

# SCIENCE AND CULTURE

JANUARY-FEBRUARY 2014/ VOLUME 80/ NOS. 1-2

A JOURNAL OF NATURAL AND CULTURAL SCIENCES

PUBLISHED BY THE  
**INDIAN SCIENCE  
NEWS ASSOCIATION**

EDITORIAL BOARD

**Professor S. C. Roy** Editor-in-Chief

**Professor N. D. Paria** Associate Editor

**Shri Biman Basu**

**Professor Barun Kumar Chatterjee**

**Professor Syamal Chakrabarti**

**Dr. Amit Krishna De**

**Professor Sudhendu Mandal**

**Professor Parimal Chandra Sen**

**Dr. Srinivasan Srikanth**

COLLABORATORS

S. Aditya (Kolkata)	S. Kailas (Mumbai)
Amiya Bagchi (Kolkata)	Ananta Krishnan (Pune)
D. Balasubramanian (Hyderabad)	Abhijit Lahiri (Delhi)
Indrani Bose (Kolkata)	R. C. Mohanty (Bhubaneswar)
Sankar Chakravorti (Kolkata)	S. P. Mukherjee (Kolkata)
R. N. Chatterjee (Kolkata)	B. K. Pattnaik (Kanpur)
D. P. Chattopadhyay (Kolkata)	V. Prakash (Mysore)
R. Gadagkar (Bangalore)	G. Prathap (Delhi)
Irfan Habib (Delhi)	R. R. Rao (Bangalore)
E. Haribabu (Hyderabad)	Ashoke Sen (Allahabad)
A. K. Hati (Kolkata)	S. P. Sengupta (Kolkata)
	P. Tandon (Shillong)

## EDITORIAL

The Dalai Lama—His Encounter with Science  
— *S. C. Roy* ... 1

## ARTICLE

The Big Bang and the Buddhist Beginningless Universe  
— *His Holiness The Dalai Lama* ... 4

Genesis of Fire-worships, Fire-Altars and Related Mathematical Knowledge in Vedic Traditions of India  
— *A. K. Bag* ... 12

U. N. Brahmachari's Scientific Achievements and Nomination for the Fellowship of the Royal Society of London  
— *Rajinder Singh* ... 29

Thirty Metre Telescope : A New Window to the Universe  
— *Biman Basu* ... 38

## OPINION

Integration of Bioinformatic Flow from Genome to Phenome : The Gap is Still Open  
— *P. Sharma, O. P. Gupta, R. Singh and I. Sharma* ... 42

## INNER SPACE

Heavy Metal Banned  
— *IncogRito* ... 44

## RESEARCH COMMUNICATION

The Bacteriophage-bacteria Rivalry Mechanism : Molecular Syringe vs Molecular Scissors  
— *Subrato Ghosh* ... 46



Indian Science News Association

**President**

Professor B. B. Biswas

**Vice-Presidents**

Professor M. S. Swaminathan

Professor P. K. Ray

Professor S. K. Talapatra

Professor Sibaji Raha

Professor N. C. Datta

Professor Bimal Roy

**Honorary Secretaries**

Professor Sudhendu Mandal

Professor Parimal C. Sen

**Honorary Treasurer**

Professor Amalendu Bandyopadhyay

**Council Members**

Professor (Mrs.) Julie Banerji

Professor Bikas K. Chakrabarti

Dr. Satyabrata Chakrabarti

Professor Manas Chakrabarty

Professor Dhrubajyoti Chattopadhyay

Professor Basab Chaudhuri

Dr. Manas Pratim Das

Dr. Sisir Kumar Majumdar

Dr. Balaram Majumder

Dr. Hemanta Kumar Majumder

Professor Partha P. Majumder

Professor Biswapati Mukherjee

Professor Siddhartha Ray

Professor Milan K. Sanyal

Professor Devdatta Sinha

Dr. D. K. Srivastava

Dr. R. C. Srivastava

Professor (Mrs.) Bani Talapatra

**Members of the Editorial Board are also  
members of the Council**

Growth Performances and Hematological Responses of a Fresh Water Teleost (*Labeo rohita*, Hamilton) Fingerlings Fed with *Jatropha curcas* L. Kernel Meal

— *J. K. Mukherjee, P. K. Bandyopadhyay and A. Saha*

... 53

**BOOK REVIEW**

Probability : The Science of Uncertainty

— *Nachiketa Chattopadhyay*

... 57

Arithmetic and Algebra : Numbers and the Beginnings of Algebra

— *Asok Kumar Sinha*

... 58

**NOTES AND NEWS**

... 61

**Cover :** (Top): Location of Thirty Metre Telescope (TMT) on Mauna Kea (arrow); (Bottom): Sketch of the 30m diameter primary mirror made of 492 hexagonal segments.

**Members of the Advisory Committee  
of  
Indian Science News Association**

Professor Padmanabham Balaram	Bangalore
Professor D. Balasubramanian	Hyderabad
Professor Basudeb Barman	Kolkata
Professor A. K. Barua	Kolkata
Professor Ashok Nath Basu	Kolkata
Dr. M. K. Bhan	New Delhi
Professor Jagadish Chandra Bhattacharyya	Bangalore
Professor Samir Kumar Brahmachari	New Delhi
Professor Chandrashekhar Chakraborty	Kolkata
Dr. Purnendu Chatterjee	Kolkata
Professor Suranjan Das	Kolkata
Professor Asis Datta	New Delhi
Professor P. N. Ghosh	Kolkata
Dr. N. K. Ganguly	New Delhi
Professor S. N. Ghosh	Kolkata
Dr. H. K. Gupta	Hyderabad
Dr. K. Kasturirangan	Bangalore
Dr. R. A. Mashelkar	New Delhi
Dr. Govardhan Mehta	Bangalore
Professor M. G. K. Menon	New Delhi
Professor Yash Pal	New Delhi
Dr. T. Ramasami	New Delhi
Dr. Anuj Sinha	New Delhi
Dr. Bikash Chandra Sinha	Kolkata

**SCIENCE & CULTURE  
ADVERTISEMENT  
RATE**

	Single Insertion	
	(Full Page)	(Half Page)
COVER (Back)	Rs. 10,000/-	×
COVER (Front Inside)	Rs. 7,000/-	×
COVER (Back Inside)	Rs. 7,000/-	×
OTHER PAGES	Rs. 5,000/-	Rs. 3,000/-

**N.B. : For colour or any other special types of advertisement—rates may be negotiated.**

**A discount of 20% for insertions in all issues in a year and of 15% for atleast three insertions will be allowed.**

**TO OUR READERS**

**Your** appreciation of the journal makes us bold to suppose that some of your friends would also like to read **SCIENCE & CULTURE**, the premier scientific bi-monthly of India devoted to the publication of the progress in pure and applied sciences. The Indian Science News Association has been conducting the journal for over 79 years with the editorial co-operation of eminent scientists of India with the object of promoting and diffusing knowledge laying special stress on the progress of scientific studies here and abroad, and advocating methodical application of science to problems of national regeneration.

**Editorial** correspondence should be sent to the Editor-in-Chief, *Science and Culture*, 92, Acharya Prafulla Chandra Road, Kolkata : 700 009. Manuscripts prepared in accordance with the Instruction to Contributors should be submitted in **Triplicate** and will not be returned unless accompanied with return postage.

**Correspondence** relating to subscription, advertisement and other matters should be addressed to the **Hony. Secretary, Indian Science News Association, 92, Acharya Prafulla Chandra Road, Kolkata : 700 009, Phone : 2350-2224. E-mail : scie2224@dataone.in, Website : www.scienceandculture-isna.org**

**MEMBERSHIP FEE**

Life Member	:	Rs. 2500.00
Ordinary Member (without journal)	Rs.	100.00
Ordinary Member (with journal)	Rs.	400.00

**ANNUAL SUBSCRIPTION**

Inland (Institution)	Rs.	1500.00
Foreign	U.S.\$	125.00
Inland (Individual)	Rs.	400.00
Foreign (Individual)	US.\$	60.00
Single Copy (Inland)	Rs.	80.00
Single Copy (Foreign)	\$	20.00

## Past Special Issues

- **Glass and Ceramic Research in India** (May-June 2005)
- **Water Resources in South Asia : An Assessment of Climate Change – Associated Vulnerabilities and Coping Mechanisms** (July-August 2005)
- **Unconventional Applications of Physics** (March-April 2007)
- **Current Trends in Leishmania Research** (May-June 2007)
- **Forensic Science in Criminal Justice Delivery System** (November-December 2007)
- **Natural Products Chemistry** (January-February 2008)
- **Mysteries of the Earth's Interior** (May-June 2008)
- **Radio Science** (September-October 2008)
- **Scientific Legacy of Acharya J. C. Bose The Doyen of Indian Science** (November-December 2008)
- **Origin of Species–A Revolutionary Argument** (March-April 2009)
- **Geomagnetism and Aeronomy** (July-August 2009)
- **Cholera : A Disease that Eludes Technological Advance** (May-June 2010)
- **Fifteen years of Econophysics Research** (September-October 2010)
- **Emerging Trends in Genomics : Applications in Health and Disease** (January-February 2011)
- **Recent Trends in Tea Research** (September-October 2011)
- **Impact of CSIR-NEIST in the North East Region** (November-December 2011)
- **New Science of Synthetic and Systems Biology** (March-April 2012)
- **A Journey from Plant Physiology to Plant Biology** (May-June 2012)
- **CSIR-CSIO : Instrumental in Scientific-eco System Measurements** (September-October 2012)
- **CSIR-NML on the March** (November-December 2012)
- **Atomic Energy in National Development** (January-February 2013)
- **Communicating Science Through Science Museums, Science Centres and Planetaria towards Developing a Culture of Science** (November-December 2013)