

SCIENCE AND CULTURE

SEPTEMBER-OCTOBER 2016/VOLUME 82/NO. 9-10

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. Amit Krishna De

Professor Sudhendu Mandal

Dr. K. Muraleedharan

Professor Parimal C. Sen

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)
Sankar Chakravorti (Kolkata)	S. Kailas (Mumbai)
S Chandrasekhar (Hyderabad)	Punam Kakkar (Lucknow)
D. P. Chattopadhyaya (Kolkata)	Abhijit Lahiri (Delhi)
Samit Chattopadhyaya (Kolkata)	A. N. Lahiri Majumder (Kolkata)
Mihir Kanti Choudhuri (Tejpur)	B. K. Pattnaik (Kanpur)
R. Gadagkar (Bangalore)	V. Ravichandran (Kolkata)
	R. R. Rao (Bangalore)
	Ashoke Sen (Allahabad)
	Srinivasan Srikanthan (Chennai)

EDITORIAL

Faith Fathoms
— *S. C. Roy* ... 275

ARTICLE

Stem Cell Therapy its Challenges, Successes
Failures and Potential Applications :
On-going Translational Research
— *Mrinal K. Dewanjee* ... 278

Flashback on Super-Resolved Fluorescence
Microscopy Exploiting a New Era in Optical
Nanoscropy
— *Urmi Halder, Aparna Banerjee and
Rajib Bandopadhyay* ... 295

The Challenges for Make in India and Role
of Scientists
— *Hem Shanker Ray* ... 299

Gravitational Waves : New Clues to Black
Hole Formation
— *Biman Basu* ... 307

The Tragic Lady of DNA
— *S. D. Chatterjee* ... 310

A Tribute to Francis Harry Compton Crick on
his Birth Centenary
— *Dhrubajyoti Chattopadhyay* ... 313

A TRAVELLER'S JOURNAL

Introduction to the Monks and An Expedition
— *Antonia Hoogewerf* ... 316



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 Kumar 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**

RESEARCH COMMUNICATION

Role of Science Clubs in Developing STEM Skill
and Knowledge
— *Brinder Kumar Tyagi, R. Sreedher and
R. Gopichandran* ... 319

Investigating the Relationship between Listening to
Children's DAB Radio Programs and Scientific
and Social Education of Children in Iran
— *Mohammad Hossein Ameri Mohabad and
Fereshteh Sepehr* ... 325

BOOK REVIEW

India's Nobel Prize Nominators and Nominees
— *S. C. Roy* ... 332

NOTES AND NEWS ... 334

Cover : Top: An artist's drawing a black hole named Cygnus X-1. It formed when a large star caved in. This black hole pulls matter from blue star beside it (page 308).

Bottom: Simulated view of a black hole (centre) in front of the Large Magellanic Cloud. Note the gravitational lensing effect, which produces two enlarged but highly distorted views of the Cloud. Across the top, the Milky Way disk appears distorted into an arc (page 308).

**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
Professor Goverdhan Mehta	Hyderabad
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. 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 & 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.	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

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)