

KHWARIZMI
SCIENCE SOCIETY

Daswaan Falakyati Mela

(10th Astro-fest)

A Night of Fabulous Questions

Report by Ali Khan

Time: Evening of Saturday October 8th 2011

Place: The Learning School, Kot Radha Kishan-Changa Manga Road, District Kasur, 50-60 km South of Lahore and 15 km South of Raiwind.

Occasion: A night with the Moon and Jupiter by Khwarizmi Science Society (KSS 10th Astrofest or Falakiati Mela) and Lahore Astronomical Society LAST joint venture on World Space Week.

Equipment:

- Multimedia screen of KSS
- Celestron C14 on Titan Losmandy mount with color CCD camera of Umair Asim.
- Meade 114mm f/8 Newtonian on Alt Azi mount of KSS.
- Orion 5" Muskutov on Equatorial mount with tracking of Maroof Mian.
- Two Galileo scopes of KSS (one of which was gifted to the school principal by KSS).
- Sound system of the school.

Visitors: Dr. Sabieh Anwar, Umair Asim, Maroof Mian, Zubari, Mannan, Ali Khan and another half a dozen KSS members. Dr. Saadat Anwar Siddiqi couldn't come as had been busy organizing the marriage ceremony of his son.

Audience: School faculty, staff, students (boys and girls ranging from age 4 till 15-16, majority were under 12)

We were concerned about the sudden appearance of clouds in morning time but Mr. Umair Asim assured that they would vanish by sunset and they did.

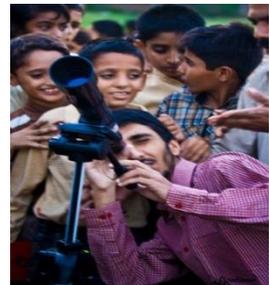
When we reach the school, few faculty members were outside and received us with smiles and guided us. The school ground was huge and building was very well designed and its assembly area was raised from the ground by about two feet while classroom floors were a further 2-3 feet higher still. Assembly area had a stage and the entire area was carpeted. Some anti-mosquito spray was being done in the building. Stage had a multimedia screen and there was arrangement for music. A large LED model of solar system was hanging on school front.



KSS's Galileo scope, was too hard to use without tripod and their 114 mm Newtonian. Soon Mr. Umair Asim arrived too. We set about adjusting the Newt. A teacher asked with excitement, "Can we see stars and milky way galaxy with this telescope?" then Mr. Ali Khan said that Milky Way was a naked eye object in dark sky locations such as Kot Radha Kishan.



First Mr. Ali took off the finder and focused the telescope on Moon. Then he putting it back, he set about aligning the main scope and finder. He used a pointed pyramid tip on school roof as object. He carried the scope to a location to view moon where it cleared the roof in daylight. Soon a group of students gathered to look at the Moon. Eyepiece was 25mm. Focal length of main mirror was 900 mm so the Moon was at 36x and filled the field with room to spare. He tightened the focuser after focusing to prevent changes. The scope was very often bumped and shoved so he had to constantly look through the finder and kept moon on the black cross lines while a faculty member managed the queue. Some wanted to look through the finder and it felt funny to me to not go for main dish and crave for potato chips instead. Curiosity was the reason. Many smiled at the moon in amazement, a few exclaimed, a few stared, some asked. He got tired in my kneeled down position so he asked for a chair and then manning the finder was much easier. A teacher brought cold drink for him and for all KSS team. The students kept coming along with a few adults and teachers. Mr. Ali said he had great time observing the wonder and amazement on their faces when they were looking through the eyepiece while he was manning the finder.



Then Mr. Umair was ready for his presentation and the 114mm scope was set aside, much to the dismay of a small bunch of students who wanted to see more. From the onset, Umair welcomed any questions from audience. Mr. Umair analyzed cratering in the solar system from Mercury till Mars. He showed a beautiful globular cluster. The way he conveyed the sense of distance and size was very appealing. Like how long to reach Neptune in a speeding bus at 120 km/h or how long to reach a globular while speeding on Voyager, the fastest man made space probe or the width of our galaxy in light years. He showed Earth's visible and hidden and eroded craters and the one which wiped out all the big dinosaurs. He showed tallest mountain on moon to



be about 5 km high as opposed to Mount Everest which was over 8 km high. He showed a huge crater on the far side of the moon. Then he showed live Moon views, Clavius, Tyco, Copernicus and many more craters, the lava seas, the mountain ranges. He told about the huge temperature swing from dark minus 110 C to lit 110 C of lunar surface, from colder than Antarctica to hotter than a pressure cooker. He had also mentioned in his presentation the name of Asad Mehmood, a school kid from Okara city, who made a 6" Newtonian with his own hands and who was covered by media and featured in a Sunday Magazine of Tribune newspaper.

Between the Moon and Jupiter, Mr. Ali had a short time to give an idea of rough grinding of 19 mm thick 4.5 inch diameter float plate blanks. He showed that in starting, chordal stroke is done to create central depth of 1-2 mm then it's followed with center over center strokes to complete the dish shape. This is followed with polishing on pitch lap and then reflective coating of silver or aluminum is applied. A few students later asked for telescope making websites and he told them about www.stellafane.org. A photographer asked, "What is the largest telescope that can be made in Pakistan?" he replied 6" as maximum blank thickness available was 25mm. One to six is the thickness to diameter ratio to be maintained. For larger mirrors, thicker blanks would be needed. Maximum size was limited by thickness of blanks available. For a 12 inch mirror, two inch thickness would be needed. Then Mr. Maroof asked earlier how deep the dish curve is, he replied only 1-2 mm. So he concluded correctly that the extra thickness of blank is to provide rigidity to maintain the curve shape under gravity as shape accuracy of about 40 nm was required for a good image.

After some time Jupiter was on screen with its brown bands. Due to air turbulence, the image was wavy and nowhere as good as what Mr. Umair routinely gets by capturing a video very late at night and processing or stacking the frames to get stunning detail. Then Mr. Umair over-exposed deliberately and showed three of the four moons, the volcanic Io, icy and watery Europa and the giant Ganymede. Calisto was hidden behind the planet disk. These moons were first seen in 1610 by Galileo.

Mr. Maroof had also setup his 5" and a group of students gathered around him till the end of the presentation.

Some of the questions asked:

- Why is sun reddish at sunset and sunrise?
- Can we live on the moon?
- If Jupiter is all gas, then why doesn't its gas fly away and vanish because gravity is due to solid rocks?
- If Jupiter is hot then will its moons be hot also?
- What will happen to us if we go to the sun?
- What was in that meteor which killed all the dinosaurs?
- To look at the moon we look up, so on the moon, where will we look to look at earth?
- How large will the Earth look from the Moon?
- Can we stand on the moon? Can we place things on its surface?
- Why did astronauts walk in jumping fashion?
- How was Moon formed?
- Why does the Moon circle us and we circle the sun?
- What will happen if Moon stops circling us or we stop circling the Sun?
- If there are seven skies then on which sky is the Moon?
- What gases are on the Moon or Jupiter?
- Why do we study the stars and planets?
- If Universe was made in a Big Bang then how did God make it?
- Can we really come back to the same place if we keep travelling in a straight line?
- What caused the moon craters?
- Where did the asteroids come from?
- Are there still asteroids?
- What is a shooting star?
- What is a Moon Eclipse?
- Our Earth rotates and revolves. Does the Moon spin also like we do once in 24 hours?
- What is the meaning of the word "Chand" or Moon? Why is Chand called chand?
- How many craters are on the Moon?
- If we stand on the Moon will we sink in the dust?
- If Moon is filled with craters then why do people say that such and such a person is as pretty as the moon?
- Are there earthquakes on moon? What causes earthquakes on earth?
- Are there people on Moon now?
- With C14 can we see footprints of astronauts or some other things left behind by them?

One teacher said that now that we have seen the moon, it's our moon now. He was thrilled that from among the 541 groups looking at the moon at that very moment, they, at Kot Radha Kishan, were one of them, one of the few groups around the world, one among the world, important. He also said that October 8 was also the day when the historic earthquake struck the north of Pakistan taking many lives.

At the end the school administration treated us visitors with chicken pulao rice, kebabs, samomas, rolls, biscuits and tomato ketchup. Mr. Maroof asked us that what effect it would have on our solar system, if rest of the Universe vanished. We concluded that no effect would be felt. He also said that spin of sun and the ecliptic plane are very largely tilted (close to 60 degree) compared to our galaxy plane. Moreover its spin (counter clockwise) is opposite to galaxy spin (clockwise), thus implying that sun was captured from a small nearby galaxy.

The principal said that they gave full opportunity to kids to express and never suppressed them. There were regular elections among students and this taught them about democracy. Those who performed stayed on top.

In the end we thanked the school principal and administration and they in return thanked us and assured to keep in touch.

Some glimpses:

