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# The physical science in the Vedas with special context in Rigvedadi Bhashya Bhoomika of Maharshi Dayanand

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**Abstract**
Vedas are not only India's but also world's precious and fundamental treasure of knowledge. There is an enormous treasure of science and knowledge in Vedas so not only Indians but foreigner also bow with veneration before the Vedas. In this reference, with the study of Vedas, we come to know that in Vedas, various references of physical sciences are scattered to make human life successful. Relevance of which is visible in modern period.

**Keywords:** Vedas, Rigvedadi Bhashya Bhoomika, Maharshi Dayanand

## Introduction

Regarding the purpose of the Vedas, Sayana Declares openly that the Vedas have no purpose other than sacrifice [1]. Winternitz believes that "these songs are of incalculable value to us as evidence of the oldest religious faith of the Aryan Indians [2]. Max Muller understands the Vedas as a "hymnal of an early, primitive and largely barbaric society, crude in its moral and religious conceptions, and rude in its outlook upon the world that environed it [3]. But for Maharshi Dayanand the Vedas are the original source of all true knowledge.

Dayanand makes a very bold claim of ideas dealing with physical sciences being present in the Vedas. It is on this question that Europeans like Max Muller and Indians like Pandit Maheshchandra Nyayaratna have expressed disappointment at what they felt was Dayanand's virtual misrepresentation of the contents of the Vedas. One topic related to physical sciences treated in the Rigvedadi Bhashya Bhoomika, and perhaps the most controversial in the eyes of his opponents is that of "The Art of Building Ships and Aerial Cars". The first mantra he quotes in his chapter is from the Rigveda-

Tugro ha bhujyumashvinodameghe
Rayim na kashchinmamrivaan avaahaah.
Tamoohathurnaubhiraatmanvateebhir
Antarikshaprudbhirapodakaabhih [4].

This mantra Griffith translated as follows:

Yea, Ashwins, as a dead man leaves his riches,
Tugra left Bhujyu in the cloud of waters.
Ye brought him back in animated vessels,
Traversing air, un-wetted by the billows.

All scholars prior to Dayanand have established references to historical events on the basis of the word Turga and Bhujyu. In Sayana's opinion, Tugra was a King and his son was Bhujyu. Tugra was a great friend of the Ashwins. Troubled by enemies residing on a different island, he sent his son against them with an army on board ship. After sailing some distance, the ship encountered a storm and ended up being lost. Bhujyu invoked the help of the Ashwins who with their own ships helped to bring together agains his army. Such meanings in Dayanand's estimation are invalid because the Vedas existed much before the time when the Bhujyu and Tugra had existed. Such criticisms against Sayana and Griffith are indeed valid, this being so, it becomes interesting to see how Dayanand applies his etymological method to arrive at his own understanding of the mantra.

Tugra is not the name of a historical personage but refers to a man possessing a specific desire. He being desirous of riches (rayim) and things of enjoyment (bhujyu) should accomplish his desires with the aid of material and physical sciences. He, by constructing ships of wood, iron etc. and by using fire and water (Ashvina) (for producing steam) may make voyages in the ocean for export and import and thus amass riches. By adopting this practice, none can die of starvation and without assets, for he will have labored much. Hence, ships should be launched in the ocean for trafficking from one country to another. How are ships to be constructed? Ships are to be constructed with metals like iron, copper and silver, or with wood, and with the use of heat and light-producing energy. These substances (Ashvins) when rightly used enable men to travel from one country to the next in all comfort. These ships must be firm and steady (aatmanvateebhih). Similar to sea-ships can be constructed airships traversing the upper regions (antarishaprudbhih), both of which should be water-proof (apodaka). In this way, people should construct means of communication like vehicles, ships and aerial cars. These should be swift to cross the sea-space, air-space and land-space in record time, as if they are equipped with countless feet (shatapadbhih). They should be constructed with several mechanical fittings, fastenings and regulating apparatus so that they can remain firm and steady. Steam is the form of energy to be used to propel them into motion. This steam is obtained from a conjunction of air, fire and water [5].

In the commentary on Rigveda mantra (1.34.2), Dayananda further explains that for the creation of smooth (and graceful) motion in a car, and for the speediest locomotion, there should be attached three Vajra-like solid sets of wheels mechanically prepared. Constructors should erect three supports to keep the car firm and steady and to preserve the various mechanical devices firm in their respective places. Dayanand talks of even a fly-wheel, the function of which is to keep the machinery in rotation, and those mechanisms to put the ship into and out of motion [6].

The Rigveda (1.119.10) bears a reference to Telegraphy also. A pure white metal which is a good conductor of electricity should be charged with electric current and made use of in the construction of a telegraphic apparatus. Being repeatedly punched (literally, struck) it transmits. Such an apparatus proves useful in military operations, because with it an army can transmit its messages to various places [7].

In the realm of philosophical speculation, there has always been the persistent question that who created the universe? Did the creator fashion the universe completely out of his own nature or through His power acting on an eternally pre-existent material cause? Dayanand, in his chapter on Cosmogony, quotes the famous Nasadiya-Sukta from the Rigveda abd Purusha Sukta fourd in both the Rig and Yajur Vedas, explaining that "this entire universe that we see was duly created by God. He preserves it, and at the time of dissolution He disintegrates it, making it disappear. The action is repeated again and again for ever [8]. In these hymns, and in the commentary he appends, Dayanand represents the most advanced theory of creation.

In the beginning, there was not Asat, this world as is presently observed, even space was not before the creation, because there coult be not such thing designated. Not was time there was present only the Saamarthya of God,-His Divine Energy which is the subtlest, supreme and ultimate cause of all the world. From this explanation, one is not to surmise that Dayananda is propagating the ideals of monism which postulates Brahma as the sole existence. Permanand observes that following the trend of thought conveyed in the mantras, Dayananda aims only at emphasizing the supremacy of God among the main causes of the universe [9]. From Him was produced viraat-the sum-totally of all bodies taken together, resplendent with various objects-which is metaphorically described as one whose body is the universe, Whose eyes are the Sun and the Moon, whose breath is the wind and Whose feet are the earth. Thereafter were formed the individual bodies of all living creatures from the various elements of the universe. The bodies have their growth from the elements and are absorbed back into them after death. God, however, remains constantly distinct from all these created things. He first created the earth and gave it support, after which the souls, through His might, supported their corporeal frames on it. God is distinct from the souls also. He produced all things worth eating, in addition to the beasts of the air, of the forest and those of the villages. The Moon was produced from the mind, i.e. from the reflective element of the Super Power. The Sun was produced from the eye, the refulgent portion. The sky was produced from the ears, i.e. from the Aakaasheeya portion, while the atmosphere, the vital air and all the senses were produced from the atmospheric protion. The inter-stellar space was produced from the navel, and waters from the feet, i.e. the terrestrial elements of the Super Power.

The universe has seven circumferences. The imaginary line which passes round the outer surface of a sphere is called its circumference. There was seven concentric circles round the universe (1) the ocean (2) the atmosphere together with the small particles called motes (3) the region of the clouds and the air thereof (4) the rain-water (5) the air above it (6) the air extreme subtle called Dhananjaya, and (7) the ubiquitous electricity.

The constituent elements of the universe are twenty-one in number enumerated as follows: Prakriti (made up of the three gunas), Mahat (Intelligence), the ten organs of sensation and action, the five subtle elements (sound, touch, sight, taste and smell), the five gross elements (earth, water, fire, air and ether) [10]. These are to be considered the chief ingredients in the construction of the universe, tough there are many more sub-ingredients derived from them.

Explaining the import of Yajurveda (31.17) Dayanand summarizes the theory of creation as follows. "The Supreme Being made the attenuated matter (Aapah) solid and thus fashioned the earth. This Aapah was produced from igneous matter, the igneous from the gaseous, the gaseous from ether, and ether from Primordial Matter (Prakriti). Prakriti, the Original Material Cause of the universe was acted upon and given motion through the Eternal Potentiality of the Lord (Svasaamarthyam). Thus, the Lord is the first efficient cause of the Universe (nimitta kaaran) [11].

Dayanand's researchers [12]. prove also that the theory of rotation of the earth and other bodies can be traced to the Vedic mantras. In this regard, he quotes the following mantra.

Aayam gauh prishnirakrameetdasdanmaataram purah. pitaram cha prayantsvah [13]. Griffith translates the mantra as follows:-

This spotted Bull hath come and sat before the Mother and before the Father, mounting up to heaven.

In his commentary on the verse, Dayanand quotes the authority of Yaska to prove that gauh would mean 'the earth', among other things, because it keeps revolving every minute. In the Upanished it is started that the earth was produced from the waters. Hence the waters are the mother of the earth. The mantra states that svah (the sun) is the father of the earth. The words 'duram gata' used by Yaska (2.14) in the sentence 'atha dyaur yat prithivyaa adhi duram gata bhavati' (Now the sky is called gauh because it has gone very far from the earth) prove that the earth does move around the sun at a particular distance. In the same way, all the other spheres, supported by God's power in the form of the force of gravitation, revolve in their orbits. To prove the theory in clearer words, Dayanand quotes the Rigveda (10.65.6)

Griffith translates the mantra as follows :-

The cow who yielding milk goes her appointed way hither to us as leader of holy rites,

> Speaking aloud to Varuna and the worshipper, shall
> with oblation serve Vivasvan and the Gods.

Parmanand, in his English translation of Rigvedadi Bhashya Bhoomika, infers Dayanand's translation as follows:-

The earth revolves (pari eti) round the sun (vivasvaan) in her

prescribed orbit ceaselessly (a vaaratah) without violating this law (vrata) yielding (duhaanaa) juices to all living beings. She being the cause of all speech gives to the noble (varunah) donor and the learned (all comforts) by oblations (havih) [14].

About the moon, Dayanand presents, on the basis of the Rigvedic mantra (8.48.13), the fact that the moon moves round the earth and sometimes appear between the sun and the earth.

Griffith translates the Rigvedic mantra (8.12.28) as follows:

When the two beautiful Bay steeds grew great and greater day by day, Even then all creatures that had life bowed to thee.

This same mantra Dayanand translates differently [15]. What Griffith translates as "two beautiful bay steeds" is nothing but gravitation and attraction, or illumination and motion. Most likely Dayanand derives the word 'hari' from the verbal root 'hri' to attract.

In mantra 29 of the same Sukta is recorded the fact that "all spheres move in their own orbits", and in another mantra "the earth and all other spheres are kept firm by the sun's attraction."

The fact that all regions like the earth and the moon are illuminated by the sun is also traceable to the Vedic mantras. On the basis of these mantras, Dayanand establishes that the regions which appear shining deduce their light from the sun, even the moon is established in solar light (Atharv Veda, 14.1.1) The solar rays coming into contact with the lunar globe are reflected on the earth and become invigorative by acquiring strength-inspiring qualities when the region of space, having lost its contact with solar rays on account of the interception by the earth, loses its heat and becomes very cold. Because of the absence of solar heat and light, the lunar rays attain vigour. The earth also becomes strong invigorated [16].

The Yajurveda gives clear indications of principles of mathematics also treated of in the Vedas [17]. One finds mentioned in the verses the Yajrveda odd and even numbers, and definite pointers to the concepts of multiplication and addition. This is Arithmetic, observes Dayanand [18]. While Arithmetic deals with the known, Algebra deals with the unknown. The first mantra of the Samveda has annotations of musical notes (1.2.3) appended to the text. This is a definite trace of Algebra. The measurements for the construction of the fire-altar (Vedis) in various shapes for triangular, quadrilateral, circular, or in the shape of a hawk point to a knowledge of Geometry. In relation to the Geometry of the Vedas, one finds a mention of the word Paridhi in Rigveda (10.130.3). Griffith translates this word as 'the wooden fender'. Dayanand translates it as a line running round a spherical object, and says that is refers to the mainstay of the world [19].

Thus Dayanand proves that there are the roots of physical sciences in the Vedas. The student of the Veda who is still influenced by the commentaries of Sayana and western scholars would really want to feel that Dayanand's claim of sciences in the Vedas is really a fantastic one. Here I would like to quote Shri Aurobindo-"There nother fantastic in Dayanand's idea that the Veda contains truth of science as well as truth of religion. I will even add my on conviction to that the Veda contains the truth of science which the modern world doses not at all posses, and in that case Dayanand has rather understated than overstated the depth and range of Vedic wisdom." [20].

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