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Book Review

Vedic Mathematics and Vedagalalli Vijnana by S Balachandra Rao, 2018, (Reprinted) Navakarnataka Publications, Bengaluru, pages 132, Price: Rs.120/- (in Kannada)

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Professor Balachandra Rao is well known for his authentic works on Indian mathematics and astronomy. He has been a research guide for a number of theses on these subjects, and has written several research articles. He has several popular books published debunking myths and questioning irrational attitudes, both in English and Kannada, on two such themes, *'Tradition, Science and Society'*, and '*Astrology - Believe it or Not*', reprinted many times. He is well versed in Kannada and therefore, the readers of Karnataka are privileged to have access to most of his works in Kannada. This book introduces mathematics as known from the time of Vedas in a very simple narrative. It has been brought out essentially to educate the common man about the highlights of mathematics and at the same time clarify some false claims floating around in print and e-media.

The book under review (29 small chapters) covers three aspects which are of interest in today's context. First, the concepts contained in the early literature with respect to the mathematical equations, place values, series, geocentric theorems and even metrology; second, Vedic Mathematics – a new term that made entry into textbooks by virtue of the prefix 'Vedic' - which is about the mental mathematics i.e. quick methods of solving arithmetic problems and third, contribution of Trachtenberg.

The first seven chapters cover all aspects that are contained in the old texts of mathematics and astronomy. Some very interesting theorems (attributed now to Greek mathematicians) are also explained. The chronology of introduction of place value system is explained. The introduction of decimal system, symbols used in mathematical texts and units of measurement for weights, distances and time are described.

The *Śulbasūtras* are the oldest texts on mathematics. They give details on geometry, arithmetic and to some extent algebra. Interesting puzzles like squaring a circle, arithmetic and geometric progressions, indeterminate equations are covered apart from the construction of altars.

The development of calendars can be traced from the astronomical deductions. These are explained in chapter five entitled Vedic astronomy. Various definitions of the *Yuga* (which includes a period of five years) as against the common man's belief of "lakhs" of years are clarified here.

In the seventh chapter, very interesting allegorical references – with astronomical import – are analysed. Some such informative episodes are: (i) *Prajāpati* chasing *Rohiṇī* (Aldebaran); (ii) *Kṛttikā* (Pleiades) constellation rising always in due east. Around 30th-31st centuries BCE the

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declination (*krānti*) of the star Alcyone (Eta Tauri) was zero i.e. it was on the celestial equator (*viṣuvad vṛtta*) and hence that property during that period (but not now!); (iii) Competition of star *Abhijit* (Vega) with *Rohiṇī* (Aldebaran); (iv) *Yama* (the ruler of the south direction) and the two dogs (Alpha Canis – Majoris and Minoris); and (v) The presence of the vernal equinox (*Vasanta viṣuva*) near different visible stars during different historical periods.

The eighth chapter is an introduction to the chapters ahead. It is entitled "what is not there in the Vedas" – this sounds very irritable – because one cannot have a finite list on what is not there! But the purpose of the book is to expose the false claims. Thus the discussion covers aerospace technology, telegraphy and electricity as claimed to be from the Vedic texts. Quite obviously the claims ignore that advancement in technology is a slow process and demands a very strong foundation in theory as well as experimentation. The claim that the speed of light is concealed in a verse in *Ṛgveda*, also finds a place here. The word to word meaning and the explanation is written very clearly so that the reader can make his own judgements on the claim.

We hear the word "Vedic Mathematics" springing up in several contexts, school syllabi, summer programs and "improving" the skills in mental maths for school children and the like. Prof Rao discusses the origin of this word which leads to the techniques popularised by Sri Sri Bharathikrishna Thirtha (1884–1960), who was the religious head of the Shankaracharya Math of Puri. He was well known for his skill in arithmetic, which he taught for several decades. He devised several formulae which are easy to memorise and execute. This increases the efficiency of the student and is therefore a very useful tool. All the formulae have been explained in six chapters and then continue to the methods developed by Trachtenberg which also fall into the same category. The controversies about the *"Vedic"* - as also the *"Mathematics"* part - part of *Vedic Mathematics* are discussed. This is very important in understanding the development of knowledge in the past. The opinions of several scholars are included. The book concludes with the debate on whether the Vedic mathematics should be included in the textbooks at all.

Rao and Navakarnataka Publications need to be congratulated for bringing out the book, which is an eye-opener for those who believe in the false claims. Every student of mathematics should read and understand the facts. We need very authentic sourcebooks of this nature to counter the arguments like "Āryabhaṭa discovered zero". The advantage for publication of the book under review in regional languages is quite justified since it is easier to reach all such sections of the society to avoid them in believing false claims. An English version also is under preparation.