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CORRESPONDENCE

Early Workings and Modern Science: Some Reactions to Current Happenings*

I am dismayed like many other Indians (some of whom are also professional scientists) at recent statements regarding signal achievements of science and technology in ancient India. These emanate from public figures as well as others. While freedom of thought and expression is an essential component of our polity, the probable influence of such statements on many of us, the consistency of the many instances, as well as their direct relevance for the nature of the scientific enterprise, have led to this reaction.

An aspect which is worrisome is the total implicit acceptance of a certain worldview, and the casting around for possible suggestive instances in the Indian context. These are identified with well-known features of modern science and technology, generally after the latter become well known. (A counter example, absent in the current scenario, is the statement that the proton is a composite of three quarks, which themselves have internal structure. This was made by the famous theosophists, Annie Besant and C. W. Leadbeater in their book on *Occult Chemistry* in 1908, nearly six decades before the observation. It is stated to be a perception originating in a different psychic state). Such speculative connections and insights could be the basis of serious investigation and analysis. One such case is of the Sanskrit text *Vymanika Shastra* (published in the first half of the 20th century, well after the invention of man-made aircraft; there is no demonstrable connection with Maharshi Bharadwaja of classical Indian mythology, though such is stated and is extrapolated to claim a five millennium antiquity for the content of the book). This book describes several kinds of flying machines. The conclusions of the investigators are that the devices are 'poor concoctions'. Assertions of such identifications or connections largely hurt the professed cause by becoming easy targets of ridicule.

Another troubling fact is that some of the undoubtedly great achievements in science and technology are not mentioned, let alone highlighted. Some random examples are discoveries in mathematics, including that of differential calculus (about 150 years before Newton, who is universally credited with it), achievements in ferrous and nonferrous metallurgy, and remarkable surgical accomplishments such as rhinoplasty. (Of course, these singular achievements do not amount to the about four-century-old tradition of Baconian modern science which envelops us all). I think that our national academies, as representative bodies of scientists in the country, should take the lead in putting together such instances as a positive step.

I am saddened to see this in a land whose ancient culture (sought to be espoused) is fundamentally experiential/experimental. I recall the words of Swami Vivekananda who was a fierce agnostic in his early youth and evolved into a 'cyclonic monk': 'All our knowledge is based on experience. This includes scientific knowledge, which is of the outer world, of external nature, and religious or spiritual knowledge, which is of the inner world, of our inner nature.'

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