

# Capsule

JAN  
MAR  
1990

# 16

## THE SECOND SCIENCE CENTRE IN MAHARASHTRA RAMAN SCIENCE CENTRE NAGPUR



**Capsule**  
sends you  
**Best Wishes**  
for 1990

**R**aman Science Centre, Nagpur, is the second science centre in the State of Maharashtra.

Some time in the year 1987 the project was taken in hand by NCSM. Land measuring 14 acres

on a filled-up tank bed was available to set up this Centre on the opposite bank of Gandhi Sagar.

The Centre houses the exhibition halls in a built-up area of 1500 sq. mt. in the first phase.

# SCIENCE MUSEUMS—a special feature



The theme of the exhibition is the 'Umbrella', that protects us from harmful radiations and showering meteorites. It is the atmosphere that surrounds the planet Earth. Do we know enough of this 'Umbrella'? How does it protect us from solar radiations and how does it convey solar heat to us? What is the composition of air, how do the clouds form, what is the relationship between pressure and temperature of air? How does the shortwave radio signal reach us, how does air cooling take place, what is vacuum, how does a cyclone form? One can discover, explore and experience the cosmic drama in Atmosphere in this exhibition hall.

With hands-on exhibits visitors can participate to ascertain the weight of air, effect of heat, light and sound and electricity. Objects can fly in air, and air does work. Apart from the physical properties, electronic properties of air in the ionosphere are demonstrated by the exhibits. It is also important to detect the pollutants that may destroy this protective umbrella—covering and bring destruction to life forms on this planet.

The second exhibition hall is devoted to the method of science understanding through fun and excitement. Exhibit areas are—wave motion of pendulum, gravitation, sound vibrations, mirrors, optical illusions, colours, electricity and magnetism. All these exhibits answer not only the basic questions but give the step-by-step solutions also. The same hall houses the inflatable dome planetarium, 'Taramandal'.



A large Science Park, sprawling over five and half acre of lush green beautiful landscape provides the visitors with opportunity to relax in the colourful surroundings, away from the hustle and bustle of city life and allows the children to play with an array of outdoor exhibits on physical science and also live tender animals. It is an experience with life.

It is an exciting world on the bank of Gandhi Sagar. Here science is no more a subject but an experience. Here science is a thing to play with and learn. Here one is free to spend a whole day in play with hands-on exhibits: press levers, turn things. One can discover that here the concept of science is different: it is sheer fun.

Mobile Science exhibition buses run throughout Nagpur and its vicinity, carrying messages of science to the doorsteps of common people. It organises Teachers' Training Pro-

grammes, Creative Abilities Centre for young students, Science Fairs, Seminars, Nature Camps and gives support to the schools for developing their own Science Centres. Appropriate programmes are run for rural adults.

(Above Left) : 'Air Cushion' exhibit.

(Above Right) : 'Hot Air Balloon'.

(Below) : 'Umbrella' Gallery.

# ELECTRO- TECHNIQUE



## GALLERY

**V**isvesvaraya Industrial and Technological Museum, Bangalore, the first museum of its kind in the South opened its portals to the visitors on July 27, 1965, with a gallery on 'Electro-Technique' which comprised exhibits on basic electricity, telephony and applications of electronics with the then state-of-the-art technology.

The quantum jump of developments in electronics prompted VITM to completely change this gallery and throw it open to the visitors as part of its Silver Jubilee Celebration Programme.

What is Electricity? Can it be stored? What factors govern its flow through conductors? How much energy do common household gadgets consume? On what basis does one pay for the electrical energy consumed? An array of interactive exhibits provide the answers.

How does the telephone work? What is the mechanism of long-distance telephone networks—national and international? What is a picture-phone? Visitors can operate several exhibits, know and understand.

Visitors can play with microcomputers and understand their capabilities and limitations. One can pass through a metal detector. Check or see in a mock-up display the impact of developments in electronics in the household scene. An operating HAM station brings to the visitors the exciting experience of global person-to-person contact by wireless.

The gallery also has two kinds of robots for demonstration to the visitors and a section on electronic measurements of parameters like vibration, rotational speed, temperature, pressure and strain.

The gallery with a floor space of about 6000 sq. ft. and seventy exhibits is all ready for formal inauguration on December 20, 1989.



- (Above) : Demonstration of discharge of electricity through gases, and Tesla Coil—Old Gallery (1965).
- (Middle) : A new exhibit on 'Mutual Inductance'.
- (Bottom) : Computer Awareness Programmes are regularly held in the Gallery.

**National Seminar on****Calcutta and Science**

Venue : Birla Industrial and Technological Museum, Calcutta.

Duration : December 21-23, 1989

Organised by :

Birla Industrial and Technological Museum, in collaboration with The National Institute of Science Technology and Development Studies (NISTADS), and The Centre for Studies in Social Sciences.

**Computer Fair—1989**

Venue : Birla Industrial and Technological Museum, Calcutta

Duration : December 24-31, 1989

Organised by :

Birla Industrial and Technological Museum, in collaboration with the Directorate of Education, Govt. of West Bengal and leading computer companies in India.

**Indian Science Congress**

Venue : Cochin

Duration : January 7-12, 1990

Organised by :

Indian Science Congress Association, Calcutta.

Seminar on

**Management of Rural Development**

Venue : Puri, Orissa

Duration : January 8-13, 1990

Organised by :

Indian Institute of Management, Calcutta.

**Eastern India Science Camp**

Venue : Salt Lake City, Calcutta

Duration : January 17-22, 1990

Organised by :

Birla Industrial and Technological Museum, Calcutta, in collaboration with State Departments of Education and Youth Services.

**Southern India Science Fair**

Venue : Hyderabad

Duration : January 19-23, 1990

Organised by :

Visvesvaraya Industrial and Technological Museum, Bangalore in collaboration with State Departments of Education and Youth Services.

International Workshop on

**Solar Energy**

Venue : New Delhi

Duration : February 5-10, 1990

Organised by :

Solar Energy Programme Centre for Energy Studies, IIT, New Delhi.

**Breaking New Grounds**

International Conference on Current

Research in Museum Studies

Venue : University of Leicester, U.K.

Duration : April 8-11, 1990

Organised by :

University Department of Museum Studies.

**WHAT IS AN ELLIPSOID**

**S**olid geometry can be fun too :—

Solid geometry is more of an abstract concept as explained by mathematicians. However, there are many objects of daily use through which solid geometry can be understood in simple terms without recourse to symbols and formulae which form the language of mathematics.

Place the pieces of quarter circles as shown in figure. Observe the solid formed together with the reflections. Can you remember any object of daily use of this shape? This solid is called ELLIPSOID.

This exhibit, which will help visitors to understand solid geometry and symmetry of an ellipsoid, is on display for evaluation by the visitors in the reception area of Visvesvaraya



Industrial and Technological Museum, Bangalore.

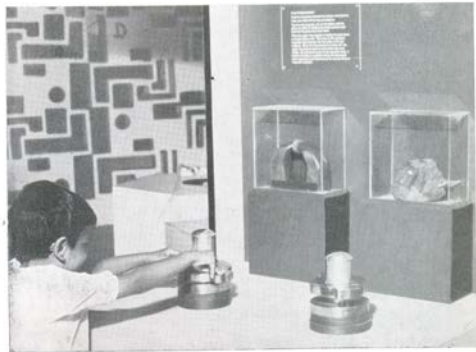
**FLOATING MAGNET**

**S**cience is fun, and so are magnets.

Two ring magnets (ferrite) are placed on a central vertical dowel in such a way that like poles of the two magnets face each other. Left to themselves, the magnet on the top floats above the bottom magnet at a particular height, apparently defying gravity. The visitor can push the floating magnet down and feel the resistive, repulsive force, and also

understand that at the level where the magnet floats, the downward force due to gravity is just balanced by the upward repulsive magnetic force between the two like poles facing each other.

This exhibit, FLOATING MAGNET, can be seen in the new Electro-Technique gallery at Visvesvaraya Industrial and Technological Museum, Bangalore.



# INDO-US

was to appraise the participants about the outcome of the workshop held in the USA and to develop new concepts on the design and fabrication of exhibits on 'Atom' and 'Chemistry of Life' which would form a part of Chemistry gallery in an NCSM unit.

Organised under the auspices of the Indo-US Sub-Commission on Education and Culture, the series of workshops between the science museum professionals of India and the USA add an element of dynamism to the science museums' activities in both the countries, by way of bilateral exchange of information and experiences. The workshops held so far have been highly successful in generating ideas for creation of new exhibits and programmes relating to various aspects of science museums' activities.

## CHEMISTRY EXHIBITS

'Development of Chemistry Exhibits for Science Centres' was the theme of the Workshop held at Lawrence Hall of Science, Berkeley, California, and the Exploratorium, San Francisco, during October 2-4, 1989. The workshop was inaugurated by the renowned Nobel Laureate scientist Prof. Glen Seaborg. The contingent of four Indian science museum professionals, led by Dr. Saroj Ghose, the Director General of NCSM, extensively interacted with their nineteen American counterparts in this three-day workshop. Through presentations, hands-on demonstrations and panel discussions, many new concepts were generated on the design and fabrication of exhibits relating to chemistry, chemical sciences and chemical technologies.

## FOLLOW UP PROGRAMME

As a corollary to the Indo-US workshop, a group meeting on the same topic was held at NCSM headquarters in Salt Lake City, Calcutta, on November 4, 1989. A team of six experts in chemical sciences from Tata Institute of Fundamental Research, University of Calcutta, Jadavpur University, and Indian Association for the Cultivation of Science, took part in this meeting with eighteen NCSM personnel coming from different Centres all over India. The rationale behind this meeting

# WORKSHOP



## SHARING SCIENCE BY ASTC

'Sharing Science: Museum and Community Partnerships' was the topic of the ASTC (Association of Science Technology Centers, USA) Annual Conference held at Maryland Science Centre, Baltimore, USA, during October 14-17 1989. About 300 delegates from all over the world participated in this Conference.

There were many thought-provoking sessions including one on 'Indo-US Co-operation: Science Parks to Portable Planetarium', panel speakers in which were Dr. Saroj Ghose,

Mr. Shab Levy, Dr. Alan Friedman and Ms. Sheila Crespi. Highlights of the Conference included a session on 'Memory' by the distinguished psychologist and researcher, Prof. Fergus Craik; and exhibition of exciting exhibits from the USA, Europe and Australia.

The closing session was held colourfully with music and masks, and with a call for the 1990 Annual Conference at Orlando Science Centre, Florida.

# SCIENCE CENTRE

## NEWS

### NATIONAL SCIENCE SEMINAR-1989

Student representatives from all the States and Union Territories of India assembled at the auditorium of Visvesvaraya Industrial and Technological Museum in Bangalore on October 5, 1989, for the final round of interaction in the Seminar. Dr. C. V. Sundaram, Director of the Indira Gandhi Centre for Atomic Research, Kalpakkam, inaugurated the Seminar with his keynote address. Shri T. R. Satishchandran, Director of the Institute for Social and Economic Change, Bangalore, was also present to deliver the valedictory address and distribute awards to the winners. Shri M. Manoj from Kerala was adjudged the best participant in this event.

A major annual event of NCSM, organised in collaboration with the State Education Departments, this seminar has a kind of multi-tier, pyramid-like system: on a given theme or topic of national relevance, thousands of students all over India start interacting at Block level, and gradually go up to the National level, through the successive stages of District and State level contests.

Such annual programmes of NCSM endeavour to develop resourcefulness in the participating students across the country, provide them with a platform where they can interact with one another on topics, not only of scientific but of socio-economic importance also. All that is expected of them is that they will take their turn to disseminate the benefits in every walk of life.

'Atomic Energy—Potentialities and Hazards' was the topic of the year, given to the school students to deliberate on, and it got thousands of young thinkers all over the country into involved, intimate but nevertheless critical discussions. It is always interesting to observe them—so young, yet so reflective.



(Above): Shri Subhas Chakravarty, West Bengal Minister for Sports & Youth Services, distributing prizes to the winners of the State level seminar.



(Above): The seminar at Nagpur. Topics like 'Atomic Energy'—Potentialities & Hazards provide the student participants with opportunities for creative extra-curricular studies.

The seminar held throughout the country is a strong platform for national integration.

(Bottom): Dr. S. Varadarajan, Chairman of NCSM, delivering the Presidential address at the inauguration of the seminar in Bangalore.



### SCIENCE CENTRE NEWS

#### Tirunelveli

District Science Centre, Tirunelveli, organised a Lecture-cum-Exhibition on 'Diabetes' on October 8, 1989. Lions Club of Palayamkottai collaborated with the Centre in this project. Lectures delivered by eminent medical experts of the area included topics like 'Diabetes and the

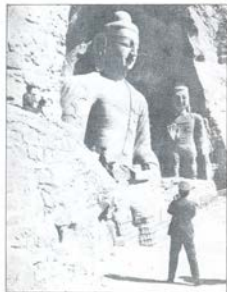
Heart', 'Eye Care in Diabetes', and 'Diabetes and Pregnancy'.

#### Gulbarga

District Science Centre in Gulbarga organised a Nature Study Camp for youngsters on October 03, 1989. Prof. V. Rangaswamy and Prof. S.A.T. Venkatachari, respective Chairmen of the Dept. of Botany and

(Continued in Page 8)

## CONSERVATION OF BUDDHIST SITES IN CHINA



The Colossal Buddha, sixty feet high at the Yungang Grottoes.

The People's Republic of China and the Getty Conservation Institute of the USA, with assistance from the UNESCO, are collaborating on the conservation of two of China's most important cultural sites: the ancient rock temples of the Mogao Grottoes and the Yungang Grottoes. The Mogao site is inscribed in the World Heritage List; the Yungang caves are in the process of inscription. These two great treasure-houses of mankind record the patterns of interchange of civilization, trade, and Buddhist art along the Silk Road into China.

The conservation project is the first major collaboration of its kind involving China, GCI, and UNESCO. In the first phase of work through the end of 1990 the project will focus on scientific research, data collecting and analysis, site conservation and stabilization, training and documentation.

## SCIENCE CARNIVAL IN THE USA

The Pacific Science Center in Seattle, USA, has been awarded a grant from the National Science Foundation of the USA to develop 'Science Carnival', a travelling science center.

'Science Carnival' will travel to 17 communities in Washington, Montana, and Idaho that do not have easy access to a major science center. "The Pacific Science Center is fulfilling its mission to increase science literacy throughout the Northwest by bringing its most popular and interactive exhibits and demonstrations to these communities," said PSC Director George Moynihan. "Science Carnival is a new addition to what is already the

most extensive science education outreach program in the nation".

'Science Carnival' will feature more than 45 components of PSC's most popular exhibits—Science Playground, Kids Works, and Body Works—and will be displayed in a 3,000—5,000 sq. ft. area. Exhibit components include a pitching cage, a giant bubble wall, a boa constrictor demonstration, and a mini laser show.

## 'HEUREKA' OPENS IN FINLAND

At 'Heureka' one can be the editor of newspaper, can make paper by hand, go to the bank of the future, make plastic, or try to solve the mystery of the 'perpetuum mobile'. 'Heureka' is meant for everybody: mothers and sons, fathers and daughters, grandmothers and grandfathers: all encounter the newest achievements of science and see them applied in practice.

The exhibition is divided into six major sections: The Universe, Life, Human Society, Production, The World of Sound, and an Outdoor Science Park, containing samples of Finnish bedrock, from Helsinki to the Arctic Circle.

Besides the exhibitions, 'Heureka' also includes a lecture hall, science shop, an excellent restaurant, and the geodesic dome of the Verne Theatre. With a hemispheric screen

of almost 5,000 square ft. and seats for 197 spectators, the Verne Theatre is equipped for multiple slide-projector shows, planetarium programmes and Omnimax films.

The building itself is a beautiful mathematical sculpture. Reflective surfaces shy away from the vertical, like building blocks transformed by CAD. Inside, interlocking volumes are joined by ramps and tantalizingly blocked by mirrors. Computer exhibits are combined with the classic hands-on and with static displays, all monochromatic or shiny, bathed in cool daylight, spotlight with halogen bulbs.

Established by the Finnish Science Centre, Heureka had a gala opening on April 27, 1989, at Tikkurila, City of Vantta, Finland. In the first 11 days after opening 40,000 visitors poured in through the doors of Heureka.

'Heureka' is synonymous to hands-on science experience for people of all age-groups, especially youngsters.



## SCIENCE CENTRE NEWS

(Continued from Page 6)

Dept. of Zoology of Gulbarga University, took part in this programme.

In collaboration with the Indian Association of Family Physicians and Pfizer, the DSC Gulbarga organised a Lecture-cum-Audio Visual Presentation on 'Health Care', on August 19, 1989. Another programme on 'First Aid for Women' was arranged on October 18-20, 1989, in collaboration with St. John's Ambulance Association, Gulbarga.

### Calcutta

**B**ITM (Birla Industrial and Technological Museum, Calcutta) Football Team 1989 has bagged the Mahendralal Sarkar Memorial Trophy defeating by 3-1 goals the CGCRI (Central Glass and Ceramic Research Institute, Calcutta) team in the final match on November 2, 1989 held at the IACS (Indian Association for



The Cultivation of Science, Calcutta) ground. Science Association Club at the IACS organised the tournament in which the other participating team was from the Indian Institute of Chemical Biology, Calcutta.

### FABRICATION TECHNIQUES FOR ACRYLIC MATERIALS

**V**arious exhibit and display items are fabricated in different NCSM Ex-

hibit Development Laboratories as a part of the Council's Exhibit Development Programme. During the last few years, a number of gadgets, furnaces and fixtures have been developed with acrylic materials to create interesting shapes. Hemispherical domes, large double convex lenses, rods and tubes bent in peculiar shapes are now standard products of NCSM Laboratories.

To enhance the capability of acrylic fabrication, a team of five technicians from different NCSM units have recently been deputed to the Application Development Centre of Gujarat State Fertilizers Corporation, Vadodara, the renowned manufacturer of acrylic sheets, for an on-the-job training programme of one week duration. During the programme, the trainees learnt techniques of cutting, joining, polishing, bending and heat-forming of GUJPOL-S acrylic sheets.

## MAGIC MIRROR



## THE NEXT

**A** Regional Science Centre, the first in the State of Assam is now ready for inauguration. CAPSULE-17 will give you the details.

## WE NEED

**T**he Editor of CAPSULE is looking forward to your sending by January 31, 1990, publication materials for CAPSULE-17. Please send short notes, photographs, problems, suggestions, cartoons and puzzles.



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