We have already discussed in the previous chapters about some scientific inventions and discoveries in medical science, architecture, technology, science of making awful weapons and ships, making different types of charoits and planes and so on. But here we want to discuss the elements of physics specially of astronomy, chemistry, mathematics and geometry.

**Physics:** So far the elements of physics in the *Vedas* are concerned, the facts that the planets and the stars of the space become spiritless and hide after the light of the sun falls in the earth, shows the highness of the scientific thoughts of the Aryan sages. They knew that the dividing factor of time and space in this earth is the sun who is the pivotal centre of this Universe also. The visibility of the Great Bears (*ṛkṣah* according to Vedic term) or seven sages also occur due to the absence of the light of the sun. The same thing has been explained thus, "The constellation pass away, like thieves together with their beams, before all beholding sun." On the other hand, we find the elements of the theory of Gravitation also as, "Savitar fixed the earth with bands he binds it." Another passage declares the theory of Gravitation as, "Truth is the base that bears the earth by Sūrya are the heavens sustained." The belief that Newton discovered the Theory of Gravitation in the world is put in question thus. Such attraction causes the earth and the planets to be hanged in space. Another passage informs about eclipse.

**Astronomy:** Mentioning of Great Bears (*ṛkṣah*), sun eclipse, all the seasons, light and dark fortnights, *Uttarāyana* and *Daksīṇāyana*, dates or *tithis* of lunar months, stars or *nakṣatras* such as *Magha*, *Pūrvāphālguni* and *Uttarāphālguni*, fourteen *bhuvanas*, six *lokas*, and seven *lokas* are some of the evidences that may claim the knowledge of astronomy of the Vedic rṣis.

**Mathematics:** We get a passage in the RV where a sage counts upto sixty thousands and ten thousands. So counting, addition, substraction, multiplication and division also came into being in the vedic age. Another passage of the SYV says of a huge number. The passage presents the following informations:

1. Aryans knew G.P. series and the passage presents a ten multiplied series.
2. The G.P. series goes up to $10^{17}$ or having seventeen numbers of zeros after one.

3. Though some scholar are counted up to $10^{12}$ in the passage as eka, dasa, sata, sahasra, ayuta, niyuta, prayuta, arbuda, narbuda, samudra, madhya, anta and parārdha.\(^{125}\)

4. On the other hand, Ubata, Mahidhara,\(^ {126}\) and J.P. Misra,\(^ {127}\) in their commentaries mention that it was $10^{17}$.

Whatever the fact there also may be, we get another instances of A.P. series in the two passages of SYV\(^ {128}\) as 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, & 33 and 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44 & 48, respectively. Those series have the common difference of 2 and 4, respectively.

The conception of geometry came first into the mind of the Aryan sages. A Vedic sacrificer decorated the alters of the yajñas with lines and circles and made the fire places in the different shapes. A Yajurvedic passage mentions that the sacrificial fireplace was made the centre of seven circumferences.\(^ {129}\) Ramgopal says about geometry as, "The Sūlvasūtras, for example, lay down exact rules regarding the construction of squares and rectangles equal to squares and vice versa; and the construction of circle equal to squares and vice versa. Moreover the sūtras show their knowledge of pythegorean theorem, and give with it's help the constructions for finding a square that will be equal to the sum or difference of two squares."\(^ {130}\) R.G. Trivedi also comments as, "Vedic literature must be respected as the father of geometry. The Sūlvasūtras describe the relationship between sides and hypotenuses, squares and circles etc."\(^ {131}\) Again squares, triangles and trough types of alters of yajñas are described in the Vedic literature.\(^ {132}\)

Chemistry: The RV is able to express the theories of chemistry also. But it can be done only on symbolical basis. Gurudatta has explained some passages of the RV in that context. He, in one place mentions that if Mitra, Varuṇa, Aryama and Indra are supposed to be electron, proton, neutron and the atomic energy, respectively\(^ {133}\) then some Rgvedic passages of a sukta\(^ {134}\) can give the following informations:

1. Atoms' particles are formed when energy starts to be active.

2. Apah are of three kinds, "electron, proton and neutron or Mitra, Varuṇa and Aryama."

3. Those three particles make atoms.
4. Neutrons move round the boundary of the atomic circle.
5. The neutron particles are Soma because of their chargelessness.

A Rgvedic passage indicates that the atom becomes imbalanced when the will of supreme existence rides upon it. Gurudatta gives the following diagram for the expression.

Atom becomes imbalanced when the arvan (the will of God) rides upon atom and the imbalancing happens when the Tritas split. The above verse also presents the following diagram

Rta was spread everywhere and it is looked like having rays. The place of Mitra, Varuṇa and Aryama was seemed in dyuloka.

Another passage says that the footless and handless Vṛtra or the chargeless particle challenged Indra or the charged one. Consequently, Indra or charged particle smote the uncharged one. Thus, emasculate Vṛtra or uncharged particles lie with scattered limbs. A special condition was happening between the vajra of Indra and Vṛtra and thus the proton particles contract with neutron particles. Gurudatta presents the following diagram to express the above description.

Thus, the studies of the Vedas lead us to confess that the several fields of science also are found discussing in the passages of the Vedas and other Vedic literature.

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