UNIT-V
TRADITIONAL KNOWLEDGE IN DIFFERENT SECTORS

1. Traditional knowledge and engineering

Even four or five decades earlier, the general opinion in India was that science had its origin and development in Europe, and that non-Western societies did not have any noteworthy sciences prior to their colonization. Actually, a lot of work had been done on sciences in India, particularly mathematics and astronomy, and some other disciplines too, for more than 150 years before the 1980s by both Indian and European scholars. But this was all in the scholarly domain and not a part of public discourse.

The 1970s and 80s saw some significant changes in the scenario. This was when the harmful effects of modern science and technology with a Western stamp began to be realized. This led to greater interest in alternate technologies, and the realization that non-Western societies had viable technologies with their own worldviews and social norms.

This is when gobar gas‘ and such innovations came into being, and environmental movements like chipko andolan‘ and others gained ground. Indian society had functioned well for several millennia. Also, some estimates indicated that a major part of the total world industrial production in the 18th century came from India and China. All these could not have been possible without viable technologies pertaining to various aspects of life. However, some scholars would not consider the traditional technologies as science- based. They exclusively associated science with modern Western science.

There was a significant change in the discourse around the beginning of the 1980s, thanks to a remarkable book named Indian Science and Technology in the 18th Century by Dharampal, published first in 1971, but not noticed much till the end of the 70s. It had 17 chapters, which were all contemporary European accounts of the sciences and technologies as practiced in India in the later part of the 17th century.

One remarkable chapter was ―Remarks on Astronomy of the Brahmins‖ by John Play fair, a British astronomer (1790). His

analysis was based on four Indian astronomical tables (pertaining to the positions of the sun, moon and planets) from Siam (Thailand), Chrisnaboram (Krishnapuram), Narsapour, and Tirvalore. He made a detailed comparison of the data with some contemporary European tables and what could be derived from Ptolemy‘s astronomy. He remarked onthe great accuracy of the tables and observed that ―the construction of these tables implies a great knowledge of geometry, arithmetic and even of the theoretical part of astronomy‖.

He rules out the possibility of Indians borrowing from Greeks or Arabs, and argues that the transmission was more likely to have been the other way round. Equally remarkable is the chapter on ―Hindu Algebra‖ by H T Colebrooke (1817). Colebrooke goes into the details of Indian algebra and concedes that it was advanced, but remarks without any justification that Hindus received hints on the methods from Greeks. A review of this in Edinburgh Review (November 1817) doubts this remark, and notes that ―Greeks had nothing to give on that subject which it was worth the while of the Indians to receive‖.

From the three chapters on the indigenous production of iron, one learns that woot ‘steel of very high quality was produced in India. It is estimated that around 10,000 iron and steel furnaces might have been functioning in India in the late 18th century, producing around 20 tons annually. There are two chapters on the Indian method of inoculation against smallpox, which seems to have been practiced in large parts of India for a long time and was very effective. There are also chapters on the making of mortar, paper, ice, on agriculture, and also shorter accounts of dyeing, surgical operations, materials used in buildings, and so on.

All these indicated a significant level of development of sciences like mathematics and astronomy, and technological methods in India before the British conquest. Also, the theories and practices were markedly different from the contemporary European ones.

Dharampal‘s book had a great impact, and inspired many people to look at traditional Indian sciences and technologies with a new perspective. It also inspired social activists. Academic work had been going on in areas like astronomy, mathematics, chemistry,

metallurgy, agricultural practices, Ayurveda and architecture even earlier, but there was a new impetus. Also, some traditional practices were continuing, if not thriving, as in the case of Ayurveda, local health traditions, textiles, metal works, etc.

There has also been an increase of interest in non-Western science, technology and medicine, the world over. However, all these do not mean that there has been a significant revival of traditional Indian sciences and technologies. Nor are they posing any challenge to the dominance of the modern paradigm of development. One of the reasons for this is the lack of awareness about the traditions in society at large, thanks to our educational system. There is a need for widespread dissemination of authentic information about them.