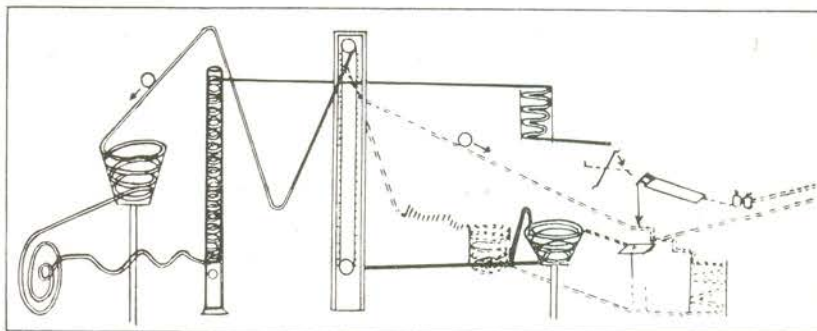
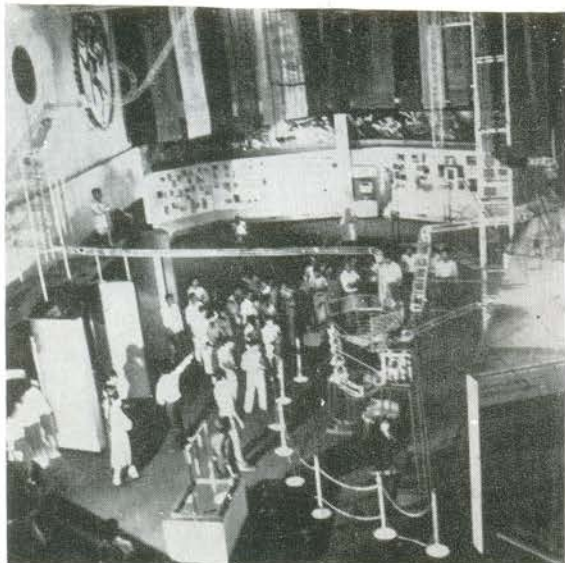


Capsule

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(Left) Visitors can't help being enthralled by the exhibit, "Energy Ball".

(Top) Designers' impression of the exhibit, showing the course of the Ball.

ENERGY BALL a fascinating experience for children

A solid ball, larger than that used in cricket, moves about 30 ft. up by a chain driven by visitors and gives performance like an acrobat in a circus while coming down the slope. It turns wheels, hits gongs and musical pipes, creates a music while passing through a xylophone, generates electricity by turning a small bicycle generator and passes through a series of loops like the motor cycle rider in a 'circus death well'. Now imagine 16 balls moving simultane-

ously in the system, picking up different paths through logic gates, playing music at various tunes, and moving all over 3000 sq.ft. of space. That is what the new exhibit 'Energy Ball' is, added to the 'Energy is Life' pavilion at Pragati Maidan, New Delhi on 14th November, last.

In a single exhibit one can demonstrate transformation of energy from muscle to potential, from potential to kinetic, from kinetic to potential, from kinetic to electricity. Also, transfer of momentum, centrifugal force, conservation of angular momentum and even Kepler's law on planetary motion. The exhibit is possibly the largest of its kind ever placed in a Science Centre, having 650 feet path length for moving balls. It is a product of four months' work of a team of engineers, technicians, and artists in National Science Centre, Delhi.

NCSM SPEAKS

With this issue, CAPSULE completes its first year of existence. And, A Happy New Year to our readers. Dr. Madhuri Shah, former Chairman, University Grants Commission, writes to us about CAPSULE :—

"It is very well brought out and is extremely interesting and informative. I was very happy to read about the events in India and abroad, and the development of regional and district science centres."

This is the highest tribute to us that readers of various ranks find something of interest in CAPSULE. We do feel bound to accommodate new ideas and materials from them, and to reach more and more people.

SCIENCE MUSEUM—a special feature

A science museum is not all exhibits. Activities, especially for school children, dominate the scene.

Science Museums and Centres throughout India are buzzing beehives of activity. Something or the other is always taking place—programmes like science-quiz, star-gazing, training in amateur radio, competition on model making, staging dramas on science based episodes, photography and so on. Inexhaustible variety is there, for all, especially the school children.

National Science Seminar : This Annual event by NCSM provides school children all over India a platform for interaction on a topic of current interest. Organised in collaboration with the Education and Youth Services Departments of the State Governments, the Seminar has a pyramidal structure. From Block to District to State and then culminating in the National level are the steps. Students from all States and Union Territories of India participate in this programme, thus strengthening National Integration. In 1986 the programme started all over the country in August, culminating at New Delhi on October 1, 1986 for the final round contest.



(Top) A young thinker articulating on "Green Revolution and Our Future", at West Bengal State Science Seminar 1986.

(Right) Children exploring their creative abilities.

Creative Ability Centre : Culture of creative abilities in children can be done by giving them full liberty to choose a topic and work on it. Guidance by experienced instructors often kindles their imagination. It is interesting to watch them in action—some are interested in copying an instrument, some like to engage themselves in casual investigations and some ultimately come up with ingenious things—mirrors for reflecting telescopes, weighing machine using a football bladder, optical micro-meter, transistorised photoelectric circuit, projector and various other interesting exhibits.



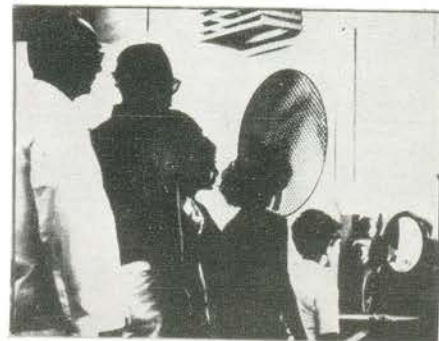
SCIENCE MUSEUMS IN INDIA

Smt. Krishna Sahi, Union Minister of State for Education & Culture opened 'Our Senses' gallery at Shrikrishna Science Centre, Patna.

A new Gallery "Our Senses" was opened at Shrikrishna Science Centre, Patna. Smt. Krishna Sahi, Union Minister of State for Education & Culture, inaugurated on October 18, 1986 the Gallery that invites the children of Patna to a wonderful world of perception.

The five sense organs in human body that make the world tangible to us through the senses of hearing, smell, vision, tactility and taste are vividly presented through the exhibits. Also are presented the phenomena of illusions, related to sensory perception.

The 'cheese' smile of the minister surely reveals the immensity of fun children get out of this exhibit, "head on a platter". This exhibit, apparently horrifying but simple, demonstrates a phenomenon of optical illusion.



(Top) Ecstasy incarnate—the Minister in the Gallery.

Various exhibits help the visitors to know themselves.



Fourth National Seminar on High Energy Materials, □ Shrihorikota, 1986-87.

High Energy Materials Society of India, Pune.

Symposium on Quality Assurance for Safety & Reliability of Nuclear Power Plants □ (venue to be fixed) January—February, 1987. Bhava Atomic Research Centre, Bombay.

Second Asian Congress on Applied Cybernetics, □ New Delhi, January, 87.

Society of Management Science & Applied Cybernetics, New Delhi.

74th Indian Science Congress □ Bangalore, January 3-8, 1987.

Indian Science Congress Association, Calcutta.

Conference on Perspective in Nuclear Physics, □ Madras, January, 19-23, 1987.

Department of Nuclear Physics, University of Madras.

International Symposium of Afforestation of Salt Affected Soils □ Karnal, February 16-20, 1987.

Central Soil Salinity Research Institute, Haryana.

Programme of Fuel & Oil Economy □ Pune, February 23-27, 1987.

Central Institute of Road Transport, Pune.

ICCC Special Conference on Computer Communication for Developing Countries, □ New Delhi, some time in 1987.

Department of Electronics, Govt. of India.

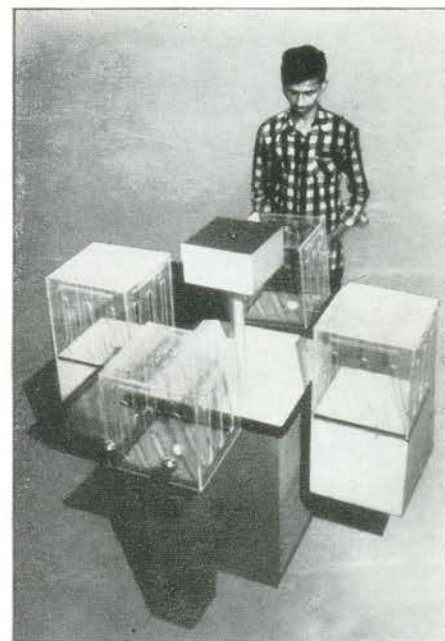
Sub-Regional Workshop on Training of Key-Personnel for Out of School Scientific and Technological Activities □ Dhaka, Bangladesh, December 11-14, 1986.

National Museum of Science & Technology, Dhaka, and UNESCO.

Developed at the Central Exhibit Laboratory of NCSM, these exhibits are sheer playful embodiments of certain principles of physics.

Push the button at the top. A whine is audible, and lo! ping-pong balls in the four perspex boxes rise simultaneously and remain suspended in mid-air. Tilt a box right or left to a certain limit but the ball's position is not affected.

It is Bernoulli's Principle (Daniel Bernoulli, a Swiss scientist of 18th century) in action here, which states that pressure in a moving fluid is less when velocity is high, and greater when velocity is low. Here, an air jet at the bottom of each box creates partial vacuum, and atmospheric air



rush over the nozzle to lift and sustain the ball in position.

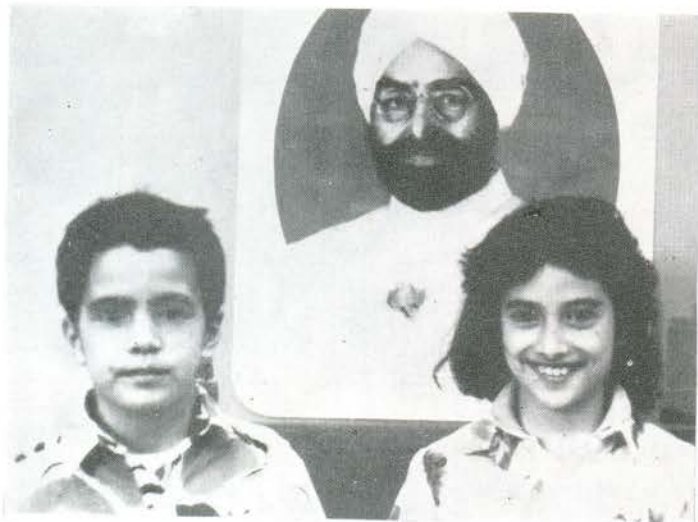
In this simple hands-on exhibit, a capsule with a closely set steel ball inside somersaults to and fro over the guideway, when the guideway is rocked up and down. This somewhat funny movement of the capsule is due to the working of gravitational force on the ball. With

lowering of the guideway the ball rolls down inside the capsule, and as the centre of gravity of the capsule as a whole comes down, gravitational force acting at the lower hemispherical end makes the capsule somersault that way.



India. a Festival of Science

"India : a Festival of Science" Exhibition moves from West Coast of USA to the East. The Exhibition was inaugurated at Discovery Place in Charlotte, the penultimate site, on December 15, 1986. It will stay there for a period of 3 months, before moving over to Boston.



What is the underlying technique of the exhibition, so monumental in scale and staggering in vision, that by achieving a delicate balance between many cultures and many centuries, simply wins the West? What magic wand lifts the Festival, to a never-never-before evocation of what is the world's greatest civilisation, for the world's richest nation?

No single answer suffices. It is perhaps in the grand symmetry. Excellence of the 'Past' is restored, in part created; and demonstrated is the flow of the tradition in the veins of today's India. Display of the



phenomena of present-day technological development leaves 'India Tomorrow' an easy conjecture for the Americans. But most likely it is in the range of hands-on experiences offered to them, especially to the children, that wins their hearts. They may do anything at their sweet will; they may test the validity of an ancient mathematical formulation with a calculator, play question-answer games about India on a 'made in India' computer, taste traditional Indian perfumes, have a look at the artisans at work, adorn themselves in Indian style or even recreate Ajanta paintings.

25 YEARS OF SPACE PHOTOGRAPHY

An exhibition of 149 rare photographs of planetary bodies—from Earth to Uranus, including their satellites, all taken by specially designed hi-tech equipments from unmanned spacecrafts and synthesized on the Earth in computers, is on display at Birla Industrial & Technological Museum, Calcutta. Inaugurated on November 29, '86 by the noted Space Scientist of India, Dr. Yash Pal, presently Chairman of the University Grants Commission, the exhibition will remain there till January 4, '87. The exhibition was organised in USA by the Baxter Art Gallery, California, Pasadena. Photographs were made by the Jet Propulsion Laboratory for NASA. The exhibits were made possible by a grant from the IBM Corporation. Mr. Jurrie Van Der Woude, Director, Public Relations, Jet Propulsion Laboratory and Mr. Jay Belloli, Director, Baxter Art Gallery were present in Calcutta during installation of the exhibition, to train the Indian science museums personnel in installation and demonstration of the exhibits. Five noted Space Scientists from USA are scheduled to undertake lectures tours in different Science Museums in India during the course of the exhibition in India. Dr. Stuart A. Collins from Jet Propulsion Laboratory was the first among

the lecturers who delivered illustrated lectures on "Voyager Photographs of the Outer Planets : Camera's Image Processing and Discoveries" at Bombay, Bangalore, Delhi and Calcutta. The exhibition shall remain in India upto 31st October, '87 and during this period it will be held at Calcutta, Tirunelveli, Bangalore, Bombay, Delhi, Purulia and Bhubaneswar. NCSM, in collaboration with the Indo-US Sub-Commission on Education and Culture has brought this unique exhibition in India. The exhibition has received wide publicity in press, TV and is drawing a good number of inquisitive visitors. □

The greatest thrill of space-photography is that it provides sights—the Great Red Spot of Jupiter and the rings of Saturn, etc—which are not likely to be seen by human beings for some generations.

For the first time, we shall receive actual pictures from other stellar systems, and, who knows, perhaps among them shall be ones showing a planet with buildings on it, and signs of an alien life, far away from us....

APPROPRIATE TECHNOLOGY FOR RURAL FOLKS



A villager learning the operation of the machine.

In the course of developmental programmes on cottage industries, District Science Centre, Purulia has launched a sisal fibre making machine. With this simple machine costing Rs. 150/- only, fibre can be obtained from sisal ("Agava Sisalana", local name "Konga") leaves which grow in abundance in Purulia. This fibre is used in yarning ropes, carpets, doormats, brushes and different handicrafts. This machine, which even women can operate, opens up new avenues of earning for the community, especially in lean farming seasons. □



Prof. Yash Pal inaugurating the Exhibition.



"Wedding of Science and Art—these photographs", Says Prof. Yash Pal.

EVENTS ... ABROAD

EXPLORE

Calls Don Harrington Discovery Centre, Texas, USA. Excitement and curiosity abound at the Don Harrington Discovery Centre. Here one can experience a unique adventure of science, enjoy and explore the fascinating and wonderful world of science and self through a series of exhibits, planetarium programmes, health and science workshops and activities. The Centre offers children of all ages a chance to look forward to the Future, quick understanding of technology, the natural and physical sciences. Science comes alive as the Museum focuses attention on stimulating the minds and imagina-

EXPERIENCE

tion of the viewers.

With the installation of "CINEMA 360°", a revolutionary 35 mm hemispheric motion picture system, the Centre enters a new period of exciting growth. Great attraction is the Helium Monument which is a celebration of the 100th anniversary of Helium in the spectra of the Sun. The four sealed stainless-steel columns of the Monument represent the two protons and two neutrons of the Helium-4 atom, and contain the only above-ground time-capsule in the USA. They are scheduled to be opened in 1983, 2018, 2068 and 2968 respectively. □

DISCOVER



Cinema—360°—An artist's impression.



"FAMILY DAY" AT SINGAPORE SCIENCE CENTRE

'Family Day' at Singapore Science Centre

It must be a day for them—
thousands of people that flock to

the Centre, every year, to experience the fun of learning. People of various age-groups, of different social and educational backgrounds, converge there to play, enjoy and learn. It is a sight to see generations playing together. A host of things and events are there to allure them—Ecogarden and various galleries, physical fitness contest, radio-controlled car-race, super-bouncer for the children and classes for science-toys and mathematical model-making. Topping them all are the Science Centre Stars, handsome male robot Bin Bin and his beautiful companion Ling Ling, charming all the visitors; Bin Bin with his agility and Ling Ling with her demure disposition. □

Superbouncer—a great attraction for children.

ENGLISH HERITAGE

Capsule 2 brought to you the Historic buildings and Monuments Commission of England. Their journal "Remnants" is always a good reading. It is far from drab accounts of outings among ruins; they first "people the past" and then learning is not contrived. For them, it is really recreation through re-creation. It is fascinating to watch the young receptive minds variously affected by the places: while a budding technocrat engages

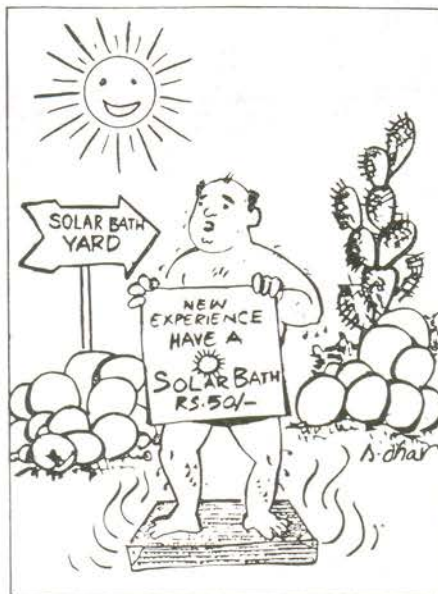
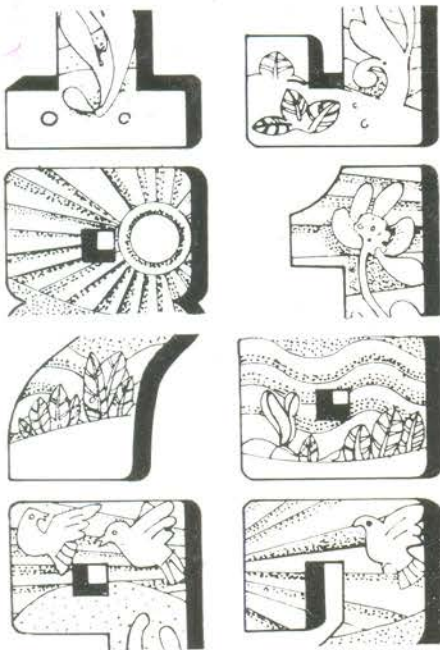
himself in trigonometric measurements, his 10 years old friend, bit poetically inclined, sings out—

Drains
Ferns growing like a maze
Red eyes watching me
Slime up the wall
Insects crawling on the floor,
Misty shaped walls

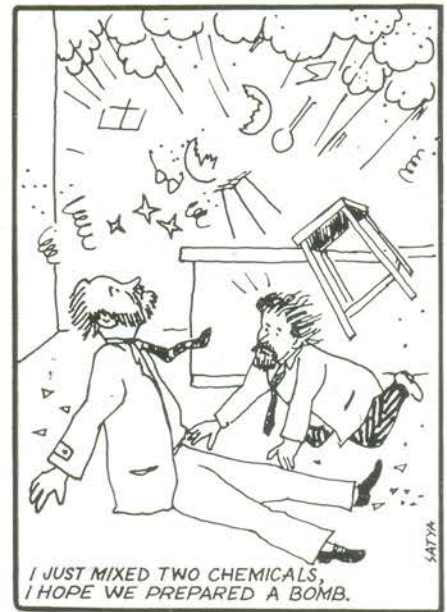
Recreating the "Past"—from a heap of broken images.



Match the riddle to
catch the puzzle



"I SHOULD HAVE BEEN
A BIT CAREFUL ABOUT
NEW TERMINOLOGY"



I JUST MIXED TWO CHEMICALS,
I HOPE WE PREPARED A BOMB.

THE NEXT...

Eastern and Southern India Science Fairs will be held at Guwahati and Bangalore during February 1987. Thousands of students and science-buffs from Science-Clubs assemble every year in these Fairs, to mark their creative abilities.

Capsule-5 will give you the details.

WE NEED....

EDITOR CAPSULE is looking forward to your sending by January 31, 1987, publication materials for CAPSULE-5. Please send short notes, photographs, problems, suggestions, cartoons and puzzles.



Published by
National Council of
Science Museums
19A, Gurusaday Road
Calcutta-700 019 INDIA