ROCK CUT CAVE TEMPLES OF GOA

Available known sources of information about architecture in India are the early Vedic texts beginning with the Rigveda. Rigveda mentions 'Pur' (town or city) 'Path' (Street) 'Durg' (Fort) 'Purandhar' (Ruler of the city or fort), 'Asmayi' (Store) 'Ama' (Mud brick) etc. These words indicate that the existence of well planned cities and architectural development during this period. Rigveda mentions about Prathama, Madyama, and Avama. Similarly, Atharvaveda also mentions about the respective divisions as Parameshthin, Madyameshin, and Avameshin. These words show the importance and position of the place, and it was found in the Harappan civilization with well-planned settlements. These divisions are categorically divided in Harappan metropolises such as 'Citadel' (Prathama-place for King and royal family) 'middle town' (Madyama-place for noble men, merchants and officials) and 'lower town' (Avama-place for common people). All these divisions can be seen at Dholavira, the largest Indus site in India. After the Harappan civilization, there was a dark period, and a big gap up to the definite historic period, which starts with the Mauryans. During the dark period, the architectural development might have been rich (e.g., Mayasabha of Dharmaraja in Mahabharat period) but unfortunately the constructions were made of perishable materials like wood, brick, mud, etc. As a result, they all disappeared.
Though the earliest architectural evidence we are obtaining from Jarmo Alikosh phase (West Asia), here fortification wall and some structural alignment were found. The architectural activities started rapidly in India with the beginning of Historic period only. Architecture means art in structure. This art started in monolithic stambhas in the beginning (e.g., Sarnath stambhas of Ashoka, Bsar Bahkira, Laurya Nandangarh etc.). Later, the development of art and architecture in the matured form can be seen in the stupas which were constructed by Mauryas followed by Sungas and Satavahanas. Structures for religious purpose started with spreading of Jainism and Buddhism in India. Buddhists first used to gather in open place, after clearing area of the forest. Since stupas and stambhas could not be used for residences and a large congregation of worship, there was a need to search for a shelter especially during the rainy season (Varshavasa). Hence chiselling was started in rocky hills and they began occupying the natural caves, which were left by prehistoric men.

The first experiment in rock cutting can be seen in India in Barabar hills in west Bihar where Lomas Rishi cave and Sudama caves hewn in stone and Sita Marhi cave had been excavated in the Nagarjuna hills during Mauryan period. Maurya Ashoka (273 BC) not only built stambhas but also constructed 84 stupas during his life time and dedicated Sudama cave to Ajivika sect of the Jain monks. His Lomas Rishi cave is famous for its early architectural beauty. Imitation of wood in the cave shows that the wood was used for the first time in the rock cut caves. The vaulted roof of the cave supported by the rafters
resembles a thatched hut. Here, the carvings of the trellis, elephants in its lunnettes are excellent. 5 Ashoka also contributed eight rock cut halls or chambers in the Barbar and Nagarjuna hills. These chambers, which resembled the wooden buildings of that period, became the prototypes of the later more sophisticated rock-cut chaityas in India.

Next phase of the cave architecture started rapidly in Western India. In Pithalkohra (Maharashtra) cave excavation started on a large-scale form 3rd century BC onwards. And the Ajanta cave excavation started from 2nd century BC. Nearly 1200 rock cut caves are discovered so far in India. Out of those 900 caves were Buddhist, 200 caves were Hindu and 100 caves were of Jains. A Buddhist monk could travel 37 Kms in a day on foot in those days. That was the reason why the cave excavation took place within the 37 kms distance from one place to another such as Elephanta caves, Kundivate, Ambevale, Nanegari, Nasik, Ankai, Pithalkohara, Ellora, Ajanta, etc. Some of them might have been converted as Brahminical caves later. 6

In addition to man made caves, Buddhists and Jains started occupying natural caves. Goa also contributed some important natural caves such as at Rivona and near Cazur, both in Sanguem taluka. Siridao natural cave is near Bambolim. There are natural caves at Prembhat in Verna and at Pissurlem. Some other natural caves are also found at Chikalim, Adkona and Usgao. Except in the Rivona cave in Sanguem taluka, no other natural cave is producing the evidence of human habitation in Goa. Discovery of Stone image of Buddha in
Bhumisparshamudra near Rivona cave shows the evidence that the cave was occupied by the Buddhists.

Hallowing of the rocky hillsides for making halls is quite difficult. First a perpendicular rock wall had to be cut down and smothered and on this the outlines of the façade and entrance were to be indicated. Then a window had to be cut through tunneling of which could begin from the front to the rear. After completion of the ceiling, the workmen continued quarrying downwards, removing the debris of rock through the open façade. Rock cut caves at Harvalem are the best specimens for systematic and skilful work carried in Goa of the time.

Rock cut caves in Goa can be categorised into six major groups such as 1) Rock cut cave temples, 2) Rock cut cave temples with single cell, 3) Rock cut cave dwellings, 4) Rock cut caves in transitional period, 5) Natural caves, 6) Cave like pockets. Most of the rocks cut caves are concentrated in the present talukas of Bicholim, Sattari and Sanguem in Goa. These talukas have the common border with Sahyadri hills, which have the perennial source of water and are rich in food resources. These suitable conditions might have attracted the early farming communities and made them settle here. It may be the reasons for rich concentration of rock cut cave temples, apart from natural caves here. Though the Ponda taluka does not have the border with Western Ghats, it has its own resources of water and food grains, which attracted the early communities and made them settle here to develop rock cut cave architecture in
this region. Whereas talukas like Salcete and Mormugao are producing less evidence of rock cut cave architecture, Canacona, Quepem, Bardez and Pernem talukas are producing very meagre evidence of cave architecture in Goa.

Rock cut caves at Harvalem are the first ever-largest cave excavation in laterite rock in India. And these caves are situated near Harvalem waterfalls that are nearer to present Rudreshwar temple in Sanquelim village in Bicholim taluka. They are altogether 5 shrines — chambers and one room. The local tradition associates these caves to five Pandava brothers of Mahabharat and their wife Draupadi. The cave structure measures 28 metres long and 8 metres height cut in the low laterite outcrop, descending from North East to South-West and thus turned out to be the first ever rock cut cave excavation in laterite. Three major caves and one small with a residential chamber at the northern end show that it might have been used as Vihāra in the beginning. These two major caves and one small cave has an access from the rectangular ardhamantapa or common verandah. The residential chamber has its own access from its front courtyard. A thin curtain wall, which leads from ardhamantapa separating major caves into two separate blocks. The northern chamber is a square hall with separate entrance and freestanding pillars and pilasters. Regular cornice has been provided over the pillars and bold kantha of the entablature is also shown in the form of a beam above and below the kantha, which proves it was excavated later. Providing a semi circular rock cut step in one entrance and rectangular shape rock cut step in another entrance also strongly support that the cave excavation was carried out in two different phases.
The southern side chamber contains 3 linga shrines, which are detachable from their laterite pedestal or pitha. The northern chamber has a lone linga shrine with a pitha, which is also a detachable one. All linga shrines are made out of greenish schist in different shapes. The southern most linga shrine and southwest linga shrine in triple shrine chamber are inscribed and others are plain. Linga shrines of cave Nos.1 and 3, engraved with Parasva Sutras. The style of Parasva Sutras of these lingas resemble the style developed during 3rd to 5th A.D. Linga shrine of cave No.3 belongs to 'dvibhāga' type, (bottom square and top circular) and the similar feature can be traced in the developed linga shrines of pre-Chalukyan period in the other parts of the country.

Worshipping five lingas in a common ardhamandapa is a rare phenomenon. According to Karangāgama Panchalingārādhana is for Pancha Pāṭhakanāsanam. Hence Panchalingārādhana might have prevailed here. All six free standing pillars of ardhamandapa set at equal intervals corresponding to the major cave chamber are simple and massive without any ornamentation like early Chalukyan caves at Badami, Aihole, Pattadakal, etc. No decoration like lotus, Naga huddles were found in the ceilings of the cave unlike at Badami, Aihole, etc. Hence one can assume that the Harvalem group of caves belongs to pre-Chalukyan period.

Lingas of Pissurlem cave are also dvibhaga type like in Harvalem caves and Consua cave. A linga with large diameter in its circular top, can be seen in the Pissurlem cave No.1, unlike other linga shrines in Bicholim taluka.
Brahmasutras of Pissurlem lingas resemble the features of Cave No.3 linga of Harvalem rock cut caves. The lower cave at Pissurlem seems to be a natural one and later it was chiselled into required shape and size. The upper cave is man made cave. Linga shrine of this cave also seems to be of early period like that of Harvalem, but the cave seems to be a later development. Linga shrines of these caves might have been brought from somewhere else and venerated here.

Size of the linga shrine at Kusyache Rann cave in Bicholim taluka also shows the similar features like other lingas in Bicholim taluka. Here the cave excavation was started after leaving the height of 0.80 cm from the ground. Two freestanding square pillars support the roof from the porch. A square laterite pitha of linga have a bandhana in its centre. Two massive square columns and linga shrine show the features of early medieval period i.e., 8th – 9th centuries like in the caves of Lâmgao and Surla.

Rock cut caves in Narve, Bicholim taluka are chiselled into two groups in low laterite outcrop. Among the three caves, two were chiselled in one place forming 'L' shape and the other one is chiselled separately little away from this group. Cave No.1 in the two-cave group shows interesting feature in the cave architecture. Both garbhagriha and porch are in rectangular shape. Two freestanding massive pillars are supporting roof with corresponding pilasters. These pillars are square at the bottom and octagonal at the top. Unlike recessed panel shown in the façade of Harvalem caves, here Cave No.1 also has a recessed panel in its façade. A projected linga pitha was shown in this cave.
from its rear wall of garbhagriha like in Kundai cave and Shigao cave. On the basis of massive columns, recessed panel, linga pitha and an inscription found on the ‘lion image’ of this cave, show that this cave might have been chiselled after Lāmgao group and Kusyache Rann cave. The pillars of Lāmgao, Kusyache Rann and even of Surla caves are massive and plain like those found in the second group of Harvalem caves. But in the case of Narve Cave-I, the pillars are changed into octagonal shape at the top and square at the bottom.

After Harvalem group of rock cut caves, now the large-scale excavation might have taken place in the laterite hill in Lāmgao near Bicholim. Lāmgao group consists of two caves, with a gap of little distance. Cave No. I of Lāmgao group consists of a rectangular shrine chamber, with a hall and courtyard. Two square pillars separate the main shrine chamber from its hall. Here linga pitha is not monolithic laterite pitha like the one at Harvalem. A square linga is inserted in the pānavattā and placed in the middle of the garbhagriha. A ling pitha of Lāmgao resembles the features depicted in the relief of linga puja representation in the early Chalukyan temple, Virupaksha at Pattadakal (734 – 745 AD). On the basis of pānavattā, linga shrine, plain pillars, a massive platform, and a series of niches at the inner surface of the beam, this cave might have been chiselled in the 8th century A.D.

Cave No.2 in Lamgao is in a deteriorated state. Here the ground plan of the cave is very huge and square hall type. Height of the ceiling is nearly 2.50 mts. Since the cave is in a bad state, we were unable to measure the ground, but the
existence of a huge square hall indicates that this was the biggest cave excavation, which had taken place in Goa.

Next cave excavation took place in Surla in Bicholim Taluka near Honda. Unlike Cave No.1. at Lamgao, Surla cave also consists of a rectangular garbhagriha, with a hall and a courtyard, excavated in transverse direction. Here lingapitha of the garbhagriha is excavated from its rear wall. This feature also appeared in the Kundai cave near Mangueshi temple, Narve cave, and Sigao cave. Here lingapitha, is in cubic form. And linga has a large ovoid loop in the place of Brahma sutras. The ground plan of the cave shows that the influence involved was as in the case of structural temples of Hindu worship, and the basic components such as garbhagriha, antarāla and sabhāmandapa are shown here. This cave might have been come up after Lamgao, Kusyache rann and Narve caves.

Rock cut cave at Consua situated in Mormugaon taluka near ancient Kushasthali, has a square Yoni pitha (Pranala). Linga shrine is also dviibhaga type like in Harvalem caves but no Parsva Sustras were found in it. The three divisions (bhagas), Brahmabhāga (Square at the bottom) Vishnubhāga (Octagonal – middle portion) and Rudra Bhaga (Circular top) developed after 6th century A.D in the linga shrines. The linga shrine of Consua is dviibhāga type; hence the period of this linga goes back to pre- Chalukyan period. The rock cut cave at Consua is nearer to Kushasthali, where the ancient Mangueshi temple was destroyed and ruined.
Two rock cut caves, one on the hill top and another on the National Highway side are chiselled in the laterite outcrop at Kundai near famous Mangueshi temple. Rock cut cave chiselled on the side of the National Highway is showing the tantric worship in Hindu religion by representing a 'hole' in the high pedestal. According to locals, there was linga shrine in this cave, but now it was missing. A pitha (pedestal) is chiselled from its rear wall from its parent rock. A curtain wall separates the cave into garbhagriha and porch. Two massive pilasters support the roof in the porch with simple band of offsets in it. Since the tantric sect entered in the Hindu religion and became much adoptive in the early medieval period, this cave excavation might have come up in the same period.

Cave No.2 at Narve is chiselled in the mixed formation of laterite and basalt. This small cave also has a projected pitha from its rear wall with a hole in the center like in the Kundai cave. Making a 'hole' in the pedestal (pitha) in the absence of a linga shrine, in the cave chamber is one of the ancient traditions in Hindu worship. Here people worshipped a hole as Shiva. It shows the tantric worship in Hindu mythology. Both Kundai cave and Narve cave No.2 show the similar pattern of worship. Hence both the caves might have been developed in the same period.

Rock cut caves at Dabos also has a high projected pedestal from its rear wall near Sonali in Sattari taluka. Here linga is worshipped on special occasions.
Though the cave is small, it has two divisions in it, such as garbhagriha and porch.

The man-lion incarnation of Vishnu was shown in the small cave at Shigao. This cave is situated on the bank of River Dudhsagar. (Dudhsagar valley has given birth to Palaeolithic people). This cave measures 2.10 x 2.05 mts with a projected pitha from its rear wall. A couchant lion sculpture is carved on a pedestal out of the parent rock, whereas in Narve cave No. I, the lion image is carved in basalt and must have been brought there from somewhere else and consecrated there. Shigao lion sculpture which is the first in situ lion sculpture found in the cave architecture in this region seems to be of tantric worship in Hindu religion. On the basis of main deity with pedestal and worship of Vishnu, this cave may go back to the period of cave No.-I of Narve i.e. Kadamba period.

Cave temples with single cell are also found in many places in Goa. These caves are chiselled in a single rock boulder or low laterite outcrop from its parental rock. Small caves are chiselled in a single rock boulder and are found to be in worship in many places in Goa. Few of them are listed here -- Two small caves at Kavale Rann near Mayem Lake, a small cave at Narve (Cave No.III), two small caves at Sonali (Sattari taluka), one small cave at Caranzal (Sattari taluka), and a rock cut cave at Khandepar Gavathari etc. Two small caves were chiselled in two separate small laterite boulders at Kavale Rann within a gap of 5 metres in the cashew plantation. These caves have broad
openings. A pedestal is projecting from its rear wall with *in situ linga*. Both pedestal and *linga* are carved out from its mother rock. These caves look like a roadside shrines, since they are situated in the agricultural fields and found under the influence of worship occasionally. This worship seems to be of a nature of a family worship by the owner of the land to protect the crops as well as his family. Similar type of family worship is also traced in the caves at Caranzal, Sonali, Narve No.3 and Khandepar Gavathari. Caranzal cave is also chiselled in the similar manner like the one at Kavale Rann in a small boulder, while Sonali caves were chiselled in low laterite outcrop. In Sonali caves no idol was found, but according to the local people, these caves are under worship. These caves are also under family worship for their protection. Narve cave No.3 is also chiselled in the low laterite outcrop. But here they made two divisions, *garbhagriha* and porch within the cave. Rock cut cave at Khandepar Gavathari also has the similar features like in Narve cave. But its *Sabhamandapa* (porch) is in rectangular shape is very large. Nandi shrine is absent here. But in one of its mandapa corners a *linga* was placed. This cave was also chiselled in a low laterite outcrop. This cave is larger among the chiselled caves in this small group caves.

Unlike this small caves some caves like pockets naturally formed in the laterite outcrop are found. Sometimes these pockets are more in number due to erosion or drying up of water from its body e.g., Dhārbandoda, Neturlim and near Bicholim. In Bicholim town the pocket appeared after the depth of 25 metres while digging for a well.
There are some rock cut caves, which are situated near religious places in various parts of Goa. These caves might have been used as residential chambers. Few of such caves are mentioned here.

Rock cut cave at Curdi chiselled on the banks of River Salaulim is a rectangular hall with a rectangular porch. A large size bench was chiselled in the porch from its southern wall. Flights of steps lead to the river (Pushkarghat) which is chiselled in the laterite rock for bathing purpose. Since the site is famous for Mesolithic blades, Mother Goddess (Shakti cult) and famous Mahadeva Temple (now shifted to safer place), and non-availability of related material to support the worship in this cave, this cave might have been used as residential chamber.

Two rock cut caves at Malanguinim (Cuncolim) and a small cave at Sanguem also might have been used by Nathpanthis as residential chambers during that period.

Rock cut cave at Dhārbandoda is little larger in this group. It has a rectangular hall measuring 5.70 x 3.00 mts and a rectangular porch measuring 5.00 x 3.60 mts. A curtain wall is separating the open porch and the hall. No indication of worship was found here. Hence, this cave might have been used as a residential chamber by religious monks or used by the administrative staff to collect revenue from neighboring villages. Using caves for collection of taxes by the officials of respective areas is one of the practices in the medieval period.
(e.g., Akkanna Madanna caves in Vijayawada AP). Rock cut cave at Banastari is small with rectangular shape. No architectural features and evidence for worship was found there. Like in Dharbandoda cave it might have been used it for residential chamber. After two kilometres from Banastari cave, there is a huge natural cave with internal partition near Kushali Sattarikar’s house. Here also no human habitation was found. Village Adkona is nearer to Banstari cave and this village is famous for Betal worship. Hence this place was probably adopted as a great centre for religious worship.

Rock cut cave in Jua fort also has similar features like above caves. Here also no evidence of worship and architectural importance was found. This cave also might have been used as a residential chamber.

Rock cut caves at Curpem, Vichundrem and Neturlim in Sanguem taluka also indicate the similar activities like in other caves in this group.

Rock cut cave at Diwar also shows the similar features like those of caves at Curdi, Dharbandoda, Jua, Banstari. This cave has two divisions, a rectangular garbhagriha and a rectangular porch. Except a niche and four peg holes on the ground in the garbhagriha, no further evidence of worship is found in this cave. Local people know it as ‘Yogyache ghar.’ Since the site is nearer to famous Saptakoteswar temple at Diwadi, the religious monks and other recluses in Goa might have used this cave.
Rock cut cave at Aquem in Madgao is also a large rectangular cave that contains 3 divisions such as Garbhagriha, Sabhamandapa and Mukhamandapa. Sabhamandapa has two entrances on either side. No indication of worship was found here. A bold kanta and a flat roof for sikhara are showing the features involved in the Hindu temple. The Nathpanthis of this region also might have used these caves as residential chambers.

Ground plan of the Kodar cave also shows that it was a big complex with two square chambers and a rectangular chamber with an open courtyard on all three sides. These caves are in dilapidated state. An enclosed wall with doors indicates that this cave was also used as residential chamber. Since these caves also fall within the range of 5 kilometres from Saptakoteswar temple at Opa, rock cut caves at Khandepar and rock cut cave at Khandepar Gvathari, one can presume that this place must have been a great religious centre during medieval period.

Though these caves were chiselled for religious purpose in the beginning, due to negligence of religious functions the caves might have been converted for other purposes in the later period.

Groud plan of the Pilar cave shows that, it has a large rectangular chamber with wide rectangular porch. A Ganesh image carved in relief and unidentified human sculptures as well as Naga with expanded hoods show the existence of Hindu worship here. Since the cave was destroyed in the year 1962
by the order of Archbishop of Goa, and on account of the construction of an administration building here, we are unable to trace original plan and superstructure of this cave. Available coins and sculptures of Kadamba period and existence of Kadamba tank with a large natural cave indicate that it was a rich religious centre in this region.

Largest monolithic cave temples with flat roofs and *sikharas* were chiselled in laterite rock on the banks of the River Khandepar. Architecturally, these caves are very important. Architectural features of these caves show the transitional phase from cave temples to structural temples. Caves are chiselled in monolithic rock upto *kapotha*. A flat roof with slanty front is cut proportionately as the base for its superstructure. A *pamsana sikhara* is arranged with the neatly dressed laterite blocks, as superstructure of the cave. A lotus (*padma*) beautifully carved was shown in the relief of the ceiling within the trabeats. Caves are chiselled with the enclosed walls. This feature shows the influence of Hindu temple like encircled *prākara* wall in it. And necessary temple components such as *garbhagriha* and a porch with open common *mukhamandapa* also confirms the architectural feature of Hindu temple. A common open courtyard around the cave temples was meant for *Pradakshināpathā* (Circumbulatoriy passage). A flight of steps chiselled in the laterite rock bed on the banks of river Khandepar upto the caves seems to be for bathing *ghat*. All the above features of the caves show that it has basic amenities like any structural temple for Hindu worship.
The rock cut caves in Goa are small, as compared to the caves in the Deccan Plateau at Ellora, Elephanta, Badami, Aihole, Pattadikal etc. of this period, which are elaborately carved. And their architectural features are also distinct. Unfortunately the caves in Goa are chiselled in the natural laterite rock which has a high porosity in it. Hence carvers of this period were unable to embed sculptures in this weak stone. With the few and limited available features of art and architecture of these caves, it is very difficult to fix them in the particular time span. Except cave No.1 at Narve, the freestanding pillars of the other caves like Harvalem, Lamgao, Surla, Kusyache Rann caves are of plain and massive square. Only in the pillars of Narve cave, they were shown as bottom square and octagonal top like in Ellora caves. But other features like fluet sculptures were absent here. Except few linga shrines, no other sculptural evidence was found here. Hence, it is doubtful whether this linga shrine originally belonged to this particular cave or it was brought from somewhere else? Similarly, the mouldings in the adhisthana of the cave architecture are also not clear, whereas in the other parts of India the details were given more. With the help of available few evidences, the author tried to fix them in different groups as the following: After brick temples, the construction of the stone temples started from 5th & 6th century A.D, in India. In the same period, excavation of rock cut caves also started rapidly because of the administrative set-ups of the time was to build a temple or chisel a cave in the natural rocks.
ROCK CUT CAVE TEMPLES

ROCK CUT CAVES AT HARVALI M.

The name Harvalem might have been derived from Hara = Shiva and Halli = village, harahalli. From this it took colloquial form, Arvalaem. Presently pronouncing it as Arvalem, it has taken an important place in the archaeological world map by giving birth to a world famous rock cut caves in the laterite.

Rocks cut caves of Harvalem are situated on the west bank of River Sanquelim near Sanquelim bhatt in Bicholim taluka in North Goa. Present site is nearly 35 kms North to Panaji, in Goa. There are altogether '5' shrine chambers and one room. Hence the local tradition associates these caves as 'Panchapandava Guha' and attribute them to five Pandava brothers of Mahabhārata and their wife Draupadi. It is known as Houri Dos Pondaos, and Pandavanchi Guha. The cave measures 28 mts long and 8 mts height chiselled in a low laterite outcrop descending from northeast to south west near Harvalem water falls towards south west of present Rudreswar temple.

On the basis of assumption, these two major cave blocks with a small residential chamber at the northern end might have been used as Vihara in the beginning. Five of the six rock cut cells No. 2,3,4,5 and 6 are oriented towards East and Cave No.1 at the extreme south west however is facing north. There are four free standing massive square pillars set at almost equal intervals.
corresponding to the triple shrine chamber which is cut on the back wall of the
*ardhamandapa* against each of the longitudinal bays. The group of four
shrines' chambers No. 1, 2, 3 and 4 has the entry through a common front hall or
*ardhamandapa*. There is no access for passing to the shrine chamber No. 5
from the group of 4 shrine chambers. A thin curtain wall is separating these
caves into two separate blocks and more developed characteristic features can
be seen in the shrine chamber No. 5. Common *mukhamandapa* without roof for
all six caves are chiselled in the monolithic rock and a *chandrasila* and square
steps at their respective entrances are also cut in the natural rock bed.

**Cave No. 1**

Cave No. 1 is at extreme southwest in the first block. It is squarish plain
chamber measuring 2.05 mts x 2.10 mts facing north and belongs to *Nirandhara*
type. No *pradakshanāpaitha* is found in it, because the *pitha* (pedestal for *linga*)
of the *garbhagriha* is chiselled from its rear wall of the cell. An inscribed
detachable *linga*, with *Somasutras* is made out of fine basalt stone and is
inserted in the squarish hole of the *pitha*. The doorframe of the cell shows a
framework recessed within an outer rectangle. *Shivalinga* in this shrine has on it
a box headed character of Brahmi. The language is chaste Sanskrit of the Kavya
style and the extant portion reveals the poetic calibre of the composer. The pillar
appears to have been later converted into a *linga* when the base of the pillar was
cut to make it in the present form. The writing style resembles the Gudnapur
inscription and the box headed character of the epigraphy resembles the
Banavasi inscription of ‘Mrigesa’ published by M.N.Katti in Epigraphica Indica 47 and JEST-VII. It says that God Shiva was visible in the beautiful garden like forest suggesting the existence of Siva temple there. ‘It also refers to a Mahalaya to the south and to the associates practising ‘Yoga’ and engaged in meditation. Naravyagra that was mentioned in this inscription is surmised to be Mrigesavarma himself. It has been suggested that the pillar with the epigraphy was brought to the cave where it was later on consecrated thereby indicating that the pillar as well as the Shivalinga were brought from somewhere outside this cave.\textsuperscript{11}

Text follows:

1. \textit{nyasailo ramy= Opavana kananah}
2. \textit{(bha) gamanisas=Sata sannihito Harah}
3. \textit{nyena tulyas=tad=abhigamina (m)}
4. \textit{Japyais=cha sthana=Virasana=adibhih}
5. \textit{Sau gatva cheshtay=apy=agatstviha}
6. \textit{Naravyaghra dakshin=epi mahalaye}
7. \textit{(vo) himsyat=sa- pataka-yukto bhave (t)}

Its translation in English is as under: -

\\begin{quote}
\textit{the hill and the beautiful garden like forests..... (God) Hara who is always (visible) nearby ........... in the mahalaya to the south the (Yogis ?) mediating and indulged in Virasana.....Naravyaghra ........ who by violence ........ becomes guilty of sins.}^{12}
\end{quote}
Brahmasutra or Somasutra of this linga goes back to circa 5th to 6th century A.D. Because Somasutras of Linga shrine in this cave show continuation of diamond shape with vertical ridge without any cut in it. Whereas in Chalukyan period, the gap between diamond shape and vertical ridge was maintained. The linga top is tapered in rounded shape like early lingas of 3rd – 5th century AD. But the base of the linga is circular in section like 5th – 6th century A.D. Linga shrines. During 3rd to 5th century A.D, the Linga bases were found in elliptical shape. Hence, on the basis of above assumption, this linga can be dated to before 6th century A.D.

Cave No.II

Cave No.II is a western most shrine, in the triple shrine chamber and is facing east. It is a square chamber and measurers 2.45 x 2.70 mts. A plain hall with a square pitha (pedestal) at the centre of the cave shows that it is a Sandhara type. Unlike Cave No.I, Linga shrine of cave No.II is also inscribed one and was made out of basalt stone and inserted in the laterite pitha. Linga pitha of this cave was cut in the laterite rock after leaving a gap of 80 cms from its rear wall of the cave. Linga of this cave shows some interesting features. The bottom Brahmacāga and Vishnuśāga are slightly recessed in pentagon shape and top Rudrābhāga shows circular shape. The rectangular part which was chiselled below the circular disc and top of the pentagon shape, contains an inscription which reads as ‘SAMBALPURAVASI RAVI’ which is in Brahmi script with angular character.
A.B. Valavalikar discovered this inscription first in 1927. Later Fr. Heras copied it in 1929 and Panduranga Pissurlencar accepted this reading as "on the top of Sanchapura" which renders no meaning. But in 1964, G.S. Gai and K.V. Ramesh translated it meaningfully as "Sambuluruvasi Ravi".

Shamba is the son of Lord Krishna. According to Sambapurana, Shamba was suffering and hence he was advised to erect temples of 'Surya' (Sun God) to get cured from leprosy and get rid of his ailments. So he erected temples of Surya. Ravi is one of the many synonyms of the Sun God and is also referred often in Sambapurana. Here Ravi, a circular disc shape of linga top is Surya or the name of the donor of the linga shrine. Vasi=Native place, Sambaluru or Sambapuri is a town name. Some evidences of an old temple platform and small image in relief of the Sun God and some portion of the garbhagriha of the ancient temples near Kudne which lies a few kilometers away from Harvalem, discovered during exploration conducted by Mitterwalner and her team in 1964 disclosed the confusion on Shivapura or Sambapura.

Cave No.III

Cave No.III is a central shrine chamber in the triple shrine group. Cave is a square chamber and plain, measuring 2.70 x 2.55 mts facing east. Unlike the pitha of cave No. II, pitha of the cave No.III also is installed in the middle of the cave like as in the Sāndhara type cave. A basalt stone pillar later was converted into a Shivalinga and inserted in the laterite pitha. Brahmāsūtras or Somasūtras of Sivalinga resemble the Sūtras engraved in the linga of Cave No.I. Hence this linga also goes back to the date of cave shrine No.I. Two
square steps chiselled near the entrance of the cave in the ardhamandapa and a chiselled chandrasila at the entrance in the open mukhamandapa indicates that this cave is a principal cave in this row. Generally on the right of Siva, Brahma is shown and on the left Vishnu is placed. But here on the right of Shiva (Brahmabhaga) is occupied by Surya (circular disc) and left of Vishnubhaga is occupied by Shakti. Surya-Shiva-Vishnu cult is popular in some of the places in the neighbouring Karnataka State. And this culture might have been adapted here with the influence from there.

Cave No.IV

Cave No.IV is also a square chamber measuring 2.50 x 2.50 mts and is facing East. Square rock cut platform repeated here is also at the centre of the cave and few stone blocks were joined in the damaged portion of pitha, while making a square platform for Linga shrine of Sandhara type. Linga of this cave is a square, and spear shaped. This pointed linga is chiselled in good basalt and is inserted in the square pitha. Here the spear shape Linga indicates a ‘Shakti cult’ and it also occupied left side of the principal chamber. In the place of Vishnu, Shakti was shown here as Surya-Shiva-Vishnu culture. According to K.V.Sounderrajan, Saiva-Kumara-Saura culture displayed here is similar to that in the southern Pandyan caves in Tamil Nadu. According to this culture, Kartikeya is shown as Shaktidhara here.
Cave No.V

A thin curtain wall in the *ardhamandapa* separates this cave chamber from 4-shrine chambers. This cave chamber is rectangular in shape and measures 6.25 x 2.80 mts and has a plain hall with central *pitha*. Cave is facing east—and was provided a separate entrance from the *mukhamantapa* with rectangular steps. Two free standing square pillars with pilasters supporting *Uttira* beam, runs all around *ardhamandapa*. Recess in the columns indicates that there was a doorframe that was missing now. Two square niches (windows) are provided on either side of the front wall and a regular cornice is provided roughly over the pillars. Rectangular sanctum for Shaiva worship is unique and it can be seen in the Ravulphadi cave at Aihole in Karnataka which belongs to later period. A laterite *pitha* (pedestal) at the centre is repeated in this cave also. A *linga* carved in basalt with *panavatta* is placed over pedestal. *Pānavatta* now is in fragile condition and its flow shows towards south. *Shivalinga* with *Pānavatta* of this cave indicates that the *Somayoga* concept of Shiva and Parvati worship prevailed here. *Somasutras* on *linga* of it, shown with a division (gap) between diamond shape and vertical ridge indicate that it was the influence of Chalukyan period. Whereas in the caves No. I and III in the 4-shrine chamber, the gap was not maintained in the *Somasutras* which indicates that these *linga* shrines belonged to pre-Chalukyan period.

Recessed panel in the façade of the cave resembles the recessed panel of the temple No. 17 at Sanchi supporting the idea of later phase. On the basis of *Somasutras* on *Sivalinga*, indication of doorframe for sanctum in the form of square columns, separate entrance from *ardhamandapa* as well as
mukhamandapa and recessed panel over the façade this cave might have been chiselled in the second phase (after 6th century A.D).

**Cave No.VI**

At the far northeastern end of the row, a rectangular chamber measures 2.80 x 2.20 mts chiselled from Mukhamandapa. This cave also is facing east. It has a 0.55 cms wide raised platform with eight circular holes, chiselled along the northern wall. Eight circular holes are the indication of ‘Ashtamatrikas’. (in the absence of Saptamatrikas, Ashtamantrakas were worshipped in Hindu religion with liquids and sacrificial offerings. e.g. in cave No.22 and 16 in Ellora 8 matrikas were shown). A raised platform in the cave, with separate entrance, and cave chiselled at the corner of the row, indicate that it might have been used as residential chamber by religious monks, before converting this Vihara as Brahmanical caves.
ROCK CUT CAVES AT HARVALEM

PLAN
Rock cut caves at Harvalem
ROCK CUT CAVES AT PISSURLEM.

Two rock cut caves are found hewn in the slopy laterite rock near Pissurlem in Bicholim taluka. Presently, the large-scale iron ore mining is going on in front of the rock cut caves. The lower cave seems to be a natural one and later it was converted into the present position as per the required shape and size. The ground plan of the cave chamber is extended inside towards north. A flight of steps is provided near the entrance. A circular pedestal for linga shrine, was constructed in the recent past with modern material. As a result, it has lost its aesthetic value.

A few metres away from the cave No.I, another cave is hewn at the height of 20 metres from the ground level. Now it is called as Cave No.II. Cave is not easily accessible.

Cave No.I (Lower cave):

Cave is facing west. It measures 6.20 mts x 4.90 mts with slopy ceiling towards north and its maximum height from its centre is 2.25 mts. Ceiling of the cave touches the ground at the northern end. A circular pitha made of concrete for linga shrine and pāṇavatta seems to be of very recent origin. Flight of three steps and an iron gate for entrance also is the later addition in this cave.

Linga shrine of this cave is dwibhaga type like in Harvalem caves. Poojasma is a circular and had a diameter of 0.75 mts and height of 0.53 mts made out of basalt stone. Linga shrine contains Brahmasutras. These Brahmasutras resemble the Brahmasutras of cave No.3 in Harvalem rock cut caves.
According to Matsyapurana edited by H.N. Apte, Linga shrine has three parts. Bottom is squarish and is called as Brahmbhagā, middle is octagonal called as Vishnubhagā and the top is circular called Rudrabhagā or Poojasnia. These 3 bhagā linga shrines were developed in the early Chalukyan period around 6th century AD and were incorporated deeply in Hindu religion.

Linga shrine here is dwibhagā type and has Brahmasutras in it, like in Harvalem caves. Hence this linga shrine goes back to 5th to 6th century A.D. But the architectural features of this cave show that it belonged to a very late period. Linga shrine might have been brought from outside the cave and was inserted here.

Cave No.II (Upper cave)

Upper cave is also chiselled in the slopy laterite outcrop few metres away from the lower cave. This cave is hewn in a rectangular shape, approximately at the height of 20 metres from the ground. Cave is facing north. Flight of narrow steps is provided to reach this cave. Cave measures 3.90 metres x 1.60 metres with a height of 2 metres. This cave is very narrow in shape. Linga shrine of this cave also has similar type of Brahmasutras as it was shown in the lower cave. Poojasma also shows the similar features like those of Harvalem caves and the lower cave. Hence this linga shrine also might have been brought from outside the cave and installed here.

Linga shrines with circular top containing wider diameter are mostly found in the Bicholim taluka in Goa, such as Harvalem, Kusyache Rann and Pissurlem. Four kms away from this cave there is a Mahadev temple at
Pissurlem where *Swayambhu linga* is found under worship with great pomp. It seems that, this place was a great Śaivite centre for Hindus from the beginning of this era.
ROCK CUT CAVE AT PISSURLEM.

GROUND PLAN - CAVE NO. I

PLAN - CAVE NO. II
Rock cut cave Pissurlem -
Rock cut caves at Lamgao

Rock cut caves at Lamgao is hewn in the slopy laterite outcrop in the southern side of Bicholim town. Here the lower cave is facing east, and is situated in the agricultural field, and was not easily accessible. It has a rectangular garbhagriha, and a rectangular porch, with open mukhamantapa (which, forms a open courtyard). Garbhagriha measures 3.40 x 2.65 mts. A 0.10 cm offset, was provided on either side in the front wall with a bandana. A square Linga shrine made out of basalt stone was placed on a pāṇavatta (water chute) in the middle of the garbhagriha. A rectangular porch is chiselled before garbhagriha with four freestanding massive pillars with two pilasters on either side of the porch. These four free standing plain pillars form a square and give support to the ceiling of the cave. A square hole hewn on the ground in the middle of the porch may be for ‘Homa’ ritual. A Uttira beam supported by two square pillars and its two pilasters runs in front porch. A 16.30 mts long rectangular open courtyard was built at the entrance of the cave for Nandi shrine, and Nandi was placed in the centre of the open courtyard with a pedestal facing towards his master.

On the basis of architectural features, the Buddhists in the beginning might have used this cave. And later it might have been converted as Brahmanical cave and is under worship since then. G.von. Mitterwallner says in her article ‘Two natural caves and 11 man made cave excavations of Goa’, that Linga of this cave may not be the original one, since it is carved in basalt'. The pitha of linga (pāṇvatta) is carved in hourglass shape. This type of pithas are noticed in the reliefs depicting linga puja representations in the Virupaksha
temple at Pattadikal. The original pitha might have been replaced with the present one. On the basis of linga shrine and panavatta the approximate date can be the 8th century AD. This cave excavation was not carried out earlier to Harvalem group of caves, which were hewn and are situated a few kilometres away from this cave in the same taluka.

Cave No.II

Upper cave at Lamgao is in a badly deteriorated state. Ground plan of the cave shows that it is a large square hall type. Height of the ceiling is nearly 2.50 mts. Since the cave is in a bad state, we were unable to measure the ground plan, but large hall in square shape indicates that this cave excavation is the biggest and first ever cave excavation with massive pillars in Goa.
ROCK CUT CAVE AT LAMGAO-BICHOLIM.

PLAN - CAVE NO. I
ELEVATION OF LAMGAO CAVE NO. I.
Rock cut cave at Lamgaon
ROCK CUT CAVE AT KUSHYACHE RANN NEAR VARPAL HATURLE

The word 'Kushyache' means of a type of tree, 'Rann' means forest, 'Houri' means cave in the local language Konkani. Hence the cave is called Kushyache Rann Houri.

A medium size square cave measuring 3.47 mts x 3.90 mts is hewn in a low laterite outcrop in the Kushyache Rann near Varpal Haturli. The site is nearly 3 kms away from Mayem Lake in Bicholim taluka in North Goa. The excavation of the cave is at 0.88 cms from its ground level near the water stream, which starts from natural water spring a few hundred metres away from it. This cave is facing west. Two free standing square pillars supporting the roof of the mandapa. A uttira beam is running on its top and below the roof ceiling. The square pillars measure .58 cms x .48 cms and have a moulding of kumuda at its bottom. A 1.75 x 1.58 mts rectangular hall (mandapa) is provided for main deity. Square shaped linga, 0.38 cms high carved in basalt is found inserted in its laterite pedestal of 0.75 cms x 0.80 cms by leaving 0.50 cms gap from its rear wall. A bandhana running all round the pitha near the bottom is an interesting feature here. The cave seems to be a Sandhara type but no idol worship is reported here. The cave is situated in a thick jungle and is not easily accessible. The linga shrine of this cave has similar features like those of Harvalem and Pissurlem in the same taluka. Hence, the cave excavation might have started here after Harvalem, Pissurlem and Lamgao excavations.
ROCK CUT CAVE AT KUSHYACHE RANN.

PLAN

ELEVATION
Rock cut cave at Kushyache Raan
ROCK CUT CAVERNS AT NARVE

Rocks cut caves at Narve are chiselled in laterite outcrop in three different places near Saptakoteswar temple in Bicholim taluka. There are altogether 3 cave temples situated in the agricultural field near the natural water spring. First two caves are hewn one after another in ‘L’ shape, and the second group includes a lone cave temple, which is comparatively small, but also lies in the agricultural field, a few metres away which has no approach road and is also not easily accessible.

Cave No. I

Cave No. I is comparatively big, and is facing south. This cave has a rectangular garbhagriha and a rectangular porch at the entrance. Garbhagriha is plain, except a projected pitha, which is hewn from its rear wall, measuring 0.80 x 0.75 cms. Garbhagriha measures 2.10 x 1.35 mts. A lion idol (main deity) carved in basalt stone is placed over projected pitha in the garbhagriha. An inscription engraved on the lion image was found here. On the basis of its palaeographic features of Brahmi script, the inscription goes back to early Kadamba period. A rectangular porch measuring 2.70 mts x 0.70 mts has a recess in its pilasters in the entrance. Two free standing square pillars with their corresponding pilasters on either side separate the garbhagriha from its porch. A uttira beam running horizontally with the support of the free standing pillars and its pilasters. A recessed panel carved on the façade of the cave resembles the features of recessed panel carved in the façade of second group of Harvalem rock cut caves. Two massive columns hewn on either side of the entrance give support to the roof. These columns have two divisions in it; the top is octagonal.
shape and the bottom square one. It is an interesting feature, which is found in
the cave architecture. A seated lion of '15' inches is installed in the cave No.1
on a pedestal, which has a Brahmi inscription, referring to the pious woman
who had made the donation. The mane below the chin of the lion and bell-hara
around the neck unusually thick moustaches are striking features of this lion.19
The early Chalukyas were the worshippers of Nārāyana and their emblem
insignia was Varaha. Here the linga may be representing Narasimha in the
form of Man-Lion incarnation. Construction of a famous Saptakoteswar temple
and the spot where a Jaina Thirthankara image was found in the Jaina Kota are
nearer to these caves. It shows that this site was a much cultural adaptive centre
from the beginning of this era. On the basis of Lingapitha, massive columns,
and recessed panel on façade, this cave might have been hewn after Lamgao and
Kusyache Ran caves.
ROCK CUT CAVE AT NARVAEZ NO. 1

PLAN
Cave No.1 at Narve
ROCK CUT CAVE AT VELGUEM SURLA.

Rock cut cave is situated behind the present Siddheshwar temple at Velguem Surla, 3 kms away from Usgao on Honda-Usgao State highway in Bicholim taluka. Cave is hewn in the low laterite outcrop on the bank of a small water stream. Ground plan of the cave resembles the features of Hindu temple, which contains a garbhagriha, an antarala and a sabhāmandapa; these parts being necessary components for a basic Hindu temple. This cave also contains a rectangular garbhagriha, a rectangular porch, and a rectangular open courtyard. Garbhagriha measures 2.60 x 1.70 mts with a wide opening of 1.20 x 1.75 mts. A rectangular porch measures 6.75 x 2.00 mts with two free standing square pillars and pilasters also chiselled in the continuation of the cave excavation. A rectangular open courtyard (Sabhāmandapa) measures 6.00 mts x 3.10 mts with a flight of 3 steps. Cave is facing north. A projected cubic pitha (pedestal) of 0.90 x 0.90 x 0.60 mts is chiselled in the garbhagriha from its rear wall of parental rock. A linga shrine with panavatta is placed over pedestal. Rudrabhaga of linga has a diameter of 0.57 mts and its height is 0.40 mts, like other linga shrines in Bicholem taluka. Here engraved Brahmasutras in the linga is a different type. A broad line like a large ovoid loop was drawn in the form of inverted ‘ma’ in Brahmi script. No similar type of Brahmasutras like those of Harvalem, Lamgao, Pissurlem caves were found here. But the shape and size of the cave resembles the features of the above caves. There is a niche like depression on the right side entrance wall of the garbhagriha, which seems to have been used for keeping small religious objects. Two freestanding massive pillars are supporting the ceiling of the porch with pilasters on either side. An
uttira beam is running over the chiselled pillars in the east-west orientation. No ornamentation was found in the ceiling. Extended cutting on either sidewalls of the cave, and a step at the entrance forms a sabhamandapa of the cave. This open courtyard does not have any roof.

Similar features of three divisions also can be seen in the Lamgao cave No. I. But in Lamgao, two square pillars support both garbhagriha and porch and gives an appearance like a single hall. Whereas in the Surla cave, a curtain wall separates garbhagriha and porch. On the basis of cubical linga pitha, a large ovoid loop in the linga shrine, and three divisions in the cave resemble the features of a Hindu temple. This cave excavation might have started after Lamgao and Kusyache Rann caves in the same Bicholim Taluka.
ROCK CUT CAVE AT VELGUER SURA

PLAN
Rock cut cave at Velguem Surla
ROCK CUT CAVE AT CONSUA

Rock cut cave at Consua is situated near ancient Kushyasthali in the Mormugaon taluka. This site is very close to the ancient site of Manguesh temple, which was destroyed by the then Portugues Government. This cave has a square *yoni-pitha*. The Linga shrine is *dwibhāga* type, but no *pārśvasutras* were found in it. Moreover, the lower part of the linga is not given the perfect square shape and it remained as unfinished cylindrical *linga*. Similar type of *dwibhāga lingas* also can be seen in the Harvalem and Pissurlem caves. The *dwibhāga lingas* mostly found in India belong to pre-Chalukyan period. Architectural features like *Brahmabhāga* (square), *Vishnubhāga* (octagonal) and *Rudrabhāga* (circular) are incorporated in Hindu religion after 6th century A.D.²⁰
ROCK CUT CAVE AT KUNDAI

Rock cut cave at Kundai is hewn in the naturally formed laterite rock near the deep curve on the hills after Kundai industrial estate. This Brahmanical cave falls on the right side of the Panaji- Ponda National Highway near the famous Mangueshi temple in Ponda taluka. Cave is facing east and is comparatively small in size. It is chiselled up to the height of 3mts in the slopy laterite hill. Two massive pillars are standing on either side of the entrance and support the rectangular porch with their sidewalls. These pillars have a recess in their bodies. Rectangular porch measures 1.75 x 0.85 mts. A 0.52 cms wide curtain wall is separating sanctum sanctorum from its porch, with a 0.60 cm gap, as entrance for garbhagriha. Sanctum sanctorum is also a rectangular hall measuring 1.60 x 0.70 mts.

A rectangular projected pitha was hewn out from its parental rock from its rear wall of the garbhagriha for main deity, measuring 0.60 x 0.30 x 0.75 mts. A 0.10 cm x 0.20 cm circular hole in the projected pitha indicates that it is for the worship of Lord Siva. Worshipping a hole in the absence of Linga shrine is one of the traditions in the Tantric sect of Hindu religion. Similar feature also appeared in the cave No.II of Narve in which a high pedestal was made in the basalt stone. There was a natural water spring a few metres away behind the cave, which provides the required water for the cave temple and its devotees. Tantric sect probably entered in Hindu worship in the early medieval period. Hence these caves also go back to the same period. According to local people, Linga was missing from this cave. If it is true the Linga shrine might
have been of small size (Swayambhu Linga) because there is no possibility to insert 3-bhāga linga in this small hole.
Rock cut cave at Kundai
CAVE NO.II AT NARVE

Cave No.II at Narve belongs to first group near natural water spring. The cave is hewn in the mixed formation of basalt and laterite outcrop. It is facing east, and has a small square chamber. Square chamber (garbhagriha) is plain, except a projected hight pedestal for its main deity, which was chiselled from its rear wall. A circular hole, found in the middle of the top surface of the pedestal, indicates that the cave was meant for Shiva worship (tantric sect). In the absence of Linga shrine, a hole was worshipped as Siva. Similar feature also can be seen in the cave temple at Kundai near Mangueshi temple. Though the cave is small with single cell, owing to its high pedestal and a hole, this cave was not included in the group of cave temples with single cell. A natural water spring which flows behind this cave supplies the required water for its devotees and other purposes.
ROCK CUT CAVE AT NARVIQ.
ROCK CUT CAVE TEMPLES WITH SINGLE CELL

ROCK CUT CAVE AT SHIGAO

A rock cut cave hewn in a low laterite outcrop exists at Shigao near Molem in Sanguem taluka. The cave is chiselled in the laterite on the banks of River Dudhsagar. It is a square chamber measuring 2.10 x 2.50 mts with a height of 1.34 mts. from the ground. No architectural features were found in this cave except a pilaster on either side of the entrance. A lion sculpture is carved on a pedestal out of the parent rock. Since the stone is badly weathered the facial details of the lion are not clear. Since the front legs are half sculpted, it clearly indicates that the sculpture is incomplete. However, there are many sculptures of lion found in Goa, Shigao lion is the first in situ lion sculpture found in a cave. Scholars like Prof S.Sundara feels that this sculpture may represent Girija Narasimah – the Man-lion incarnation of Lord Vishnu. In this case, Narasimha is depicted in the form of lion. According to the texts on iconography, the conception underlying the name Girija Narasimha is that the lion comes out of the mountain cave. This concept might have been adopted here. There is a bathing ghat with hewn flight of steps into the River Dudhsagar from the cave entrance to facilitate the pilgrims. Temple ruins with some loose sculptures and some erected stones (menhirs) nearby the cave indicate that once it was a famous pilgrimage centre for Hindu worship. Dr.Nambirajan of the Archaeological Survey of India discovered this cave and he gave tentative period between 8th to 9th century A.D. for both the cave and sculptures. Discovery of palaeolithic tools nearby the cave also indicates that the palaeolithic people had occupied this place.
ROCK CUT CAVE AT SHIGAON.

PLAN

ELEVATION
Rock cut cave at Shigaon
ROCK CUT CAVE AT DABOS NEAR VALPOI

Rock cut cave chiselled in the slopy hill of the laterite outcrop is found near Dabos, which is nearer to Valpoi in Sattari taluka. This cave is facing east, with a rectangular hall and square porch. Rectangular hall is plain and measures 0.90 mts x 0.50 mts except a raised pedestal for its main deity, which was carved from its rear wall. Porch is also a plain hall. Doorframe of it contains a 0.10 cm recess in its body. A small stone placed on the ground near pedestal in the garbhagriha is under worship on the special occasions of this region. A projected pedestal for main deity hewn from its rear wall of garbhagriha is a unique feature in the cave architecture of this region. (This type of high pedestal appearing from the rear wall also can be seen in the cave No.II at Narve in Bicholim taluka, but here the pedestal has a hole in it). About 2 kms from this cave near Sonali village, two minor rock cut caves were carved out and one more cave chiselled near Caranzal village of this area shows the rich potentiality of cave dwellings in this region.
ROCK CUT CAVE AT DABOS NEAR VALPOI.

PLAN

ELEVATION
Rock cut cave at Dabos
CAVES WITH SINGLE CELL AT KAVALE RANN

There are two small caves at Kavale Rann and one medium size cave at Kushyache Rann. They show some important architectural features in the cave architecture of this region. Kavale Rann means forest of crows in the local language and also the area of these caves is known, as Divgale, which means grove in the same local language. With the help of Mr. Rajendra Kerkar, a well-known writer in Marathi, these caves in this region only are located.

Cave No.1

Cave No.1 at Kavale Rann near Mayem Lake, in Bicholim Taluka, and North Goa District is a miniature cave. A small rock cut cave is found chiselled in an independent laterite boulder in the cashew plantation (agricultural field) that is just 1.5 kms from Mayem lake on the Mayem-Chodan highway. Cave is carved out of a 1.55 x 2.55 mts laterite boulder. It is facing towards the east and the actual excavation of the cave starts after the level of 0.23 cms from the ground. The height of the cave entrance is 1 metre. and the width is 0.66 mts. Garbhagriha, a house for deity is a plain hall measuring 1.5 x 1.5 mts. A 0.30 cms high circular linga cut from its rear wall on a circular pedestal measures 0.50 cm x 0.30 cm in the natural rock. Presently, the linga (main deity) is under worship on special occasions by the family of the agricultural land.
Cave No.2

Just five meters away from Cave No.1, another small cave is hewn in an independent laterite boulder, which measures 1.85 x 1.74 mts. The cave excavation started at 0.70 cms from the ground level. The height of the cave entrance is 1.15 mts, while the width is 0.74 cms. House for the main deity is a plain square hall. A circular linga of 0.30 cms height is chiselled in a 0.30 x 0.40 cms circular pedestal from its rear wall in the natural rock. Linga of this cave also is under worship occasionally by the family of the owners of the land. Linga srines of these caves show the unique feature of in situ linga hewn from its parental rock in the cave.
ROCK CUT CAVE AT KAVALE RANN.

PLAN

ELEVATION

PLAN

ELEVATION
Rock cut caves at Khavale Raan
ROCK CUT CAVE AT CARANZAL, NEAR SONALI IN SATTARI TALUKA

Rock cut cave at Caranzal is situated on the banks of the River Mahadai near Caranzal village. Cave is hollowed out in the slopy hill of laterite in the agricultural field. Unlike the caves at Kavale Rann, this cave is also hewn in an independent laterite rock boulder. Cave is small and features of this cave also resemble the features of the caves at Kavale Rann. Striking feature of this cave is a miniature sikhara, which crowns the rock boulder of the cave.
Rock cut cave at Caranzal
ROCK CUT CAVES AT SONALI

Two small caves chiselled in the laterite rock are situated in the agricultural field in Sonali village near Valpoi in Sattari taluka. Two independent caves hewed in two separate laterite blocks also are found near the small bridge at Sonali.

Cave No.I

Cave No.I is facing east and is comparatively little bigger than the Cave No.II. This cave cut in a rectangular shape measures 1.70 mts x 1 mt. It is a plain hall except a 0.40 cm projected pedestal meant for the main deity from its rear wall. A flight of three steps is cut at the entrance of the cave as a staircase. Doorframe of the cave has a 0.10 cm recess in its body. But no idol worship is there in this cave.

Cave No.II

Cave No.II is also hewn in a low laterite outcrop a few metres away from Cave No.I, in the same agricultural field in Sonali near Valpoi. The place where the caves are situated now, might have been converted as agricultural field in recent times. Cave has a small rectangular hall measuring 0.80 mts x 0.50 mts facing south. A 0.30 cms projected pedestal carved out for main deity from its rear wall, unlike in the Cave No.I. No idol worship is found prevailing in this cave also. A large rectangular step cut at the entrance of the cave is for easy access.
ROCK CUT CAVE NO. I AT SONALI NEAR VALPOI.

PLAN

ELEVATION
Rock cut cave at Sonali I
ROCK CUT CAVE, NO. II AT SONALI NEAR VOLPOI.

PLAN

ELEVATION
Rock cut cave at Sonali II
**Cave No.III at Narve**

Cave No.III is a lone cave in the second group at Narve. Rock cut cave is in the low laterite outcrop. It is rectangular and measures 3.80 mts x 2.70 mts and is facing south. It has a rectangular *garbhagriha* and a rectangular porch with open *mukhamantapa*. Garbhagriha is plain except a square pedestal from its rear wall measuring 3.80 x 1.60 mts. A projected *pitha* for main deity is cut from its rear wall. This *pitha* measures 0.60 x 0.50 cms and forms a base for *pānавatta* from which the outlet is directed towards east. A miniature *linga* shrine placed in the middle of the *pranala* is under worship on the special occasions.

A curtain wall exists there with a wide opening separating the *garbhagriha* from its porch. Porch also is a rectangular hall measuring 3.80 mts x 0.70 mts and was occupied by Nandi shrine which is made of basalt and was placed in the middle of the porch facing towards his master. Pilasters on either side of the porch have a recess in its body. A partly raised masonry curtain wall with an entrance to *mukhamantapa* seems to be a recent addition. Since the cave is situated in the agricultural field, it does not have an easy access to reach the cave.
ROCK CUT CAVE AT KHANDEPAR GAVATHARI

Rock cut cave at Khandepar Gavathari situated on one of the banks of the river, which is a tributary of River Khandepar. Cave chiselled in a low laterite outcrop. It has a rectangular garbhagriha measuring 2.00 mts x 2.55 mts and an open rectangular sabhāmandapa measuring 4.60 x 3.50 mts. Garbhagriha is plain, and has a niche in the northern wall and an outlet in the southern wall for water chute. Lingas enshrined in the garbhagriha have a pānvatta, which is of a circular shape. A large open sabhāmandapa of the cave is to accommodate a large congregation at the entrance. A miniature linga, which was placed before the outer wall of the garbhagriha in the northwest corner, and the enshrined linga in the sanctum are under worship. Rocks cut caves at Khandepar region are comparatively larger in size and the caves like Khandepar and Kodar show the matured form of cave architecture in this region.
ROCK CUT CAVE AT KHANDEPAR GAVATHARI

PLAN
Rock cut cave at Khandepar Gavathari
**CURDI CAVE**

Curdi cave is lying on the bank of River Salauli near ancient Mahadev temple in Sanguem taluka. Cave excavation is seen on the right side of the steps, which were cut on the riverside as a bathing ghat for the temple. Cave contains two cells in a rectangular shape. Front porch has a bench in it, which was scooped out from its southern wall. No indication of worship was found in this cave. Cave is facing north with two simple rooms. Finding the huge image of Mother Goddess on laterite rock, Megalithic stone circles, Mesolithic tools and building of two important Hindu temples in this place signify the existence of a rich culture in the remote past. Religious monks might have used this cave as residential chamber. Unlike Shigao and Khandepar caves; this cave also has a bathing ghat for pilgrims.
ROCK CUT CAVE AT CURDI.

PLAN
ROCK CUT CAVE AT MALANGUNI IN SALCETE TALUKA

Two rock cut caves are chiseled in laterite rock at Malanguini in Salcete Taluka. Cave No.1 is in rectangular shape with a wide opening at the centre. Cave is a plain hall and no important architectural features were traced in it. Cave measures 12.70 x 2.50 mts. with a height of 1.90 mts. It has a 1.50 mts wide opening in it. Cave No.II also has a rectangular hall with a rectangular porch. It measures 1.15 x 0.80 mts with a height of 0.80 cms. It too has a wide opening in the centre. Porch also has a rectangular hall, which measures 1.10 x 0.70 mts. A thin curtain wall with wide opening is separating the hall and the small porch.
ROCK CUT CAVES MALANGUINI

PLAN - CAVE NO. I

PLAN - CAVE NO. II
ROCK CUT CAVE AT DHARBANDODA

Rock cut cave at Dharbandoda is situated in the Sanjivani Sugar factory complex. Rock cut cave is cut in the low laterite outcrop on the bank of a perennial water stream. A number of small and big cave like pockets are also seen along the water stream approximately up to a half-kilometre distance. Cave is hewn in a rectangular shape with two divisions. A covered cell of the cave is a plain hall, rectangular in shape and measures 5.70 x 3.00 mts. No important architectural features were found in it. No evidence for worship is also found in the chamber. A 0.80 cm wide wall separates the cave chamber and open courtyard. Sidewalls on either side of the cave chamber extended up to the end of its open courtyard. Open courtyard is also a rectangular hall measuring 5.0 x 3.8 mts (Similar feature of extending the walls on either side up to the end of open courtyard can also be seen in the Surla cave). Since no indication of worship is noticed in this cave, religious monks or other recluses of this region might have used this cave as residential chamber. According to V.R.Mitragotri, these caves were used by Nāth-panthis. His contention may be acceptable because of the widespread of the Nath-cult in Goa. Deities of Nāth cult like Siddhanāth, Brahmanāth, Govindanāth, Mallināth, Manganāth, Ramanāth, Ravalnāth, Saptanāth, Vaghanāth, Hemanthanāth, Chinchinināth, Vishwanāth, Naganāth, etc., are very popular in Goa and they are still under worship in their respective temples.
ROCK CUT CAVE AT DHARBANDODA.

PLAN

ELEVATION
Rock cut cave at Dharbandoda
ROCK CUT CAVE AT BANASTARI

Rock cut cave at Banastari is situated on the roadside on Banastari-Adkon road. Cave is hewn in a low laterite outcrop. It is a small cave; rectangular in shape and measures 1.25 x 1.50 mts. Cave is simple and plain and neither important architectural feature nor images were found in it. But some people of this locality worship here occasionally as one who worships a deity in the roadside small shrines. But it looks like a residential chamber more than a religious one. Two kilometres away from this cave, there is a huge natural cave with a partition inside was found near Kushali Sattarikar’s house. This cave was neither in use nor it was easily approachable.
ROCK CUT CAVE AT BANASTARI.

PLAN

ELEVATION

NATURAL CAVE
Rock cut cave at Banastari.
ROCK CUT CAVE AT JUVEM FORT

Rock cut cave is hewn there in a laterite boulder on the hilltop of Ju vem. Cave has a rectangular hall and no indication of worship is found in it. Since the fort is in ruins, the cave also was in the similar condition. A rectangular chamber of the cave is chiselled with the similar features like those of caves at Banastari and Dharbandoda. This cave also might have been used by religious monks or by the officials of the then Governments.
DIWAR CAVE

The cave is situated near the Divar church in the Malar area of Divar Island. Rock cut cave is chiselled in the slopy hill of laterite rock. Cave is facing north. It has a small garbhagriha measuring 1.55 mts x 2.0 mts, and a porch measuring 2.40 x 1.70 mts. Garbhagriha is plain, rectangular hall. No pedestal for main deity was found here. Four peg holes on the ground and a niche like depressions are found vertically on both the sidewalls of garbhagriha in this cave.

A rectangular porch is bigger than its garbhagriha with a flight of steps at the entrance. A niche like depression is also found vertically in the right side entrance wall. An uttira beam is running over the main entrance of the cave. It has an antarapatti in it. A square hole (may be for providing light inside or for dropping food) was provided in the roof slab of the entrance porch.

Though the cave is cut with two small chambers, no evidence of worship was found in it. Niche like depressions in the garbhagriha walls as well as in the entrance wall indicate that those niches were used for keeping lamps or other small religious objects. The niches neither are cut deeply nor are they in proper shape. This cave is well known and the local people call it as Yogyache Ghar (the abode of an ascetic). Hence, religious monks might have used this cave as residential chamber during the medieval period.
ROCK CUT CAVE AT DIVAR.

PLAN

ELEVATION
ROCK CUT CAVE AT AQUEM

Rock cut cave at Aquem is situated behind St. Sebastian Chapel in Aquem area of Madgao in south Goa. This cave in Aquem is a large-scale excavation and it was chiselled in a rectangular shape measuring 8.00 x 5.60 mts. This large rectangular rock cut cave is categorically divided into three-square chambers with a rectangular open veranda in the South. Garbhagriha is a square hall measuring 2.60 x 2.30 mts and sabhamandapa is also a squarish hall measuring 2.40 x 2.40 mts. Mukha mandapa is also a squarish measuring 2.35 x 2.20 mts. Garbhagriha is a plain hall. It has a niche in the southern wall and a window in the northern wall. Sabhamandapa has two entrances, one from the north and another is from the south, which give access to veranda. A curtain wall is separating the porch (Mukhamandapa) from its sabhamandapa. Mukhamandapa is facing east and it has sockets on the top which indicate that a door was installed here. A bold kanta like patti is running all round the cave inside, which is just above the ground level. Here sculptor has tried to carve trabeats in the ceiling like in Khandepar caves. Two-tier flat roof system is adopted in this cave to accommodate sikharas on its top. No evidence of worship is traced here. Hence the religious monks and other recluses in Goa might have used these caves also as residential chambers.
Rock cut cave at Aquem
ROCK CUT CAVE AT KODAR

Kodar caves are situated at Kodar village on the right side of the road before entering the village, which is nearer to present Thermal Power Station. Cave is facing north. Since the cave is in ruins, the architectural features of the superstructure were not traceable. The ground plan of the cave shows that they are all together Three cave chambers are excavated in the low laterite outcrop with the open back courtyard which runs in all three sides like Khandepar caves. On the western side, two chambers have a single entrance from middle chamber, while the middle chamber has two entrances, one from the front and another from open back courtyard. A thin curtain wall is separating the back courtyard into two blocks at the eastern end of the cave, with a small opening. This feature was absent in the Khandepar caves. No indication of worship was found here. Existence of vertical high walls of the cave chambers suggests that, this cave also had a superstructure like Khandepar caves. Three cave chambers with enclosed walls, doors and with open courtyards (both one in the front and another in the back), strongly support the view that the religious monks might have used these caves as residential chambers. Saptakoteswar temple at Opa, rock cut caves at Khandepar, another rock cut cave at Khandepar Gavatari within a five kilometres radius. And the style of chiselling rock cut caves of Kodar is similar to the above caves, which are popular among Hindus who worship the deities therein. They must have had important places of worship during the medieval period. Hence Kodar caves are also significant for Hindu worship and for the religious monks as their residences and for other ritual purposes might have used it.
Rock cut cave at Kodar
PILAR CAVE

A single cave at Pilar Seminary was excavated in the low laterite outcrop at the foot of the hill on the southwest of the present Pilar Seminary. Cave is rectangular in shape. Four deep niches are found there on either side of the cave. The door of the cave is irregular and no ornamentation was found in it. On the right side of the door, a Ganesh image was carved in relief. On the left side, unidentified carved image exists. A human figure also can be seen on the narrow wall of the cave. A snake with expanded hood also can be seen on the same wall. Since the cave was demolished in 1962 by the order of Archbishop of Goa, the original plan of the cave could not be traced. Discovery of a heart shaped Yoni for the insertion of a linga shrine shows that this cave was a Brahminical cave. And the present site is nearer to the ancient Goveswara temple. Lord Goveswar was a titular deity of Goa during the period of Kadambas who patronized Hinduism in Goa.
ROCK CUT CAVE AT PILLAR

PLAN
A LARGE CAVE AT PILAR

A huge rock cut cave is situated at the eastern end of the Kadamba tank, of which ancient name was ‘Kuzmorayachem Tollem' near Pilar Seminary. Though it looks like a natural cave, the ground plan of the cave shows it is a matured form of chiselling in the cave architecture. The cave measures 60 x 25 metres and with a ceiling height of 15 metres. Though the cave is in deteriorated state, the ground plan resembles the plans of a large Buddhists Chaitya hall. Two projected inner butteresses separate the cave into two divisions, inner hall and front hall. Each division had deep recess - one each on either side of the wall. This neatly cut deep recess forms a square chamber in this cave, and they might have been used as residencial chamber. Since the cave is in bad state, no important architectural features were traced out, but the ground plan indicates that it was the largest cave excavatoon, found in Goa so far.
LARGE ROCK CUT CAVE AT PIL'AR.

PLAN

ELEVATION
ROCK CUT CAVES IN TRANSITIONAL PERIOD

GROUP OF BRAHMINICAL ROCK CUT CAVE TEMPLES AT KHANDEPAR

Khandepar, the ancient Khategrama was first mentioned in some of the plates which are in the possession of a family at Verem. They are transcribed in "Oriente Portugues" which describes that it under the patronage of Vimanamantri, the then ruler of Goa. In 1271 on the day of Gokulashtami of the month of Sravana, there was a meeting at the temple of Gananatha of Khategrama (Khandepar) to decide to confer certain honours and privileges to Nagasetti, Gomosetti, Bhairesetti, Kaisetti, Lakhusetti, all from the city of Govem (Goa-Velha) and Vittalsetti, Santsetti, Somosetti and Vazarsetti of Narve.23

Monolithic Brahmanical cave temples are cut in laterite rock with their super structures in pamsana order on the bank of River Khandepar, which is a tributary of River Mandovi. Rock cut caves situated on the west bank of River Khandepar are nearly 36 kms from Panaji and 6 kms from Ponda on the way to Tisk-Usgaon. Altogether five caves were hewn in the laterite rock into two groups. Since the caves are five in number, the local tradition associates it as 'Panchapândavaguha'. First group consists of four cave temples which face towards the east, with a common mukhamandapa, while the second group consisting of a single cave temple which is facing west is comparatively small. Square holes are cut in the raised foundation (ardhamantapa) in front of the first group indicating that there were few columns in the ardhamandapa, which have disappeared now. The mukhamandapa, which is adjoining to upsidal
ardhamandapa, is a structural one, and forms a platform to second group. A staircase chiselled from the riverside to the temple group is disturbed now, and the alignment of stones can be seen in the section of the river.

Cave No. I as one enters from the left is facing towards the east. It has a square garbhagriha with a doorframe, and a square ante -chamber or porch. Garbhagriha is a plain hall measuring 2.20 x 2.20 mts except a square hole measuring 0.75 x 0.75 mts in its outer wall of the west (rear wall of the cell). Since the hole is not connected to inner garbhagriha, there is no reason to say that it is for pranala (water chute), and for disposal of water (Abhishekajala of Sanctum). A lotus (Padma) carving which can be seen on the ceiling of the cave is ornamental.

Porch or ante -chamber also is a square hall measuring 1.65 mts x 1.65 mts with an ornamental entrance. Sikhara of this cave shows the influence of 'Pamsana' order and has the mouldings of kapota, kanta and samathala vimana for prathama tala. Repetition of the same mouldings can be seen in the second tala also, and finally Brahmasila or topstone has crowned the Sikhara.

Cave No. II is cut on the right side of Cave No. I without any top coverage, which indicates that the cave is in ruins. Available ground plan of the cave shows it has a square garbhagriha and a rectangular porch. Garbhagriha measures 2.00 x 2.00 mts while porch measures 3.15 x 2.15 mts and it shows a unique architectural feature in this cave group.

Cave Nos. III and IV are also facing towards the east under a common roof. While the Cave No. IV has an ornamental entrance, the entrance of Cave No. III is simple. The latter Cave has a square garbhagriha measuring 2.40 x
2.40 mts with a pranala the water (abhishekajala) of which flows towards the west. (The tradition of keeping a cist hole on the outer side of the rear wall of the chamber to collect water from pranala, started from Pallava times and later continued by Chalukyas and Kadambas and it is incorporated deeply into Hindu architecture). Two cotton pillars, one each on south-east corner, and north-east corner near door-jamb give support to the ceiling with their potikas. Porch of this cave is also a square hall measuring 2.40 x 2.40 mts. Repetition of two cotton pillars one each on south-west corner and northwest corner give support to the ceiling, also can be seen in the porch. Super structure of pamsana Sikhara was also repeated here as in the Cave No.I with similar mouldings. Padma (Lotus) are carved on the ceilings of garbhagriha and antarala as decorative motifs in these caves.

Cave No.IV hewn on the right side of Cave No.III also faces towards east with an entrance. This cave temple has a square garbhagriha measuring 2.80 x 2.80 mts and it is a plain hall. It has a pranala in the middle of the northern wall. The rear wall of garbhagriha has four niches in it like a depressions. These small niches might have been used for keeping lamps or small religious objects. Similar type of niches, one each on either side, can be seen in the southern and northern walls of garbhagriha. Two cotton pillars on either side of garbhagriha support Uttira beam, which runs all round the garbhagriha and works as a base for Lantina type ceiling with Padmasila for Samatala Vimana. An ornamental door made of basalt stone is provided as an entrance to garbhagriha of this cave.
Porch of Cave No.IV also a square hall measures 2.75 x 2.75 mts. Repetition of small niches can be seen in the north and south walls of the porch. Lantina type ceiling with Padmasila is also repeated in the ceiling of antarala. Here, the Lantina type ceiling is carved in the laterite rock in relief, whereas in Mahadev temple at Curdi and Mahadev temple at Tambadi Surla, fragments of basalt stone shaped beautifully into trabeats and are fixed for Lantina type ceiling in the later period. Pamsana sikhara is repeated in the Cave No.IV also. A kalasa that was shaped in the laterite rock and placed over the roof in between Cave No.II and IV is a unique feature in this cave architecture. These extracting features of this cave show a well-developed form of cave architecture in this region.

Second group consisting of a single cave, which is facing towards west, is small. It has a rectangular hall measuring 2.40 x 1.80 mts. A Pamsana Sikhara with Dvitala Vimana is repeated here as shown in its counterparts with its respective mouldings.

Two fragmentary bases of lingas with their water chutes detached from their original place and kept in this cave are lying now on the ground without any care.

Basically, the temples of this group are Nirandhara type. But open circumambulatory covers all the cave temples. Garbhagrihas of these temples are square in shape indicating that the worship of God Siva was prevailing here.

These caves show, a transitional phase from cave chambers to structural temples in Goa. The principle temple components like garbagriha, antarala or porch, and mukhamandapa are positioned in sequence one before the other like
in the case of structural temples. A conton pillar in the corners, pranals with linga, and appearance of prānala (water chute) in the outside open courtyard also show the features of structural temples. A pamsana sikhara constructed with stone blocks capped to the flat roof also shows the features of Hindu temple architecture. Depiction of a padma (lotus) motif in the ceiling shown in the relief here was later incorporated deeply in Indian Art. It is believed that, this motif (padma) was beautifully depicted in the prepared slabs and fixed in the ceilings of structural temples in the later period (eg. Mahadeve temple Curdi and Tambdi Surla).

NATURAL CAVES: After evaporation of stagnated water from its body, these gaps (caves) appear from its mother rock. Sometimes these caves are very big. These nature provided caves were occupied by the pre-historic men in the beginning for their survival. Later the religious monks occupied them. Though some natural caves were converted as religious centres in Goa, (eg. Natural caves at Rivona and Pissurlem) most of the natural caves were neglected such as at Kazur, Pilar, Chiklim, Verna, Sirdaon, Adcon, etc.

CAVE LIKE POCKETS: Unlike the natural caves, these pockets also appeared from its parental rock after evaporation of water and other gases from its body. Many such pockets, small and big were found in Goa, such as series of pockets seen along with the water stream near Dharbandoda cave in Ponda taluka, and cave like pockets near Neturlim, near Zuari factory, and a big pocket found existing in Bicholim while digging a well for water recently at the depth of 25 metres.
ROCK CUT CAVE AT KHANDEPAR.
ELEVATION OF KHANDEPAR CAVE.
Rock cut cave at Khandepar
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<th>Location</th>
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<td>Malanguini</td>
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### NATURAL CAVES

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<td>8</td>
<td>Siridao</td>
<td>Near Bambolim</td>
<td>Tiswadi</td>
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### CAVE LIKE POCKETS

1. Dharbandoda
2. Neturlim
3. Bicholim
4. Zuari Agro-chemical factory
Natural cave at Rivona
Natural cave at Cazur
References and Notes:

4. Idem.
8. Idem.
11.Idem.
12.n.8,p.169
14.n.10,p.45
15.Caves visited personally by this researcher.

17. n.7, p.495.


21. n.7, p.505.