville, Pa. Everhart Museum, Scranton, Pa.

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PRESIDENT'S REPORT

When I ran for the presidency of the LAS, it was my intention to provide better and more informative programs for our meetings, to make the LAS better-known to the public by upgrading our publicity, as well as to improve our relationship and correspondence within the MERAL region. With the help and hard work of the Executive Board and the regular members, progress has been made in all of these directions.

But the main reason that I sought the office was to erect an observatory. It is my hope that the LAS will soon, through the efforts, determination, and skills of its active members, house the society's 12½" reflector in a permanent building.

Already there have been numerous debates and discussions as to the final appearance and design of the building until the build-committee now has presented to us a final plan. This same committee has drawn up and mailed out letters to large corporations soliciting donations of material or money to help us achieve our goal

I myself have been in contact with officials of Keystone Junior College, concerning the acquisition of some land adjacent to their own observatory buildings to be used for our construction. These talks have been proceeding well. In the near future I will present to the Executive Board and the membership, the draft of an agreement. After discussion and vote by the membership, if both parties accept the agreement, construction will begin promptly.

My expectations are that the spirit displayed in the construction of the 12½" telescope will exhibit itself also in the construction of our observatory building. I wish to thank all members for their support and suggestions

John D Sabia

THE TRIP TO THE HAYDEN PLANETARIUM

The LAS sponsered bus trip on May 18 was a sell-out with 47 people, about evenly divided between members and friends spending an enjoyable day in New York. Walter Bullett, trip committee chairperson, put in a lot of work in planning the event, as was evidenced by the printed itinerary and map, and the smooth way things went. We lost no one and even made good time on the return trip. Walt's rating almost slipped a little when he and his wife were the last on the bus in the morning. However, since he arrived at 8:30 sharp, which was when we were scheduled to be there, the referees declared it a fair play.

The planetarium show "Between the Planets" was good; it's always a pleasure to sit under a spacious sky with all the stars the ancients saw and relax. Once the hour-long show was over, the rest of the time available was spent by all exhausting themselves by trying to see the whole of the American Museum of Natural History

in one day. Myself, I'm looking forward to the next trip so I can catch those minerals, dinosaur bones, and native art exhibits that eluded me this time, and I'm sure that most of the others on the trip feel the same way.

J. M. Pluciennik

LUNAR ECLIPSE OF MAY 24-25

While this event was, to say the least, disappointing, the turnout at Fleetville was quite good considering the weather conditions. Upwards of 50 people were there at one time or another, with about a dozen telescopes, including the 9½" and 12½", open for business. (Not to mention the video-tape recorder borrowed from the Scranton School District.) While not much was seen, some photos of the partial phases were taken, and one, John Sabia's, was printed on page one of the "Scranton Tribune."

For those pessimistic souls who slept through it all, this report by Mr. Edward Sidorski should provide a typical experience and give them a sample of how all the optimists felt that night.

"

"May 24 9:45 p.m. First sighted moon
10:30 p.m. Moon in full view, some slight haziness. Clouds in the west. Hope they break up before eclipse starts. No stars visible.
10:53 p.m. Clouds cover top half of moon.
10:55 p.m. Moon totally covered by clouds.
10:59 p.m. Clouds still cover the moon.
11:06 p.m. Glimpsed top one third of moon through hole in clouds.
11:19 p.m. Moon out now. No sign of eclipse.
11:33 p.m. I fail to see any sign of an eclipse, using my Binolux 7 x 50 binoculars, a home-built 3" reflector, a 5" Richest field reflector, and a Tasco Model 5vTe 2.4" refractor. At this point moon should have been well into the penumbra. My wife Ronnie called out that she heard a news announcer say that the eclipse wouldn't start until 11:49. Obviously he meant the moon would encounter the umbra at this time.
11:51 p.m. East side of moon seems to be darkening (probably well into penumbra by this time.) A star appears now southwest of the moon about 3 moon radii. Moon clear but surrounded by clouds, another star appears to the northeast of moon about 4 radii
May 25 12:01 a.m. Moon one third covered by penumbra. Also clouds beginning to be troublesome again.
12:07 Clouds cleared enough for me to see umbra at about 1/8 into the moon. It definitely showed a curved shadow indicating it was indeed an eclipse and not a cloud.
12:15 a.m. Umbra covering about ½ of moon, but clouds again making observing difficult. Penumbra seemed to darken only eastern limb to about 1/3 of the moon's radius, western limb never seemed to darken much at all. Umbra was very dark. Could not discern any details in shadow.
12:18 a.m. Moon totally covered by clouds.
1:00 a.m. Stars out, but moon still clouded out. At this time I ended my observations as I could not see any stars from the zenith to the horizon to the south and concluded that I wouldn't see the rest of the eclipse anyway."

J. M. Pluciennik

THE AMATEUR ASTRONOMER'S TELESCOPE

There come a time when some amateur astronomers decide that they are ready to join the ranks of the serious amateur, (sometimes called the lunatic fringe) and have decided to pursue one specific class of celestial objects within that great void called the "Heavens" which circles above our heads.

The following is a discussion of various types of telescopes and their applications to different sky objects. It can be said that there is a telescope for virtually every kind of observing. Under each class of celestial object is listed a specific instrument and the reasons given for its selection.

DEEP SKY OBJECTS

Here, there is no doubt that the reflector wins, due to its large aperture and light-gathering power used to pick up these dim galaxies, star clusters and diffuse nebulae, including planetaries.

The Newtonian reflector is superior to most other designs due to its inexpensive contruction and short focal length. Optimum aperture for the amateur ranges in size from 10" to about 16", in focal lengths of F 5 or less.

To find the light gathering power of a telescope, the following formula applies: Light = 9 x Diameter squared (10" telescope being 900).

The lowest power eyepiece that can be used is one which gives 3.5 power per inch of objective diameter. This is due to the fact that a larger light cone cannot be accepted by the eye's pupil, it's being one third of an inch at maximum. Of course, when using this lowest power, the sky background appears lighter and impairs contrast so that sometimes a power of 5 or 6 per inch is better for diffuse extended nebulae or galaxies.

STAR FIELDS AND THE MILKY WAY

For this kind of observing, a Rich Field Telescope giving a large field of view is necessary to see the beauty of the Milky Way, especially during the summer.

The 5" diameter F5 short focus lens sold by Jaeger's & Co., makes an excellent telescope for viewing our galaxy. Used with a large 32 mm fl Surplus Erfle eyepiece, it gives close to a three degree field, being exceeded in area only by binoculars. Due to its sufficient light grasp, this telescope makes a fine all around instrument and aids in finding objects due to the large field. It can also be used as a comet seeker, although a higher power eyepiece had best be utilized to increase contrast and darken the sky background.

Binoculars are excellent instruments to use on the Milky Way, although the minimum size should be 7 x 50mm. The ideal size in this category are the German 10 x 80mm binoculars. They have a field of 6° and offer views of the heavens unmatched by any other instruments. These are rare and when found are very expensive, however.

PLANETS

In observing the planets, consistent resolving power is the most desirable factory to consider in choosing a telescope. A refractor of 4 to 6" in diameter is to be preferred. One reason being it is less affected by bad seeing conditions, and convection air currents. Refractors also give better definition and contrast because of increased focal lengths. Also, there aren't any secondary mirrors or holders to diffract images, the whole field getting equal illumination.

The Cassegrain reflector also is frequently used for planetary study, but its advantages lie with only the larger sizes of 12½" and over. The Cassegrain gives large image scale due to the long focal lengths, but the contrast is reduced because of the light beam folding back on itself.

Bill Mecca

THE CURRENT VIEW OF THE PLANETS
PART I

MERCURY
Diameter - 3,007 miles (4,840 km)
A.U. from the sun - 0.39
Sideral Period - 87.969 days
Rotation Period - 59.8 days

From the data collected by the spacecraft Mariner 10 a whole new picture of the planet Mercury has been conceived and suppositions supported or discarded. Photographs show the surface to be very similar to our own moon, as suspected, with craters, scarps, ridges, circular basins and relatively smooth plains. Since Mercury has no atmosphere at all, heavy bombardment of meteors caused many impact craters to show clearly on the rugged surface. Due to the higher force of gravity, the impact craters are shallower and the ejected material is not thrown as far as on the moon.

A new feature not found on the moon are large irregular shaped scarps between 3,000 to 8,000 ft., in height and traveling for 100 to 400 miles cutting across craters and plains. These are presumed to be faults caused by the compression of the outer silicate surface in the early history of the planet. One NASA official compared this to the wrinkles of a dried apple.

Underneath the 600 mile deep silicate base surface is a rather large interior core of iron. This iron based core is the factor which is responsible for the magnetic field which extends 600 miles from the planet at its maximum. For a small planet that rotates very slowly the magnetic field discovered is larger than predicted. As most amateur astronomers know, Mercury can be a very difficult planet to observe in the low horizon sky. The planet's phases can be seen to change within a month's time, with the greatest problem being clouds near the earth's horizon. Mercury never reaches more than 22° in elongation from the sun for an observer with a latitude of plus 40°. No surface markings can be viewed with amateur instruments so the observer must be content with the rapid changing phases and decreasing magnitude.

REFERENCES: SCIENCE NEWS, March 22, 1975, Vol. 107, No. 12.
SCIENCE NEWS, February 22, 1975, Vol. 107, No. 8.
SKY & TELESCOPE, June 1974, Vol. 47, No. 6.
SKY & TELESCOPE, November 1974, Vol. 48, No. 8.
ASTRONOMY, December 1974, Vol. 2, No. 12.

VENUS
Diameter - 7,705 miles (12,400 km.)
A. U. from Sun - 0.72
Sideral Period - 224.643 days
Rotation Period - 243 days

Venus, the brightest planet, is still a great mystery as far as the exact nature of its surface concerned. From information obtained from radar observation, astronomers were able to learn that Venus rotates in an east to west direction which is opposite from the rest of the planets. Even more mysterious is the unusual rotation period of the planet which is longer than its orbital period. The planet is locked by gravity in a 2/3 resonance orbit with the sun. Information from Mariner 2 and Verna 5 and Verna 7 has provided astronomers with a value of 800°F on the surface.

From observations obtained by Mariner 10 in the ultraviolet light reveal stratification of the atmosphere in the North and South Temperate belts and Polar latitudes resembling long delicate streaks of cirrus clouds. Tropical regions are darker containing round mottlings that suggest convection cells - rising and falling areas. Composed mostly of carbon dioxide with traces of hydrogen, helium, and oxygen, they are dispersed in the three or four layers of the cloudy atmosphere where the winds reach speeds of 200 miles per hour in the upper layers and very little disturbance in the lower layers.

Also detected was a very small, almost non-existent, magnetic field about 1/20 that of the earth.

In the night sky Venus is the brightest star to the naked eye during its crescent phase. The time for Venus to complete a change in phase illumination is considerably longer than that of Mercury by about 6 months. The planet can be viewed with all amateur instruments showing a large crescent to a smaller gibbous phase. From a latitude of plus 40°, the maximum elongation Venus can obtain is 60°.

REFERENCES: SKY & TELESCOPE, April 1974, Vol. 47, No. 4.
ASTRONOMY, April 1974, Vol. 2, No. 4.
"CELESTIAL OBJECTS FROR COMMON TELESCOPES", by the Rev. T. W. Webb, Dover Publications, Inc., 1962.

John D. Sabia

MR. KNOW-IT-ALL
(or the Answer Man)

Q. How much brighter is a star of the 1st magnitude than one of the 6th magnitude?

A. An average 1st magnitude star is 100 times brighter than an average 6th magnitude star. The difference between each step of magnitude is a factor of 2.512.

Q. How can one tell the difference in light gathering power of two telescopes?

A. The difference can easily be determined by the following: $(\frac{A}{B})^2$ Where A = large telescope diameter, B = small telescope diameter. Using a 4" and 2.4" telescope $(\frac{4}{2.4})^2$ equals 2.8.

The 4" telescope gathers 2.8 times as much light as the 2.4".

Q. What is the largest refractor in the world?

A. The largest refracting telescope in the world is at the Yerkes Observatory near Chicago, Illinois. The lens is 40" in diameter. It weighs 500 lbs and was ground and polished by Alvan Clark and Sons, who also ground the KJC refractor's lens. The steel tube is 62 ft. long and weighs 20 tons. It was completed in 1895 at a cost of $349,000.00. The elements in the objective are separated by about 8". It gathers more than 25,000 times as much light as the human eye. Its resolving power enables it to show craters on the moon as small as 600 ft. It is a superb instrument.

Send all queries to : Don Murray
514 Walsh Street
Scranton, Pa. 18505
He's still waiting to be stumped!

UPCOMING EVENTS

June	1	Neptune in Opposition
	16	Mars 0.5° S. of Jupiter
	18	Venus at greatest elongation E. (45°)
		Spica 1° N. of Moon. Occ'n.
	21	Solstice. Summer Begins
		Neptune 0.8° N. of Moon. Occ'n.
Jul	1	Pallas 1° N. of Moon. Occ'n.
	4	Mercury greatest elongation W. (22°)
	5	Earth at aphelion
	7.	Mercury 0.5° S. of Moon. Occ'n.
	15	Saturn in conjunction with Sun
		Spica 1° N. of Moon. Occ'n.
	19	Neptune 0.7° N. of Moon. Occ'n.
		Appulse of Ceres and SAO 93633
	21	Venus greatest brilliancy
	29	Aquarid Meteors

Aug	1	Mercury in superior conjunction
	9	Venus 0.7° S. of Moon. Occ'n.
	11	Spica 0.7° N. of Moon. Occ'n.
	12	Perseid Meteors
	15	Neptune 0.5° N. of Moon. Occ'n.
	27	Venus in inferior conjunction
	30	Mars 0.1° N. of Moon. Occ'n.
Sept	8	Spica 0.5° N. of Moon. Occ'n.
	11	Neptune 0.2° N. of Moon. Occ'n.
	13	Applse of Juno and SA0117225
		Mercury greatest elongation E. (27°) unfavorable
	18	Vesta at opposition
	20	Full Moon. Harvest Moon
		Pallas at opposition
	23	Equinox. Autumn begins

EDITOR'S NOTE

I wish to thank all the contributors of articles. Keep up the good work. Articles for the September issue should be in by August 5. Send articles to:

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