

NEWS

INDIAN ASTRONOMY AND MATHEMATICS WORKSHOP – A REPORT

A three day workshop on Indian Mathematics and Astronomy was conducted by the Indian Astronomy Research Centre of the National College, Basavangudi, Bangalore from 23rd to 25th December, 1995 as a part of the Golden Jubilee Celebrations of the College. There were 75 student participants.

The inaugural address was given by J.C. Bhattacharyya, Hon. Professor and former Director of Indian Institute of Astrophysics. In his lecture Prof. Bhattacharyya traced the “Evolution of Astronomy”. After his lecture there was a video programme on topics “Solar system” and “Cosmos” arranged by S. Sundararaj of the Mathematics Department which was highly informative and educative.

The main lecture sessions commenced at 9 A.M. and continued upto 4.30 P.M. on Sunday as well as Monday (December 24 and 25).

B.R. Guruprasad, Scientist, ISRO, gave an enlightening talk on “India in space”. He mentioned how India has developed in this area from its primitive stage to its present stature. Now the organisation is in a position to supply information to many other countries.

M.S. Sriram of University of Madras gave an elementary introduction of ‘Astronomical Development in India’. He explained the calculations of various terms which were essential for astronomy. Vidwan Ramasubramanian from Madras, discussed the *panca aṅgas* (five parts) of the *Pañcāṅga* and gave details of calculations of longitudes of the celestial objects. His lecture was followed by a talk on “Astronomy in India” by R.K. Kochhar, of the Indian Institute of Astrophysics.

On the last day, M.S. Sriram gave a talk on “*Dik, Deṣa and Kāla*”. He explained how to determine directions using a simple experiment and method of finding the latitude and longitude of a place. S. Balachandra Rao spoke on mathematical contributions of our ancient Indian astronomers. He mentioned in his lecture regarding the value of π (and its incommensurability) given by Āryabhaṭa, methods for solving of Diophantine equations using the Kuṭṭaka method and about Brahmagupta’s formulae for rational cyclic quadrilaterals. The students were introduced to the contributions made by different astronomers in different periods. Rao also brought to light the great contributions of Kerala astronomers to Indian astronomy. Later, the contribution of

Kerala astronomers/mathematicians was discussed in detail by Sriram. Smt. Padmaja spoke on the computation of eclipses in Indian Astronomy.

A written quiz based on the lectures was conducted in the afternoon on December 25. Almost all students performed well. Prizes were announced for the best ten students. Most of the prizes were bagged by first Year Pre University and second Year B.Sc. students. The function came to an end with the valedictory note and distribution of prizes and certificates by Padmabhushana H. Narasimhaiah, President, National Education Society of Karnataka and Chairman, Kannada Development Authority.

The response of the students was spontaneous and overwhelming. The prizes to the winners in the quiz were given in the form of the copies of the famous book, *Aryabhatīyam* and other books on Indian mathematics.

S. Balchandra Rao

SEMINAR ON THE CONCEPT OF ŚŪNYA

The Indian National Science Academy, New Delhi, has planned to organise an International seminar on the Concept of Śūnya in collaboration with Indira Gandhi National Centre for the Arts, New Delhi on 12-14 February, 1997.

The seminar will discuss the concept of Śūnya and its various ramifications in the field of Mathematics, Philosophy, Arts, Architecture and other related areas.

The scholars interested in the seminar may write to the Co-ordinator (History of Science Programme), Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi 110002.

Phone: 3232066 - Ext. 328/327; 3235153/3232096. Telex 31-61835 INSA IN.
Fax 91-11-3235648.

Publications on History of Science

Indian Journal of History of Science

Editor : S. SRIRAMACHARI; Periodicity-Biannual since 1966, Quarterly since 1983.
Rs. 250.00; \$ 135.00 (Annual Subscription)

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 Saṃhitā (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 sub-division of the treatise, concepts and theories, physiological process 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, 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 1969; 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 & 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 modern age. Major focus are 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 K.V. Sarma, 1976, Rs. 21.50, \$ 7.00; £ 2.75.

Āryabhaṭīya 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 were released on the occasion of 1500th birth anniversary of great Astronomer-Mathematician, Āryabhaṭa I, (b. 476 A.D), the founder of scientific astronomy in India.

Rasārṇavakalpa by Mira Roy and B.V. Subbarayappa, 1976, Reprinted 1995 Rs. 80.00; \$ 27.00.

An eleventh century AD Sanskrit manuscript (814 verses) of Alchemy and iatrochemistry on alchemicals 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; \$ 75.00.

An Ayurvedic surgical classic of Dhanvantari School (128 chapters, divided in five books) composed by Suśruta summarised in English under the headings viz. Aim of Āyurveda, Authority and Date of Composition of the *Suśruta Saṃhitā*, Scope and Subdivisions of the *Suśruta Saṃhitā*, Concepts 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 Formulae, Living Creatures and Their Classification, 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 Mallikarjuna Suri, Rs. 45.00; \$ 15.00.

Part-II, English translation and mathematical notes by Bina Chatterjee, Rs. 45.00; \$ 15.00.

An authoritative text of Indian Astronomy written By Lalla (7th century AD) in 22 chapters, following Āryabhaṭan school of astronomy.

A Bibliography of the Works of Abu'l-Raihan Al-Birūnī by Ahmad Saeed Khan, 1982, Rs. 30.00; \$ 10.00.

Compiles a list of 135 works of Al Bīrunī, 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 Ghori 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.

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

The Vedāᅅga Jyotiᅅa of Sage Lagadha is the earliest work compiled on Indian calendar which were in vogue for fixing times for rituals and sacrifices during vedic times. The work is edited in two recensions, one relating to the *ᅅgveda* (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 in 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, Rs. 200.00; \$ 100.00, £ 50.00.

Narrates astronomical development in India from antiquity to modern times. Thirteen experts contributed to the 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.

Vaᅅeᅅvara Siddhānta and Gola of Vaᅅeᅅvara

Part I – Sanskrit Text edited by K.S. Shukla, 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 Vaᅅeᅅvara giving details of methods and process is employed by Indian astronomers.

Ancient Glass and 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 2nd millennium B.C. to 14th century A.D. with special reference to India based on both literary and archareological evidences.

A Critical study of Laghumānasa of Mañujla (AD 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 Indian National Science Academy and the Academy of Science 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, 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 educations and is useful for formulation of policies and strategies of higher education in India.

Rasa Rata Samuccaya by Śrī Vāgbhaṭa Edited with English translation, notes and appendices-in two parts by Damodar Joshi, 1991-92, 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 process, 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 Ayurveda, medicinal plants, general medicine, preventive and social medicine, surgery, obstetrics and gynaecology, pediatrics, promotive therapy, toxicology and other topics besides basic concepts of Ayurveda and Siddha medicine. The role of Indian medicine vis-a-vis world medicine as a whole have also been highlighted in a perspective manner.

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*Out of Print