

# A Few Fascinating Geological Observations in the Rāmāyaṇa of Vālmīki

## *Greatness of the Rāmāyaṇa of Vālmīki*

“There is not in the whole range of Sanskrit literature a more charming poem than the Rāmāyaṇa. The classical purity, clearness and simplicity of style, the exquisite touches of true poetic feeling with which it abounds, its graphic description of heroic incidents, *Nature's greatest scenes*, the deep acquaintance it displays with the conflicting workings and most rapid emotions of human heart, all entail it to reach among the most beautiful compositions that have appeared at any period within any country.” – *Monier Willams*

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“Few works of literature produced in any place at any time have been as popular, influential and successful as the great and ancient epic poem, the Vālmīki Rāmāyaṇa.”

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“Vālmīki's poem has entertained, moved, enchanted and uplifted untold millions of people of India and much of Southeast Asia for countless generations.”

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“The power and popularity of the Rāma story has been such that it has been able successfully to cross not only the boundaries of caste, religion and language but even those that divide major cultural areas. In this way the story has come to serve as one of the major wellsprings of poetry, folklore and puppet theater in many of the languages and cultures of Southeast Asia. The power of the tale to inspire artistic creation has manifested itself as well in many of the finest examples of painting and sculpture in both South and Southeast Asia.” – *R.P. Goldman*

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These are great praises indeed coming from persons belonging to an alien culture hailing from different parts of the world. If they could take so much interest in the study of the epic, how much more should be our own effort in understanding the beauty and the grandeur of Rāmāyaṇa. It is, however, sad to find that the average Indian student of today, from the primary school right up to college, is not getting exposed to the poetry of Vālmīki in original.

Our educational system has taken least interest in the promotion of Sanskrit and the study of the classics. Instead, we find much money and time wasted in the name of Rāma on issues like building temples, holding rallies and fanning communal hatred.

## *Some Features of Geological Interest*

My object in raising this topic of Rāmāyaṇa is to emphasize the fact that our ancient classics like the *Rig Veda*, *Upanishads*, *Purānas*, *Rāmāyaṇa* and *Mahābhāratha* are not just myths and poetic fantasies to be dismissed as not of much significance but can be rich sources of information of value.

Being a student of geology and more particularly that branch of the science which deals with

the face of the earth – geomorphology, I was specially attracted to the description of some of “Nature’s grandest scenes” described by Vālmiki.

The greater part of the scenes described in the earlier sections of the Rāmāyaṇa lie between the Himālaya and the Vindhya mountains, forming Aryāvarta. The poets’ description of the mountains and rivers in the region is most vivid. But more surprising are the frequent references to the occurrence of minerals and metals.

### *Mineral Riches*

Himālaya is described as the king of mountains and a vast store of metals (*Sailendro Himavannāma Dhātūnām ākaro mahān*) - Bāla 35:13; Mount Kailasa especially as adorned with metals (*Kailāsam dhātumanditam*) - Bāla 37:11.

In the Bālakānda, there are five to six verses of an intriguing nature dealing with the ‘origin’ of different metals:

*Utsasarja mahātejāḥ srotobhyo hi tadānagha  
Yadasyā nirgatam tasmāt tapta jāmbūnada prabham ||  
Kāncanam dharāṇi m prāptam hiranyamatula prabham  
Tāmram kārṣṇāyasam caiva taikṣṇyādevabhyajāyata ||  
Malam tasyābhavat tatra trāpu sīsakameva cā  
Tadetadharaṇṁ prāpya nānā dhāturvardhata ||  
Nikṣiptamātre garbhe tu tejohirabhiranjitam  
Sarvam parvatasannaddham souvarnamabhavadvanam ||  
Jātarūpamiti khyātam tadā prabhṛti Rāghava  
Suvarṇam puruṣavyāghra hutāśana samaprabham – (Bāla 37:19-23)*

(When the mighty Ganges heard Agni’s words), she released the unbearably brilliant embryo from her channels;

Since it had emerged from her, it had the lustre of molten gold, and as it touched the earth, it turned to gold and silver, pure and beautiful;

From its acrid quality, copper and iron were produced, while its impurities became zinc and lead. Thus, when it entered the earth, it turned into various elements;

The moment the embryo was set down, the whole mountain forest was pervaded by its splendour and turned to gold

And ever since that time Rāghava, gold, lustrous as Agni has been known as *jātarūpa* – formed at birth

The significance of these verses is not clear and has to be carefully analysed.

There are vivid descriptions of auriferous rocks along with copper and silver in the *Citrakūta* mountain.

*Śikharaiḥ khamivodviddhai dhātumadbhir vibhūṣitam  
Kecid rajata sankāśāḥ kecit kṣataja sannibhāḥ  
Pitamānjiṣṭhā varṇāśca kecit māṇivaraprabhāḥ ||  
Puṣyārkaketakābhāśca kecidjyotirasaprabhāḥ  
Virājante ācalendrasya desā dhatuvibhūṣitaḥ || – (Ayodhyā 94:4-6)*

What a brilliant sight the lordly mountain (*Citrakūta*) is with its different regions adorned with minerals. Some sparkle silvery; some look blood-red or are tainted

yellow or crimson; some gleam like the rarest gems, some shine like topaz or crystal or the pale white screw pine flower or gleam like stars or quicksilver. The mountain is spectacular and the country around is full of metallic ores (*Deśā dhātu vibhūṣitā*)

*Śītāḥ śailasya śobhante viśalāḥ śataśo abhitāḥ*  
*Bahulā bahulai varnairnīlapītasitārunaiḥ* (Ayodhyā 94:20)

How beautiful the rocks of the mountains are, massive rocks, hundreds of them all around, so many and so colourful – blue-black, yellow, white and pink.

*Bhivveva vasudhām bhāti citrakutaḥ samuthitāḥ*  
*Citrakūtasya kūto ayam drśyate sarvataḥ śubhāḥ* (Ayodhyā 94:23)

The mountain *Citrakūta* has arisen, splitting open the earth; its peak is gracious in every way.

It appears to indicate a granitic dome piercing through the surrounding rocks!

A beautiful description follows of *Pancavati* which Rāma in his wanderings through the forest chooses for his stay. The place is marked with lofty mountains dotted with caves and echoing with the cry of peacocks (*mayūra nādītā ramyā pranśavo bahu kandarāḥ*). Not only that, the place is full of veins of gold, silver and copper (*souvarṇai rājataistāmraiḥ deśe deśe ca dhātubhiḥ* – Aranya 15:15). There is also reference to a mining industry. Wealthy people gather riches with effort precious metals of all sorts, veined with gems and gold (*dhanāni vyavasāyena vichīyante mahāvane dhātavo vividhaścāpi maṇiratna suvarṇinā* – Aranya 43:31).

Further on comes a description of *Prasravana* mountain. The mountain is covered by dark clouds (*megharāśinibham*) and always abounding in pure water (*nityam suci jalāsravam*). The hill is made up of white, black and red coloured rocks (*svetabhiḥ, kiṣṇatamrābhiḥ, śilābhirupaśobhitam*). It is like the peak of Kailasa (*Kailāsa śikhara prakhyam*) and is full of mineral riches (*nānā dhātu vibhūṣitam* – Kiṣkindha 27:3,8,15)

The peaks of *Prasravana giri* is described as a mountain top bright with gold and minerals (*parvatasyāgre hemadhātu vibhūṣite* – Kiṣkindha 30:5)

There is a reference to the capital of Kosakāra kings described as abounding in mines of silver: (*pattanam Kosakārānām bhūmim ca rajatākaram; Suvarṇa rūpyakam caiva suvarṇākaramaṇḍitam* – Kiṣkindha 40:23).

References are made to Kanakaparvata and Udayaparvata, as being rich in gold

*Jātarupaśilo nāma mahān kanakaparvataḥ* (Kiṣkindha 40:50)

*Hemamayāḥ srīman udayaparvataḥ* (Kiṣkindha 40:54)

Obviously the tract that the poet is describing is an auriferous belt.

There is an interesting reference to *Ayomukha* in the *Sahyādri*: *Ayomukhaśca gantavyoh parvato dhātumanditāḥ* (you must go to Mount *Ayomukha* embellished with ores) – Kiṣkindha 40:13. Could this *Ayomukha* be a reference to Kudremukha in the *Sahyādri* full of iron ore? *Haya* means a horse (*Kudure* in Kannada). *a* and *ha* are interchangeable. Incidentally the first reference in the ancient texts to *Sahyādri* is to be found in Rāmāyaṇa. *Apasāyante giri sreṣṭham Sahyam dṛmalatāyutam* (Rama saw the great mountain *Sahya* covered with forest) - Yuddha 4:38.

Further south Vālmīki refers to Mahendragiri as the greatest of mountains (*Mahendrāḥ parvatottamāḥ*). The interesting part is that it is described as abounding in gold (*jātarupamayāḥ*) and projecting into the sea (*Kiṣkindha 41:21*).

Reference is made to glittering mountains, golden and bright as fire, full of all kinds of jewels, rivers with round pearls, precious gems and gold distributed in the sands (*udbhūta pulināstatra jātarupaisca nimnagāḥ*) (*Kiṣkindha 43:44*).

These references picked up at random indicate that mining for copper, gold and silver were being carried out on a fairly extensive scale. Copper was the metal most widely used. A good part of the gold must have been collected from placers and alluvium. It is clear that gold and silver had also been traced to their source rock and mining attempted at a few places.

### Rivers

In the description of physiographic features, the pride of place is to be given to the description of Ganga. The poet goes into ecstasies in describing the river in all its varied aspects.

*Divyā punyodakā ramyā himavantam upasritāḥ; Lokasya hitakāryārtham pravṛtā* (a lovely goddess with holy waters rises from the Himalaya and flows forth in her desire for the welfare of the world)

*Tripathagām śivatoyām aśaivalām* (Ganga, the heavenly river that goes by three paths (*tripathagām*), free from weeds (*aśaivalām*) (*Ayodhya 50:12*)

*Jalaghātāttahāsoḡrām* (tumbling, making waters heave with grandeur); *phena nirmalahāsiniṁ* (smiling with foam); *kvacit venikṛtajalām* (sometimes flowing in a braided form), *kvacidāvarta śobhitām* (sometimes revolving in whirls, eddies); *kvacit stimita gambhirām* (sometimes still and profound); *kvacit vega jalākulām* (sometimes rushing in rapids); *kvacid gambhīra nirghosam* (sometimes flowing majestically with a roar); *kvacit bhairava nisvanām* (at others shrieking with tremendous noise) (*Ayodhya 50:16-18*). No aspect of the river has escaped the notice of the poet. Some of the phrases used are so full of meaning and simulate the flow of river in its varied aspects in lines of exquisite beauty.

Vālmīki describes Ganga as emerging from the matted head of Śankara as seven streams:

*Hlādinī pāvanī caiva nalinī ca tathā parā  
Tisraḥ prācīm diśam jagmurgangāḥ śivajalāḥ śubhāḥ ॥  
Sucakṣuścaiva śīta sindhuścaiva mahānadī  
Tisrastvetā diśam jagmuḥ pratīcīm tu śubhodakāḥ ॥  
Tathaiva alakanandā ca visrutā lokapāvanī  
Saptamī cānvagattāsām Bhagīrathamātho nripam ॥ – (Bāla 43:13-15)*

Hlādinī, Pāvani and Nalini – these three flowed east; Sucakṣu, Śīta and Sindhu flowed west. Alakananda, the seventh followed Bhagīratha. The division to east-flowing and west-flowing rivers is real and accurate and is astonishing in such an old epic as the Rāmāyaṇa, testifying to the extraordinary observational powers of poet Vālmīki.

### Oceans

Poet Vālmīki excels in his description of the oceans. Reading it you get a sense of the grandeur, the awe and the immensity of the vast spread of water in front of him.

*Sāgaram cāmbaram prakhyam ambaram sāgaropamam*  
*Sāgaram cāmbaram ceti nirvisesam adrsyata* || - (Yuddha 4:20)

Ocean looked endless like the sky and sky appeared like the ocean. It was difficult to make out which was the sky and which the ocean.

### **Rainy Season**

A series of most charming verses heralding the onset of the rainy season are to be found in the Kiṣkindha Kanda. A few examples may be cited:

*Navamāsadharam garbham bhāskarasya gabhastibhiḥ*  
*Pī tva rasam samudrānām dyau prasūte rasāyanam* || (Kiṣkindha 28:3)

The sun's rays have drunk the water of the seas and carrying it as an embryo for nine months are giving out the elixir of life

What a beautiful and poetic description of a natural process!

The land parched with the summer sun (*gharma parikliṣṭā*) now smiles with the incoming of new water (*nava vāri pariplotā*) (Kiṣkindha 28:7).

*Meghakṣṇājina dharā* (The mountains are clad as though with the skins of deer); *dhārā yagnopavītiṇaḥ* (hill streams appear like sacred threads of Brahmins); (*mārutā puritaguḥāḥ* wind murmuring in the caves) – these make it appear to the poet like brahmins reciting the Vedas (*pradhita iva parvatāḥ*).

*Kasābhiriva haimībhiḥ vidyudbhirabhitāditam* (The sky is lashed by lightning as if by golden whip); *antaḥstanita nirghoṣam savedanamivāmbaram* (the whole sky is rant with sounds of pain) – (Kiṣkindha 28:1). *Jātā mahī sasya vanābhirāmā* (earth is beautiful with greenery).

### **Earthquakes**

There are several references in the Rāmāyaṇa to the quaking of the earth and it looks as though the poet was aware of earthquakes and probably was an eye witness to the devastation that took place as a result. *Ṙṥhviyām bhidyamānayam nirghātasamaniswanāḥ* (Earth was torn apart and there arose a noise like that of an earthquake).

*Vyākulāśca disāḥ sarvā na ca kincit prakāśate*  
*Sagarāḥ kṣubhitāḥ sarve vishī ryante ca parvatāḥ* || (Bāla 65:13,14)

All directions are clouded and nothing can be seen. Oceans are agitated and the mountains are crumbling; *prakampate ca pṛithivi vayurvātā brisākulāḥ* (The earth is trembling and the wind blows wildly).

*Tasya sabdo mahānāsīt nirghātasamaniswanāḥ*  
*Bhumikampaśca sumahān parvatasyevea dīryataḥ* || (Bāla 67:18)

There was a tremendous noise loud as a thunderclap, and a mighty trembling shook the earth, as if a mountain had been torn asunder; *nipetuśca narāḥ sarve tena sabdena mohitāḥ* (hearing the noise people fell to the ground)

Expressions like '*vyathamānā pṛthivi*', '*prakampitā parvatāḥ*' (shaking of the earth) '*cālayanniva medinīm*' – (Aranya 2:9); '*Pracacāla mahī sarvāḥ sa śāila vanakānanā*' – (Aranya 23:16) the earth with its mountain clothed with forests began to shake); indicate clearly that quaking of the earth and the shaking of the mountains were within the experience of men living at the time the Rāmāyaṇa was composed.

*Vātaśca kaluṣā vānti kampate ca vasundharā  
Parvatāgrāni vepante patanti dharaṇiruhā ॥*

*Meghah kravyādasankāsāḥ paruṣa paruṣaniswanāḥ  
Krūraḥ krūram pravaraṣanti misram sonita bindubhiḥ ॥*

*Raktacandāna sankāśā sandhyā paramadārunā  
Jwalatah prapatatyetaḍ ādityāḍ agnimaṇḍalam ॥ - (Yuddha 23:4-6)*

*vātasca kaluṣā vānti* (wind full of dust is blowing); *kampate ca vasundharā* (earth is shuddering); *parvatāgrāni vepante* (mountain peaks are shaking); *patanti mahiruhāḥ* (trees are falling to the earth). *Meghāḥ kravyāḍ asankāsāḥ* (clouds like rakṣasās rise in the sky); *paruṣa paruṣaniswanāḥ* (making tremendous noise); *krūraḥ krūram pravaraṣanti sonita bindubhiḥ* (rain water is of the colour of blood); *raktacandana sankāśa sandhyā parama darunā* (evening is red like raktachandana and dreadful to behold).

Who but a poet and an actual witness to the terrifying power and devastation of an earthquake, with all its horrifying details, could describe the scene so graphically!

#### Conclusion

Although least qualified to undertake a work of this nature with my very limited knowledge of Sanskrit, an overwhelming urge to pick out certain verses of some geological interest made me draft this essay for the benefit of our readers in the fond hope that it will persuade them to read the great epic in original.

I find it difficult to label the Rāmāyaṇa of Vālmiki as a myth and fantasy conceived only in the brain of a poet. The monkeys and demons that figure in the story are possibly creations introduced to entertain and drive home a moral. The rest of the story however appears to be real, as real as the grand scenes around which it is woven.

When Vālmiki was about to write the Rāmāyaṇa, Brahma, the Creator it is said, blessed the effort saying:

*Yāvat sthāsyanti girayah saritaśca mahī tale  
Tāvat Rāmāyaṇa Kathā lokeṣu pracariṣyati*

As long as the mountains and rivers endure upon the earth,  
so long will the story of Rāmāyaṇa be told among us.

True to this prediction Rāmāyaṇa katha has survived for thousands of years. But now looking at the way our children are being educated, one begins to wonder whether Rāmāyaṇa will disappear from India, much the same way as the teaching of the Buddha from the land of its origin. Rāmāyaṇa of Vālmiki is our priceless heritage and every effort should be made to restore and sustain our interest and the immortal lines of poet Vālmiki which should forever inspire the young minds of this nation, improve their character and make them lead better lives.

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