



Friends,

Do you know the speciality of the year 2009? The United Nations Organization has declared 2009 as the International Year of Astronomy.

2009 is the 400th anniversary of using the telescope for celestial observations. Looking through it, Galileo laid the foundation of modern Astronomy. 2009 is also the 40th anniversary of Man setting foot on the Moon. Besides, the year is the 150th anniversary of the publication of the Origin of Species by Charles Darwin who brought about radical changes in Life Sciences. Friends, do you know that Galileo's discoveries through the telescope uprooted the strong belief in the geocentric theory of the Universe of those days? The telescope was invented 400 years ago. However, most of the older generation could not experience the cosmic wonder that could be discerned through the telescope. For you to acquaint with, telescopes will reach you this year. A number of activities using telescopes are given in this book. Here is a rare chance to know the Universe through interesting learning experiences and to enter the field of space research.

*To know the secrets of the heard, the seen and the known, to soar up to the world of endless wonders, to read and relish the stories of scientific secrets, to know how the world was transformed by scientific discoveries and inventions, to strive and seek beyond the unknown, turn the pages of **Galileo Little Scientist** and perform the activities suggested in it. With the aid of your own thoughts, and in the company of your friends, embark upon a voyage into the world of new wonders. The Sun, the Moon and the star-studded sky are there to welcome you.*

With the Chandrayan, India is now active in lunar explorations. Perhaps one of you may be among the voyagers to the Moon in 2015! Who knows!



With Love,

A handwritten signature in black ink, appearing to read 'M.A. Baby'.

M.A. Baby

*Minister for Education & Culture
Kerala.*





MESSAGE

The Universe is always a wonder. The sky with blooming stars makes us curious. How many things are there in the sky that might excite and inspire your imagination!

In Mathematics and in Astronomy, Indian masters like Aryabhata were models to the world. Even now studies take place on their discoveries. The Indian Space Research Organization (ISRO) is the Nation's pride in the field of Science and Technology. Under the able leadership of Dr. G. Madhavan Nair, using PSLV G9 rockets, we could put 10 artificial satellites on 28th April 2008 in their orbits with precision. After this historic achievement, the Chandrayan, launched on Oct. 22, 2008, has awakened new hopes in space research.

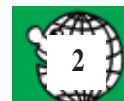
We are preparing to spring up to the top of the world in the field of Astronomy. *Galileo Little Scientist* is full of activities that can give wings to India's space dreams. Parallel to the learning activities, *Galileo Little Scientist* offers opportunities to understand the celestial spheres closely and to journey through the sky with new experiences. Surely, *Galileo Little Scientist* will be in the forefront of the books that students like most. It is rich with activities that will light up the inexhaustible mines of cosmic secrets. They will provide the kids of our schools with strength and imagination to be world famous geniuses in years to come.

With Love,

James Varghese

*Secretary for Education
Kerala.*

Thiruvananthapuram
10.07.2009





MESSAGE

The Earth is full of diversity. We know only a little of it. While poems and stories enrich our imagination, the Universe fills us with wonder. Often we can only stand in awe and stare with curious excitement as the gifts of Nature unfold beautiful moments before us.

Science is doing.

The joy and happiness that young minds experience when they understand the mysteries of Nature through interesting experiments is ineffable.

By providing opportunities to involve in joyous activities, **Galileo Little Scientist** excites the imagination, develops a scientific attitude to life and helps the appreciation of the diversity of Nature. This book, containing invaluable pieces of information, should be cherished as a guide to your learning activities.

Along with the students, let us hope, the Parents and the Teachers will also involve themselves in the activities in **Galileo Little Scientist**.

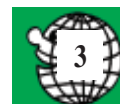
Let **Galileo Little Scientist** light up a new path in the field of education.

With Love,

A.P.M. Muhammed Hanish, I.A.S.

*Director of Public Instruction
Kerala.*

Thiruvananthapuram
10.07.2009





MESSAGE

Aryabhata was India's first step in space research. We can be proud of many landmark achievements in the field of launching artificial satellites. The discoveries of the ancient Indian Acharyas in Astronomy and in Mathematics were models to the rest of the world. The artificial satellites have become part of our daily life in areas like telecommunication, weather fore-casting, fishing, etc.

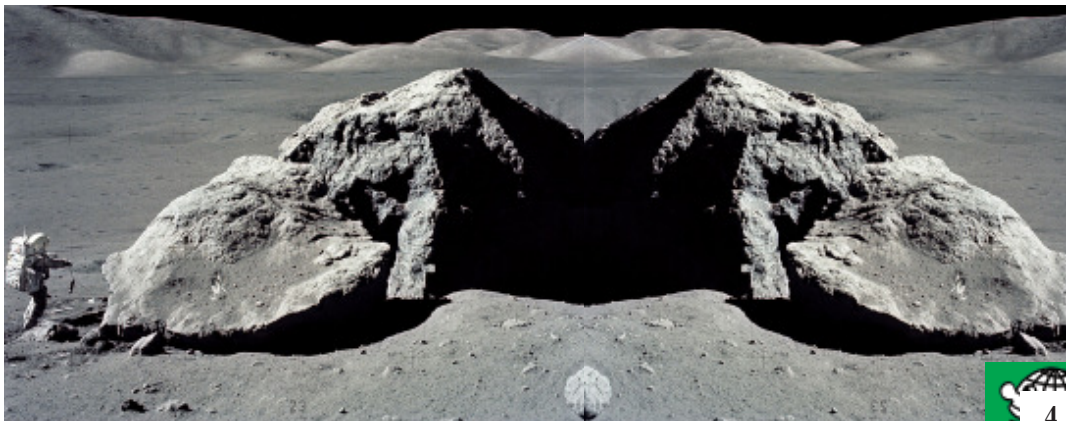
Our country is moving forward with the explorations of the Moon and the Mars. Students also can contribute to these. They rejoice freethinking and love to know the scientific facts gained through activities and experiments. ***Galileo Little Scientist*** is a book that provides opportunities for such activities and experiments. The inclusion of tips on scientific, mathematical and astronomical activities, useful to the students, the teachers and the parents, adds to the value of ***Galileo Little Scientist***.

With Love,

K. Sasidharan

State Project Director (I/C)

S.S.A. Kerala.



WHAT GALILEO SAW 400 YEARS AGO ! AND STILL WE DO NOT SEE !!



GALILEO GALILEI

Observing the celestial objects through his telescope, 400 years ago, Galileo started unravelling the mysteries of the Universe. What were his observations?

■ **The Mountains and Craters on the Moon.**

Galileo drew their sketches. Observing the shadows in the craters, he calculated their depth.

■ **The Ears of the Saturn.**

He observed and noted what appeared to be the ears of the Saturn. But he could not understand that they are its rings.

■ **The Satellites of the Jupiter.**

He observed the four satellites (Io, Europa, Ganymede and Callisto) orbiting the Jupiter. He marked their positions each day. These satellites are called Galilean Satellites.

■ **The Crescent of Venus**

He observed the Venus and documented its waxing and waning. The Venus is never seen overhead and it appears as a crescent. These prove that the Venus orbits the Sun. Using his telescope, Galileo showed the crescent of the Venus to all.

■ **The Sunspots**

He observed the black spots on the Sun using the telescope fitted with a filter. He then calculated the time of rotation of the Sun, noting the position of the black spots each day.

*Have you seen any of these?
If not, please see in 2009.
Galileo Little Scientist provides an opportunity for it.*

