

Gemmology and Gupta Period: Context of Precious Stones Industry in Ancient India

B. S. Farida^{1*}

¹Research Scholar, Centre of Advanced Study, Department of History, Aligarh Muslim University, Aligarh-202002, India

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*Corresponding author: B. S. Farida

Research Scholar, Centre of Advanced Study, Department of History, Aligarh Muslim University, Aligarh-202002, India

Abstract

Review Article

India has always been rich in its natural resources and its products. All these rich resources offered scope for a large number of industries, handicrafts and many other professions [1]. Likewise, industrial works and other economic professions were encouraged during the Gupta period also since raw materials were abundant for industries. Gemstone is a piece of mineral crystal that in cut and polished form is used to make jewellery or other adornments. One of the most ancient Industries of India was the precious stone Industry which includes diamonds, pearls, ruby and emerald among many others. The Guptas were also skilled in craftsmanship. They got the credit for organizing the technical skill of the craftsmen under royal supervision and inducing them to be enterprising in their trade. They inherited the fine craftsmanship of the Indians from an earlier period [ii]. The science of testing gems was so perfected in India in this period as to arouse the admiration of the later European travellers of the 16th century. In the *Kamasutra ruparatnapariksha* (testing and valuing of precious stones etc.) are included in the list of sixty-four arts [iii]. The jewellers [iv] used scales and touchstones for weighing and testing the quality and quantity of stones and metals. Such a high level of culture and the enhanced standard of living of the rich were impossible without a well developed urbanization and trade network. It is a fact from the Gupta period, trade had started falling on bad days but localized economic formations started taking place. By the time of this period, the trade become luxury oriented, a fact attested by the frequency of references to such items in the *Brihatsamhita* and many other ancient Sanskrit literature [v].

Keywords: Gemmology, Gupta Period, Precious Stones Industry, Ancient India.

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INTRODUCTION

India's jewellery is a striking expression of the Country's aesthetic and cultural heritage since the early period. The various types of jewels survived from various parts and regions, references in literature, gemmology documents, myths, legends and chronicles provide evidence of a unique tradition in the world. From ancient Indian civilization to the Mughal and reports from J.B. Tavernier (French gem merchant and traveller), it is safe to conclude that India has been a pioneer in the history of gemstones [1].

In the Gupta period, diamonds, pearls, other precious stones, corals and conch shells were largely used for ornaments. There is ample reference to precious stones in our literature. Varahamihira in his

Brihatsamhita [2] has dealt exhaustively with the quality, quantity and prices of the different classes of precious stones and the source of these gems. It mentions 22 jewels including diamonds, sapphires, emeralds, ruby, beryl, amethyst, moon-gem, azure, topaz, pearl and coral as well as less precious substances like agate, quartz, beads and conch-shell. The *Amarakosha* [3] refers to emerald, ruby, pearl and pearl oyster. Kalidasa [4] mentions *mani* (a precious stone of any description), diamond, topaz, sapphire and lapis lazuli. Moreover, from the *Mrichchhakatika*, we got a very good picture of precious stones and shells

²Brihatsamhita, Chapters, LXXX-LXXXIII.

³Amarakosa. 9. 92, p. 221; 9. 23, p. 65; 9. 93, p. 229; 3. 133, p. 301.

⁴Raghuvamsa, III. 18; VI. 19; XIII. 53, 54, 59; XVI. 69; XVIII. 32, 42; XIX. 45; Meghaduttam, II. 16; Kumaravamsa, VIII. 75; Rituvamsa, II. 5; Legge p. 79.

¹Kamasutra, Book I. III, P. 23.

usage. In one passage of the above source, the goldsmiths are seen consulting among themselves about particular jewels, such as lapis lazuli, pearls, coral, blue sapphires, rubies, emeralds and so on. Rubies are being set in gold, gold ornaments are being fashioned, pearl ornaments are being patiently polished, conches are being split up, corals are being polished on whetstones [5]. The following are the precious stones that have been found recorded in history- diamond, sapphire, emerald, agate, ruby, blood-stone, royal-gem (quartz), moon-gem, brahma-gem, conch, azure stone, topaz, pearl and coral [6].

Varahamihira while referring to 22 precious stones enumerates that diamond, pearl, ruby and emerald were the four most important ones [7].

Diamonds

Diamonds were first recognized and mined in India. For many years one could find these gems only in India. The earliest known reference to the diamond was found in a Sanskrit manuscript which was dated from 320-296 B.C. However, this precious gem has been known in India for many years. In fact, until the 1730s, India was the world's only known source of diamonds. The word used for diamonds in Sanskrit is "Vajara," which implies "thunderbolt", the weapon of Lord Indra (god of rain and thunderstorms) thereby revealing its spiritual properties attributed in ancient India to diamonds other than economic importance [8].

Diamonds got from the banks of the Vena river are of the purest kind, those of Kosala have the lustre of the Sirisha flower, those of Saurashtra have a reddish lustre, those of the Himalayas were slightly reddish, those of Matanga country have the colour grey of valla blossoms, those of Kalinga are yellowish and those of Paundra are black [9]. Various types are described here, hexagonal white diamond, red and yellow diamonds are auspicious, for Kshatriya white ones, for Brahmans those of the hue of Sirisha flower, for Vaishyas and those resembling swords in colours (dark), for Sudras [10]. It is certain that without a developed transportation

⁵Mrichchhakatika Act. IV. pp. 131-2.

⁶Panditabhusana V. Subrahmanya Sastri and Vidwan M. Ramakrishna Bhat, tr. *Brihat-Samhita*, Bangalore, V.B. Soobbiah & Sons, Bangalore, 1946, Slokas 4-5, p. 629. Also in M. Ramakrishna Bhat's *Varahamihira's Brhatsamhita*, part 2, 1981, p. 738.

⁷Brhatsamhita of Varahamihira, ed. with Hindi tr. Achutanand Jha Sharma, Vranasi, Chowkhamba Vidyabhavan, 1917, Lxxx, pp. 6-7.

⁸tr. *Brihat-Samhita*, 1946, slokas 6-7, p. 629. Also in M. Ramakrishna Bhat's *Varahamihira's Brhatsamhita*, part 2, 1981, p. 738-739.

⁹*Ibid.*

¹⁰*Ibid.*, Slokas 8-11, pp. 629-630.

network, it would have been difficult for the whole country to use it [11].

The diamond played an important role in ancient India both in social and economical terms. Even its properties and magic powers were studied right to the minutest detail. The significance of this precious item in ancient Indian society was so great that there was a separate profession for it called 'Mandalins', the diamond experts.

During the time of discovery, diamonds were known for its durability, strength and ability to refract light and engrave metal. These gems were used as ornaments, cutting tools, a talisman to ward off evil and was believed to protect the people. In the dark ages, diamonds were also used as medical aid and were thought to cure illness and heal wounds when ingested. The hindu religious scripture *Garuda Purana* is considered to be the authoritative reference for ancient Indian gemmology. According to this source, the owner of a flawless diamond will prosper with wealth, livestock, good harvests and many other good things. Above all, it is said that diamonds will protect the owner from any kind of evil sorcery [12].

The evidence of using diamonds as gems is a worldwide fact. However, its usage as a tool in the ancient world is somewhat not clear. The experimental evidence for its use in Arikamedu in southeast India 250 B.C.-A.D. 300 is the earliest thus far reported. Wheeler found a bead workshop in Arikamedu, as well as a shred of strong evidence for trade with Rome. It is well likely that Romans have learned to use diamond splinters as drills in Arikamedu after learning it from India. The fact of using diamond splinters as drills was supported by Pliny who states that diamond splinters 'are much sought after by engravers of gems' (HN 37.15.61). Furthermore, both Sanskrit and Roman works of literature add more weightage to the claim. Additional references, although meagre, help trace the continued use of diamonds as engraving tools after the fall of Rome through the Sassanian and Islamic periods. Diamonds are still used in the modern industrial world as well as in modern crafts [13].

Pearls

Pearls originated from Ceylon, Persia and the Pandyan country. Pearl working seems to have reached the height of perfection at the time of the Gupta period. The *Brihatsamhita* recalling the information given in Kautilya's *Arthashastra* gives long lists of pearl chains

¹¹Anil Kumar, PP. 82-86.

¹²Abazis, *Ancient India: The Frontier of Diamonds Discovery, Mining and Usage*, sanskritmagazine.com, 2021.

¹³Leonard Gorelick and A. John Gwinnet, *Diamonds from India to Rome and beyond*, American Journal of Archaeology, Oct., 1988, vol. 92, no. 4, p. 547.

ranging from one to 1008 strings. Pearls were also used combined with other gems or gold in inlay work in the manufacture of sword hilts and handle, drinking vessels, in dresses and customs and for a variety of other purposes. The literary work of the period and the *Amarakosha* abound in the descriptions of the crafts of the time [14].

Varahamihira also provides interesting information about pearls. According to the author, the different sources of pearls are 1. Elephants 2. Serpents 3. Pearl oysters 4. Conch-shells 5. Clouds 6. Bamboos 7. Whales and 8. Hogs. But the best pearls are those that are got from pearl oysters [15]. He describes eight centres of pearls, viz, 1. Ceylon (Simhalaka) 2. Paraloka (Travancore) 3. Saurashtra 4. Tamrapani river 5. Parasava (Persia) 6. Northern Country 7. Pandya Vataka and the Himalayas [16]. In ancient times, Ceylon and the tiny islands around it were the great pearls producing centres. This is recorded by the Chinese pilgrim, Faxian (399-4141 A.D.). Paraloka is identified with Purali in Kerala. Saurashtra is meant the Gulf of Cambay. The Pandya country lay in the southernmost part of the Indian peninsula [17]. In yet another verse, the author describes various categories of pearls coming from different places. If we keep in mind the location of these centres, which included foreign countries like Ceylon and Persia, we can conclude that contemporary society knew of external trade, however, the nature of trade was limited confined mainly to luxury items [18].

The pearls got from Ceylon are multi-shaped, glossy, swan-white and large where those from the Tamrapani are white with a slightly red tinge and bright, those from Paraloka are blackish, white or yellow mingled with gravel and uneven, those from Saurashtra are neither too big nor too small and hued like butter, those from Persia are lustrous, clear, heavy and very valuable, those from the Himalayas are light, broken, hued like curds, large and double-shaped, those from the North country are rough, black and white, light, of good size and brilliance and those from Pandya-vata are like the neem fruit or coriander seed, trigonal and very minute [19].

¹⁴Romila Thapar, *A History of India*, Volume I, Pelican Books, Great Britain, 1966, p. 149.

¹⁵*Brhat Samhita of Varahamihira*, ed. with Hindi tr. Achutanand Jha Sharma, Varanasi, Chowkhamba Vidyabhavan, 1917, Lxxx, P. 1. Also in M. Ramakrishna Bhat's *Varahamihira's Brhatsamhita*, part 2, 1981, p. 742.

¹⁶*Ibid.*, pp. 1-2.

¹⁷M. Ramakrishna Bhat, *Varahamihira's Brhatsamhita*, part 2, 1981, p. 742.

¹⁸Anil Kumar, p. 83.

¹⁹tr. *Brihat-Samhita*, slokas 1-2, pp. 632-633. Also in M. Ramakrishna Bhat's *Varahamihira's Brhatsamhita*, part 2, 1981, p. 743.

The pearls got from conch-shells, whales, bamboos, elephants, snakes and clouds cannot be easily recognized as they are not to be perforated and as they are of immense value and no price has been fixed upon them by the authorities. They were bestowed on kings, sons, wealth, popularity, renowned and desired objects and dispel diseases and grief. A pearl necklace composed of 1008 strings and four cubits long is called an ornament for gods and is termed *Induchanda*. A necklace of 27 pearls and one cubit's length is called *Nakshatramala*, the same is called Mani Sopana if it has other gems or gold beads inserted and is known as *Chatukara* [20].

The pearl fishery was also a very flourishing industry in Ceylon [21] and the Tamil country during our period of study. On the arrival of Raghu, the king of the Pandya country offered him the best of pearls collected from the Tamrapani river to please him [22]. The sea at the mouth of the river, which is still considered to be one of the most important centres of pearl fishery in the world, yielded the most perfect specimens of these precious stones. From these places, they were exported throughout India. Several types of pearl necklaces with gold and other precious stones are mentioned in the *Amarakosa* [23]. Moreover, conch-shells are popularly used in religious and social ceremonies [24]. Thus, we can safely conclude that the shell gathers and shell cutters [25] earned a very good living in ancient times.

Rubies

As one of the most popular and traditional cardinal stones, *rubies* are exceptionally durable and now are widely used in Indian gemstone industry. *It* is one of the most popular historically significant coloured stones traditional jewellery gems and is very durable. We can find its reference way back to the first century A.D., where the Roman scholar Pliny included rubies in his 'Natural History' describing their properties as hard and dense.

In India, rubies are found in all three geological settings in igneous, sedimentary and metamorphic rocks. In Rajasthan, rubies are found to be hosted in gneisses. Those from Madhya Pradesh are hosted in gneisses and schists. In Orissa, rubies are found as pebbles in river beds and gneisses (Hughes, 2013) while in Andhra Pradesh, it is found to be hosted in gneisses, granulites, pegmatites and anorthosites (Sangam *et al.*, 2013). Rubies in Karnataka are found to

²⁰*Ibid.*, slokas 29-39, pp. 637-638.

²¹Legge, p. 101. According to Faxian, most of the subjects of certain parts of Ceylon produce pearls and precious stones of various kinds. The king employs men to watch the pearls and takes 3 out of every 10 pearls.

²²*Raghuvamsa* IV, 49-50.

²³*Amarakosa*. 6, 104-106, p. 156.

²⁴Legge, p. 37.

²⁵*Amarakosa*. 10. 8. p. 227.

be hosted in pegmatites, crystalline limestones, anorthosites, gneisses, schists and granulites and also as pebbles dispersed in soil (Radhakrishna *et al.*, 1997). Rubies in Tamil Nadu are hosted in paragneisses, granulites and gneisses. Rubies in Kerala are found to be hosted in granulites and gneisses [26].

Rubies are born of Sulphur, Kuruvinda and Crystal [27]. Those produced from Sulphur show the lustre of bees, antimony, lily, rose apple or rosa (myrrh). Those that arise from Kuruvinda are grey, of pale lustre and mixed with mineral substances, those coming from Crystal are lustrous, multi-coloured and pure [28]. The price of single ruby weighing a pala (4 Karshas) has been fixed at 26000 silver kasapana, one of three karsas silver pieces, one of the karsa, 6000 silver pieces, one of eight masas or ratti is 3000 silver pieces, one of the four masas, 1000 silver pieces. A less attractive ruby will fetch a lower price. For instance, the one lacking brilliance will fetch only 1/20th of the standard prices. A ruby somewhat dusky with many holes (or scratches) and few features will fetch 1/200 of its usual price [29]. Price is an important aspect throughout most gemological literature, going back to Kautilya's *Arthashastra*. The price of gemstones is generally thought to be proportional to the value of a stone and therefore a mark of its quality [30].

From pre-modern times to the present day in written treatise and oral traditions, gemstones have played a varied and significant role in treating physical, emotional and social ailments in South Asia. Known in Sanskrit and several North Indian vernaculars as 'ratna' and 'mani', precious stones have a long history as powerful remedies. In the Sanskrit literature of the classical knowledge system of Jyotisa (astral science) and Ayurveda (knowledge for longevity) as well as the allied field of Rasasastra (alchemy), 'ratna' and 'mani' are described as valid therapists to prevent and remedy an array of personal miseries, difficulties and diseases [31].

Emeralds

Emeralds was one of the most precious gemstones in history. It is a green transparent variety of beryl. Its earliest known mine is located in the mountain

²⁶P. Patil, A. Mookherjee, T. Maratha, T.N. Sastry, Inclusions in Rubies from South India, *IJARSE*, vol. no. 6, issue no. 11, Nov. 2017, pp. 714 to 715.

²⁷*Brhat Samhita of Varahamihira*, pp. 1-2.

²⁸tr. *Brihat-Samhita*, slokas, 1-2, p. 639.

²⁹*Brhat Samhita of Varahamihira*, pp. 7-11.

³⁰A Cerulli, C Guenzi, *Mineral Healing: Gemstone Remedies in Astrological and Medical Traditions in Soulless Matters, Sects of Energy, Metals, Gems and Minerals in South Asian*, ed. Fabrizio, M. Ferrari and Thomas W.P. Dahnhardt, Equinox Publishing Ltd., 2016, p. 89.

³¹A Cerulli, C Guenzi, p. 73.

valley of Wadi Sikait in Egypt's Eastern Desert where mining probably began toward the end of the Ptolemaic period in the first century B.C. Most of the mining activity, however, dates to the Roman [32] and Byzantine periods, from the late first century B.C. through the sixth century A.D. An archaeological geology survey of Wadi Sikait was undertaken to map the distribution of ancient mine workings, deducing the ancient mining methods and describing the geological occurrence of emeralds [33].

Emerald is a gemstone and a variety of the mineral beryl ($\text{Be}_3\text{Al}_2(\text{SiO}_3)_6$) coloured green by trace amounts of chromium or sometimes vanadium. A large number of emeralds occur in Indian jewellery both in their native form and rudely cut into pear-drops and tables [34]. The emeralds were traded by Indian merchants around the world [35]. An emerald of the hue of parrots, bamboo leaves, plantain tree or sirisha blossoms and good qualities is extremely beneficial to every man when worn at ceremonies in honour of Gods and the Manes [36].

The people highly prize the emeralds stone and wear it when setting it in a crown. Ethiopians who traffic with the Blemneys [37] in Ethiopia carry this same stone into India and the price they obtain make purchases of the most beautiful articles [38]. Emeralds found in the mines of Upper Egypt and were no doubt shipped from Adule for the Indian market by the Ethiopian traders who bought them from the Blemnyes. If they were taken to Barygaza (Bharoch), they could be transported by a much frequented trade route to Ujjain, thence to Kabul and thence over the Hindu-Kush to the regions of the Oxus [39]. Apart from having economical value, the emeralds has widely also known for its religious and medicinal properties as described in many ancient literary sources.

In India, as well as in many other ancient civilizations, emeralds was a highly regarded gemstone that is mentioned in ancient texts however, there are no

³²The Romans referred to emerald as *smaragdus* and named the Sikait region *Mons Smaragdus* or Emerald Mountain.

³³James A. Harrell, *Archaeological Geology of the World's First Emerald Mine*, *Geoscience Canada*, vol. 31, issue 2, June 2004, p. 69.

³⁴C.W. King, *The Natural History of Precious Stones and the Precious Metals*, London, 1867, p. 276.

³⁵S. Madabhushi, *Mineralogical Traditions in Sanskrit Literature*, Rashtriya Sanskrit Vidyapeetha, 2004, pp. 58-59.

³⁶tr. *Brihat-Samhita*, slokas, 29, pp. 641-654.

³⁷The Blemnyes were fierce, predatory nomads of the Nubian wilds and the regions adjacent.

³⁸J.W. Mc Crindle, *Ancient India as Described in Classical Literature*, Archibald Constable, 1901, p. 164.

³⁹*Ibid.*

known references to emeralds localities in India. The first Indian find was recorded in 1943 in Rajasthan. The emeralds deposits in this region are situated in a narrow NE–SW belt in the Aravalli Mountains. The studied deposits were formed by the metasomatic reaction between muscovite (garnet + tourmaline) pegmatite and lenticular bodies of altered ultramafic rocks that are hosted by the Delhi Group Gneisses [⁴⁰].

The historic aspects of importing emeralds from different regions are, however, quite interesting. Old writings refer to a country, at the edge of the desert, close to the coast, pointing possibly, to the old Egyptian mines. It is a reasonable assumption that while rubies and sapphires are from Ceylon and India were finding their way to Egypt along ancient trade routes, emeralds travelled in the opposite direction. The term old mine is still used today in the gemstone trade and refers to emeralds of exceptional colour, size and purity [⁴¹].

CONCLUSION

With the thriving industry and agriculture, the Gupta era was one of the economic stability and commercial prosperity. The age of imperial Guptas is generally believed to be the golden age in Indian history. During this period, India enjoyed the blessings of a strong but benevolent central government without disturbing peace, wealth and prosperity for a considerable time. We have the valuable account of Faxian to the effect that the people of the Middle Kingdom were numerous and happy [⁴²]. This industrial development, no doubt, brought beneficial results not only to society at large but also to the workers themselves. They were gradually recognized in society and found a valued position in the local government of the day.

By the end of the 5th century, A.D., external trade was gradually declining even though it was going on with South-East Asian countries. It can be concluded based on this text that this mechanism of trade was such that only a few merchants could prosper. The growing competition of the contemporary economic formations embedded trade in utilitarian commodities but did not sustain trade in luxury items. However, overall this industrial development helps in the trade and the economic development of the ancient Gupta period as well its urbanization process.

ⁱS.K. Maity, *Economic Life of India in Gupta Period*, The World Press Ltd., Calcutta, 1957, p. 102.

ⁱⁱKamasutra, Book I. III, p. 23.

ⁱⁱⁱ*Ibid.*

^{iv}Amarakosha, 10, 32, p. 232.

^vAnil Kumar, *Precious Items of Trade Gleanings from the Brihatsamhita, IHC*, 2004, vol. 65 (2004), pp. 82-66.

⁴⁰Paul Alexandre, Mineral Chemistry and Geochronology of the Rajasthan Emerald Deposits, NW India, *The Canadian Mineralogist* (2020), 58 (3), pp. 335.

⁴¹Schwarz D., Giuliani Gaston. (2002). Emeralds from Asia: Pakistan, Afghanistan and India: Historically Significant Deposits. in: Giuliani Gaston (ed.), Jarnot M. (ed.), Neumeier G. (ed.), Ottaway T. (ed.), Sinkankas J. (ed.), Staebler G. (ed.). *Emerald: the most valuable beryl: the most precious gemstone*. East Hampton: Lapis International, p. 60-63. (Extra Lapis English; 2). ISBN 0-971-5371-1-9.

⁴²Legge, p. 42.