

# Jewels and Jewellery in Early Indian Archaeology and Literature

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## INTRODUCTION

The bulk of the Vedic literature falls in the domain of protohistory as it essentially antedates the times of Gautama Buddha, Mahāvīra Jina and their royal contemporaries such as Bimbisāra and Ajātaśatru of Magadha, Prasenajit of Kośala, Udayana of Vatsa, Chaṇḍa Pradyota of Avantī and the Lichchhavis of Vaiśālī, all during the 6th–5th centuries BCE when India entered the Historical Age. It should not be impertinent to go back in time, albeit in passing, to trace the history of jewellery in India (South Asia), with special reference to its north-western part where the Harappa Civilization arose and where the *Rigvedic* hymns were composed.

Even before that there was a long cultural process progressively evolving through several millennia culminating into the Harappan/Indus civilization. This was followed by an enigmatic reversal of dynamics that was broken only by the meeting of two diverse cultural systems, which brought about slowly and steadily a new invigorating synergy leading to the emergence of the 'second urbanization', now in the Gangetic plains. Among several other things, a new revolution happened in the field of jewellery. The precious gemstones of the earlier times had now become semi-precious in value and appeal, because new kinds of precious stones of far more superior quality in colour, tone and hues, and superior in brilliance, lustre and transparency, hence requiring better lapidary technology, were discovered mostly in the southern states of India.



The upland valleys and the lowland Kachhi plains of Balochistan witnessed the development of a village farming economy. Among several other features, this region has exhibited an elaborate corpus of personal ornaments datable to the late 8th or early 7th millennium BCE (may be rounded off to c. 7000 BCE). Much before that, there are a few stray pieces of evidence from the Upper Paleolithic Patne (Maharashtra), as far back as 30,000–35,000 years BP; the occupants were making beads of ostrich eggshell and oliva marine shell by using carnelian drills (R.K. Mohanty, personal communication). The Mesolithic (microlithic) people buried the dead with earrings and necklaces made of bone and antler (Misra 2002: 120).

But the phenomenally rich north-western tradition or Indus tradition, which Possehl would prefer to call Indus Age (Possehl 1999: 1-5), is exceedingly important for being directly and technically ancestral to the Harappan lapidary and metal work. This has passed through several stages of progressive development in both quality and quantity, thus paving the way for rich and variegated pan-Indian jewellery and gemmology to which the Old World owes much for materials as well as terms.

Mehrgarh on the River Bolan, in the Kachhi plain in Balochistan, may be visited to trace the beginnings. It has provided the best documented archaeological record of a fairly continuous cultural sequence of seven periods of progressive growth and development, ranging from c. 7000 to 2600 BCE (Jarrige et al. 1995: 51-557), during which jewellery has been one of the important components.

Period I at Mehrgarh (c. 7000–5500 BCE) (Jarrige et al. 2001: 129-41; Jarrige et al. 1995), accounting for 6.5 m of deposit, belonged to the pre-pottery Neolithic. People were living in brick-made houses and were practising crop-farming and livestock keeping. They were using a variety of stone tools and were burying the dead along with offerings, which included elaborate jewellery on persons, especially of females. It was predominantly beaded jewellery,

consisting of beads, pendants, rings and amulets for which both ordinary and exotic materials were used. The first category belonged to steatite, carnelian, limestone, bone and antler, but the exotic materials were of exceeding importance as those included sea shells, lapis lazuli and turquoise. Significantly, the fifteen species of marine shells (Kenoyer 1995: 566-81), brought from the Arabian Sea, lying about 500 km away, were used for making beads, pendants and rings. These were profusely used for jewellery that was used for the head, neck, arms, wrists and ankles. More importantly, the known source of lapis lazuli (lazurite—the Sanskrit and Tamil word is *rājāvarta*, and the modern *lājward*) lay about 600 km north, beyond the Hindkoh, in the headwaters of the River Kokcha, a tributary of the Oxus, in the Badakhshan region of north Afghanistan. The route, of course, passes through a very difficult mountainous terrain, while the distance given above is as the crow flies. The nearest source for turquoise (the old name *kallait*, md. *firozā*) should be the ancient mines in the Madan deposit (Betekhtin n.d.: 418-21), near Nishapur in north-eastern Iran at a distance of more than 1200 km of crow-flight from the Kachhi plain. All those three should be the most prized and precious luxury materials for the Neolithic people of Mehrgarh. There was, perhaps, an intersecting network of intermediaries for exchange. An important piece of evidence that has come up from that aceramic phase was the finding of copper beads strung in a cotton thread, which was found in the upper levels of the deposit. It was, of course, a naturally occurring native copper that was heat-treated and beaten into beads while the genuine copper technology arrived at least 1000 years later. The above system continued more or less during Period II, that is, the ceramic phase of the early village economy (c. 5500–4500 BCE), the only difference being a slightly less use of sea shell species. During the following periods over millennia, the technology of making stone beads and amulets of stone and copper underwent



marked improvement both in diversity and quality. It was during the early 4th millennium BCE when the people from the confines of Balochistan started to march outward to populate the alluvial plains of the Indus, which as well included the Sarasvati basin in north Rajasthan, Panjab and Haryana. This facilitated a mechanism which helped them develop an inter-regional trading system and procure a greater variety of chalcedony, carnelian, agates, jaspers and other precious and semi-precious stones. In addition, there was an easy access to gold, silver, copper, lead and sea shells. The terracotta figurines from Mehrgarh, Nausharo and the Quetta region, datable to the late 4th and early 3rd millennia BCE, are eloquent examples of heavy ornamentation with jewellery of diverse types adorning one from head to ankle (Fig. 1). The ornaments were for the head, ears, neck, arms, wrists, waist and ankles. In some cases, gold jewellery is suggested by the use of yellow colour and that of copper by the red. The necklaces are particularly of multiple strings of beads hanging from the neck to the chest.

#### THE PROTO-HARAPPAN HOARD FROM KUNAL

Kunal, a very important protohistoric site on the palaeochannel of the Sarasvati in District Fatehabad (previously in Hissar), Haryana (Khatri and Acharya 1995: 84-86), has yielded a cache of valuables in a pot that has come up from a proto-Harappan deposit (c. 2600-2500 BCE). It contained two silver crowns, one silver armlet, fragments of silver bangles, six round gold pendants, each bearing two holes at the top, and a few thousands of beads of lapis lazuli, carnelian, agate, steatite and shell. The crowns can fit well on a human head. One was heavier and bigger than the other. The central part of each one was bedecked with a full-blown flower, each petal of which was topped with a sacred symbol resembling the Greek letter 'omega'. Although the crown was the only one of its kind in the Indian protohistoric context, pieces of petals

with their crowning members are reported from Mohenjo-daro and Dholavira. The whole collection, indeed, represents full regalia of exceptional importance.

#### THE HARAPPAN EFFLORESCENCE

In the middle of the 3rd millennium BCE, the Harappans appeared on the scene and brought about a sudden and swift burst of all-round progress, prosperity, technological finesse and aesthetic expression. This first urban civilization rapidly spread almost entirely over the alluvial plains of the Indus, the resource-rich desert of Kachchh, parts of Saurashtra, mainland of Gujarat and the dry Makran. Kachchh in particular emerged as a very profitable land as it not only produced all species of sea shell which the Harappans required, but also yielded a host of semi-precious stones. Besides, there was an easy access to the sources of copper, silver and lead of Rajasthan. All those were the basic raw materials required by the Harappan lapidaries, shell-cutters and smiths for making jewellery that was much sought after at home as well as abroad. The Harappans extensively exploited the diverse natural resources for making excellent jewellery made of the beads and pendants of gold, silver, copper, gold-plated copper, and a variety of semi-precious stones such as carnelian, agates of most diverse combinations of coloured bands, quartz, amethyst, onyx, red jasper, green jasper, variegated jasper, bloodstone, red stone, feldspar, sodalite, vesuvianite, amazonite, lapis lazuli (lazurite), turquoise, white coral, yellow limestone, banded limestone, fossiliferous limestone, mudstone, shell of many species and a few others. The Harappans developed the technique of making long beads of carnelian, sometimes of jasper as well. They also invented the technology of making 'etched carnelian beads', decorated with various patterns by way of bleaching the surface with organic chemicals. Long carnelian and etched carnelian are the two types of beads which were





Fig. 1. Pre-Harappan terracotta figurines, 4th-3rd millennium BCE: 1-6 (female, Mehrgarh VII), 7 (male, Mehrgarh VII), 8 (male, Nausharo IA-C) (courtesy Catherine and Jean-François Jarrige).



the prized luxury items of export, especially to Mesopotamia. Interestingly, the persons who were buried in the Royal Graves of Ur were found wearing such beads. Both these, more particularly the latter, have been found widely distributed in Iran, Bahrain, Oman peninsula and Central Asia, including the enormous domestic market. These specialized beads surely travelled along with plenty of other ones too. Furthermore, the Harappans used artificial material, such as faience, for making beads, rings, bangles and several other things. Clay, too, was used for making ordinary jewellery.

The Harappans got their penchant for personal decoration from their predecessors. Most of the female terracotta figurines display that. We may cite two examples (Fig. 2): one, from Mohenjo-daro that shows a standing lady (with hands and lower legs missing) bearing heavy jewellery and decoration: fan-shaped headgear tied with a broad band that is topped with another ornament (the like worn by married ladies in Rajasthan); heavy earrings; three-stringed choker, the lower one with four or five pendants; five more necklaces, four of which with three to five pendants while the lowermost one being set with round pieces; armlets (much damaged); and an elaborate, three-stringed girdle with three medallions, the median one being larger than the others. The other one from Harappa has a fan-like headgear, two cup-like objects in place of the ears, a garland of flowers round the forehead, a three-stringed choker with five pendants, a two-stringed necklace with a central medallion at lower end, and a three-stringed girdle with three medallions.

All such jewellery items are sumptuously represented in five hoards—three from Mohenjo-daro, one from Allahdino and the fifth from Harappa. The Mohenjo-daro Hoard No. 1 (Marshall 1983: 519-20, pl. cxlvii, cxliv, etc.), found in a silver vessel closed with a lid, consisted of one conical gold cap (either to be worn on the frontal part or on side of the head); a couple of silver earrings;

two necklaces; two silver bracelets; a silver ring and a few silver pieces. The larger necklace is made up of beads: 10 of vesuvianite-grossular; 55 gold disc-shaped beads; 7 agate-jasper ones each fitted with gold spikes for pendants; and a few steatite beads capped with gold from either end. Another necklace was made of globular gold beads. The Hoard No. 2, found in a large copper bowl, covered by a shallow copper dish (Marshall 1983: 520-22, pl. cli), is notable for its yielding a girdle, two gold studs (apparently for the ears), pendant-spikes with a needle-point each and gold bead caps. The six-stringed girdle is made up of 42 long carnelian beads, arranged in seven sets, each of six beads, separated from each other by bronze spacers and all held by two terminals, one each at either end. Each set of beads, barring near the terminals, was flanked by copper beads. The Hoard No. 3 from the HR Area of Mohenjo-daro (Marshall 1983: 523, pls. cxlix and cl) comprised, among other things, one bracelet and eight necklaces. The bracelet, made up of gold pieces, was arranged in six strands, all segmented by six-holed spacers, and finally all held together by terminals along with washers at both ends. The four necklaces (numbered 4 to 7) were made up of a mix of gold, steatite and gemstones. One string (No. 4) was additionally furnished with twenty-one pendants, each with gold and glazed beads. Another one (No. 6) had five strings held together by spacers and terminals. Yet another one was notable for its eight flat, circular gold beads, interspersed with those of onyx, green feldspar, turquoise, and small globular beads of gold, and the central bead of agate was capped with gold at its either end. Furthermore, its gemstone pendants were fitted with domed gold caps, each one of which was soldered with a gold loop from the inside for passing a thread. The necklaces, shown on the pl. cl, were largely made up of coloured semi-precious stones.

Allahdino, another Harappan site near Karachi, has also yielded a hoard which, among other things, possessed one large waist-belt having, like





Fig. 2. Harappan terracotta female figurines, 2500–2000 BCE: 1-2 (Harappa), 3 (Mohenjo-daro), 4 (Nausharo IA-C).



its Mohenjo-daro counterpart, six strands of long carnelian beads held by copper bronze spacers and terminals (Kenoyer 1998: 138, fig. 7.30, Cat-no. 48).

Equally, of immense importance were a large number of jewellery items which were found lying, as if in their original position, in the courtyard of a house in Mound F at Harappa (Vats 1999: 63-66, pl. cxxxviii). It consisted of pieces of fine jewellery: (i) a necklace of gold with four strands bounded by two terminals; (ii) five necklaces made up of the beads of gold and gems, and each with a number of pendants of gem beads having a gold spike in each; (iii) two gold bracelets having three strands bounded by two terminals; (iv) two long elliptical hairgrips or brooches of conical gold beads fitted with loops; (v) one double-spiralled brooch of gold and silver inlaid with two rows of tiny cylindrical beads of steatite, each with gold ones on both ends; (vi) a heart-shaped pendant of gold in repoussé with its sunken surfaces being inlaid with ribbed bands of blue faience. It also had two gold hooks on the underside for suspension. Besides, the collection had bangles, single strings, large and small. The account cannot be closed without mentioning that it also included a gold cone for the forehead.

The above account has only dealt with the hoards which are usually inclusive and provides better information about the system of arrangement of different components in a jewellery piece. There are, otherwise, countless beads and other individual components which have turned up from the excavations at numerous sites in the subcontinent, and even outside of it, for example, Shortughai in north Afghanistan.

It has been observed that each Harappan settlement had its own distinct personality. It also appears as if each house, even in the citadel, was engaged in some craft activities or commercial dealings. Chanhudaro specialized in cutting seals, making stone weights and long carnelian beads. Nageshwar near Dwarka was exclusively involved in shell fishing, shell working and marketing of

shells collected from the Gulf of Kachchh. Dholavira was carrying out multiple functions, including copper smithy, beadmaking, manufacturing stone artefacts and shell-cutting. Some northern sites of Harappania were manufacturing faience for jewellery and other miscellaneous items. This was one of the reasons why the faience continued to remain considerably popular during the post-urban period when its manufacturing did not die out following the break-down of the urban system. This technology was subsequently transmitted to the still later times. Faience is an artificially made material prepared from finely crushed quartz, or pure white sand, with the possibility of its being mixed with highly viscous solution of the silicate of soda for easy modelling, and with some mineral colour, if necessary. It was during the following Iron Age that the artisans developed the skill of producing true glass for use in jewellery. It was possibly the advancement of the faience technology.

#### POST-URBAN EVIDENCES

It should also be relevant to state that, following the break-up of the urban system, Harappania parcelled out into diverse rural cultures, as it was prior to the grand integration. Of the later times, two sites of the post-urban Bara culture must be referred to. One is Mandi and the other Sanauli, both in the western Uttar Pradesh. The former gave a chance discovery of a treasure which, notwithstanding the night-long loot by the villagers, yielded more than thirteen kilograms of gold beads, countless stone beads, and silver ornaments and vessels. A gold necklace was also found that was made up of flat circular disc-shaped beads, which harmoniously diminish in size from the central part towards either end. The hoard also yielded two solid and two hollow gold bangles, two large and hollow silver anklets, and a large amount of beads of different cryptocrystalline stones. Sanauli, a burial site, too yielded gold bangles and ornaments of semi-precious beads, some of which seem to have been artificially treated, surely



for obtaining different kinds of decorative patterns. The changing styles of manufacturing as well as fashion were the forerunner of what multiplied and diversified during the succeeding historical times.

With the emergence of iron technology, sometime in the middle of the 2nd millennium BCE (although there are claims to push it back by three centuries more), the Iron Age rapidly encompassed larger parts of India, and even Sri Lanka. This not only generated a new pan-Indian awakening, cross-cultural contacts, but also spread the introduction of the horse and new crops. It threw open new fields in the southern states of Andhra Pradesh, Telangana, Karnataka, Kerala and Tamil Nadu, even including the island nation of Sri Lanka, all of which are very rich in real precious stones that would be soon welcomed for jewellery, as well as for export to the Roman markets through which those spread far and wide. Besides, the pearls of the southern sea were also to become the items of trade and treasure. The precious stones of yore would now become less precious compared to the newly found ruby, sapphires, emerald and diamonds of different tones and hues while those of the earlier times continued to be in use.

Excavations at numerous sites across India have provided a good deal of material as well as information. However, this is still the tip of the iceberg, for want of requisite horizontal excavation at potential sites, except for those in the north-western part of the subcontinent, for example, Taxila.

All said and done, it is true to admit that archaeology may not answer all that we seek to enquire. It does provide a solid and firm skeleton for a particular culture or time period, but does not speak much by itself unless made to do so on the strength of science and technology, or that of our accumulated knowledge, and, lastly, with the help of contemporary literature, all of which together put flesh and blood on the bare bones. This is all the

more relevant for the literate times for which we are surely on a better footing.

#### GLEANINGS FROM THE VEDIC LITERATURE

For gems or jewels, the standard terms in India are *ratna* and *maṇi* which have always been in use right from the R̥g-vedic period downwards. *R̥gveda* (RV) essentially pertains to the Copper-Bronze Age while the remaining of the Vedic works belong to the Early Iron Age that began around the middle of the 2nd millennium BCE, while the Historical Era began in the 6th century BCE.

#### R̥GVEDA (RV)

As stated at the outset that *ratna* and *maṇi* are two special terms that are used in the Indian literature for jewels, the former being more emphatically done so, and oftentimes suggestive of riches or wealth in a generic way. The word *maṇi* tends to, however, imply to be rather more specific while individual class or quality of jewel material is averred. Furthermore, it inclines to point to a product that is ready for use, or a material that can be used for making such a product. Strangely enough, it occurs only twice in RV while *ratna*, along with its various derivative forms, recurs repeatedly. In its both singular and plural forms, it is meant for jewels, hence earnestly solicited. It often appears in combination with a verbal noun as suffix as *ratnadhā*, an epithet for a divinity or for more than one collectively. Literally, it is one who procures, accumulates or bestows *ratna* in favour of devout beneficiary or beneficiaries who can be both mortal men and immortal gods. It is also used in its superlative form as *ratnadhātama*. *Ratna* can as well be combined with a noun as *vājaratna*, usually in plural, as bestowers of treasure of jewels, or with an adjectival prefix to form *suratna* for one who is bejewelled, or one who is good bestower of gems.

Plentiful allusions in RV to *ratna* and the intense craving for it makes it obvious as to what a



high value was attached to it. Recurrently, gods are invoked to bestow *ratna* (*RV*. I.15.14; I.35.8 (cf. *YV* 34.24); I.41.6; I.58.7; III.8.6; III.18.5; III.26.3; III.56.7; IV.1.10; IV.2.13; IV.12.3; IV.44.4; IV.54.1; V.49.1,2; V.2; VI.65.3; VII.16.6; VII.37.2; VII.38.6; IX.59.1; X.74.3).

In solicitations the covetous *ratna* occurs in its plural form as well (*RV*. I.35.8; III.62.4; IV.54.1; V.75.3; V.82.3; VII.17.7;--38.1; VIII.35.22; VIII.82.26; VIII.84.9; IX.3.6, and others). Importantly, there are some superior divinities that are capable of distributing *ratna* to the immortal gods, too (*RV*. I.91.1; *RV*. II.38.1; *RV*. III.26.3;--28.5). In one verse, prayer is made for 'pure wealth' and 'pure gems' (*inda śuddho ratnāni dāśuṣe RV*. VIII.84.9). Deities are eagerly engaged in the distribution of *ratnas* as implied by *ratnadeya* [(*RV*. IV.34.1,4,11, (also in *TS*.2.6.12.1); IV.13.1; IV.35.9; VII.7.5; X.78.8)].

As already indicated, in their divine capacity of providing precious gems, many a deity earned the epithet of *ratnadhā*—'the bestower of jewels'. It is showered upon a few chosen gods, e.g. Agni (*RV*. I.15.3; VII.16.6), Savitri (*RV*. II.1.7), Soma (*RV*. IX.67.13; IX.90.2), and Sarasvatī (*RV*. I.164.49). Agni, in particular, is given the highest form of it. In this context, the role of the Ṛibhus may invoke special interest. They are three brothers, namely Ṛibhu, Vibhu/Vibhva and Vāja, often known after the eldest one. In fact, Ṛibhus were mortal master craftsmen who attained godhood because of their great skills of diverse kinds. They, being industrious and skilful, affording good protection and having dexterous hands, are invited to craft 'our' valuables (*ta ā takṣantvṛibhavo rayim nah svavasah svapasah suhastāh-RV*. IV.33.8). 'These followers of Indra' are not only 'the keepers of gems' (*RV*. IV.34.6) but also the best as such (*RV*. I.20.7). Even their wives are competent to grant jewels (*RV*. IV.34.7). Importantly, an indication is there that they were exploiting jewels from the mountains and from the rivers (*RV*. IV.34.8), all of which are naturally praised as well to be granting valuables.

The Ṛibhu brothers were the divinities of several trades, and the youngest one was probably excelled in lapidary. It is not unlikely that the others too were as such, and hence earned the sobriquet of *vājaratna* (*RV*. IV.34.2;--35.5). Their skill was highly rated too (*RV*. V.49.4; X.42.7).

Most significantly, at one place there is a reference to seven kinds of jewel [*dame dame sapta ratnā dadhāno-RV*. V.1.5; (*AV*. VIII.29.1)]. Elsewhere (*te no ratnāni dhattana trirā sāptāni sunvate ekamekam suśastibhih-RV*. I.20.7), three groups of jewels, possibly each containing seven kinds of them—thus twenty-one in all are averred. These are alluded to in a hymn which is dedicated to the Ṛibhus. It is true that nowhere gems are specified by individual names, but for pearl that is mentioned elsewhere as *kṛīśana* (*RV*. I.35.4). At one place it seems that a pearl was strung in a golden pin or wire (*RV*. I.126.4; *RV*. VIII.18.23). Even the beasts were decorated with pearls (*RV*. X.68.11).

The word *maṇi*, as stated earlier, occurs in *RV* at two places only. In one, the foes of Indra are described as 'decorated with gold and jewels', or else 'by gold beads' (*hiranyena maṇiṇā śumbhamānah, RV*. I.33.8), and in the other, divine favour is sought for a person decorated with golden earrings and jewel necklace (*RV*. I.122.14). A gold *maṇi* figures in *Atharvaveda* (*AV*. XII.1.44) as well.

The other ornaments that are mentioned in *RV* are *śipra*, *rukma*, *khādi*, *niṣka* and *sraja*.

A golden *śipra* that could be a tiara, a cone or a crown was worn on the head: *śiprāh śīrṣan hiranyayih (RV*. VIII.7.25); *śiprāh śīrṣasu vitatā hiranyayih (RV*. V.54.11).

*Rukma* is another important ornament that was worn on the head (*RV*. IV.10.5, cf. *RV*. VIII.46.33), on the breast (*RV*. I.64.4;--166.10; *RV*. II.34.2,8; *RV*. V.54.11; V.55.1; V.57.5) and in the arms (*RV*. VIII.20.11). Monier-Williams (1987: 882) defines it as 'an ornament of gold, a golden chain or disc.' It may not be unlikely if it is likened to the Harappan specimen



that is a cup-shaped golden piece with a loop of gold at the inner apex (so as to sew it on a thick ribbon of cloth or on clothing itself) that is widely found at most of the sites. Making of gold jewellery in this style is still in vogue in India. It is not unlikely that some gold pieces were inlaid with coloured paste (*RV*.I.56.1), while some were engraved with some pattern (*RV*.I.117.5). Notably, some such gold objects have a circular depression on the top side, obviously for inlaying something in it. *Rukma* occurring singly too is alluded to at several places in *RV* and later Vedic works.

*Khādi* were bracelets when worn around the arms and anklets if around the ankles (*RV*.V.58.2 and *RV*.V.54.11), respectively.

*Niṣka*, as an ornament for the neck (*RV*.V.19.3), was as well quite popular in the later times (*MBh. Sabhā*.LXI.8; *MBh. Karṇa*.XXXVIII.8; *Rām, Sundara*.V.25, &c.) when it was used as coins for being given in gift (*MBh. Sabhā*. LXIII.15; *MBh. Sabhā*. LXI.2; *MBh. Van*.XXIII.2; *Ram. Ayodhyā*. XXXII.10; *Ayodhyā*, LXX.21&c). The word is derived from the root-verb *niṣk*, meaning to weigh or measure, hence used as money initially, and became a coin later on. It may not be improbable if for *niṣka*, an analogy is drawn with the round beads of gold or silver that the Harappans crafted by soldering two metal sheets of equal size by providing an axial channel across the centre for passing a thread. Such pieces of necklaces are almost universal at the Harappan sites, and may have as well been passed for money in business transaction. Necklaces of coins can easily be seen in early historical sculptures too. Like *rukma*, *niṣka* is referred to many times in the *RV* and later works.

It may be not be out of place to cite reference to a garland of flowers, particularly that of the lotus, in connection with *Aśvins* (*RV*.19.3; also of *RV*.53.4) in particular.

To sum up, the words like *maṇigrīva*, *niṣkaḡrīva*, *hiranyaśipra*, *hiranyabāhu*, *hiranyakarṇa* and a few

more are significant appellations while cursorily discussing the *Ṛig-vedic* period.

#### THE LATER VEDIC WORKS

Between the early and later Vedic periods, there appears to have prevailed a long gap as reflected in the drastic changes that came about in terms of geography, theism/theodicy, material culture, language, diction and grammar. It is, however, noticeable that the existing literature is silent about that period and process of outward movement of the people from the land of the seven rivers to the Ganga valley and towards the southeast from their terra firma, and the resultant comingling with new peoples of different socio-economic status and ethos that coincided with the introduction of new technologies of iron and glass. Certainly the centre of activity had shifted from the Indus to the Ganga valley. And now, the new nuclear zone extended from Haryana to north Bihar whilst a broad corridor from the former to the River Jhelum, stretching along, under the shadow of the Siwaliks, was still a part of the Vedic learning. Yet, the lands, outlying far and wide, stretching from north and east Afghanistan through north-western Pakistan to south Bihar: Balhika (Bactria), Mūjavat (Badakhshan), Mahāvriṣa (the upper and the mountainous areas of Kabul valley), Gandhāri (Charsadda-Taxila), Magadha and Aṅga (*AV*.V.22.5,7,8,14), were well known albeit looked down upon as fever is invoked to infect them. In addition, the tribes of Andhras, Pūṇdras, Śabarās, Pulindas and Mutibas, living in the frontiers, obviously on the south and southeast, seem to have been brought into the Aryan faith by Viśvāmitra (*AB*.VII.18). In the southern quarter (Bundelkhand, Madhya Pradesh) are the Satvants (*AB*. II.25; VIII.14) and further southeast is the land of Vidarbha (eastern part Maharashtra) (*AB*.VII.34)—all of which have been peopled by the Aryans. The lands of the Uttara Kurus and the Uttara Madras, beyond



the Himavanta (though not satisfactorily identified as yet) were also the Aryan countries. All said and done, the geographical horizons of the later Vedic period had extended immensely far and wide and thereby throwing up new regions of diverse minerals and forest produces.

A careful study of these later texts makes it obvious that the society had become highly structured and complex owing to the commingling with new tribes and new communities, which led to the formation of new sub-castes and subgroups on the one hand, and provided strong and diversified working classes that facilitated proliferation of specialized professions and occupations. *Yajurveda* (YV.30) refers (leaving aside the general classes, castes, etc.) to no less than seventy-five professionals, tradesmen, craftsmen, and even those who are well adept at pursuing social vices. A few of them germane to the present discourse are: *maṇikāra* (YV.30.7) (jeweller), *hiranyakāra* (YV.30.17) (goldsmith), *ayogu* (YV.30.5) (miner and collector of metal-bearing ores), *ayastāpa* (YV.30.14) (coppersmith, metal smelter/melter) and *karmāra* (YV.30.7, also RV.X.72.2; AV.III.5.6) (artificer, mechanic, craftsman, blacksmith), *peśaskārī* (YV.30.9) (female embroiderer), *peśitri* (YV.30.12) (inlay-cutter) —all some way related *inter alia* to ornamental crafts. A *maṇikāra* may mean a maker of beads (*maṇikā* in Sanskrit and *manakā* or *maṇakā* still a colloquial word for a bead). Besides, it was he who cuts gems for setting them in precious metals. Furthermore, there are such mercantile-related terms as *vaṇij* (*vaṇij* trader-AV. III.15.1), *vāṇijya* (*vāṇjya* trading-AV.XXX), *prapaṇa* (exchange, barter or merchandise), *vikraya* (sale), *pratipāṇa* (commodity for exchange), *phalina* (profit), *charita* (investment), *utthita* (money borrowed from the market) —all occurring in *Atharvaveda* (AV.III.15.4) in a hymn ascribed to a *panyakāma Atharvan*, meaning *Atharvan* who is engaged in business in which the aim is 'to earn money out of money' (AV.III.15.5). The same

composer invokes Indra, who is called a trader (AV. III.15.1) himself. There are many such allusions which point towards a well established economy and an efficient transportation system. Thus, the stage had been set for the 'second urbanization' to take off in the following 6th and 5th centuries BCE, when a number of precious gem materials had already been identified as is manifest in the pre-classical literature, and partly substantiated in the contemporary archaeological records which are, however, far from complete on the present showing. The above account now merits a little more delving in the literature of the Later Vedic period.

The Later Vedic literature, albeit considerably voluminous, is not so eloquent as the *ṚV* in so far as allusions to precious things are concerned unless those are directly borrowed from the latter or used as a matter of routine. Off the rut are the citations in the *Atharvaveda*, which has prescribed the use of ten kinds of *maṇis* (beads), all made of biotic substances perhaps but one, solely intended for incantational purposes, either for all-round welfare or for annihilation of foes, rivals or evils. Although not made of stone, those are very relevant to show that the beads of organic materials were widely used in the past as well as are done even today for the purposes of jewellery, rosary or talisman. These *maṇis* or magical beads are: (i) *jāṅgida-maṇi* (AV.II.4; XIX.34 & 35), made out of the wood of the sacred śamī, i.e. *Prosopis spicigera* or *Mimosa sumā*; (ii) *parṇa-maṇi* (AV.III.5) could have been made of some tree-leaf, or of some green stone-like turquoise, green jasper, etc.; (iii) *śaṅkha-maṇi* (AV.IV.10), made out of conch-shell—it is often mentioned in the hymn together with *kriśana*, i.e. pearl, which too is produced by a oyster shell; (iv) *pratisara-maṇi* (AV.VIII.5), perhaps made of wood as indicated therein (AV.VIII.11), and is often called a *srāktya maṇi* (AV.VIII.4.7 & 8), indicating that it was meant for a string for being worn round the neck or as a bracelet as *srakti* means a string; (v) *varaṇa-maṇi* (AV.X.3), perhaps made of wood



of the tree, *Crataeva roxburghii* that is used in medicine and supposed to possess magical virtues; (vi) *phāla-maṇi* (AV.X.6), made out of a wooden ploughshare made out of *khadira* wood, *Acacia catechu*, to be worn from the head (to go round the neck), also perhaps sometimes strung in a golden string (AV.X.6.4); (vii), *kalamali-maṇi* (AV.XV. 2.5, 13, 21 & 29), made of some bright, sparkling material which could be a crystal or glazed faience, steatite or gypsum; (viii) *darbha-maṇi* (AV. XIX. 28-30, 32&33), made of *kuśa/kāsa* grass, *Saccharum cylindricum*, which is still worn by a devout Hindu institutor on the occasion of every sacrifice/ceremony necessarily; (ix) *audumbara-maṇi* (AV.XIX. 31), made of the tree *Ficus glomerata*, which is a sacred tree; and (x) *śatavāra-maṇi* (AV. XIX. 36), made of the plant *Asparagus racemosus*, a vegetable and also known for its medicinal properties. Thus, except for the seventh, all others are made of biotic materials, including the chank which is called a product of the sea in the respective hymn itself. It could as well be a pearl as indicated or suggested by the accompanying *kriśana* in the hymn. The title that is given to the hymn that invokes the *phāla-maṇi* is *maṇibandhana*, meaning the tying of the bead. This indicates the performing of a ritual that must have been observed while trying such auspicious and magical beads.

Another hymn that is given to 'the ritual wearing of *mekhalā* (*mekhalā-bandhanam*: AV.VI.133) (waistbelt)' is also significant because we have shown earlier how a waist-belt was a coveted jewellery piece for both men and women, more particularly for the latter, during the whole of the 3rd millennium BCE, and as how two such complete multi-stringed belts, predominantly made of long carnelian beads, held together with bronze spacers, terminals and washers, have been found in hoards, one each from Mohenjo-daro and Allahdino in the context of the Harappan period. Keeping in view the find of abundant number of stone beads together with those of precious metals and artificially made

materials, it is well nigh assumable that such belts were sometimes made up of beads of different materials as well. It is also recorded that Mandi Hoard from U.P. has yielded a considerable quantity of beads, spacers, terminals, all of gold, along with much higher quantity of stone beads. It may be stated again that an Atharva-vedic hymn (AV.XII.1) —the Earth-hymn (*Bhumi-sūkta*) —alludes to a gold bead.

*Yajurveda* contains an enigmatic verse (YV.24.3) that alludes to *śuddha-vāla* (pure *vāla*) *sarvaśuddha-vāla* (all pure *vāla*) and *maṇi-vāla*, all dear to the twin gods Aśvins; further white, white-spotted and red ones are said to be sacred to Rudra. It was not clear whether *vāla* itself is an ornament, or it was an ornament made of hair of some inorganic substance. The interesting word is *maṇi-vāla*, open to any interpretation. Interestingly, *Śatapatha Brāhmaṇa* (Ś Br.XIII.2.6.8) speaks of weaving of one hundred and one pearls each to be woven in the hair of the mane and tail of a sacrificial horse.

#### SOME SPECIAL ORNAMENTATION OF VEDIC AGE

The Ṛig-vedic terra firma comprising the combined Punjab, Sindh, Haryana, north Rajasthan, western U.P. and Gujarat, which corresponds well to Harappania of yore, is still famous for its ornate embroidery on cloth for a wide range of use in apparels, spreads and covers for the use of humans as well as domestic animals. Oftentimes those are decorated with beads and inlays that are delicately and artistically sewn on them making meaningful patterns. The 'bearded man' of steatite from Mohenjo-daro is an eloquent example in point of fact. The use of decorative pieces and even thin wires of precious gold and silver make such a garment a piece of jewellery itself.

As already stated, *Yajurveda* provides two significant terms for such skilled professionals, i.e. *pésaskārī* for a female embroider and *peśītri* for a carver or an inlay cutter as well as inlay worker. Related to the former are words such as



*peśas*, meaning an embroidered garment, and a lady/deity wearing such a garment is referred to as *peśasā/supeśasā* (RV.188.6; V.57.4). In respect of the latter, there are quite a few suggestive derivative forms such as follows. *Piśa* (*adhi śriyam śukrapīśamdadhane*-RV.X.110.6, YV.29.31, AV.5.22.6, TBr 3.6.3.3; RV.VIII.18.2), which is derived from *piś* meaning to hew out, carve, adorn, etc., is an ornament or decoration embellished with precious metal, stone, shell or ivory. From the same root are derived *peśa* and its other forms. It is again an ornament that appears to have involved weaving, and occurs as such several times in the Vedas (RV.I.192.5; VII.34.11; *tantum tatampeśasā sañvayantī*, YV. 20.41. *Supēśa* is its other form that only heightens its quality YV.20.61). *Peśana* is yet another term (*sa tu vastrānyadhahpeśanāni vasāno*, RV.X.1.6). *Peśala* and its other extended forms also point toward artificially formed, adorned apparels which were embellished with embroidery and sewn with beads and other decorative objects (*sarasvatī manasā peśalam vasu nāsatyābhyam vayati darsatam vapuh* YV.19.83).

Thus, the Vedic literature contains some useful, if not much, information about the aesthetics of the society with regard to personal decoration of the humans, even of the animals, and, in that gems and gem beads may have played a great role although the requisite details of individual jewels are desiderata.

#### EARLY HISTORICAL (PRE-CLASSICAL) LITERATURE

The Sanskrit and Pali literature, particularly *Mahābhārata*, *Rāmāyaṇa* (*Vālmikīya*), *Saddharmapuṇḍarīka* and *Jātakas*, are rich in mentioning *ratna* and *maṇi* in a generic as well as individual ways. These texts allude to gems by names, and in that pearls, corals, and ivory, despite all being of biotic origins, are freely included as jewels for jewellery, as well as considerably large number of miscellaneous purposes of decoration on cloths, and even in architectural forms, such

as doors, windows, walls, stairs, garden pools and whatnot, oftentimes in a measure of exaggeration that the poet could fancy are also treated as jewellery. While the organic jewels, viz. *muktā* for pearls, *vidrūma* and *pravāla* for corals and *dānta* and *danta* for ivory, are well understood and identified, specific terms for the gemstones, whether *ratna* or *maṇi*, pose a problem as many of them have gone out of vogue from the lapidary jargon that is prevailing in India, or have undergone much change beyond giving any clear understanding for identification. The early lexicon, e.g. *Amarakośa*, is not elaborate in this respect either; and the modern translations do not help much as they could give conflicting renderings. The *Mahābhārata* (*MBh*), *Rāmāyaṇa* of *Vālmiki* (*Ram*) and *Saddharmapuṇḍarīka* (*Sad*) are most lavish in allusions to gemstones. Information that is cursorily gleaned from the first two of the above-mentioned works which are far more exuberant would provide such gemstone-wise break-up in relation to approximate number of citations in each case as follows: *vaidūrya* 27; *sphaṭika* 11; *vajra* 7; *indranīla-mahānīla* 4; *padmarāga-padmasaugandhika-saugandhika-raktapadma* 3; *puṣpārka* 1; and *masāraḡalvarka* 1, while biotic ones are: *mukta* 22; *vidrūma-pravāla* 14; and *dānta* 4. Thus, the pearl is only next to *vaidūrya*, while the third in importance is *vidrūma-pravāla* group, followed by those of *sphaṭika* and *vajra*.

The picture, however, remains quite hazy as in most of the cases the gem-names remain inexplicable. Luckily, *Kauṭīliya Arthaśāstra* comes forward to provide immensely useful help. It categorizes all the jewels and furnishes information regarding the sources, properties of colour, tone and hues, brightness, transparency, hardness and so on, albeit much more still remains to be desired. The problem of correct identification yet remains desiderata in many cases. This problem can be considerably tackled if the terminology of the modern jewellers is collected; surely, some of the



vexed problems would be solved; many words of the old literature may still be found in their primary or derivative forms. It has been observed that many old words, particularly for precious jewels, are still prevalent in the modern Tamil language as well as its old literature in their pristine or derivative forms because the southern peninsula and Sri Lanka are home to most of the gemstones from where those travelled to the western world through Indo-Roman trade during the closing century of BCE and early centuries of CE. And their names also went along in somewhat changed forms and some of them have gone into the modern terminology of the minerals.

A careful look into *Arthaśāstra* therefore becomes imperative. The text is primarily composed in the form of formulae, infrequently interspersed with a few verses here and there. All precious materials are termed *ratnas*, both organic and inorganic, that the Superintendent of Treasury (*Kośādhyakṣa*) is enjoined to admit into royal treasury, along with a number of other treasurable materials with which we are not concerned for the present. Jewels are, however, dealt with in six classes (*Arth.2.11.1-42*), viz.

- i) pearls (*muktā*) (*Arth.2.11. 2-27*);
- ii) gemstones (*maṇis*) (*Arth. 2.11. 28-34*);
- iii) inferior jewels (*antarajāti*) (*Arth.2.11. 35*);
- iv) glass jewels (*kāchamaṇi*) (*Arth. 2.11. 36*);
- v) diamonds (*vajra*) (*Arth. 2.11. 37-41*);
- vi) corals (*pravāla*) (*Arth. 2.22. 42*).

Pride of place, of course, goes to pearls, accompanied with much details, and corals come last; if *vajra* is really diamond, its lower position—fifth in order of priority—is rather inexplicable. In most cases, but for the third and fourth in the above classification, provenances, and merits and demerits of jewels are fairly spelt out.

#### MAṆIS

Each of the four aphorisms that speak of superior gemstones, most plausibly, make one group of jewels, arranged in accordance with their differently

distinct colours, tones and hues in the same family. Each word seems to stand for an individual gemstone, certainly not a qualitative adjective as held by some scholars, but should be taken as a qualitative noun for one each. Since to describe a jewel in many a case it has been a universal practice to draw analogy from nature, e.g. a flower, sun, moon, star, water and so on, some amount of subjectively cannot be ruled out therefore. Furthermore, it may be reiterated that difficulties in identification are obviously due to non-currency of many of such terms which are encountered in the literature.

However, taking the first word of each aphorism, we may group them in the following four series:

- I. *saugandhika*,
- II. *vaiḍūrya*,
- III. *indranīla*,
- IV. *śuddhasphaṭika*, or *sphaṭika*

Series I: Saugandhika group of jewels contains the following five words, each for an individual gemstone:

- i. *saugandhika*, ruby,
- ii. *padmarāga*-red lotus-coloured, *padparadscha*, i.e. pink-orange,
- iii. *anavadyarāga*, saffron-coloured,
- iv. *pārijātapuṣpaka*, light red-coloured, and
- v. *bālasūryaka*, of the colour of the rising sun

Thus, all are of different tones and hues of red colour and related. It is noteworthy that another edition of the text includes these five as varieties of *padmarāga*.

Series II: *Vaiḍūrya* group of jewels consists of the following nine:

- i. *vaiḍūrya* (*vaiḍūrya* usually in *Mahābhārata* and *Rāmāyaṇa*), is obtained from Viḍura, a place or a region, not in the sense of distant land as held by some,
- ii. *utpalavarṇa*, of a blue lotus colour,
- iii. *śīrīṣapuṣpaka*, of the colour of the flower of *śīrīṣa*, *Acacia sirissa*,



- iv. *udakavarṇa*, of the colour of water, aquamarine,
- v. *vaṅśarāga*, of the colour of bamboo leaf,
- vi. *śukapatravarṇa*, of the colour of the feather of a parrot, say parrot-coloured, i.e. light green,
- vii. *puṣyarāga*, yellow sapphire-*pukhraj* (Hindi),
- viii. *gomūtraka*, yellow as cow's urine,
- ix. *gomedaka*, hessonite.

Thus, all range in colour from green, greenish-blue to deep-yellow.

Series III: *Indranīla* group of jewels are eight in number as follows:

- i. *indranīla*, blue sapphire,
- ii. *nīlāvalīya*, a blue stone perhaps simulating lines of a deeper blue lines (lapis lazuli),
- iii. *kalāyapuṣpaka*, blue as the flower of *kalāya*, a kind of pea or pulse,
- iv. *mahānīla*, blue sapphire of deeper hue,
- v. *jambvābha*, resembling rose apple fruit, *jāmun* (Hindi), probably amethyst,
- vi. *jīmūtaprabha*, of the colour of water-bearing cloud that is about to pour rain, perhaps smoky quartz,
- vii. *naṅdaka*, probably iolite,
- viii. *śraṇmadhya*, as if pouring water from deep inside.

Thus, all belong to different tones and hues of blue or related thereto.

Series IV: *Sphaṭika* group of gemstones include the following five:

- i. *śuddhasphaṭika*, colourless transparent quartz,
- ii. *mūlātavarṇa*, colour of the curd after removing the top layer of cream, may be moonstone,
- iii. *śītavrīṣṭī*, pouring like cool rain, and
- iv. *sūryakānta*, sunstone.

All these belong to the quartz of different colours and hues.

The text also speaks of three sources of *maṅḡis*, viz.

- 1) *Kuṭa* or *Koṭa*, not yet identified so far,
- 2) *Malaya* or *Māleya*, in probability the Malaya regions, or say mountainous and rocky regions lying across Tamil Nadu, Kerala, Karnataka, Telangana and Andhra Pradesh, which are home to a variety of precious gemstones, and
- 3) *Pārasamudra*, of course, Sri Lanka which was widely known as such in the 1st century CE as is known from *The Periplus of the Erythraean Sea* (*Periplus*: 47 & 249), which refers to it as Palaesimundu, and adds 'called by the ancients Taprobane', ancient *Tāmrparṇī* as in Aśoka's Rock Edict 2 in which the southern states of the Cholas, the Pandyas, the Satyaputras and the Keralaputras, and even Sri Lanka as *Tāmrparṇī* (Sircar 1965: 17) (all sanskritized from the Prakrit) are called his frontier states.

About the good qualities of gems, according to the *Arthaśāstra*, it should be hexagonal, square or round, of flashing colour, having a suitable form, clear, smooth, heavy, lustrous, with lustre inside and shedding light, while dullness in colour and lustre, grains inside, pitted surface, broken, with bad perforation and scratches on the surface are the defects (Kangle 1963: 114).

All the gems that are just referred to above strongly appear to pertain to the groups of corundum, beryl and quartz. All of them are found in several localities lying in the extra-Deccan trap regions in the southern states of India as well as Sri Lanka, as already alluded to. It seems most pertinent to discuss them along with quartz, which is, however, most widely distributed in nature.

Ruby, which is identified with *saugandhika*, is also known as *kuruvinda* in Sanskrit, and *kuruvindam* in Tamil in which it is also called *kuraṅḍam*, obviously named after the Kuraṅḍa state. The word *kuraṅḍam* has lent its name to the mineral corundum as has been accepted by



mineralogists the world over, and acknowledged to have come from India (Betekhtin n.d.: 264). In this regard, a valuable clue about the source of this mineral, which is only prior to diamond in hardness on Moh's scale, is provided by *Mahābhārata* (*MBh. Kāṇ.* XLIV.43) as follows:

*kāraskarān māhiṣakan kuraṇḍān keralān tathā*

The great epic places the people of Kuraṇḍa, say their state of the same name, between the lands of Kāraskaras and Māhiśakas on the one hand, and the people or state of Kerala on the other. While the first can be easily identified with modern Tulu-speaking Konkani (Tulunadu), probably extending from Karwad to Mangalore area, the second one is surely the larger Mysuru region. Kerala is already well known. The intervening area what is now called Kongunadu, comprising the districts of Erode, Tiruppur and Coimbatore in Tamil Nadu, may easily be identified with Kuraṇḍa of the great epic. I have little doubt in identifying Kongunadu with the Kuranda country of the great epic as more than eight places therein yield corundum as scattered in soil or as a constituent of syenitic rock or elaeclite-syenite; besides, this region is well known for producing fine quality of sea-green beryls, sapphires, quartz, feldspar of translucent pink and opaque white varieties, and zircon (Rajan 1994: 7-8). The excavations conducted at the site of Kodumanal (Rajan 2015: 65-79) in district Erode have yielded, among several other important things, the beryls and quartz belonging to the early historical period, datable to the 4th-3rd century BCE. It may be noted that *kurunḍa* or *kurunḍam* is still used by lapidaries for polishing gemstones. Seven years of excavations in habitation and cemetery areas at the site have made remarkable discoveries. Two metres of habitational deposit, which has been dated to 6th-2nd centuries BCE archaeologically, epigraphically and radiometrically, have yielded *inter alia* a gemstone industry in association with NBPW, punch-marked coins and potsherds bearing

Brāhmī letters. Presence of debitage, raw material, different stages of manufacture of beads and ornamental pieces of quartz, amethyst, sapphire and beryl, all procurable from the neighborhood, is singularly important, while those of agate, carnelian lapis lazuli, jasper, garnet and soapstone were the exotic materials brought from the north; the etched carnelian and agate beads were confined to the graves (Rajan 2015: figs. 5 and 6). To quote the excavator: 'The famous beryl-bearing site Padiyur and sapphire-bearing hillocks Sivanmalai and Perumalmalai, respectively, lie about 15 km south and southeast of Kodumanal.' The quartz-bearing sites—Vengamedu (*veṅga* means quartz, and *mēḍu* means mound) and Arasampalayam—respectively lie, 5 km north and south of Kodumanal. He has located another quartz-bearing hillock just 1 km north of the ancient habitation. He also points out to the use of 'huge quartz blocks in some grave circles'.

It is worthy of note that Kodumanal lies on the ancient highway Koṅka-o-peruvaḷi that connected the Kaveri delta to *Malaimaṅṅalam* (Kerala), where lay the port of Musiri (-pattanam=Muziris of the *Periplus*).

Rajan finds resemblance of Kodumanal to *Koṭumaṅṅam* that occurs in the early Tamil anthology of the 1st-3rd centuries CE. Both *koṭu* and *maṅṅam* in the place-name may make one recall that one of the three sources of *maṅṅi*, according to *Arthaśāstra*, was *Koṭa*, *Kuṭa* or *Koṭi*; hence *kaṭa*, and *maṅṅam* could have some connection with *maṅṅi*.

The gemstone that is called beryl in relation with Kodumanal is in fact transparent and vitreous green of different tones and hues. Its ancient name is *veluriyam* as it occurs in *Suppāraka Jātaka* (Rouse 1999: 89 fn. 3) and in the old Tamil, and transformed into *beryllium* as recorded by Pliny (Schoff 1974: 222), of course, by way of transposing 'l' for 'r', and 'r' for 'l', and changing 'v' to 'b', basically, and beryl is its shortened form. Its colour ranges from the sea-green aquamarine to white.



Schoff also records and elaborates the trading of a number of gemstones, many of which like beryl, ruby, diamond, sapphires, spinel, garnet, quartzose (rock crystals and chalcedonic group of semi-precious ones), tourmalines (*turmali* in Sinhalese), all originating in India and Sri Lanka, and even exotic ones like lapis lazuli, turquoise, jade/jadeite and topaz, coming from Afghanistan, Iran and Central Asia were passing through the emporiums of west coast of India. In many cases, the Romans could not distinguish between precious and semi-precious stones. Yet there was craving for them, particularly beryls were as much favoured by them as they were by the Indians. However, since there are many gemstones of different families which have similar colour, there may not have been a scientific method of differentiation and identification other than their comparative hardness and heaviness on facile grounds. Nevertheless, mineral-wise discussion would be worthwhile in order to understand some shortcomings of our forefathers.

#### CORUNDUM

It is avowedly an Indian term korundum emanating, as stated earlier, from an ancient state that most plausibly lay in the modern Kongunadu in Tamil Nadu. It is commonly found in well-formed, barrel-shaped, columnar, pyramidal and tabular crystals in trigonal structure having common forms of hexagonal prism and somewhat commonly bluish or yellowish grey in translucent varieties; gem quality varieties are: colourless leuco sapphire, blue sapphire (*nilam*), red ruby (*māṇik*), yellow oriental topaz, violet oriental amethyst, green oriental emerald, and asteriated corundum showing a six-rayed star; its lustre is vitreous; hardness is 9 on Moh's scale; and ancient sources are: India, Sri Lanka, Myanmar, Thailand (Betekhin n.d.: 264-67; Shipley 1974: 49). In Kongunadu, corundum is found scattered in the soil at several places such as Salangipalayam, Gobichettipalayam, Kangayam, Kandiyam Koil, Karatupalayam, Pedyur and



Fig. 3. Beryl (courtesy K Rajan).

Sivanmalai. Sometimes it is as big as a walnut (Rajan 1994: 8). Ordinary corundum is widely used in powder form as abrasive by jewellers in India.

#### BERYL

Composed of the basic mineral beryllium, derived from Indian (Prakrit and Tamil) *verilyam* (Fig. 3), as already seen; hexagonal; symmetry, dihexagonal dipyramidal; crystal, usually well-developed, columnar or prismatic and pincoïd in habit; occurring usually as single disseminated crystals, sometimes in druses, sometimes massive; rod-like aggregates; gem quality stones: emerald (pleasant deep bright green-*marakata* or *harinmani* in Sans., *panna* in Hindi), aquamarine (transparent sea-blue) moraganite, heliodor, goshenite and vorobyevite pink—all of vitreous luster (Betekhin n.d.: 474-76; Shipley 1974: 20).

In Sanskrit *verilyam* is *vaidūrya* with dental 'd' or *vaidūrya* with cerebral 'ḍ'; the former was known as such to Paṇini and the composers of the epics and many other ancient works while the latter was always preferred by Kauṭilya and some other writers. It is certain that all these words originate from the source of the gemstone that could be a place-name, a small area or a larger region. Much discussion has taken place in this regard without general consensus



or final agreement. Pāṇini derives it from *vidūra*, which has been interpreted as a 'distant land,' 'a place name' or a 'geographical region'. Likewise, various place-names in the south, appearing somewhat phonetically closer to *veliriyam* have been suggested to be the origin of the term. Not unlikely, both terms *vaidūrya* or its variant, and *veliriyam* may be traced to two different localities because beryls are reported from a large number of places in south Karnataka (Patil, typescript: 3) and mountainous Tamil Nadu; we may add one more, 'Yediuru', now a suburb in Bengaluru city, which once, according to Radhakrishna, was an important source of beryls (Patil, typescript: 3). Yediuru can easily claim for *vaidūrya*. Interestingly, *MBh* mentions Vaidūrya-parvata on the River Narmada (*MBh.*, *Sabhā*.L1.35). The first epigraphical mention of *vaidūrya* occurs in the Hathigumpha (near Bhubaneswar, Odisha) cave inscription of the Kalinga king Kharavela (end of the 1st century BCE), which records to have erected on a crossroads a pillar suggestively decorated or inlaid with beryl (*chatare cha veḍuriya – gabhe thambhe paṭiṭhapāyati*), in addition to bringing *muktā*, *maṇi* and *ratnas* from the Pāṇḍya country (*haya-hathiratana-[manikam] paṇḍarājā ---[mu]ta – maṇi – ratanāni āharāpayati idha sata [sahasāni]*). Further, the Junagadh inscription of Rudradāman (150 CE) talks of the (royal) treasury overflowing with the collection of gold, silver, diamond and beryl jewel (*kānaka – rajata – vajra – vaidūrya – ratnopachaya – viṣyandamāna – kośena*).

*Vaidūrya* has wide-ranging colours of green and blue as testified by the epics with their such allusions that it is blue (*nilavaidūryavarṇāścha*, *Ram.*, *Kiśka*.XIII.7), green like verdant grass (*vaidūryavarṇeṣuśadvaleṣu*, *Ram.*, *Sundar*.I.7), as pure as water hence transparent (*vaidūryavimalaistoyaiḥ*, *Ram.*, *Kiśka*. XIII.7), or of the appearance of sea hence aquamarine (*samudrasāram vaidūryam*, *MBh.*, *Sabhā*. LI. 35).

Gleaning information from a few different sources, Patil (typescript: 3) has given the following beryl-yielding sources in Karnataka: Melkote, Chikkayhalli, Katteri, Babygram and Linganakoppa in Pandavapur taluk; Kurubara Manchenahalli and Ragi Muddanahalli in KR Pet taluk, and from Chattanhalli and Kuppere, all in District Mandya, which is well known for a variety of beryls; Dodkandur in Holenarasipur taluk in District Hassan; Tattapur in District Shivamogga, and Yediuru, a suburb in Bengaluru in the district of the same name. Like the neighbourhood of Kodumanal in Tamil Nadu, many other localities in that state as well as others need to be documented along with details of different colours and their tones and hues of gemstones. The same can be said for corundum in Tamil Nadu and elsewhere. The best known source of ruby is Ratnapur in Sri Lanka. It is not improbable that Yediuru (Bengaluru) could be the Viḍūra-bhūmi of Kālidāsa (*Kumārasambhava* I.24). Regarding Veluriya, Master (1944: 306) has suggested a few place-names, viz. Belūr (Belloor), Vellore (Telugu Elluru) and Ellore, one of which could have formed the adjectival noun as above.

#### QUARTZ

It is quartz (Fig. 4), which provided a few precious stones to the ancients besides the four *Arthaśāstra* mentioned under *sphaṭikas*. Chemically, it is oxide; crystal structure essentially consisting of tetrahedra framework with common apexes; hexagonal dipyrramids in habit; occurring in a wide variety of colours; hardness, 7; specific gravity 2.65-66; gem quality are (1) rock crystal, colourless, water-transparent (*billaur*) (Fig. 5a), (2) amethyst, violet varieties (*kaṭahailā/jambu-maṇi*) (Fig. 5b), (3) rauchtopyaz or smoky quartz, tinted grey or brown (*dhumhailā*), (4) citrine, golden-yellow or lemon-yellow (*suṇhailā*) (Fig. 5c), (5) morion, a black crystalline variety—all these of transparent varieties; translucent varieties: (1) prase,





Fig. 4. Quartz beads, Dholavira.

greenish with inclusion of acicular actionolite, (2) aventurine, yellowish brownish-red glimmering due to tiny scales of mica, (3) milk-white quartz owing to the presence of liquids and gases, may have correctly been called moonstone (*chandrakānta* | *chandrārka* | *chandrāmśu*) in place of adularia, found in Sri Lanka, and (4) rose quartz (*gulābī sphaṭika*) (Betekhtin n.d.: 305-10; Shipley 1974: 165, 128).

Some of these quartz gems seem to have been included in the *Saugandhika*, *Vaidurya* or *Indranila* group of stones, probably for example, citrine for *gomūtraka*, amethyst for *jambvābha* and smoky

quartz for *jīmūtaprabha*. Likewise, rose quartz could be *pārijatāpuspaka*, perhaps.

It is, however, difficult to understand whether rock crystal meant *sūryakantā*, shedding light like the sun, or *śuddha* (pure)-*sphaṭika*. Or else, it is mineralogical sunstone, also called aventurine, so called for having 'beautiful sparkling golden chatoyancy due to inclusion of very fine specks of iron glance', belonging to the sub-family of plagioclase (acidic plagioclase), and to the same family belongs the moonstone (potassium-sodium feldspar) that 'shows a peculiar lightly-bluish opalescence resembling moonlight' (Betekhtin n.d.: 558-59).

#### VAJRA

The last-mentioned precious gemstone is *vajra*, which is said to be obtained from a mine, a river bed or found in a scatter on the ground (*Arth.* 2.11.38). These are named after their respective provenances as (1) *sabhārāṣṭraka*, *ṭajjamā*-(*tajjumā*)-*rāṣṭraka*, (2) *kāstīrarāṣṭraka* or *kāntīrarāṣṭraka*, (3) *śrīkaṭanaka*, (4) *ma* (*mā*)-*ṇimaṇṭaka* and (5) *indravānaka* (*indukhānaka*) (*Arth.*: 37).

Regarding the colours of *vajras*, analogies are drawn from the then known gemstones, viz. *mārjārakṣa*, cat's eye; *śīrīṣapūspaka*, of blue hue, *gomūtraka*, of yellow tinge; *gomedaka*, cow's fat-colour of hessonite-yellow to red-orange, or yellow-brown to reddish brown; *śuddhasphaṭika*, maybe



Fig. 5. Varieties of quartz (courtesy K Rajan).



colourless, transparent white (and this perhaps clears the confusion we have pointed out above in respect of *sphaṭika* group of stones, because the *vajra*, if diamond, it need not be an opaque/translucent milk-white stone), *mulāṭīvarṇa*, which has been interpreted in two ways: colour of the curd after removing the layer of cream, (i.e. *malai* in Hindi), or the colour of *mulāṭa* flower, and then it is added that the colour of *vajra* could be of the colour of some other gemstones (*Arth.*: 39).

Regarding the good qualities of the jewel, it is stated that it should be big, heavy, resistant to strike, facets of equal size, (capable of) scratching a (metallic) vessel, spindle-like brilliance or refractive of light, shiny and excellent; those with angles lost, having no facets and ill-formed on one side are not good (*Arth.* 2.11.40-41). It is worthy of note that the special words that are used in respect of the qualities, particularly that it should be resistant to strike, etc. strongly recall those of diamonds. It is emphasized because some scholars hold that Kauṭilya's *vajra* may not be a diamond. But *Amarakośa* of Amarasimha makes it clear that its synonym is *hīraka* (*vajro'strī hirake pavau-Amar.* III.IV.XXI.186), and *hīrā* is a well known word for diamond in North India and Maharashtra, while in Tamil, it is *vairaim* or *vairā*, which are philologically closer to *vajram* (K. Rajan, personal discussion).

India was the most ancient country to mine and work on diamond, and remained as such until the onset of colonialism that spread to Africa and other parts of the world where new provenances were found. Diamond is derived from the Greek "adamas", i.e. invincible (owing to its supreme hardness and resistance to the action of chemical and physical agents)' (Sanskrit equivalent may be conjectured *asadamyā*, meaning the same). In system, it is cubic; in symmetry hexoctahedral; habit, octahedral; hardness, 10; specific gravity 3.47 to 3.56; lustre, strong, adamantine; in colour, colourless water-transparent, light blue, yellow

brown, black violent, or green red, and with frequent curved crystal faces (Betekhtin n.d.: 165-67; Shipley 1974: 59).

Jean-Baptiste Tavernier, a French diamond merchant, paid two visits to India between 1641 and 1668. He visited at least four mines and left behind his account of visits, published in two volumes (Ball 1989). He has given a detailed account on diamonds (Ball 1989. Vol. II: 41-7). Ball in his appendix (Ball 1989, Vol. II. Appendix II: 348-54) has added a list of mines in India (of course in accordance with the then prevailing administrative divisions), which are rearranged below in accordance with the present states:

#### *Karnataka*

District Bellary: Wajrā Karur, Ganjigoonta, Gutidrug, Hotoor—all in and around Wajrā Karur.

#### *Andhra Pradesh*

District Kurnool: Banganapalle, Baswapur, Byanpalle, Deomurru, Devanur, Dhone, Gudipand, Jorapur, Kannamadakalu, Lanjapoleur, Muddavaram, Maṇimadagu, Muravakonda, Oruvakal (or Woraykal), Panchalingala, Pendekallu, Polur? (NW of Nandial), Pyapali, Rammalakota, Saitankota, Tandrapad, Timmapuram and Yembye.

District Krishna and Godavari (given together for want of the latest reorganization): Ātakur, Barthenypadu, Bhadrachalam (doubtful, a diamond said by Newbold to have been found on the Godavari, however), Damarapad, Golapalle (or Golapilly), Kodavatakallu, Kollur (the Gāni or Coulour of Tavernier), Madagalu, Malavaram Moonaloor, (or Moogaloor), Mulele, Ustapalle and Partial.

#### *Maharashtra*

District Chanda (now Chandrapur): Wajrāgarh (the Bairagarh of the *Ain-i-Akbarī*), on a tributary of River Wainganga in Vidarbha.



*Jharkhand*

District Lohardaga: Sand-washings from River Sankh and River Koel, tributaries of River Brahmani, near Tavernier's Soumelpour.

Sambalpur on River Mahanadi, in Odisha, however, needs an examination. But Sonpur in that state is reported to yield diamonds.

*Madhya Pradesh*

District Panna: Several localities around Panna region have now many active mining sites.

*Himachal Pradesh*

District Shimla: With a question mark, albeit several diamonds in the Indian Museum, Kolkata are said to have been found in a stream near Shimla.

These are a few interesting and a few tempting points worthy of note. One commentary on *Arthaśāstra* locates Sabhārāstraka in Vidarbha country (*Vidarbha-viṣaye*) in connection with the name of Wairagarh is interesting as *vairā* in Tamil is another word for diamond. Likewise, Wajra Karur, as mentioned above, is also interesting as *vajra* is the standard term for diamond in the ancient literature.

Most of the provenances as given in *Arthaśāstra* elude at present their geographical identification.

## OTHER KINDS OF GEMSTONES

Immediately after naming precious *manis*, *Arthaśāstrā* makes mention of what it puts in a category of *antarajātayaḥ* (*Arth.2.11.35*), interpreted as "inferior" gemstones which comprise eighteen diverse gemstones, obviously semi-precious in value and quality. These are: (1) *vimalaka*; (2) *sasyaka*; (3) *añjanamūlaka*; (4) *pittaka*; (5) *sulabhaka*; (6) *lohitākṣa*; (7) *rigāsmaka*; (8) *jyotīrasaka*; (9) *māleyaka*; (10) *ahichchhatraka*; (11) *kūrpa*; (12) *pratikūrpa*; (13) *sugandhikūrpa*; (14) *kṣīravaka*; (15) *śuktichūrṇaka*; (16) *śilāpravālaka*; (17) *pulaka*; and (18) *śuklapulaka*.

*Ahichchhatraka* is identified by Bhuvan Vikrama (personal discussion), the re-excavator of the site, with a special kind of beads which were

manufactured at Ahichchhatra. According to him, these are bleached chalcedony beads bearing three kinds of patterns done in black and white colours. These are called 'dzi' beads, and are reported from Taxila as well. *Vimalaka* perhaps may be plain chalcedony beads or cut pieces. *Sasyaka* may be a green-coloured stone, which can be jasper, vesuvianite, turquoise, or jadeite, the last two being exotic hence valuables. Agravala informs that the term for jade or jadeite is *masāra* that is mentioned in the *Rāmāyaṇa* (*Ram.Aranya.XL.III.29*) combined with *galvarka*. *Galv* is said to be a gem; *arka* in *galvarka* may mean that the gem has a shine. It may be equated with *gallaka* in Prakrit texts, and also in *Mṛichchhakaṭika* and *Harṣacharita*. *Śilāpravālaka* seems to be another interesting word, which literally means a coral-coloured stone which could be carnelian or garnet. It is also wondered whether *kūrpa* or other terms associated with it could be agates of diverse colour schemes, as this word means a space between two eyebrows.

Some of the words appear to be self-speaking, and yet difficult for identification with any known gemstone.

In archaeological record, a wide range of gemstones—chalcedony, carnelian, agates, garnet, jasper, onyx, quartz, rock-crystal, amethyst, lapis lazuli (Hasan 1982: 131-40)—besides coral, glass, ivory, bone, shell, copper and gold, are reported from excavations. Kodumanal, as already referred to, has yielded a number of transparent green-coloured beryls in the form of beads and raw material pertaining to the precious category, in addition to a large quantity of etched carnelian, agate and rock crystal beads dated to the Northern Black Polished Ware (NBPW) period. To this may be added the 'dzi' beads of Ahichchhatra. However, notable absentees in archaeological record are the most coveted pearl, most possibly owing to its extreme vulnerability due to its layered formation liable to become completely peeled off, and secondly due to its tendency of sucking moisture that causes a covering layer of



clay and sand around it and thus making it difficult for recognition leading to an escape from retrieval at the time of excavation. Nevertheless, we have found it from the pre-Harappan as well as Harappan horizons, in a solitary example in each case. Yet references to it in the literature are copious as a covetous jewel.

*Arthaśāstra* (*Arth.* 2.11.2) informs that pearls were obtained from *Tāmrparṇī* (Sri Lanka), Pandyan coast in far south in India, Paśika, and the coastal regions from there up to Mahendra, i.e. north Andhra Pradesh and Odisha; and in between are Kola and Churṇa coast which remain unidentified so far. However, according to *Paraśaratantra* (*Parāśaratantra.* 13.5), Paśika is a country or region in south of India which is said to be home to conch, pearl, coral and beryl in the same text. Further, *Arthaśāstra* speaks of the sources, qualities and defects of pearls in addition to giving elaborate details about different forms of jewellery that are made thereof, including such strings which are to be added with jewels (*Arth.* 2.11.2-27).

#### CORALS

Corals, which are red and pinkish red in colour, are said to be excellent, but those bored by insects are defective; and the sources are *Alakanda* and *Vivarṇa*. The former has other variants: *ālatsandraka* and *ālasāndraka* in different recensions of the text—all three, however, pointing towards Alexandria in Egypt. Among all the Alexandrias that Alexander the Great founded in different nook and corner and a few in the interior of his newly conquered vast territory, the one on the seashore of the Mediterranean Sea in Egypt developed into a great commercial centre what it is even today. The best quality of red coral is produced in the northern parts of the Mediterranean Sea. So far the other source, i.e. *Vivarṇa*, is concerned, it is not identified as yet, if it is a geographical location at all.

#### PAENEULTIMUS

There are two legendary jewels, namely *kaustubha-maṇi* and *syamantaka-maṇi*. The former is well known as one of the fourteen jewels obtained at



Fig. 6. Waiṣṭband and other ornaments from Allahdino.



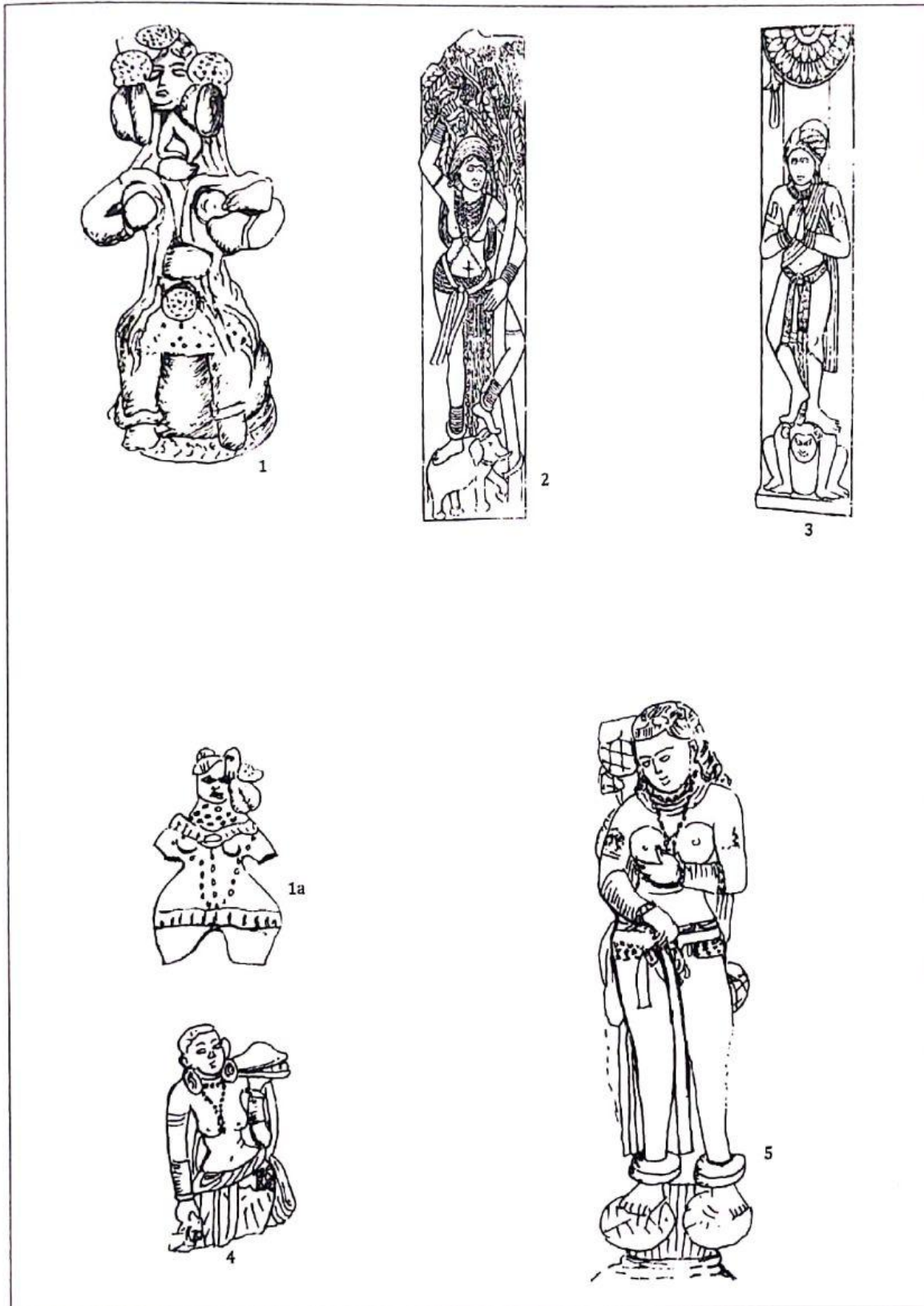


Fig. 7. Bejewelled humans: 1 (terracotta female, Maurya, Mathura), 2-3 (stone images, Sunga, Bharhut), 4-5 (stone images, Kushana, Mathura).



the churning of the ocean, and later on received by Viṣṇu to suspend it on his breast. It is, perhaps, a resplendent ruby resembling the rising sun (*kaustubhenorasisthena maṇiṅābhivirājstam, udyatevodayam śailam sūryenābhivirājstam. MBh. Santi.XLIV.15*). The latter is the *syamantaka-maṇi*, which is said to be the source of the dazzling brilliance of the sun-god while wearing it round the neck. The story goes that the deity gifted it to his friend Satrājī, who when wearing it went to the city the people ran after him saying "this is the sun going there" (*Harivaṅśapurāṇa.I.38.19, 23*). This jewel brought about in its trail murders and battles. No doubt it was a brilliant diamond like the *Koh-i-Nūr*, which too was sought after by many princes until it was finally set in the British crown.

A rare find of a composite figurine of parrot, with its head made of carnelian and the rest of the body that of a bluish-grey gemstone with scored stripes for simulating wings, has been recovered from the middle phase of the NBPW period (Period IIIB, probably datable to the 4th–3rd century BCE, albeit not so spelt out precisely) at Pakkakot, District Ballia, Uttar Pradesh (Dubey et al. 2013: 69, illustrated in cover page). The use of two materials for making one art piece testifies what the literature bears. Out of numerous such depictions, a few may be cited.

In one example, a pond in a royal court was bedecked with a lotus flower made up of pink ruby, with the spread-out leaves and the stalk that of emerald, diverse birds, in addition to the flowering lilies, tortoise and fish of gold, in the water that is devoid of mud (*MBh. Sabhā.III.30-31*).

The other example is that of Mārīcha assuming the form of a phantom deer to deceitfully attract the attention of Sitā. The deer is said to be made up of several jewels (*Ram.Aranya.XLII.35*), the horns tipped with gems, the mouth made of ruby, the ears and the underbelly of blue sapphire, the hooves of beryl, the tail appearing as rainbow and different body parts of pearls (*Ram.Aranya. XLII 16,14,18,33*).

Elsewhere (*Ram.Aranya. XLII XLIII.29*), the mouth is said to be of *masāragalvarka*. According to V.S. Agravāla, *masāra* is jadeite (*yashab*) and *galvarka* is agate (1977: 34).

The above two may suffice although references are nebulous in the epics.

The word *maṇimekhalā* is interesting as it reminds of the Harappan waist belts made up of long carnelian beads set in with copper devices (Fig. 6). It also makes one recall the main character Maṇimekhalā of the early Tamil work *Maṇimekhalai*, who seems to be named after the *Jātaka* fame deity Maṇimekhalā, the daughter of the gods of the quarters, who comes forward with provisions to the rescue of the righteous merchants who met with shipwreck in the ocean as referred to in the *Jātakas* (*Saṅkha: 11-13, Suppāraka: 86-90, Mahājanaka: 22-24*).

The epics, particularly the *Rāmāyaṇa*, contain a large variety of ornaments from head to ankles, and the art objects of historical period show them duly substantiated (Fig. 7). This paper does not intend to elaborate on all that, however.

#### COMMENT

Thus, the archaeological records, going back to the Upper Palaeolithic Age, much more eloquently from the Neolithic Age (Mehrgarh) down through over times, have demonstrated that the humans always loved personal decoration as well as decoration of what they created and used whether movable or otherwise. And this is best manifested in the living primitive societies whether living in the proximity of a civilized world or dwelling in the forests. It is very significant to reiterate that India has lent to the mineralogical dictionary of the word many terms of gemstones, e.g. corundum (*kuraṅḍam*), veryllium (*veluriyam/veduriyam*), carbunculus (*kuruvindam*), padparadscha (*padmarāga*), onyx (*akhṣa*), opal (*upala*), tourmaline (*turmali* in Ceylonese) and so on. All these terms travelled west through the Indo-Roman trade from the last century of the Common Era to the sixth–seventh centuries CE.



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