

Alluvial Placer Gold Mining in India through Ages: A Historical Perspective

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[Abstract: The present paper discusses some of the important literary references related to alluvial placer gold mining from the earliest period till the present time in India. Some of the socio-economic and as well as ethnographic aspects of the alluvial placer gold mining and miners have also been presented.]

Gold has a rich history in India. The attributes of gold influenced the mind and heart of early Indians so deeply that they conferred upon the supreme spirit the designation of “*hirn̄yagarbha*”, meaning golden egg. It was so called because He remains in a golden egg as an embryo. In ancient times, it was the eluvial and alluvial placer gold deposits which were first exploited. Subsequently, and still in ancient times, the vein or reef deposit was exploited simultaneously. The history of alluvial placer gold mining in India can be obtained through the study of literary works, history books, scientific books, traveler’s records and gazetteers. The present paper discusses some of the important literary references related to alluvial placer gold mining in India from the earliest times till the modern times. Some of the socio-economic as well as ethnographic aspects of alluvial placer gold mining have also been presented.

Alluvial Placer Gold Mining in India in Ancient Times

Vedic Literature

The Vedic literature is the most important class of ancient Hindu literature, which has guided the thinking and feeling of the people from time immemorial in India. Pande ⁽¹⁾ has discussed the date of composition of the Vedas in detail, and has stated that the Vedas were composed approximately 5000 years or more before the present time.

In the R̄gveda (8.26.18), the river Sindhu (Indus) has been described as “*hirn̄yavartanih̄*”. The relevant hymn is as follows:

ut syā śvetayāvarī vāhis̄t̄hā vā īn̄ nadīnām |
sindhurhiran̄yavartanih̄ ||

Sāyanā, the greatest commentator of the Vedic hymns, has given the following commentary on the word *hirnyavartanih* :

“hirnyavartanirh hirnmayasvīyamargā hirnmayobhayakūlā”

Thus, *hirnyavartanih* can be translated as *hirnmayobhayakūlā*, i.e. both banks containing gold. It is interesting to note that the famous lexicon Amara Kosha (2.15) states that “*vartani*” is one of the twelve words used to denote the word “path”. The above hymn of the Rgveda can be translated, as follows:

“And moreover, the river Sindhu having white (i.e. clean) water flow, and path (i.e. both banks) containing gold, praises you (Aświn).”

There is another reference in the Rgveda (10.75.8), which also mentions that the river Sindhu contains gold. The word used for it is “*hirnyayī*”. The relevant hymn is as follows:

*svāśvā sindhuh surathā suvāsā hiranayī sukrātā vājinīvatī |
urnāvatī yuvatih sīlamāvatyutādhi vaste subhagā madhuvr dham ||*

Sāyanā has given the following commentary on the above hymn:

“This is the river Sindhu which is full of horses, chariots, cotton, gold, grains, and wool (i.e., these materials are either produced or found on the banks or on the nearby area of the river Sindhu). Its banks contain ropelike plants, which are used to tie down ploughs. It bestows fortune on people, and such plants are grown on its banks that help in producing greater amount of honey.”

The river Sarasvatī has also been described with an adjective of “*hirnyavartanih*” in the Rgveda (6.61.7).

Clearly, the gold referred to with reference to the river Sindhu and Sarasvatī was stream placer type. The above hymns of the Rgveda are some of the earliest references to the stream placer gold deposits in ancient India. It has been shown later that the river Sindhu was famous for stream placer gold deposits throughout the ages.

In another Vedic text Śatapatha Brāhmaṇa (2.1.1.5), it has been stated that gold is found in water, apparently referring to stream placer gold found from rivers:

“*atha hiraṇyāṃbharati | retastasmādapsu vindantyapsu hi
tasmādhiraṇyāṃbharati |*”

Mahābhārata

The Mahābhārata is one of the most important Sanskrit epic. Upadhyaya ⁽²⁾ is of the opinion that the Mahābhārata was composed in the 5th or 6th century B.C. The Mahābhārata (Vana Parva, 90.26) stated that the sand of the river Gaṇḍakī (Ganges) contains gold:

*usṇātoyavahā gaṇḍakī śītatoyavahā purā |
suvarṇāsiktā rājan viśālāṃ badarīmanu ||*

Kālidāsa

Kālidāsa is the most important Indian creative writer that India has produced. It is believed that he existed in the first century A.D. ⁽³⁾. Kālidāsa has stated in his work Kumārasambhava (13.26) that the sand of the river Mandākinī is auriferous. A similar observation is again made by him in another work Meghadūta (Uttaramegha, 6). The river Gaṇḍakī is also known as Mandākinī ⁽⁴⁾.

Vāyu Purāṇa

The Purāṇic literature occupies an important place in the entire Indian literature. There are eighteen major Purāṇas, and their date of composition lies between first century A.D. and tenth century A.D. ⁽⁵⁾. The Vāyu Purāṇa is one of most ancient Purāṇas amongst all the Purāṇas.

The Vāyu Purāṇa (47.22-25) has given information about Bindu Lake, which contains gold, and states that the mud and sand of this lake are auriferous. It has given the physical location of this lake, as the foot-step of the Gaura mountain, situated in the north of the Kailāsa mountain. The Vāyu Purāṇa (47.23) has also stated that the Gaura mountain is auriferous. It is apparent that the placer deposit of the Bindu lake was derived from the weathered auriferous rocks of the Gaura mountain.

Herodotus, Pliny and Strabo

The Classical Greek and Roman historians have also given information on the subject of gold found from Indian rivers, which corroborates the facts given in the Sanskrit texts, as discussed earlier. Herodotus (3.106) has stated that gold is obtained from the rivers in India:

“As I have lately said, India lies at the world’s most distant eastern limit; and in India all living creatures four-footed and flying are by much bigger than those of other lands, ----; moreover the gold there(India), whether dug from the earth or brought down by rivers or got as I have shown (i.e. ant’s gold) is very abundant.”

Pliny (33.21.66) has mentioned that gold found in the river *Gaṅgā* (Ganges) in India:

“In the world, as known to us, gold is found in three ways, not to mention gold dug up in India by ants, or by gryphons among the Scythians: Firstly, in the sands carried down by rivers such as Spanish Tagus, the Italian Padus, the Thracian Hebrus, the Asian Pactolus, and the Indian Ganges. This is the purest of all gold polished finely by the friction of the running water.”

On the basis of the statements made by other historians, Strabo (15.1.69) has stated that gold-dust is brought by rivers in India:

“The following statements are also made by the historians: that the Indians worship Zeus and the Ganges River and the local deities---- And they (historians) say that some of ants that mine gold have wings; and that gold- dust is brought down by the rivers, as by the rivers in Iberia.”

Alluvial Placer Gold Mining in India in Medieval Times

Several medieval writers, historians and travelers have described about the mining and extraction of alluvial placer gold in India. Tāhakkara Pherū, a noted Prākṛta writer of fourteenth century has clearly stated in the very first *gāthā* of his book *Dhātūtpatti* that gold is also obtained from the sand and gravel of rivers. *Ain-i-Akbari* is an astounding combination of gazetteer, almanac, dictionary of science, book of rules and procedures, and statistical digest. It was composed by Abul-Fazl, a wazir of the emperor Akbar, who ruled India during the period 1556-1605 A.D. *Ain-i-Akbari* mentioned the availability of alluvial placer gold in Pakali river, near Kashgar area of Jammu and Kashmir state of India ⁽⁶⁾. Alluvial placer gold miners of Pakali used a very interesting method for the recovery of alluvial placer gold. Several sheep hides, having long hairs side up, were spread on the stream bed. Apparently these streams were shallow.

Heavy stones were used to keep the hides flat and undisturbed due to the strong water current in the stream. The gold particles flowing along with water stream got entangled with the hairs of the sheep hides and its further transport was stopped. After a couple of days, the hides were taken out and dried in open sunlight. Subsequently, gold particles were removed from the hides by simple shaking. In 1586 A.D., Ralph Fitch ⁽⁷⁾ described the recovery of alluvial placer gold from the river Ganges near Patna town in Bihar state, India.

Alluvial Placer Gold Mining in India in Pre-Modern Times

A reference of alluvial placer gold mining in the seventeenth century, as reported by Shihabuddin, has been described by Gait ⁽⁸⁾. Shihabuddin, who was a writer, accompanied Mir Jumlah on his invasion of Assam in 1662 A.D. According to this report, alluvial placer gold was mined from the sand of the famous river Brahmaputra. Approximately ten to twelve thousand Assamese were engaged in the mining and recovery of gold. This reference is unique in the sense that no other reference of pre-modern period has stated such a large number of people engaged in alluvial placer gold mining.

In 1766 A.D., James Forbes ⁽⁹⁾, a clerk in the East India Company, landed in Bombay. He lived in India for 18 years, and traveled widely all over the country. He has reported that gold was found in the torrents which flowed from the mountains of Tibbet into the river Indus (Sindhu) and Ganges (Ga ĩ gā). Further, he stated that gold was also found in the Nelambur river and other mountainous torrents of Malabar in South India.

Ball ⁽¹⁰⁾ in his famous treatise "A manual of the geology of India, Vol III", published in 1881 A.D., presented a detailed account of rivers from which Indians were mining alluvial placer gold. An important information, which can be drawn from this account is that alluvial placer gold was mined throughout India, stretching from the Himalayas in the extreme north to Madurai, Calicut and Mysore in the south, and from Assam and Manipur states in the north-east and Orissa state in the east to Belgam in the west. This account is one of the most important one describing the alluvial placer gold mining in India in pre-modern times.

In 1843 A.D., Jammeson ⁽¹¹⁾ witnessed the alluvial placer gold mining from the river Indus, in between Attock and Kalabag, by approximately three hundred people. Stein ⁽¹²⁾ witnessed the alluvial placer gold mining from the rivers Indus and Darel in Kashmir in 1912 A.D.

One of the noted Indian writers and travelers Rahul Sankrtyayana ⁽¹³⁾ reported the alluvial placer gold mining in the lower portion of Himalayas, now in the present Uttarakhand state of India. This observation is dated 1922 A.D. The rivers like Ganges, Alakananda, Pindara and Ramaganga were the important sources of alluvial placer gold. The most preferable months for the mining were from January to April of each year, when the stream flow was low. The washers first separated the coarse size gravels by screening the mined ore through a sieve made from bamboo sticks. The sieved ore, consisting of fine size portion, was then subjected to panning process for the recovery of gold using a wooden pan.

Alluvial Placer Gold Mining in India in Modern Times

It is interesting to note that even today there are a few examples of alluvial placer gold mining in India, in particular in Chattisgarh, Himachal Pradesh, Uttarakhand and Uttar Pradesh states of India. An example from the Chattisgarh state has been described, as follows. The rivers like Ib, Seni and Sonagiri flowing through Chattisgarh state are important sources of alluvial placer gold. A report of 1992 A.D. stated that the people living near these rivers have been engaged in alluvial placer gold mining for the last several years ⁽¹⁴⁾. Although the local people carried out the mining operation throughout the year, it became more intense just after the rainy season in the months of July, August and September. The method used for mining was mostly manual in nature. The wooden pan used for the recovery of gold particles from the mined ore was called by the name *Phārā* in the local language. The recovered loose gold particles were called *gudi*, while the gold particle still attached with stones *kucā*. It must be emphasized that the total weight of gold recovered by a person in one day was rather small, of the order of 100-150 mg. The quality of the gold recovered in Chattisgarh was rather superior, of the order of 22 carat mark. The miners-cum-washers sold the recovered gold particles to goldsmiths who regularly visited their villages.

Recovery of Gold from the Alluvial Placer Deposit

In ancient times, people discovered that the more dense gold particles along with other dense mineral particles lodged preferentially in hollow in streams. This led to development of the panning process for the recovery of gold particles from the auriferous alluvial placer deposits.

Most of the ancient Indian texts referred to above have not given any direct reference dealing with the process used for recovering gold dust or particles from stream placer deposits. However, the Pali text *Aññuttara Nikāya* (3.10.10) in its *Paññā sudhovaka Sutta* has narrated the process of the recovery of gold dust or particles from alluvial placer gold deposits. The description of this process was used beautifully as an allegory in explaining the removal of various evil

thoughts from the mind in order to retain only the thought related to Dharma (i.e. religious or moral virtue). Pande ⁽¹⁰⁾ has discussed the dates of the composition of the Nikāyas, and has stated that the growth of the Nikāyas falls between the 5th and 3rd centuries B.C.

The reference under question stated that the gangue present in the alluvial placer gold deposit was a mixture of coarse, medium and fine size material. A series of successive panning processes were used to remove these materials in steps starting with coarse size material first, followed by medium and fine size materials. The reference stated the fine size gangue also contained black coloured fine particles. In all probability these could have been magnetite.

Several accounts of the gold panning process practiced in the pre-modern period are available in literature. All of them are based on the same basic principle, although some process details vary from place to place. In principle, the process consisted of placing the auriferous earth into a wooden bowl, called pan, where it was subjected to frequent ablutions by a circular motion until the lighter parts washed away. This process was repeated several times until most of the lighter parts are washed away. The gold particles are collected at the bottom of the pan. The success of the process in terms of the minimum possible loss during the panning depends on the dexterity and ingenuity of the washers. It is interesting to note that the same old panning process is being used by washers even in modern times.

Ethnographic Aspects of Alluvial Placer Gold Mining in India

The mining of the auriferous sand and gravel, and the subsequent recovery of gold from it was carried out by the same person. The ancient Sanskrit word for the alluvial placer gold miner-cum-gold washer is *pānsudhāvaka*. The literal meaning of the term is “the one who cleans or washes sands”. In pre-modern and modern times, the word used for them was based on local languages. For example, the alluvial placer gold miner-cum-gold washer was known as Bīhī in the Assam state, Dhoni in the Uttarakhand state, and Dāola in the Himachal Pradesh. These people are mostly villagers or tribals. Gold washers were required to pay taxes to the local king or landlord. As an example, the Bīhīs of Assam state were paying a tax of one tola of gold dust, equivalent to eight or nine rupees, per head per year in 1662 A.D. ⁽¹⁵⁾ Dhonis of Uttarakhand state were paying a tax of twentyfive rupees per head per year in 1992 A.D., which was approximately 14% of his total yearly earnings from gold washing ⁽¹⁶⁾. Many a times, all the adult members of the family were engaged in the mining and washing of alluvial placer gold. An important point is that alluvial placer gold miners-cum-gold washers were, and still continue to be, a class of people different that goldsmith. Their social and economic status were, and still are, lower than that of goldsmiths or gold refiners.

Alluvial Placer Gold and Sanskrit Linguistics

Alluvial placer gold influenced the minds of Sanskrit linguists in more than one ways. Firstly, the interrelationship between gold and river was responsible for starting a practice of naming rivers by words based on different Sanskrit synonyms of gold, such as *hiranya*, *kanaka*, *kancana*, etc. An example of the name of the river based on the word *hiranya*, an oldest Sanskrit word for gold, is discussed below.

An alternative name of the river Sona, flowing in Northern India, was stated as Hiran^oyabāhu by Amarasi *m* ha in his famous lexicon Amara Kos^a (1.10.34), composed in the beginning of the third century A.D. The reference in question is as follows:

śon^oo hiran^oyabāhuh^o syāt |

Bhānujī Dīk^sīta has stated another reading for the word “*hiran^oyabāhuh^o*” as “*hirn^oyavāhah^o*”. The Rāmāśramī commentary on the above stanza of the Amara Kos^a states that the literal meaning of the above word is the river wherein gold particles flow- “*hiran^oyam vahatī*”. Arrian has used “Erannoboas” for the river Śon^a in the “Indica” (10.5), which is the corrupt form of the word *hirn^oyavāha*.

Another interesting example is the name of the river Svarn^oarekhā flowing through the state of Jharkhand in India. The literal meaning of the above word is the river which produces a streak of gold.

It is to be noted that the practice of naming a river on the basis of a word for gold was also practiced in other parts of the world. For example, the river Sughd, flowing in the northern area to the Oxus river in the Central Asia, is also known as “Zarfshan” or “Zeravshan”. “Zar” is a Persian word for gold, and the meaning of Zarfshan or Zeravshan is “gold spreader or scatterer”. The name “Zarfshan” indicates the availability of alluvial placer gold over there ⁽¹⁷⁾. This river starts from the Jabal-al-Buttam mountain range, which contains mines of gold, silver and other metals.

Secondly, Sanskrit linguists coined synonyms of gold based on the name of the rivers which were the important sources of gold. It has been discussed earlier that the river Ga *n* gā (Ganges) was an important source of alluvial placer gold in India. It is to be noted that one of the Sanskrit synonyms of gold is *gā n* geya, which is a word derived from the word Ga *n* gā.

Lastly, Sanskrit poets used poetic imageries base on the processes associated with alluvial placer gold mining and recovery for explaining their thoughts in a cogent manner in their works. Asvaghōśa stated that a *yogī*, i.e. a practitioner of meditation, should keep the valuable *dharma* (i.e. moral merit or righteousness) in himself and should discard all the shortcomings howsoever small it may be, for the purification of inner self, similar to gold washers who keep the valuable gold particles with himself and discard fine sand particles.

Concluding Remarks

Sindhu (Indus), *Gaṅgā* (Ganges), *Sonā* and other rivers flowing in the Himalayas including Kailasa mountain region were the principal sources of alluvial placer gold in ancient India. It is reasonable to believe that some of the tributaries of these rivers were also auriferous. This indicates that there were vein/reef gold deposits near the source of these rivers and their tributaries. Further, most of the early Sanskrit references reported in the present paper are related to the alluvial placer gold mining in northern India. However, it can not be ruled out that alluvial placer gold was also mined from some rivers flowing in southern India in early times.

The earliest reference of alluvial placer gold in India is found in the oldest Sanskrit scripture *R̥gveda*, composed approximately 5000 years or more before the present time. According to it, the river Sindhu was an important source of alluvial placer gold in the Vedic age. It is interesting to note that the references for the availability of alluvial placer gold in the river Sindhu are also reported in modern times. Tucci ⁽¹⁸⁾ reported that “there were near the Indus (Sindhu) source, as there are even now, great mines of gold in the region of the Mānasarovar and in Thokjalung” . Further, in the itinerary in Khotanese Saka ⁽¹⁹⁾ from Gilgit to Chilas (written between 958- 972 A.D.) the Indus is called “*Ysarniji ttāji*”- the golden river, which is not a mere poetic attribute, but a reality.

It is interesting to note that the alluvial placer gold mining and washing are still being practiced in many parts of India, although on a very small scale. The mining and washing operations are carried out by local villagers. Interestingly, the age old gold panning process together with the equipments used, have not changed even today in any significant manner.

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