

# Capsule 40

Jan - Mar 1996

## Children's Science Activity Centre at Sirsa, Haryana

A first hand adventure in science for children is the aim of this new centre. Inaugurated on Nov 8, 1995 by Ms Selja, Minister for Culture in the Bal Bhavan Complex at Sirsa, the centre comprises of four sections - Activity Corner,

Arora, Minister of Excise and Taxation, Govt of Haryana, around the campus.

In the Activity Corner, scientific charts, kits, biological specimens etc help visiting students to understand various scientific theories and encourage them to experiment further. Students also gain hands-on experience in using simple machines.

The Taramandal or inflated sky-lab offers the unique opportunity to about 25 adults or 30 children at a time to study stars and constellations. The visitors seated inside this make-shift planetarium are encouraged to interact freely and solve their queries. The Fun Science section engages visitors with participatory exhibits which teach them more about science. In the Creativity Corner teachers gain fresh perspectives about modern teaching techniques through investigative projects and easy-to-make science kits.

Adjoining the centre is a beautiful Science Park which opens doors on the natural world. Children play with the participatory outdoor exhibits and learn to love park animals and birds.

The Children's Science Activity Centre was set up by the National Science Centre, Delhi with support from Nehru Science Centre, Bombay and Central Research and Training Laboratory, Calcutta.



Children's Science Activity Centre at Sirsa, Haryana

Taramandal, Fun Science and Creativity Corner. It provides the much needed supplement to classroom education.

On the inaugural day, Dr Saroj Ghose, DG, National Council of Science Museums took distinguished guests like Jagadish Nehra, Minister for Parliamentary Affairs and Irrigation and Lachman Dass



Dr Saroj Ghose explaining an exhibit to the distinguished visitors

## National Science Seminar

The National Science Seminar was held at National Science Centre, Delhi on Oct 10, 1995. The National Council of Science Museums has been organising National Science Seminar for school students every year, since 1982, with the primary objective of inculcating in the minds



of young students a spirit of scientific inquiry and analytical thinking and also to provide them an opportunity to exchange ideas with fellow-winners from other states. Above everything, the project helps to grow a feeling of national integration among budding scientists from all over the country.

The chosen topic for this year's Seminar was 'Resources from the Earth' because of immense relevance of the issue. This being a very vast subject, the participants were given the option to deliberate on any one of the five major areas, viz. Ores

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**B**irla Industrial & Technological Museum, Calcutta organised a Computer Awareness programme for school students between Oct 10 and 31. The training included Basic Language, dBase III+ and Word Star Package in IBM-PC. BITM evaluated the candidates and issued certificates to them. Seven students were offered membership of the Museum's Computer Club for further study and practice.

BITM, in collaboration with the World Wildlife Fund for Nature-India observed World Wildlife Week from Oct 5 to 7 to create an awareness in nature and wildlife conservation in our country. The programme included open house quiz for students upto class XII, identification of animals for junior students, bird and insect watching, drama competition on the theme 'Wildlife' etc. On this occasion Pranabesh Sanyal, Conservator of Forest, Govt of West Bengal delivered a popular talk on Ecosystem. There was also a festival of films on wildlife and forestry.

BITM, in collaboration with the Dept of Environment, Govt of West Bengal organised 'The Conservation Day' on Nov 25. The programme emphasised on protection of environment, conservation of natural resources, abatement of pollution and promotion of environmental awareness among young people. S Goswamy, Director, BITM stressed the need and responsibility for environment protection to save human population. Pranabesh Sanyal delivered a lecture (illustrated with slides) on Sunderban Reserve of West Bengal. M K Chatterjee, IAS, Jt Secretary, Environment Dept, Govt of West Bengal was also present on the occasion.

BITM, Calcutta organises Nature Study camp every year for younger school students to instil a general awareness towards nature and its conservation. Accordingly, the 10th Nature Study camp was organised in Kapilas Science Park under NCSM at Kapilas, Dhenkanal from Oct 10 to 14. There were twenty-two students of classes VIII and IX from ten different schools of Calcutta.

The Nature Study camp was a combination of theoretical sessions interspersed with field training. The participants were acquainted with bird watching, tree identification, insect study, astronomical observation and imparted training in field crafts. A quiz was conducted to test acquired skills.

Between Oct 10 and 21, BITM organised Hobby Camp for school students. One hundred and two students from various schools in and around Calcutta completed 29 different scientific projects in four camps on Physics, Chemistry, Electronics and Aeromodelling and Ship modelling. Some of the

interesting projects were Conductivity of heat, multiple reflection of plain mirrors, sound vibration, magnetic compass, exo-thermic and endo-thermic reactions, electroplating, amplifier, timer circuit, frequency generator, chuck glider, catapult glider, free flight (Power Engine) time - control aircraft and a model of INS Pratap.

**A** training programme on Vermiculture was conducted at **Nehru Science Centre, Bombay** on Oct 6 & 7. The programme was organised in collaboration with BAIF, Pune for the benefit of technicians (Horticulture) of NSC, Bombay and its satellite units i.e. RSC at Nagpur, Bhopal, Calicut and Lucknow and DSC, Dharampur. V C Badve, Programme Coordinator, BAIF imparted the training. A vermiculture unit has already been started at NSC, Bombay.

Vermiculture technology involves composting of bio-wastes using earthworms. During this process, earthworms consume bio-wastes. Their excreta, called Vermicast, is rich in nitrogen, phosphorus and potassium. The trainees were informed about regenerative agriculture, classification of earthworms, systems of vermiculture, benefits of earthworms/vermicompost, preparation of vermicompost, food for the earthworms, and precautionary measures for vermiculture. The surface variety of earthworms was selected for study as they are good bio-processors, multiply rapidly and adapt quickly to changes in environment.

**O**n Nov 2 & 3, **Srikrishna Science Centre, Patna** in joint collaboration with District Education Office organised district



Bringing wildlife closer to people

Practical Training programme for the 2nd year Museology students of the University of Calcutta was organised between Nov 20 and Dec 2. Twelve students, divided in two groups, prepared drawings, exhibition layouts and complete dummies (in scale) on the themes 'Environment' and 'Textile'.



Little scientists astound foreign guests

level Jawaharlal Nehru Science Exhibition 1995. Students from Patna district participated. The main theme of the exhibition was "Science and low-cost technology for development". Under the main theme there were six sub-themes - Food, health and nutrition, Energy, Environment, Industry, Transport and communication and Education Technology.

The exhibition was inaugurated by Dr Dharendra Prasad, ex-Director, SCERT, Patna, Bihar. Later the exhibition was opened to the public.



Participants explaining their exhibits to the visiting dignitaries

On the valedictory day, Prof S N Ahsan, pro-Vice Chancellor, Patna University was the Chief Guest and Adrian Thomas, First Secretary, Cultural Affairs, British Council Division, British Deputy High Commission, Calcutta was the guest of honour.

**R**egional Science Centre, Tirupati collaborated with A P Forest Dept to observe the 41st Vanya Prani Saptah on Dec 1.

T Sathyanarayana Rao, IAS, Jr Executive Officer of Tirumala Tirupati Devasthanam was the Chief Guest. K G Kumar, Project Coordinator, RSC presided. The various programmes included open-house quiz on 'Wildlife and Forestry' as well as film shows.

On Nov 14, the Centre observed Children's Day. The programmes included One minute, brain teaser, Treasure hunt, Balancing game, Crossword puzzle, Remember Scientists and Children's open-house science quiz.

**R**egional Science Centre, Guwahati celebrated Children's Day on Nov 14 with Sit & Draw contest for children of class V-VII, Open-house science quiz contest among students of class VIII & IX and a popular science lecture on "Stresses arising out of the Syllabus Burden - Its Consequences and Remedies".

In the Sit & Draw Contest, 31 children from various schools in Guwahati participated. The topic given for drawing was 'During Solar Eclipse'. The children brilliantly recapitulated the spectacular phenomenon. The popular science lecture was delivered by Dr Punyadhar Das, Professor of Psychiatry of Guwahati Medical College. Dr Das dwelt at length on different aspects of adolescence. He discussed how anger, frustration and depression in the life of a student may lead to identity crisis, lack of confidence, manifestation of violence, leading to drug addiction and some times even to attempts of suicide in some cases. He also discussed how anxiety during examination leads to temporary memory loss. He advised the student community on how to tackle all these problems

arising out of the present competitive environment. He had a separate session with teachers also. A total of 218 students and 27 teachers actively took part in this lecture which was followed by an interesting question-answer session.



Models displayed at the State Science Fair

The attractive open-house quiz contest with live demonstration for the students of class VIII & IX was held in the auditorium of the Centre on this occasion.

RSC, Guwahati observed World Aids Day on Dec 1, in collaboration with Voluntary Health Association of Assam. Posters and Group discussion helped spread public awareness.

**R**egional Science Centre, Bhubaneswar, in collaboration with Lioness Club of Bhubaneswar observed Children's Day on Nov 14 with a variety of interesting programmes for children.

Sit & Draw competition was conducted for classes I-III, IV-V, VI-VIII on the topics 'Rainy Day', 'Flowering Garden' and 'Chacha



Giving free rein to their ideas



Nehru - Friend of Children' respectively. A poster competition was conducted for 'class IX & X on 'Prevention of cruelty to Animals'. An interesting programme 'Sound Source Detection' was conducted for the children of class IV and V. These programmes were well attended by various school children, specially handicapped children from Deaf and Dumb school.

RSC, Bhubaneswar celebrated 'National Pollution Prevention Day' on Dec 2 in collaboration with Orissa Environmental Society. Various programmes were conducted between Nov 30 and Dec 2 under the sponsorship of State Pollution Control Board. Among the host of events organised to mark the occasion was a series of competitions for school and college students.

Aranyani, the Forest Officers' Wives Association organised a sit & draw, a science quiz and a fancy dress competition among school students in collaboration with RSC, Bhubaneswar on the occasion of the former's Annual Day on Nov 25.

Pathani Samanta, regarded as the last link in the long chain of classical Hindu astronomers, is known as an indigenous instrument-maker and for his practical observations of the night sky. As a tribute to this genius some of his instruments preserving his original style and perception is to be recreated. The present Creative Ability Centre is a step forward in that direction.

As many as 4 students and a teacher-guide of a distant rural school conceived this novel idea and fabricated replicas of some of his 3 original instruments as well

as tested and took measurements with these. Among the instruments fabricated were a Gola Yantra - popularly known as Armillary Sphere used for determining the position and motion of planets, a Chapa Yantra - the semi circular sundial and a Golardha Yantra a sundial of hemispherical type.



Kit making made interesting

The students also made an equatorial sundial and evolved "equation of time" factors for the given day at Bhubaneswar latitude.

On Nov 8, 1895, Sir Wilhelm Conrad Roentgen discovered Roentgen Rays, popularly known as X-Rays. To commemorate the centenary of the discovery of X-Ray, **Raman Science Centre, Nagpur** in collaboration with Association of Radiation Oncologists of India, Nagpur and other institutions organised a programme on Oct 7-8 at the Centre.

The programme was formally inaugurated by Prof R N Ingle, Principal, VRCE. An exhibition on 'Application of X-Rays' was also opened to the public. On Oct 8, eleven popular science lectures were organised. The two day programme ended with a valedictory function and a visit to the galleries of the Centre.

**District Science Centre, Dharampur**, in collaboration with Pulse Polio Steering Committee of Taluka Panchayat

and BAIF-DHRUVA organised the Pulse Polio Awareness and Immunization Campaign during Dec 8-10. There were special film shows too.

**District Science Centre, Tirunelveli**, in collaboration with Regional Transport Office, Kattabomman Transport Corpn. and Getwell Hospitals organised Road Safety Year 1995 and C V Raman Birth Anniversary celebration at Saratha Matriculation Higher Secondary School. Shri Sattanathan, Dy Manager (Tech.), Kattabomman Transport Corpn. was the Chief Guest and inaugurated the session. Dr David Srinivasham, Consultant Physician, Getwell Hospitals delivered a lecture-cum-demonstration on First Aid : Related to Road Accidents.

On Nov 7, **Dhenkanal Science Centre** and Raman Bigyana Sansad observed 107th birth anniversary of Prof C V Raman. Parag Gupta, IAS, District Magistrate and Collector, Dhenkanal was the Chief Guest. Two popular lectures were delivered by Dr P C Naik, Dy Director, Pathani Samanta Planetarium and Dr P C Dash, Reader, Physics Dept, Dhenkanal College.

R M Chakraborti, Director, Nehru Science Centre, Bombay was awarded the **2nd Manubhai Mehta Memorial Award (1994-95)** for Science Popularisation. This award was given by Nehru Planetarium, Bombay in memory of late Manubhai Mehta, Editor, Gujarati Daily 'Janmabhoomi' who was also a prolific popular science writer. The Director delivered a speech on 'Development of Science Museums in India' on this occasion.

# SOLAR ECLIPSE



**P**opularly termed as Dusk at Dawn, the Total Solar Eclipse that occurred on Oct 24, 1995 was a phenomenon to behold. Visible from many places in India, the eclipse generated an excellent response among scientists and the lay public. Since the total eclipse was visible from quite a few places and for a considerable



duration, astronomers and other subject related researchers from around the globe converged at little known villages and countrysides of India. And according to an observer, the gadgets of these foreigners often elicited more excitement among the villagers than the eclipse itself.

The eclipse has always been looked upon as a phenomenon of fear and superstition by the lay public in our country. As a result, this unique event occurring on Feb 16, 1980 had mostly gone unobserved by the general public. This year, the central and the local governments as well as the various scientific organisations put in an excellent effort to make the general public aware and free of superstitious beliefs associated with the eclipse.

The various centres of the National Council of Science Museums began campaigning in favour of the eclipse much ahead of the actual event. As a result, when the Total Solar Eclipse occurred on Oct 24, the viewing facilities offered by the various centres were extremely well-received.

Though most of the centres followed the uniform pattern of popular lectures, quiz and viewing the total solar eclipse through various methods, special mention must be made about the works of District Science Centre, Dharampur and Regional Science Centre, Bhubaneswar. While the former made an excellent effort to create an awareness among a large number of tribal people, the latter made an innovative arrangement on the day of the total solar eclipse so that viewing opportunity was available to the maximum number of people. The detailed programmes of these two centres and others are as follows :

For **BITM, Calcutta** preparing for the event was nothing extraordinary since they have the long experience of arranging for such public viewing programmes. Opportunities like observing the eclipse through telescopic images and through CCTV were available. A six-panel mounted exhibition explained solar and other eclipses. A working exhibition on solar eclipse was fabricated and demonstrated to explain how an eclipse occurs at regular intervals. Special solar filters were fabricated and given to large number of people for safe viewing. Students were encouraged to conduct various experiments and keep close observations of the reaction evident in the atmosphere and living creatures.

**VITM, Bangalore** arranged a lecture on 'awareness on Solar Eclipse' by Ramalaxman, Scientist, Satellite Controls, ISRO Satellite Centre, Bangalore on Oct 19.



Lecture programme at VITM

Elaborate arrangements were also made for observing the solar eclipse at the museum premises.

**NSC, Bombay** well-organised the solar eclipse programme with a variety of items. An Elocution Contest for Jr College students on the topic "Eclipses - Myth & Facts" was organised on Oct 20. On the spot painting and poster competition for junior & senior students was organised on Oct 21 on the topics 'Eclipse & Life of People' and 'Eclipse and Associated Myths' respectively. Special film shows on Astronomy was organised for visitors in the Science Centre throughout the day. A special Eclipse viewing programme was organised through telescope projection and some special sun filters. Popular Science Lectures were organised on Oct 24. Dr S V Dample from TIFR and Prof P V Chandratre,



Everybody loved to watch the eclipse

Retd Professor, Ruparel College, Bombay delivered lectures on the topics "Solar Eclipse & Facts" and "Myths & Their Scientific Interpretation". 150 visitors attended the lectures.

From early morning, people gathered at **RSC, Guwahati** where three telescopes were so arranged that people could indirectly view the eclipse on a screen. The TV in the auditorium telecasted the Door-darshan's programme. The more interested observed the eclipse in the open at the Science Park. A small exhibition with different astronomical models and charts was arranged and explained to the visitors.



Observation of solar eclipse through reflection at RSC, Guwahati

**RSC, Bhubaneswar** made the observation of total solar eclipse an event to behold. Twelve exhibit stalls covering all the aspects of the eclipse were erected for an effective live observation by the public. A guide chart showing the nature and location of the stalls was displayed at the entrance and all the stalls were provided with proper labels and safety precaution write-ups.

There were other programmes too before and after the eclipse. A four-day hobby camp was organised on the theme 'Astronomy with special emphasis on Solar Eclipse' for senior secondary students, beginning on Oct 19. The 20 kits fabricated by them were used

during the total solar eclipse and pamphlets describing the phenomenon were distributed. On Oct 22, a special NASA slide show was arranged on the themes Moon Landing and Voyager's Mission. On Oct 24, a popular lecture was

delivered by Dr L P Singh, followed by an open house quiz.

On Oct 14 & 15, **RSC, Lucknow** organised a two-day workshop in collaboration with Council of Science & Technology, U.P. Several scientists spoke on the occasion.

Stall	Title	Nature of the exhibit
1	Observation by Traditional Method	Observing solar imaged through Haldi water in earthen pot
2	Projection with plane Mirror	A circular aperture on a plane mirror projects the eclipsed Sun on a screen
3	Pinhole Camera	A small pinhole projects the Sun's image on a translucent screen
4	Filters	Direct observation of the Sun using 4 different kind of filters fitted in an array of 8' panels. These are : 2 layers of fully exposed and fully developed black & white photographic film, Aluminized Mylar sheet, Welder's Glass No.14 and 8 layers of silver coloured Sun-control film
5	Projection with Reflecting Telescope	This telescope was fabricated at RSC after 12 days of grinding during the NCSTC workshop
6	Projection with Refracting Telescope	The 4" Carl Zeiss German telescope was "equatorially" mounted for this purpose
7	Recording of Date	Students in groups recorded various eclipse related dates before the visitors
8	Befooled Tubelight	An in-built L.D.R. circuit attached with the Solar Tubelight in the Park supposed to switch on due to the false nightfall and this formed one of the stalls
9	Eclipse on the Ground	Observing the eclipsed light patches of the Sun's image i.e. the shadow rings, under the 'Kadamba' tree near the Main Gate
10	Birds & Animals Perplexed	Observing the perplexed birds and animals of this centre during the eclipse
11	Plants sense nightfall	Two light sensitive pot plants were displayed for any 'clipping' of the leaves during the eclipse
12	Eclipse News Board	A Newsboard carrying all sorts of eclipse related data and literature

# SOLAR ECLIPSE



Enthusiastic crowd observing solar eclipse at RSC, Lucnow

On the day of total solar eclipse, safe viewing filters were distributed among those who wanted to be in the open, others observed the telescopically projected images. An exhibition explained the phenomenon through photographs, supported by information booklets.

**Ramun Science Centre, Nagpur** organised two popular lectures on Oct 14 and 21 respectively, for school students. The two respective speakers were Nilima Kirane of Marathi Vigyan Manch, Pune and Prof P V Khandekar of Nagpur. On the day of total solar eclipse, Prof P V Khandekar and Dr M Y Apte guided the observers to enjoy the event. Later they answered queries of the curious onlookers.



The Eclipse was fun to watch

Students gathered in large numbers at **RSC, Tirupati** to observe the total solar eclipse through the TV projection in the auditorium besides observation through telescopes, pin-hole projections, filtered glasses etc. Later a

popular lecture was delivered by Prof V V Shastri on the eclipse. It was followed by an open-house quiz on 'Sun and its Family'.

At **Srikrishna Science Centre, Patna**, indirect viewing was made available by reflecting the telescopic image on a frosted glass and then telecasted through closed circuit TV. Groups of students were guided to conduct observations of and record the behavioral changes in living creatures, temperature variations, changes in light intensity etc. Apart from this, small children participated in tracing the eclipse on tracing papers.

Earlier, on Oct 7, Rituparno Goswami delivered a popular lecture entitled 'Nightfall on A Sunny Morning'.

**Bardhaman Science Centre** helped train resource persons who were helping the local administrative body to create a scientific awareness of the total solar eclipse among the local people. The workshop was organised on Sept 12 and 13. Centre also organised a number of activities. They made provisions for viewing the solar eclipse simultaneously by a large number of people.

It is one thing to create awareness among the urban and peri-urban people regarding the total solar eclipse but to do so among the tribals requires patience and innovativeness. **DSC, Dharampur** merged anti-superstition programmes with general awareness programmes for the benefit of tribals from 18 villages in the area. The science centre's efforts were furthered with help from Field Publicity Office, Valsad.

On the day of total solar eclipse, a special solar eclipse

observation programme was arranged. Between Oct 12 and 14, amateur astronomers and local science school teachers were assisted in preparing low-cost basic astronomical tools as well as given a grounding in the basics of astronomy.

**Dhenkanal Science Centre** organised the solar eclipse observation programme by installing a refracting telescope and a large pin-hole camera.

**DSC, Tirunelveli** too made various arrangements for viewing the eclipse on Oct 24.



Observing animal behaviour during solar eclipse

## Solar Eclipse and Discovery of Helium

The total solar eclipse of Aug 18, 1868 observed from Guntur in India goes down as a very important one in the annals of history. The British team comprising Col. Tennant and the French team headed by Jules Janssen observed independently an extra yellow line in the spectrum of sunlight. This line did not match with those of any elements known then.

So this was attributed by the British astronomer Norman Lockyer to a new element in the sun; it was aptly named helium (Helios - Sun). Twenty-seven years later the existence of this gas on earth was brought to notice by William Ramsay while he was looking for an inert gas, 'Argon'. Incidentally, Ramsay has the credit of discovering all the inert elements.



# NATIONAL SCIENCE SEMINAR

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and Minerals, Fossil Fuels, Food from the Ocean, Medicines from Plants and Life support from the Atmosphere. State and Union Territory level winners from all the States and Union Territories of the country except Meghalaya participated. The Seminar was inaugurated by Ashoke Bajpayee, Jt Secretary, Dept of Culture, Govt



of India, Prof Yash Pal, National Research Professor delivered the valedictory address and distributed prizes to the winners while Dr A P Mitra, FRS, an eminent Radio-Physicist, presided over the valedictory function.

The participants spoke well on the various issues. Almost all participants insisted that we find alternatives to the conventional resource means. Some of them suggested a thoughtful use of existing resources.

The erudite speeches further revealed important information on our natural resource bases, e.g. we are losing 6-7 million hectares of land



Prof Yash Pal signing best wishes to Ms Nathamuni, the 1st prize winner



annually due to soil erosion; mineral resources, fuel, metals and other materials are being consumed at a rate of 50 billion tonnes annually; it took 100 years to double the existing



population in the 19th century but it takes roughly 10 years now.

Ms Chari Deepa Nathamuni of S R Girls High School, Sevasadan,

Solapur, Maharashtra, winner of NSS 1995 received the NCSM Scholarship of Rs.200 per month, tenable for two years. Nine other second prize winners received NCSM Scholarship of Rs.100 per month for two years. Prizes in the form of books were awarded to all participants. They also received Science Reporter magazine and Junior Science Digest magazine for one year by the kind courtesy of the Publications & Information Directorate, CSIR and M/s N V Publishers and Distributors respectively.

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