

CONTRIBUTION TO 'WEATHER SCIENCE IN
ANCIENT INDIA'

I - THE YAJÑA CONCEPT OF THE ARYANS

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The performance of *yajñas* (sacrifices) by Aryans as described in Vedic and Brāhmaṇic literature reveals some interesting facts when closely examined from the scientist's point of view. It would appear that the principal object in performing these rituals was to ensure timely and adequate rainfall, which in turn ensures availability of plenty of food and thriving of animal and plant life leading to human prosperity.

INTRODUCTION

The Vedic rituals of the Aryans have been the subject of investigation for many years and quite a few books and papers have appeared during the past one hundred and fifty years. Particularly some western scholars studied this subject in depth and came out with a few authoritative books in different languages.¹ A close perusal of the original literature purely from the scientist's point of view reveals some interesting aspects of these rituals.

The Vedas will probably remain for ever, a subject which will defy correct interpretation, principally because the language is symbolic and the internal aids to resolve the symbolism correctly are not sufficient. Naturally, while tradition has given one interpretation, scholars who do not agree with the traditional interpretation have either given their own interpretations or have left many passages unexplained. The result has been that today there have been so many schools of interpretation that an unbiassed student is thoroughly bewildered when he wants to grasp the essentials of the Vedic passages. To mention one example, there is difficulty even in understanding the correct meaning of the word Veda. If we are to understand by Veda what are recorded by the *ṛsis* who are supposed to be the seers of Vedic truths, it will be difficult to understand many passages occurring in various authoritative texts and having direct bearing on the meaning of Veda. Again, we often come across the statement that Vedas are not the products of human mind (*apauruṣeya*). Let us see the following statements :

1. "Sound, touch, form, taste and smell have come out of Vedas only, according to birth, quality and action."²

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2. "The four divisions of men, the three worlds, the four disciplines of one's moral life, the past, the future and the present are all achieved by the Vedas."³
3. "From fire, air and sun, the three Vedas *ṛk*, *yajus* and *sāman* were milked (by Prajāpati) for the sake of success of *yajña* process."⁴
4. "The form (of the object of creation) has resulted from the *ṛk*; the motion is the result of *yajus*; the halo is from *sāman*; the whole thing is created by Atharva."⁵
5. "The shining disc (of the sun) is *Mahāduktha*; they are *ṛks*; it is the world of *ṛks*; it is the rays which form the halo around the disc are the *sāmans*; it is the world of *sāmans*; and the *puruṣa* (representing life and motion), who is inside the disc, is Agni; they are the *yajus*; it is the world of *yajus*; thus the triad of knowledge shines."⁶

There are many such passages which are not quoted here. If we carefully examine these passages we come to the inescapable conclusion that the word Veda means something beyond the written passage. It would also appear that the words, *ṛk*, *yajus*, *sāman* and *atharva* have deeper meanings than what are normally understood. The division of *Rgveda* into eight *aṣṭakas* and ten *maṇḍalas* and similar division of *Yajurveda* etc. as well as statements like *Sāmaveda* has a thousand branches seem to convey something deeper than what is normally understood.

While we reserve a detailed analysis of the above aspects for a later occasion, we wish to point out here that if we understand by the word Veda all intelligent and divine processes which have been responsible for the creation of the universe, for the establishment of order from a previous state of chaos or disorder and also for manifestation of life forms of all kinds and their sustenance, then to a great extent many passages regarding Veda and its contents become intelligible. In other words, *Veda vidyā* and *Śiṣṭi vidyā* are synonymous in the sense that Vedas merely deal with the metaphysics of creation.

THE YAJÑA CULT

The Aryans who moved to the Punjab plains and adjoining high lands on the north and northwest about four thousand years ago, constituted a highly organised group and were active both physically and intellectually. As keen observers of Nature, they saw the sun, the prime life giver on earth and the stars appearing on the firmament moving systematically without change in their lustre. They also saw the moon with its waxing and waning phases moving with respect to the stars and completing one full round of the sky in about a month. They contrasted their ephemeral existence and their stages of growth and decay with the unchanging nature of the sun and the stars and attributed some type of immortality (*amṛtatva*) to the celestial bodies as opposed to their mortal nature. They understood the power of time measured in terms of the apparent motion of the sun, planets and stars in the sky, the seasons and their attendant features coming in an orderly fashion as well as their cycles. The importance of fire

was recognised by them and they worshipped it as their principal God in three forms, viz. fire on earth (*pārthivāgni*), the fire in the middle region playing an important role in rainfall/thunderstorm and associated phenomena of the atmosphere, and the sun God of the heavens above. It did not take much time for the Vedic ṛṣis to realise that the orderly functioning of the sun God and the Gods responsible for the atmospheric phenomena, especially rainfall was very essential for their very existence and then their prosperity. From a stage of merely offering prayers they passed to the next one of speculating about the origin of the solar system and of life on earth. In these speculations, they struck at one important concept namely that the sun and the stars should be constantly fed with some food which is of divine origin and which maintains their brightness and therefore, is responsible for their being immortal. The *yajña* concept of the Aryans has its origin in this principle of feeding of fire (*agni*) with food (*soma*) '*Agnau somāhutir yajñah*'. The offering of *soma* in fire is *yajña*, is perhaps the best definition of *yajña*. According to the vedic seers the whole process of creation takes place as a result of interaction of *agni* and *soma*. *Agni* is referred to as "*annāda*" (eater of food) and *soma* as '*anna*' (food) ('*Somovai annam agnirannādah*'). The *soma* that is referred to here is some sort of fluid that pervades space and on which the heavenly bodies feed for retaining their form and brightness.⁷ *Agni* and *soma* exist initially in the shapeless form (*ṛta*) and when a centre of creation appears, *ṛta soma* feeds *ṛta agni* and an object of creation comes into existence which is termed *satya*, that is having a definite shape as opposed to shapeless *ṛta* state. Several details of this *yajña* process are discussed in the Vedas⁸ which we shall not go into. In the Vedas the milky way in the high heavens was identified with *soma* and is called *soma dhārā*, the stream of *soma*. According to the Vedic seers, it is this white substance which encompasses the upper heavens and which serves as food to the burning stars and the sun and makes them shine.⁹ They recognised a three-fold existence for *soma*, viz. (1) *soma dhārā*, (2) *soma* the moon, and (3) *soma* juice which is extracted from the *soma* plant. A careful study of the relevant passages in the Vedas reveals that the latter two are only replicas (*pratikṛti*) of the *soma* substance which forms food for *agni*, as a result of which creation proceeds. In fact, whether it is the birth of the solar system, or the occurrence of rain, or the birth of a child, or plant, the process at work is *yajña*, in which a substance of the *soma* category is absorbed or consumed by or intercourse with a substance of the *agni* category. This has been a basic and important concept that runs through the entire Vedic Brāhmanic and Upaniṣadic literature. The sum and substance of this concept is contained in the *Gītā* verse '*Saha Yajñah prajāh sṛṣṭva purovāca prajāpatiḥ. Anena prasaviṣyadhvam yeṣa vo astiviṣṭa kāmādhuk*'. (Having created the subjects (*prajāh*) together with *yajña*, Prajāpati told them, 'procreate using this process (*yajña*) and let it bestow on you whatever you want') The very first cosmic *yajña* was conceived to have been performed by Prajāpati himself in which he created all things out of himself. The creation took place at two levels, firstly on the plane of thought (*Veda*) and then on the plane of matter which brought into existence all the visible worlds, consisting of creatures or living beings composed of three principles of mind, life and matter. Thus the *yajña* ritual became the first sacred act of Devas or representatives of Prajāpati and then also for men on earth who professed to perform the ritual exactly in the same way as was done by the Devas¹⁰

(*Devāh yadakurvan tadaham karāvāni*—I do exactly what the Devas did). It is, therefore, necessary that the terrestrial sacrifices should have all the details of those taking place in Nature. *Yajña vidyā*, *ṛṣi vidyā* and *vedā vidyā* are all synonymous.

The *agni-soma* concept is further elaborated in the structure of the four *lokas*. Using the *ahargana* unit of the vedas and brāhmaṇas, from the surface of the earth upto the ninth *ahargana* constitutes the *Agniloka*, in which region the *pārthivāgni* prevails (*Agni-garbha Pṛthivi*). From 9th to 15th *ahargana*, it is the region of *Vāyuloka* or *Antarikṣa*. Here *agni* is in the *ṛta* form and all the atmospheric processes, the chief of which is rainfall, take place in this region. From 15th to 21st *ahargana* is the *Adityaloka* or *Dyau*, the sun being located at the 21st *ahargana*. From 21st to 33rd *ahargana* is *Apoḥloka* (the region of waters). It is the region where the *soma* substance prevails and is stratified into two layers. From 21st to 27th *ahargana* is the *Parameṣṭhiloka* containing *pavitra soma* or unpolluted *soma* and from 27th to 33rd *ahargana* is *Vārūna soma* which is *dūṣita soma* or polluted *soma*. The pollution is conceived to be due to *āsuric* (evil) forces as opposed to divine forces present in the *Parameṣṭhiloka*. It is the feeding of the *parameṣṭhi soma* that sustains the sun and gives it brightness. It is this *soma* that the brāhmaṇas were after in order to attain immortality. This is incorporated in one of the most beautiful prayers to *soma* by a *ṛṣi*.¹¹ We give below Max Muller's English version of the same.

'Where there is eternal light, in the world where the sun is placed, in that immortal, imperishable world place me, O Soma.'

'Where life is free, in the third heaven of heavens where the worlds are radiant there make me immortal.'

'Where the son of Vivasvat reigns as king, where the secret place of heaven is, where the mighty waters are, there make me immortal.'

'Where wishes and desires are, where the bowl of the bright Soma is, where there is food and rejoicing, there make me immortal.'

'Where there is happiness and delight, where joy and pleasure reside, where the desires of our desire are attained, there make me immortal.'

Further support to the above idea also comes from *sūkta* 85 of 10th *maṇḍala*. The Vedic *ṛṣi*s distributed 33 Gods in these four *lokas* and propitiated them in the various sacrifices.

The *soma* feed on the sun giving it the brightness shows up itself in the form of rays (*go*) emanating from the sun. Through the sun the *soma* spreads also to the atmospheric region which is pervaded by *ṛta agni* and here it is recognised by its light-giving property, viz. lightning. It reaches the plants in the form of its sap and life principle.¹² The *soma* coming down from the upper heavens into the atmospheric region mixes with water during rainfall and produces life on earth. (*Somo vai retodah*). The word *ghṛta* for water in vedic passages is characteristic of its capacity to

produce life when it comes as rainfall. The *Chândogyopaniṣad* beautifully describes the *Agni-soma* interaction in the vertical direction taking place in five stages.¹³ It is very interesting to note that modern science lays much stress on the ionic balance of the atmosphere required for the healthy growth of all life forms including vegetation. The required balance of excess of negative ions is actually produced through lightning and rainfall (thunderstorms).

The Vedic seers always imagined a replica on the earth of what they conceived in space. They explained the occurrence of the various seasons in terms of *agni-soma* interaction. The northern side is the seat of heaven and the earth is to its south. They imagined that *agni* in *ṛta* form is located in the south and is always moving north. *Soma* is present in the north and is always moving southwards. This corresponds to *soma* coming down and *agni*, (*pārthivāgni*) moving upwards. There is a confrontation between the two and the seasons are produced as a result of either of the two asserting over the other.¹⁴ The *vasantha*, *grīṣma* and *varṣā ṛtus* show the assertion of *agni* over *soma* and reverse takes place during the other three *ṛtus*. The northerly movement of the equatorial trough (which later becomes the monsoon trough) during the three former seasons and the penetration of cold westerly trough southwards during the latter three seasons are suggested here.

If the *yajña* performed by the Gods results in the birth of the solar system, the occurrence of the seasons, rainfall and life on earth, it logically follows that man whose prosperity and even whose very existence depend on the orderly behaviour of all these natural phenomena develops a technique for expressing his gratitude. This technique resulted in the elaborate rituals which not only enabled him to propitiate Gods for his well-being but also afforded him a method by which he could demonstrate to posterity his concepts on cosmogony and life sciences. In these demonstrations the atmospheric phenomena are given the highest importance. Particularly since rainfall was essential for production of food, most of the rituals were intended for ensuring the occurrence of rainfall in sufficient measure. The following statements of *Gītā*¹⁵ and *Manusmṛti*¹⁶ support the above idea.

“Yajña produces rain. Rain produces food.”

“An offering made properly to Agni reaches the sun and urges on him to produce rain. Rain produces food and food, the living beings.”

The *samvatsara yajña* (the birth of solar system)¹⁷ which contains in itself the occurrence of day and night, the waxing and waning periods of the moon (*śukla pakṣa* and *kṛṣṇa pakṣa*), the occurrence of the seasons (hot, rainy and cold) so important for the birth of life, the production of food and the annual cycle of apparent motion of the sun in the celestial background were all individually propitiated for ensuring their beneficial effects and avoiding their evil effects. The Vedic seers even believed that by performing the various *yajña* rituals like the *agnihotra* (day and night), the *darśapūrṇi-*

maśeṣṭis (fortnightly), the *cāturmāsya iṣṭis* (seasonal) and the *soma yaga* (annual), they could become *bhūsuras* (gods on earth) capable of acquiring divine powers while living on earth and attain a blissful life after death. In every one of these *yajñas* appeal to rain gods for prosperity was very prominent. ‘*O śravaya, astu śrouṣat, yaja, ye yajāmahe, vouṣat*’, which were uttered by the priests before making the offering to gods was a direct appeal to them for rains. (The Devas produced the easterly winds by uttering ‘*O śravaya*’. They brought the clouds by uttering ‘*Astu śrouṣat*’. They produced lightning by uttering ‘*Yaja*’ and thunder by uttering ‘*Ye yajāmahe*’, when they said *vouṣat* the rains fell.)¹⁸ Special rituals (like *kāriṣṭi*) were also performed when there was drought. In the *Soma yaga* the omentum of the goat is smeared with ghee and is held in fire with two sticks. The following passage in *Śatapatha Brāhmaṇa* (translated by Eggeling) elaborates this act.

‘Thereupon the *Adhvaryu* having taken ghee with the dipping spoon pours it upon the omentum with ‘May Agni graciously accept the ghee *swāha* (hail)’. Thus those drops thereof reach the fire after becoming cooked offerings made with *swāha*.

‘He then says (to *Maitra Varuna*) ‘Recite to the drops’. He recites to the drops verses addressed to *Agni*. The reason why he recites to the drops verses addressed to *Agni* is that rain originates from gifts made from the earth, for from here it is that *Agni* obtains rain. By means of these drops (falling from the omentum) he obtains those (rain) drops and those drops rain down here. Therefore, he recites to the drops verses addressed to *Agni*.’¹⁹

In fact, it will not be unreasonable if one infers that the omentum when it is spread and held over the fire represents the overcast sky and the drippings, the rain. There are many *sūktas* in *Ṛgveda* in which the *ṛṣis* earnestly appeal to the rain gods for rain and most of these have applications in the various rituals. The ninth *maṇḍala* of *Ṛgveda* deals mostly with the preparation of the *soma* juice. If one goes through the *ṛks* carefully one cannot escape seeing in them a demonstration of the rainfall phenomenon where the *soma* particles capable of producing life on earth come down after mixing with rain water.

There is another aspect of the *yajña* cult which deserves our attention. It was believed by the Vedic seers that the phenomena of the atmosphere namely seasons, winds, rainfall, etc. giving rise to life on earth is the result of the *pravargya* (oozed out) portion or *ucchiṣṭa* portion of the sacrifice in the heavens performed by *Prajāpati* which means a constant loss of the *yajña retas* (semen) of *Prajāpati*. In order to compensate for this loss (*kṣatīpūraṇa*) sacrifices are performed in which the performer attuning himself mentally to the cosmic *yajña* gives his respectful offerings to the Gods and imagines that he puts back into the atmosphere whatever is lost by *Prajāpati* through the atmosphere. By this take and give process the *yajña* cycle of the universe is imagined to be maintained. The following statements of *Gītā* support the above idea,

“Let us please the *Devas* and let them please us. This mutual understanding gives us prosperity. The *Devas* propitiated with *yajñas* will give us what comforts we need. He who does not return what he gets from them is considered a thief.”²⁰

Another way of viewing the above aspect of the *yajña* cult is as follows: The origin of life on earth is sun’s radiation and rainfall. The sun is constantly shedding its heat to the earth and the life giving *soma* particles are coming down constantly through rainfall. It is natural for any intelligent man to think that unless there is some sort of cycle by which what is lost from above is returned in the reverse direction this activity cannot be maintained. The vedic *ṛṣis* discovered the *yajña* cult by which they wanted to put back into the atmosphere the very same particles of the *soma* category, like ghee (replica of *retas*), fuel, food, omentum of goat, etc. by which the *soma* content is replenished and rainfall and regeneration of life is ensured on earth. (‘From *Agni* smoke arises, from smoke clouds and from clouds rain’).²¹

To put it in another way, just like we are careful not to cause any damage to environment and encourage afforestation programmes for ensuring the proper functioning of the rainfall cycle, our ancients believed in putting back into the atmosphere what they got from it, so that the life cycle goes on without break. Indirectly, it also shows their belief in the conservation of life principle by which the appearance and disappearance of life takes place through some process of upward and downward movement.

It is necessary in conclusion to point out that the *yajña* cult of the Aryans is an extremely complicated subject in which many truths are enshrined. We have here touched upon only one important aspect of the same.

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²*Sabdaḥ sparśaśca rūpam ca raso gandhaśca pañcamah; Vedādeva prasūyante prasūti guṇa karmatah, Manusmṛti*, 12-98.
³*Caturvarṇyam trayo lokāścatvārascāśramāḥ pṛthak’ Bhūtam bhavyam bhavaccaiva sarvam vedāt prasidhyati Manusmṛti*, 12-97.
⁴*Agni vāyuravibhastyu trayam brahma sanātanam; dudoha yajñasiddhyartham ṛgyajussāmalakṣaṇam’.*
⁵*Rgbhyo jātam sarvaśo mūrti mahuh; sāvāgatiryajusi haiva śasvat; sarvam tejah sāmārūpyam hī śasvat; sarvaṃ hedam brāhmaṇa haiva sṛṣtam, Taittirīya Brāhmaṇa*, 3.12.9.

⁶Yadetanmaṇḍalam tapati, tanmahduktham; tā ṛcaḥ; sa ṛeām lokah; yadetadarchirdīpyate tanmahāvratam, tāni sāmāni, sa sāmānām lokah; Atha va eṣa etasmin eta sāmāni, sa sāmānām lokah; Atha ya eṣa etasmin maṇḍale puruṣaḥ so agniḥ; tāni yajūṃṣi, sa yajuṣāmlokaḥ; saiṣā trayī vidyā tapati—Śatapatha Brāhmaṇa 10.5.2. (1-2).

⁷R̥gveda—9.26.2; 9.36.33; 9.37.3; 9.37.4; 9.66.27.

⁸R̥gveda—10.130.3.

⁹R̥gveda—9.74.7.

¹⁰R̥gveda—10.90.16.

¹¹R̥gveda—9.113. (8-12).

¹²R̥gveda—1.91.22.

¹³Chāndogyoṇiṣas—5. (4-8).

¹⁴R̥gveda—6.69.8; 10.85.18.

¹⁵Yajñādbhavati parjanyaḥ parjanyaḍanna sambhavah; , Gītā, 3-14.

¹⁶Agnau prāstāhutīḥ samyak ādityamupatiṣṭhate Adityaj jayate vṛṣṭiḥ vṛṣṭerannam tataḥ prajāḥ—Manusmṛiti, 3-76.

¹⁷R̥gveda—10.190.

¹⁸Śatapatha Brāhmaṇa, 1.4.3.

¹⁹Śatapatha Brāhmaṇa, 3.8.2. (21-22).

²⁰Devān bhāvayātānena te devāḥ bhāvayantu vah; parasparam bhāvayantah śreyah param avāpsyatha Iṣṭān bhogan hi vo devah dāsyante yajña bhāvītāḥ Tairadattānaṣṭadāyaibhyah yo bhunkte stena eva saḥ—Gītā, 3-11, 12.

²¹“Agnervai dhumo jāyate; dhumādabhram; abhrādvrṣṭiḥ—Śatapatha Brāhmaṇa, 5.3.5.17.