SCIENCE AND CULTURE

JULY-AUGUST 2015/VOLUME 81/NO. 7–8

EDITORIAL

A JOURNAL OF NATURAL AND CULTURAL SCIENCES

PUBLISHED BY THE

INDIAN SCIENCE NEWS ASSOCIATION		When the Sum is Better than the Total — S. C. Roy		161
EDITORIA	LBOARD	LETTERS TO THE EDITOR		164
Professor S. C. R	oy Editor-in-Chief	ARTICLE		
Shri Bim	an Basu	Many Explanation Today		
Professor Syamal Chakrabarti		Mars Exploration Today — Jeremie Lasue		167
Dr. Amit K	rishna De	Whence and Whither of Indian Science and		
Professor Barun Kumar Chatterjee		Technology		
Professor Sudhendu Mandal		— S. N. Balasubrahmanyam		175
Professor Parimal C. Sen		Globalization of Technological Innovation:		
Dr. Srinivasan Srikanth		Challenges and Opportunities		
		— Samarjit Kar and S. C. Roy		182
COLLABORATORS		Carbon Trading, Clean Development		
S. Aditya (Kolkata)	S. Kailas (Mumbai)	Mechanism and Sustainable Development: A Tangible Solution to Global Climate		
Amiya Bagchi (Kolkata)	Ananta Krishnan (<i>Pune</i>)	Change		
D. Balasubramanian	Abhijit Lahiri (Delhi)	— Nitai Chand Sinha		187
(Hyderabad)	R. C. Mohanty	D 1 (WILL 1: 1: 0		
Indrani Bose (Kolkata)	(Bhubaneswar)	Development of White Light Sources — Pradip K. Datta		192
Sankar Chakravorti	S. P. Mukherjee (<i>Kolkata</i>)	Trump II. Dunu	•••	1)2
(Kolkata) P. N. Chattarioa (Kolkata)	B. K. Pattnaik (Kanpur)	FOCUS		
R. N. Chatterjee(<i>Kolkata</i>)D. P. Chattopadhyay	V. Prakash (Mysore)			
(Kolkata)	G. Prathap (Delhi)	Kalpana Chawla Centre for Space and Nano Sciences		
R. Gadagkar (Bangalore)	R. R. Rao (Bangalore)	— Barun Kumar Chatterjee		
Irfan Habib (Delhi)	Ashoke Sen (Allahabad)	and S. C. Roy		196
E. Haribabu (<i>Hyderabad</i>)	S. P. Sengupta (Kolkata)			
A. K. Hati (Kolkata)	P. Tandon (Shillong)			
	ı		. 1	

Contd. next page.



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. Manoj 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

Dr. Kalyan Mukherjee

Professor Devdatta Sinha

Dr. D. K. Srivastava

Professor (Mrs.) Bani Talapatra

Members of the Editorial Board are also members of the Council

'I DIDN'T KNOW THAT' SERIES

Sherborne and World's First Recorded Vaccination

— S. C. Roy ... 198

RESEARCH COMMUNICATION

Socio-economic Importance of Mithun (Bos Frontalis) Among the Adi Tribes of Arunachal Pradesh, India

— Nayo Apum and Gibji Nimasow ... 200

BOOK REVIEW

India : An Ancient Exotic Wonderland of Mystic Environment

— H. S. Ray ... 206

NOTES AND NEWS ... 208

Cover: The Mars Science Laboratory (2012) instruments

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 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	
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 80 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)