

GEOLOGICAL EVIDENCES IN SUPPORT OF THE ANTIQUITY OF SOME ANCIENT INDIAN EVENTS

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Geological evidences in support of the antiquity of the time of Sūrya-Mayāsura discussion of the *Sūryasiddhānta* and of the events of *Rāmāyaṇa* are discussed in the light of modern earth science concept of the theory of Plate Tectonics.

INTRODUCTION

Amongst the earliest civilisations known to humanity are included those of mid-east and far east, the records of the Indus Civilisation having been declared to be the oldest, specially in the absence of other evidences in the Indus Civilisation like those of temples, tablets etc., as is known of Egypt. According to Norman Lockyer¹, "The circumstances of these two groups (India and China) are vastly dissimilar so far as the actual sources of information are concerned; for in relation to China and India we have paper records, but alas! no monuments of undoubtedly high antiquity. It is true that there are many temples in India in the present day, but, on the authority of Prof. Max Muller, they are relatively modern." Further he commented that "I have already remarked that the ideas of the early Indian civilisation, crystalised in their sacred books called Vedas, were known to us long before the Egyptian or Babylonian and Assyrian records had been deciphered...Enough, however, is now known to show that we may take the Vedas to bring before us the remnants of the first ideas which dawned upon the minds of the earliest dwellers in Western Asia—that is, the territory comprised between the Mediterranean, the Black Sea, the Caucasus, the Caspian Sea, the Indus, the waters which bound the southern coasts—say, as far as Cape Comorin." He also quoted that "The Veda, in fact is the oldest in which we can study the beginnings of our language and of everything which is embodied in all the languages under the sun.

In the context of the foregoing it can easily be said that Vedas are the earliest compositions known to the humanity and its antiquity is shrouded in mystery. Barring the antiquity of the Vedic compositions, which are pragmatically, astronomical philosophical in their purport, the composition of *Rāmāyaṇa*, the

universally known Indian Epic, appears to be of great antiquity next only to the Vedas. The *Rāmāyaṇa* was declared to be *Ādikāvya* and the author Vālmikī is known to this day as *Ādikavi* in Sanskrit. Of course the other texts including those of *Siddhāntas* or astronomical treatises, a branch of the Vedas are also of similar antiquity and one such text, the *Sūryasiddhānta*, enjoys the pride of a place amongst the various astronomical treatises.

It is well known that *Vedāṅga Jyotiṣa* or the astro science of the Vedas propounded the *Yuga* Theory of measuring time in millions of years and the Vedic calendar considered 4320 million years (solar) as a day of *Brahma*. A cycle of 308 million years is called a *manvantara* and according to the Vedic calendar the present year is the 5077th year of *Kali Yuga* in the 28th *mahāyuga* of the seventh Manvantara called *Vaiwasvat* equitable to a total solar year completion of 1,955, 885, 077 years from the beginning of present creation.

Rāmāyaṇa is observed to have taken place during the *Tretāyuga* of the 24th *Mahāyuga* of the current *Manvantara*. Each *Mahāyuga* consists of 4,32 million years; hence it appears that *Rāmāyaṇa* occurred some 15, 135, 079 years back. Similarly, the discussion between Mayāsura, the author of the *Sūryasiddhānta**, and the Solar person is mentioned to have taken place about the close of *Kritayuga* (*Alpāvaśiṣṭe tu Krite etc.*) in the current *mahāyuga*, equitable to some 2, 175, 079 years. Further, the *Mahābhārata* took place during the *Dwāpara yuga* of the current cycle of *mahāyuga* and the close of *Dwāpara yuga* is well known to be 3102 B. C.

These statements and their purports are simply astounding and difficult to be believed specially in the context of modern civilisation and scientific evidences of human evolution, which proclaim that man was evolved only during the last couple of millions years. But hardly any attempt has been made to tackle this problem excepting from the point of view of astronomy. The antiquity of the Egyptian monuments were deciphered by the astronomical knowledge applied by Lockyear but such are not attempted so far in the case of these Indian events.

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It may be worthwhile to look at this problem from a fresh angle. Although geographical identity of many of the places mentioned in those texts are difficult to be made out at present, it is hard to discard some of the more important and well known geographic locations like Ujjain, Laṅkā, Ayodhyā etc. etc. From the astronomical data mentioned in those texts, a correlation may be effected to find out whether the antiquity known to these cases are really agreeable specially from the modern concepts of the earth science disciplines.

In the *Bhūgolādhyāya* of the *Sūryasiddhānta* the following verses are important :

*“Bhūvṛttāpāde Pūrvaśyām Yama (or Yava)
Koṭīti Viśrutā—Bhadrāśwavarṣanagarī
Swarnprākāratoranā, M-38*

*Yāmyāyām Bhārate Varse Laṅkā Tadwanmahapurī
Paścime Ketumālākhye Romakkhyā Prakīrtā-39
Udakṣiddhapurī Namā Kuruarṣe Prakīrtitā
Tasyām Siddhā Mahatmāno Nivaasnti Gatavyathaha”—40*

meaning that on the equator Yavakoti (Java isle) in the east is located in Bhadrāśwavarṣa ; to the south of Bhāratavarṣa is located Laṅkā ; to the west is located Romaka deśa in Ketumāla varṣa ; and to the north is located Siddhapuri in Kuruarṣa.

Also in two verses it is stated the :

*“Bhādrāśwoparigahkuryāt Bhārate Tūdayam Ravihī
Rātryardham Ketumāle Tu Kurāvastamayam Tadā,—70
Bhāratādisu Varṣesu Tadwadeva Paribhraman
Madhyodayārdharātrystakālan Kuryad Pradakshinam”—71*

meaning that when there is sunrise in India, it is midnight in Ketumalavarṣa. Similarly sun's apparent movement will cause mid-night and sunset moving over India in clockwise direction.

These observations make it clear that the author had the geographical knowledge of the distribution of Java, Ceylon, Rome and Siddhapuri (equated perhaps to the Maya and Inca areas of the Americas), specially located at equidistant on the equator.

According to Āryabhaṭa :

*“Sthala Jala Madhyāllaṅkā Bhukakṣyāyām bhavet
Caturbhāge Ujjayinī Laṅkāyāstaccaturthamśe samottarataha”*

indicating that Ujjain is located to the north of Laṅkā at a distance a fourth of the equator of the equatorial distance. A fourth of the equatorial distance is 90° and quarter of that distance is 22°30'. Hence it is clear that Ujjain is 22°30' north of Laṅkā which is situated on the equator for, he states in another verse supporting the earlier *Sūryasiddhānta* statement of distribution of four well known cities of the time at equidistant on the equator :

*“Udayo Yo Laṅkāyām
So Astamayassavituraeva Siddhapure
Madyānho Yavakotyām
Romakaviṣaye Ārdharātrasyāt”*

Presently Ujjain is just near Tropic of Cancer, i. e. $23^{\circ}30'$ a difference of about 1° amounting to nearly 90 km. Since Āryabhaṭa mentions this supporting the geographic distribution of the *Sūryasiddhānta*, it is to be considered that the distance was maintained at the time of the composition or discussion of the *Sūryasiddhānta* but not at the time of Āryabhaṭa for, at the time of Āryabhaṭa the situation of Laṅkā was not on the equator. Should this be the consideration as it is now understood, then we have to account for the change in the distance of 90 kms. from the position of Ujjain at the time of *Sūryasiddhānta* to the present. This will be made clear by considering the modern geological concepts.

Similarly, the situation of Laṅkā on the equator as mentioned by the *Sūryasiddhānta* needs a little elaboration. Now the northern tip of Ceylon is close to 10° N latitude. The island is about 4° in length in N-S direction. Hence, it is at a distance of about 6° from the equator. In the absence of *siddhāntas* earlier to the *Sūryasiddhānta*, which most likely incorporates the earlier ideas as in other texts of sanskrit, the position of Laṅkā during the time of the text although might have been different from the present disposition, perhaps was not on the equator, but incorporated from the earlier texts. The earlier texts or compositions like *Rāmāyaṇa* should be considered for such a disposition of the island Laṅkā and it stands to reason that in the *Sundarakāṇḍa* of Vālmiki *Rāmāyaṇa*⁸ it is stated that :

“*Yojanānām Śatasyānte Vanarājim Dadarśa Saha*”

meaning that Hanumān saw the land with forests after his flight of 100 *yojanas*. One *yojana* is considered to be about 4.9 or 5 miles and it would be amounting to some 500 miles (or about 800 kms.) from the southern tip of Mahendragiri (from where Hanumān flew) to Laṅkā. From this it is clear that island of Laṅkā has been closer to the main land of India from the time of *Rāmāyaṇa* by a distance as much as 800 km., or less.

The above narrations suggest that the main land of India with Ujjain has moved about 90 km. during the last 2 million years or so (the time of *Sūryasiddhānta*) and the island of Laṅkā has moved some 100 km., or so during the last 15 million years (from the time of *Rāmāyaṇa*).

Could there be movement of land masses? This is as astounding as the antiquity of the texts themselves. But the modern earth scientists believe that continents and land masses are in constant motion since the beginning of the history of the earth and palaeomagnetic evidences show that the sea floor is spreading at varying rates from about 2 to several cms. per year. Geologists, the world over, now believe in the movement of land masses which were once together based on various geological evidences. The continents of the southern hemisphere were together before 200 million years ago with the

south pole somewhere about the present day Natal in Africa and that singular large continent is called 'Gondwana Land'. Similarly the continents of the northern hemisphere were together and called 'Laurasia'. Laurasia and Gondwana were separated by an equatorial sea called the 'Thehys', which contained the sediments which have been responsible for the formation of the present day Alpine-Himalayan mountains, being uplifted by the equatorward moving landmasses of the Gondwana land, being rifted up. With the Indian Peninsula moving northeastwards, it is estimated that it has moved some 9000 km. during the last 200 million years (Dietz and Holden)⁴.

This may look fantastic but the theory which originally proposed by Wegener⁵ in 1924 as The Origin of Continents and Oceans, has now become the major concern of the students of the earth, specially under the modern title 'The Theory of Plate Tectonics'. Each land mass is supported on a plate and some 6 major plates and over 15 minor plates have been recognised to constitute the crust of the earth. Extensive researches are being carried out to ascertain the rates of spreading ocean floor and the migration of land masses. Hence, it can safely be assumed that the Indian texts which have fantastic observations are no more fantastic but hard truth.

In the context of the above observation the problem can be examined. The Indian Peninsula has moved nearly 9000 km., during the last 200 million years. If it be so, the time that is necessary to move a distance of about 90 km (of Ujjain from 22°30' to 23°30' northwards) at the average rate would be about 2 million years. The *Sūryasiddhānta* text records that the discussion took place about 2 million years ago (*Alpāvaśiṣṭe tu Krite* etc., etc.).

On the same line the movement of Ceylon can be accounted. On an average rate the island could move some 675 km., during the past 15 million years. But the rates of migration vary and the distance of 800 km., between Mahendragiri in the southend of the Indian Peninsula and Ceylon may be nearer to the truth. If it is only 6° then a distance of 540 km., can be accounted easily by the moving island. This would support the antiquity of *Rāmāyaṇa*.

REFERENCES

- ¹ Norman Lockyear, J.,—The Dawn of Astronomy, MIT publication No. 15—(1964).
- ² *Mayāsura-Sūryasiddhānta*—Kashi Sanskrit Series No. 144—(1946).
- ³ *Vālmiki Rāmāyaṇa Sundarakāṇḍa Prathamāsarga, śloka 211.*
- ⁴ Dietz, R. S. and Holden, J. C.,—The Break Up of Pangea, *Scientific American* Vol. 223, No. 4, P. 30—41 (1970)
- ⁵ Alfred Wegener—The origin of continents and oceans. Methuen & Co, Ltd.—(1924).