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Dyu, Mithra, Varuna

Aryans were a warlike race with a capacity for active enjoyments, and an appreciation of all that was lovely and joyous in nature. They looked up to the beautiful and bright sky, and worshipped it under the name of **Dyu**, equivalent to the **Greek Zeus** and the first syllable of the Jupiter. They also called the sky of day by the name of **Mithra** corresponding to the **Zend Mithra**; and they called the sky of night **Varuna**, corresponding to the Greek **Ouranos**.

These common names under which the sky-god was worshipped by the different Aryan nations of the ancient times prove that the sky was worshipped under these names by the primitive Aryans in their original home.

Indra, Maruts

While the Hindu Aryans of the Punjab continued to worship the ancient sky-god under the ancient names of Dyu, Mitra, and Varuna, they paid special homage to the sky that rains, which they called **Indra**. Rise of rivers and the luxuriance of crops depend on the rain-giving sky; and in course of time **Indra** became the most prominent deity in the Vedic society.

Indra was conceived as a warlike deity, battling with the clouds, called **Vritra**, to obtain copious torrents of rain for man, and fighting with the demons of darkness, called **Panis**, to restore to the world the light of the morning. The **Maruts** or storm-gods were supposed to help **Indra** in his contest with the reluctant clouds, for in India the first showers of the rainy season are often attended with storms and thunder.

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And the deity, at once so beneficent and so warlike, was naturally a favourite with the martial and conquering Hindus; and as we have seen before, they constantly invoked him to lead them against the retreating barbarians, and to bestow on the conquerors new lands and wealth, cattle and progeny. (Adapted from R C Datt, Ancient India)

Aditi, Sun, Savithri, Adiyas

Next to the sky, the sun was the most prominent object of the worship of the ancient Hindus. **Aditi** was the limitless light of sky, and her sons, the **Adityas** were the sons of the different months of the year. **Surya** was coterminous with Greek **Helios**, the Latin **Sol**, and the Teuton **Tyr**.

Savitri is another name of the same deity Sun, and the sacred hymn, the *Gayathri Mantra*, which is still repeated every morning by pious Hindus all over world is a verse dedicated to **Savithri**. Please note that Vishnu, which in later Hindu mythology has become a name of the Supreme Preserver of all beings, was a name of the sun in the Vedic age. The rising sun, the sun at Zenith, and the setting sun were considered the three steps of Vishnu striding across limitless space.

Agni

Fire or Agni was an object of worship. No sacrifice to the gods could be performed without libations or offerings to the fire, and Agni was therefore considered to be the **priest among the gods**. But Agni is not only the terrestrial fire in the Rig Veda; he is also the fire of the lightning and the sun, and his abode was in heaven. The early sages Bhrigus discovered him there, and Athai-van and Angiras, the first sacrificers, installed him in this world as the protector of men.

Vayu and Rudra

Vayu or the wind is sometimes invoked in the Rig Veda. The Maruts or storm-gods are oftene invoked, as we have seen before, and are considered the helpers of **Indra** in obtaining rain for the benefit of man. Rudra, the loud-sounding father of the Maruts, is the Thunder, and in later Hindu mythology this name has been appropriately chosen for the Supreme Destroyer of all living beings.

Soma and Brahamanaspati

Agni, or fire, received special homage because he was necessary for all sacrifice. The libation of soma juice was similarly regarded sacred, and Soma was worshipped as a deity. Similarly, the prayer which accompanied the libations or offerings was also regarded as a deity, and was called Brahamanaspati. In later Hindu mythology, Brahman is selected as the name of the Supreme Creator of all living beings.

Ashwins or Ashwinikumars

Light and Darkness naturally suggested to the early Aryans the idea of twin gods. The sky (Vivasvat) is the father, and the Dawn (Saranyu) is the mother of the twin **Ashwins** and the legend goes on to say that Saranyu ran away from Vivasvat before she gave birth to the twins.

There is a similar legend in Greek mythology, where and **Erinnys** (corresponding to Saranyu) ran away from her lover, and gave birth to **Areion** and **Despoina**. The original idea is that the Dawn and Gloaming disappears, and gives birth to Light and to Darkness. ☺

Please note that later, Aswins lost thier original charecter and simply became the **physician gods**, responsible for healing of the sick and the wounded, tending mortals with kindness.

There are other twins Yama and Yami, who are kids of same parents - the Dawn and Sky. They also acquired different chareters in Rig Veda.

Usha

Usha has been described as far - extending, many - tinted, brilliant Dawn, whose abode is unknown. She harnesses her chariots from afar and comes in radiance and glory. She is the young, the white-robed daughter of the sky, and the queen of all earthly treasures. She is like the careful mistress of the house who rouses every one from his slumbers and sends him to his work. And yet she is radiant as a bride decorated by her mother for the

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auspicious ceremony, and displaying her charms to the view. Such are the fond epithets and beautiful similes with which the Hindu Aryans greeted the fresh and lovely mornings of a tropical sky.

Difference between Greek Dieties and Ancient Hindu Dieties

There was an essential difference between the Hindu gods of the Vedic age and the Greek gods of the Homeric age. The first thing we should note that the Sanskrit language is nearer and closer than the Greek to the original Aryan tongue, yet Hindu conceptions go nearer to the original Nature-worship of the primitive Aryans. The Gods of Homeric Greeks have attained a marked individuality and the characters are so individualistic that "nature" almost escapes. But the Hindu Gods are still the powers of Nature and show manifestations of Nature. For example, we can identify **Indra** with Rains easily but can not identify Zeus with Sky. So, we can say that Hindu conceptions are more true to their original sources.

Hindu Scriptures

The Hindu literature, as we have studied in our regular modules, can be classified in **Shruti and Smriti**. They can be further divided into six orthodox heads and four secular heads.

- ✓ The six orthodox sections form the authoritative scriptures of the Hindus. The four secular sections embody the later developments in classical Sanskrit literature.
- ✓ The six scriptures are: (i) Srutis, (ii) Smritis, (iii) Itihasas, (iv) Puranas, (v) Agamas and (vi) Darshanas.
- ✓ The four secular writings are: (i) Subhashitas, (ii) Kavyas, (iii) Natakas and (iv) Alankaras.

Sruti and Smriti: Broad Outlook

Srutis are called the Vedas, or the **Amnaya**. The Hindus have received their religion through revelation, the Vedas. These are direct intuitional revelations and are held to be *Apaurusheya* or entirely superhuman, without any author in particular. The Vedas are the **foundational scriptures of the Hindus**. The Veda is the source of the other five sets of scriptures. Vedas were not created out of mind of a Rishi or Rishis. No Rishi is inventor of Veda. Rishi is only a medium or an agent to transmit to people the intuitional experiences which he received or heard and that are why, Veda is called Sruti.

Each Veda consists of four parts:

1. Mantra-Samhitas or hymns
2. Brahmanas or explanations of Mantras or rituals
3. Aranyakas
4. Upanishads

Mantra-Samhitas are hymns in praise of the Vedic God for attaining material prosperity here and happiness hereafter. **Brahmana** portions guide people to perform sacrificial rites, so Brahmanas are prose explanations of the method of using the Mantras in the Yajna or the sacrifice. **Aranyakas** are the forest books, the mystical sylvan texts which give philosophical interpretations of the rituals. **Upanishads** contain the essence or the knowledge portion of the Vedas. The philosophy of the Upanishads is sublime, profound, lofty and soul-stirring. The Upanishads speak of the identity of the individual soul and the Supreme Soul. They reveal the most subtle and deep spiritual truths.

The Smriti Sastra is founded on the Sruti. The Smritis are based on the teachings of the Vedas. The Smriti stands next in authority to the Sruti. Smriti explains and develops Dharma. The laws for regulating Hindu society from time to time are codified in the Smritis. The Smritis have laid down definite rules and laws to guide the individuals and communities in their daily conduct and to regulate their manners and customs. The Smritis have given detailed instructions, according to the conditions of the time, to all classes of men regarding their duties in life.

The Sruti and the Smriti are the two authoritative sources of Hinduism. **Sruti literally means what is heard, and Smriti means what is remembered**. *Sruti is revelation and Smriti is tradition*. Upanishad is a Sruti. Bhagavad-Gita

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is a Smriti. Sruti is direct experience. Sruti is primary authority. Smriti is a recollection of that experience. Hence, it is secondary authority. The Smritis or Dharma Sastras also are books written by sages, but they are not the final authority. If there is anything in a Smriti which contradicts the Sruti, the Smriti is to be rejected.

Meaning of Upanishada

The meaning of Upanishada adopted by **Max Muller** and usual ever since, makes the word mean firstly *a session of pupils, hence secret doctrine*, and secondly *the title of a work on secret doctrine*. Upa means nearby, Ni means down and sad means to sit. This implies that *Upanishada contain the instructions received by pupils sitting near a teacher*. However, as per **Oldenberg**, the word Upanishada is derived from worship {Upasana}. Hopkins denotes that Upanishada denotes a subsidiary treatise {Upa-subsidiary} and does not account for secret meaning. Please note that all Upanishada have been passed down in a oral tradition and are parts of Shruti Literature.

The Upanishads represent one important fact of social life in India. The Brahmanas which lay so much stress on ceremonialism were composed by the priestly caste, but the Upanishads which mark the beginning of the rationalistic epoch were composed by the kingly class.

Concept of Rita and Dharma

Dharma is so called, because **it holds**; Dharma holds the people. Etymologically, *Dharma* is derived from the root *Dhr*—to hold—and its meaning is ‘that which holds’ this world.

Rita is predecessor to **Dharma** and is the **Original Rig Vedic concept** which refers to the principle of natural order which regulates and coordinates the operation of the universe and everything within it. Rita is described as that which is ultimately responsible for the proper functioning of the natural, moral and sacrificial orders. In Rig Veda, Rita appears as many as 390 times. Rita has been characterized as "the one concept which pervades the whole of Rig-Vedic thought.

In the early Rig Vedic era, Rita was abstract; slowly the universal principle started mingling with the anthropomorphic tendencies of the Vedic period. In due course of time, it became associated with the actions of individual deities. The **Rita became associated with Varuna**, the *omniscient, all pervading sky God*. **Adityas** became the Chariotter of Rita. Varuna became the **friend & keeper of Rita**. Varuna became the universal Power, which maintained Rita and was celebrated as having "separated and established heaven and earth, spreading them out as the upper and lower firmaments, himself enthroned above them as the universal king, ordering the immutable moral law, exercising his rule by the sovereignty of Rita". (James 1969)

Eventually Dharma overshadowed Rita in the later Vedic Era. While Rita encompassed the ethical principles with a notion of cosmic retribution, **Dharma** was said to be a path to be followed as per the ordinances of Rita. Failing to follow this path meant appearance of various forms of calamity and suffering. Committing to the path of Rita was "Dharma" so we can say that Dharma was originally conceptualized as a subordinate component Rita Dharma became a very useful instrument in framing religious, moral and social regulations, that interest in it and discussion of its applications to social and moral order eclipsed all discussions of metaphysical and theological ideas.

There was also an important change in later Vedic and Epic Era. The notion of Dharma shifted emphasis away from nature as executor of Rita and now it became more or less an individual duty to uphold the Dharma through one's actions. This was called Karma. Karma is what one does to uphold the Dharma and thus, the emphasis from the natural order vanished and it became essentially related to the pains and pleasures one experiences in life, and this tried to explain the gross inequality and injustice in the world. So, Karma was somewhat opposite to Rita as well as Dharma. Karma became the central piece of Hindu philosophy in later Vedic era.

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4 Purushartha

Purushartha refers to a goal, end or aim of human existence. The Four Purushartha of Hinduism are as follows:

1. Dharma: Dharma is given the foremost rank in the scriptures. Today, it corresponds to religious, social and/or moral righteousness
2. Artha: material and/or financial means of living
3. Kama : pleasure including sensual pleasures
4. Moksha: Liberation; or renunciation as well as detachment

The Hindu Philosophy says that Dharma is the gateway to Moksha.

Varnashrama

4 Varnas are Brahmana, Kshatriya, Vaisya and Sudra. The duties of the stages in life are Asrama Dharma. The four Asramas or orders of life are Brahmacharya, Grihastha, Vanaprastha and Sannyasa.

Sapta Rishi

Saptarshi or the 7 sages are mentioned at many places in Vedic Literature. The term "Saptarishis" is NOT mentioned in Vedic Richas but they are enumerated in different later vedic texts, Upanishads and Brahmanas, They are considered to be the patriarchs of Vedic Religion.

- ✓ Ursa Major constellation is coterminous with Sapta Rishi. Ursa Minor is coterminous with Laghu Sapta Rishi. There is **one more star slightly visible** within the Saptarishi and it is called Arundhati.

*Please note that **Arundhati** is also the name of a plant celebrated in several passages of the Atharvaveda as possessing healing properties in case of wounds, as a febrifuge, and as inducing cows to give milk. The plant was a climber which attached itself to trees like the Plaksa, Asvattha, Nyagrodha, and Parna. The plant was of Golden color and had hairy stem.*

- ✓ The first list of the 7 sages was given by Jaiminiya Brahman. The rishis are Vasistha, Bharadvaja, Jamadagni, Gautama, Atri, Visvamitra, and Agastya
- ✓ The second list is given in Brihadaranyaka Upanishad which mentions the names as Gautama and Bharadvāja, Viśvāmitra and Jamadagni, Vasiṣṭha and Kaśyapa, and Atri.
- ✓ Gopath Brahmana enlists the 7 sages as follows: Vasiṣṭha, Viśvāmitra, Jamadagni, Gautama, Bharadvāja, Gungu, Agastya, and Kaśyapa.
- ✓ The role played by the Saptarishis in the birth of Kartikeya, has been vividly described in Kumarsambhava of Kalidasa.

Rishi Agastya was one of the legendary sage, about whom a lot of traditions prevalent. His greatest feat was the reconciliation of **Indra** and the Maruts after **Indra** had been annoyed at his proposing to give the Maruts an offering to the exclusion of **Indra**. This feat is the subject of three hymns of the Rigveda.

Agastya married **Lopamudra**, and appears in a strange dialogue with Lopamudra in Rigveda. In the Rigveda, this appears to show him as an ascetic who finally yields to temptation.

Agastya and Lopamudra

- ✓ Lopamudra is also known as Kaushitaki and Varaprada, there is one hymn in the Rigveda is attributed to her. Lopamudra was created by sage Agastya with the most graceful parts of animals such as eyes of the deer etc.
- ✓ She spread the fame of the Lalita sahasranama (the thousand names of the Divine Mother).
- ✓ The meaning of word Lopamudra is "loss of beauty" which refers to the loss caused to the animals in her creation.
- ✓ Agastya created her and secretly introduced her to the palace of Vidarbha King and later when she grew up asked the king to return her as his wife.

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Abhi-seka

The Abhiseka meant consecration of a Vedic King (Rajan) after his election and was followed by coronation. Its a very elaborate ritual of vedic era. The consecration took place by sprinkling with water. ONLY the kings could be consecrated and please note that Abhiseka was an essential part of Rajsuya Yajna, the sacrifice of royal inauguration.

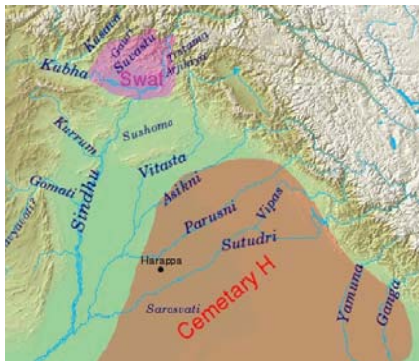
Ayas: the Ubiquitous metal

The exact metal denoted by this word when used by itself, as always in the Rigveda, is uncertain. The most probable accepted candidate for the use of word **Ayas were either copper or Bronze**. In Rigveda, Agni has been referred to as Ayodamstra which means "one that with teeth of Ayas", the teeth refer to flames of Agni. The Vajansayi samhita notes that Gold was Hiranya, Iron was Syama (also Syama Ayas), Lead was sisa, Tin was Trapu, **Lohita Ayas** was Copper, because of its red color.

Aryamnah Pantha

The literal meaning of this word is "Aryaman's Way" and is an expression which occurs in the Brahmanas and denotes the "Milky way"

Rivers of Rig Veda



Nadisukta hymn of Rig veda praises the rivers. It mentions 19 rivers including Ganga as follows:

O Ganga, Yamuna, Sarasvati, Shutudri (Sutlej), Parushni (Iravati, Ravi), follow my praise! O Asikni (Chenab) Marudvridha, Vitasta (Jhelum), with the Arjikiya (Haro) and Sushoma (Sohan), listen! First united with the Trishtama in order to flow, with the Susartu and Rasa, and with this Svetya (you flow), O Sindhu (Indus) with the Kubha (Kabul R.) to the Gomati (Gomal), with the Mehatnu to the Krumu (Kurram), with whom you rush together on the same chariot.

Westernmost River was Kubha that is today's Kabul River. Out of them the Battle of 10 Kings was fought on the banks of Parushni (Ravi) River.

All rivers like the Yamuna, Saraswati, Sutlej, Ravi, Jhelum and Indus located between the Ganga and Kabul rivers are mentioned not arbitrarily but serially beginning from the east i.e. Ganga to the west Le. Kubha. In the north, the RigVeda mentions the Himalayas and Mujavant mountains. It also mentions ocean (samudra) in connection with rivers Sindhu and Saraswati falling into ocean. The ocean is also mentioned in the context of foreign trade. The Rig Vedic geography, therefore, covers present-day western Uttar Pradesh, Haryana, Punjab, Rajasthan, Gujarat, whole of Pakistan and South Afghanistan.

Avi and Purushni

We all know that Ravi river is mentioned as Purushni in Rig Veda. Ravi has been mentioned as Iravati {Ira(water)} in classical Sanskrit literature. The word Ravi is derived from Iravati only. The Rigveda mentions that **Indra** made the waters of this river favorable for King Sudas when the king's enemies attempted to change the river's course during a war.

Sheeps and Wool

In Rig Veda, Avi has been mentioned many times and refers to "Sheep". Please note that Rig Veda also used the word "Ura" for sheep. Avi and Aja refer to sheep and goat respectively. Wolf (vrka) was their enemy number 1. Shephards were mentioned as Avipala. Sheeps were captured from the enemy as war booty! The seives for creation of Soma (the drink) were made up of sheep wool. The Gandhara sheeps were famous for thier wool and purusni was named after the richness of sheeps in the region.

- Urna refers to 'wool,' is very frequently mentioned from the Rigveda onwards. The Parusni country was famous for its wool, like Gandhara for its sheep. So, sheep has also been referd to as {urndvati}.

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- Weaving was well known, of course, and deft female fingers wove the warp and woof, used in preparation of Soma. Weaving and bleaching of sheep's wool are attributed to the god Pushan, who, is the god of shepherds.

Asikni:

Asikni or Aksini literally means black. It was the name of a river which was later known as Chandrabhaga and now known as Chenab. The Greeks called this river as Akesines.

Sindhu

Sindhu was the westernmost boundary of then Sapta Saindhava. The tributaries of Sindhu on west are Krumu and Gomati and East are Vitasta (Jhelum), Asikni (Chenab), Parusni (Ravi), Shutudri (Sutlej) and Vipasa (Beas).

Asva:

Asva was the common word used for Horses, which were common in Vedic Era. The other words used for horses were atya (Runner), Arvant (Swift), Vdjin (strong in pulling), Haya (strong in speed).

- ✓ Atharvaveda mentions that "white horse with black ears" was of an special value.
- ✓ Horses from Indus and saraswati were of special value.
- ✓ Asva-tara referred to mule.
- ✓ Aji referred to Horse-racing that was one of the favourite amusements of the Vedic Indians, the other being dicing (Aksa).

Iksu:

Iksu is the the generic name for the sugar-cane, is first found in the Atharvaveda and the later Samhitas.

Udumbara

In Atharvaveda, we find the reference of Udumbara which refers to the Gular plant or Fig Plant (Ficus glomerata) does not occur. The wood of this plant was used for all kinds of religious purposes. The vedic texts have kept the sweetness of fruits of this plant at par with honey.

Property in Vedic Era

The term Urvara in Rig Veda denotes a field which is coterminous with a piece of 'ploughland' (apovpa). In Rig Veda, intensive cultivation by means of irrigation is clearly referred, and there are also hints of use of manure. The evidence of individual ownership of land has been supported by a hymn in Rig Veda, yet, the legal relationship of the head of a family and its members is nowhere explained, and can only be conjectured. Moreover, fields are spoken of in the same connexion as children, besides referring to the conquest of fields as often referred to in the Samhitas. Ploughland was bounded by grass land {Khilya} which in all likelihood would be joint property on the analogy of property elsewhere. The land was NOT free, as Satapatha Brahmana mentions giving of land as a fee to priests.

However, real property in Vedic Era was Cattle. We should know that Manu's division of his property had excluded Nabhanedistha {a son of Manu} and this exclusion was made good by Nabhanedistha obtaining "cattle". So, this is something which proves that Cattle not land were the real foundation of wealth. The scholars agree to great extent that cattle could be, and were, used individually, but land was not open to a man's free disposal; no doubt, at any rate, the consent of the family or the community might be required, but we are reduced to reliance on analogy in view of the silence of the texts.

Seasons in Rig-Veda

Rtu is the word used for seasons and is repeatedly mentioned in Rig Veda. One of the passage of Rig Veda mentions that name of spring (vasanta), summer (grisma), and autumn (sarad). The another passage also deals with rainy season (prd-vrs) and the winter {hima, hemanta}, but Rig-Veda does not clearly demarcates the seasons. The Satapatha Brahmana mentions that four-monthly sacrifices were performed at the beginning of each season, so clearly denoting 4 seasons. The later texts divide a year into 5 seasons viz. vasanta, grisma, varsa,

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sarad, hemanta-sisira. Later, 6 seasons are reckoned, hemanta and sisira being divided, so that the six seasons can be made parallel to the twelve months of the year. Hemanta was the last season of a year. So, we can say that division of seasons into 6 rtus is NOT Rig Vedic.

Sita:

"Auspicious Sita! proceed onwards, we pray unto thee, that thou mayest bring us prosperity and an abundant crop"

The above is a part of a hymn to the Gods of agriculture. Among them we find mention of Sita—the field furrows which produced the crops. Later on this furrow-goddess became the heroine of one of the two great Epics of ancient India: Ramayan.

Nishka

Every considerable Aryan village had its artisans in those days as now, and we have frequent mention of the construction of carts and chariots, and of the use of metals. The numerous references to arms and weapons in the hymns show that they were of common use. We are told of armours and helmets, of the javelin, the sword and the battle-axe, of bows, arrows and quivers, of caparisoned war-horses and war-chariots. Similarly there are references to ornaments made of gold and silver, to necklaces and breastplates, to bracelets, anklets, and golden crowns. **The Nishka was probably a gold piece of a specified weight, used both as money and ornament.** Metals were also extensively used for the manufacture of domestic utensils.

The First Man & Women: Manu & Shradha

Ever thought about the meaning of **Pandora's Box**? **Pandora** was the **first women of the world** as per the **Greek Mythology**. Each God contributed in her creation by giving her unique gifts. Zeus gave a Jar to Pandora with instructions that she not open it; she gave in to her curiosity and opened it; all the miseries and evils flew out to afflict. All evils of the mankind such as diseases and disasters were now open to afflict the mankind, but only one item left in the box. This one item was Hope and so, when we say opening Pandora's box, it means to create problems.

All mythologies have their own concepts of first man or woman. In Indian mythology, **Manu and Shradha** were the first man and women and so Manu is called the progenitor of mankind.

Manu is also the very first Brahman king to rule this earth, who saved mankind from the universal flood. The progenies of Manu are *Manavas* (Human kind). Manu had 10 offsprings, *including one daughter named Ila*. If we go in a little deep in the mythology, we find that there is NOT a single Manu. Each kalpa has 14 Manus and each of them rules one Manvantara or eon. There are *504000 Manvantaras* in each 100 years of Brahma's life.

Manusmriti

Manusmriti is the earliest text the Dharmashastra tradition and is known as laws of Manu. It was first translated by Sir William Jones in 1794. Manusmriti became a standard reference for all future Dharmashastras. The Hindu traditions say that manusmriti has recorded the words of Brahma. It was composed in around 200-300 BC. Oldest known commmentator on Manusmriti was Bharuci and the famous commentator is Medatithi.

Dhratavatra

In early Vedic era, there was no distinct theory of Kingship and King (Rajan) was generally a tribal chieftain. This chieftain was the holder of the established order and moral rule which was called **Dhratavatra**.

Agni Soma Cult

Aprt from lightning the Holy Fire, the Soma-drinking was another mark of the Arya cult, which may therefore be called 'the Agni-Soma cult-' Soma is a product of the Himalayan regions, so that when the cult moved down to the plains, Kirata (huntress) girls from the Himalayan hills supplied it to Brahmanas. The use of Soma, like the worship of Agni indicates the Himalayan region as the place where the Agni-Soma cult first originated.

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Astronomers and Their Contribution

The following table shows the astronomers, their contribution and the instruments used by them, which are briefly described in this module:

Astronomers and their period.	Contribution in the form of book	Instruments used by them. Original name	Equivalent name.
(1000 BC)	• Suryasidhanta		
Aryabhata (476 AD)	• Aryabhata Sidhanta • Aryabhatiya	• Chakra Yantra • Gola Yantra	• Disk instrument. • Spherical instrument
Varahamihira, (505 AD)	• Pancha Sidhanta • Brihatsamhita • Brihat Jataka	• Chakra Yantra	• Ring instrument.
Brahmagupta (598 AD)	• Brahmasphuta Siddhanta • Karmakhandakhadyaka		
Lalla (700 AD)	• Shihya Dhi Vriddhida	• Gola Yantra, • Bhangana Yantra, • Chakra Yantra, • Dhanu Yantra, • Ghati Yantra. • Shakat Yantra • Kartari Yantra, • Shalaka Yantra, • Yashti Yantra	• Spherical instrument. • Ring instrument. • Disk instrument. • Bow & arrow instr. • Time vessel. • Two pivoted sticks • Scizzor instrument • Needle instrument. • Stick instrument.
Shripati (999 AD)	• Jyotishratnamala, • Shidhantashekhara	• Shalaka Yantra	• Needle instrument
Bhaskaracharya (1072 AD)	• Sidhantashiromani • Leelavati, • Beejaganitam, • Karanakutuhala	• Chakra Yantra • Chaapa Yantra • Yashti Yantra • Gola Yantra	• Disk instrument. • Semicircular disk instr. • Stick instrument. • Spherical inst.
Ganesh Daywanya (1507 AD)	• Grahalaghav, • Sudhiranjani, • Tarjaniyantram	• Jalatnalika Yantra (method)	• Star positioning instrument

Surya Siddhanta

In India people had started the use of the astronomical instruments before 1000 BC. During this period one of the prominent books 'Suryasidhanta' was written for astronomical calculations.

- Please note that there are several works with the same name, BUT the Original writer of Surya Siddhanta is UNKNOWN.

The title 'Suryasidhanta' means sun theory and it highlights the calculations of positions of stars and planets. Some of the Indian mathematicians later have developed their own instruments and developed their own methods to facilitate the theory of 'Suryasidhanta'. Introduction of zero in mathematics and the decimal method of calculation is one of such invaluable contribution. We should note that Varahamihira had contrasted Surya Siddhanta along with his 4 other treatises in the panchsiddhantika viz. Paitamaha Siddhantas, Paulisha, Romaka Siddhantas and Vasishta Siddhanta. Citation of the Surya Siddhanta is also found in the works of Aryabhata.

Aryabhata (476 AD)

Aryabhata is the author Aryabhatiyam which sketches his mathematical, planetary, and cosmic theories. This book is divided into four chapters:

1. The astronomical constants and the sine table
2. Mathematics required for computations,
3. Division of time and rules for computing the longitudes of planets using eccentrics and epicycles,
4. The armillary sphere, rules relating to problems of trigonometry and the computation of eclipses.

Aryabhata took the **earth to spin on its axis**; this idea appears to have been his innovation. He also considered the heavenly motions to go through a cycle of 4.32 billion years; here he went with an older tradition, but he introduced a new scheme of subdivisions within this great cycle. According to the historian **Hugh Thurston**, Not only did Aryabhata believe that the earth rotates, but there are glimmerings in his system (and other similar systems) of a possible underlying theory in which the earth (and the planets) orbits the sun, rather than the sun

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orbiting the earth. The evidence is that the basic planetary periods are relative to the sun. That Aryabhata was aware of the relativity of motion is clear from this passage in his book "Just as a man in a boat sees the trees on the bank move in the opposite direction, so an observer on the equator sees the stationary stars as moving precisely toward the west."

- In his book named 'Aryabhattium', Aryabhata has given lot of references of Suryasidhanta. He had developed instruments like chakra yantra (disk instrument), Gola yantra (type of armillary sphere) and shadow instruments.

Varahamihira (505 AD)

He has done a valuable job of compilation of five astronomical theories which were in use before Crist and suryasidhanta is one of them. This compiled book is known as 'Panchasidhanta'. He had developed some ring and string instruments.

Lalla (700 AD)

Lalla was an Indian astronomer and mathematician who followed the tradition of Aryabhata I. Lalla's most famous work was entitled **Shishyadhividdhidatantra**. He was well known because of twelve instruments which he brought into practice.

One of the most discussed shloka of Lalla is

गोलो भगणश्चक्रं धनुघटी शङ्कशकटकर्तयः ।
पीष्टक पालशलाका द्वादशयन्त्राणिसह यष्टया ॥

In the above Shloka, Lalla describes the 12 Instruments as follows:

Sphere, ring, dial, bow, time measuring water vessel, Gnomon, divider, scissor. Circular seat with central stick, semicircle with stick, combination of sticks, are the twelve instruments along with a stick.

The 12 instruments are as follows:

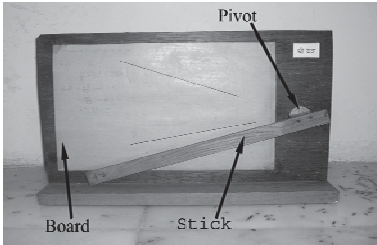
1. The **Gola yantra** is a type of armillary sphere used to locate planetary positions.
2. **Bhangana** is a ring with angular graduations along its circumference, it is a type of protractor.
3. **Chakra** is a circular disk with angular graduations; it is also a type of protractor.
4. **Dhanu** is a semicircular disk with angular graduations and a stick pivoted at the center, it is a type of protractor with a plumb bob arrangement.
5. **Ghati** is a small vessel with a hole at the bottom. It was used to measure time.
6. **Shanku** is a type of gnomon, a long vertical cone used to identify East-West-North-South direction based on shadow of its tip.
7. A special geometrical construction known a '**Matsya**' was used for the above purpose. Altitude of sun and day time was also measured with this instrument based on the shadow.
8. **Shakata** consists of two 'V' shaped sticks, pivoted at the end.
9. **Kartari** means a seizer. This instrument is made up of two sticks both pivoted together. It was used like a caliper, and also to measure angle with the help of protractor.
10. **Pitha** is a horizontal disk with a vertical stick at its center. It was used to measure local time based on its shadow, it was used to measure the height with the help of special geometrical construction.
11. **Shalaka** is combination of two sticks with a string.
12. **Yasti** is just a long stick having standard dimensions; it was used to measure height and distances. Special geometrical constructions were framed to facilitate the use of this stick. These proposed geometrical constructions were to construct the proportionate triangles with the help of which heights of terrestrial objects could be calculated.

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Bhaskaracharya (1072 AD)

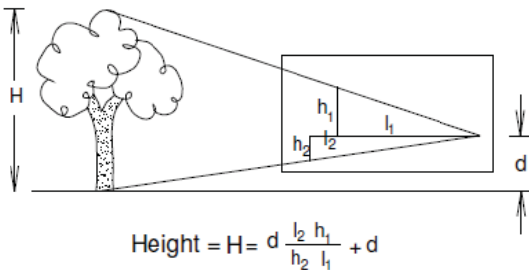
He was one of the prominent Indian mathematician and astronomer, who wrote a book 'Sidhantshiromani'. In his book he has documented valuable ancient literature and given the references of many of the instruments used by the astronomers before him. Similarly he has documented the various methods for the use of these instruments.

Yasti Yantra of Bhaskaracharya



Yasti means a stick. **Yasti Yantra** was developed by Bhaskaracharya and has also been referred to as **Dhi Yantra**. The same type of instrument has also been described by ancient sages and astronomers, but Bhaskaracharya has developed this Yantra as unique methods to calculate the height of terrestrial objects like trees and mountains. The usage and principles have been described in the 'Shidhantashiromani' of Bhaskaracharya.

The concept of this Yantra is to mount a stick on a pivot at a height d above the ground, and take sightings of the top and bottom of the object such as a tree using the stick.



$$\text{Height} = H = d \frac{L_2 h_1}{h_2 L_1} + d$$

The projected length of the stick on a horizontal line at the two sightings, L_1 and L_2 , and the heights to which the stick is raised, h_1 and h_2 , can be marked on an adjoining board. If the overall height of the object is H , and the horizontal line at the height at which the stick is mounted splits it into H_1 and H_2 , the lengths form similar triangles, and we can write $h_1/L_1 = H_1/L$ and $h_2/L_2 = H_2/L$,

where L is the distance to the object. Eliminating L from the equations using $L = H_2 (L_2/h_2)$, and since $H_2 = d$, we get $H = H_1 + H_2 = (h_1/L_1) L + H_2 = ((h_1/L_1) (L_2/h_2) + 1) d$.

Ganesh Dayvatnya (1506 AD)

He has also described the use of the instruments in his book 'Grahlaghawam'. There is a typical method of star positioning listed in his book.

Angles: Vikala, kala, bhaga, bhagana

We refer to the following shloka from Surya Siddhanta

विकलानां कलाषष्ट्याः तत् षष्ट्या भाग उच्यते
 तत्रिंशता भवेद्राशिः भगणो द्वादशैव ते ॥
 — सुर्यसिद्धांत

The above shloka means *Sixty vikala is one kala, sixty units (kala) is one bhaga, it is said this way that, thirty units (bhaga) makes one rashi, twelve rashi makes one bhagana*. The Vikala, Kala, Bhaga, Bhagna are the **Units of Angle** used in Surya Sidhnata. This knowledge about the division of the angles in a circle is one of the earliest knowledge. Today, Vikala, Kala and Bhaga are coterminous with the Second, Minute and Degree respectively. Please note that Rashi was also used as a unit of angle.

Length: Yahodara, Angula, Hatha, Danda, Krosha and Yojanas

We refer to this shloka from Lilavati

ययोदरेरङ्गुलमष्टसंख्यैर्हस्तोऽङ्गुलिः षड्गुणितश्चतुर्भिः ।
 हस्तैश्चतुर्भिर्वतीह दण्डः क्रोशः सहस्रद्वितयेन तोषाम् ॥ ५ ॥
 स्याद्योजनं क्रोशचतुष्टयेन तथा करणां दशकेन वंशः ।
 निवर्तनं विंशतिवंशसंख्यैः क्षेत्रं चतुर्भिश्च भुजैर्निबध्दम् ॥ ६ ॥
 — लीलावती (1072 AD)

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Meaning of above shloka is as follows:

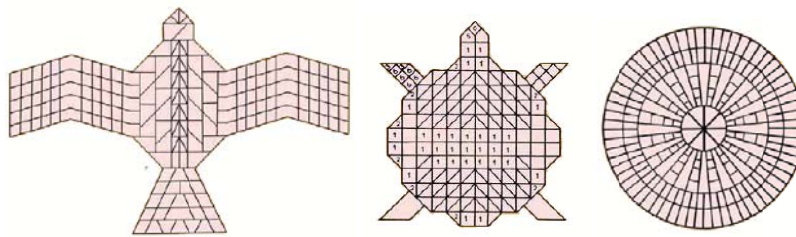
Eight rice grains (yahodara) makes one fingure width (angula), twentyfore fingures make one hand (hasta), four hands make one stick (danda), 2000 danda make one krosha (unit of length). Four krosha make one yojana (unit of length), ten hasta make one vamsha (unit of length), one nirwatan (unit of area) is equal to 400 square vamsha.

Time: Vipal, Pala, Gati, Hora, and Dina

Sixty Vipala makes one pala. Sixty pala makes one ghati. 150 Pala makes one Hora. 24 Hora (Hours) makes one Dina (a day).

Geometry in Vedic Age- Sulvasutras

Some scholars have shown on the basis of evidence in Shatapatha Brahmana that Indian geometry predates Greek geometry by centuries. It has been argued that Geometry and Mathematics had a ritualistic beginning in India centuries before Greeks or Babylon. In these rituals, Earth was represented by Circular altar and heavens were represented in Squar altar. There were eagle shaped altars also. The examples are as follows:

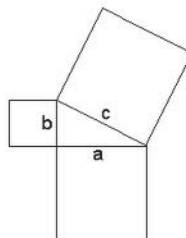


The Ritual consisted of coverting the Circle into a square of identical area. As per a paper by Seidenberg: Babylonia [1700 BC] got the theorem of Pythagoras from India or that both Old-Babylonia and India got it from a third source. **The source quoted was Sulvasutras.**

- Sulvasutras deal with complex fire altars of various shapes constructed with bricks of specific shapes and area: the total area of the altar must always be carefully respected. This proves that despite of no existance of algebra, there was an awareness of precise purely geometrical calculations.

Seidenberg's conclusion of India being the source of the geometric and mathematical knowledge of the ancient world has been included now in chronology of the texts. Please note that **Sulva sutras belong to a bigger text Shrauta Sutras**. The four major Sulva Sutras, which are mathematically the most significant, are those composed by **Baudhayana, Manava, Apastamba and Katyayana**. Out of them the oldest belongs to **Baudhayana** and dates back to 600BC. They discuss the cases of the Pythagorean Theorem and Pythagorean triples.

- The Baudhayan Sulbasutra 1.48 says: *The diagonal of a rectangle produces both areas produced seperately by its two sides.* It is represented as follows



- In the Baudhayan's Sulva Sutras we should note that the Right angles were made by ropes marked to give the triads 3, 4, 5 and 5, 12, 13 ($3^2 + 4^2 = 5^2$, $5^2 + 12^2 = 13^2$) ☺
- Sulva Sutra also mentions a ritual which included "Squaring the circle" (and vice-versa), thus geometrically constructing a square having the same area as a given area. It has worked out the square root of 2 to 1.414215, up to last 5 decimals.

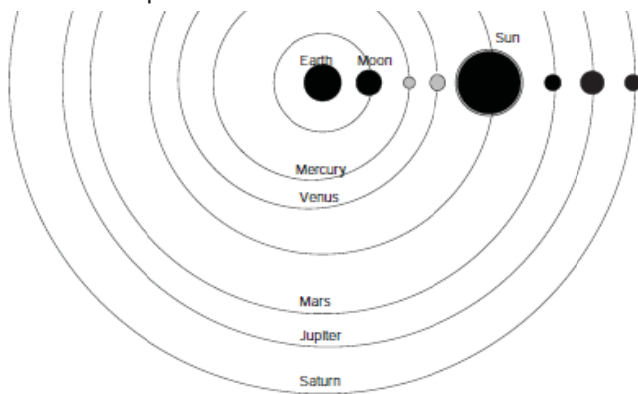
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Knowledge of Days of Year

There have been found symbols that prove that the Aryans knew about the year. In a ritual, pebbles were placed around the altars for the earth, the atmosphere, and the sky. The number of these pebbles was 21, 78, and 261, respectively. These numbers add up to the 360 days of the year. There were other features related to the design of the altars which suggested that the ritualists were aware that the length of the year was between 365 and 366 days.

Model of Sky

The Vedic People took Earth as Centre of Universe. The system they identified was as follows:



Thus Sun was taken on mid of the planetary system.

Saraswati Script

Most probably, the first true alphabetic script was Saraswati Script that was practiced on the banks of Saraswati River. It has been hypothesized that symbol of Zero was devised by unknown Indians who were inspired with the Fish sign of Brahmi script that referred to 10. However, it was not till 6-8th century AD, when practical calculations were carried out using zero.

Knowledge of Binary Numbers- Pingala

The Indian scholar Pingala (circa. 5th-2nd century BC) used binary numbers in the form of short and long syllables (the latter equal in length to two short syllables). This was very much similar to today's Morse code, shown in the following picture. Kindly compare them:

1 ●	17. ●●●●●●	33. ●●●●●●●●	49. ●●●●●●●●●●
2 ●●	18. ●●●●●●●	34. ●●●●●●●●●	50. ●●●●●●●●●●●
3 ●●●	19. ●●●●●●●●	35. ●●●●●●●●●●	51. ●●●●●●●●●●●●
4 ●●●●	20. ●●●●●●●●●	36. ●●●●●●●●●●●	52. ●●●●●●●●●●●●●
5 ●●●●●	21. ●●●●●●●●●●	37. ●●●●●●●●●●●●	53. ●●●●●●●●●●●●●●
6 ●●●●●●	22. ●●●●●●●●●●●	38. ●●●●●●●●●●●●●	54. ●●●●●●●●●●●●●●●
7 ●●●●●●●	23. ●●●●●●●●●●●●	39. ●●●●●●●●●●●●●●	55. ●●●●●●●●●●●●●●●●
8 ●●●●●●●●	24. ●●●●●●●●●●●●●	40. ●●●●●●●●●●●●●●●	56. ●●●●●●●●●●●●●●●●●
9 ●●●●●●●●●	25. ●●●●●●●●●●●●●●	41. ●●●●●●●●●●●●●●●●	57. ●●●●●●●●●●●●●●●●●●
0 ●●●●●●●●●●	26. ●●●●●●●●●●●●●●●	42. ●●●●●●●●●●●●●●●●●	58. ●●●●●●●●●●●●●●●●●●●
	27. ●●●●●●●●●●●●●●●●	43. ●●●●●●●●●●●●●●●●●●	59. ●●●●●●●●●●●●●●●●●●●●
	28. ●●●●●●●●●●●●●●●●●	44. ●●●●●●●●●●●●●●●●●●●	60. ●●●●●●●●●●●●●●●●●●●●●
	29. ●●●●●●●●●●●●●●●●●●	45. ●●●●●●●●●●●●●●●●●●●●	61. ●●●●●●●●●●●●●●●●●●●●●●
	30. ●●●●●●●●●●●●●●●●●●●	46. ●●●●●●●●●●●●●●●●●●●●●	62. ●●●●●●●●●●●●●●●●●●●●●●●
	31. ●●●●●●●●●●●●●●●●●●●●	47. ●●●●●●●●●●●●●●●●●●●●●●	63. ●●●●●●●●●●●●●●●●●●●●●●●●
	32. ●●●●●●●●●●●●●●●●●●●●●	48. ●●●●●●●●●●●●●●●●●●●●●●●●	64. ●●●●●●●●●●●●●●●●●●●●●●●●●

Morse Code

Pingala's Binary numbers

Pingala used the above in his **Chhandahshastra**. The knowledge of binary numbers indicates his deep understanding of arithmetic. Binary representation has now become the basis of information storage in terms of sequences of 0s and 1s in modern-day computers.

Ghati Yantra

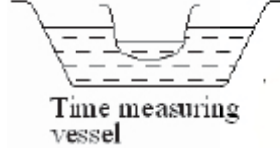
Kindly go thru the following Shloka

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घटिका कलशार्धाकृति ताम्रपात्रं तले ऽ पृथुच्छिद्रम् ।
मध्ये तज्जलमज्जन षष्ट्या द्युनिशं यथा भवति ॥

*ghatikā kalāśārdhākṛti tāmrāpātraṁ tale a pṛthucchidram |
madhye tajjalamajjana ṣaṣṭya dyuniśaṁ yathā bhavati ||*

The meaning of the above shloka is that a Ghatika or (bowl) is a hemispherical vessel made of copper with a small aperture at the bottom so that it sinks into the water 60 times in a day and night. The Ghati Yantra looked like this:



The clepsydra (Ghatī -yantra) was used in India for astronomical purposes until recent times. The above Shloka is of Bharamagupta. Brahmagupta of Bhilamala in Rajasthan, who was born in 598, wrote his masterpiece, Brahmasphuta Siddhanta, in 628. His school, which was a rival to that of Aryabhata, has been very influential in western and northern India. Brahmagupta's work was translated into Arabic in 771 or 773 at Baghdad and it became famous in the Arabic world as **Sindhind**. One of Brahmagupta's chief contributions is the solution of a certain second order indeterminate equation which is of great significance in number theory. Another of his books, the Khandakhadyaka, remained a popular handbook for astronomical computations for centuries. The ghatiyatra theory interprets that the vessel sinks in 24 Minutes.

Panini's Grammar

The Panini's grammar was composed in 6th century B.C or earlier. This grammar has provided 4,000 rules that describe the Sanskrit of his day completely. It has been shown that grammar of Panini represents a universal grammatical and computing system. From this perspective it anticipates the logical framework of modern computers.

Concept of Tridosha

Ayurveda adopts the physics of the five elements viz. Prithvi(earth), Jala(water), Agni (fire), Vayu(air) and Akasha (ether)). It notes that these 5 elements compose the Universe as well as human body. The Ayurveda divides the human body in SaptaDhatu or 7 constituent elements viz.

1. Rasa Dhatu: Chyle or plasma
2. Rakta Dhatu: blood
3. Mamsa Dhatu: Flesh
4. Medha Dhatu: Fat
5. Asthi Dhatu: Bone
6. Majja Dhatu: Marrow

Then, Ayurveda talks about the balance of three elemental energies called :

1. Vata: Air
2. Pitta : Bile and
3. Kapha: Phlegm

Unbalance in any of the above three causes illness and this is called Tridosha. **Plato in Greek medicine has also described the same 3 issues and it appears to be derived from the earlier tridosha theory of Ayurveda.**

Varahamihira

Varahamihira (died 587) lived in Ujjain and he wrote three important books: Panchasiddhantika, Brihat Samhita, and Brihat Jataka. The Panchasiddhantika is a summary of five early astronomical systems including the Surya

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Siddhanta. Another system described by him, the Paitamaha Siddhanta, appears to have many similarities with the ancient Vedanga Jyotisha of Lagadha. Brihat Samhita is a compilation of an assortment of topics that provides interesting details of the beliefs of those times. Brihat Jataka is a book on astrology which appears to be considerably influenced by Greek astrology.

Bhaskara

Bhaskara (born 1114), who was from the Karnataka region, was an outstanding mathematician and astronomer. Amongst his mathematical contributions is the concept of differentials. He was the author of Siddhanta Shiromani, a book in four parts:

1. Lilavati on arithmetic
2. Bijaganita on algebra
3. Ganitadhyaya on astronomy
4. Goladhyaya on astronomy

Bhaskara's epicyclicentric theories of planetary motions are more developed than in the earlier siddhantas.

Madhava

Madhava (c. 1340-1425) developed a procedure to determine the positions of the moon every 36 minutes. He also provided methods to estimate the motions of the planets. He gave power series expansions for trigonometric functions, and for pi correct to eleven decimal places.

Yogavashishtha of Valmiki

Valmiki, the author of Ramayana has written Yoga Vashishtha in which there are some passages on scientific point of view relating to the description of the nature of space, time, matter, and consciousness. For example, one of the passage says: *The world is like a potter's wheel: the wheel looks as if it stands still, though it revolves at a terrific speed.*

- **Valmiki** has also written Akshara Lakshana in which he deals with mathematics in general, algebra, trigonometry, chemicals and heat.

Some Other Legends

- **Govindasvami** was an Indian mathematical astronomer whose most famous treatise was a commentary on work of Bhaskara I.
- Mahavira was an Indian mathematician who extended the mathematics of Brahmagupta. Approximate formulas for the area and circumference of an ellipse; work on permutations and combinations are ascribed to him.
- Prthudakasvami was an Indian mathematician best known for his work on solving equations.
- Sankara Narayana was an Indian astronomer and mathematician. He wrote a commentary on the work of Bhaskara I
- Sridhara was an Indian mathematician who wrote on practical applications of algebra and was one of the first to give a formula for solving quadratic equations
- Vijayanandi was an Indian mathematician and astronomer who made some contributions to trigonometry.
- Sripati was an Indian who wrote works on astronomy and arithmetic.
- Brahmadeva was an Indian mathematician who wrote a commentary on the work of Aryabhata I.
- Parameswara (1360-1455) detailed observations of eclipses over 55 years and consequent correction techniques; minute corrections for the position of planets after long periods of time. He worked on Infinite series, especially of trigonometric functions.

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- At Varanasi, the 14 Aditya shrines precisely track the path of the sun through the year, month after month.
- All Indian numerals and even the Arabic numeral are ultimately derived from Brahmi numerals except Tamil numerals, which had its own system.
- Bhâskara said "*The sky is beyond limit; it is impossible to state its measure*". Indians conceived of infinity of time and space.
- Brahmagupta first spelt out the mathematical definition of infinity.
- Aryabhatta deduced that earth is a rotating sphere: the stars do not move, it is the earth that rotates. Its diameter is 1,050 yojanas. Its circumference is therefore $1050 \times 13.6 \times \pi = 44,860$ km.
- Aryabhatta also deduced that: "The moon eclipses the sun, and the great shadow of the earth eclipses the moon."

Bhogaz koi inscription

Bhogaz koi inscription dates 1380BC and has been found in North East Syria. It has recorded a kind of treaty between a Hittite and Mittani King. Apart from Indra, Varuna and Nasitya, it mentions the names of Ashvins and Mitra also.

Writers of Rig Veda

The Rig-Veda consists of 1028 hymns, comprising over ten thousand verses. The hymns are divided into ten Mandalas or Books, and with the exception of the first and last books, every one of the remaining eight books contains hymns said to have been composed or rather proclaimed by one Rishi, by which we may understand one family or line of teachers. Thus the second book is by Gritsamada; the third is by Visvamitra; the fourth is by Vamadeva; the fifth is by Atri; the sixth is by Bharadvaja; the seventh is by Vasishtha; the eighth is by Kanva; and the ninth is by Angiras.

Yava, Dhana & Vrihi

Thus the word yava, which in modern Sanskrit implies barley only, was used in the Veda to imply food-grains generally, including wheat and barley. And the word dJiana, which, in Bengal at least, now means paddy or rice, implies in the Rig-Veda fried barley, which was used as food and offered to the gods. *There is no allusion to rice (vrlhi) in the Rig-Veda* : says RC Datt.

Soma & Haoma

The fermented juice of the plant called Soma appears to have been the only intoxicating drink used in Vedic times. So much were the ancient Aryans addicted to this drink, that Soma was soon worshipped as a deity both in India and in Iran (under the name Haoma in the latter country), and we find one entire Mandala, or Book, of the Rig-Veda, dedicated to this deity. ☺ (R C Dutt)

Civil Court in Mrichhakatika

There is a description of a civil court in Mrichhakatika, whose headquarters were at **Nalanda**.

Temples in Rig Veda

There are no indications in the Rig-Veda of any "temples reared by mortal hands" and consecrated as places of worship. On the contrary, every householder, every patriarch of his family, lighted the sacrificial fire in his own home and poured libations of the Somajuce and prayed to the gods for happiness to his family, for abundant crops and wealth and cattle, for immunity from sickness, and for victory over the black aborigines. There was no separate priestly caste, and men did not retire into forests and subject themselves to penances in order to meditate on religion and chant these hymns.

Megasthenes Account for Pandyas

About Pandyas, Megasthenes has written "" *Next come the Pandoi, the only race in India ruled by women. They say that Hercules had but one daughter, who was on that account all the more beloved, and that he endowed her*

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with a noble kingdom. Her descendants rule over 300 cities and command an army of 150,000 foot and 500 elephants."

The above account is though half myth, but has been linked to Krishna. The Yadavas, who, under the leadership of Krishna, left Mathura and settled in Dwarka in Gujarat, did not flourish there long. They fell fighting among themselves, and the remainder left Dwarka by sea. It is believed that they came to Southern India, where they founded a new kingdom. They probably called themselves Pandyas because they pretended to be of the same race with the Pandavas, and they named their new southern capital Mathura, or Madura, as the town is called to the present day. Megasthenes no doubt refers to Krishna under the name of Hercules, and he had probably heard some legend which was then current in India, about the foundation of the southern kingdom by Krishna for his daughter. (R C Dutt)

Megasthenes on Slavery

Indians did " not even use aliens as slaves, and much less a countryman of their own," that thefts were very rare among them, that their laws were administered from memory, and even that they were ignorant of the art of writing.

Punishment for Adultery in Ancient India

Adultery has always been looked upon in India not only as a criminal offence, but as an offence of a heinous nature; but here again punishment for the offence was regulated by the caste of the offender. A man of the first three castes who committed adultery with a Sudra woman was banished; but a Sudra who committed adultery with a woman of the first three castes suffered capital punishment.

New castes by Intermarriage of 4 castes: Account of Vashishtha

1. The offspring of a Sudra and a Brahman woman becomes a Chandala.
2. That of a Sudra and Kshatriya woman, a Vaina.
3. That of a Sudra and Vaisya woman, an Antyavasayi.
4. The son begotten by a Vaisya on a Brahman woman becomes a Ramaka.
5. The son begotten by a Vaisya on a Kshatriya woman, a Paulkasa.
6. The son begotten by a Kshatriya on a Brahman woman becomes a Suta.
7. Children begotten by Brahmins, Kshatriyas, and Vaisyas on women of the next lower, second lower, and third lower castes become respectively Ambashthas, Ugras, and Nishadas.
8. The son of a Brahman and a Sudra woman is a Parasava.

7 Castes by Megasthenes

Megasthenes writes that there were 7 castes viz. philosophers , farmers, soldiers, herdsmen, craftsmen, magistrates (Overseers) and soldiers. It is evident that the seven castes described by Megasthenes are virtually the four castes spoken of above. His philosophers and counsellors were the Brahmins, those who engaged in religious study, and those who took employment under the state respectively. His husbandmen, shepherds, and artisans were the Vaisyas and Sudras, who engaged in cultivation, in pasture, and in manufacture. And his soldiers were the Kshatriyas; while his overseers were only special servants, spies of the king.

8 Types of Marriages

Vasishtha mentions six forms:—

1. **Brahma marriage;** the father pours out a libation of water and gives his daughter to a suitor, a student.
2. **Daiva marriage;** the father decks his daughter with ornaments and gives her to an officiating priest, while a sacrifice is performed.
3. **Arsha marriage;** the father gives his daughter in exchange for a cow or a bull.
4. **Gandharva marriage;** the lover takes and weds a loving maiden.

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5. **Kshatra (or Rakshasa) marriage;** the bridegroom forcibly takes a maiden, destroying her relatives by force of arms.
6. **Manusha (or Asura) marriage;** the suitor purchases a damsel from her father.

The lawgiver Apastamba recognizes only these six forms of marriage; but the older writers, Gautama and Baudhayana, sanction eight forms of marriage, adding to these six forms one rite, **Prajapatya**, which was considered praiseworthy, and another form, **Paisacha**, which was sinful. In the Prajapatya form the father merely gave away his daughter to the suitor, saying, "Fulfil ye the law conjointly." The Paisacha form was simply a rape of an unconscious woman. (RC Dutt)

Age of marriage

The marriage of girls at a tender age was not yet prevalent in the Philosophic Period. Vasishtha says:— " A maiden who has attained puberty shall wait for three years. " After three years, she may take a husband of equal caste."

Domestic Ceremonies

- ✓ Garbhadhana (ceremony to cause conception)
- ✓ Pumsavana (ceremony to cause the birth of a male child)
- ✓ Simantonnayana (arranging the hair of the pregnant wife)
- ✓ Jatakarman (ceremony on the birth of a child)
- ✓ naming the child
- ✓ the first feeding
- ✓ the tonsure of the head
- ✓ the initiation;
- ✓ the four vows for the study of the Veda;
- ✓ the bath of completion of studentship
- ✓ marriage
- ✓ and the five sacrifices to gods, manes, men, spirits, and to Brahma

Objective of Garbhadhana rite, was supposed to secure conception. The Pumsavana rite was supposed to determine the male sex of the child, and the Garbharakshana secured the unborn child from danger, while the Simantonnayana, performed, according to Asvalayana, in the fourth month, and according to Sankhayana, in the seventh month of pregnancy, or even, according to Gobhila, in the fourth, sixth, or eighth month, was a more interesting ceremony, and consisted in the husband's affectionately parting his wife's hair, with certain rites.

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