

## CORRESPONDENCE

### MINING GEOLOGICAL KNOWLEDGE FROM ANCIENT SANSKRIT TEXTS

I found the editorial by Dr .B .P. Radhakrishna on – “A Few Fascinating Geological Observations in the *Ramayana* of Valmiki” (Jour. Geol. Soc. India, v.62, Dec.2003, pp.665-670) very interesting and was greatly delighted to read the same. What is striking is that this ancient epic (approximately dated 1600 BC) by the sage and poet Valmiki not only contains vivid descriptions of the nature – rivers, mountains, oceans etc., while narrating a great story, but also about the detailed knowledge/information that was available during that time – a sign of great advancement achieved by our ancient civilization, which is over 5000 years old. As Dr. B. P. Radhakrishna has pointed out, the *Ramayana* mentions the various *dhatunam* or metals known at that time and that they were mined on a fairly extensive scale. The importance of mining minerals/ metals was well established as a source of revenue even during the time of the other great epic *Mahabharatha* (1000 BC).

I fully concur with the views expressed by him that our ancient epics/classics and early Sanskrit texts are sources of a great treasure of valuable information relevant to scientific knowledge. The promotion of Sanskrit and study of the ancient literature in this language should be pursued, especially by the younger generation and all encouragement and support should be extended by the educational institutions and scientific organizations. There is definitely great scope for the research scholars and the scientists to mine more valuable information relevant to geology/earth science from the ancient Sanskrit texts in addition to what is already available.

Apart from Vedas, Upanishads, and Arthashastra, there are many ancient Sanskrit texts written on smelting/ extraction of metals, medicinal chemistry, alchemy and other relevant aspects. I have tabulated below a list (by no means exhaustive) of the metals/minerals known in ancient India based on early Sanskrit texts.

METAL/ MINERAL	SANSKRIT TEXTS	Period (approximate)	METAL/ MINERAL	SANSKRIT TEXTS	Period (approximate)	
Copper	Vedas (Atharva)	5000-2500 BC	Silver	Vedas (Atharva)	5000-2500 BC	
	Arthashastra	327BC		Arthashastra	327 BC	
	Charaka Samhita	300 BC		Tin	Vedas (Yajur)	5000-2500 BC
	Manasollasa	1130 AD			Arthashastra	327 BC
	Rasarathna Samuchhaya	1300 AD			Rasarathna Samuchhaya	1300 AD
Gold	Vedas	5000-2500 BC	Zinc	Rasopanishad	1300 AD	
	Arthashastra	327 BC		Charaka Samhita	300 BC	
Iron	Vedas (Yajurva)	5000-2500 BC		Arthashastra	327 BC	
	Chandogya Upanishad	-		Susruta Samhita	700 BC	
	Susruta Samhita	700 BC		Rasarathnakara	200-400 AD	
	Charaka Samhita	300 BC		(Nagarjuna )		
	Arthashastra	527 BC		Rasarnavam Rasatantrum	500-100 BC	
	Brihat Samhita	550 AD		Rasakalpa	1200 or 1300 AD	
	(Varahaamihira)		Rasa Prakasha Sudhakara	1200-1300 AD		
Lead	Rasarathna Samuchhaya	1300 AD	Diamond	(Yashodhara)		
	Vedas	5000-2500 BC		Vedas (Rig)	5000-2500 BC	
	Arthashastra	327 BC		Arthashastra	327 BC	
	Rasarathna Samuchhaya	1300 AD		Agastyamata	1000 AD	
	Rasarnavam Rasatantrum	500-100 BC		Brihat Samhita (V)	550 AD	
Mercury	Arthashastra	327 BC		Garuda Mahapurana	1000 AD	
	Charaka Samhita	300BC		Yukti Kalpataru	1000 AD	
	Rasarathnakara	500 AD		Skanda Purana	1300-1400 AD	
	Rasarathna Samuchhaya	1300 AD	Ratnasashtra	-		

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