

Ancient Hindu Science

Its Transmission and Impact on World Cultures

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Ancient Hindu Science: Its Transmission and Impact on World Cultures

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ABSTRACT

To understand modern science as a coherent story, it is essential to recognize the accomplishments of the ancient Hindus. They invented our base-ten number system and zero that are now used globally, carefully mapped the sky and assigned motion to the Earth in their astronomy, developed a sophisticated system of medicine with its mind-body approach known as Ayurveda, mastered metallurgical methods of extraction and purification of metals, including the so-called Damascus blade and the Iron Pillar of New Delhi, and developed the science of self-improvement that is popularly known as yoga. Their scientific contributions made impact on noted scholars globally: Aristotle, Megasthenes, and Apollonius of Tyana among the Greeks; Al-Birūnī, Al-Khwārizmī, Ibn Labbān, and Al-Uqlidīsī, Al-Jāhiz among the Islamic scholars; Fa-Hien, Hiuen Tsang, and I-tsing among the Chinese; and Leonardo Fibonacci, Pope Sylvester II, Roger Bacon, Voltaire and Copernicus from Europe. In the modern era, thinkers and scientists as diverse as Ralph Waldo Emerson, Johann Wolfgang von Goethe, Johann Gottfried Herder, Carl Jung, Max Müller, Robert Oppenheimer, Erwin Schrödinger, Arthur Schopenhauer, and Henry David Thoreau have acknowledged their debt to ancient Hindu achievements in science, technology, and philosophy.

The American Association for the Advancement of Science (AAAS), one of the largest scientific organizations in the world, in 2000, published a timeline of 100 most important scientific finding in history to celebrate the new millennium. There were only two mentions from the non-Western world: (1) invention of zero and (2) the Hindu and Mayan skywatchers astronomical observations for agricultural and religious purposes. Both findings involved the works of the ancient Hindus.

The Ancient Hindu Science is well documented with remarkable objectivity, proper citations, and a substantial bibliography. It highlights the achievements of this remarkable civilization through painstaking research of historical and scientific sources. The style of writing is lucid and elegant, making the book easy to read. This book is the perfect text for all students and others interested in the developments of science throughout history and among the ancient Hindus, in particular.

KEYWORDS

Hindu science, History of science, Vedic science, Hindu religion, Ancient Indian science, Indian science and technology

*This book is dedicated to my parents,
Late Ganga Saran Sarswat, father
and
Late Shanti Devi, mother.
They taught me virtues of life.*

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Preface

I was raised in Haridwar, a famous Indian city that is known for religion, philosophy, mysticism, and the Ganges river. I heard about the greatness of India often as a child from my father who was a learned man. I did not notice about this greatness in the scientific literature that was a part of my academic curricula. It created a great emotional dilemma to me. Why India, with so much philosophy, intellect, and prosperity, could not make a substantial contribution to science? I found the answer only after I came to America and had access to good library facilities in California. The history of science as we know from the textbooks is simply incomplete. By writing this book and other books, I am trying to fill these gaps.

It is not possible to provide details of the achievements of the ancient Hindus in one introductory book. Their contributions are enormous and this book presents only the ‘tip of the iceberg,’ as the phrase goes. I have chosen only those topics that are interesting to me and I have some knowledge.

The accomplishments of the ancient Hindus span many fields. In mathematics, they invented our base-ten number system and zero that are now used globally, carefully mapped the sky and assigned motion to the Earth in their astronomy, developed a sophisticated system of medicine with its mind-body approach known as Ayurveda, mastered metallurgical methods of extraction and purification of metals, including the so-called Damascus blade and the Iron Pillar of New Delhi, and developed the science of self-improvement that is popularly known as yoga. Their scientific contributions made impact on noted scholars from all over the world, Aristotle, Megasthenes, and Apollonius of Tyana among the Greeks; Al-Birūnī, Al-Khwārizmī, Ibn Labbān, and Al-Uqlidīsī, Al-Jāhiz among the Islamic scholars; Fa-Hien, Hiuen Tsang, and I-tsing among the Chinese; and Leonardo Fibbonacci, Pope Sylvester II, Roger Bacon, Voltaire and Copernicus from Europe. Their testimony about Hindu science provide a clear sense of the immense contributions of the ancient Hindus. In the modern era, thinkers and scientists as diverse as Ralph Waldo Emerson, Johann Wolfgang von Goethe, Johann Gottfried Herder, Carl Jung, Max Müller, Robert Oppenheimer, Erwin Schrödinger, Arthur Schopenhauer, and Henry David Thoreau have acknowledged their debt to ancient Hindu achievements in science, technology, and philosophy.

In this book, I have used scientific norms of analysis and have sorted out the hard facts from fantasy. In other words, the analysis here is rational and objective. For important statements, I have provided citations to the peer-reviewed literature. This can help the readers to investigate further, if needed.

No culture or civilization has prospered to great heights without knowing and preserving their historic and existing knowledge base. Preserving knowledge is a process in which all gen-

erations must participate otherwise the knowledge become prone to be lost forever. This is my mindset in writing this book.

After I was done with the manuscript of one of my previous books, *Sciences of the Ancient Hindus: Unlocking Nature in the Pursuit of Salvation*, I submitted it to an internationally renowned publisher. After about two years of review process, the publisher agreed to publish the book provided I drop the term Hindus from the title and replace with Indian. One reviewer warned me of “the deeply contested nature of the adjective Hindu and its association with a particular kind of nationalist politics” in India. This was prior to Narendra Modi’s government in India. I have no involvement in Indian politics now nor I ever had one at any stage. I have lived most of my adult life in America. I rejected the suggestion since I wanted to be truthful.

It has been a challenging and rewarding experience for me to write this book. I hope the readers enjoy reading this book as much as I have enjoyed writing it. Only the readers can judge the validity of this endeavor.

Alok Kumar
March 2019

Acknowledgments

After I completed my book, *Sciences of the Ancient Hindus*, I told my wife that I would not be writing another book on this topic. I said so since writing a book is a long arduous journey. It was difficult for me to conduct research for the book in the absence of a network of collaborators and proper academic support. I had to work on that book during my off hours from the job and the family-life suffered in the process.

Much was changed after I published the above-mentioned book. My family and I realized that this book was not just another academic publication. The book struck a chord with the readers and we were inspired to observe it. It changed our mindset. As a result, when I was approached by the editors of Morgan and Claypool Publishers, I readily accepted their offer.

Any arduous task becomes much simpler with a network of capable people to assist. I would like to thank the following people for their assistance:

- My wife, Kiran Singh-Kumar, daughter, Aarti Kumar, and mother-in-law, Chaya Singh, provided me constant encouragement and assistance. They are the silent heroes in this project.
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I have tried hard to avoid printing and scholarly mistakes. However, if some remain, please bring them to my notice (alok.kumar@oswego.edu). If you like the book, the credit goes to the people mentioned above. I am responsible for the errors.

Alok Kumar
March 2019