History of Oriental Astronomy

IAU Colloquium 91

Edited by G. SWARUP A.K. BAG K.S. SHUKLA



HISTORY OF ORIENTAL ASTRONOMY

HISTORY OF ORIENTAL ASTRONOMY

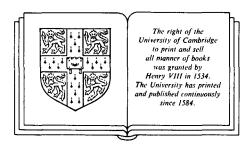
Proceedings of an International Astronomical Union Colloquium No. 91 New Delhi, India 13–16 November 1985

Edited by

G. SWARUP

A. K. BAG

K. S. SHUKLA



CAMBRIDGE UNIVERSITY PRESS
Cambridge
New York New Rochelle Melbourne Sydney

Published by the Press Syndicate of the University of Cambridge The Pitt Building, Trumpington Street, Cambridge CB2 1RP 32 East 57th Street, New York, NY 10022, USA 10 Stamford Road, Oakleigh, Melbourne 3166, Australia

© Cambridge University Press 1987

First published 1987

Printed in Great Britain at the University Press, Cambridge

British Library cataloguing in publication data

The History of oriental astronomy:
proceedings of the International Astronomical Union,
colloquium no. 91, New Delhi, India,
13 November to 16 November 1985.
1. Astronomy — Asia — History
I. Swarup, G. II. Bag, A. K. III. Shukla, K. S.
520'.95 QB33.A78

Library of Congress cataloguing in publication data

History of oriental astronomy.

Includes indexes.

- 1. Astronomy, Hindu History Congresses.
- 2. Astronomy, Chinese History Congresses.
- 3. Astronomy, Arabic History Congresses.
- I. Swarup, G. (Govind), 1929- . II. Bag, A. K.
- III. Shukla, Kripa Shankar. IV. International Astronomical Union.
- V. Title: Oriental astronomy.

QB18.H58 1987 520'.9 87-18376

ISBN 0 521 34659 2

Contents

	PREFACE	ix
	ORGANIZING COMMITTEES	хi
	SYMPOSIUM PHOTOGRAPH	xii
	LIST OF PARTICIPANTS	xiv
1	INTRODUCTORY LECTURE	
	E.S.Kennedy	3
2	ANCIENT ASTRONOMY AND ITS CHARACTERISTICS	
2.1	MAIN CHARACTERISTICS AND ACHIEVEMENTS OF ANCIENT INDIAN ASTRONOMY IN HISTORICAL PERSPECTIVE (Invited Talk) K.S.Shukla	9
2.2	THE ASTERISMS A.K.Chakravarty	23
2.3	VEDIC LITERATURE VIS-A-VIS MATHEMATICAL ASTRONOMY Ramatosh Sarkar	29
2.4	THE CHARACTERISTICS OF ANCIENT CHINA'S ASTRONOMY (Invited Talk) Xi Zezong	33
2.5	ANCIENT CHINESE AURORAL RECORDS : INTERPRETATION, PROBLEMS AND METHODS Michel Teboul	41
2.6	WORK OF ART OF THE HAN DYNASTY UNEARTHED IN CHINA AND OBSERVATIONS OF SOLAR PHENOMENA Xu Zhen-tao	51
2.7	RESEARCH ON SCALE AND PRECISION OF THE WATER CLOCK IN ANCIENT CHINA	57

	Contents	vi
2.8	GREEK ASTRONOMERS AND THEIR NEIGHBOURS (Invited Talk) Olaf Pedersen	63
3	ANCIENT ELEMENTS AND PLANETARY MODELS	
3.1	REVISION OF YUGAS AND YUGA-CONSTANTS IN INDIAN ASTRONOMY K.V.Sarma	77
3.2	SYSTEM OF ASTRONOMICAL CONSTANTS IN HINDU ASTRONOMY A.Bandyopadhyay & A.K.Bhatnagar	85
3.3	INDIAN CALENDARS S.K.Chatterjee	91
3.4	THE MERIDIANS OF REFERENCE OF INDIAN ASTRONOMICAL CANONS (Invited Talk) R.Mercier	97
3.5	PERIODIC NATURE OF COMETARY MOTIONS AS KNOWN TO INDIAN ASTRONOMERS BEFORE ELEVENTH CENTURY A.D. S.D.Sharma	109
3.6	PLANETARY THEORIES IN SANSKRIT ASTRONOMICAL TEXTS (Invited Talk) S.N.Sen	113
3.7	THE HSIU-YAO CHING AND ITS SANSKRIT SOURCES (Invited Talk) M.Yano	125
3.8	THE POSITION OF THE FUTIAN CALENDAR ON THE HISTORY OF EAST-WEST INTERCOURSE OF ASTRONOMY Shigeru Nakayama	135
3.9	AN EXAMINATION OF AL-BĪRŪNĪ'S KNOWLEDGE OF INDIAN ASTRONOMY M.S.Khan	139
3.10	ANCIENTS' CRITERION OF EARLIEST VISIBILITY OF THE LUNAR CRESCENT: HOW GOOD IS IT? M.Ilyas	147
4	MEDIAEVAL ASTRONOMY	
4.1	AN UNKNOWN ARABIC SOURCE FOR STAR NAMES (Invited Talk) P.Kunitzsch	155

	Contents	vii
4.2	AL'SUPHI'S STAR-ATLASES AND MIDDLE EUROPE Karl A.F. Fischer	165
4.3	A STUDY OF SOME ASTRONOMICAL DATA IN MUSLIM CALENDAR Chen Meidong	169
4.4	ON THE SOLAR MODEL AND THE PRECESSION OF THE EQUINOXES IN THE ALPHONSINE ZĪJ AND ITS ARABIC SOURCES (Invited Talk) J.Samsó	175
4.5	NĀŚĪR AD-DĪN ON DETERMINATION OF THE DECLINATION FUNCTION Javad Hamadani-Zadeh	185
4.6	A NOTE ON SOME SANSKRIT MANUSCRIPTS ON ASTRONOMICAL INSTRUMENTS Y.Ohashi	191
4.7	MADHAVA'S RULE FOR FINDING ANGLE BETWEEN THE ECLIPTIC AND THE HORIZON AND ARYABHATA'S KNOWLEDGE OF IT R.C.Gupta	197
4.8	BIBLIOGRAPHICAL NOTES ON ISLAMIC ASTRONOMY, THE RESULTS OF A STUDY OF THE EXACT SCIENCE AMONG THE JEWS OF YEMEN Y.Tzvi Langerman	203
4.9	LA THEORIE ASTRONOMIQUE SELON JABIR IBN AFLAH H.Hugonnard-Roche	207
4.10	TRIGONOMETRY IN TWO SIXTEENTH CENTURY WORKS: THE DE REVOLUTIONIBUS ORBIUM COELESTIUM AND THE SIDRA AL-MUNTAHĀ (Invited Talk) S.Tekeli	209
4.11	TWO TREATISES ON ASTRONOMICAL INSTRUMENTS BY CABD AL-MUN ^C IM AL-CĀMILĪ & QĀSIM ^C ALĪ AL-QĀYINĪ S.M.R.Ansari & S.A.Khan Ghori	215
4.12	A MOORISH ASTROLABE FROM GRANADA Maria G. Firneis	227
4.13	ASTRONOMICAL EFFORTS OF SAWAI JAI SINGH - A REVIEW Virendra Nath Sharma	233
4.14	SKY CALENDARS OF THE INDO-MALAY ARCHIPELAGO Gene Ammarell	241

	Contents	viii
4.15	ASTRONOMICAL ASPECTS OF "PRANOTOMONGSO" OF THE 19TH CENTURY CENTRAL JAVA Nathanael Daldjoeni & Bambang Hidayat	249
4.16	USES OF ANCIENT DATA IN MODERN ASTRONOMY (Invited Talk) J.A.Eddy	253
4.17	OLD SUNSPOT RECORDS V.R.Venugopal	261
4.18	GUEST STARS : HISTORICAL SUPERNOVAE AND REMNANTS T.Velusamy	265
5	CONCLUDING REMARKS Owen Gingerich	273
	SUBJECT INDEX	277
	MANUSCRIPT INDEX	283
	ASTRONOMERS' INDEX	287
	AUTHOR INDEX	289