Science For All!

Planetarium Science Center

PSC newsletter

Summer 2008

Year 1, Issue 3

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EDITORIAL

An Unforgettable Summer!

By Maissa Azab, PSC Publications Coordinator

It gives me great pleasure to write this editorial for the third installment of the PSC newsletter, the "Summer 2008" issue.

The newsletter is in fact a milestone on the path to achieve the Center's goal of science popularization, and realizing its vision of *Science For All!*

The newsletter aims to publicize the Center's easy, yet unique variety of activities that aim to educate through entertainment, targeting the general public with emphasis on children and youth.

Another milestone for the PSC has been the successful consistency in creating innovative ongoing and recurring programs and events, one of the most popular being the ever-surprising Summer Festival.

For the third year in a row, the PSC is offering its loyal visitors, as well as inviting new comers, to join the unique summer experience that combines Fun with Knowledge!

As always, the heart of the Summer Festival is the kaleidoscope of unique workshops; this year, the Summer Festival offers a whopping total of fifteen workshops, all adapted to three different age groups, spanning the duration of ten weeks starting on 22 June 2008.

In addition to the free admission and tours of the BA and PSC, for the second year in a row, the Festival includes a variety of one-day fieldtrips, in addition to an Astro-Camp.

Furthermore, this year, the Festival also incorporates some of the most successful ongoing activities, such as the dynamic *RoboAlex*, the amusing *Super Science Show*, and the alluring *Fun with Science* program.

The Summer Festival concludes with the "End of Summer Festivity", this year taking place on 30 August 2008.

Participation in the Festival is by reservation only so do not waste any time and guarantee your children ...

An Unforgettable Summer!

Planetarium

History of Planetariums

Part ONE

We will probably never know when the first planetarium was invented, but we do know that Man has always been interested in the movement and position of the stars.

The design and orientation of Neolithic temples, such as the one at Stonehenge, show that these monuments were aligned to mark the places where the sun or moon rises on certain dates of the year.

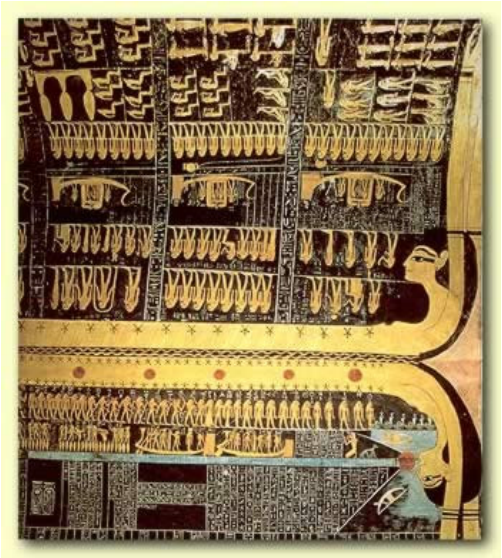
The first known map of the heavens, found in Germany in 1999, is a bronze disc in which gold stars and the moon and sun have been set.

This map of the heavens dates from the Bronze Age, *c.* 1600 BCE.

The Nebra Sky Disk, Germany

Depictions of the nightly skies and the constellations appeared frequently in Ancient Egyptian monuments:

An Impressive example is seen on the vaulted ceiling of the burial chamber of King Seti I who reigned Egypt 1291-78 BCE.



Another example would be the Zodiac ceilings at the Temple of Hathor in Dendera, in particular the "Circular Zodiac" dated *c.* 30 BCE, which is an Egyptian presentation of the, by then, well-established Greek astrology.

All truths are easy to understand once they are discovered; the point is to discover them.

Galileo Galilei
(1564-1642)

For Planetarium Show Times and Fees, please visit:

www.bibalex.org/psc/planetarium/schedule.aspx

Read More:

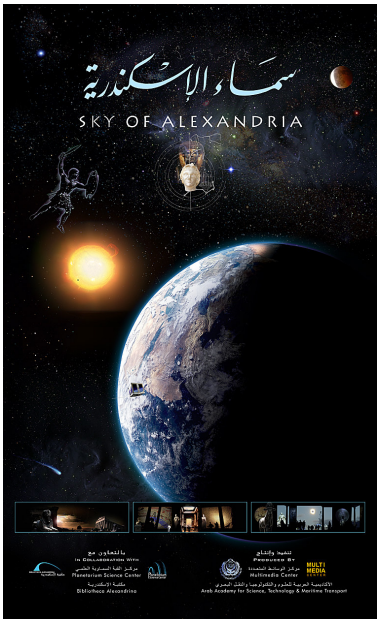
http://witcombe.sbc.edu/earthmysteries/EMStonehenge.html
http://www.crystalinks.com/nebraskydisc.html
http://www.touregypt.net/featurestories/seti1t.htm
http://www.geocities.com/astrologysources/classicalegypt/dendera/

New Shows

Sky of Alexandria

30 min. Video-Panorama

The story of *Sky of Alexandria*, the first planetarium show ever produced entirely in the Middle East, is about the evolution of Man's vision of the sky in search for answers to its riddles and laws of motion across time. The show explains how time acts as an important factor in the evolution of knowledge and the changes in ideas, opinions, and visions.



Applying advanced technologies, the production team showcased the most important contributions of the scientists of the Ancient Library of Alexandria, specifically in the field of astronomy. The viewers of the show will see how the contribution of each scientist added to previous knowledge. In the beginning of the show, the viewer enters the Ancient Library and feels the glory of Apollonius, Eratosthenes, Hipparchus, Ptolemy, and others; as he watches them move, discuss and observe, he will join them in gazing at the Sky of Alexandria. In this part, the viewer hears the narrators voice:

"the Sky of Alexandria was an open book for the musing of scientists … they were occupied by the distance of the Sun and the Moon, the rotation of the planets, the center and the limits of the Universe … they observed that sky for answers about the relationships between the stars, their positions and movements."

The show then moves forward through time to the present where the viewer looks at the Sky of Alexandria today and sees how our vision has changed from that of the ancients. Modern science and new observational technology make it possible to see what our predecessors could not see. In a voyage from the Earth to the Moon and a journey amidst the planets of the Solar System, we discover that what we see and know today is attributed to the contributions of the ancients.

Sky of Alexandria is the first Egyptian scientific planetarium show. It has been produced by the *Arab Academy for Science and Technology.* The original idea and script were put by the resident astronomers at the Planetarium Science Center. The scientific content was revised by Dr. Farouk Elbaz. The show was executed and installed by a collaborative team from both the BA Planetarium Science Center and the Multi-Media Center at the Arab Academy for Science and Technology.

SOLARMAX

40 min. IMAX film.

Our Earth is a small planet …
its pole crowned with a circle
of "Northern Lights"…

The whole planet glows in the warmth of a star we rarely think about… A star we call the Sun.

Our Sun is a star … one of billions.

For us, it is the engine of life...

Ancient civilizations recognized the Sun as the source of all life and called it god…

They observed it with care and set up stone markers to send that knowledge through time…

… Aristotle taught that the world was round and that the Sun and planets were carried in crystal spheres around the Earth...

… Copernicus had the courage to believe in a world spinning through space … a vast Universe of billions of stars…

… Galileo was the first to look at the sky through a telescope and discovered that the Sun was not a flawless orb…

Space has given us new eyes…

Everything we had glimpsed at before can be seen anew…

Parked a million miles from Earth at a point where the gravity of Earth exactly balances the gravity of the Sun, SOHO shows us the Sun as we have never seen it before...

Every sunrise brings hope…

For some, it is the hope that we can learn to do what the humblest plant can do…

Make clean and abundant energy directly from sunlight.

History of Science Museum

Eratosthenes 2008

Mathematician, astronomer, geographer, philosopher, and historian, Eratosthenes is a universal scientist of ancient times. Born in Cyrene, Libya, he studied in Athens then in Alexandria were he lived for many years. In 236 BCE, he was appointed third Librarian of the Library of Alexandra.

Eratosthenes set some of the most significant geometric and arithmetic definitions. In his works of astronomy, he developed a catalog including 675 stars and 44 constellations; he also calculated the ecliptic orbit.

Unfortunately, none of his works survived, but his successors quoted extracts from them.

Eratosthenes is best known for calculating the circumference of the Earth with great precision.

How did Eratosthenes measure the circumference of the Earth?

In 205 BCE, he used a rather simple, yet accurate method of calculating the Earth's circumference using his observations of shadows.

Where? In Alexandria and Syene (Aswan).

When? At the moment of summer solstice, according to the local solar midday.

Eratosthenes; knowing that at precisely midday on 21 June, the Sun is at its highest above the horizon; noticed that in Syene, objects had no shadow. In Alexandria, on the other hand, the same objects had short angled shadows.

He measured the shadow of an obelisk in Alexandria and then estimated the angle between sunrays and the obelisk (7.2°).

Knowing that in Syene there was no shadow for objects, such as a well, Eratosthenes reached the conclusion that:

The Earth is not flat and its surface is curved and maybe completely spherical.

If the Earth is spherical, then if we extend the vertical line of the obelisk in Alexandria and that of the well in Syene, the two lines will meet exactly at the center of the Earth.

Knowing that Alexandria and Syene are located almost on the same meridian, he assumed that:

Sunrays are parallel, thus, the angle formed by two verticals at the center of the Earth is identical to the one of the obelisk shadow; that is (7.2°).

Accordingly, the conclusion that the ratio of this angle (7.2°) to the (360°) of the Earth is the same ratio of the distance between Alexandria and Syene (800 km) to the circumference of Earth.

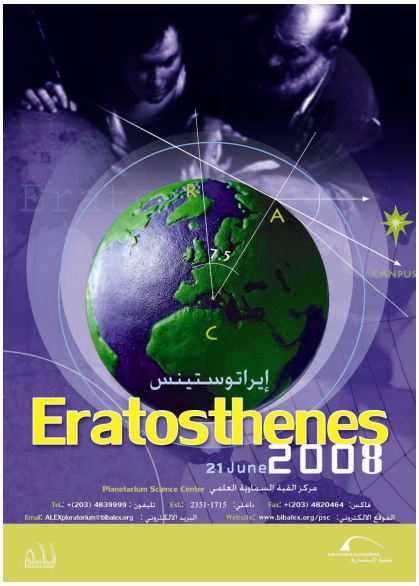
How?

7.2°/ 360° = 800 / x

x = 360 X 800 / 7.2°

x = 40 000

Then,
the circumference of the Earth = 40 000 km.



Come,
JOIN US
at the
Eratosthenes
Annual Festivity
21 June 2008
Become part of the TRADITION

Admission and Tours

Opening Hours

From Sunday to Wednesday [from 09:00 am to 16:00 pm]
Saturday and Thursday [from 09:00 am to 18:00 pm]
Friday [from 15:00 pm to 18:00 pm]

Guided Tours

From Saturday to Thursday
[10:00 am + 11:00 am + 12:15 pm + 13:00 pm + 14:15 pm]
Additional Tours on Saturday, Thursday and Friday
[16:45 pm + 17:45 pm]

- Museum entry fees are included in all Planetarium show tickets
- For non-audience of the Planetarium, Museum entry fees are 0.50 EGP
- Museum Tours are free for ticket holders

Ongoing Activities

Summer Festival 2008

Search & Find Contests

The History of Science Museum offers fun and interactive contests, games and quizzes, that stimulate children to look for answers among the displayed information; thus, helping them understand and remember what they learned during their visit. The topics of the contests are inspired by the three themes of the Museum:

Egypt of the Pharaohs, *Hellenistic Alexandria*, and *Arab-Muslim Middle ages*.

- Target Age Group: 8-16 years

Hands-on Workshops

The History of Science Museum workshops aim to animate, and therefore, facilitate the information introduced in the Museum.

Light (6-16 years of age)

What is light and what are its properties? What are light applications in our daily life? What are the different types of images, rays and shadows? What is reflection and what is refraction? And what is the day and night phenomenon?
Students participating in this workshop get to learn the answers to all these questions.

Gravity (6-12 years of age)

Gravity is the pull that objects have on other objects around them. All objects have gravity, which means that they are always trying to pull other objects toward them. The larger an object, the stronger its pull. Because Earth itself is the largest object in our world, the pull of its gravity is the strongest we can feel.
In this workshop, students learn all about gravity.

Time Measurement (6-12 years of age)

A recreation of the history of clocks; how they were made and how they were used.

ALEXploratorium

Discovery Zone

Opening Hours

From Saturday to Thursday [from 09:00 am to 16:00 pm]
Friday [from 15:00 pm to 18:00 pm]

Guided Tours

From Saturday to Thursday
[10:00 am + 11:00 am + 12:00 pm + 13:00 pm + 14:00 pm + 15:00 pm]
Friday
[15:00 pm + 16:00 pm]

- Discovery Zone entry fees are:
  Students 2 EGP
  Non-students 4 EGP

Listen and Discover

Show Times

From Sunday to Thursday
10:00 am + 10:30 am + 11:00 am + 11:30 am + 12:00 pm
+ 12:30 pm + 13:00 pm + 13:30 pm + 14:00 pm + 15:00 pm

For reservation, please contact the PSC Administrator at least one week ahead.

Show Fees

- **DVD shows:**
  Students 1 EGP
  Non-students 2 EGP
- **3D shows:**
  Students 2 EGP
  Non-students 4 EGP

For a list of available shows, please visit:
www.bibalex.org/psc/ALEXploratorium/films.aspx

Programs and Events

SEED corner (12-16 years of age)

In collaboration with the ***Schlumberger Excellence in Educational Development*** (SEED) program, the PSC launched **SEED corner** to host a series of scientific hands-on activities. Each year a theme is chosen; this year it is climate change and clean energy.

- Session Duration: 90 min. – 3 sessions/program
- Program fees, including fieldtrips, are 75 EGP per student
- For reservation, please contact the PSC Administrator at least two weeks ahead

Flight club (8-16 years of age)

ALEXploratorium specialists supervise groups of children on trips to Alexandria Aviation Club where they learn the basics of aviation and put together different airplane models.

- For additional information and reservation, please contact the PSC Administrator

Summer Festival

Workshops + Programs + Lectures	75 EGP
Workshops + Programs + Lectures + Astro-Club + 1 Fieldtrip	150 EGP
Workshops + Programs + Lectures + Astro-Club + 1 Fieldtrip + Astro-Camp	300 EGP

Space Technology (14-20 years of age)

Understanding Space is essential to face 21st-century challenges, such as: climate change, natural disasters, security, communication, information, and scientific development in general. This program simplifies this field to students via multiple activities, such as: lectures, workshops, fieldtrips, and research projects.

NEW

- Session Duration: 120 min.—8 sessions/program
- Program fees, including fieldtrips, are 75 EGP per student
- For additional information and reservation, please contact the PSC Administrator.

TechnoKids (6-16 years of age)

TechnoKids Inc. is a trusted and valued publisher of technology curriculum; *TechnoKids* Computer Curriculum is used, on daily basis, to teach thousands of students the skills that will best prepare them for the digital age. *TechnkoKids* presents a variety of sub-programs tailored according to the target age of children groups.

- Program fees depend on the chosen program
- For additional information and reservation, please contact the PSC Administrator

Summer Festival 2008

ALEXploratorium Contests (6-16 years of age)

ALEXploratorium contests help students of different age groups interact with essential scientific topics. Students get the opportunity to test their knowledge and experiment science communication by sharing their knowledge.

RoboAlex Center (8-14 years of age)

RoboAlex Center at the ALEXploratorium offers compelling hands-on robotic challenges. Guided by specialists, participating groups design, program, and test Robots to accomplish given tasks or missions on special playing fields.

Super Science Show (6-12 years of age)

The ***Super Science Show*** is a dynamic and highly motivational activity that gets participating children involved in hands-on experiments that stimulate infectious enthusiasm.

Fun with Science Program (9-14 years of age)

Fun with Science is a program organized by the PSC in collaboration with the BA Young People's and Children's libraries. The program applies a series of fables containing messages that aim to provide children a scientific basis, enabling them to apply scientific knowledge as a creative tool.

Fun with Science introduces "systems thinking"; children learn that everything is interconnected and that thinking from a systems perspective influences choices and behavior.

Workshops

Astronomy (6-12 years of age)

What is a solar system? Can you make your own solar system? Can you make your own rocket? Can you gain new information about astronomy without reading a book?

Colors (6-12 years of age)

Without light, colors do not exist. But how can light enable us to see them? How is it that two colors mixed together make a third? Why do crystal drops cast rainbows when they catch the light? Why isn't the sky always the same color?

Biodiversity: Dinosaurs (6-12 years of age)

Biodiversity is the variety of life on Earth. It boosts ecosystem productivity where each species, no matter how small, has an important role to play and that it is this combination that enables the ecosystem to possess the ability to prevent and recover from a variety of disasters.
In this workshop students will understand that all animals are important, even extinct animals, such as dinosaurs. They will study dinosaur characteristics and skeletons, see the environment where they lived, what they had for nutrition; they will also discover why they perished.

Biodiversity: Fish and Birds (6-12 years of age)

In this workshop students will understand the importance of birds and fish, analyze their anatomy, see their environment and nutrition, and compare different kinds of birds and fishes.

Kindergarten (6-9 years of age)

This is a workshop dedicated for very young children; it tackles a scientific theme in a different approach that simplifies theories and turns them into entertainment and practical games.

Air (6-16 years of age)

Air is all around us, but it can be hard to see. Performing interactive experiments, find out why hot air rises, how temperature changes air pressure, and much more.

Magnets (6-16 years of age)

When you use a computer, you're using magnets! A hard drive relies on magnets to store data, and some monitors use magnets to create images. If your home has a doorbell, it probably uses an electromagnet to drive a noisemaker. Magnets are vital for many devices we use on daily basis.

First Aid (9-16 years of age)

The objective of the workshop is to give children the ability to face risks and accidents that might happen to them or to their friends, to show them the simple tools they may use , and the necessary equipment in the first aid kit.

Planet Earth (12-16 years of age)

This workshop is about our planet earth. It answers questions like:
What does the earth look like ? How old is the earth and how it formed?
What is in the atmosphere? What are minerals and crystals?

Light Painting (12-16 years of age)

Painting with light is a fun technique that gives great results. It is called painting with light because this is what you are actually doing while taking the shot - painting with light.
All you need is a camera capable of long exposures, a flash , and a dark location.

Mechanics (12-16 years of age)

Simple machines are the foundation of all mechanical devices. Learn about these simple, yet fundamental machines, such as pulleys, gears, levers and inclined plane.

Zoom Earth (9-16 years of age)

Satellites capture images that differ according to the type of light waves, using sensitive equipment. By analyzing the images provided by the satellites, professionals get the information they need to better monitor and study Earth.

Edited and Directed by: Maissa Azab, PSC Publications Coordinator