

SCIENCE AND CULTURE

MARCH-APRIL 2019/VOLUME 85/NO. 3-4

A JOURNAL OF NATURAL AND CULTURAL SCIENCES

PUBLISHED BY THE

**INDIAN SCIENCE
NEWS ASSOCIATION**

EDITORIAL BOARD

Professor S. C. Roy Editor-in-Chief

Shri Biman Basu

Dr. Satyabrata Chakrabarti

Professor Syamal Chakrabarti

Professor Manas Chakrabarty

Professor Barun Kumar Chatterjee

Dr. Sabyasachi Chatterjee

Dr. Amit Krishna De

Professor Sudhendu Mandal

Professor Vasant Natarajan

COLLABORATORS

S. Aditya (Kolkata)	Ajoy Ghatak (Delhi)
Amiya Kumar Bagchi (Kolkata)	Irfan Habib (Delhi)
D. Balasubramanian (Hyderabad)	A. K. Hati (Kolkata)
Indrani Bose (Kolkata)	Mridul Hazarika (Guwahati)
S Chandrasekhar (Hyderabad)	S. Kailas (Mumbai)
D. P. Chattopadhyaya (Kolkata)	Punam Kakkar (Lucknow)
Samit Chattopadhyaya (Kolkata)	Abhijit Lahiri (Delhi)
Mihir Kanti Choudhuri (Tejpur)	A. N. Lahiri Majumder (Kolkata)
Mrinal K. Dewanjee (U.S.A.)	B. K. Pattnaik (Kanpur)
R. Gadagkar (Bangalore)	V. Ravichandran (Kolkata)
	Ashoke Sen (Allahabad)
	Rajinder Singh (Germany)
	Srinivasan Srikanthan (Chennai)

EDITORIAL

Eclipse, Eddington and Einstein

— S. C. Roy ... 69

ARTICLE

Albert Einstein's Interaction with Indian Physicists -
Theory of Relativity and India's Reaction

— Rajinder Singh ... 71

Background Radiation – Natural and Artificial

— N. R. Das ... 85

Turmeric (Curcuma Longa) : From Ancient
Medicine to Current Potential Therapeutic
Agent as Curcumin

— R. P. Chamoli and Gaurav Bahuguna ... 93

OPINION

Last of the Freethinkers

— J. N. Sinha ... 100

A TRAVELLER'S JOURNAL

Egypt IV – Sinai, the Red Sea and Back to
Cairo

— Antonia Hoogewerf ... 102

RESEARCH COMMUNICATION

Bamboo (*Bambusa polymorpha*) Leaf Litter
as a vermiculture Substrate for Earthworms,
Pontoscolex carethrus (Muller) and
Drawida assamensis Stephenson

— P. S. Chaudhuri and
Sourabh Chakraborty ... 105

Contd. next page.



Indian Science News Association

MEMBERS OF THE COUNCIL

President

Dr. K. Muraleedharan

Vice-Presidents

Professor M. S. Swaminathan

Professor S. K. Talapatra

Professor Sibaji Raha

Professor Sanghamitra Bandyopadhyay

Professor Biswapati Mukherjee

Professor (Mrs.) Julie Banerji

Honorary Secretaries

Professor Sudhendu Mandal

Professor Manas Chakrabarty

Honorary Treasurer

Professor Amalendu Bandyopadhyay

Members

Shri Biman Basu

Shri Prasanta K. Bose

Professor Bikas K. Chakrabarti

Dr. Manoj Kumar Chakrabarti

Dr. Satyabrata Chakrabarti

Prof. Syamal Chakrabarti

Professor Barun Kumar Chatterjee

Professor Dhrubajyoti Chattopadhyay

Dr. Sabyasachi Chattopadhyay

Dr. Manas Pratim Das

Dr. Amit Krishna De

Shri Pathik Guha

Professor Dipak Kumar Kar

Dr. Sisir Kumar Majumdar

Dr. Balaram Majumder

Dr. Hemanta Kumar Majumder

Professor Partha P. Majumder

Dr. Shankarashis Mukherjee

Professor Vasant Natarajan

Professor Sajal Ray

Professor S. C. Roy

Professor Devdatta Sinha

Dr. D. K. Srivastava

Professor (Mrs.) Bani Talapatra

Brahma Kamal : A Source of Livelihood in the
Life of Locals of Kedarnath Shrine

— *Prabhakar Semwal, Susheel Verma
and Ashish Thapliyal* ... 113

BOOK REVIEW

A Jewel Unearthed : Bibha Chowdhuri –
The Story of an Indian Woman Scientist

— *Arnab Rai Chaudhuri* ... 115

Address Given in annual General Meeting
of ISNA Held on 28th September 2018

— *Jogen Chowdhury* ... 118

NOTES AND NEWS

... 119

Cover : Top Left : Albert Einstein (Credit : Wiki-Public domain); Top right : Arthur Eddington (Credit : Oxford Science Archive); Centre: A view of the solar eclipse that occurred in May 1919.

**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 (Mrs.) Sonali Chakravarti Banerjee	Kolkata
Dr. Purnendu Chatterjee	Kolkata
Professor Basab Chaudhuri	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
Professor Goverdhan Mehta	Hyderabad
Dr. T. Ramasami	New Delhi
Dr. T. V. Venkateswaran	New Delhi
Dr. Bikash Chandra Sinha	Kolkata

**SCIENCE & CULTURE
ADVERTISEMENT
RATE**

	Single Insertion	
	(Full Page)	(Half Page)
COVER (Back)	Rs. 20,000/-	×
COVER (Front Inside)	Rs. 15,000/-	×
COVER (Back Inside)	Rs. 15,000/-	×
OTHER PAGES	Rs. 10,000/-	×

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 AND 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 84 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 Authors 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 **Honorary. 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 (India)	Rs.5,000.00**
Life Member (Foreign)	\$ 600.00
Ordinary Member (without journal)	Rs. 100.00
Ordinary Member (with journal)	Rs. 500.00

ANNUAL SUBSCRIPTION

Inland (Institution)	Rs. 2,500.00
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

* Entitles to receive *Science and Culture* for 15 years
+ Rs. 1000/- towards the cost of delivery of the journal for 5 years

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)
- **Nuclear Chemistry Research : Past, Present and Future** (September-October 2015)
- **International Year of Light 2015** (November-December 2015)
- **J. C. Bose, Bose Institute and Scientific Legacy** (November-December 2017)
- **Cooperative Learning and Social Games : Kolkata Restaurant Problems** (January-February 2018)
- **Meghnad Saha and the World of Plasmas** (November-December 2018)
- **How Bose Statistics Changed Our Understanding of Matter** (January-February 2019)