

Official Newsletter

4

Astrolabe

3rd International Olympiad on Astronomy and Astrophysics

Oct. 21, 2009 Tehran-Iran

Fun at Fanamooz Park

TODAY'S PROGRAM

STUDENTS

Photometer Workshop

Astrolabe Workshop

TEAM LEADERS

Discussion of the Observational and
Experimental Exams

Translation of the Observational and
Experimental Exams

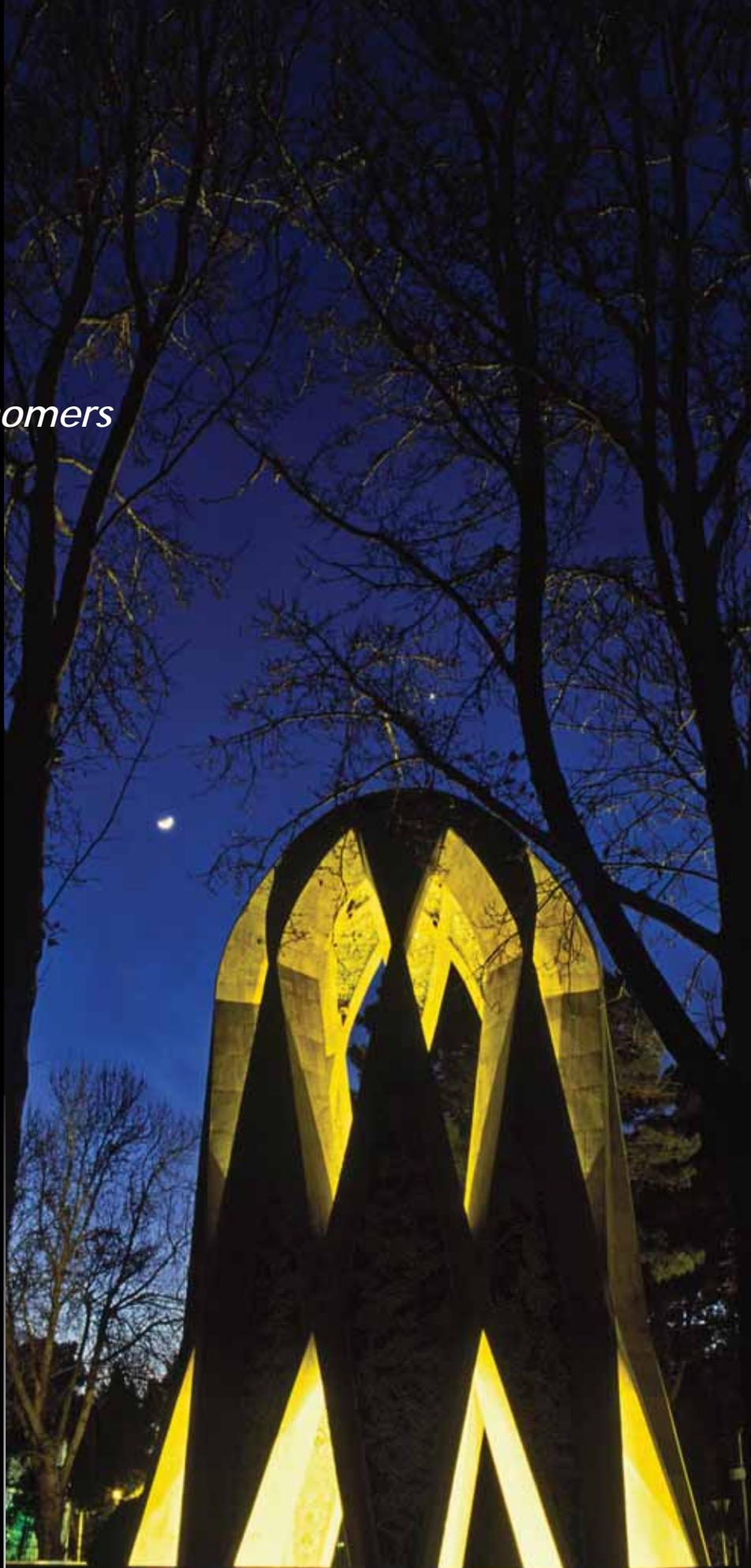
3rd
IOM
International Olympiad on
Astronomy and Astrophysics
Tehran, Iran, Oct. 17-26, 2009



►► *The Poet of Astronomers*

In the deep-blue evening twilight, the Moon shines above the mausoleum of Omar Khayyam in the historic city of Nishapur, in northeastern Iran. Khayyam was a Persian poet, mathematician, philosopher, and astronomer who lived in 11-12th century. He has become established as one of the major mathematicians and astronomers of the medieval times. He is recognized as the author of the most important treatise on algebra before modern times, the *Treatise on Demonstration of Problems of Algebra*, in which he gives a geometric method for solving cubic equations by intersecting a hyperbola with a circle. He also contributed to calendar reform. His significance as a philosopher and teacher, and his few remaining philosophical works, have not received the same attention as his scientific and poetic writings. Zamakhshari referred to him as "the philosopher of the world". Many sources have also testified that he taught for decades the philosophy of Ibn-e Sina (Avicenna) in Nishapur where Khayyam lived most of his life, breathed his last breath, was buried, and where his mausoleum remains today a masterpiece of Iranian architecture visited by many every year.

Photo by Oshin Zakarian - www.twanight.org/zakarian



►► *An Interview with Mohammad-Taghi MirTorabi, Chairman of the 3rd IOAA, Al-Zahraa University, Tehran*



How well did the theory exam?

The theoretical part of this Olympiad was done very well and in a timely manner. The exam started at 9 AM and ended exactly at 2 PM. The exam salon was calm, and the security guards helped a great deal in creating a calm and orderly atmosphere for this exam. All the students were able to utilize the whole time allotted to the exam, and the questions on this exam were quite standard.

What will happen now to the exam papers?

First we will make copies of the exam papers and give them to the markers and also to the leaders, so that they will both mark them and decide on a final score. There are a total of 60 markers who

work in the Teachers Club, and they will receive the papers this evening. It will take about two days for all the papers to be marked.

What comes next?

On Thursday morning, the experimental exam will be held at Shahid Baahunar Camp and on the same evening the observational exam will be carried out in Deh-Namak.

What happens to the observational exam if the sky is cloudy?

If the skies are cloudy, the exam will be postponed to the next day (Friday) and if the skies are still cloudy on Friday, the exam will be simulated using a video projector and planetarium software.

►► *Fun at Fanamooz Park*

The students had a choice to go to either the Nature and Wildlife Museum, or the Fanamooz Park. They chose to go to the Fanamooz Park which provides an interactive and scientific recreational environment for the visitors. There are several science workshops, each of which amazes the visitor in its own way. The Ball-Thrower was one such workshop where the stroboscopic flashlights make the balls appear suspended in mid-air or moving in the opposite direction. The Sound Mirrors and the Storm Maker were two other workshops that attracted a lot of attention. Other amusing experiences were watching parachutists in three-dimensional space and the laser light show.

Photos: M.J. Torabi



Aniruddha Bapat from India places his hand on the generator of static electricity.



Students play the Laser Harp



Four contestants play football with the robo-footballers



Haazem Faripoor, designer of recreational science exhibits, describes one of his instruments



SAY CHEEEEEEESE!!



The team from Greece



Young children, wearing the local costumes of various cities of Iran and holding the placards bearing the names of the participating countries, are ready to enter the hall.



The team from Slovakia



Seyyed Ramezan Mohsenpour, the acting minister of education, shows the first issue of Astrolabe to Dr. Ve-layati, researcher and the advisor to the Leader of IRI.



Babak Amin Tafreshi, night sky photographer and the founder of the global project "The World At Night"(TWAN) was the last speaker at the opening ceremonies.

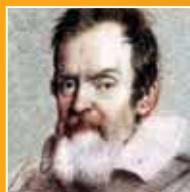
1600 CE

Vatican: The Catholic Church burned Giordano Bruno at the stakes in the town square for his belief in a heliocentric universe.



1609 CE

Italy: Galileo built his telescope and started his observations which revolutionized astronomy.



1619 CE

Germany: Kepler published his laws of planetary motion.





Students from the Indonesian team at attention!



Traditional Iranian music at the opening ceremonies.

Hunting the hunters!



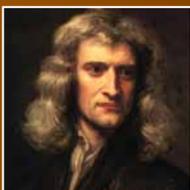
The team from Serbia



The team from Poland

1668 CE

England: Newton invented the first reflecting telescope.



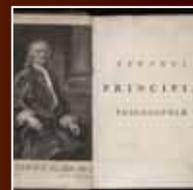
1671 CE

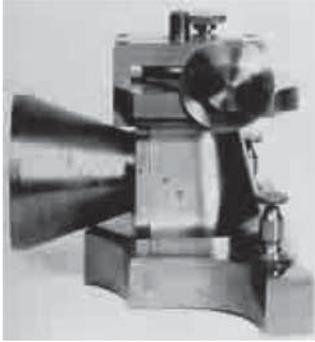
Paris observatory, world's first optical observatory, was built.



1687 CE

Newton published *Principia* (*Philosophiæ Naturalis Principia Mathematica* or the *Mathematical Principles of Natural Philosophy*) in which he expounds his theory of gravitation.





▶▶ Edison, Astronomy, and Chickens

In 1878 a total eclipse was visible in the American west. This was the time when astronomers were turning towards the study of the stars themselves, rather than their positions and motions. Samuel Langley, the director of Allegheny Observatory, intended to use this opportunity to study the strange outer atmosphere of the Sun called the corona. A recent theory at the time proposed that the corona, then visible only at a total solar eclipse, was the moon's atmosphere rendered visible by backlighting from the sun. The obvious thought was that if the corona is hot, it must produce infrared radiation. At the time, Edison, was already a famous inventor who had just invented the phonograph. By early 1878 he had already been experimenting with a new invention that was particularly sensitive to heat and had discussed it briefly in correspondence with Langley. Langley's best thermopile was capable of detecting a change in temperature of about 10^{-4} degrees Fahrenheit, and Edison's new invention was already capable of about 4×10^{-5} degrees. Edison called it a tasimeter. He liked to show how easily the tasimeter could detect the heat from a person's hand 30 feet away.

After some further tweaking, Edison claimed the tasimeter had a sensitivity of 10^{-6} degrees Fahrenheit, and so met Langley's challenge. There is some doubt, however, as to whether Edison ever really made a sensitivity test in these terms. Time was running out and Langley was impatient to receive Edison's instrument, sending him several reminders about the promised tasimeter, with no success. What Langley didn't know was that Edison himself was going to the eclipse, armed with the tasimeter. One modern writer has described Edison like "a rather typical modern day eclipse-goer since (1) he made preparations only shortly before leaving, (2) he elected to defer final assembly and tests until arrival at the site, (3) he claimed success immediately after third contact, (4) he never reduced his data and (5) he never published his scientific findings." Which brings us finally to the chickens. This oft-told tale has been recorded by J. A. Eddy thus:

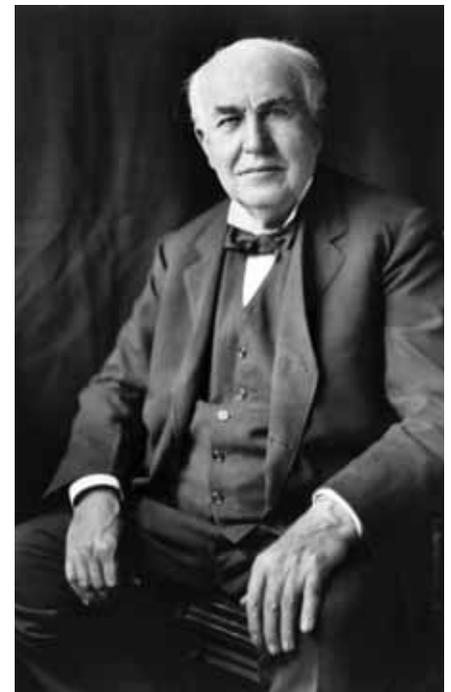
"When Edison stepped off the train at Rawlins he found the professional astronomers already ensconced in the best rooms of the only hotel and already in possessive claim of the more protected places from which to observe the coming eclipse. All that remained for the tasimeter was a dilapidated hen-house, and in its doorway Edison set up his telescope and equipment. In the afternoon of 29 July, as totality neared, a brisk Wyoming wind arose, filling the darkening sky with dirt and debris. These conditions made the balancing of the tasimeter . . . especially difficult, and with the onset of darkness at second contact, the tasimeter was still not adjusted. Only two minutes of totality remained. Feverishly he worked, but alas! With the sun covered and sky dark, the chickens came home to roost, through Edison's observatory door, past the telescope, in, around, and over the frantic inventor. Uninitiated in astronomy, he had failed to allow for a fundamental eclipse phenomenon."

It is not clear if Edison was successful in his attempt. The New York Herald reporter, in his dispatch home, not-

ed, "When but one minute of totality remained Edison succeeded in crowding the light from the corona upon the small opening of the tasimeter. Instantly the galvanometer cleared its boundaries. Edison was overjoyed." Edison himself, however, in later years faced up to the irony of having made too much of an improvement over existing detectors: "My apparatus was entirely too sensitive and I got no results." Langley, by contrast, found himself once again the victim of an inadequate thermopile, which failed to detect the corona. He had his revenge by inventing the bolometer a couple of years later. History perhaps had the last laugh. It was later pointed out that, during a total solar eclipse 36 years before the 1878 one, Professor Luigi Magrini, observing at Milan with an unusually sensitive thermopile on a reflecting telescope, had already measured a definite infrared signal from the solar corona.

Source:

J. Donald Fernie, "Eclipse Vicissitudes: Thomas Edison and the Chickens", *American Scientist* (May-June 2000), available at: <http://www.americanscientist.org/issues/pub/2000/3/eclipse-vicissitudesthomas-edison-and-the-chickens>





Find the Differences!!

These four pictures appear to be made up of two identical pairs, but actually there are 7 differences between the pictures in each pair. Can you find them? You can look up the answers on the next page, but be patient and do not give up hastily!



Essential Farsi (Iranian Language)

Hello	salaam	sæla:m	سلام
How are you?	chetori?		چطوری؟
I'm fine	khoobam	khu:bæm	خوبم
How much is it?	chande?	Chændeh?	چنده؟
Goodbye	khodahaafez	khoda:ha:fez	خداحافظ
Yes	baleh	bæleh	بله
No	na	næ	نه
Good	khoob	khu:b	خوب
Bad	bad	bæd	بد
Ok	baasheh	ba:sheh	باشه





▶▶ Photo of the Day

Auroras in Saariselka

From the photographer: "Saariselka is a very good location for Auroras. In February 2008, there was a lot of activity and we were able to watch spectacular auroras."

Bernd Margotte



▶▶ IYA2009 Projects in 209 Words ▶ Galileo Teacher Training Program

The International Year of Astronomy 2009 (IYA2009) provides an excellent opportunity to engage the formal education community in the excitement of astronomical discovery as a vehicle for improving the teaching of science in classrooms around the world. An incredibly rich store of useful astronomy resources is available for such an effort, much of it in digital form and freely available on the internet. However, experienced educators and outreach specialists identify a critical impediment: many teachers lack the training to understand these resources or use them effectively.

To address this problem and to sustain the legacy of IYA2009, IAU - in collaboration with the National Nodes and leaders in the field such as the Global Hands-on Universe project, the US National Optical Astronomy Observatory and the Astronomical Society of the Pacific - is embarking on a unique global effort to empower teachers by developing the Galileo Teacher Training Program (GTP).

GTP's goal is to create a worldwide network of "Galileo Ambassadors" by 2012. These Ambassadors will train "Galileo Teachers" in the effective use and transfer of astronomy education tools and resources into classroom curricula. The Galileo Teachers will be equipped to train other teachers in these methodologies, leveraging the work begun during IYA2009 in classrooms everywhere.

<http://www.galileoteachers.org>

▶▶ Weather Forecast for Tehran

▶ TODAY

Clear
High: 21 °C
Low: 12 °C



▶ TOMORROW

Clear to partly cloudy
High: 21 °C
Low: 13 °C



(Forecast by AccuWeather)

"Find the Differences" answers: from page 7



Astrolabe

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