

# Capsule 38

July-Sept 1995

## NCSM develops animated Dinos

The hands of the chronometer seemed to have gone back millions of years. Under the pale blue canopy were gigantic lizards & a bird or two. Growling, whining, nodding their slender reptilian heads, their necks drooping in an ungainly bow to look at people in the eye. The spiny winglike flaps of one beat vigorously, an egg-stealer held fast to its catch, another revealed its



Apatosaurus

cavernous mouth and a lockgate of jagged teeth. A threatening rumble from one reverberated through the hall. And visitors to the first Dinosaurs Alive exhibition in India were perhaps happy to be born now and not then, when these creatures walked our earth, between 125 and 65 millions years ago.

The Dinosaurs Alive was a unique exhibition put together by the National Council of Science Museums. NCSM's efforts rank third in the world, only after Kokoro of Japan and Dymation of USA. Held between June 15 and July 31, 1995, the exhibition drew more than 8 lakh visitors, from all walks of life. Coming soon after the internationally acclaimed film Jurassic Park, the people



Diplodocus

of Calcutta (the venue of the first Exhibition) eagerly awaited the show. A subject that was limited to a handful of scientists has now become a matter of common interest.

On display were 17 big & small dinosaurs of 14 varieties arranged strategically and placed in their natural habitat and backdrops. The exhibits had complex movements of neck, jaws, eye-ball, tail, knees, torso, all created by computer and controlled pneumatically. The skins were made of specially treated latex rubber to give a as near-natural look as possible. The heights varied between 1 ft x 1 ft and 40 ft x 6½ ft. But what really made the dinosaurs awe-inspiring was the fusion of imagination and creativity grafted on the fossil finds. What is more important, these dinosaurs

are fully designed and developed in India by the engineers of NCSM. For two years, these people worked with untiring effort and developed the exhibits at the museum laboratories at Delhi, Bangalore, Bombay and Calcutta.

There were quite a few difficult situations to be solved. The skin itself and the colour of the skin was one such difficulty. Another



Ornithomimus

was lending voices to the exhibits. Having been always scientific in their outlook, the NCSM could not resort to wild imagination, even for the sake of publicity and thus they had to find a roundabout way. They studied existing animals and their behaviour. Since most animals have a tendency to camouflage against their background, it was inferred that probably the dinosaurs followed the same pattern. So they studied the back-grounds where fossils were found. Then they looked at what sort of colourations the animals have today in the same locale. Thus the colour of the dinosaur was arrived at.

A similar method was used for the voice. From



Visitors queuing up for entry to the exhibition

# EXHIBITION



A little girl trying to build a rapport with the Spinosaurus

## Dinomania

The first description of true dinosaurs date back to the 1820s. Gideon Mantell (1790-1852), a country doctor from Sussex described the first remains of Iguanodon in 1822 before naming them in 1825. William Buckland (1784-1856), Dean of Westminster, described the remains of Megalosaurus in 1824.



Scelidosaurus

## Dinomania

First reports of dinosaurs in India date back to the latter half of the nineteenth century (notably the sauropid Titanosaurus). The Kota area of Central India has revealed abundant remains of the early Jurassic Dinosaur, the Barapasaurus. The interesting late Cretaceous Stegosaur Dravidosaurus was found in Southern India.

fossil finds, scientists had arrived at what sort of vocal chords were possessed by the dinosaurs. At NCSM, they studied the length and diameter of vocal chords of existing animals and deduced the pitch, the vibration, the tone, etc. These deduced voices were then added to the dinosaurs according to their respective vocal chords.

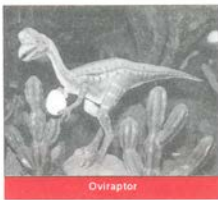
But this present Exhibition is not end-all. This is only a stepping stone and not the end of the goal. The scientist at NCSM are still busy trying to develop the models, rectifying the faults as discovered during the Exhibition. In fact, a detailed logbook was maintained while the show was on so that these faults could be rectified later on.



Stegosaurus

## Dinomania

Dinosaurs were reptiles, a special group to be precise. All of them were land living creatures. Although a few did venture into shallow swamps, they were neither swimmers nor lived in the sea. Thus the gigantic sea monsters of the Mesozoic, the pleisosaurs, the ichthyosaurs and mosasaurs were not dinosaurs. Similarly no dinosaurs were airborne fliers, so that the extraordinary flying reptiles of the Mesozoic, the pterosaurs were not dinosaurs.



Oviraptor

## Dinomania

The name 'dinosaur' was first coined by Richard Owen (later Sir Richard), a British anatomist, in 1841. He coined the word from two greek words 'deinos' meaning 'terrible' and 'sauros' meaning 'reptiles'.



Excited and joyful visitors in front of mighty Tyrannosaurus Rex

# EXHIBITION

## Smallest

Compsognathus was one of the smallest among dinosaurs. It was about 2 feet long and weighed hardly 3 Kgs. Many such tiny dinosaurs lived during the Triassic and Early Jurassic times. Their sizes were no larger than today's cats.

## Fastest

Ornithomimus, meaning "Bird Imitator", was possibly the fastest. It could reach 80 km. per hour, a bit slower than today's ostrich. Scientists could guess the speed of a dinosaur by knowing about its bone and muscle structure, size and weight.

## Fiercest

Tyrannosaurus Rex or "King of tyrant lizards" was undoubtedly the most fearsome. This ferocious carnivore measured 46 feet from head to tail and weighed about 10 tons. Its huge jaws were lined with razor-sharp teeth. It could easily tear off and swallow enormous pieces of its victim's flesh.

## Biggest

'Ultrasaurus' must have been the biggest of all. It was more than 100 feet long, stood 60 feet tall and weighed 152 tons. It was a plant eater and might have lived in herds rather like elephants do today.

## The Egg Thief

Oviraptor was given the name "egg thief" because the first skeleton discovered was found lying over a bunch of Protoceratops eggs. The 'egg thief' was toothless and lived by sucking out eggs that it stole from the nests of other dinosaurs.

## The Most Kind

'Maiasaura' a duck-billed dinosaur of the Cretaceous times, is thought to be the most kind of all dinosaurs. Fossil remains indicate that it cared for its young ones after they were born. That is why it was given the name 'Maiasaura' meaning 'the good-mother lizard'.



Prof Satya Sadhan Chakraborty, Minister of Higher Education and Dr Shankar Sen, Minister of Power of West Bengal keenly listening to the explanation on the exhibits given by Dr Saroj Ghose

Only one word can describe the public response - enormous. Ninety per cent of the visitors were

organisers hope to hold the Exhibition in a much more large area with a larger parking space.

Also on view were 42 additional supporting exhibits to answer visitors'



A special exhibition on A to Z of Dinos provided lots of information hitherto unknown to the visitors

overwhelmed and ten per cent were dissatisfied. But organisers at NCSM were fully sympathetic with those who found the place too crowded, too noisy or too hot. Because the unprecedented crowd infrastructural facilities were inadequate. Hence next time, the



Longisquama

question on dinosaurs. The largest display of dino stamps from all over the world was organised. A continuous video projection was made on life of dinosaurs along with the wild life of India and a fascinating dino show on multimedia



Triceratop



Visitors engrossed in building Dinosaurs from zig-zag-puzzles

# EXHIBITION



Prasanta Sur, Minister of Health & Family Welfare of West Bengal trying to befool the T-Rex



Pteranodon



Dr Shankar Sen appreciating the exhibition



Spinosaurus

screen was also a major crowd puller. Visitors participated eagerly in different activities like reconstruction of dinosaurs, etc. On sale were kits, souvenirs, books, stamps and toys.



Tyrannosaurus Rex



Visitors provided enormous feedback about exhibits and exhibition through their comments in the visitors' book

## Dinomania

The first dinosaur exhibition dates back to the 1850s. In 1850-51, Richard Owen organised the Great Exhibition at Hyde Park. The enormous Crystal Palace in which the exhibition was held was moved to Sydenham Park in South-east London and Owen was asked to provide life-sized models of his prehistoric animals which could be placed in the park grounds. These models attracted enormous publicity at that time and are still standing today, and inaccurate though we know them to be, they still create a strong impression on the viewer.

In 1868, Waterhouse Hawkins (who had assisted Owen with his Sydenham dinosaurs) created life-size models of Hadrosaurus and a carnivore named Laelaps in the Kangaroo-pose for the then newly created Central Park of New York, USA. This exhibition was a great crowd puller too.



Parasaurolophus

## Dinomania

Dinosaurs lived during the Mesozoic Era of earth history. The Mesozoic (middle life) comprises the Triassic, Jurassic and Cretaceous periods.



Archaeopteryx



Dino cutouts welcome the visitors



**Birla Industrial & Technological Museum** observed its 36th anniversary on May 2. Children attended programmes like Taramandal demonstration along with astronomy workshop and sky watching; science demonstration lectures on Chemical Reaction and study of microscopic specimens; dinosaur puzzle; extempore talk and quiz. The Open Laboratory was also inaugurated on this day.

Also organised were film festivals, open house quiz, astronomy workshop and a popular lecture by Prof Sankar Chattopadhyay of Texas University, USA on the topic of dinosaurs.

On July 15 began World Forestry Week. They had a series of programmes that included quiz, field trips and tree identification. Two interesting films on 'Silent Valley' and 'Indian Rain Forest' were screened.

**National Science Centre, Delhi** organised and conducted a Science Festival between May 12 and 15 at Dharamsala (Himachal Pradesh) for the students and teachers of Tibetan Children's Village.

The Festival consisting of 22 exhibits on Fun Science, a Mobile Science Exhibition on 'Man, the Tool Maker', teachers training programme, science demonstration lectures, Taramandal, film shows and Open House Quiz was inaugurated by R

O Chogyal, Hon'ble Minister for Education, Govt of Tibet who felt that, "this sort of exhibitions will bring the world of science closer to the children and make it interesting to them." Also present was Jetsun Pema, President of all the TCVs in India who is, incidentally, sister of the Tibetan spiritual leader H H Dalai Lama.

On valedictory day, Nawang Dorjee, Director of Education, TCV, distributed the prizes. He praised NSCD for the work done and hoped that in future NSCD and TCV will put up collaborative programmes.

**DSC, Tirunelveli** organised a week-long programme to commemorate World Health Day between April 7 and 12.

DSC, Tirunelveli and the Student Branch of Computer Society of India from M S University organised Regional CSI Students Convention between March 10 and 11 which was also accompanied by a three day Computer Exhibition. Entitled Manoco'95, the event was arranged on a grand scale and saw some of the best computer brains around.

**DSC, Dharampu.** organised its Anniversary Week Celebration between April 20 and 27. The week-long programme was packed with activities that brought the local visitors and the science centre much closer. There were programmes on public awareness as well as explorations of various public utility projects.

**DSC, Purulia** collaborated with Dept of Zoology, J K College and Nature & Wildlife Conservation Club, Purulia to hold the National Environmental Awareness Campaign, 1994-95 on the theme Joint Forest Management and Eco-development.

A new gallery on the topic 'Vibration' was inaugurated on April 5 by Prof Sankar Sen, Hon'ble Minister for Power, Science & Technology and Non-Conventional Energy Sources, Govt of West Bengal, Swami Umananda Maharaj, Secretary, Ramakrishna Mission, Purulia, was the Chief Guest and Malay K Dey, IAS, DM, presided over the function.

The gallery covers a floor area of 2000 sq ft consisting of 49 interactive exhibits on the topic. It begins with an explanation on the many types of vibrations existing in nature, starting from the tiny atom to the expansive galaxies. However, it is interesting to note that most of the vibrations produce a rhythm irrespective of the size of the vibrating body. Slowly the story unfolds describing how 'Vibration' produces waves, what are the possible sources of such waves, what are their nature and characteristics etc. The star attraction of any 'Vibration' show is the Pendulum. Hence, a complete section consisting of 10-12 exhibits have been designed and placed in the gallery to discuss about pendulums clearly explaining different types of pendulums, their behaviour and characteristics in relation to their length and gravitational pull etc. In this respect, it is also essential to understand the importance of 'Vibration' in the mechanism of transferring information from one place to other. Visitors will enjoy operating the exhibits in this gallery, particularly an exhibit on 'Domino', which clearly explains through interaction, the process and mechanism of transferring information from one place to another.



Science Festival at Dharamsala

**W**orld Environment Day reminds us of our pledge to preserve this one earth that we have got. The various centres of NCSM, like always, observes the Day with programmes that will further the relationship between man and environment. The programmes are mostly aimed at making people aware of the environment and its various components.

**Birla Industrial & Technological Museum, Calcutta** was joined by the Dept of Environment, Govt of West Bengal. In the morning, there was a bird watching and insect identification camp where the participants were introduced to these wonders of nature by volunteers from local nature clubs. This was followed by a costume parade for children; a sit and draw competition on the theme 'Save Our Planet'; a debate on the topic 'Conservation of nature is against the growth of civilization'; an open house quiz on 'ecology and environment'. Two popular lectures were organised in the later half of the day. Pranabesh Sanyal, Senior Environment Officer, Dept of Environment, Govt of West Bengal and Prof T M Das were the two speakers. Achintya Ray, Hon'ble Minister for Environment & Forests, Govt of West Bengal inaugurated an exhibition on 'To be or Not to be'. The function was presided over by Kalyan Biswas, IAS, Secretary, Dept of Environment & Forests, Govt of West Bengal.

**Shrikrishna Science Centre, Patna** observed a two-day programme. There was a sit and draw competition on the theme 'Water - the fountain of life'. A training cum demonstration on the theme 'Do it yourself' and 'Techniques of growing plants

without soil' was quite appreciated. The trainees also put up a temporary exhibition of plants grown without soil. Visitors enjoyed a selection of science films as well as a lecture cum demonstration on the theme 'Environmental activities - a source of life and livelihood' by Manzar Alam.

**Regional Science Centre (RSC), Guwahati** spread its programmes over June 4 and 5. Besides an open house science quiz and film shows and drawing contests, there was a nature study camp organised at the Assam State Zoo-cum-Botanical Garden. Dr Dulal Goswami, Head of the Dept of Environmental Science, Gauhati University delivered a popular lecture on Man, Environment and Science.

**RSC, Bhubaneswar** collaborated with Forest and Environment Dept and Nature & Wildlife Conservation Society of Orissa. They arranged four competitions on essay writing, debate, quiz, popular science lectures as well as an open house quiz on the lectures. A film festival was also organised.

**RSC, Lucknow** divided their day in several widening topics. School students were involved in a tree plantation programme. Film shows were organised on environment and wildlife. The open house quiz was also centred on the theme of environment. Dr J C Bhutani spoke on 'Floriculture'. Another popular lecture was on 'Remote Sensing Application on Environmental Science'. Dr N K Mehrotra, Head, Dept of Environmental Science, Lucknow University gave the inaugural address. Local school students presented an interesting cultural programme.

**RSC, Bhopal** was assisted by MP State Council of Educational Research and Training, Bhopal in organising a short and educative programme. There was a popular science lecture and an open house quiz on Environment followed by a valedictory function.

**District Science Centre (DSC), Tirunelveli** joined hands with several local bodies, viz. Nehru Yuva Kendra, Rotary Club, Green Education Trust, Arumbugal Trust, Read Trust and Susee Auto to observe an environment week. An environmental Kala Jatha provided both entertainment and awareness. A seminar highlighted on Joint Forest Management and Eco Development. A photo exhibition reflected on the environmental issues. Visitors explored a nature trails. A 'Vehicle emission test' programme (that also formed part of the Road Safety Year programme) was much appreciated.

**DSC, Dharampur** collaborated with Lady Wilson Museum to organise a three day programme. A photography exhibition entitled "Toward Better Environment" was put up at the popular science gallery for five days. There were two popular lectures on the themes 'Observations on Eco-system of Dharampur block' and 'Mushroom Culture' respectively. Participants of Ecoclub conducted a bamboo plantation ceremony. The plant species in the Science Park were identified and named. An interesting snake show charmed its way to the hearts of the participants. Saplings which are economically beneficial, were distributed to those interested. Besides these, there were special film shows and an open house quiz.

# INTERNATIONAL NEWS

## First Science Centre World Congress

### *Learning for Tomorrow*

June 14-18, 1996 - Heureka, Finland

On June 14-18, 1996 science centre professionals from all over the world will gather at Heureka, The Finnish Science Centre in Vantaa, Finland for the First Science Centre World Congress.

The first ever science centre world congress is held following an initiative by the Association for Science-Technology Centers, ASTC and the European Collaborative for Science, Industry and Technology Exhibitions, ECSITE. Heureka, The Finnish Science Centre has the honour of hosting it.

The aim of the congress is to facilitate international cooperation between science centres and to bring together science centre colleagues and other interested professionals to learn and share experiences. So far, colleagues from more than fifty different countries on all continents have expressed an interest in participating in the congress. This reflects the truly global nature of the event.

The theme for the congress is *Learning for Tomorrow*. This reflects the fact that science centres are an important resource for most educational systems and that learning for tomorrow is an urgent task, in which science centres make a major contribution. The preliminary congress programme includes general discussions, professional sessions, workshops, contests, live science shows etc. The keynote address will be delivered by Prof Yash Pal from India. Among other things, he is a physicist, a space science specialist

and anchorman of a very popular television programme. Another programme highlight is the World Forum where an overview will be given, by means of regional network reports, of the global state of the art in the science centre field. Future international collaboration will also be discussed. Other programme topics are meeting the challenges of the 21st century, travelling exhibitions, communication, learning and visitor research, human resources etc.

In addition to the professional programme a varied social programme, excursions and post-congress tour will be organised. Participants will get the chance to hike in the wild forests of Vantaa, fish in the Gulf of Finland or make a daytrip to Tallinn in Estonia. Post-congress tours will be arranged to Lapland and the Midnight Sun, two Arctic Circle science centres and to St. Petersburg in Russia.

Heureka, The Finnish Science Centre, a full member of ASTC and

ECSITE, is located in Vantaa, 10 minutes by car from Helsinki International Airport and just 15 minutes by train from downtown Helsinki. The recommended hotels are very close to both Heureka and the airport and all meeting rooms are within five minutes walk from one another.

The Second Announcement for the congress including preliminary programme, registration form and practical information will be distributed in the beginning of 1996.

For more information, or to be included on the mailing list for the Second Announcement, please contact:

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Participants of the Programme Planning meeting for First Science Centre World Congress held at Heureka, Vantaa, Finland, during June 29-30, 1995. Fourteen participants from 5 different countries including ECSITE and ASTC attended the meeting

# INTERNATIONAL MUSEUM DAY

In the calendar of any museum, May 18 is an important date. It is on this date that all museums around the globe celebrate International Museum Day. The units of NCSM also observed the day with activity-centred programmes.

**Nehru Science Centre, Bombay** celebrated the 'International Museum Day' by organising several programmes. The Exhibit Hunt Contest for visitors was organised for the whole day. Quiz sheets comprising of clues to lead visitors to the exhibits where they have to identify the exhibits based on the clues, write the name of the galleries and the explanation as they understood from the exhibits. Special Film Show on wild-life was arranged for visitors throughout the day. A Popular Science Lecture was delivered by Dr M N Vahia of TIFR, Bombay on the topic 'How do we understand Stars?'.

International Museum Day was celebrated at **RSC, Bhopal** on May 17 and 18. Various science films were screened. Special Taramandal Shows with slides were organised. Science demonstration lectures on the themes 'science vs miracle' and 'Fun Science' were conducted. With the help of 80 mm refractor telescope visitors watched Mars, Jupiter, double stars, constellations, etc at the Sky Observation programme.

**Raman Science Centre, Nagpur** had quite an active day. A popular science lecture was delivered and simultaneously demonstrated on 'Simple Machines in Home'. More than 100 people participated in the Open House Quiz. Film on science and other interesting topics were screened. The Taramandal Show and Sky Observation Programme

were highly appreciated and well-attended.

**Shrikrishna Science Centre, Patna** organised a science quiz contest for primary and secondary school children as well as Taramandal demonstrations and sky observation programmes along with special film shows. Dr A Narayan from Dept of Physics, Patna University delivered a popular science lecture on Vedic Mathematics.

**DSC, Tirunelveli** organised a seven day programme that consisted of inauguration of new facilities, Group Dynamics - Training Programme, a museo science fiesta, and two dramas - 'The Social Virus' and 'New Vistas of Science' by summer school students.

**DSC, Dharampur** observed the International Museum Day by organising a week long programme. A photographic exhibition was inaugurated on the first day. Its theme was 'Knowing the tribal communities of Gujarat'. A popular lecture on the theme 'Non formal Science Education in Tribal Village' was delivered by R B Suthar, Dist. Youth Coordinator from Nehru Yuva Kendra, Valsad. A teaching aid workshop on Astronomy and

Sound was organised for primary school teachers. Also organised were an open house quiz on computers and a science film festival. With help from Dr K P Mehta Charitable Trust, Bombay, a medical camp was organised at Ashram School, Kaprada Tal. A temporary exhibition was put up at the Popular Science Gallery.

**Dhenkanal Science Centre** in its week-long programme organised sit and draw competition on the topic 'Tree is our Friend', Chemistry demonstration lecture, Science Magic Show and demonstration of new kits, an essay competition and open house quiz as well as a debate. There were several popular lectures - 'Principles of Electric Transformers'; 'Role of Science & Technology Communicators in promoting scientific temper' by Prof B B Mohanty, Res. Director, IIMC; 'the Mysterious Sky', and 'AIDS - medical and social aspects' by Dr B K Pattanaik, Chief District Medical Officer.

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