

NEWS

Academy Publications on History of Science

Indian Journal of History of Science

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Published under the guidance of the Indian National Commission for History of Science. Devoted to studies and researches in various fields of ancient, medieval and modern science in historical perspective, and an interesting forum for scientists, historians, sociologists, indologists and philosophers for exchange of their ideas on the evolution and characteristics of scientific concepts and technological advances.

Caraka Samhitā (A scientific synopsis) – By P. Ray and H.N. Gupta, 1965; Second Edition, 1980, Rs. 30.00, \$ 10.00.

A renowned medical treatise of Ancient India, prior to Galen; Contains Synoptic survey on-authorship, date of composition, scope and sub-division of the treatise, concepts and theories, physiological processes, health and longevity, physicians in diagnostic methods of treatment, including surgery, poisons, physio-chemical processes, classifications, and twenty tables, including bibliography & index.

A Bibliography of Sanskrit Works in Astronomy and Mathematics, By S.N. Sen, A.K. Bag and S.R. Sarma, 1966, Rs. 20.00, \$ 5.00.

A bibliography of primary source materials along with their place of availability, secondary studies, commentaries made on the sources, etc. indispensable for the study of history of Astronomy and Mathematics in ancient and medieval India.

* *Some Aspects of Pre-historic Technology in India* By H.D. Sankalia, 1966, Rs. 10.00; \$ 2.50.

Deals with the development of technology during pre-historic times.

Fatullah Shirazi By M.A. Alvi and A. Rahman, 1968, Rs. 2.30; \$ 0.33.

The book presents an interesting reading of the life and works of Fatullah Shirazi, a sixteenth century Indian scientist of remarkable versatility.

Jahangir, the naturalist by M.A. Alvi and A. Rahman, 1960, Reprinted 1989. Rs. 75.00

Jahangir (1605 – 1627), the Mughal emperor was a keen lover of nature. The book is based on the studies of *Memoirs of Jahangir* and throws light on the scientific interest of Jahangir. It has six sections: 1. Mammals 2. Aves 3. Botanical Informations

4. Chemical Technology 5. Medical Phenomena 6. Astronomical Data. The reading has been made interesting with the presentation of colourful plates originally drawn by the artists of Jahangir's Court and are available in various museums of the world.

A Concise History of Science in India Editor – D.M. Bose, S.N. Sen and B.V. Subbarayappa, 1971: Reprinted, 1989: Rs. 200.00 \$ 70.00.

The volume throws light on the History of Indian Science from pre-historic times to the modern age. Major focus is on the survey of source materials, Astronomy, Mathematics, Medicine, Chemical practices and Alchemy, Agriculture, Botany, Zoology, the Physical World, Western Science in India. The work is a joint effort of the historians and scientists and was planned for the Indian National Commission for History of Science.

Āryabhaṭīya of Āryabhaṭa, Text with English translation by K.S. Shukla and K.V. Sarma, 1976. Rs 21.50, \$ 7.00; £ 2.75.

Āryabhaṭīyam of Āryabhaṭa with the Commentary of Bhāskara and Someśvara, critically edited by K.S. Shukla, 1976, Rs. 40.00 \$ 13.00.

Āryabhaṭīya of Āryabhaṭa with the Commentary of Sūryadeva Yajvan Edited by K.V. Sarma with Introduction and appendices, 1976, Rs. 25.00, \$ 8.00.

Āryabhaṭīya of Āryabhaṭa (in Hindi), by R.N. Rai, 1976 Rs. 25.00, \$ 8.00, £ 3.00.

The series in four volumes was released on the occasion of 1500th birth anniversary of great Astronomer-Mathematician, Āryabhaṭa 1, (b. 476 A.D), the founder of scientific astronomy of India.

Rasārṇavakalpa by Mira Roy and B.V. Subbarayappa, 1976. Reprinted 1993, Rs. 80.00, U.S. \$ 27.00

An eleventh century A.D. Sanskrit manuscript (814 verses) of Alchemy and iatrochemistry on Alchemical recipes and mercurial preparations. The present book is a critical edition with English translation of the manuscript.

Suśruta Saṃhitā (A scientific synopsis) by P. Ray, H.N. Gupta and Mira Roy, 1980, Reprinted 1993, Rs. 225.00, U.S. \$ 75.00.

An Ayurvedic surgical classic of Dhanvantari School (128 chapters, divided in five books) composed by Suśruta, summarised in English under the headings. Aim of Āyurveda, Authority and Date of Composition of the *Suśruta Saṃhitā*, Scope and Subdivisions of the *Suśruta Saṃhitā*, Concept and Theories, Embryonic Growth and Obstetrics and Post-Natal Measures. Human Body-Its Anatomy and Physiology, Food, Health and Longevity, Diseases, Poisons and Antidotes, Some Special Recipes and Formulas. Living Creatures and Their Classification, Plant and Plant Life, Pharmacology

and Materia Medica, Surgery, Convalescence, Training and Duties of Physicians, Surgeons and Nurses.

Śiṣyadhivṛddhida Tantra of Lalla, New Delhi, 1981.

Part – I, Critically Edited by Bina Chatterjee with commentary of Mallikārjuna Sūri, Rs. 4500; \$ 15.00.

Part – II, English translation and mathematical notes by Bina Chatterjee, Rs. 4500; \$ 15.00.

An authoritative text of Indian Astronomy written By Lalla (7th Century A.D.) in 22 chapters, following Aryabhatan school of astronomy.

A Bibliography of the Works of Abul-Raihan Al-Birūnī by Ahmad Saeed Khan, 1982, Rs.3000, \$ 10.00.

Compiles a list of 135 works of Al Birūni, the great astronomer-mathematician (b.973, d.1050 A.D.) of Central Asia, of which 28 are on India along with details of secondary studies.

Science and Technology in Medieval India – A Bibliography of Source Materials in Sanskrit, Arabic and Persian by A. Rahman, M.A. Alvi, S.A. Khan Ghorī and K.V. Samba Murthy, 1982, Rs. 200.00, \$ 70 00.

A most comprehensive single volume bibliography based on a survey of 10,000 medieval technical manuscripts in Sanskrit, Arabic and Persian available in India. It supplies information on contents of the manuscripts, authorship, availability, date, language, text, studies and translations of manuscripts wherever possible, on the basis of catalogues and other sources.

The Śulba Sūtras of Baudhāyana, Āpastamba, Kātyāyana and Mānava with Text, English translation and Commentary by S.N. Sen and A.K. Bag, 1983; Rs. 85.00, \$ 30.00.

Four Śulba Sūtras by Baudhāyana, Āpastamba, Kātyāyana and Mānava of the pre-Christian era have been edited, translated and commented upon. The Śulba Sūtras are of special importance because these deal with the rules for the necessary measures and constructions of the various sacrificial fire altars, involving geometrical propositions, construction and mathematical discoveries.

* *Vedāṅga Jyotiṣa of Lagadha in its R.K. and Yajus Recensions with the Translation and Notes of T.S. Kuppana Sastry* critically edited by K.V. Sarma, 1985, Rs. 25.00, \$ 8.00.

The Vedāṅga Jyotiṣa of Sage Lagadha is the earlier work compiled on Indian calendar which were in vogue for rituals and sacrifices during vedic times. The work

is edited in two recensions, one relating to the *R̥gveda* (36 verses) and the other relating to the *Yajurveda* (43 verses).

**Science and Technological Exchanges between India and Soviet Central Asia (Medieval Period)* Editor, B.V. Subbarayappa, 1985, Rs. 125.00, \$ 42.00.

The Seminar Proceedings of the first Indo-Soviet bilateral seminar on History of Science giving details of scientific and cultural heritage and interaction that took place between two regions-India and Central Asia.

History of Astronomy in India, Editors: S.N. Sen & K.S. Shukla, 1985, 200.00, \$ 100.00, £ 50.00.

Narrates astronomical development in India from antiquity to modern times. Thirteen experts contributed to areas like survey of Sanskrit, Arabic and Persian sources and studies made on these sources. A survey of twentieth century astronomy in India makes the reading interesting.

Vaṭeṣvara Siddhānta and Gāla of Vaṭeṣvara.

Part I – Sanskrit Text edited by K.S. Shukla, 1986, 1986, Rs. 100.00, \$ 35.00.

Part II – English Translation and Commentary by K S Shukla, 1985, Rs. 130.00, \$ 45.00

Most comprehensive 10th century A.D. text compiled by Vaṭeṣvara giving details of methods and processes employed by Indian astronomers.

Ancient Glass India By S.N. Sen and Mamata Chaudhuri, 1985, Price Rs. 100.00. \$ 35.00.

The book traces the history of glass, the techniques of glass manufacture and trade since millennium B.C. to 14th century A.D. with special reference to India based on both literary and archaeological evidences.

A Critical study of Laghumānasa of Mañjula (A D 932) by K S Shukla, 1990; Rs. 150; \$ 50.00.

The Astronomical Text is critically edited with commentary and English translation.

Interaction between Indian and Central Asian Science and Technology in Medieval Times, 1990, Rs. 500.00, \$ 170.00 (per set).

Vol-I General ideas and Methodology, Astronomy, Mathematics and Physical Concepts.

Vol-II Medicine, Technology, Arts & Crafts, Architecture and Music.

The volumes are the product of Indo-Soviet bilateral programme jointly sponsored by the Indian National Science Academy and the Academy of Sciences of the USSR. The volumes have revealed the importance of many Indian and Central Asian manuscripts, their methodology, contents and impact on Central Asian culture.

Scientific and Technical Education in India – 1781-1900 by S.N. Sen, 1991, n Rs. 250.00; \$ 85.00.

Contains documented materials and critical analysis of the development of scientific and technical education in India during the 18th-19th century. A rich source book to all scholars interested in the history of education specially in technical and science education and is useful for formulation of policies and strategies of higher education in India.

Rasa Ratna Samuccaya by Śrī Vāgbhaṭa Edited with English translation, notes and appendixes-in two parts by Damodar Joshi, 1991-91, Rs. 200.00, \$ 70.00.

A very popular Sanskrit text of medieval period on Indian alchemy and pharmaceuticals; an authentic English translation, useful for modern scientists. This contains useful information on essential pharmaceutical processes, apparatuses, heating devices, etc.

History of Medicine in India, Editor: P.V. Sharma, 1992, Rs. 350.00 \$ 120.00.

The book contains contributions of well known international scholars making a systematic survey of Pre-vedic, Vedic and Post-Vedic literature dealing with medicine, followed by studies on different traditions of Āyurveda, medicinal plants, general medicine, preventive and social medicine, surgery, obstetrics and gynaecology, pediatrics, promotive therapy, toxicology, pharmacology and other topics besides basic concepts of āyurveda and Siddha medicine. The role of Indian medicine vis-a vis world medicine as a whole has also been highlighted in a perspective manner.

Available at: Indian National Science Academy
Bahadur Shah Zafar Marg, New Delhi – 110002
Telegram: NATSCIENCE, New Delhi;
Telex: 31-61835 INSA IN; Fax: 91-3716648.

* Out of Print

**Projects approved by the Indian National Commission for History of Science
(INCHS) for 1994-95**

I. Ancient Period

1. Restoration of Amṛta Hṛdaya Aṣṭāṅga Guhyopadeśa Tantra – A lost Ayurvedic Text in Sanskrit by Vaidya Bhagwan Dash, Tibet House, Lodi Road, Delhi.
2. The Technique of architecture as revealed in the Purāṇas by Dr. Manabendu Banerjee, Deptt. of Sanskrit, Jadavpur University, Calcutta.
3. Mathematical contents in the Digambara Jaina Texts of the Karanānuyoga Group by Prof. L. C. Jain, N.E.S. Science College, Jabalpur.
4. Numismatics and Technology (History of Technology for coin making in India) by Sri Amal Kumar Jha, Indian Institute of Research in Numismatics Studies, Anjaneri, Nasik.
5. History of Textile and Weaving Technology by Mamata Chaudhuri, Institute of Historical Studies, Calcutta.
6. A comparative study of Indian Astrophysical System vis-a-vis Modern System in computation of planets by Dr. S. Balachandra Rao, National College, Bangalore.
7. Ancient Indian Building Technology (from Chalcolithic Period to Gupta period) by Dr. Kamal Kr. Jain, National Research Laboratory, Lucknow.
8. Translation of chapters 2 & 5 of Aklanka's commentary on Umāsvāī's Aphoristic treatise on Jain system of Philosophy by Dr. N. L. Jain, Girls College, Rewa, M.P.
9. English Translation of Hastyāyurveda of Palakapya by Dr. (Km) Jayantee Bhattacharya, Institute of Medical Sciences, BHU, Varanasi.
10. Translation of Brahmasphuṭa Siddhānta of Brahmagupta with critical analysis, Notes and Introduction by Dr. Sushma Zadoo, Himalyan Research and Cultural Foundation, Delhi.
11. Indian Science-A logical historical study of some Physical and Mathematical concepts in Indian Tradition by Prof. P. K. Mukhopadhyaya.
12. Critical assesment of modern Sūryasiddhānta with the help of commentaries and other contemporary Siddhāntas by Dr. A. K. Bag. Delhi.
13. Ancient Star catalogues by Dr. George Abraham, Madras.

14. Iron Metallurgy and Industry in Ancient and Medieval Tamil Nadu by Dr. B. Sasisekaran, Tamil University, Madras.
15. Inventory of Oriental Institutes by Prof. K. V. Sarma, former Director, VVRI Institute, Madras.

Medieval Period:

16. Minerals and Metals in the Pre-modern Period (1200-1900 A.D.) by Prof. A. K. Biswas, Indian Institute of Technology, Kanpur.
17. The process of modernization of Indian Science (17-18 centuries) by Prof. M.A. Alvi, Aligarh Muslim University, Aligarh.
18. English Translation of Viadya Jivana by Lolimbaraja by Dr. Nirmal Saxena, Deptt. of History, Bareilly College, Bareilly.
19. Translation with critical notes in English of the work of Nīlkaṇṭha Somayājīn's Tantra Saṅgraha-A Sanskrit treatise on Astronomy Dr. V. S. Narasimhan, Vivekanand College, Madurai.
20. Granary Architecture of Medieval South India by Dr. Raju Poundarai, Thanjavur.
21. Rasa Prakāśa Sudhākara-Critical study, Edition and Translation by Dr. D. Joshi, IMS, BHU, Varanasi.
22. English Translation and critical commentary on Rāja Nighaṇṭu of Narhari Pandit (16th Cent. A.D. Kashmir) by Dr. S.C. Sankhayadhar, Regional Research Laboratory, Jammu.
23. Hakim ʿAlī Gillani's commentary on Ibn Sīnha's Al-Quānun Vol.II by Prof. Zillur Rahman, Deptt. of Ilmul Advia, A.K. Tibbiya College, Aligarh.

Modern Period:

24. History of Botany in India (Modern Times) by Prof. B.M. Johri, FNA.
25. History of Pharmaceutical Development in India during the last two centuries by Prof. Harikishan Singh, Chandigarh.
26. Meghnad Saha and his Time-A short History of Physics, Astronomy and Allied Sciences in India in the period (1900-1946) by Prof. Shantimay Chatterjee, Saha Institute of Nuclear Physics, Calcutta.
27. Updating and Editing of the Project report entitled 'The development of Mathematical Sciences in India during the 20th century' by Prof. J.N. Kapur,

FNA, New Delhi.

28. Sir Jagdish Chandra Bose in Periodicals (1895-1985): An Anthology of Literature by and on Jagadish Chandra Bose by Shri Ashim Kumar Mukhopadhyay, Netaji Institute for Asian Studies, Calcutta.
29. History of Technology and Tank Irrigation by Dr. Uma Shankari, PPST, Foundation, Madras.
30. History of Calendars of East Asian Countries by Commodore S.K. Chatterjee, New Delhi.
31. History of Nutrition Research in India by Dr. B.S. Narsinga Rao, National Institute of Nutrition, Hyderabad.
32. Jnan Chandra Ghosh: Scientist, Educator and Administrator by Dr. P.K. Basu, IIT, Delhi.
33. Development of Topology in India during post Independence period by Prof. B.K. Lahiri and Dr. P.K. Majumdar, Calcutta.

II. Projects completed during 1993-94

1. A Critical study of Kāśyapa Saṃhitā (Vṛddha Jivaka Tantra) by Prof. (Ms) P.V. Tewari, Varanasi.
2. Historical Atlas in India-Śaka Kuṣāṇa Age by Prof. B.N. Mukherjee, Calcutta.
3. Mathematical Models of Bījagaṇita of Bhāskaracārya II by Prof. M. Dutta, Calcutta.
4. A critical study of Sanskrit Alchemical Text-Rasopaniṣad by Dr. (Ms) Vijaya Deshpande, Pune.
5. Shipping and Ship building in India-Medieval Period by Sri Baldeo Sahai, Delhi.
6. Origin and Development of Nuclear Physics in India by Dr. B.B. Baliga, Calcutta.
7. Development of Astronomical Studies in Bengal in Company's Time by Prof. A.K. Chakrabarty, Calcutta.

* New Projects.

Workshop on Indian Astronomy and Mathematics

Dr. S. Balachandra Rao, Head of the Department of Mathematics, 2388, Jnana Deep, Rajajinagar, II Stage, Bangalore 560004 and investigator of an INSA project on a "Comparative Study of the various Astronomical Systems" organised a three day Workshop on Jan. 14-16, 1994 on Indian Astronomy and Mathematics. The Workshop was held as a part of Golden Jubilee Programmes of the National College, Basavangudi in which 70 students including experts participated.

The Workshop was inaugurated by Dr. H. Narasimhaiah, President, National Education Society, on the astronomically significant day of Makara Saṅkrānti, January 14, 1994. The Inaugural Lecture was given by Dr. A.G. Kulkarni, formerly Director, Planetaria at Jaipur and Baroda. Dr. Kulkarni presented the survey of the development of astronomy in India through transparencies and slides.

Dr. M.D. Srinivas, Dr. M.S. Sriram and Vidwan K. Ramasubramanian, all from Department of Theoretical Physics, University of Madras, covered various important aspects of Indian Mathematics and Astronomy. Dr. M.D. Srinivas explained in detail the solutions of the first order and the second order indeterminate equations (called *Kuṭṭaka* and *Varga Prakṛti*) of the type $ax + by = c$ and $Nx^2 + 1 = y^2$. The simplicity and efficacy of the Cakravāta algorithm of Bhaskara II was demonstrated.

Dr. M.S. Sriram and Vidwan Ramasubramanian went into details of the Hindu. Calendrical system (*Pañcāṅgas*) and the computations of the mean and true positions of planets. Students were introduced to the astronomical treatises like *Vedāṅga Jyotiṣa*, *Sūrya Siddhānta*, *Āryabhaṭṭiyam*, *Varāhamihira's Pañcasiddhāntikā* and the works of Brahmagupta and Bhāskara II. There were clear references to a heliocentric model suggested by the great Kerala astronomers like Mādhava and Nīlakaṇṭha Somayājīn who preceded Copernicus. It is particularly significant in the context of the comcentric theory.

The students were actually trained to solve the *Kuṭṭaka* and *Varga Prakṛti* types of equations as also in the computations of tithi, nakṣatra, adhika māsa, the mean and true celestial longitudes of the Sun and the Moon.

Special guest lectures by Dr. Vithal Rao (Indian Institute of Science) and Dr. S.D. Sharma (Visiting Professor from Punjabi University) were arranged. Dr. Sanaula Bintory (Al-Ameen College) Spoke on Islamic Astronomy and stressed the indebtedness of the Persian and Arabic Astronomers to Brahmagupta.

On the last day a written quiz on the lectures was conducted. The performance of the students was truly encouraging. Particularly the first year Pre-university students clearly exhibited their grasp of and keen interest in the topics covered in the Workshop. Prizes are given in the form of highly informative books on Indian Astronomy and Mathematics. It is contemplated to conduct more such Workshops in near future to

create an awareness about India's contributions to mathematics and astronomy and to encourage students to pursue these subjects.

A Volume on "Indian Mathematics and Astronomy-Some Landmarks" by S. Balachandra Rao has been published by M/S Jnana Deep Publications, 2388, Jnana Deep 13th Main, A-Block, Rajajinagar II Stage Bangalore - 560 010, Price (India Rs. 75.00; Foreign US \$ 7.00).