



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

Volume #2 No. 3

AUTUMNAL EQUINOX ISSUE

September 1974

JOINT MEETING SCHEDULED FOR OCTOBER 8

The annual joint meeting of the LAS and the Binghamton Astronomical Society will be held at the BAS's new observatory on Tuesday, October 8 at 7:30 p.m. The regularly scheduled October 1st meeting at the Keystone Jr. College Observatory will not be held.

On October 8, LAS members are asked to assemble at the Keystone Junior College Observatory by 6:00 p.m. in order to form carpools. The caravan will proceed from there, led by Bill Speare.

If you have any photos or equipment you'd like to show at this joint meeting, please bring them along. We hope to see you all there.

J. M. Pluciennik

I DIDN'T KNOW THAT!

This article is written about astronomy, the astronomy practiced by the ancient Egyptians who lived, worked, and loved about 5,000 years ago, but not necessarily in that order. Bearing in mind as you read on, there were no telescopes and sidereal time was not available. Their observations were made with the naked eye, which has a maximum resolving power of one minute of arc under ideal conditions, with five minutes of arc considered good. They didn't do so well with the calendar when New Years Day finally fell on the Fourth of July, but their work with the cardinal points is, in my opinion, outstanding.

The Egyptians worshiped a pantheon of gods, but the two greatest were Re, god of the sun, and Osiris, god of death or the ruler over the dead. The Pharaohs who ruled Egypt would not accept death, but believed that they would live forever. In order to join Osiris and enjoy the pleasures of his world, the body must be preserved, mummified, and the wealth of the ruler must accompany him to the grave. Also, there must be a body. Earlier, the body was sewn in skins or reeds and buried in the ground. The wind eroded the sand, exposing the body to jackals and buzzards, but the grave robbers were there first. In order to circumvent this condition a tomb like structure, called a mastaba, made of mud and bricks was built. However, this type of construction did not thwart the grave robbers.

Finally during the third dynasty, Pharaoh Djoser or Zoser commissioned his architect, named Imhotep, to design a structure that would prove adequate enough to foil the grave robbers. Imhotep designed the first stepped up pyramid and it was completed during Djoser's reign. He also developed a method of cutting and facing large blocks of stone. The pyramid still stands, but it failed in its purpose, namely that of preventing pilfering. This pyramid was oriented to the north as were all subsequent pyramids.

During the fifth dynasty, Pharaoh Cheops or Khufu reigned. (The Greeks spelled his name "Hwfu". How they ever got Khufu out of that I'll never know.) He built the Great Pyramid of Gizeh about 3050 B.C. It has been called one of the great wonders of the world, and perhaps rightly so for it is a magnificent structure and it has been visited by millions of tourists. It has withstood the weathering of time for over five millenniums, but it was built for the wrong reason. Grave robbers stole the valuable articles interred with the body and the body is missing, making it difficult for Cheops to join Osiris.

Cheops chose as a site for his tomb a limestone plateau on the western edge of the desert about five miles to the west of the Nile River and ten miles north of Memphis. The sand was cleared away exposing the rock strata. The length of each side of the pyramid is 751 feet and originally it was 481.4 feet high. The top was removed at a subsequent period leaving it about 450 feet high.

Most Egyptologists are of the opinion that a priest was selected to determine the north line. The Sumerians were traditionally well schooled in astronomy of the day and the Egyptians were not, so it is believed that the Sumerians passed on some of their knowledge to the Egyptian priests. Any corner of the pyramid could have been used in making the observation, but we are told that the southwest corner of the proposed pyramid was used. A semicircle with a 10 foot radius was drawn from the corner and a wall was constructed along this radius 6 feet high, perfectly level. Next a plumb line was suspended to the exact corner, somewhat higher than the observer's eye. He then sighted from this position and over the top of the wall to a star just rising in the east. A mark was then made on the wall on line with the corner and the star. It would be 10' from the corner. This procedure was repeated as the same star set in the west. The circle was then bisected between the two marks on the wall, made on the east and west sightings. A line stretched between this bisected circle and the southwest corner is the north line.

The Egyptian Survey Service made a geodetic survey of the pyramid in 1925 and found that the celestial north was off 2' 30" along the westerly side of the pyramid. The elevation checked very well with the average error on the corners less than 4". The levelling medium used by the Egyptians was water. The square was the only other means they had of accurately laying out the rest of the structure.

Archeologists have determined that Vega in the constellation Lyra, mag. 0.04 was probably used as the sighting star. As a check such stars as Capella in Auriga, mag. 0.05; Deneb in Cygnus, mag. 1.26; and Mirfak in Perseus, mag. 1.90, could have been used. Polaris was not a pole star during this period. The pole star was Tuban in Draco.

The calculated internal angles of the pyramid were very close to right angles. The southwest corner was off only 33". The largest error was in the southeast corner - 3' 33".

Will Cuppy in his book "The Decline and Fall of Practically Everyone" wrote, "Building a pyramid was easy, aside from the lifting, you just pile up stones in receding layers, placing one layer carefully over another. Pretty soon you have a pyramid. You can't help it and once it's up it stays there, it's not in the nature of a pyramid to fall down."

Merton Ruth

COMET BRADFIELD PHOTOS PUBLISHED IN ASTROGRAPH

Comet Bradfield 1974B which appeared almost at the exact time Kohoutek was disappearing, became the LAS's and Keystone's big chance to become well known. Because not very many observatories as well as private citizens knew about the new comet, the chances of having photographs, if obtainable, published became greater.

So with a battery of instruments ranging from a 50 mm f 1.4 lens, tripod mounted, to the 8" f 1.5 Schmidt camera, the four amateurs John Sabia, James Filipski, Jerry Zawislak and Ken Mason obtained close to 100 photographs. The best four were sent to "Astronomy", "Sky and Telescope" and "The Astrograph." Three of the four were published by "The Astrograph," a magazine made by amateurs and containing amateurs' work. The pictures were those taken with the f 4.2 system on the 9" Alvan Clark, the 8" f 1.5 Schmidt camera and a 400 mm telephoto driven by the clock drive.

Although the moon was full, members of the LAS were able to view the comet at the April meeting. The members used the 9" refractor and 7 x 35 binoculars to view the stranger in the constellation of Aries.

Jerry Zawislak

FOR SALE BY
LAS MEMBERS

20 year old "Cave" mirror, 10" diameter, 80" focal length, F 8, last aluminized in 1973; 1 diagonal mirror 1.183; \$90.00 for both
Contact 961-2199

8" "Edmund" reflector; 75 lb. equatorial mount; eyepieces - 4 orthoscopic; 1 Branden; 2 Kellner; 1 Erfle; 1 Barlow lens; 1 terrestrial image erector; 3 Vernonscope Filters #58, #21, #38A; \$300.00 for all;
Contact 343-4803

COMING ATTRACTIONS IN THE SKY

September 15	Jupiter at opposition
September 23	Equinox. Autumn Begins
October 1	Mercury at greatest elongation, E. (26°) unfavorable
October 21	Orionid meteors
November 4	Taurid meteors
November 10	Mercury greatest elongation, W. (19°)
November 17	Leonid meteors
November 29	Eclipse of Moon visible in extreme NW
December 13	Partial eclipse of Sun visible in E U.S.A.
December 14	Geminid meteors
December 22	Solstice. Winter begins

HAS SIDNEY OMARR BEEN RIGHT ALL ALONG?

An article in the September 16, 1974 "Newsweek" opens up several interesting trains of thought. The article itself discusses the book "The Jupiter Effect" by two reputable astronomers, John Gribbin and Stephen Plagemann. They are concerned with the alignment of the planets that will occur in 1982. This arrangement, which occurs like clockwork every 179 years, will place all nine planets on the same side of the sun.

Gribbin and Plagemann claim that this planetary line-up may cause a great increase in solar magnetic activity at a time when the sun should be at the peak of its sunspot cycle. This could intensify sunspot and solar flare activity to the point where the earth would be greatly affected.

While disturbed radio communications, spectacular aurora displays and disrupted weather patterns (caused by altered upper atmosphere wind patterns) could result, the astronomers are most concerned about the possibility of changes in the frictional effect between the atmosphere and the solid earth. This could suddenly slow the earth's rotation, causing a change great enough to trigger many large and small earthquakes in seismically sensitive areas such as southern California.

The end of the world tone of these predictions is reminiscent of early 1974 when predictions of higher than usual high tides got widespread radio and newspaper coverage. Or, for those whose memory goes back a bit further, remember the reaction to the solar eclipse of February 1962? Astrologers in India had predicted dire results because not only would the sun and moon be aligned with the earth, but Mercury, Venus, Saturn, Jupiter and Mars were all in conjunction with the sun. Thousands of people in Asia spent the day in fasting and prayer. After it all, the only big damage was to some India astrologers' reputations.

Imagine what Comet Kohoutek's pressagent could do with all this controversial stuff! Actually all of this is a description of a possible chain of events and not a certainty. Like everything else, becoming a casualty in this possible series of events has its bad points (you'd miss Halley's Comet in 1985) and good points (you'd miss 1984 and Big Brother, assuming you don't believe he's already been here and gone.)

Science is by its nature filled with speculations to be tested by observation and experimentation. Problems arise only when an hypothesis is seized upon by the uninformed and presented as fact. Hopefully the more spectacular predictions of "the Jupiter effect" won't be blown out of proportion.

J. M. Pluciennik

