4. AGRICULTURAL EXPANSION AND TRADE MECHANISMS

4.1 The Marxian idea that economic factors determine forms of society has been modified by the notion associated with Max Weber that certain social and cultural forms may be necessary before economic growth can take place. The distinction between society and economy may at times be tenuous, for as Marshall (1898) describes it, economics is the study of mankind 'in the ordinary business of life'. As such economy would encompass life as a whole. Others see a dilemma in this position and would rather limit the study of economy to the systems of production, distribution (exchange) and consumption. The way in which these three are organised would, however, be determined by the value system of the society and by the cultural processes. Economic growth is usually based upon institutional changes of which the growing complexity and sophistication of the exchange system is the major index (Belshaw, 1969:6). Similarly, social development means an increased social differentiation and an alteration in the quality of social institutions. In other words, increased complexity must be based on an increased division of labour; an increase in the range and quantity of transactions to which market principles apply and an intensification of those principles; and an increase in exchange liquidity\(^1\) which can be described as the monetisation of the economy (ibid.:52).

It may be pertinent to deal with the three systems of the economy - production, distribution and consumption - in this chapter and to reserve the study of society for the next. Peasant societies retain a high degree of subsistence production and in this they differ from urban centres which combine

\(^{1}\)Liquidity here refers to the ease with which a commodity (or entry into an account book) can be exchanged (Belshaw, 1969:9).
market activity with subsistence production. It becomes necessary here to analyse the evidence for private ownership of land and the use of slaves or hired labour in agricultural and handicraft production.

Role differentiation and division of labour are characteristic of market systems. One force in market systems is that a seller can dispose of his stock at times when he has a surplus in relation to his immediate consumption wants, buying it back at times of continuing demand but when his own production is not being harvested. The market acts with a warehouse or storage function; but this is possible only if seasons are reasonably stable so that a poor crop by one individual is counterbalanced by the harvest of another, or if commodities are reasonably durable and some group takes on the function of holding stocks. The last condition is more important in the development of trade and is predicated on role differentiation between the producer and the trader. Many traders operate on a fairly restricted circuit with limited capital and with local goods only. But the network effect of trading is extended by the establishment of other roles based upon modest increases of capital and handling of stocks of more complex origin (ibid.:55).

The Jātakas provide considerable data on the mechanics of the distribution system which is complemented by inscriptive evidence regarding complexities of trading networks. Thus there are references to guilds and different categories of traders and artisans, while foreign works like the Periplus provide information on commodities imported into the western Deccan and those in demand in the western world. These transactions would have to be based on some form of monetary exchange and it is this that we shall discuss in the last section of this chapter.
It is best to start with historical factors and local conditions that may have influenced the economic development of the western Deccan and may have contributed to the extension of the power centre from Magadha to the western Deccan after the decline of the Mauryas. The rugged terrain of this region has been described in detail in the first chapter. A result of this topography is that agricultural settlements are confined to river valleys. Another restrictive feature is that the major rivers do not flow in valleys of their own erosion, but occupy fault plains in the rocks, hence unlike the Gangetic valley, no large expanses are available for agriculture along their banks. The black soil no doubt has a high lime content and is ideal for growing cotton, but it is not of uniform thickness (cf., p. 27). Coupled with these two restrictive factors is a third—rainfall. Rainfall reduces on the leeward side of the Western Ghats and continues to diminish eastwards, so that the middle reaches of the river valleys lie in an arid zone with less than 50 cms. of precipitation annually (Singh, 1971: 704). These factors have combined to make the western Deccan an area of overall low agricultural productivity. To this day, the gross value of output per acre in Maharashtra is roughly three-fifths of the average for the rest of the country (ibid.: 713).

Once agricultural productivity is seen to be marginal, one has to look for other reasons to explain the importance of the western Deccan and these are to be sought in its location (cf., pp. 50-54). Thus in the centuries preceding the Christian era, the western Deccan controlled the trade route from Karnataka and the eastern Deccan proceeding north to Ujjain and continuing eastwards and from there northwards; it provided an outlet for export not only to regions to its east and south-east, but also to goods from the Gangetic valley routed through Ujjain to Bharuch; and its ports of Sopara and Bharuch on the west coast catered to the West Asian trade.
The first century B.C. thus provided ideal conditions for any would-be expansionist power to exploit the Mediterranean trade boom and to carve out a base for itself in the western Deccan, the highlands providing defensive hideouts for retreat in times of adversity. It is therefore understandable that the Sātavāhanas exploited the situation to their advantage.

4.2 Agricultural Economy: Trade can flourish only if the agricultural economy of the region is capable of providing a firm base for it or else if the profit margin is large enough to pay for the purchase of food. In spite of its overall low productivity, the upper basins of the major river valleys of the western Deccan offer fertile tracts for cultivation and it is precisely within these areas that we find the earliest monastic establishments, e.g. Masik in the Godavari valley and Nadsur and Bhaja in the Bhima valley. At present 70% of the arable land is under food crops, the remaining 30% being covered with oilseeds, cotton and other fibre and fodder crops. Jowar, bajra, wheat and rice are the four important food crops, while cereals and pulses are cultivated over a large area. As the demand for cash crops increases, sugarcane gets top priority where irrigation facilities are available, cotton being the next choice (Singh, 1971:713).

Sātavāhana inscriptions refer to plantations of karaṇja (timber), jambu, mango and coconut trees (Burgess & Indraji, 1976, reprint: 48; Senart, 1905-6:82-5). The real cause of the development of the west coast was the coconut which was of utmost value on account of its wood, fibre, wine and oil. The Konkan is ideal for the growth of the coconut tree because of the heavy rainfall and the hot climate. It could not have been profitably cleared of its dense forest, let alone settled without the coconut tree and the heavy commodity production based upon its exploitation in full (Kosambi, 1981:189). Apart from these,
there is no mention of the crops cultivated and primary evidence in this regard comes from archaeological excavations. In the Sātavāhana levels at Nevasa, grains of wheat, barley, rice and millets, sorghum, gram, pea and Indian jejube have been identified (Kajale, 1976-7:50-1). Most of these occur at Bhokardan as well (IAR, 1976-77:91), whereas at Ter, the finds are limited to those of wheat, rice, lentils and jejube (Kajale, 1975-6:62-3).

The term hala in Sātavāhana inscriptions (Senart, 1902-3:66) designates a measure of land and also means a cultivated field. This may be taken as evidence for the use of the plough. The terrain of the western Deccan, however, imposes serious limitations and irrigation plays a limited role in the agricultural economy. Existing irrigation facilities include canals, wells and tanks. Of these canal irrigation is common in the western parts, whereas wells are utilised to irrigate small farm holdings all over the region (Singh, 1971:715). Wells and tanks seem to have been in use in the Sātavāhana period also. According to Allan, symbols on the obverse of some early Andhra coins from Kolhapur represent the water wheel used for irrigation (1936:xxxii). The Gāthāsattasai corroborates this by mentioning a water lifting device called rahattaghadiya (490), while the Nasik inscription of Madhariputa speaks of the guild of odayantrikas described as makers of water machines (Senart, 1905-6:no.15). Usavadāta is eulogised as the maker of tanks (tadāga) and wells (udapāna)(ibid.:no.10). An inscription engraved on a detached rock between caves 21 and 22 at Kanheri and dated to the second century A.D. records the construction of a tank (talāka) by setthi Punaka of Sopara (Gokhale, 1975:21); another construction is recorded in the Myakadoni inscription of Pulumāvi (Sukthankar, 1917-8:153-5). An epigraph from Amaravati of the time of rājan Siri Sivamakasada (cf., p.64) mentions the paniyagharika or the superintendent of water houses, possibly for controlling
the distribution of water. The overall evidence, however, would seem to suggest private control of irrigation facilities, though in the difficult terrain of the western Deccan, the digging of tanks would necessitate help from either the king or rich landowners.

The Arthasastra (II.24.18) mentions four methods of lifting or drawing water and one of them includes the use of a water machine. The Cullavagga (V.16.2) refers to the use of a long pole balanced as a lever, a bullock machine and a wheel and axle. While Kautalya recognises the right of farmers to construct and mortgage private irrigation works, he imposes a fine on a person constructing a drain or a well in another's land or putting to sale or mortgage a charitable water-work.

Private control of irrigation facilities raises the controversial problem of the ownership of land. Scholars have expressed differing opinions on the subject ranging from the 'oriental despotism' of the eighteenth century writers to the views expressed by modern historians that land could be donated as a commodity for religious purposes, but could not be sold or purchased on a secular basis (Sharma,1966:225). It seems more likely that no uniform set of rules can be formulated for the whole country for a given period. The prevalence of land as a commodity varied with the region and depended on the economic condition of the society.

The Arthasastra (II.1.10; I.14.3) is, at times, misquoted to suggest that the king had the right to confiscate land or to transfer it from one person to another. A reference to the context makes it clear that this right was limited to newly settled or colonised lands, and as such lands which were originally state property. Besides the sole objective of the state behind the colonisation was to get the lands cultivated and to derive revenue from this. Under these
circumstances it had a right to punish defaulters. The Arthaśāstra indicates two distinct categories of agricultural revenue: sita or the produce of crown lands; and bhāga or one-sixth share of the produce of other lands (Kangle, 1963:173). Crown lands were under the supervision of the sitadhyakṣa; slaves and labourers in state service were employed to get them cultivated and some were also let out on other terms. On the other hand, there were lands which the karsaka or farmer tilled and there is a clear distinction between the kṣetrika, the owner of the field and the upavāsa or the tenant (III.10.8).

Both the Arthaśāstra (III.9.15-23) and the Manusmṛti (VIII.262) recognise the right of the individual to his land and lay down elaborate rules to deal with boundary disputes and to the sale and purchase of property. According to the Arthaśāstra: 'Kinsmen, neighbours and creditors, in this order, shall have the right to purchase landed property (III.9.1). Owners shall proclaim a dwelling (as for sale) in front of the house, in the presence of members of forty neighbouring families and a field, a park, an embankment, a tank or a reservoir (as for sale) at the boundaries, in the presence of village elders who are neighbours, according to the extent of the boundary, saying, at this price who is willing to purchase?' (Kangle, tr. III.9.3). What has been thrice proclaimed and not objected to shall be open to purchase.

In Pali works, peasant proprietors who cultivated arable land were called khettapati or khettasāmiṇa (Dīghanikāya.XII.7); boundaries were set up to distinguish plots of land (Jātakas, Bk.XIV:no.484) and land was classed with cattle, etc. as the the personal property of the householder.

Sātavāhana inscriptions at Junnar (Burgess & Indraji, 1976, reprint:nos.9,13,14,15,17,18), Nasik (Senart, 1905-6:77), Kanheri (Burgess, 1983:nos.15,18) and Mahad (Burgess, 1964, reprint:
no.2) record donations of land by lay devotees, while the Nasik inscription of Uṣavadāta refers to the purchase of a field from a brähmana (Senart, 1905-6:78-80). Epigraphs at Junnar (Burgess & Indraji, 1976, reprint: nos.17,18) mention gifts of land situated in different villages and at Kanheri a kheta in gāma Saphau is given by a merchant of Kalyan (Burgess, 1883: no.18). The Arthasastra (III.10.15) lays down that landowners living in a different place may live on the produce of their fields. The prevalence of 'absentee landlordism' or the cultivation of landed estates by the monasteries could only be possible in conditions where labour, like land had become a commodity. For labourers on land, the Arthasastra (II.24.28) fixes a wage of one pana and a quarter per month in addition to food. The same rate also applies to workers in vegetable gardens, orchards and herdsmen. The Jātakas too seem to describe a society where labour could be employed for a wage and where slaves were regarded as the property of the owner.

The Kummasapinda jātaka narrates how the Bodhisattva was born in a poor family and made a living by working for wages (bhātiyā kammam karonto) with a setthi, doing farm work (Bk.VII: no.415). Elsewhere also the Bodhisattva is depicted as living a hard life on a workman's wages: bhātim katvā kicchena jivati (Bk.VIII: no.421). A man supported his father by working for hire or by ploughing in the fields: bhātim vā kasim vā katvā (Bk.X: no.46). In Sravasti there lived a very poor man, a hired labourer: bhā tikārako (Bk.I: no.109) and a country woman who worked for hire: bhātim kurumāna (Bk.I: no.108).

The landowners were not the only class employing men on wages. The monasteries also seem to have employed people to do manual labour and other jobs forbidden to the monks. The Vinaya Piṭaka (Mahavagga.VI.15) narrates the story of the monk Pilindavaccha who was seen supervising the work of levelling
the soil by Bimbisāra. The latter offered him 500 āramikas who settled down with their families in a village near the monastery and began to work for their new masters. The word āramika is said to be derived from ārama or pleasure house and denoted men responsible for the upkeep of these (Chanana, 1960:83).

A second category of the labour force comprised of slaves, as mentioned in the Vinaya Pitaka (Mahavagga.I.47). Buddhaghosa's later commentary on the text enumerates three kinds: those born in the master's house; those acquired by purchase; and those captured in war. To these, the Dighanikāya (II.35) adds a fourth: those who give themselves up as slaves and the Aṅguttaranikāya (III.208) forbids an upāsaka to traffic in human beings. The Vidhurapandita jātaka (Bk.XXII:no.545) mentions four kinds of slaves: born slaves; purchased slaves; those that come of their own will; and those that are driven by fear. The owner of a slave had the right to gift him to another.

The Manusmṛti and the Arthaśāstra expand these categories to seven and nine respectively: those captured in war; those who serve for their food; those born in the house; those bought and those given; and those enslaved by way of punishment (Manusmṛti.VIII.415). Kauṭalya adds two more to this list: those who have either mortgaged or sold themselves and devotes a whole section to rules on slavery (III.13). The Manusmṛti (VIII.416) places slaves in the same category as a wife and a son and states that the wealth they earn belongs to him to whom they belong. The Milindapañha (Horner tr.II:106) introduces the practice whereby a father could sell his children into slavery when he had too many of them and could not feed them. The Periplus (sec.36) mentions the import of slaves from Arabia into the subcontinent.
The Jātakas are replete with stories of persons born slaves (Bk.I:nos.39,125). Jātaka no.477 (Bk.XIII) describes how the border people raided the countryside and carried off people to make them slaves. Elsewhere (Bk.XXI:no.537) a yakṣa is depicted as bringing hostages to the border country to sell them as slaves. The Durajana jātaka (Bk.I:no.64) speaks of a satakītādāsī, i.e. a slave girl bought for a hundred pieces, while the Losaka jātaka (Bk.I:no.41) describes how the Bodhisattva urged the king's men to hand over to him a thief they had caught, so that he could keep him as a slave. Slaves were evidently considered personal property. The Namasiddhi jātaka (Bk.I:no.97) tells of a slave girl who was ill-treated by her master and mistress, because she had not given them her wages: dāsim bhatim adadamānam.

This survey leads us to the conclusion that land could be privately owned; it could either be cultivated by the farmer himself, or he could employ labour and slaves for the work; and a third alternative was that it could be leased out) (Arthasastra,III 9.1-9). How did one acquire land? The Manusmṛti rules that land could be inherited (IX.104-5), purchased (VIII.201) or else it could be obtained as a gift. Furthermore, possession for ten years was sufficient to create ownership, in the absence of a legal title. Whatever property an owner sees enjoyed by others for ten years and though present does not object to it, that property he shall not recover (VIII.147-8). Another method which seems to have been widely used is that of reclaiming arable land by clearing the forest. As all waste and forest land belonged to the state, this means could not have found approval with the authorities. But as it would have been difficult to check forays into unarable tracts, the state seems to have legalised this method of acquiring agricultural land, in order to claim revenue. The Manusmṛti states that as per the sages a field belongs to him who cleared away the timber (IX.44).
Kauṭalya instructs the king not to take unarable lands from those who are making them arable (II.1.8-9), instead the king should allot these to tax payers for one generation. On the death of the allottee, waste land being state property, these fields should revert to the state. The practice of reclaiming land is reflected in the Kāma jātaka which narrates the story of a brāhmaṇa who dwelt at Sravasti and who cleared the forest on the banks of the Aciravati in order to cultivate the land (Bk.XII:no.467). Similarly, the Milindapañha (Horner tr.II:222) refers to farmers who make the land arable thus becoming owners of the land.

Though a person had an inalienable right to his land, the king could claim revenue on account of the protection that he offered. The Manusmṛti states that the king is the lord of the earth and as such he obtains half of the ancient hoards and metals found in the ground (VIII.39). The Arthasastra (II.24) lays down rules for levying revenue and water charges. It is, however, very unlikely that the state maintained a bureaucratic machinery large enough to be able to collect revenue from each landowner. Both the Manusmṛti (VII.115) and the Arthasastra refer to only one officer in charge of villages and it is possible that the entire village formed a single unit for the calculation of revenue (Jha, 1967:140). The revenue due from a village was, however, fixed after measurement of the fields and the Jātakas refer to officers who measured the land with ropes (Bk.III:no.276). Once the sum was decided, it was upto the village elder to procure it by whatever means he could from the individual cultivators. The Milindapañha (Horner tr.I:206) mentions the gāmika or headman in charge of the village. This system obviously did not apply to crown lands where the king was the sole owner.

Kauṭalya refers to the gopa and the sthānaka as revenue officers
and assistants of the samāhartr, but nowhere do they appear to be involved in the actual collection of land revenue. It seems that dues were ordinarily brought by the assessees themselves, but the recalcitrant were dealt with by the pradeṣṭr (II.35.7). 'Dividing the janapada into four divisions, the samāhartr should cause to be entered into a register, the number of villages, classifying them as jyestha-madhyama-kanistha (recording) this is exempt from taxes, this provides soldiers, this much is (the revenue) in grain, cattle, cash, forest produce, labour and produce in place of tax'(II.35.1). The gopa was in charge of five to ten villages and kept a detailed record of the size of the boundaries, forests, roads, grants and exemptions (II.35.3).

A study of Sātavāhana inscriptions shows that the king often donated the revenue of a village to a monastery or a brāhmaṇa (Burgess,1883:60f) and this could have been feasible only in circumstances where the revenue was collected for the village as a whole. The village again figures as a separate entity in the list of donors and an ornate arcade in cave XVIII at Nasik is recorded as the gift of the village of Dhambhika (Senart,1905-6:92).

At times inscriptions record donations of fields situated in different villages (Burgess & Indraji,1976, reprint:nos.9, 13,14,15,17,18) and at times partially owned by the donor as in the case of the Adhapanakhetiya (Burgess,1883:no.15). This situation may have arisen out of certain inheritance laws which decree that he who has no son may make an appointed daughter (putrikā) his heir and her son will inherit his maternal grandfather's property (Manusmṛti.IX.127) or else if an appointed daughter died by accident without leaving an heir, her husband could take the estate (ibid.IX.135). Similarly the mother's property could be equally divided between uterine sisters and brothers (ibid.IX.192).
No Sātavāhana record specifies the amount of revenue claimed by the state, though Gautamiputra Sātakarni is referred to as dharmopajitakaraviniyogakarasa, i.e. one who never levied taxes, but in conformity with dharma (Senart, 1905-6: no.8). The Karle inscription of Pulumāvi records the gift of a village free from all taxes - sakarukarosadeyameya (Senart, 1902-3: 71). Ghoshal considers this interpretation doubtful and insists that there is no mention of a regular tax levied upon village lands (1973: 44). There seems to be no justification for this view and it is apparent that the donation of villages makes over not only revenue and administrative rights, but also economic functions as for instance the manufacture of salt. Immunities (bhikkhuhala parihāra) mentioned in the Nasik inscriptions of Gautamiputra Sātakarni (Senart, 1905-6: nos. 4, 5) and Vāsiṣṭhīputra Pulumāvi (ibid.: no. 3) include apāvesa (immunity from being entered by the king's soldiers for imposing any sort of fees), anomasa (royal officers were prohibited from taking possession of anything belonging to the village), alonakhādaka (immunity from being dug for salt) and aratha savinayika (exemption from the police and the magistrate of the district). The first - apāvesa - has been taken to mean that either the village folk had to pay some contribution of money or supplies to soldiers when they halted or passed through villages or that the soldiers were connected with the collection of revenue (Jha, 1967: 33).

In the Jātakas also, kings are described as transferring revenue to the donees. In the Avariya jātaka, the king donated a village whose revenue was a hundred thousand pieces (Bk.VI: no.376). Elsewhere too (Bks.III: no.289; XXI: no.533; XXII: no. 546), the king is shown as expressing his pleasure by granting to a subject the revenue from a village. This was calculated on the basis of a survey of the fields conducted by the king's officers (Bk.XII: no.467). At times the revenue was paid in kind and jātaka no.276 (Bk.III) describes the Master of
Granaries sitting at the door of the granary 'causing the rice of the king's tax to be measured'.

Later Vedic literature refers to donations of both land and villages (Sircar, 1979:14), though among the earlier epigraphs recording such donations are those of the Sātavāhanas. The Nanaghat inscription of Nāyanikā mentions the gift of thirteen villages as daksinā during the performance of Vedic sacrifices (Burgess, 1883:60f). Gautamīputra Sātakarni conferred a field measuring 200 nivartanas¹ in the village of western Kakhadi, previously enjoyed by Usavāda to the bhikkhus residing on the Trirāṣīmi hill and grants immunities to them (Senart, 1905-6: no.4). In a subsequent epigraph, the king exchanges this field for another measuring 100 nivartanas from the rājakam khetam as the former was neither tilled nor inhabited (ibid.: no.5).

Usavāda seems to have been equally generous. He donated sixteen villages to the gods and the brāhmaṇas. He also bought for 4,000 kāhāpanas the field which Asvibhuti, the brāhmaṇa had got from his father. From this field, food was to be procured without distinction, for all dwelling in the caves at Nasik. Another 32,000 coconut trees were given by him at the village Nānangola to the congregation of Carakas at Pīṃḍītaṅkāvāda, Govardhana, Suvarṇamukha and Rāmatīrtha in Sopara (Senart, 1905-6:78-80). A second inscription at Nasik records the gift of 8,000 coconut trees at the village of Chikhalapadra in Kāpurāhāra (ibid.:82-5), while an inscription at Karle records the gift of the village of Karajaka to the Sangha of monks residing in the lena (Burgess & Indraji, 1976, reprint:33).

¹Baudhāyana suggests that a holding of 6 nivartanas is sufficient for a peasant family (Sharma, 1966:62). R.S. Sharma regards one nivartana as equal to \( \frac{2}{3} \) hectare (ibid.:73), while Niyogi equates it to approximately one hectare (1962:97).
Another king known to have made donations was Vāsiṣṭhīputra Pulumāvi who granted the gāma of Pisajipadaka for the embellishment of the cave given by Gotami Balaśrī to the Bhadāvanīyas (Senart,1905-6:no.2). An epigraph engraved in continuation of this inscription records that the village of Sudisana was taken back by the king and in its place the gāma of Sāmalipada was granted together with all immunities (ibid.:no.3). These villages are, however, different from those mentioned in the earlier record. In contrast to these royal records, an inscription at Karle mentions the gift of a gāma by Mahāratrī Somadeva to the Valuraka Sangha (ibid.: no.85).

Thus the Sātavāhanas initiated the practice of donating villages as early as the first century B.C. It is understandable that this was the prerogative of members of the royal family only, yet there is a singular absence of land grants by lay devotees at this time. It is not possible to identify the villages mentioned in the epigraphs, but as six of the ten inscriptions are at Nasik, most of these villages may have been located in its vicinity. Nasik occupied a strategic position in the fertile upper Godavari valley (cf.,p.35) and formed a part of the Govardhanāhāra, the seat of administrative authority being Govardhana, 9 kms. west of Nasik (Senart,1905-6:82-5,88).

Nasik may have witnessed the first attempts by the Sātavāhanas to exploit an agricultural base in the western Deccan. (The grants of villages to the monasteries and the brāhmaṇas may be seen against the backdrop of the expanding rural economy at this time and the need of the state to monitor new settlements and their development. Religious institutions - of which monasteries were the most developed - were amply suited to the consolidation and integration of agricultural settlements, on account of their ability to forge channels of
communication. These channels could not only be used to popularise improved methods of agriculture and cropping patterns, but also to reinforce the authority of the state. It was perhaps for this purpose of supervising and maintaining control that the Sātavāhanas gifted villages to the Sangha.) As corroborative evidence a Nasik inscription of Gautamiputra Sātakarni may be cited (Senart,1905-6:no.5). This offers to the bhikkhus 100 nivartanas from the rājakam khetam in exchange for a field in Kakhaḍī village, as the field was neither tilled nor the village inhabited.

These early attempts by the state to use the agricultural potential of the western Deccan led to agricultural developments in other fertile tracts of the region, i.e. the Ulhas basin on the west coast and the upper Bhima and Krishna valleys. Examples from ancient societies show that (there was a close connection between landed wealth and commercial capital and it was the possession of the former that made large scale investment in trade and money lending possible) (Raschke,1978:645). From the first century A.D. onwards, there is an increasing number of inscriptions recording donations of land by lay devotees and later on by the bhikkhus as well. The first century A.D. was obviously an era of prosperity for the Sātavāhanas, principally the reign of Gautamiputra Sātakarni. This was also the period when the second phase of rock cutting commenced after a lull of seventy years (Dehejia,1972:148).

Interestingly, a majority of the inscriptions recording donations of land are at Junnar. Situated at the head of the Nanaghat, Junnar lies in a broad flat valley on the right bank of the Kukdi, a tributary of the Ghod (cf.,p.29). As such investment in land seems to have been a natural corollary. Fifteen nivartanas of land in Puvānada gāma were gifted by Palapa to the Aparājita sect (Burgess & Indraji,1976,reprint:
Another inscription mentions twenty nivartanas in Vadālika gāma and nine nivartanas in Kataputaka gāma donated by Āduthūma, the Śaka (ibid.:45). In Mahāveja gāma, twenty-six nivartanas were given for planting jambu trees and three nivartanas at the foot of the hill to the Sidhagāna of the Aparājītas. The inscription at this point is damaged and it is not known to whom the remaining two nivartanas of land were donated (ibid.:46). Another fragmentary record mentions two nivartanas of mango trees (ibid.:47). In Valāhaka gāma twelve nivartanas were given for the plantation of karanīja (timber) trees, while some land was donated in Seuraka gāma (ibid.:48); in Sirikadaka, four nivartanas were given, in Kadaka gāma twelve and in addition another eight were gifted for a jambu plantation (ibid.:48).

Elsewhere the donation of land is less frequent. An inscription in cave VIII at Nasik dated to A.D. 100 (Dehejia,1972:160) mentions that the cave was a gift of Mugudasa of the lay community of Cetikas. To that cave Dhamanandin gave a field (kheta) in western Kanahahini and the income from the field was to provide clothes for the monks living in the cave (Senart, 1905-6:77). To the later Mahāyāna period belong inscriptions 11 and 12 at Kuda, which record the gift of the Chendina field for expenses for lamps. The donor surprisingly is a Sākya bhikṣu by the name of Sanghadeva (Burgess & Indraji,1976, reprint:11).

At Kanheri, a majority of the donations are in the form of perpetual endowments of money (akhayanivi) ranging from 200 to 1600 kāhāpanas (Burgess,1883:nos.17,21,22,26,27,28) and land grants are comparatively few. A negama of Kalyan is known to have made a perpetual endowment of a kheta in the village of Saphau. Out of the revenue from land, money was to be given to the monks residing in the cave (ibid.:no.18). Another negama from the same place gifted a bigabha house.
and made an endowment of a house (nivesana) in the Mukudasivayiva (ibid.:no.16). A complex financial transaction seems to be recorded in inscription no.15 where a kheta in village Māgalathāna of an adhapānakhetiya (part-owner) was donated for the benefit of the community and out of the revenue, money was to be provided for the clothing of the monks (cf., p.127).

There seems to have been an elaborate procedure for recording land grants at this time. The donations were made verbally by the king (Senart,1905-6:nos.3,4,5) or proclaimed in a nigarasabhā (ibid.:82-5); these were then written down on a surface of either copper or cloth by an officer such as the amāca (amātya) (ibid.:no.4), mahāsenapati (ibid.:no.3), or a door keeper (ibid.:no.5) and delivered to the donees. It is this delivery that is recorded in the cave inscriptions. Some epigraphs also mention a 'keeper of records' who must have been in charge of the documents (Senart,1902-3:69).

Oh a superficial level, one would attribute the attainment of religious merit as the motive for these grants from merchants and disciples, though the large amount of money flowing into the monasteries would question such a claim. There is increasing evidence to suggest that the bhikkhus were not averse to participating in commercial transactions. Presumably perpetual endowments of money were being invested by the monasteries either in land speculation or in commercial ventures with interest being earned on the capital. What use would plantations of fruit trees and timber be to the Sangha, unless they ensured a steady income?

The Nasik inscription of Nahapāna (Senart,1905-6:83) and numerous passages at Kanheri (Burgess,1883:nos.15,18,21,28) allude to kusānamūla (expenses for minor necessities) being given to monks during the rainy season. This practice was
against the Buddhist tenets. Inscriptions at Kanheri speak of money endowments made by ascetics (pavajita) and nuns (pavaitikā) (Burgess, 1883: nos. 17, 21, 28) as well as gifts of caves and cisterns (Lueders, 1912: nos. 1006, 1014, 1016, 1020). Elsewhere, e.g. as at Kuda (Burgess & Indraji, 1976: nos. 4, 5, 8), Karle (ibid.: nos. 3, 12, 15, 18, 22), Ajanta (ibid.: nos. 16, 21, 23) and Nasik (Senart, 1905-6: no. 7), such donations include images, vedika (railing) and cisterns. These inscriptions are good indicators of conditions that develop in the later Mahāyāna period when bhikkhus are known to have made donations of land, e.g. the Kuda inscription recording the grant of the kheta of Chendina by the Śākya bhikṣu Sanghadeva (Burgess & Indraji, 1976, reprint: nos. 11, 12).

One explanation for this could be that the monks and nuns continued to retain their worldly possessions even after joining the Sangha. The Devadhanna jātaka narrates the story of Sāvathivāsi kir'eko kutumbiko who joined the Sangha. 'When he was joining, he caused to be built for himself a chamber to live in, a room for fire and a store-room; and not until he had stocked his store-room with ghee, rice and the like did he finally join. Even after he had become a monk, he used to send for his servants and make them cook whatever he liked to eat and dwelt aloof on the outskirts of the monastery' (Bk. I: no. 6).

At the same time, the Jātakas denounce bhikkhus indulging in trade and other occupations and amassing wealth. Jātaka no. 179 (Bk. II) speaks of a large number of bhikkhus who lived by being physicians, runners doing errands on foot or by exchanging alms for alms (giving a share of alms on one day and receiving the like the next day, to save the trouble of seeking alms daily); another tells of a bhikkhu who had his mother to support (Bk. II: no. 164). Some monks begged materials for houses for themselves from all and were forever eating
(Bk.III:no.253). A monk used to plant vegetables and herbs in a corner of the park and by selling these to the market gardeners, he amassed great wealth (Bk.XV:no.505). 'The Elder Ananda once received a present of a thousand robes. The king on hearing of this thought: the Supreme Buddha allows only three robes. Ananda is doing a little trade in cloth, I suppose' (Bk.II:no.157). Kautilya goes a step further and rules that the bhiksuki or parivrājikā should be used for spying in the houses of high officers, where she finds easy access because of the honour shown to her in the palace (I.12.1-5). Heretical sects could also be used for the purpose.

The Vinaya Pitaka (Cullavagga.XII.1.1) states the use of gold and silver was not allowed to the Sakyaputtiya samanas. They were neither allowed to accept it nor to take charge of it. About a hundred years after the death of the Buddha, the monks of Vaisali had begun to accept and even to solicit cash gifts. This caused a scandal among other monks who convened a Council at Vaisali and condemned the new usage, stating that the monks were to accept nothing except food or small articles for immediate personal use.

This evidence of increasing participation by Buddhist monks in commercial and other transactions in defiance of Vinaya rules and tenets supports our premise that the social environment at this time encouraged economic growth. So far we have dealt with the data for agricultural production and argued for the existence of an agricultural base in the western Deccan which could be used to diversify into trading ventures. The other aspect of production is the manufacture of handicrafts. The mention by Pāṇini of grāmāsilpin (VI.2.62) and grāmatakṣa (V.4.95) and Patañjali's enumeration of five categories of village craftsmen (I.1.1.48) has been erroneously taken to suggest the prevalence of the jañāni system and the self-sufficiency of the Indian village. It is not necessary
here to deal with the views of Marx (1965:72) either on the Asiatic mode of production and the union of agriculture and industry as these were largely based on a misinterpretation of historical facts.

4.3 Organisation of Trade: The village was neither self-sufficient nor self-contained. Unfortunately no detailed records exist for this period and it is difficult to interpret information on the mechanism of trade from inscriptions recording donations. Considerable reliance has, therefore, to be placed on literary sources.

A study of the Arthasastra would reveal what Polanyi would describe as 'administered trade'. Much of the trade was under the control of the state supervised by the panyādhyakṣa. It was he who fixed the prices of various commodities (IV.2.36) and allowed a certain percentage of profit to the traders. Kauṭalya decrees that 'state goods called rajapanya may be svabhūmija (indigenously produced) or parabhūmija, i.e. produced in foreign lands and imported along a water-route or a land-route (II.35.12). Indigenous goods belonging to the state may be sold in one place, i.e. the capital; foreign goods are to be sold in different centres. State goods are to be sold by state servants, but in this the aid of foreign traders may also be sought'(II.16.14-16).

Besides the state machinery, there were traders with their caravans who were afforded protection when they stayed in villages (Arthasastra,IV.13.7-12). The sale of goods at their place of production was banned and a śulka or duty was collected at the city gates (II.16.18-24). Similarly, traders had to pay duty at ports as well and when travelling by the king's ships had to pay hire charges for the voyage (II.28.4). Kauṭalya praises frontier officers for maintaining trade routes and bemoans profiteering by traders who cooperated with
each other in order to raise or lower prices making substantial profits (VIII.4.35).

A specialised political authority implies control and coordination of external exchange relations, for a political authority must have the ability to mobilise resources to support its claim to power. Substantial sources of revenue are the customs and other levies collected along political boundaries. A parallel situation prevailed in the medieval period at the time of early European contact with India. In-coming vessels, whether from Europe, other Asian countries or from other political entities on the Indian subcontinent established their social status by the donation of a prestatory gift to the ruler or his representative, after which negotiations could begin. Prices for whole cargoes and categories of goods were fixed and embodied in treaties or contracts and only those goods acceptable to the administration could be imported or exported. Once the terms were settled, foreign merchants made over their cargoes to local middlemen who then transported the goods to market places. Foreign merchants were sequestered in specific quarters and were not allowed to participate in local market transactions (Belshaw, 1969:91).

The Jātakas describe an economy which was only marginally under state control, and had a complex mechanism of trade, with commercial transactions at different levels governed to a great extent by the nature of the commodity handled. Thus, for articles of royal consumption it was the king who decided the price. The Tāndulanāli jātaka (Bk.I:no.5) narrates the story of the Bodhisattva who was a valuer (agghakāraka) of the king of Varanasi. He used to value horses, elephants, jewels and gold and paid to the owners of the goods the proper price as he had fixed it. Two other jātakas (Bk.II:no.158; Bk.III:no.254) refer to horse dealers of the north country (uttarāpathaka- assavānija) who used to transport horses to Varanasi for sale.
Commodities for the consumption of city dwellers were transported and traded by merchants in caravans. The Bodhisattva was born in a satthavāhakula in Varanasi and used to journey to the east and to the west with 500 carts driven by oxen. The roads were rough, wares were bartered and haggling over prices was difficult work (Bk.I:no.1). To guide the caravans across the desert, merchants relied on the desert pilot (thalaniyāmaka) who was well versed in the knowledge of the stars (Bk.I:no.2). Similarly merchants had to rely on guides through the forests as well. Once the Bodhisattva was born into the family of a forester. When he grew up, he took the lead of a band of five hundred foresters and lived in a village at the entrance to the forest and used to hire himself out to guide men through it (Bk.III:no.265).

In the Amarakośa (II.6.42; III.9.78) a sārthavāha is described as the leader of merchants who invested an equal amount of capital and carried on trade with outside markets, travelling in a caravan.

There are several ways described in the Jātakas by which merchants could purchase or obtain goods. When a ship arrived in a port, merchants converged there to buy the goods and often had to pay money in advance to secure a share in the cargo of a ship (Bk.I:no.4). Alternatively a merchant could procure goods by mutual agreement with another living along the border. Once the Bodhisattva was a very wealthy merchant (setthi) in Varanasi and had as a correspondent a border merchant whom he had never seen (paccantavāsiko setthi adittha-sahāya). There came a time when this merchant loaded 500 carts with local produce and gave orders to the men in charge to go to the Bodhisattva and barter the wares in his shop for their value and bring back goods received in exchange (Bk.I:no.90).
A third way of procuring goods was by directly approaching the producer. 'In Varanasi, once the Bodhisattva gained his living as a trader (vānijjāva jīvikam kappeti). In those days in a border village in Kasi there dwelt a number of carpenters. The Bodhisattva reached the village by way of trade (Bk.I:no.44). Similarly, certain traders (vānija) of Varanasi made a journey to Ujjain for trade (Bk.II:no.243).

Just as there were land-traders, there was another category of merchants called sea-traders who earned a living by jala-pathakammikena (Bk.I:no.4; Bk.X:nos.439,442; Bk.XI:no.463; Bk.XVI:no.518). Panini states that merchants were known as dvināvadhena (one having two boats) or pañcanāvaprīya (one sailing with five ships) (Agrawala,1953:155). An inscription at Kanheri records the gift of the sagarapaloganas interpreted as a community of traders by sea (Burgess,1883:no.23). In the Baveru jātaka (Bk.IV:no.339) the merchants (vānijā) of Varanasi brought a crow and a peacock in two separate voyages to the kingdom of Baveru, where they sold the former for a hundred pieces and the latter for a thousand. A prince decided to make money and to carry on trade. Having got together his merchandise, he put it on board a ship with some merchants bound for Suvarṇabhūmi (Bk.XXI:no.539).

The Periplus provides further evidence of sea trade by Indian merchants and while describing the ports of Africa and those at the entrance to the Red Sea states that ships were fitted out from places across the sea, from Ariake and Barygaza, bringing to these market towns their products like: wheat, rice, clarified butter, sesame oil, cotton cloth and girdles and honey from the reed called sacchari. 'And some traders sail direct to these marts; others exchange their goods while sailing along the coast. The country is not ruled (by one chief), but each mart is under its own chief' (Huntingford, 1980:sec.14). An inscription found in the temple of Pan at
Berenike informs us that there was an Indian traveller named Subahu who sailed between India and Alexandria (Moti Chandra, 1977:120). Sea trade was by no means oriented only to the west; there is evidence of contact, possibly commercial, between central India and Sri Lanka as well. In Sri Lanka, two inscriptions in the early Brahmi script have been found at Andiyagala on the northern bank of the Modaragam Aru. One of them records the construction of a flight of steps by a person who describes himself as 'the mariner of Bhojakataka', the site having been identified with Bhatkuli (cf., p.108). Since the place where the Modaragam Aru flows into the Indian Ocean is in the coastal area of north-western Sri Lanka known for its pearl banks, it is likely that the nature of the mariner's visit may have been commercial (Paranavitane, 1970:8).

Retail outlets for goods acquired by these land and sea-traders were provided by shops in urban centres. The Jātakas mention an ivory workers' street (Bk. I: no.72), dyers', perfumers' and florists' shops (Bk. X: no.454). Together with these there are references to the hawker who either bartered his merchandise for trinkets or else sold it against cash payment (Bk. I: no.3). This itinerant trader is likely to have handled articles of a more prosaic nature needed by the common people, such as pots and pans.

For their requirements of essential services, people approached craftsmen who resided in villages on the outskirts of a city and this arrangement is reflected in the Jātakas. The carpenters (vaddhakī) from a village near Varanasi used to claim that they would make a bed or a chair or a house and after receiving a large advance they proved unable to provide the goods (Bk. XII: no.456). The Bodhisattva was born in Kasi in a smith's family (kammārakule). Not far from their village was another smith's village (kammāragama) of a thousand
houses. The principal smith (kammārajeththa) was a favourite of the king, rich and a man of great substance. People came from the villages around to have razors, axes, ploughshares and goods made (Bk.VI:no.387).

Literary texts thus make a distinction between a general trader (vanij) and the setthi who was possibly a financier; as opposed to these was the sarthavaha or the caravan leader who either transported his own goods or those of other merchants. The setthi in the Jātakas was a man of immense wealth and hence constantly in the retinue of the king. References to rice fields of setthis imply that they were both traders and landowners. Pāṇini (III.3.52) refers to traders as vanik and makes a distinction between the krayavikrayika (whose main occupation was buying and selling, IV.4.13), the vasiṇka (who invested his money in business,IV.4.13), the saṃsthānīka (a member of a guild,IV.4.72) and the dravyaka (trader on outward journey carrying merchandise for sale) (Agrawala,1953:238).

It is hazardous to generalise from literary texts pertaining primarily to the Gangetic valley as conditions were by no means similar between the Gangetic valley and the western Deccan. By the beginning of the Christian era, the former had been extensively settled and had already undergone the experience of the centralised administration of the Mauryans, while in the case of the latter, the Sātavāhanas were the first local dynasty to rule the western Deccan. Besides there are indications for the existence of an earlier rudimentary exchange network in the Deccan which the Mauryans possibly exploited.

The inscriptions of the Sātavāhanas indicate merchants by the use of terms such as the setthi (Burgess & Indraji,1976, reprint:3,16,19), the vanij (ibid.:67), the satavāha or
sārthavāha (ibid.:19-21) and the negama (Burgess,1883:80-1; Senart,1905-6:75). The first three terms are known from the Jātakas as well, the last denoting persons connected with a nigama. A nigama has been described as a gāma composed of members of various groups more or less integrated (Wagle,1966:22). Others do not regard a gāma and a nigama as synonymous and translate the latter term as a market town on the evidence of the Amarakosā (II.9.78) which refers to a merchant as a naigama. Nigamas such as those of Taxila and Kausambi are known to have issued coins under their own authority (Ghosh, 1973:46).

The craftsman formed the basis of handicraft production. The Arthaśāstra (IV.1.2-3) makes a distinction between two types of craftsmen: the karuśasitr who appears to be a master craftsman employing a number of artisans on a wage to do the actual work for the customer; and the svavittakāru who was probably an artisan working independently with his own capital and workshop and states that the craftsman should accept entrusted material with the guarantee of the guild. The distinction appears in the Jātakas as well where mention is made of the master carpenter (jetthaka, Bk.XII:no.466), master smith(kammāra-jethaka), master garland-maker (Bk.VII:no.415) and master mariner (Bk.XI:no.463). At the same time there are references to apprentices, e.g. a potter's apprentice (rajakumbhakarassa antevāsika, Bk.XX:no.531). Possibly a similar distinction is meant by Pāṇini also when he distinguishes between a carpenter earning his living by serving the village and one working in his own workshop (V.4.95), though some scholars have somewhat erroneously argued for the prevalence of the balute or jajmani system on the basis of this evidence (Gopal,1970:763-8).

Literary references to guilds at this time are of a general nature and the number eighteen commonly referred to (Jātakas,
Bk.XXII:no.538) seems to be more in the nature of a stereotype description rather than based on realistic grounds. A treasurer in the Jātakas (Bk.X:no.445) was made the judge of all the merchant guilds (senī), while elsewhere there is a reference to a quarrel between two ministers in the service of the king and at the head of the guilds (senipamukha, Bk.II: no.154), but nowhere are the eighteen guilds separately enumerated. It would thus seem that though the guilds had become rich and powerful at this time their number was not fixed.

Inscriptions of the western Deccan record investments made with the different guilds: the guilds of bamboo workers (vasakara senī) and braziers (kāsakara senī) mentioned at Junnar (Burgess & Indraji,1976,reprint:47); and the guilds of weavers (vāthavāsa śrenī) potters (kūlārika), dealers in water machines (odayantrīka) and oil millers (tilapiśaka śrenī) dwelling at Govardhana (Senart,1905-6:82-5,88). Guilds also made donations and a Junnar inscription records the gift of a seven-celled cave and cistern by the guild of corn dealers (dhanika senī) (Burgess & Indraji,1976,reprint:54), while at Pitalkhora a damaged epigraph possibly records a gift by a guild of bankers (ya.. athi senī) (Deshpande,1959:77).

Other professionals mentioned in inscriptions, however, do not seem to be organised in guilds, or else the donors were master craftsmen; in which case it is surprising that they do not mention it. In all likelihood then, they were ordinary workers and included jewellers (manikara, Burgess,1883:82), goldsmiths (suvanakāra, Burgess & Indraji,1976,reprint:53-4), those who examined coins (Kosambi,1981a:38) or treasurer (heranika, hiramakāra, Burgess,1883:75,78; Deshpande,1959:82), blacksmiths (kāmara, Burgess,1883:66), ironmongers (lohavaniṣ, Burgess & Indraji,1976,reprint:16), carpenters (ibid.:30), perfumers (gadhika, ibid.:29,39), stone masons (selavadhaki, Burgess,1883:76), fishermen (Senart,1905-6:76), gardeners
The pattern of trade that emerges suggests that craftsmen either lived in specialised villages in the vicinity of cities or else organised themselves into guilds which also acted as bankers and gave an interest on investments; a third alternative was that a craftsman could work on his own with a number of apprentices.) In the *Arthasastra* (II.23), there is a reference to the king's textile factories where slaves were employed. An analytical study, however, shows that the use of slave labour did not play any significant role in agriculture or handicraft production (Bongard-Levin,1978:199-227). The goods thus produced were either sold in retail shops in urban centres or transported to market centres and exchanged in wholesale transactions. Merchants also traded extensively by sea with centres along the Arabian coast. At the same time merchandise was exchanged at ports on the Indian coast, supplemented by the looping trade. At the bottom of the scale was the itinerant trader who hawked goods from place to place. In certain cases the itinerant trader may have been a craftsman also and hence sold his own goods.

*Weekly markets* and *fairs* may have also provided venues for commercial transactions as was the case at the turn of the century. 'The market days are known throughout the neighbourhood and all who have anything to sell or buy crowd to the market that is usually held in some open space in the village. Almost everything required by the people: grain, salt, spices, pepper, bangles, cooking vessels, coarse cloth and in some places ponies and cattle are offered for sale. Small villages generally depend on weekly markets for their supplies. The dealers have fixed shops in some neighbouring town or village and go from one market to another. Generally one
member of a family travels, while another stays at home and minds the shop' (Maharashtra State Gazetteer, Nasik district; 1975:517-8). Unfortunately no such details are available for the period under study and there is only an occasional reference to fairs. 'Once the Bodhisattva lived as a drummer in a village. Hearing that there was to be a festival at Varanasi and hoping to make money by playing his drum to the crowds of holiday makers, he made his way to the city' (Jātaka, Bk.I:no.59).

4.4 Items of Export: A better idea of the trade mechanism could be had if one could enumerate commodities in demand at this time and possibly indicate production and retail centres. A useful guide in this regard is the Periplus. It refers to agricultural products like wheat, rice, clarified butter, sesame oil and honey (sec.14) and lac (sec.6) which were exported from Barygaza to Cape Guardafui and Moscha and exchanged for frankincense, tortoise shell and rhinoceros horn (cf.,p.139). Trade was also carried on by those who called at Dioscorida from Barygaza and Damirike or Limurike (Tamil country), bringing rice, wheat, Indian cloth and a few female slaves (Periplus;sec.31). We shall deal with imports subsequently, here we should like to indicate that these agricultural products were perhaps the only essential items exported at this time from the western Deccan and were possibly required for the sustenance of trading communities settled along the southern coast of Arabia and the Somali coast of Africa (ibid.:secs.6,14).

Sesame was cultivated partly on account of the oil which was extracted from the seeds and partly for the seeds themselves. Strabo mentions the ancient use of sesame oil in Mesopotamia for anointing the body (Geography,XVI.1.20), while sesame seeds were extensively used as spices (Miller,1969:87). Raschke (1978:651) has shown that sesame was produced in
considerable quantities in Egypt, Syria and Babylonia and there is no reason to assume that it was exported in large quantities from India to Rome. It is more likely that it was meant for local consumption along the Arabian and East African coasts.

A majority of the items shipped from the west coast of India were sent in their raw or unfinished state. These may be divided into the following categories:

- Bulk items like ebony, teak, blackwood, sandalwood, bamboo, tusk for ivory and iron;
- Easily transportable merchandise including aromatics such as spikenard, bdellium, costus, lycium and saffron;
- Items treasured for their medicinal value such as long pepper, malabathrum and cinnabar;
- Dyes such as indigo and lac;
- Semi-precious stones like agate, red jasper, carnelian and onyx; and perhaps once in a while an exotic bird such as the peacock (Periplus: sec. 49). About the only products that required manufacture were textiles sent to Adulis at the mouth of the Bay of Adulis. These included the broader Indian cloth called monakhe; cloth called sagmatogenai; belts; garments called gaunakai; mallow cloth and a little muslin (ibid.: sec. 6).

Schoff (1974:73) translates monakhe as 'singularly fine cloth' and sagmatogenai as 'the sort used for stuffing' and states that these words may be Greek corruptions of some Indian trade names. Mallow cloth was a coarse cotton cloth dyed with a preparation from a variety of the hibiscus native in India. Miller has provided an alternative categorisation of the commodities exported from Bharuch as spice commodities and non-spice commodities (1969:202).

Raw silk, silk yarn and silk cloth were brought from China through Bactria to Bharuch and shipped to Arabia where these were used in making embroidered and silk fabrics for the Roman market (Periplus: sec. 64). It is uncertain at what stage
the production of silk from domesticated silk worms spread to India\(^1\); references to \(\text{cīnāṃsūka}\) in the \textit{Arthasastra} (II.9) are taken to indicate the presence of Chinese silk obtained through commercial channels. The earliest document specifically referring to a domestic silk industry in India is the Mandasor inscription of the Gupta period which mentions the repair of a temple by the silk weavers' guild (Sircar, 1964: 294-307).

The term 'ksauma' occurs several times in Sanskrit and Pali literature dated to the Early Historical period and has been translated as a variety of silk, though in later literature it is used for linen (Moti Chandra, 1973: 6). Unambiguous evidence comes from Dura Europos where microscopic analysis of the fibres has shown that at least one of the silk textiles found at the site is of Indian origin (Raschke, 1978: 623), thereby suggesting the export of Indian silk together with that obtained from China.

Alternatively these export commodities can be divided into two categories on the basis of their destination with a marked difference between the two: those shipped to the Persian Gulf, southern Arabia and Cape Guardafui; and those meant for the Roman market. While the first category included raw materials like iron, copper and silk, to be reworked and sold as finished products, dyes like lac required for colouring the silk, essential foodstuffs and cloth, the second category comprised mainly luxury items. Timber exported from Bharuch probably found its way both to the Persian Gulf and the Mediterranean markets. The \textit{Periplus} (sec. 36) states that from Bharuch large vessels were regularly sent to the market towns of Persia including Oman and these carried sandalwood, timbers of teakwood and logs of blackwood and ebony. Teak thus imported into the Persian Gulf towns may have been used for ship building as Arabia does not produce wood suitable for building ships (Hourani, 1963: 89).

\(^1\)A thread from Nevasa Chalcolithic period is of silk and cotton (Sankalia, 1974: 486)
Pliny states that ebony was exhibited at Rome by Pompey the Great on the occasion of his triumph over Mithridates (Natural History, IV.12.9) and bamboo was used in Roman temples (IV.16.15). 'The cost of perfume was more than 400 denarii per pound... Emperor Caligula had the bath tubs scented and so also later did one of the slaves of Nero... In the camps the eagles and standards were anointed on holidays' (Rackham tr., 1938:IV.13.4). Cane sugar was employed as a medicine and indigo was used to dye clothes purple (IV.35.27).

The distinction between these two categories of trade was not only confined to a distinction in commodities, but extended to the nature of the trade as well. Indian vessels shared a good deal of the commercial traffic between the ports on the west coast and the Arabian coastline as far as the entrance to the Red Sea. Beyond that trade was monopolised first by the Arabs and later by the Greeks from Egypt (Schoff, 1974:88). Strabo in his Geography (XVI.4.24) states that from Myos Hormus merchandise was conveyed on camels to Coptus of the Thebais situated on a canal of the Nile and from there to Alexandria destined for the Roman markets.

Whereas Greek and Roman ships were built with wood and nails, Arab vessels were constructed of planks of wood fastened together and to the keel by means of stitches of either cords of coir or threads of palm fibres. Indian ships also had a similar construction, the stitches being clearly visible in one of the Sanchi sculptures. On the evidence of medieval Arab writers the normal speed of Arab ships may be taken as between two and four knots. On the other hand, Greek and Roman merchant vessels often attained six, seven or eight knots (Hourani, 1963:110). Sails were woven from the leaves of the coconut or the palm tree or made of cotton sail cloth (ibid.:100). The Periplus (sec.60) mentions Indian trading vessels called sangara and kolandiophonta. Schoff correlates
the former with the *sangadam* (Tamil) a double canoe made from two great hollowed out tree trunks. This type of craft is now restricted to rivers. Kolandiophonta described vessels of great bulk employed for overseas voyages to Malaysia. These must almost certainly have been two-masted vessels probably equipped with stout outriggers and counterparts of the present day Sinhalese *yatra oruwa* (Hornell, 1918-23: 215).

A double mast ship flanked by conch and lotus appears on the lead coins of Vāsiṣṭhīputra Pulumāvi found along the Andhra coast (Sarma, 1980: 99). This type was revived by Yajña Śrī and these coins are found both along the east coast as well as at sites in the western Deccan, such as Pune and Brahmapuri (ibid.: 103). Further east, sculptures depicting royal pleasure boats are found at Amaravati (Sivaramamurti, 1942: 141). A rather unusual representation of the boat form is to be found in the shape of a shell bead from Kondapur (Dikshit, 1952: 13).

Hourani (1960: 135-6; 1963: 28) has written on the flimsy construction of Arab vessels which could not withstand the south-west monsoon in the open seas, hence had to coast all the way along Arabia and Iran. This view has come in for considerable criticism by Van Beek (1960: 136-9) based on the research carried out by Bowen (1952: 201, 209) who has drawn attention to the fine construction, strength and flexibility of sewn boats when compared with modern dhows with nailed hulls. This type of construction does not limit the size of the craft either, as sewn vessels of approximately 200 tonnes are known, larger than the average modern ocean going dhow.

Bowen's study has shown that contrary to Hourani's view, the square sail was used by local vessels operating in the Arabian Seas and as these boats must sail before the wind and cannot beat into the wind, they had to use the south-west monsoon (ibid.: 217-8). Besides the nature of the south-west monsoon
has been greatly misunderstood. This monsoon is the prevailing wind system over the Indian Ocean and the Arabian Sea during the six month period from May to October. It is generally a fair weather trade wind, except along the coast of India where it is usually strong during part of this period. Along the Konkan coast, the rough spell lasts from the first week of June to mid-August. Thus the conclusion is inescapable that the south-west monsoon could be used by the ancient Arabian vessels during the rest of the period (Van Beek, 1960:138).

As raw materials formed a large part of the items for export, we should examine their place of origin and the resources required both in terms of money and transportation for their procurement. All the woods that were exported, i.e. ebony, teak, blackwood, sandalwood and bamboo are indigenous to the peninsular region of India, and the forests at one time teemed with wild life and as such tusks for ivory could be easily obtained, though Africa continued as the main source of the Mediterranean world's ivory supply (Raschke, 1978:650). Similarly wheat, rice, oilseeds and sugarcane grow well in the valleys of the western Deccan.

Teak is found in the Satpura range; in north Konkan; and at the foot of the Khandesh ghats (Watt, 1972:VI,1-14) and may have been exported from Bharuch and Kalyan. These ports may also have provided outlets for other varieties of woods like blackwood found in north Konkan and central India (ibid.:III, 7-10) and perhaps for bamboo which occurs abundantly in the Konkan and on the Western Ghat ranges. It is unlikely, however, that ebony and sandalwood would have been transported north from their habitat in south Konkan and the Malabar coast (ibid.:III,138-41; VI,461-7). Modern research suggests that the dry regions of eastern Indonesia, rather than south India, may have been the chief source of sandalwood in ancient times. The Periplus does not mention it as an export from the Malabar,
but records that large ships loaded with copper and sandalwood, timbers of teakwood and logs of blackwood and ebony sailed regularly from Bharuch to the Persian Gulf (sec. 36). It may have been an entrepot trade and this sandalwood came both from the Malabar and from Indonesia after trans-shipment through Sri Lanka (Miller, 1969: 86-7).

Kautalya specifies sixteen kinds of sandalwood (Arthasastra, II.11.43-55) but does not mention the name valgu which is derived from valgum, the Malabar equivalent of the Sanskrit candana. On the contrary, the earliest reference to sandalwood in western literature in the Old Testament describes the wood as being obtained from 'algum' or 'almug' trees, an obvious allusion to valgum (Miller, 1969: 62).

Of the aromatics, bdellium is obtained from a tree which grows in the arid zones of the Tapti basin and in Sind, Kathiawar and Rajasthan. From incisions made in the bark of the tree, a gum oozes in the cold season and is collected in vermiform pieces of a brown or greenish colour (Watt, 1908: 400). It is frequently mentioned in Sanskrit literature, including the Atharvaveda as guggulu. Long pepper is obtained from a perennial shrub native to the Konkan and Malabar coasts. The fruit is gathered when green and is dried in the sun for preservation. The dried unripe fruit and the root have long been used in medicine (ibid.: 891). Kautalya refers to two kinds of pepper: long pepper (mirica) and black pepper (pippalī, Arthasastra, II.15.20).

Western India has been described as the main source of another herb from which the indigo dye is made. Writing in the thirteenth century, Marco Polo states that it is gathered and after the roots have been removed, 'it is put into great vessels upon which they pour water and then leave it till the whole plant is decomposed'. This liquid is then put in the sun where it
dries and coagulates and is then divided into small pieces (ibid.:664).

The western Deccan is also a rich source of semi-precious stones such as agate, carnelian, red jasper and onyx. The Rajpipla mines near Bharuch are famous for agate and carnelian, though the Periplus states that carnelian was brought to Bharuch in great quantities from Paithan, while common cloth, all kinds of muslins and mallow cloth came from Ter (sec.51). The latter area is known as a cotton growing area and further corroboration of the statement may be seen in the recovery of a number of vats for dyeing cloth at the site (IAR,1968-69:17-8).

The Periplus (sec.6) states that from the inland regions of Ariake, Indian iron and steel was imported in the west. Contrary to the view that the source of the iron should be sought either in China or in the Chera kingdom, Schoff (1915: 233) has argued for the region around Hyderabad. The ores found in this area are principally rock magnetite and the steel produced from these was a good grade of charcoal crucible steel (ibid.:235). In any case the total amount shipped westward must have been very small (ibid.). Raschke (1978: 651) has criticised this theory on the grounds that carbon steel as a local product was not unknown in the Mediterranean region. A better identification would surely be cast iron, the production of which, while unknown in the west was familiar to the Chinese and some people of central Asia (ibid.). While conceding the existence of a Chinese source, Indian origins may also be postulated. As we have shown in the first chapter, excavations at Naikund in Vidarbha (cf.,p.50) have indicated the smelting of local iron ores as early as the seventh and sixth centuries B.C. (Deo,1982:5) and the artefacts found at megalithic sites contain a high percentage of iron with little impurities or admixture. That iron working continued to be a profitable occupation under the Sātavāhanas
as well is attested to by inscriptions which record the donation of a cave by a lohangla (Burgess & Indraji, 1976: Kuda, no. 20) and that of a path by a kamara (blacksmith, Burgess, 1883: Kanheri, no. 30).

Though much of the merchandise required for export was available locally, a few items had to be procured from elsewhere. These were, however, small items in terms of volume and presented no problems of transportation. Spikenard comes from a plant which grows in the Himalayas extending eastwards from Garhwal to Sikkim (Watt, 1972: V, 338-42). Pliny in his Natural History describes the plant at some length as its leaf 'holds a foremost place among perfumes', though at times it is adulterated with its root and other substances (IV.12.26). 'The price of nard is dependent on the size of the leaf' and the best quality Indian nard sold for 100 denarii per pound, while Gallic nard was considered inferior and fetched only 3 denarii for a pound.

There is an interesting passage in Dioscorides (De Materia Medica: I. 6) pointing to another source of spikenard west of the Himalayas which is corroborated by the Periplus (sec. 48) and Cosmas (Christian Topography, XI.332). There were two kinds of spikenard, Dioscorides wrote, 'the one Indian and the other Syrian; not that it is found in Syria, but because one part of the mountain where it grows turns towards Syria, and the other towards India'. This mountain appears to have been the Hindu Kush or perhaps the mass of the Pamirs together with their extensions westward in the Hindu Kush.

The Periplus speaks of three sources of the spikenard which came down from the mountainous north, through Poclais (Charsadda) and Ozene (Ujjain) and was shipped at Bharuch. The first source was Caspapyra (Jelalabad) on the Kabul river, the second the Paropamisus or Hindu Kush which would include
the 'Syrian' nard of Dioscorides and the third the region of Kabul. The spikenard from these areas was distinct from that which grew on the southern slopes of the Himalayas between Garhwal and Sikkim and it came across the country via Ujjain to Bharuch or was shipped at the Ganges town as Gangetic nard and brought down the east coast to the Cola region for final shipment from the ports of the Malabar (Periplus: secs. 48, 49, 56, 63).

Costus was obtained from a herb indigenous to the moist open slopes surrounding the valley of Kashmir. Trade in costus between Kashmir and the west coast existed early in this century as well, when roots of the plant were dug up, cut into small pieces and sent to Bombay for export (Watt, 1908: 980). The Periplus (sec. 49) included costus among the exports from Barbaricon and Barygaza, to which it came 'from the upper country', together with spikenard and bdellium. Kautalya (Arthaśāstra.II.11) refers to it in the category of poisons. In antiquity, it was used medicinally and as a source of incense (Miller, 1969: 84). Saffron has also long been cultivated in Kashmir; the flowers of the plant are dried in the sun and the three long stigmata picked by hand (Watt, 1908: 429). Malabathrum comes from an evergreen plant indigenous to the southern slopes of the Himalayas from the Sutlej to Assam, the leaf of the plant being important (ibid.: 310). Its present habitat includes north Kanara district, though it is doubtful if this provenance was known in Roman times. Cosmas made no mention of it, when describing the trade of Malabar in c. 527 A.D. (Miller, 1969: 74). The Periplus makes it clear that there was an important market area at the mouth of the Ganges to which there came from China not only silk, but also

1 There is a difference of opinion as to whether Costus speciosus which is abundantly found in the Konkan and Coromandel region is the costus used in ancient times, or whether it is Saussurea Lappa which is indigenous to the moist open slopes surrounding the valley of Kashmir. Watt favours the latter identification (1972: II, 579; VI, 481).
malabathrum (sec. 65). The identity of the Besatae tribe which carried on this silent trade continues to be uncertain (ibid.). Another product possibly of the north was lycium obtained from a plant which grows extensively in the Himalayan districts as well as in the Nilgiris in the south. A watery extract was perhaps prepared from the stem and root of the plant. Pliny (Natural History, IV. 12. 31) and the Periplus (sec. 39) state that lycium was sent to Rome in skins of rhinoceros and camels by Indians.

Warmington has suggested that raw cotton was exported to Alexandria and Syria from India. Egyptian documents and excavations at Meroe and Karanog in the Sudan attest to the cultivation and widespread use of cotton in Egypt. There is little reason to assume that India was the primary source of cotton materials in antiquity. In general, however, it is unlikely that cotton either eastern or Egyptian played a significant role in the textile industry in the Western provinces (Raschke, 1978: 651). In all likelihood, cotton fabrics may have been required for use in Arabia. The manufacture of textiles was an important craft in India at this time. Kautilya states that cotton fabrics from Madhurā (Madurai), Aparanta, Kalinga, Kāśi, Vanga, Vatsa and Mahisha are the best (II. 11. 115). The Periplus mentions Bharuch as the outlet for cotton fabrics both from Ter and Ujjain (sec. 51; also cf., p. 99). Inscriptions at Sanchi mention the gift of a weaver (sotika, Lueders, 1912: no. 331) and also a village called karpasigrāma (ibid.: nos. 260, 515) possibly named so on account of its cotton production. The processes of textile manufacture are described in several texts including the Arthaśāstra (II. 23). Among the dyes used, Pānini (IV. 1. 42; IV. 2. 2; VIII. 3. 97) refers to maddar (manjistha) lac (lākṣa) and indigo (nili).

A unique item of export was found at Khor Rori identified with Moscha of the Periplus. This bronze statuette of a girl found
in the debris of one of the houses has been dated to the second–third centuries A.D. and may have come from the western Deccan (Goetz, 1962: 241-3).

An important conclusion that emerges from this discussion is that a majority of these export products were locally available in the western Deccan and some were native to the region. This local availability of bulk items would have solved the problems of transportation as well and as at present, bullock carts may have been used for carrying wood and agricultural produce from the inland regions of the western Deccan to the leeward side of the Ghats. From there the steep gradient to the ports on the west coast may have required the use of pack animals. It is not surprising that the caves are located at precisely those points where the change-over is required to be made. Toy metal carts found at Brahmapuri give us an idea of the mode of transportation in use during the Satavahana period. Possibly of light construction, these covered carts were intended for a pair of bullocks. The covering seems to have been of some solid material such as a framework of light wood or leather, but was not of cloth (Khandalavala, 1960: 67). Sculptures at Amaravati in the eastern Deccan depict not only bullock carts, but also light vehicles for short journeys and war chariots drawn by horses (Sivaramamurti, 1942: 140; Ghosh & Sarkar, 1964-5: pl. xli).

The Periplus (sec. 51) refers to goods brought by wagons from cities like Paithan and Ter and distinguishes them from merchandise brought locally from regions along the coast. It adds that Paithan was twenty days journey from Bharuch and from Paithan, it took another ten days to reach Ter. These estimates appear to be quite reliable as calculated by Fleet (1901: 547), the appropriate average for a day's journey being about 15 kms. (12 miles) by a bullock cart. "My experience has been that along cross-country tracks and even second-class
man made roads, 12 miles is quite as much as can be done comfortably' (ibid.). Besides the route from the east coast via Hyderabad, Ter, Paithan to the west of Nasik district ran through easy country and it was only within the last 150 kms. to Bharuch that the real difficulties of the journey commenced.

It seems that the collection of merchandise in the western Deccan was done by Indian merchants themselves and the exchange of goods took place either at ports along the west coast or at market towns on the Arabian coast. This is not to be taken as a uniform practice in the whole subcontinent. The situation may have been different in the eastern Deccan and in south India. We would agree with Warmington when he says; 'We can state with certainty that in no instance did the Greeks themselves by any agreement at all gather in person the products of Arabia, Africa or India; hence the ignorance of cinnamon and the very vague knowledge which they had for instance of the climbing pepper plant and the cardamom. Pliny gives hardly any exact localities of Indian products and even Ptolemy adds only a few' (1974:260).

On the sea routes between the western Indian ports and Sri Lanka on the one side and the Persian Gulf, southern Arabia, Somalia, Axum and Egypt on the other, according to the pattern indicated by the Periplus for the first century, by Palladius for the third and fourth and by Cosmas for the sixth, Indians in their own ships 'fitted out from Ariake and Barygaza' carried on an active trade with Omana, Adulis and the Somali ports and this they were still doing in the fourth century (cf., p. 51). There is no reference in the Periplus to Indian shipping from Damirike.

The southern Arabians, from Cana and Muza, in their own ships, were carriers from the northern ports, perhaps from Malabar and possibly also from Ceylon. The Greeks were carriers
from ports all along the Indian coast and from Egypt. The ships would be owned by Romans and be rented or commissioned to merchants who would probably be Alexandrian Greeks with a knowledge of the Indian Ocean and the conditions of eastern trade. The crew would be composed of Greeks and any other likely seamen frequenting the Egyptian Red Sea ports (Miller, 1969:190).

The west coast of India had three major groups of ports: Barbaricon in the Indus delta (Periplus, sec.39); Bharuch and Kalyan; and the group formed by Mouziris (Cranganore), Nelkunda (Kottayam) and Bakare (Vaikkarai, ibid.:secs.53-55). Of these Bharuch was the principal collecting and shipping port for northern and central India in the Early Historical period, though Kalyan and Sopara may have developed as contenders under the early Satavahanas (cf., pp.85-9). Bactria was also connected to Bharuch via Mathura and bdellium, costus and spikenard were brought along this route, together with raw silk, silk yarn and silk cloth from the great inland city called Thina (China, Periplus, secs.63-65).

To develop as an entrepot, a place had to be much more than a market or market town. While the geographical situation on a main trade route was the most important asset of an entrepot, it also had to provide facilities for the handling, sorting, storage and transportation of goods. Then there were the questions of personnel and finance and adequate banking arrangements had to be made. In the absence of horizontal excavations at Bharuch or Kalyan, no information is forthcoming on the layout of these ports or the structural units within these.

The complexity of the exchange system and increased division of labour are, however, indicators of economic growth. The development of guilds at this time points to the need to
organise and monitor complex commercial transactions. The large variety of artefacts unearthed during excavation at different sites in the western Deccan is an indicator of increased division of labour and the proliferation of crafts. The guilds performed banking functions as well and it was profitable to invest in guilds owing to favourable returns. A Nasik inscription (Senart, 1905-6:82-5) mentions investments with two separate weavers' guilds at Govardhana, the rates of interest of both being different. This was perhaps due to the varying qualities of cloth in which these guilds traded or the different kinds of textiles that they produced. It is significant that the weavers' guilds were located at Govardhana while the textile producing area as we have seen was around Ter. It is possible that the guilds were primarily responsible for the organisation of trade, while actual production took place elsewhere.

4.5 Items of Import: A question that needs to be answered is: what was the nature of the imports? Did these fall under the category of essential or luxury items? For this evidence we would again have to rely on the Periplus. Frankincense and tortoise shell obtained in exchange for grain have been referred to (cf., p.145). Other commodities included myrrh, wine, dates, glass, tin, lead, copper, sulphide of antimony, realgar, coral, gold and silver coins, vessels of silver and in addition singing boys and maidens (sec.49). Further proof of this comes from archaeological excavations.

At Ter glass beads, rings and a Roman glass bottle of the Mediterranean type have been found (IAR, 1967-68:35), while Brahmapuri has yielded a hoard of Roman metal objects of either copper, brass or bronze. These include a statuette of Poseidon; two handles of wine jugs intricately carved; a thin circular metal repousse emblem with a slightly upturned rim possibly used as a base of a dish or of a small mirror case;
a cup; a wine jug; a candlestick base; and a mirror with a slightly raised knob (Khandalavala, 1960:56). Another copper dish with a boss in the centre was found at Nevasa (Sankalia, et al., 1960:421). Evidence for the import of wine comes in the form of amphorae fragments from Nevasa which have a resinous coating on the interior. This coating either represents sediment from the wine or is a deliberate application to ensure non-permeability of the jars (Wheeler, 1955:180). Two human masks of terracotta used to decorate the sides of vessels have also been found at the same site (Sankalia, et al., 1960:398-9). Pieces of Roman amphorae have been found at Junnar (IAR, 1957-58). Another significant discovery from the same site is that of a carved alabaster depicting the birth of Eros in an egg shell (Jadhav, 1981:64). Beads of lapis lazuli found at Bhokardan (Deo & Gupte, 1974:211), and a tiny figurine of the same stone from Brahmapuri (Sankalia & Dikshit, 1952:86) may also have been imports.

Kauṭalya, while describing the jewels to be introduced into the royal treasury, mentions Alakandaka. This has been identified as coral from Alasanda or Alexandria, a port also referred to in the Milindapañha (Levi, 1936:121-33). A Brahmi inscription of the second century A.D. found at Alluru, Krishna district, refers among other things to the gift of lamps in the shape of the mouth of a fish and manufactured by yavanas (Sircar, 1939:228-30). This is significant evidence indicating the participation of yavanas in the manufacturing process in the eastern Deccan.

4.6 Proliferation in Crafts: Economic growth resulted in increased division of labour and a diversification of handicraft production. Archaeological assemblages at Satavāhana sites in the western Deccan show a larger proportion of luxury goods as compared to earlier layers. The presence of nodules, unfinished beads and bead moulds suggests that bead making was
a local industry at several sites such as Bhokardan (Deo & Gupte, 1974:119), Kaundinyapur (Dikshit, 1968:85), Nevasa (Sankalia, et al., 1960:367), Ter, Paithan and Karad (Deo, 1975-6: 37-41). Elsewhere as at Maheshwar, Satavahana layers have yielded a majority of the total number of beads (Sankalia, et al., 1958:185). Apart from semi-precious stones, artificial materials like faience and glass were increasingly used.

Certain varieties of blue glass beads, e.g. long cylinder circular, collared and convex barrel-shaped lenticular with lug collars have a dating value between A.D. 100 and 350 and have been found at several Satavahana sites in the Deccan such as Nasik, Bahal, Kolhapur, Kondapur, Karad, Maski, Paithan and Chandravali and at sites in the north such as Taxila and Ahicchatra (Dikshit, 1955:90; Sankalia & Dikshit, 1952:144). Equally widespread are the composite glass beads and the short convex barrel-shaped beads of glass coloured with cobalt (ibid.). At Kaundinyapur, Bhokardan and Nevasa several unperforated specimens indicate the local manufacture of beads (Dikshit, 1968:85; Deo & Gupte, 1974:119; Sankalia, et al., 1960:367).

At Bhokardan two moulds of soapstone and a bead polisher were found (Deo & Gupte, 1974:140). Several techniques were used for making glass beads. These included wire wound black glass beads, beads with intervening gold foil, moulded beads, eye beads and beads of copper glass (Sankalia, et al., 1960:369). Faience - a hard porcelainous material consisting of quartz grains fused with lime - gained popularity during the Satavahana period (ibid.:371). Toggle beads of shell have been found not only in the Deccan, but also at sites as far apart as Ahicchatra and Arikamedu (ibid.:372).

Other flourishing industries were the shell bangle industry at Nevasa (Sankalia, et al., 1960:458), Maheshwar (Sankalia, et al., 1958:227) and Bhokardan (Deo & Gupte, 1974:119) and the ivory industry also at Bhokardan (ibid.) and at Ter and Kondapur.
An ivory seal matrix was discovered at Dharanikota in late Satavahana levels (Mukherjee, 1970:141). There is a close similarity between the ivory statuette of a female figure which possibly formed the handle of a mirror found at Ter with the specimen from Bhokardan. Other examples are available from Pompeii, though their provenance is still disputed (Dwivedi, 1976:64-6).

In addition to faience, kaolin was another raw material introduced during the Satavahana period. It was used for pottery, mirror handles and for necks of small unguent bottles. The quarries in Karnataka and in Madhya Pradesh near Lametaghat on the banks of the Narmada provided a good source of kaolin. Objects of this material have been found at Tripuri (Dikshit, 1955:41), Kondapur (ibid.), Bhokardan (Deo & Gupte, 1974:83) and Brahmapuri (Sankalia & Dikshit, 1952:61). The introduction of kaolin also led to the development of sculpture by using the double mould technique. This was an innovation as terracotta art had hitherto been little known in the western Deccan owing to the unsuitability of the black soil for fashioning terracotta figurines. Kaolin figures have been found at sites like Paithan, Nevasa, Kondapur and Ter (Dhavalikar, 1975-6a:63).

Among ceramics, the Red Polished Ware was the most widespread and characteristic ware of the period. Kaolin was also used in the manufacture of the Russet-coated painted ware. This ware was made on a fast wheel and a variety of rectilinear patterns were painted with a thin paste of kaolin or lime and thereafter the pots were coated with a russet coloured wash prepared out of red ochre. The Ware has a wide distribution from Amaravati in the Krishna valley to Nasik in the western Deccan and further south in the Karnataka and Tamil Nadu regions as far as Kerala where it has been found in the megalithic rock cut caves (Thapar, 1957:73).
In the Satavahana period metal, i.e. iron and copper was used not only for tools and implements as had been done so far, but for utensils and other objects as well. Two copper vessels were found in the caves at Pitalkhora and belonged to a period when the caves were in occupation (Deshpande, 1959:90), while the middle phase at Kanheri was associated with the building of furnaces (IAR, 1969-70:22), possibly suggesting smelting at the site. Iron was used for ladles, bowls, pans and lamps at Bhokardan (Deo & Gupte, 1974:174), Nevasa (Sankalia, et al., 1960:424-40), Kaundinyapur (Dikshit, 1968:113) and Maheshwar (Sankalia, et al., 1958:211-5). Objects of copper included ornaments, antimony rods and small pots as at Bhokardan (Deo & Gupte, 1974:184), Nevasa (Sankalia, et al., 1960:409-22), Prakash (Thapar, 1967:121), Maheshwar (Sankalia, et al., 1958:206-10) and Kaundinyapur (Dikshit, 1968:113). Ornaments were also made of gold (Sankalia, et al., 1960:423) and lead (ibid.:440; Thapar, 1967:128; Sankalia, et al., 1958:210), though these are not recovered frequently. Another rare object is a fragmentary silver stand from Nevasa (Sankalia, et al., 1960:440).

Inscriptions in the western Deccan caves refer to donations made to the the Sangha at Junnar and elsewhere and consisting of plantations of jambu, mango and karanja trees (cf., p.132). Kautalya has an interesting bit of information on the use of these fruits: 'One of the following, viz. sugarcane juice, jaggery, honey, treacle, the juice of jambu fruit and the juice of panasa fruit, infused with a decoction of mesaśṛṅgi and long pepper, kept for one month, six months or a year (and then) mixed with ciḍbhīta (kind of melon), urvaruka (variety of cucumber), sugarcane stalk, mango fruit and myrobalan or unmixed (with these) constitute the group of fermented juices' (Kangle tr., Arthasastra, II.15.17). The cultivation of these fruit trees in plantations would obviously indicate the manufacture of 'fermented juices' on a large scale. Dated to the second century A.D. Book II of the
Arthasastra refers to the production and manufacture of several commodities which formed items of export from the western Deccan ports under the Satavahanas. Thus there is mention of trade in liquor (II.25), weaving and spinning centres (II.23), centres for the production of metal objects (II.12) and different kinds of forests including plantations of trees producing timber, bamboo and flowers as materials for dyeing.

This increasingly complex nature of manufacture and trade would require an equally versatile monetary system which would facilitate both internal and external exchange.

4.7 Coinage:
4.7.1 The Periplus (sec.14) states that some of the ships from Bharuch exchanged their cargo while sailing along the Arabian coast. Elsewhere (sec.47) it mentions that ancient coins 'stamped with Greek letters - the inscriptions of Apollodotos and Menander who reigned after (the time) of Alexander' were circulating in Bharuch. Later (sec.49) it refers to gold and silver coins which were imported into Bharuch and exchanged at a profit. The Jatakas also speak of a combination of monetary transactions and barter in the economy and a similar situation may have existed in external trade as well.

From time to time Roman coins have been found at different sites in the subcontinent though their occurrence in the western Deccan has so far been less frequent. In 1840 a hoard was discovered near Sholapur which included aurei of Severus Antoninus Commodus and Geta (Indian Antiquary, II, 1873:241-2). An aureus of Septimus Severus was also found at Waghoda in the district of Dhule while three other finds of Roman coins have been confined to the Vidarbha region. The first was from Sampewada in Bhandara district and consisted of two gold coins, one of Commodus and the other
believed to be a forgery; no details are available about the second hoard from Tadali again in district Bhandara; and the third containing eleven gold coins of Augustus and Nero was found at Adam, district Nagpur (Kawadkar, 1972: 243-7). Roman denarii were recovered during the excavation at Vadgaon-Madhavpur (Sundara, 1981: 91) and a gold coin of Augustus was found at Kondapur (Yazdani, 1941: 180). Unfortunately no hoard of Roman coins has yet been found at Bharuch and only a single coin has been reported so far (Wheeler, 1955: 195).

As compared to the western Deccan, finds of Roman coins are more numerous in the eastern Deccan and are scattered in the districts of Bijapur, Cuddapah, Guntur, Krishna, Nalgonda and Visakhapatnam (Gupta, 1965: 43-5). A hoard from Nasthulapur, district Karimnagar, yielded 39 Roman and 8 silver punch-marked coins, the former belonging to Augustus and Nero (Gupta, 1957: 1-4). Two more Roman aurei of Nero and one of Faustina the Elder were found at Nagarjunakonda (IAR, 1956-57: 38). One gold coin of Augustus with holes on top suggesting its use as a pendant was unearthed in the excavation at Kudavelli, district Mahbubnagar (Ghosh & Ismail, 1980: 11). Recent excavations at Peddabankur and Dhulikatta have also yielded Roman coins (Gururaja Rao, 1978: 62, 66).

Gupta has interpreted this paucity of Roman coin finds in the western Deccan as compared to the eastern Deccan and south India to indicate that direct trade relations with Rome were confined to a short period of fifty years in the second century A.D. between the reigns of Antoninus Pius (138-61 A.D.) and Septimus Severus (193-211 A.D.). Prior to this, he continues, Roman traders obtained their requirements from Indian merchants calling at the ports of the Persian Gulf, the south coast of Arabia and the Red Sea coast of Africa (1969: 169-80). Warmington suggests that there was a 'deliberate exportation' of Roman money to India to create a Roman currency
there (1974:274), while Wheeler accepts that Roman coins may have been used not as currency, but as bullion to be weighed out in exchange for goods or silver and gold ornaments (1955:167).

The paucity of Roman coins in the western Deccan is a rather complex question which needs to be studied in some detail. The denarius was the main silver coinage of the Republican period, the gold aureus being an infrequent issue. As soon as Augustus established the Empire and restored peace in 31 B.C., he reorganised the coinage - gold coins were issued regularly and the gold aureus was valued at 25 silver denarii. Nero (54-68 A.D.) debased the currency, lowered the weight of gold and silver coins and reduced the fineness of the latter. In India, pre-Augustan issues are rare and a majority of the coin finds of Augustus and Tiberius are concentrated around Coimbatore, within a radius of about 50 kms. from the beryl mines at Padiyur. As against this, coins found in the eastern Deccan belong to later emperors and are dated to the second century A.D. This evidence has been accepted by Gupta to indicate a shift in the Roman trade from south India to the eastern Deccan in the second century A.D. (1965:45-50).

An analytical study of Roman coins found in India shows a preponderance of denarii, a total of 5,400 denarii to 800 aurei (Raschke,1978:665). Two prominent features of these hoards are: the newness of the coins and the predominance of the issues of Augustus and Tiberius (Miller,1969:237). Adhya (1966:133-4) has convincingly countered Sewell’s (1904:591-637) arguments regarding the decrease in Roman trade after Nero by indicating that post-Nero coins could not have been used for external trade on account of the debasement of the currency. Raschke has shown that Roman coins in India do not have much chronological significance nor can they be used to indicate a diminution in Roman trade after Nero. The commercial hoards
of denarii and aurei found in India in no way reflect the coinage in circulation at this time in Egypt from where most of the coins were shipped. The Roman conquerors of Egypt permitted the continued circulation of Ptolemaic coinage and almost all the papyri attest only to the use of Alexandrian tetradrachms till A.D. 296 when Diocletian gave Egypt the same coinage as the rest of the Empire. There is, however, some conflicting evidence which indicates the existence of denarii and aurei in Egypt at this time. Issues of Roman coinage were primarily connected with military activity and it appears that provincial garrisons were paid largely in the coins collected as taxes in the province. As such bankers and money-changers in Egypt would have expended considerable effort in the collection of coins of Augustus and Tiberius which were preferred for trade and may have been substituted for gold or bullion in cases of shortage (Raschke, 1978:668-9).

It would seem that a shortage of these coins was at times also overcome by substituting imitations. At Akkenpalle in the district of Nalgonda, a pot containing 1531 silver coins, broken pieces of ornaments and some strips of silver was found. Predictably a majority of the coins belonged to the reigns of Augustus and Tiberius and included as many as 55 imitations (Gupta, 1965:65). Gupta reasons that Roman silver coins could have been used as legal tender in the subcontinent. Incisions were made on the coins to deface the portrait of the Emperor, and as the coins were approximately the same weight as the punch-marked coins (50 to 54 grains) most of them could be countermarked with minute symbols similar to those used on punch-marked coins and introduced into circulation. A similar phenomenon has also been noticed in the Nasthulapur and Eyyal hoards (ibid.:68). Raschke argues that these imitations were produced in India itself from locally made dies (1978:672). If this were the case, it would imply a direct participation of Roman merchants in
commercial transactions in the eastern Deccan.

Interesting evidence regarding the currency in the third and fourth centuries A.D. is to be found in the inscriptions of the eastern Deccan. Iksvāku epigraphs at Nagarjunakonda record donations of dinaris and their investment with different guilds. Sircar (1963-4:5) explains that dinari is derived from the Roman coin denarius, but it is difficult to say whether it meant an original Roman coin or an imitation.\(^1\)

Raschke has suggested that the dearth of Roman coins in the western Deccan as contrasted to the rest of the peninsula may be correlated to the degree of urbanisation in the two regions (1978:670). Thus as the western Deccan had a large number of urban centres at this time and its indigenous coinage there was little need to import and circulate Roman coins. Accepting this as a possible factor, it is, however, felt that the principal difference lay in the nature of the trade in the two regions. The western Deccan was not primarily a producing area; a majority of the items of export were obtained from regions along the periphery; and the importance of the western Deccan lay in its control of transit routes. It is likely that the cargo imported by foreign ships halting at the ports of the western Deccan was negotiated and bought by Indian merchants at the ports itself and foreign merchants may not have been allowed to enter into local trade transactions. The transportation and sale of these imported goods may have been completely handled by Indian merchants. There are indications of strong measures taken by the local political authority to ensure compliance with laws by foreign

\(^1\)Amita Ray (1983:33) has used this evidence together with the find of a hoard of coins in a so-called goldsmith's workshop at Nagarjunakonda to suggest that goldsmiths were authorised to mint Roman gold coins or that these were melted for jewellery. A reference to the excavation report (IAR, 1959-60:9) shows that the correlation is unsubstantiated. A hoard of 900 'Iksvāku' coins was found in that area, but in a different house.
ships and the diversion of foreign ships from Kalyan to Bharuch under escort (Periplus: sec. 52; also cf., p. 137). In contrast, the Periplus makes no mention of Indian ships from the Malabar coast to the ports of the west (Miller, 1969: 190). We have referred to inscriptions at Nasik, Junnar and Karle by yavana donors and the recording of gifts by the yavanas of Dhenukākaṭa (cf., pp. 107-8). Though Kosambi has identified the site with Deogadh opposite Karle, the identification is by no means a certainty. It would then be justifiable to accept a greater 'foreign' participation in the procurement and sale of goods in south India, as compared to the western Deccan. This would explain the find of Roman coins in greater number in the beryl producing areas of the Coimbatore district. A detailed analysis of the different geographical and historical factors influencing the development in the two regions or tracing their different trajectories of economic growth would be unfeasible here and is beyond the scope of this study.

The Andhra region or the eastern Deccan went through a different process of economic growth. Though the earliest urban centres developed in the lower Krishna valley, owing to the uncertainties of the sea routes as discussed by Kautilya (cf., I.9.8), commercial traffic followed the transpeninsular land routes connecting the eastern Deccan to Ter, Paithan and Bharuch. This explains the importance of the western Deccan under the early Sātavāhanas. With the expansion in the coastal traffic around the southern tip of the peninsula and the growth of trade between South East Asia and the west, the ports of the east coast would have become important ports of call. Their significance would have increased further owing to the unstable political conditions in the western Deccan resulting from the confrontation between the Kṣatrapas and the Sātavāhanas. In the post-Gautamīputra Sātakarni period Sātavāhana inscriptions are found
for the first time in the eastern Deccan and bilingual silver portrait coins are issued (cf., p. 70), indicating attempts by the state to integrate newly acquired areas. Such a step may have become imperative in view of the yavana presence and the large number of Roman silver coins in circulation in the eastern Deccan.

Pliny in his *Natural History* (XII.xli) states that 'by the lowest reckoning India, China and the Arabian peninsula take from our empire 100 million sesterces a year'. This has been taken to indicate a gradual drainage of the Empire's gold resources, which threw the Roman monetary system into a crisis. The figures quoted by Pliny have been questioned on account of several factors. The use of imported spices was widespread in the Roman Empire, they found their way to relatively minor places and were extensively used in drugs, perfumes, cooking and religious services, as antidotes for poisons and as ingredients in ointments (Miller, 1969:2). Even if Pliny's price list is accepted, it is unlikely that the original sum paid to the producers was high. Prices in Rome may have been exorbitant because of the high import duties, cost of transportation and the risks involved. The much better documented medieval spice trade suggests that tremendous price fluctuation could occur because of destruction of a convoy, warfare, piracy, failure of a convoy to arrive in time to catch the last ship of the season, etc. and there is no reason to suppose that prices remained stable in antiquity and were not affected by these variables (Raschke, 1978:670).

The figures quoted by Pliny have been attributed considerable credibility derived from his position as 'financial advisor' to Vespasian and it is often assumed that they refer to the export of coins to China and India. Both these views are, however, erroneous. A friend of Vespasian, Pliny died as commander of the fleet at Misenum - an important post, but
Sātavāhāna Coinage

Coin Sites

Inscriptions

Modern Towns

Scale: 100 200 300 400 500 600

Map showing the locations of Coin Sites, Inscriptions, and Modern Towns within the region of the Sātavāhāna Coinage.
military rather than financial. Another serious objection is that both Roman bureaucratic practice and the surviving records from Egypt itself indicate that it would have been impossible for Pliny to obtain any accurate figures for the annual quantity of the balance of payments deficit in Rome's trade with the East (Raschke, 1978:636). Though tax records were more carefully kept in Egypt than in other provinces and a good deal of evidence is available about transit tolls, accounting practices and customs regulations, yet nowhere is it indicated that anyone kept a record of the coinage (ibid.).

Pliny's figures have been questioned from another point of view also and it is imperative to quote at some length here. 'If the figures mentioned by Pliny in this connection are authentic, this amount would have corresponded to about 15,000 pounds of gold. At that time the annual budget of the Roman state amounted to about four milliards sesterces. One might suppose that average annual national income could not possibly be less than forty milliards sesterces. If these dangerous and hypothetical figures are correct, the value of the outflow of gold represented the fortieth part of the state's budget and certainly much less than the four hundredth part of the total income of the Empire....Considering the relatively small circles for which it (the luxury trade) was destined, the whole quantity could not even then have cut perceptibly into the economy in general, the more so as at the very close of the fourth century gold was circulating in an abundance to which hardly anything equal can be found in previous centuries. This shows that the so-called drainage resulting from the oriental trade was in no way ruinous' (Bernardi, 1970:22-3).

4.7.2 (Even though the Oriental trade may not have been substantial, economically for Rome, the prosperity that came in its wake provided a fillip to the development of the western Deccan. Coinage is an indicator of internal exchanges,
the magnitude of commercial transactions and the state of the economy. During the Satavahana period, several local currencies seem to have been in circulation in the western Deccan. The discovery of punch-marked coins in association with Roman coins and of coin moulds for manufacturing these together with Satavahana objects at Kondapur confirms this assumption (Chattopadhyaya, 1977:101). The Satavahana site at Dhulikatta also produced a rectangular mould with sixteen matrices for the manufacture of punch-marked coins (Gururaja Rao, 1978:61). Numerous hoards of punch-marked coins have been found all over the western Deccan (Gupta, 1955:14; 1970). Unfortunately in the absence of precise dating methods, it becomes difficult to indicate how many of these belonged to the Satavahana period. This tradition of manufacture was, however, adopted for Satavahana coins in the Vidisha region and punch-marked copper coins with the legends raño siri Satakäsa and raño siri Sátasä have been found at Vidisha, Tripuri and Tumain (Bajpai, 1981:302).

Owing to the hostility between the Satavahana kings and the Ksatrapas, certain parts of the western Deccan underwent frequent political change and hoards of silver Ksatrapa coins have been found in the interior regions of the western Deccan, such as Ranjangaon, district Pune (IAR, 1974-75:65), Karad, district Satara and Shirwal, district Junnar (Gupta, 1956:220-1). Gautamīputra Satakarni is the only Satavahana king who circulated silver issues of the Ksatrapas after restriking them, as is evident from the Jogalthembi hoard. Of the 13,250 silver coins of Nahapana 9,270 are restruck with the devices and name of Gautamīputra Satakarni. Over 2,000 coins two thirds of these belonging to Satakarni are perforated (Scott, 1908:223-44). Restriking of coins was by no means restricted to the Satavahanas or to silver coins. A copper coin of the Satavahanas found at Akota was restruck with the legend rajno Mahāksatrapasa (Trivedi, 1953), while
a copper issue of Nahapāna from Ajmer has the counterstruck reverse symbols of Gautamiputra (Sarma, 1980:108). 'Usually restrikes occur when a state acquires large numbers of coins of a neighbouring state whose issues are very plentiful and enjoy a wide circulation, and restrikes these due to a shortage of metal' (Laing, 1969:39).

As compared to the Ksatrapas, the finds of Kuśāna coins are rare. A copper coin of Wima Kadphises was found at Aurangabad (Ranade, 1964:228), while eight copper coins of Huviska were recovered from Katangi, district Bhandara (IAR, 1973-74:48).

Apart from the regular issues, a large number of uninscribed copper cast coins have been found in the excavations at Nevasa (Sankalia, et al., 1960:161) and Bhokardan (Deo & Gupte, 1974:19-72). These have been ascribed to the Sātavāhanas on typological grounds. Similarly, clay imitations of Roman coins are also a regular find at sites such as Bhokardan (ibid.:75), Brahmapuri (Sankalia & Dikshit, 1952:97), Karad (ibid.), Kausan (IAR, 1965-66:28), Kondapur (Yazdani, 1941:179-80) and Nevasa (Sankalia, et al., 1960:161). A stone mould for making such imitations is in the collection of the Prince of Wales Museum, Bombay and is said to have come from Palanpur in Gujarat (Gupta, 1965:77). While some of these, especially the gilded specimens from Nevasa may have been used as ornaments, others were probably used as money. The use of flimsy material for coinage is reinforced by the fifth century evidence of Budhaghosa suggesting that māsakas were made not only of bits of bamboo and palm-leaf but also of lac and gum (Sircar, 1979:46-7).

The characteristic coinage of the Sātavāhanas was of lead, copper and potin — an alloy of copper, zinc, lead and tin. No gold coin has so far been reported and silver issues are rare. The coin blanks were cast and the devices and legends
were die-struck on these blanks (Sarma, 1980:56-7). As analysed by Gupta (1972:41-61), Satavahana coins have a marked regional distribution. A majority of the coins have an elephant on the obverse, but on the basis of the reverse symbols, they may be classified into two groups: those with a tree motif as the prominent reverse symbol found in northwestern Deccan, e.g. at Nasik and Nevasa; and those with the Ujjain symbol on the reverse, which have a comparatively widespread distribution, including sites in the eastern Deccan. Similarly the lion type coins are also divisible into three categories prevalent in: Gujarat and northern Maharashtra; in the Krishna and Godavari districts; with and without legends. While the arched-hill type and the wheel type circulated in the Deccan, the horse type was confined to the Krishna and Godavari districts and the ship type to the Coromandel coast (ibid.).

The silver coins of the Satavahanas are primarily portrait coins, issued first by Satakarni and Nayanikā and continued after some time by Gautamiputra Satakarni and his successors. The restruck coins of the latter form the largest single group and apart from this only twenty specimens have so far been found, the provenance of a majority of them being uncertain. Three silver coins were obtained from a river diver at Nasik (Gokhale, 1978:13), one from a diver at Bhilsa (Trivedi, 1952:1-4) and a fifth from a gold washer at Balpur who probably got it during her gold washing operations in the river Madha (Gupta, 1959:107). The exceptions include a well preserved unworn coin of Yajña Śrī Satakarni found in a copper casket inside a stūpa at Sopara (Indraji, 1881-2:305); a coin of Vāsisthīputra Śiva Śrī Pulumāvi from Dhulikatta, district Karimnagar (Nagaswamy, 1979:105); and a clay mould from Nagarjunakonda (Sarma, 1973:89-106). Of these the specimen from Dhulikatta had two perforations on the left top corner suggesting its use as a pendant and the genuineness of the
clay mould from Nagarjunakonda has been questioned.

Shastri regards the mould to be a part of a forger's equipment on the grounds that it has a negative impression. Sātavāhana silver issues were not cast in moulds but were die struck and as such the mould would be of little use for minting coins. A circular clay piece from Paithan has a positive impression of the reverse die of the silver coin of Vāsiśṭhīputra Pulumāvi and has been regarded as a proof piece (Shastri, 1980: 115-7). Thus, on reviewing this evidence, it would seem that the bilingual silver coins had a limited circulation and were more in the nature of commemorative issues. It is difficult to agree completely with Shastri (1976:19) who suggests that the Sātavāhanas issued bilingual coins with the object of announcing their victories in the Andhra region to their subjects in the western Deccan, as very few coins have been found in situ in the latter region. One of the objectives of issuing silver coins may have been the integration of the newly conquered regions of the eastern Deccan.

This by no means suggests that silver coins were not in circulation during the Sātavāhana period. We have shown above that silver punch-marked coins continued well into the early centuries of the Christian era. Besides the silver issues of the Ksatrapas were also prevalent in the western Deccan at this time. The inscriptions at the cave sites record investments of several thousand kārsāpanas in the various guilds and mention donations in money to monastic establishments. A Nasik inscription of Uṣavadāta specifically refers to a gift of 70,000 kārsāpanas 'each 35 making a suvārna, a capital therefore of 2,000 suvārnas' (Senart, 1905-6:82-5). Altekar is of the view that the kārsāpanas and the suvārṇa mentioned in this inscription refer to the silver coin of Nahapāna and the gold coin of the Kuśāṇa respectively. The metrology of the two coins indicates a ratio of 9:1 between the prices of gold
and silver. In Persia, the ratio was 13:1 and as per the Periplus it was profitable to exchange silver for gold in India (Altekar, 1940:45).

There are no pure silver ores in India and the metal is obtained from argentiferous galena, basically an ore of lead in which silver occurs as an impurity. Galena is found in commercially exploitable quantities at Metri in Bellary district and sparsely at several places in the eastern Deccan. The most important deposit is at Zawar in Udaipur district (The Wealth of India: 505). Chemical analysis of a few punch-marked coins has indicated the presence of lead and the use of copper for alloying (Bharadwaj & Mishra, 1968:244). Apart from the minting of silver punch-marked and lead coins, these ores were probably used for a variety of purposes in the Early Historical period, such as for the making of lead ear ornaments and antimony rods. The major mining areas of copper in India are confined to the Khetri belt in Rajasthan, the Singhbhum belt in Bihar and the Guntur belt in Andhra Pradesh (Watt, 1972:II, 647). Apart from the local availability of these ores for coinage, a certain amount of tin, lead and copper may have been imported as referred to in the Periplus (sec.49).

4.7.3 There is a divergence of opinion on the question of the right of minting coins in ancient India. Smith (1972, reprint: 133) originated the view that punch-marked coinage was a private issue of guilds and silversmiths minted these with the permission of the ruling powers. Bhandarkar (1913-4: 220f), on the other hand, established that the coins of particular regions have marks occurring in certain constant and regular groups, hence these coins are state issues. Kosambi (1981a) continued on the same lines and identified punch-marked coins belonging to individual monarchs of the Saisunaga, Nanda and Mauryan dynasties or as the independent local currency of Kosala.
Scholars who favour the control of the state cite the *Arthaśāstra* (II.12.24) which decrees that coins are to be manufactured by the *lakṣaṇādhyakṣa* and four silver coins of the denominations of 1 ⁴⁄₅ṣa, ⁴⁄₅ṣa, ¹⁄₅ṣa and ¹⁄₈ṣa each containing eleven parts of silver, four parts of copper and one part of some hardening alloy are mentioned. Copper coins include the *māsaka* (1/₆ṣa), ¹⁄₅māsaka, ¹⁄₅kākāṇi (¹⁄₅māsaka) and ¹⁄₆kākāṇi, each containing three parts of copper and one part of a hardening alloy. There is no mention of gold coins in the *Arthaśāstra*, though some scholars suggest a reference to them in the phrase *rūpyasuvarnam* (II.14.1, Sircar, 1968a:78-9). From the context it would seem that this phrase simply refers to gold and silver articles entrusted to a goldsmith for manufacture (Gupta, 1960:25-34).

Kauṭalya in his *Arthaśāstra* (II.12.25) also refers to the *rūpadarśaka* or the examiner of coins who was entrusted with the regulation of currency both as a medium of exchange (*vyāvahārikī*) and as legal tender for receipt in the treasury (*kosapravesyā*). Possibly the first refers to coinage, while the second may be a variation of the later day *hundī* system. The *rūpadarśaka* was also made liable to punishment if he were to upset an established currency (*sthitā paṇcyātra*) or to allow an irregular currency to circulate (IV.1.44-6). These verses taken together with an earlier statement (II.12.26) that 'the *rūpadarśaka* should fix a coining fee (*rūpikam*) of eight per cent, a commission of five per cent, an inspection fee of one-eighth per cent and a penalty of twenty-five panas for those who manufacture, sell and examine in other places' seem to suggest, among other things, that more than one currency may have been in circulation, though the state retained the right to sanction and to authorise it. Besides the levying of a coining fee can only be justified if private individuals were involved in the minting of coins. Gupta has tried to explain this by suggesting that 'people brought
bullion to the rūpadārsaka who exchanged it for ready made coins and charged eight per cent as fee to meet the cost of manufacture, etc.' (1960:36).

That the guilds or corporations of traders were empowered to issue coins is attested to by the negama coins of Taxila, the word naigamah referring to srenis or corporations of merchants (Bajpai, 1963:18). Further proof for this view comes in the form of two copper coins bearing the legend 'gadhikānam' in bold Mauryan characters and obtained from Kausambi and Allahabad (ibid.). The gandhikas or dealers in perfume were prosperous at this time as indicated by the large number of donations made by them.

We have referred to the circulation of punch-marked coins during the Sātavāhana period. If minting of coins was under state control, how is it that the inscribed coins of the Sātavāhanas were issued only in cheap metals like copper, lead and potin, while the silver punch-marked issues carried no royal insignia? The question can only be resolved if we accept that punch-marked coins were private issues which continued in use even after the ascendancy of the Sātavāhanas. 'When punch-marked coins manufactured centuries ago were in circulation, it seems to us practically impossible to check additions to the old stock by guilds and silversmiths from time to time, especially in view of the fact that the said coins were used all over India while the whole country was never under a single suzerain and often there was no effective administration in many areas' (Sircar, 1968a:106).

Interesting corroboration of this view comes from a later period. Buddhaghosa in his Visuddhimagga (437, 515) describes the different reactions of an inexperienced boy, a man from a village and a money-changer to a heap of coins lying on a wooden slab. The boy would only be able to distinguish the
different shapes of the coins, while the rustic would also know that coins were as valuable as gems. The money-changer on the other hand, by handling the coins would be able to ascertain which of them were struck at which \textit{gāma}, \textit{nagara}, \textit{pabbata} or \textit{nādi-tīra} and by which \textit{āchariya} or mint master.

The prevalence of more than one currency in a region was not unusual in India and the practice continued till the late medieval period. This practice had its genesis in the theory that no state had the right to close its mints or to say that the currency of a region was either deficient or redundant. This question was settled solely by bankers, traders and merchants. The duty of the state was merely to assay all bullion brought to the mint for coinage and to return the value of the bullion in money (Sircar, 1968a:273). Thus, no less than twenty-six different sorts of gold coins were current in Sivaji's realm, some of which were foreign issues. The system continued in the Maratha country in the later period as well (ibid.274). This currency was further supplemented by the extensive use of \textit{hundīs} or credit instruments. Revenue officers were always instructed to make use of \textit{hundīs} in transmitting money to the central treasury (ibid.276). For day to day transactions, \textit{dhabbu} or uncoined and unstamped copper pieces were extensively used. This was a private copper currency having no stamp, no bust and no inscription (Sircar, 1979:45). In addition to all these was the use of clay and other flimsy materials as tokens of exchange and of course the prevalence of the ubiquitous cowrie shells. The mention of \textit{gandaka}, i.e. the amount of four cowrie shells in the \textit{Mahāstham} inscription points to the use of cowries in the Indian market during the Mauryan period as well (ibid.:53).

(The foregoing discussion is in no way meant to indicate the inadequacy of the state with regard to coinage. On the other hand, private issues could only have been minted with the
tacit approval of the state and the latter obtained revenue by authorising their circulation.) Unfortunately, there is very little evidence on the location of mints in the Satavahana period. Numerous clay coin-moulds along with coins of the Ksatrapas and the Satavahanas were found in the excavation at Kondapur. Of these, there were fifty-four fragments of moulds for casting punch-marked coins, some for Satavahana coins and others for Ksatrapa coins. A few of these were meant for duplicating by the casting process coins which were normally struck with punches, while other moulds included single coin-discs (Yazdani, 1941:180). Other sites which have yielded coin-moulds are Bhokardan and Vadgaon-Madhavpur. At the former site, these included terracotta moulds for punch-marked and Ksatrapa coins (Deo & Gupte, 1974:73-4), while at the latter, a few terracotta moulds were found with illegible negative impressions (Sundara, 1981:91). Sarma (1980:35, 42) records the finds of moulds from Nagarjunakonda and Peddabankur. Those from the former site, however, are 'oblong moulds with designs for ornaments' belonging to the Ikṣvāku period (IAR, 1959-60:9), while his assumption that Peddabankur was a mint is based on the find of 20,000 coins at the site (Gururaja Rao, 1978:60). As we shall show later, a coin hoard need not imply a mint.

In the absence of scientific analyses on the metrology of Satavahana coins, it is difficult to ascertain trends in the debasement of coinage, if any, thereby ruling out a significant indicator of the economic environment. The position is not much better as regards the weights of coins. Hoards are another important source of information and can be classified into accumulations, coins lost in a catastrophe, savings hoards, bullion hoards and mercantile hoards. Apart from providing an insight into the circumstances governing their deposition, these hoards are also good indicators of the political and economic climate of the region (Laing, 1969:54-6). A major handicap in the analyses of hoards is that often not
all the coins can be recovered.

Several Sātavāhana coin hoards have so far been found and apart from the Jogalthembi hoard which consisted of silver coins, all the other hoards comprised coins of copper, potin or lead. The village of Jogalthembi, near Nasik, lies close to the junction of the rivers Godavari and Darna. The hoard consisted of 13,250 silver coins, but since some of the coins had been melted, the original number may have been about 14,000 to 15,000 coins. A majority of these were of Nahapāna counter-marked by Gautamiśputra Sātakarni and over 2,000 coins, two-thirds being those of Sātakarni were perforated. This led Scott to observe that the hoard may have belonged to a temple (1908:223-44). The hoard, however, appears to be a mercantile hoard as all the counter-struck issues have a uniform set of symbols, i.e. the caitya on the obverse and the Ujjain symbol on the reverse, though on the basis of the great variation in the depiction of these marks, it may be surmised that several dies may have been used. The condition of the coins indicates that they must have been a very long time in circulation both before and after being counter-struck.

Of the other hoards, four have been found in the western Deccan: one at Wategaon (Mirashi,1972:205-12); two at Brahmapuri (Gupta,1955-7:62); and the fourth at Banavasi (IAR,1970-71:29); two in the Vidarbha region at Tarhala (Mirashi,1940:83) and Chanda (Mirashi,1940a:503), while the rest have been recovered from Andhra Pradesh in the eastern Deccan. A significant feature of a majority of these hoards is that they comprise hundreds of coins of a single type, but belonging to several different kings. All the coins in these hoards are round, have the elephant symbol on the obverse and the Ujjain symbol on the reverse. Though the alloy varies in the different specimens, surprisingly, the available weights fall into a uniform bracket ranging from 1 gm. to 8 gms. This variation
may be due to the loss in weight resulting from the circulation of coins. As the elephant type of coin was extensively used by the Sātavāhanas (Sarma, 1980: 142-5), we should have little difficulty in identifying these hoards as mercantile hoards deposited in the time of the later Sātavāhanas probably due to political upheaval and economic instability1. The recovery of mercantile hoards is an indicator of the essential nature of the trade necessitating the extensive use of copper, lead and potin coins in commercial transactions and the continuity of a single coin type during the reigns of several successive rulers.

The only exceptions to the above examples are from the eastern Deccan and include the Adapur hoard which has coins of the horse x six arched hill with tree in railing type (Sarma, 1980: 42-3) and the Penumuli hoard where all the coins have the Ujjain symbol on the reverse, though the obverse symbols differ in a few cases (AR-ASI, 1924-25: 158-61). The coins from the Padugupadu hoard also have the Ujjain symbol on the reverse, while the obverse has the horse symbol (Sarma, 1980: 43). Of these, a remarkable feature of the Adapur hoard is that the lead coins are very heavy, weighing between 25 to 32 gms. (ibid.: 237) and may have formed a part of a savings hoard. It is difficult to say anything about the Penumuli hoard, as only fifteen coins could be recovered (AR-ASI, 1924-25: 158).

Of the 38,512 Sātavāhana coins in the Hyderabad Museum, 24,345 were obtained from Peddabankur and half of these had no legend. The largest number of coins with legends belonged to Gautamiputra Satakarni, Pulumāvi and Satakarni IV and the copper coins obtained from the site constituted the largest

1 Mercantile hoards are characterised by coins of a single type in general demand for trade and a hoard is dated on the basis of the latest coin (Laing, 1969: 61).
collection of Satavahana copper coins. In spite of these large numbers involved, there are no details regarding their recovery and whether they were all found in a single hoard (Rama Rao, 1961:9).

This widespread occurrence of Satavahana coins indicates the role of money in the economy. A Nasik inscription mentions that Usavadata bought a field for 4,000 kāhāpanas and donated it for procuring food for those dwelling in the cave at Nasik (Senart, 1905-6:78-80). Similarly, a majority of the donations at Kanheri were in the form of perpetual endowments of money ranging from 200 to 1600 kāhāpanas (Burgess, 1883:nos.15-8; 21, 22, 26-8). Another inscription of Usavadata mentions a payment of cloth money of 12 kāhāpanas each to the monks. It also refers to money for kuśana (Senart, 1905-6:82-5). The term kuśana has been interpreted as a monthly stipend given in addition to the money for clothes during the rainy season. This explanation by Senart and others is in refutation of Bhandarkar's hypothesis that it refers to a silver coin of Nahapana (Sircar, 1965:166). Several inscriptions at Kanheri record payment of money for clothing and kuśana-mūla to the monks (Burgess, 1883:nos.15,18,21,28). Money was made available to the monasteries for repairs (ibid.:no.18) and other expenses also.

Most of these perpetual endowments were in the form of investments with guilds (ibid.:nos.16,17; Senart, 1905-6:no.15) or the Sangha (Senart, 1905-6:no.17) and only the interest was to be paid and utilised. Thus 2,000 kāhāpanas were invested in a weavers' guild at Govardhana at one pratika (monthly) for the hundred and 1,000 in another weavers' guild at three-quarters of a padika (monthly) for the hundred (ibid.:82-5). An inscription at Junnar records investment with the guild of bamboo workers at monthly one and three-quarters and with the guild of braziers at a quarter (Burgess & Indraji, 1976, reprint: no.16).
We could add to these examples by referring to the *Jātakas* or the *Arthaśāstra* and by giving instances of wages paid in money; commercial transactions being finalised by haggling over prices; goods being purchased against securities; or traders borrowing money on bonds (*Jātakas*, Bk. I: no. 40). Our knowledge of the economic significance of the Satavahana coinage, however, remains incomplete and we can say very little regarding the denominations of the Sātavāhana coins and the purchasing power of the *kañapana*. Indeed it is equally difficult to correlate the coinage to the inscriptive evidence from the caves.

At this stage we must recapitulate the nature of economic changes ushered in during our period. Trade transactions which had started in the pre-Satavahana presumably Mauryan times gained an ascendancy under the Sātavāhanas as the potential of the Mediterranean market came to be fully realised. The exploitation of the commercial network, however, required a sound agricultural base, hence the proliferation of settlements in the fertile valleys of the western Deccan. Migrations and the development of new agricultural areas resulted in a weakening of the old social structure leading to the development of new networks of relationships. Monasteries stepped in at this juncture to fill the void and propagated the interdependence of monks and lay followers. This system worked to the advantage of the rulers and large donations to monasteries by royalty indicate the need to honour and appease them. Gradually, monastic establishments acquired greater power; donations were increasingly made by rich citizens and prosperous workers and money was invested with guilds, the interest to be paid to the monasteries. The exigencies of trade had altered the economic structure as well and guilds and merchants had acquired considerable prosperity.