CHAPTER VI: FORTS IN MEDIEVAL ANDHRA

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During the medieval period we find a large increase in the number of forts and fortifications, spread throughout the different corners of Andhra Pradesh. To this period belong the forts of several dynasties that exercised political authority over different parts of Andhra Pradesh, like the Western Chalukyas of Kalyāna, the Kākatīyas, Reddis, Velamas, Vijayanagar, the Bahamanis, and finally the Qutub Shāhis. During this period, the importance of a fort as a politico-military institution came to be realised on a wide scale. Hence the large number of forts. Almost every village or town of some political or military importance came to be fortified, depending of course upon their strategic situation and invulnerability from outside attacks. This increase in the number of forts is mainly due to the increase in warfare, which came to be fought on a large-scale with improved methods of attack and defence and advanced equipment and machinery. Forts which remained sublime in the ancient period built of perishable materials like brick and mud, began to occupy a place of prime importance in the medieval period in the field of warfare, and were the chief targets of attack, for the capture of a fort meant during this period, the virtual occupation of the entire land under its command, by the victorious king. Hence grew forts, as a matter of military expediency large in size and complex and equipped with up-to-date materials, machinery, and arsenal. Added
to this were the natural potentialities offered by the steep rocks and the availability of strong building materials like granite, besides plain level grounds. In Andhra Pradesh, Rayalaseema, and Telangana thus geographically and geologically provided most suitable sites and materials for building a large number of forts. Further during this period grew enormous literature on polity or Rājanīti and military science dealing with the institution of a fort as an inevitable military unit in the body politic.

With this brief outline about the nature and importance of a fort, we shall now examine the concept and structure of a fort, as seen through the contemporary literature and extant archaeological remains.

**CONCEPT:**

Broadly speaking, the concept or idea of a fort as a place of refuge in times of danger, remained more or less the same as in ancient period. That is to say, its chief defensive character continued to hold good. But during this period, the importance of a fort increased and it became the chief centre of warfare, attracting the attention of the invaders to besiege it for long periods. In the ancient period while a fort and city were one and the same, it was not the case in medieval period. In this period, forts came to be built away from the cities which did not enclose the civilian population and not all the cities were necessarily fortified. Moreover, there also appears to be some kind of decentralisation of political and military authority as against the practice obtaining in the earlier period, which shows concentration of power only in the capital cities of the kings.
To take up first the evidence available from contemporary writings, we find basically there was not much of change or difference, about the importance of a fort. Almost all the contemporary writers on polity followed the earlier Sanskrit works and exhorted the contemporary rulers, about the importance of a fort for a king worth name.

Madiki Singana, in his anthology "Sakalanītisammatamu" devotes an entire chapter called "Durga Saṁrakshanamu" in which he discusses the various aspects of the fort as its importance, kinds of forts, methods of attack and defence, equipment and garrison etc. Dealing with their importance, he cites a verse from Kāmaḥādaka, which states, that "a king should take refuge in a fort, like a tiger in the bushes, an elephant on the hill tops, and a lion in caves".¹ Praudhakavi Mallana, the author of Rukmangadā charitra says that, "a king requires a strong fort, situated on high mountain cliffs, or in the midst of dense forests, like Lord Vishnu, whose abode is in the deep ocean or Śiva on the high Himalayas".² Purushārthasāra, another work mentioned by Madiki Singana compares" a king without a fort, to an elephant without a rut, and serpent without poison".³

Dealing with the classification of forts Singana follows, Kautilya and classifies them on the basis of their situation. According to him a fort built on a plain terrain is known as Sthāla durga or Land fort while those on the river banks as Jala (water or island) on a mountain peak as Śaila or hill, and in the midst of the forest as Vana. He says that although the
latter 3 categories are natural forts (Svābhāvika) yet they require several artificial contrivances like a high rampart (prākara) towers (gopura) or Aṭṭalaka and bastions (Kottala) so that it is not exposed to the outside enemy. Another important aspect of a fort emphasised by Singana is garrison, consisting of plenty of food grains, wealth, water, men, wood, machines and weapons of war fare and entrance and exit ways. Similarly Mallana also explained the different parts of a fort as Kota (prākara) agadta (most) āṭṭada (tower) Gavani (gateway) and Kavāṭa (door frame), besides the need for a strong garrison consisting of machines, weapons, horses, chariots, soldiers and elephants.

Bhāskara Rāmāyana another work of the same period describes the different parts of the fort as prākara, agadta āṭṭada, varra, and vākili, which shows only a slight change in terminology. It also says that a fort should be equipped with vatram (missiles) āvudhas (weapons) elephants, horses, chariots and soldiers.

From the above study it becomes clear that, a fort is imperative for a king, however strong he might be. Further it also becomes clear that the terminology applied for the different parts of the fort, does not differ much, from the earlier Sanskrit works.

Shape: The main shapes prescribed by Kautilya for a fort, are circular, square or rectangular. The Vishnu Dharmottara, mentions three shapes (viz.,) āvata (oblong) chaturasra (square) and vṛtta
It also says that forts in the shape of a triangle or oval are of no avail. Semi-circular or disc-shaped forts are to be avoided. Semi-circular or crescent-shaped forts are useful only in the case of forts situated on river banks. Manasāra, a work on architecture or Vāstu, prescribes 8 kinds of forts, based on their shape or plan. They are Dandaka, Sarvatobhadra, Nandyāvarta, Bhadraka or Padmaka, Svastika, Prastara, Kārmuka, and Chaturmukha. While the above are prescribed for a capital city of a king or rājadhāni, and apply largely to land forts (sthala durgas), conspicuously enough, we find complete omission on the part of contemporary writers in Telugu, about any reference to the shape or plan of a fort. In this context, it may be noted that, forts of the medieval Īndra are not always capital cities of the kings. Hence the shapes prescribed by works on polity and architecture, are not strictly followed by the forts in medieval Īndra. Secondly, unlike a religious structure as a temple, the fort being secular and military in nature did not always adhere to the canonical principles laid down in the texts on architecture. Moreover the plan or shape of a fort, depends to a large extent up the site on which it is built and its contours, and other military exigencies. That is the plan or shape of a site determines the plan or shape of a fort. However there appears to be some semblance of adherence to the rules laid down above, by Kautilya and others, as most of the forts built during this period conform to one or other of the shapes prescribed. Moreover the shape or plan of a fort can be determined only in the case of sthala durgas or land forts and not in the case of Giri durgas or hill forts.
SECTION : II

Structure of a Fort:

While the idea or concept of a fort as a defensive structure remained constant, the fort as a military structure appears to have undergone several changes from time to time in its size, methods of construction, disposition of various structures, additional defensive equipment, etc. depending on contemporary trends of warfare, methods of attack and defence, and weapons and implements of warfare. Beginning from thorn hedges, cattle pens, and pallisades of tree trunks, forts gradually grew complex in size and strength. Later on came earthen ramparts and masonry walls. This process of evolution of the fort, as a structure appears to be the same throughout in India. We have already seen that forts in ancient Andhra are mainly built of perishable materials like mud and brick, as against stone, which became the chief material of construction in medieval times. During this period developed a new masonry technique called cyclopaean, in which large blocks of stones were piled up one above the other and tightly fitted into each, without the use of any joining or binding material as chunam or mortar. Writing about Forts in medieval Deccan, G. Yazdani observes "By the advance of knowledge masonry seems to have been introduced in building defence works, first in crude forms, but later quite regular, although the size of the stones as in cyclopaean walls, remained a significant feature of military architecture of the Deccan, until the advent of the Moslems. Apart from the size of the masonry, the other
distinguishing features of the Hindu military constructions, are irregular form of the stone, and the entire absence of the use of cement of any kind. The joints of the stone were perfectly chiselled and then were laid one above the other, being kept together only by their enormous weight. After the advent of Muslims, a vigorous style of military architecture grew up and the use of guns under the Turkish officers, and Engineers, in the later half of the 14th century brought about still further improvements, in the principles and materials of building as well as in the laying out of defences. The present fortifications of a majority of the Deccan forts, bear a striking resemblance in their arrangement to the medieval European forts, the influence of the Turkish Engineers being apparently the cause of this similarity. The above observations of Yazdani about the structural feature of the Deccan forts seem to be applicable to almost all the contemporary forts in Andhra Pradesh, as will be seen later.

Another aspect of the fort during this period is, the additions made to it and the increase in their size and nature. Forts of this period are characterised by their large size and imposing nature, with the addition of several other parts to the fort complex as barbican, loopholes, machicolation etc., and the enlargement of the existing ones like the gateways, walls, bastions, towers, turrets, both in height and thickness. According to Sidney Toy "Medieval Fortifications in India occupy a distinct position in the history of military architecture from the
sequence of development, as observed in Europe, Levant, or indeed in China. Apart from design and defence, they impress the observer or the enemy with their imposing and formidable aspect, as well as express the power and affluence of the ruler. The walls of this period are of great thickness and height strengthened at short intervals by massive towers and the gateways, though not so nearly well defended as the west. Other important additions made to the fort during this period were parapets for defence musketry by heavy guns, concentric curtain walls forming circuits many miles round and bastions of enormous size and height, which according to Henry Cousens "were square in form with battlements, loopholes, merlons, machicolations, barbicans, posterns, or sally ports.

With this brief outline about the character and nature of Medieval fort, we shall now examine the nature of forts obtaining in Medieval Andhra. Before doing this we shall first take up the main principles that govern the construction of forts.

SECTION: III

1. SELECTION OF SITE

The first criterion that governs the construction of a fort is the selection of site. Great care should be taken to see that it is not exposed to external threats, and easily accessible. The suitability or strength of a site is often determined by its strategical importance, and the availability of building materials in close proximity, and the availability
of water resources in plenty. An examination of various
kaifiyats or village records of several fortified places reveals
that the strength or suitability of a site is indicated in local
tradition, by the sight of a white hare chasing the hound.14

2. Availability of building material:

The second criterion that governs the construction of a
fort is the availability of strong building materials locally or
in close proximity. This is amply proved by the fact that
several hill forts are built on high rocks, where granite or
igneous rock is easily available. For instance, the fort of
Warangal is built of black granite (basalt) which is locally
available in the hills of Hanumakonda, which is nearby within a
distance of 3 miles, while the huge mud ramparts is built of
the dug out earth, mud from the deep moat. Similarly other hill
forts like Gutti, Gandikota, Golconda, Kondavdu, Kondapalli and
Udayagiri are built of red granite that is locally available
where as Penugonda, Chañdragiri and Adoni are built of white
granite, available in the local hills.

3. Strategy:

The third and the most important criterion is the
strategic importance of a site, both from political and
military aspects. According to R.R. Seelman "One of the main
functions of a fort, was to cover land and water routes. Another
and the most important object was the defence of military stores
or naval dockyards from sudden seizure, by a surprise attack, by
holding up an enemy, long enough for relief forces to arrive". That is, a fort should be built at such a place where it enjoys maximum strategical advantage, and capable of protecting frontiers or borders of kingdom, either on land or water; and other important political and military centres, besides being impregnable to the besieger. This will lead us to an examination of the borders of frontiers of different kingdoms in A.P. which changed from time to time. It is a difficult exercise to determine the strategical importance of each fort, and it is not known to what extent, this criterion was followed by the builders of various forts. Nevertheless it may be noted that almost all the capital cities are encircled by a wide net work of border or frontier forts. For example, Dhānyakṛṣṭaka, or Dharaṇikōṭa which stands on the south bank of river Kṛishṇa, in Guntur district, the eastern capital of the Śatavāhanas, is situated in the central part of the kingdom. To its north-east lay the kingdom of Kalinga, which extended up to Pishtapura the modern Pithapur, which can be considered as the frontier outpost of the Kalingas on the south, providing entry into the Śatavāhana territories. The next important capital of the ancient period is Vēngi i.e. Pedavegi, situated near Ellore, which flourished as the capital of the Śaṅkāyanas and later of the Eastern Chāḷukyas. Since it was often a target of attack by the Rāṣṭrakūṭas of Mālkhed, their capital was later shifted to Rājamaḥendravaram, a farther place on the banks of river Gōḍāvāry. To its south stood Bezawāḍa, as its frontier out-post and in the south-west is Nellore, up to which extended their kingdom.
Coming to the medieval period the most important capital that draws our attention is Warangal, which lies about 2 miles South-east of Hanumakonda. Its strategical importance lies in the fact that it is situated like Dharanikota, in the heart of the Kākatīya empire, surrounded by a net work of frontier forts on all sides. To its west, lie the forts of Bhongir, and Gōlconda which are the frontier out posts of the Kākatīya kingdom. On the south lies Nellore, while on the south west is Gafidikota. On the north is Rāmagiri, while on the north-west is Kaulas. Bezawāda and Koṇḍapalli, situated on the banks of river Krishna serve as frontier out posts, for the Rēddi capital Koṇḍaveṇdu, in the North-east. To its south-west are Vinukonḍa and Addaṇki, where as on the west is Śrisailam and on the north is Dhānynākaṭaka. To its south lies the island fort of Mōṭupalli. Similarly Rāchakoṇḍa, the capital of the Velamas is served by a number of frontier forts on all sides, like Gōlconda in the North-west, Bhongir in the North, Warangal and Rāmagiri on the North-east, Pānagallu on the east, Dēvarakonḍa on the south and Medak in the North-west. Another important fort capital of late medieval period is Gōlconda which stands on the borders of Bīdar, protected by a chain of frontier forts. To its east lie the forts of Bhōngir, Warangal, Bezawāda, Ellore, and Rajahmundry. On the south-east are Rāchakoṇḍa and Dēvarakonḍa. On the North lie Medak and Bālakoṇḍa and on the North-east is Rāmagiri.

Lastly, coming to the empire of Vijayanagar, we find its eastern frontier extended upto Udayagiri in Nellore district. To its north-east are Adōni and Raichur, bordering Koṅkoṇa,
the South-western frontier of Gōlconda. On its south-east are the forts of Gutti, Gaṇḍikōṭa, Peṇugōṇḍa, Chāḍragiri and Vellore; on the north-east are Īdōṇi, Kurnool, Śrīśailam, Koṇḍavīdu, Bezawāda, Koṇḍapalli, Rājamahendravaram upto Potnur.

From the above examination of various fortified capitals and their frontier out posts, we find that strategy by and large was an important consideration in building the forts. Not only were the frontiers well fortified, but also some important central points, thus linking the capital with frontier out posts, by series of forts on the way.

4. Natural potentialities:

The last criterion that governs the construction of forts is the availability of natural potentialities offered by the hills, like water resources in plenty, insurmountable cliffs, and difficult pathways etc. The importance of this factor is emphasised more than once, by several writers. We also find, from an examination of several fortified places, and their Kaifiyats, that the main consideration that led the builders of forts was the availability of water resources in plenty.¹⁶ Most of the hill forts, situated in Andhra Pradesh are fed by several natural springs and tanks, formed in the clefts of the rocks which are invaluable for any fort. The fort of Gutti is thus the most natural fort which is said to possess more than 100 springs besides a large number of wells. Similarly Peṇugōṇḍa is another fort which is fed by a large number of springs and tanks.
SECTION IV:

Parts of the Fort:

Having studied the main principles that govern the construction of forts, we shall now proceed to examine the structure of a fort and its various component parts. The main parts of fort are moat, rampart, gateway, bastions, towers, turrets, secret passages besides stables for horses, elephants, magazines, granaries, barracks for soldiers, civilian quarters, and finally the royal palace or citadel. These correspond to those prescribed by Kautilya. Now let us take up each separately for examination.

1. Moat: It is termed as parikha in Sanskrit literature and adita in contemporary Telugu. According to Kautilya a fort should have 3 ditches with an intermediary distance of 1 danda or 6 ft. from each other and 14, 12 and 10 dandas i.e. 84, 72 and 60 ft. in width, with a depth not less than by one quarter i.e. 21 ft. 18 and 15 ft. or by one half of their width, and square at bottom, and 1/3 wide as at their top, with sides built of stones or bricks, filled with water from perennial sources and contain crocodiles, and lotus plants. The main idea behind a moat is to make the approach of the enemy difficult. Hence Kautilya prescribed not less than 3 moats one behind the other. These moats are of two kinds viz. a dry moat and wet moat. The former i.e. dry moat is also known as ditch, which is filled up with stocks of hay, wild thorns, and creepers, concealing underneath poisonous weapons. The other i.e. wet moat is filled up with deep pools of water up to the mouth and contain crocodiles and other poisonous creatures.
The value of a moat in the case of forts in Andhra Pradesh, is generally realised. Almost all the Sthala-durgas, or land forts, are invariably provided with a moat generally one, out side the prakāra or rampart but some times two. There is no instance of a fort provided with a triple or quadruple moat, as in the case of Bīdar. Although it is not essential in the case of jala or water forts situated on the banks of rivers, and hill or Giri durgas, yet it became a customary practice to provide one either on the side on which there is no river or at the foot of the hill. These moats often proved impassable barriers to the besieger and had to be crossed by way of draw bridges erected for the purpose.

2. Rampart or Fortification wall (Prakāra)

Referred to as Kōta or Prakāra in contemporary Telugu works, it forms the most important part without which a fort cannot be truly called a fort. Kautilya prescribes it to be erected at a distance of 4 dandas i.e. 24 ft. from the inner most ditch, about 6 dandas high, 36 ft. and twice as much broad i.e. 72 ft. by heaping up mud upwards and by making it square at the bottom and oval at the centre; pressed by trampling of elephants and bulls. It should be of sufficient thickness and height, which vary according to the contours of the ground. Since it is the chief target of attack by the besieger, great care should be taken to see that it does not suffer from breaches, and thus give way into the fort. Kautilya also warns that gaps if any, shall be immediately filled up with fresh earth.
The main materials for building these ramparts are mud, brick and stone. In ancient period we find largely the mud and brick fortifications, whereas in the medieval period, stone became the chief material of construction i.e. granite. Another important feature of these ramparts in the medieval period is their formidable and imposing appearance. According to Sidney Toy "they i.e. curtain walls, are of great extent, forming circuits many miles round with concentric walls one behind the other." Generally, formidable and impregnable forts are said to possess as many as 7 lines of walls. That is the strength of a fort is determined by the number of ramparts it possesses and their height and width. As improved methods of attack like artillery and mining, came into vogue it became necessary to increase the height and thickness of existing fort walls or ramparts. An examination of the ramparts of forts in medieval Andhra Pradesh reveals that most of them were provided with more than one line. For instance the fort of Warangal has 2 ramparts i.e. Mud and stone, The Siddhāswara charitra and Pratāpa charitra inform us of two more lines of walls, as Itika kōta (brick wall) and Kampakōta (rampart of thorny bushes). The fort of Guttī has as many as seven rampart walls built one behind the other, at different peaks of the hill, leading to the citadel on the top. Trees also appear to have been used as a formidable barrier around the forts, obviously serving the purpose of a rampart as in the case of Kolanupāka, which is surrounded by Sullī trees. The effectiveness or strength of a fort, may be said to lie largely in the strength of the rampart. Hence every care should be taken to see that it does not fall an easy prey to the attacks of the besieger.
3. Gateways (dvarāḥ) form an important obstacle in the structure of the fort, next to the rampart. It is termed as Vākili and Gavani in contemporary Telugu works. According to Kautilya an entrance gate to the fort should be 1/6th as broad as the width of the street (kavata). Writing about Medieval fortifications, Sidney Toy remarks "The gateways differ in strength but often very powerful. They are defended by barbicans, which some times take the form of two powerful walls that extend out beyond the gates with towers at the end and sinuous road in between, the road being defended by box machicolations jutting out from the parapets. At some forts, the gateways are stretched with courtyards in between; they are generally very large from 12 to 16 ft. wide and 25 ft. high up to the point of arch or the underside of the lintel. Though the width is not much greater than that of the Roman and Medieval Town gates in the west, the height is considerably more, and this was doubtless provided in order to allow the entrance of the elephants with their howdahs". This description of the gateways in Medieval forts is confirmed by the actual remains available in forts, and their importance is emphasised by contemporary literature in Telugu. Sakala Miti Sammatamu draws a verse from Miti Sāra which says, that it impossible even for Indra, the Lord of Heavens to rule a city which is not provided with well guarded entrances or gateways. Kriḍabhīrāmaḥ describes the city of Waraṅgal as one provided with a huge entrance, called Pedda Gavani and equipped with golden thresholds or door frames, resembling a mountain, whereas according to
Pratpapa charitra it has four Gavanis or entrances.\textsuperscript{27} The Siddhāśvara charitra describes it as having 8 Gavanis, 4 in the mud rampart i.e. Puttakōta and 4 in the Kalukota or store fort, and two in brick wall.\textsuperscript{28} Besides there are several side ways or posterns or sally ports called Vēṅka dārulu in Kridābhīrāma and diddivakillu in Siddhēśvara Charitra.\textsuperscript{29} Coming to other forts in Andhra Pradesh, Guttī is possessing as many as 14 gateways built into the ramparts one behind the other whereas Gāndikōta has two main entrances or gateways one in the east called Gavani dārāmanu and the other in the west called Pēṭla dārwāja, besides a number of posterns or side ways, and covered passages. The fort at Penugōṇḍahas four gateways in the rampart at the foot of the hill on all the four sides, besides several other entrances leading to the citadel on the top.

The next important aspect of the gateways is their plan which grew complex with sinuous curves and entwining turns towards left and right at right angles, in the medieval times. We are not in a position to know the nature of the plan of the Gateways, in Dharanikota or Nagarjunakonda in the absence of archaeological information.\textsuperscript{30} The medieval gateways on the other hand are provided with a slightly curved pathway flanked by a semi-circular screen wall on the left on the exterior, and massive and huge entrances, with two or more courtyards in the interior separated by barbicans and approached by turns towards left and right alternately at right angles. For instance the fort of Warangal, has gateways on all the 4 cardinal directions with 2 courtyards and 2 barbicans.
with two more inner entrances, besides the main one in the stone fort. Similarly the fort of Gandikota has 2 court yards and 2 inner entrances besides the main one, with 2 barbicans in the interior, whereas the gateways of Gutti appear to be somewhat simple in plan with only one courtyard and one barbican and one curve towards left.

Bastions: are also known as buruzu in Persian where as in Artha Śāstra they are described as Atṭālaka. Its actual corresponding term in Telugu is Kōttala meaning a tower. This according to Kautilya should be square through out and provided with a moveable stair case or ladder equal to its height. In contemporary Telugu literature, it is known as Kotta or Kottala. The terms attada or attālaka and Kottada or Kottala are often taken to be synonymous. But in actual practice attālaka represents a watch tower with a turret or structure in its midst reminiscent of a gopura.

Next to the rampart, and gateways, the value of a bastion is immense in fort architecture, for they are mainly meant to reinforce the strength of the fort wall which run for long distances continuously, spaced at regular intervals of distance and at corners. According to world encyclopaedia "a true bastion is pentagon shaped, (with 5 sides and 5 angles) with one side of the pentagon placed along the wall of the fortification, the angle farthest from the wall known as Salient. The two sides adjoining the salient are known as Faces, and the sides connecting
the faces with the wall being called flanks. A line of these bastions connected by a protective curtain is known as Bastion system".33

This system of bastion defence is first said to have been developed in Europe, by Blaze court de Pagan in his Treatise on Fortification, in which he made the flanks of each bastion perpendicular to the produced faces of those to be defended, by which and by giving more length to the faces, he obtained in the interior much greater space than was allowed previously.34 Later on, came a new system of Sebastion de Vauban in 1684, according to which he separated the bastions from the body of the place by a ditch about 40' wide, inorder that after breaching and capturing of bastions, the besieger might be compelled to recommence operations against the eminence. The angles of the lator were fortified by small pentagonal towers of masonry called Tower Bastions underneath which he had casemates for two guns in each flank, and bomb proof barracks for the troops along the faces besides powder magazines in the centre".35

From the above account of bastion system in Europe, we understand that it came into vogue in Europe only in the late 17th or early 18th C. But in India this system of defending forts by means of bastions, appears to have been in existence even as far back as the Indus civilization. While describing the excavations at Harappa, Sri R.E.M.Wheeler points to the discovery of "angle of a tower or salient at the south-eastern corner".36
He also says that the wall was reinforced by regular towers or salients representing an elaborate system of enfilade.\textsuperscript{37} According to him the surviving masses of mud brick core suggest that some at least of those salients were carried higher than the main wall. This salient or tower is found in a cutting covering an inward bend of the wall. It was 60' broad, and projected by 15' at its south-eastern end and 23' at its north-eastern end. Similarly between the south-west corner and cutting XXIX, was a central bastion, or salient 53' broad, and with a projection of 21-25 1/2'. At this bastion the wall changed its direction.\textsuperscript{38}

This system is also continued in the forts of the Vedic period of Painted Grey ware culture.\textsuperscript{39} The first defences at Kausāmbi, which came into being in S.P.1\textsuperscript{3} the rampart of mud with sloping sides is reinforced by bastions and towers square in plan, strongly reminiscent of the Harappan citadel. Here the northern wall, about 427' in length and 19' in width had a circular tower at each junction, at its eastern and western ends with a regular one in the middle.\textsuperscript{39} A total of 16 such bastions have been discovered which are solid rectangular structures measuring in plan, 47 to 60' long by 34 to 40' broad, at Girivraja or Rājagir.\textsuperscript{40} Pātaliputra, which according to Strabo, was surrounded by a wooden wall pierced with loopholes for discharging of arrows was crowned with 560 towers and 4 and 60 gates.\textsuperscript{41}
The above study of bastions obtaining in the forts of Indus and Vedic period, makes it explicit that the system of bastion defence was not unknown in ancient India, and was a well recognised practice which continued from time to time.

Now coming to the structure and plan of the bastions in Andhra Pradesh, we find two main categories basing on their shape. They are square or rectangular and round or semi-circular. Of them, former i.e. square or rectangular bastions are believed to be Hindu in construction, while the latter i.e. circular or semi-circular have come into existence only after the advent of the Muslims. Writing about Bhongir, fort, Sir Henry Cousens observes; the old Hindu bastions were as a rule square. In later times they became polygonal (many sided) and finally round under the Muhammadans. He further says that early Hindu work is characterised by this squareness of outline, segmental and curved lines came with the Mohammadans. The above observations of Cousens, seem to be true only to a certain extent as most of the bastions in forts belonging to the Hindu dynasties like Waraṅgal, Aihole, Bāḍāmi and Vijayanagar are square or square rectangular in design, while the latter i.e. circular or round bastions are available in plenty in several forts of the Muslim period. Further both the types co-exist in several forts during one and the same period, thus making it difficult to accept the theory of Cousens basing on their shape as strictly Hindu or Muslim.
It may also be noted that the shape or design of a bastion depends not exclusively on the fancy or preference of builders, but on the nature of the site on which it is built and the principles of construction in vogue in a particular period. Percy Brown remarks that "the indigenous architecture of India was of "trabeate order" i.e. placing stones one above the other and spacing the gaps by means of beams laid horizontally, thus making the pressure vertical and directly onwards, involving no structural problems. But the Muhammadans on the other hand brought a new scientific and mechanical formulae, i.e. arcuate i.e. arch system as a method of bridging space. Such formulae when put in to practice were applied to counteract the effects of oblique or lateral thrust and resist the forces of stress and strain by means of which greater strength and stability were obtained, Materials were economised and a wide range and flexibility given to the builders art".

An examination of several bastions in various forts of Andhra Pradesh reveals that square or rectangular bastions predominate in the case of several lands forts or forts built on plain terrain (Sthala-durga) whereas round or semi-circular bastions are mostly built on the edges or precipices of rocks as in the case of several hill forts or Giri-durgas, the reason being that bastions of square or rectangular type built in Sthala durgas occupy more ground space than the round or semi-circular ones which require less ground space. From the viewpoint of defence, scaling or climbing up the fort walls, is easy by the square bastions, when compared to the round or
circular bastions, which stand at the precipices of several Hills, with a steep and slopy scarp on the outside. Hence remarks Vitruvius, "The towers should be made either round or polygonal. A square bastion is a bad form on account of its being fractured at the Quions, by the battering ram, whereas the circular tower has this advantage that when battered, the pieces of masonry, where of it is composed being uniform, cannot be driven in towards their centre without displacing the whole mass".45 However a few exceptions are there as the square or rectangular bastions on the hill at Bhongir and round and semi-circular bastions in the plain levelled terrain at Chandragiri.

Viewed thus from the angle of superior defence technique and functional utility coupled with economy of space, round or circular bastions appear to be an improvement over the earlier practice of square or rectangular bastions. This can also be explained by the fact that in earlier times the Hindus did not know or use artillery and mining, and their warfare was confined to infantry only, using bow, arrow and swords as the main weapons. So long as this system continued in besieging and defending forts, Square or rectangular bastions did not face danger. But when improved methods of attack like mining and artillery by way of cannons and heavy guns came into vogue it became necessary for the bastions of the old order to give way to the new ones i.e. Round or semi-circular.
5. **Parapet wall**

The next important part of a fort that demands consideration is the parapet wall. Described by Kautilya as *Vishkaṁbha*, it stands over the rampart, built in odd or even numbers, with an intermediary space of 12 to 24 hastas from each other, and raised to a height twice their breadth.\(^{46}\)

Next to the bastions, it is these parapets, of lesser height, that provide additional security to the inmates of the fort, and enable them to face the attacks of the besieger from a vantage position. While we do not find a specific term employed for this in contemporary Telugu literature, yet we find several forts possessing it. Extant remains of parapet walls in the forts of ancient period in Andhra are almost absent. But during medieval and late medieval periods, it became an established practice for a large number of forts to possess it as at Warangal, Gandikota, Gutti, Golconda etc. These parapets often present different varieties. Some times they are continuously built along the outer edge of the rampart, some times broken by means of intermittent openings in between, and consist of solid rectangular structures with a downward slope on the top towards front, and some times by means of upright stones erected at several places leaving wide gaps in between. Lastly the most common parapets seen on several fort walls is a chain of arched hood stones, built horizontally along the entire length of the walls, leaving a very narrow space in between.
Often these parapets, are pierced with several loop holes in several tiers one above the other, and side by side both horizontally and vertically, thus enabling the defenders of the fort to peep through them the approach of the besieger, or insert weapons of smaller size and fire without being seen. These loopholes again are of different kinds, like horizontal, vertical and cross sectioned in the interior, thus providing sufficient angles to the inmates to fire from different angles which are 90°, 45°, 60° when seen from outside.

Apart from the above, there are also machicolations, and barbicans, innovated as a measure of additional defence, meant to prevent the direct and onward rush of the enemies. Then there are the usual stables for horses and elephants, magazines for storing arsenal and military equipment, the jail, granary, the barracks for soldiers, quarters for the civilians, the treasury and finally the citadel, or the palace complex of the ruler or commander of the fort.

SECTION V:
Methods of attack and defence:
(a) Attack:

Kautilya prescribes 5 methods to capture a fort under the title 'Durza lamabhārāyaḥ'. They are:

1. Upajāpa: intrigue
2. Apasarpa: pretending retreat or spies
3. Vamana: mining over people
4. Paryupāsan: Siege
5. Ayamarda: General assault
Of them the last two i.e. Siege and general assault appear to have been most commonly employed in capturing forts. This is borne out by a study of several battles and the character and nature of warfare prevailing in ancient and medieval periods of Andhra. Hence the need for a study of the nature of warfare, before examining the various methods of attack.

Warfare: Unfortunately information about this aspect is quite meagre in inscriptions and literature. However, a study of the military organization of various kingdoms and the representation of arms and weapons in the sculptural carvings of various periods, help us to understand the system of warfare. Warfare in ancient Andhra as in other parts of the country, appears to have been based on the conventional form of "chaturangabala" i.e. fourfold division of army into infantry, cavalry, elephants, and chariots. During this period infantry played a major role forming the front line of attack. Hence the wide prevalence of Field Warfare, or Land Battles, fought at a chosen site or terrain, between the two warring factions, far away from their capital cities, the idea behind which, was not to disturb or cause hindrance to the civilian population. The main weapons of war fare, as seen from the sculptural carvings at Amaravati and Nagarjunakonda, are Stones, Sticks, clubs, Mace, which are called by Dr. Krishna Murty as "crushing or stunning weapons".

There are also other types of weapons, which according to him, are piercing in nature. They are, prāśā (spear) Chhuria (dagger), Pike (śūla), chāpa and Sara (Bow and arrow with quiver). There
are also cutting weapons like swords, and shattering weapons like thunder bolts (vajra) and defensive weapons called shield.\textsuperscript{49} There are several other minor varieties in the weapons mentioned above, based on their size, and the purpose for which they are put. Hence the phenomenon of land battles, or field warfare, which offered little scope for forts to play any role, as they were not the chief targets of attack. However there seem to be some stray instances of capturing forts by means of siege warfare, which is a later development, as in the case of Pīṣṭapura and Kunāla, captured by Pulakāśin II by seizure in 7th C. A.D.\textsuperscript{50} and the dismantling of the forts of Kattemu and Kaṇḍukūru by Pāṇḍa-raṅga,\textsuperscript{51} the Brahmin general of Vijayāditya Il-Gunaga and the setting of fire to the cities of Nellore, Kiranapura and Achalapura by the same general in 9th C. A.D.\textsuperscript{52}

During the medieval and late medieval periods, came into vogue a new method of warfare called \textit{siege warfare}, or \textit{siege craft} known as \textit{lagga}\textsuperscript{53} in contemporary Telugu literature, with emphasis laid on cavalry and artillery. Siege warfare implies making a direct attack against enemy forts, which is a protracted and long drawn out affair. Laying siege to and capture of as many forts as possible, became a matter of pride and an act of valour and heroism among kings.

\textbf{Siege warfare:} This new method of warfare, although widely prevalent in the later periods of Andhra, appears to have been in vogue, in India from the earliest times i.e. the Vedic period,
for the Brāhmāṇas and Saṁhitās mention it. Rīgveda and Atharva Veda refers to the Gods Indra and Agni as fort demolishers and invoke them in several hymns, to destroy the strongholds of the Dasyus. The former even calls Indra as Purāṇḍara i.e. breaker down of forts. Fire also played a part in siege operations. During this and the subsequent periods i.e. epic and early historic, elephants were freely employed to batter the gates and walls of forts. Mahā Bhārata refers to them as Purā Bhēttārah and Kautilya calls them as nāgarāyana i.e. capable of destroying towns. "They were specially trained to rush impetuously against the wall at a given signal and hit it with their heads."

Coming to the medieval period in Āndhra, we find warfare undergoing far reaching changes. That siege warfare became the most common method of attack, is borne out by the fact that several kings and generals, assumed epithets like Durgātravanalla, Durgachūrekāra, Kaṭchikavāṭa Chūrakāra, Giri-durgamalla, Jaladurga Bādabājvalana, Vanadurgadāvānala, and Sthāla durga Saṁchurpana, which we come across in inscriptions of the period. Āravāti Sōmadēvarāja of Kaṃpili who liberated the western Āndhra country, from the oppressive Muslim yoke in 14th C. is said to have captured as many as 7 forts in one single day's campaign and held the title "Churāsidurṣavibhāla". Similarly we also find, the epithet Gandikotadurṣavibhāla" borne by Juṭṭayalenka Gonka reddi during the time of Kaṭṭīya
Prataparudra. The Srisailam and Chinna Ahobilam records of Krishnadevaraya furnish a list of forts captured by him.

Aliya Ramaraya, the defacto ruler of Vijayanagar, is attributed with the titles "Guttidurganirbdana" Adavani durgaparana, Penugonda durga Sadhaka, Kaandanaolvu kavatbhedaaka etc., by Ramaregayamu. The above study shows the amount of pride and honour taken by rulers and generals in taking as many forts by seizure. It also becomes evident that cavalry was the main force employed to besiege forts, as against infantry, which of course continued to retain its place of importance as the front line of attack.

The advent of 14th century in Deccan brought about still farther changes in the field of warfare. During this period begun the several Muslim incursions from the North, bringing with them an altogether new method of attack called artillery i.e. use of cannons and heavy guns and mining, a method which was not known to the Hindus. The Hindus upto this period depended upon the use of traditional weapons as bow, arrow, sword and mace, besides a number of other subsidiary weapons like tomara, pasa (lassoe ornoose), chakra (disc), trisula (a weapon with 3 points and sharp edges), Sula; lance, prasa(spear) Parasu (battle axe), Hugara (hammer), Parigha (battering ram) and phalaka (sheel). But, with the advent of Muslims, warfare underwent several changes, while siege warfare and capturing of forts by means of (upasad) seizure, continued to be the main feature.
With this account of the character and nature of warfare, and its main features, we shall now examine the various methods of attack in vogue. But it may be noted, that these methods are not exclusive, but are complementary to one another, and were used simultaneously sometimes in the capture of forts.

1. Upāsād (Assailing rampart): Kautilya, while discussing the "operation of siege" in Book XIV, chapter IV, cautions that a fort should be besieged by the invader, after well guarding his camp, transport, supplies, and communications, and after digging a ditch and raising a rampart around his camp. He should empty the ditches of the enemy fort or fill them up with water if they are empty; and then he may assail the rampart, and parapets by making use of underground tunnels or iron rods. He should destroy the entrance gate by means of machines, and his cavalry should force their way through and smite the enemy. This method of attack appears to be more general in nature and specific instances of its employment are absent in contemporary warfare in Andhra.

2. Fire: The next method of attack is Fire, which is considered to be foreign to India, introduced only by the Muslims for the first time. But Gustave Oppert believes that the use of fire is not new to the Hindus. Discussing the use of gun powder and firearms he remarks "No invention has within the last 500 years, been so influential in shaping the
destinies of nations as the introduction of gun powder and fire arms in the warfare.  

According to him "the use of gun powder and its application to the discharge of missiles from projectile weapons, was a well known fact in India." He also says that "projectile weapons were formed like tubes and therefore called cennons from the word canna: a reed." Sri J.N. Ray furnishes a list of fire weapons known to ancient India before the advent of Muslims: They are, 

1. agni dhāraṇā: that which keeps up fire
2. Kshōpa agni yōga: fire missile
3. Viśvāsa ghāṭi: Consists of the powder of all metals, made red hot, of lead or tin, with kuṭumbhi or with the help of Pāribhadra
dra
4. Agni bāna: a fore runner of later day gun which can be fired at short distance from a close range
5. Sataghnī: a hundred killer

Manusmṛiti also mentions the last weapon called Sataghnī to be set up on the walls and gates of the forts, besides yantras. According to Sri S.D. Singh "These Sataghnis must have been columns of wood or stone or metal, girded with spikes and usually provided with wheel, which were directed against the enemy trying to scale the walls." Kautilya also furnishes a list of weapons and (yantras) missiles, and fire arms, and the method of manufacturing gun powder. Šukranīti mentions a weapon called nālika, derived from the
term nāla meaning a reed or hollow tube resembling a gun. 76

From the above study, it is clear that fire or use of fire arms and weapons is an established practice among Hindus since earliest times. Kautilya warns against applying this method when the fort can be captured by other means. This method appears to have been in vogue in Andhra as can be found from the method in which forts like Kunala, Nellore, Kiraṇa-pura and Achalapura were captured by Pulakēśin II, and Paṇḍarāṇge respectively. Another instance of the same kind, is the capture of Vardhamānapura by Kāketiya Rudradēva. 77

However, there can be no denying the fact, that true fire weapons entered India only with the Muslims. Ferishta says that it was first used by Mā of Ghazni in the battle near Peshawar in 1108 A.D. against Anaṅtapāl. According to him Cannon (top) and tufang (musket) were used. 78 In South India and Deccan, the earliest fire weapons to be used were Manjaṇiqs in the seizure of Warangal by Mālīk Māib Kāfūr. 79 Bārni calls them as Maghribs corresponding to western stone balls. 80 They were most effective and commonly employed siege engines remarks Sri J.N. Sircar. "It hurled with irresistible force huge pieces of rocks, stones, earthen or iron balls, vessels built of naphtha, or Greek fire or casks containing foul matter, Scorpias, and poisonous reptiles from a string attached to a huge beam worked by 3 principles of torsion, counter poise and tension. The beam was held down tightly and when it was suddenly released, it cast off the missiles
contained in thesling with tremendous force. There were various types of manjaniqs varying in their construction, size and power. The maghribis and arads were the other types of the same machine. 81

Later on came cannons, which were drawn by bullocks, horses, elephants or camels and mounted on heavy wooden carriages. Other weapons of lighter variety, include guns which went by the names, as Gajnāl, Hathnāl, Shuturnāl etc., employed in siege warfare as battering rams. There were also other varieties of guns, called Matchlock and flint lock. Still later came the pistols in 18th C. 82

The actual application of this artillery and musketry seems to have been confined only to the Muslim dynasties in Deccan, who learnt it from the Turks and Europeans. There is no evidence to show that it was ever practised by the contemporary Hindu dynasties until after a very late date i.e. after the advent of English.

3. Storming: Kautilya says that when a conqueror thinks that he was well provided with necessary weapons, means and such workmen, where as his enemy was diseased with unfurnished forts, and deficient stores, and allied with no friends, or with friends enemical at heart, then should be consider it as opportune time to storm a fort. 83 A perusal of the various battles reveals that it was generally employed in capturing several forts. The
various campaigns of Krishnadevaraya show that he captured almost all the forts, by this method, by blockading ingress and outgress to the fort. Among the forts captured under this method figure Udayagiri, Kondavidu, Kondapalli, Bellamkonda, Tangeda, Ketavaram, Nagarjunakonda, etc. Terms like "Ekadhāti laggavatti" denote storming all of a sudden and seizure.

4. Hemming: Kautilya says that a besieger should at first pretend retreat and when the enemy sallies out of the fort to pursue him, then he should turn back and hemm from both the front and rear and make him yield. Instances of the application of this method are quite rare in the military history of Andhradesa. However there occurs a solitary instance at Devarakonda, when the combined armies of Recherla chiefs and the Gajapatis of Orissa, under the command of Kumāra Haṁvira hemmed the Muslim forces of the Bahmanis in the reign of Humayun Shah, and thus forced them to raise the siege.

5. General Assault (ayamarda): This is the last method of attack suggested by Kautilya. According to him, it is to be attempted suddenly, when the enemy is in distress, and taken unawares, at a time when his armies are weary, and reduced in strength. However it can be constructed that most of the attacks were generally sudden and hence come under this category. Besides the above there are also other methods viz. escalade, mining, starving and treachery.
Escalade: means scaling or climbing the walls of the fort by means of simple tools as scaling ladders (Nadurban) ropes, lassoes, and nooses. Rope ladders were thrown over towers or battlements to scale the walls. This method was used by the Hindus and Muslims. It was widely used by the Marathas to capture the hill forts with the help of a trained monitor lizard (iguana ghorpade) i.e. Udumu.

In Andhra, the use of this method appears for the first time in the capture of Warangal by Malik Naib Kafur. Amir Khusrau, the Muslim historian, informs "Vazir the minister of exalted rank issued orders that in every division high ladders with other apparatus should be kept ready in the middle of night and whenever the drum should beat to action, every one should advance for his entrenchment and carry the ladders towards the fort". Another instance of the use of this method occurs in the attacks of Krishnadvaraya against Udayagiri and Kondavidu. While attempting to capture them, he is said to have employed a new device called 'menata and Nadachapparalu' i.e. the erection of wooden mobile ladders, a sort of siege towers, so as to enable his soldiers to fight from an equal plane with those inside. Harivamssamu, a Telugu Kavya of Erra Pregada, contains a graphic description of this method. Verse 83 describes the siege of Gomahta hill by Jarasandha and states that he exhorted his allies to scale the hill from all sides and assigned them the different quarters from which each should attempt to scale. It also says that obstacles, if any should
be overcome with the help of wooden clubs, arrows, spears, and lances, which should be showered at the enemy like rain. Another verse also refers to the scaling of walls and the destruction of yantras and weapons set up on the top of the fort walls.

Mining is another important device, like fire, used in capturing forts; and said to have been brought into India only by the Muslims. It was a well-known practice in Medieval India in the North. It is carried out by means of digging approaches to the fort by sapping and mining known as naqb, and attempts at producing a breach in the wall by digging a hole below the fortifications after removing earth and placing horizontal beams across. Straw and other combustible materials were also used which were set on fire. In order to protect themselves from the missiles of defenders the besieger resorted to open trenches and covered passages (sabat) and advance up to their target with comparative ease and security.

In actual practice this method is first said to have been employed by Md. Gawan, in his second campaign against Belgaum in 1472 A.D. who according to Burhan-i-Masir and Ferishta "made use of mines successfully to make breaches in the walls of the fort". But Dr. Gopalreddi believes that it was first used by Malik Naib Kafer in 1309 A.D. during his siege of Warangal. He draws support to this from the mention of mining in the Nusipur of Amir Khusru. But a careful study of the above work shows that it was resorted to by Khusurukhan who invaded
Telingāna, in 1316 A.D. to collect the tribute due from Pratāpārudra, and not Mālik Naib Kāfur. This was the third campaign of the Muslims against Warangal. We also get some account of its prevalence among the Hindus also, who, according to a verse in Hariwāsamamu, made use of weapons like axes, large crowbars, spears, and maces, meant for effecting breaches in the walls of the fort besides danchans, probably stone balls or slings, Odisalu (caçapults) tōmaras, sakti (axes) etc. This method is applicable only in the case of land forts and not hill forts.

Starving: This is another frequently employed method to reduce forts. It is done by investing the fort closely and cutting off all supplies and communications to and from the fort, and thus force the defender to be on defensive for a long period and reduce him to the brink of starvation for want of the availability of food, water and other essential commodities and thus compel him to yield or surrender the fort. Gutti, is said to have been reduced by this method by Hyder Ali the Nawab of Karnatak, from Morāri Rao Ghōrpade in A.D. 1774.

Treachery: is the last and the most commonly employed by besieger, when he found his target difficult by force of arms or any other method. Kautilya also approves of this method. It is carried out by means of offering bribes and presents to the ungrateful and treacherous commanders of the fort or making false promises to the besieged. An instance of the later type is the capture of Gandikōta in 1649-50 A.D. by Mīr Jumbā, who
decieved Pemmasāni Timma, the stout defender of the fort, by offering him Hanuman Gutti instead of Gutti which was originally promised to him.\(^{102}\) Another instance of the use of this method can be seen in the capture of Gōlconda by the Mughal emperor Aurang Zeb in 1687 A.D. which was captured by the treacherous act of opening a postern gate near the Fatēh darwāza by Abdullah Khān Panni.\(^{103}\)

(B) *Defence:* Kautilya does not prescribe any specific methods for defending a fort. But, we find a good deal of information in the sanskrit works on polity and contemporary literature in Telugu about the several measures to be taken for protecting a fort. We also find, during this period, a vast improvement in the field of military engineering by means of new devices and methods of construction, brought about to defend the fort from the advanced methods of attack and new weapons of warfare.

Before proceeding to study them in detail, it may be noted that the strength of a fort or its capacity to defend, lies primarily in its natural situation, new military devices incorporated into it and a strong garrison consisting of abundant stocks of men, material, wealth, weapons, water, food and other essential requirements. With this brief outline we shall now examine the defence of a fort in a little more detail.

Firstly, the defence of a fort, requires strict guarding of its approaches on all sides. For this Kautilya prescribes 3 moats, or ditches, one after another, filled with water upto the neck and poisonous creatures or concealed weapons under...
stocks of hay or thorny bushes. He also says that a knee
braker called Jānubāṃhani should be erected. This caution of
Kautilya has been strictly followed by almost all the holders
of forts by guarding all the approaches to the fort. In the
medieval period counter mining by means of planting inflammable
material under the earth was resorted to counter act the sap and
mining of the besieger.

Next to the approaches, comes the gateway, or entrance
that should be effectively protected. The importance of gateway
in a fort can in no way be minimised, for, it is the most vital
part of a fort and is the target of attack for a besieger.
Sakalanīti Sammatamu, realises this and says "a fort should be
defended by means of strong gateways, placing armed barracks at
appropriate places. Guarding of all approaches, and patrolling
the entire fort area around including the postern gates by
appointing sentries and spies, both day and night. Otherwise,
it says that it would be impossible to govern the land, even for
Indra. Similarly, another work Rukmāṅgada charitra, says
"those who guard the gates of a city would be free from all fears
and difficulties and to them would accrue wealth, lustre, and
fame. In another verse, it says that, a king cannot rule
the country for long, if his subordinates failed to protect
the gateways effectively". Uttara Harivamsamu, a work of
the same period, prescribes a series of measures to be taken for
protecting a fort. Although the work is a translation of
Sanskrit original, yet the author furnishes graphic description
of contemporary forts and the system of warfare. Krishna, the
Lord of Dwāraka, exhorts his brother Sātyaki to strive hard for protecting the city, without any respite. He says that a fort should be properly repaired and renovated by raising attallu or watch towers, over the bastions, and kommas or uprights in the parapets along the entire wall, fixing a beam across the entrance, filling the moats with water, making arrangements for lighting and acquiring āṇchanas (stone balls or slings) and āddalas (fire balls) in plenty, strengthening the gateways by means of heavy door frames, fitted with sharp and pointed iron spikes, and by setting up barracks (pālemu) at appropriate places and by collecting (āyudhas) weapons and (yaṇtras) missiles in large quantities. Further in verse 93, he says that entrance and exit ways should be closely watched by examining the bonafides, through a royal seal or letter.

It also says that he should equip himself with weapons like, bow, arrow, sword, maleeoat, or body armour, and helmet, and should not indulge in rest or sleep and discussions or discourses of any sort should be avoided. Next it describes the actual operation of a siege attempted by Pundraka against Dwāraka, and the manner in which it was repulsed, by driving away the forces of the besieger, who managed to scale the walls of the fort, with the help of projectile weapons like throwing stones (āṇchanas) and āddalas.

The advent of Muslims in Deccan, in the 14th C., brought about new changes, not only in the methods of attack but also in defence as well. During this period came new methods of
construction, new building materials, and innovations in military engineering, so as to give greater strength to the fort. Among these new innovations are the barbicans, machicollations and loopholes, which appear in almost all the forts today.

**Barbican**: is an outer gate or structure, meant to protect the main entrance. In the interior it also exists in the form of a cross wall, projecting from the main one with the object of preventing the ambush or onward rush of the enemies. It is not known whether it existed in the forts of ancient Andhra. But in medieval Andhra there are several forts that possess it, like Waraṅgal, Gunti, Gaṅdikōṭa, and Penugonda, to mention a few. At Waraṅgal, it exists in the shape of semi-circular screen wall, before the main entrance. At Gaṅdikōṭa, also there is an outer gate flanked by watch towers protecting the main one in the interior. There are also cross walls in the interior projecting from the main ones as at Gaṅdikōṭa, and Waraṅgal, compelling the besieger to reduce his speed and strength.\[115\]

**Machicollation**: according to Sydney Toy "it originated in the west". But it is not clear whether it was known to the medieval Hindu rulers of Andhra, in the absence of roofs of the gateways of the Hindu period in most of the forts. "It is a hole formed in the roofs of passages, through the gateways projected out on corbels from the parapets of walls, and gateways through which boiling oil, water, stones, and other missiles were thrown down..."
the enemy below". In Andhra Pradesh, only the forts of Gōlconda, Bhōngir and Chaţdragiri provide evidence of machicolations. At Bhōngir, there are holes or machicolations, along the entire battlement, at every bastion, at regular intervals of distances as a result of the vacant space acquired in placing the projecting corbels. Similarly at Chaţdragiri also it is found to exist, in the Semi-circular bastions along the south side. Its absence on the other side i.e. North where lie the square or rectangular bastions of the Vijayanāgar period seems to lend support to the view of Toy.

**Loopholes:** Another device of military engineering is the loopholes arranged in several tiers either 2 or 3 vertically or horizontally or both. These are meant for inserting fire weapons of smaller nature like guns and pistols and enable the defenders to peep through them the whereabouts of the enemy. In the interior they look lateral, but when seen from outside they slope downwards with angles of 45°, 60° and 90° projecting vertically down below. Some of these loopholes have cross sections in the interior by means of a small dividing wall of bricks, thus making it possible for the defender to change the direction of his gun in any manner he likes, either towards left or right angularly. In Andhra Pradesh there are many forts with loop holes of different varieties.

**Garrison:** is the most important aspect of a fort that deserves consideration. It means the abundant availability of all sorts
of material like food grains, wealth, men material, weapons, and missiles etc. without which a fort cannot be effectively defended. Almost all the works on polity lay emphasis upon this. Manusmriti, in verse 75, says that "a fort should be supplied with weapons, money grain, and beasts of burden, with Brāhmanas, artisans, engines, fodder, and water". Abhilashitārtha Chintāmanī says "several weapons and implements that should be kept in a fort". It also says that several medicines should be stored in a fort. Sakalanītisammatamu, says that, the effective strength of a fort lies in the strong garrison it possesses, consisting of huge wealth, food grains, bows, arrows, soldiers, perennial water supply, unending availability of fuel, inflammable material and a number of missiles.

That the importance of a strong garrison is realised by the Forts in Andhra is proved by the fact that most of them are provided with large number of granaries, barracks, stables, treasury, and magazines for storing food grains, keeping armies, horses and elephants, wealth, weapons and arsenal respectively.

SECTION VI:

Enumeration and classification of forts:

A perusal of the available material on antiquarian remains in Andhra Pradesh, shows that there as many as 160 forts or fortified villages and towns situated at different places, big and small and belonging to almost all the categories of traditional classification. Of them only about 50 appear to
be important in view of their intact state of preservation and the role played by them, from political and military aspects. Their distributional pattern in the three different regions of Andhra Pradesh is as follows: coastal Andhra: 73, Rāyalasīma: 50 Teliṅgaṇa: 37. This shows that coastal Andhra has 73 forts with 12 districts, thus making an average of 6 in each where as Rāyalasīma and Teliṅgaṇa have 50 and 37 with 4 and 9 districts respectively making an average of 12 and 4 in each. From this we find that Rāyalasīma with its smaller geographical area, has a higher density of forts than the other two.

Secondly proceeding on the age old premise of classifying forts on the basis of their situation into 4 main categories as sthala, jala, giri and vana, forts in Andhra Pradesh fall as under:

Sthala durgas: 129, Jaladurgas: 4, Giridurgas: 30 and Vanadurgas: 2

This division of forts into 4 classes, reveals that the 1st category i.e. Sthala, occupied a place of paramount importance while the next goes to Giri (Hill) durgas. The distributional pattern of each of this category regionwise is as follows:

I. Sthala durgas

<table>
<thead>
<tr>
<th>Coastal Andhra</th>
<th>Rāyalasīma</th>
<th>Teliṅgaṇa</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>42</td>
<td>21</td>
</tr>
</tbody>
</table>

II. Jala Durgas

<table>
<thead>
<tr>
<th>Coastal Andhra</th>
<th>Rāyalasīma</th>
<th>Teliṅgaṇa</th>
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<td>3</td>
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</table>
From the above study of their classification, and distributional pattern, we find that coastal Andhra, is studded with a large number of Sthala durgas (land forts) and Jaladurgas (Island forts) obviously because of vast deltaic plains formed by the rivers Gōdāvary and Krishna. Giri durgas occupy the 1st place in Telingana region, where as Rāyalasīma has both sthala and Giri. Vana durgas seem to have occupied a place of lesser importance as they are found only in the Rāyalasīma region.

Another basis for classifying forts is their functional aspect according to which they fall under three categories as capital forts, frontier out posts or border forts, and intermediary or cantonment like forts. 

(a) Capital forts: are forts which served as capital cities of several imperial dynasties, that ruled over Andhra. But forts of this nature are quite less in number, as most of the imperial dynasties that ruled over it came from outside Andhra Pradesh like the Chālukyas of Badami, Rāshtrakūtas of Mālkhed, Western Chālukyas of Kalyāna, Chōlas of Tanjore, and the Pāyas of Vijayanagar. Hence all their capital cities are situated
outside Andhra Pradesh. However there are a few capital cities which exercised political authority in Andhra with their capital cities situated in it; they are:

1. **Dharanikota**: Referred to in chapter V, stood on the right bank of river Krishna in Guntur district, served as the eastern capital of the \textit{Satavahana}.\textsuperscript{123}

2. **Vijayapuri**: modern Nāgarjunakonda in Guntur district was the capital of the \textit{Lvshvakus}.\textsuperscript{124}

3. **Vengi**: was the capital of the Śālaṅkāyanas and later of the Eastern Chālukyas. Situated near Ellore in West Godavāry district.\textsuperscript{125}

4. **Rājamahāndravaram**: Capital of the Eastern Chalukyas of Vengi. Identical with present day Rajahmundry on the northern bed of river Godāvāry in East Godavāry district.\textsuperscript{126}

5. **Addanki**: Situated in present Prakasam district, near Vinukonda. Flourished as the earlier capital of the Reddis of Kondavidu under Prōlaya Vēma, the founder member of the family.

6. **Hanumakonda**: Situated about 2 miles south-west of Warangal, served as the earlier capital of the Kākatīyas and the headquarters of Sabbi 1000 vishaya.

7. **Warangal**: Became the capital of the Kākatīyas from the time of Gaṇapatiḍēva.

8. **Rāchakonda**: Situated in the Suryapet taluk of Nalgonda district. Flourished as the capital of the Rēcherla Velama chiefs.

10. **Golconda**: Came into prominence in the 16th C. as the capital of the Qutub Shāhis of Golconda.

While the above are few capital cities of some of the major powers in Andhra, there are also other fortified capitals of secondary or subsidiary nature. They were the capitals of subordinate or feudatory chiefs. They are:

1. **Chandavolu**: Situated in Repalle taluk of Guntur district, it is referred to as Tsandavolu or Dhanadaprolu in inscriptions and literature. Flourished as the capital of the Velanāti Chōlas, who exercised authority over coastal Andhra comprising Krishna and Guntur districts, for over a century and a half, from the middle of 11th to the close of 12th C. A.D. as the subordinates of Western Chālukyas of Kalyāna, Kākatīyas and the Chālukya-Chōlas of Tanjore.

2. **Amaravati**: modern Amaravati in Guntur district; it was the capital of the Kōta chiefs of Dhānyakataka, who owed allegiance to the Kākatīyas of Ñarengal, and ruled over the region Shatsahasramandalā.

3. **Pishtapura**: modern Pithapuram in East Godavary district. Originally it was the headquarters of South or Vārshina Kalinga, and later, the headquarters of the Dvajayas from whom Pulakesin II captured it. Afterwards it formed part of the territories of the Eastern Chālukyas of Vēṅgi and latter became the headquarters of the abranach of the above family known as Later Chālukyas of Vēṅgi under Bēta Vijayāditya or Kanthika Bēta, after Rāja Rāja Narēndra. 127
4. Vallurū: Situated in the Cuddapah taluk of Cuddapah district, it flourished as the capital of the Kayastha chiefs, who exercised authority over Rēṇāḍu 7000 and Mulkināḍu, Sakali sīma and Pottapi as the subordinates of Kākatīyas of Warangal.

5. Nellore: Modern Nellore or Vikramasimhapuri on the Howrah-Madras line. It was the capital of the Telugu Chōlas of Nellore.

From the study of a few capital cities or fortified capitals we find that sthala durgas received the pride of honour as capital cities in the early or ancient period, whereas Giridurgas replaced them in the later i.e. medieval period. This appears to be because of the concentration of political and military activities in the coastal region which with its vast geographical area and levelled plain terrains, offered scope for building a large number of sthala durgas. Extant remains of most of the sthala durgas are quite meagre, owing to the largescale agricultural operations carried out at several places.

Frontier out posts or Border Forts:

It is difficult to strictly identify forts of this nature as the boundaries of several kingdoms were not static, but often changed from time to time, thus making a fort as a capital city at one time and a frontier out post at another and an inter mediary one at yet another. However, the few recognisable frontier out posts are Nellore, Vinukonda, Kondapalle, Udayagiri Adoni, Gotti, Rāmagiri, Kaulas, Bhuvaṇagiri and Kōilkonja.
Intermediary or Cantonment like forts:

These were generally small in size and complex, and were the capitals of the feudatory chiefs, who supplied armies to the imperial overlord in times of need. In Andhra Pradesh, no specific instances of forts which can be classified under this category for the reasons already mentioned above. They were generally situated in the central part of the kingdom linking both the imperial forts and frontier out posts.

Hill Forts (Giridurgas):

It has already been pointed out that Hill forts or Giridurgas occupy the place of honour, next to the Sthala durgas among the forts in Andhra Pradesh. The main reason for this appears to be the emphasis laid by several writers on polity, about the superior strength of a Giridurga. Another reason for this large number of hill forts is the availability of high and rocky hills belonging to the several ridges of the Eastern ghats and other mountainsystems that go by several names locally, which provided strong building materials as granite, and stood impregnable to the attacks of the besieger, providing adequate safety to the inmates. Further the change in the system of warfare and new methods of attack like cavalry, and artillery also seem to be responsible for this large number of hill forts. Writing about the native fortresses of India E. Blake remarks "Hill fortresses of India if properly defended may be considered absolutely impregnable. Those vast precipices of lofty granite, may equally bid defiance to the battering gun, and the mine, the later of which Vauban
the great Master of the Art of Sieges recommends as the most powerful agent for the attack of Mountain fortresses. And in fact there seems no certain mode of reducing them, if vigorously defended, but the tedious operation of strict blockade. We have also seen that there are a large number of hill forts in Andhra Pradesh which played a decisive role in the warfare of the medieval period. It may also be noted that there are several remains of this class of forts which require a detailed study. However a study of some of the important hill forts is made here briefly as the main forts are dealt with separately in Section II.

Göloconda: The king among the hill forts of Andhra Pradesh, it stands about 5 miles west of Hyderabad. The beginnings of the fort go back to 14th C. i.e. the Kākatīyas of Warangal, and known locally as "Golla konda". It stood as the border of the Kākatīyas on the west and was ceded to the Bahmanis of Gulbarga by Kāpaya Nāyaka in A.D. 1364. From then on it continued to remain in the hands of the Bahmanis up to 1512 A.D. when Quli Qutb Shāh I occupied it first as the Governor and afterwards made it his capital. This state of affairs continued till 1687 A.D. when Aurangzeb, the Mughal emperor occupied it, not by force of arms but by treachery.

The fort of Göloconda stands on a rocky granitic hill and surrounded by a strongly built crenellated wall, of stone curtain with little over 3 miles in circumference, having high bastions 87 in number. " The bastions semi-circular in
shape are built of solid blocks of granite, firmly cemented together and some times with iron clamps*. Originally it had 8 gates, but only 4 in use now.

Rāchakonda: capital of the Rēcherla chiefs of Velama community, who exercised away over Telingāne after the eclipse of the Kākatīyas of Warangal. Situated in Nalgonda district, it is a typical example of the Hindu forts. Built on two lofty spurs of the hill, it is built of long and massive stone blocks measuring over 15"x1.10" x 1.6" without any mortar as binding material. There are also square bastions in it, another example of the Hindu nature of the fort.

Dēvarakonda: Another capital of the Rēcherla Velama chiefs. It is situated 32 miles south-west of Nalgonda. Its antiquity appears to go back to the Western Chālukyan period of Kalyāṇa. Figures in the Bahmani Gajapati wars.

Kondavīdu: Situated about 13 miles south-west of Guntur in Guntur district. Here the fortifications are very much overgrown with dense forest system. It was the capital of the Reddis of Kondavīdu and termed as Kundinapura and played a big role in Vijayanagar-Bahmani wars. After the Reddis, it went into the hands of Dēvarāya II of Vijayanagar in A.D.1424. Later on it was captured by Kapilēswara Gajapati as evidenced from an inscription dated A.D.1454 mentioning a certain Gānadeva. From the Gajapatis it passed into the hands of the Bahmanis and later it was recaptured by Krishnadevarāya in A.D.1515. Afterwards, it was taken by the Qutub Shahis who called it as Murtuzānagar.
Then it was taken by the French in 1752 A.D. and later by the English in 1788 A.D.

Here the fortifications are extensive and the bastions are built with large hewn stones which still stand as monument. The greater part of the works can be seen on the western side of the mountain. The lower fort area has a strong enclosure 5 furlongs in length, by 2 3/4 in breadth, facing west-north-west at the foot of the hill.

**Kondapalle**: Another fort of importance, in Krishna district on the northern bank of river Krishna with in 10 miles distance from Bezwada. Its beginnings go back to the 12th C. A.D. i.e. western Chalukyan period of Kalyana when Govinda Dandanaayaka, the nephew of Anantapala was ruling over Kondapalle.

Later it played an important role in the Reddi-Velama conflicts, standing on the borders of Velama territories. Till recently it is believed that it was given to Macha by his brother Peda Komati Vema who made it his capital and ruled over it. But, according to a recently discovered inscription engraved on the lintel of one of the gateways, it was built by a certain Dinakara Reddi, at the instance of his master Komaragiri in the year Bhava, corresponding to A.D.1386. Like the capital Kondavidu, it was also under Gajapati occupation, till it was finally captured by Krishnasavaraya in his eastern campaign. Later it changed hands frequently between the Qutub Shahis and the Vijayanagar. After the fall of Golconda in A.D.1687 it also went under the occupation of Moghuls. In 1766 it was taken by General Calliud, by general assault. According to
Capt. Stevens "it was so extensive that it would require an army rather than a garrison to hold it".

Adonis is situated in the present Kurnool district of Andhra Pradesh about 40 miles North-North-East of Bellary. Originally it was known as Adawani in Western Chalukyan inscriptions. Standing within a distance of 25 miles from the river Tungabhadra, it was an important strategic fort and played a major role in the Vijayanagar-Bahmani wars who vied with each other for supremacy over Krishna-Tungabhadra doab. Subsequently it was a bone of contention between the Vijayanagar and the Adil Shahis of Bijapur and it was under the occupation of the latter, for a long period. During this period it was governed by Siddi Masood Khan, 1662-1687 A.D. who built the great mosque in Bijapur style of architecture. Later it was occupied by the forces of Aurang Zeb and it was governed by Ghias-ud-Din Khan and then it went under the Nizam.

Kaulas is a frontier fort, situated in the present Nizamabad district. Originally it appears to have been in existence since the Kakatiya period, as Musunuri Kapaya Nayaka, ceded it to Allahuddin Hasan Bahman Shah I between A.D. 1347-A.D. 1351. Later on it was under the occupation of the Bahmani's and stood as their outpost providing entry into Telangana.

SECTION VII:

Fort Architecture:

The architecture of forts depends to a large extent upon the building materials and methods or principles of construction
in vogue in a particular period. At the outset, it may be noted that no strict canonical principles or rules were laid down by the works on architecture i.e. Vāstu, in the matter of constructing forts, except in regard to their plan or shape; for a fort is primarily a military and secular structure, and not a religious one as a temple. Even these canonical rules regarding the shape or plan were not strictly adhered to in the construction of forts for a variety of reasons as the nature of the site, its strategical importance etc. However, a general study of several forts in Andhra Pradesh reveals three clear phases of architectural evolution or orders, on the basis of the materials of construction, which can be termed as Early, Medieval and Late Medieval.

**Early:** This is the earliest phase of fort architecture built of mud, morum and brick represented by the forts of Sātavāhana and post Sātavāhana periods, like Dharanikōta, Nāgarjunakonda, Dhūlikatā, and Keesaragutta. At Dharanikōta the coping stone of a rail offers a clear description of the outskirts of a city, with a gate house surrounded by a brick wall. Similarly Nāgarjunakonda, had 4 phases of fortifications the first built of rubble, the second of heaped up mud and morum and brick, and the third of rubble and the fourth of stones of the medieval period. Dhūlikatā and Keesaragutta serve as examples of brick construction over rubble foundations. But it should be noted that mud and brick continued to be
used even in the medieval and late medieval periods as the
great mud rampart at Warangal and the brick super-structure in
the form of embrasured parapets over the rampart, in the
Muslim period.

Medieval: It is not known with what material, the forts of
Post Ikshwāku period were built, in the absence of extant remains.
However, it can be surmised that the earlier traditions of
mud, morum, and brick continued up to 7th C. A.D. which heralded
new building materials, and methods of construction i.e. the
use of heavy blocks of stone of irregular size and form, crude
in shape, laid horizontally and vertically one above the other
without any binding material as chunam or mortar, to fill the
crevices between joints. This phase marks, according to
Yazdani "the beginnings of a new type of architecture called
cyclopaean masonry" associated with the Hindus or the natives.  
Cousens also expressed the same view, and believes that this
cyclopaean technique is a typical characteristic feature of
all Hindu constructions. The main reason for ascribing this
architectural style to Hindus, is the existence of several
sculptural carvings on the walls of the fort, intact till to date,
and the use of Hindu temple pillars with all their architectural
and sculptural embellishment, in several of the gateways of the
forts as at Warangal, Gutti, Bhōngir etc. Another and the
most important reason is the nature of trabeate order i.e.
pillar-beam-lintel style, a characteristic feature of all the
Hindu buildings of the period. Further a comparison of the fort
walls of Aihole, Badami, Raichur and Vijayanagar also supports
the above view that cyclopaean masonry was the chief feature of
all Hindu constructions. With the passage of time, advance
of knowledge and masonry technique, came into vogue, still
improved methods of construction, like the use of relatively
small and neatly dressed blocks of cut stones with earth
filling as core on the interior. In the stone walls of Waramgal
we find neatly dressed cut stones arranged on either side i.e.
outside and interior, with the hollow space inside being
filled up with earth and rubble. The forts of the Vijaya-
nagar period, such as Haí̄mpí, Chándragiri, Penugonda, Gandi-
kōta, also reveal the same method of construction with stone
veneering only on the exterior, while on the inside is a
large earthen wall to serve as core. Here also the nature
of stones varied from irregular and crude to elegant and
neatly cut blocks of stones, with their edges arranged
vertically in symmetrical fashion. However, although
according to Yazdani "the size of the stone and absence of
cement of any kind remained a significant feature of the
military architecture of the Deccan until the advent of the
Muslims". An interesting carving on the stone wall of
Raichur fort near the west gate shows the method of construc-
tion. In it is shown a heavy stone laddeen on a large
4 wheeled cart tilted up so that the rear end touches the
ground. A number of buffaloes in several rows were yoked to
the cart. Upon the forward up turned end of the stone, is
perched the driver with a whip in hand, while others are apply-
ing long levers to the wheels and help it along.135

Late Medieval: This phase is also known as Indo-Muslim and
Indo Sarmecic, in which are perceptible several foreign influences
as Persian and Turkish. This is the period which witnessed several
Muslim constructions from 14th C. During this period developed
a vigorous style of Military architecture. Although cyclopaean
masonry continued to be used, its chief feature lies in the use
of lime and mortar as joining materials, besides brick and
tiles to serve as decorative or ornamental devices in the
super-structures over the gateways and ramparts. Another
important feature of the period is the new device of arcuate
order, as against the indigenous order of trabeate, i.e. pillar-
beam-lintel style, according to Percy Brown.136 That is, during
this period, the Islamic buildings gave preference to arch
shape, as a method of bridging the space. This was achieved by
the use of mortar-masonry which appears for the first time.
There are a number of examples of forts built in this method
in Andhra Pradesh. But it must be noted that, the Muslims
did not build new forts but developed the and altered in
accordance with their new techniques and religious fancies,
the existing ones. This is supported by the fact that all
Muslim constructional activity is confined only to the upper
levels of the fort walls and gates as can be seen at Uraṅgal,
Gaṅḍikōta, Gutti, Penugonda, Gōlconda etc.137
Methods of Dating:

The main basis for dating forts is their architectural style comprising its shape, materials and methods of construction. We have already noticed that cyclopaean masonry is the chief key to date a fort to the Hindu period, whereas the use of lime mortar and brick to the Islamic period. But it should be noted that no fort retains all its original features intact, that can be termed as strictly Hindu or Muslim, for they were the chief targets of attack and destruction by the invader, and were frequently repaired and renovated. Thus they present a blend of both Hindu and Islamic features, sometimes making it difficult to clearly differentiate them. Hence, the architectural study of a fort cannot be taken as a reliable guide to date a fort. On the other hand one has to take recourse to the references available in contemporary epigraphs, literature, and sculptural carvings engraved on the walls of the fort, and the Hindu architectural pillars extant in several gateways, which provide clues to the beginnings of the fort. This is proved by the fact that the fort of Warangal still has its Hindu gateways on all sides in the stone wall, with all the architectural members built of pillar-beam-lintel order and the carvings of Ganeśa, Boar, Bhairava etc., noticed on the interior of the Northern gateway. Similarly, the 2nd and 5th Gateways of Gutti fort, show evidences of Hindu gateways, with all the architectural motifs as pilasters, and pûrnaghata
motifs and Muslim super-structures above, while in the interior are several pillars belonging to the Chalukyan and Vijayanagar period. Further its Hindu nature is also attested by the carvings of images like Durga and Ganesha on a rock boulder near the IVth gate and the engraving of actual inscriptions belonging to the early Chalukyan and later Chalukyan periods. Similarly, forts like Gandikota, Penugonda, Bhongir, Devarakonda, Rachakonda are referred to in inscriptions of the western Chalukyas of Kalyana, Kakatiyas, Hoyasalas and Vijayanagar, thus attesting to their Hindu origin.
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3. Singana Madiki op.cit. Purusharthasaara v.50
4. Ibid op.cit. Nitisara v.53
5. Ibid Naha Bharata Sabha paryam v.56
6. Mallana Pradhakavi op.cit. 3rd Asvasa v.24 p.94
7. Bhaskara Rayana "Bhaskara Ramayogamu" v.15
8. Kautilya's Artha Sastra Bk.II, Ch.III p.50
9. Vishnu Dharma Puranams IIInd Khanda vs.12 and 13
   Ayatam chaturasraṃ vā vrittaṃ chākāra yēkhpuraṃ|
   Mukti hīnaṃ trikōpaṃ cha yava madhyam taśeivacha||
   Ardha chāndra Prakāram cha vajrākāraṃ cha varjayet|
   "Ardha chaṇḍra Praśaṇsaṃti Naditīr ē tu tadvasē"||
10. Pant G.N. Studies in Indian weapons and warfare
11. Yazdani, G. HAR 1921-24 pp.2-4
12. Toy Slaney, "Strongholds of India" ch. I.
13. Cousens Henry "List of Antiquarian Remains in his Highness Nizam's dominions" p.51
14. Several Kaifiyats like Gandikota, Vijayanagar and other places contain the legend of the divine vision of Vishnu and the sight of a hare chasing a hound suggest the suitability of strength of a site for constructing forts.
15. Sellman, R.R. "Castles and Fortresses" p.1
16. A perusal of the various Kaifiyats of fortified places like Gandikota, Gutti, Penugonda, points evidence to it.
17. Bhaskara Rayana *op.cit.* v.15
18. Kautilya’s *Artha Sastra* *op.cit.* Bk. II ch.III p.51
20. Ibid
21. Toy Sidney, *op.cit.* Ch. I
   Sarvappa, Kase *Śri Siddheswara Charitra* Ed. K. Lakshmiranganam p.119 line 8
23. Ibid pp.142 and 129 Bhaskara Ramayana v.15
24. Toy Sidney *op.cit.* Ch.I
25. Singana Madiki *op.cit.* Nītisāramu v.60
   Balagāpu vākilla (Bagalu rēyunu, Mēdikōṭa palemu taguchōta betti
   Kanumapatlanella kāvaliniyaminchi nadimi cēvadi dagu narula
    nunchi
   Nagari chuttunu bārā nadipinchī kranteṇa diruguchuṇḍaga
     dalavarula beničhī
   dina charya balemul dristi-vēttuchu relucivivalu
     viduvaka tirugachēśī
   Dorela rējulandu narayuchu bhatulandu lellede Modawakuṇḍa
   nadarinchī
   Yuchitavritti gāva kundina durgaṃbu nēlagalade bhūmi, Mindrudaina
26. Vāllabharaya ; Vinukonda *Kṛdabājiraham* Ed. V. Prabhakara Sastri
   p.35 v.112 line 8.
27. Pratapa charitra *op.cit.* p.142
28. Śiddheśwara Charitra *op.cit.* p.129
29. Ibid
30. Kautilya's *Artha Sastra* *op.cit.* p.51
31. Pratapa *charitra* *op.cit.* p. 288; Siddheswara *charitra* *op.cit.*
   Asvasa : 2 , p.113, Uttara *Harivamsamu* v.92
32. Kautilya's *Arthasastra, op.cit.*
33. *World University Encyclopaedia* VI p.1942
34. Straith, Hector *"Treatise on Fortification and Artillery"* II
    p.5 para 375
35. *Ibid* pp.6-7 Para 376
36. Wheeler, R.E.M. *AI* No.3 p.64
40. *ASI AR* 1905-06 pp.33-39
41. Memoirs of *ASI* No.30 1927 p.9
42. Cousens, Henry *"List of Antiquarian Remains op.cit. Bhongir
    Fort p.51."
43. *Ibid*
44. Brown Percy *"Indian Architecture - Islamic period"* Ch.I p.2
46. Kautilya's *Artha Sastra, op.cit.* p.51
47. *Ibid*, Bk. XII Ch. III & IV
48. Krishna Murty K. *"Cultural study of Nagarjunakonda"* Ch. IX p.191
49. *Ibid* pp197-206
50. Ramesan N. Copper plate inscriptions in *A.P.Govt. Museum Vol.I*
51. *El* XIX pp.271-277
52. *Journal of Telugu Academy* XI p.241
53. Lagga is a term often employed to mean besieging a fort. This is seen in several works of contemporary period like Nirvachanottararamayana by Tikkana: "vākita lagga sesanām" Asvasa I, v.54 line 1, Velugotivarivasavali p.17 v. 59 line 2.

54. Griffith : Atharva Veda I Bk. VIII, Hymn : VIII p.412
"Indra the shaker, shake them up, brave hero fort demolisher Bk. XX : Hymn : 76 p.391 line 2. This thine heroic power full well the people knew, where with thou breakest down Indra autumnal forts, breakest them down, with conquering might" Rigveda : Griffith Bk.VII Hymn VI;p.8 line 2

55. Williams, Możnier "Sanskrit English Dictionary".

56. Haha Bharata 2: 54, 10

57. Kautilya op.cit. Bk. II Ch. II pp.48-49

58. Sircar J.N. "Siege craft in Medieval India" article in Itihes IV :2, p.95

59. Chebrolu inscription of Ahavamalla Irivabečange Satyavrata refers to the burning of the forts of Snamadala and Dannala by the Western Chalukya commander, Bayal Nambi, SII VII No.102

60. Bapatla Inscription of the time of Jagadekamalla II, refers to his Dandanayaka Kesiraja, as "samudayavattara durjochurakara" SII VI, No.187

61. Prola Bhima nayaka, a mahāpradnani of Kakatiya Ganapatideva was credited with the title Rāchichurakara1, Kakatiye by Sastry P.V.P. p.117

62. These were the titles borne by Kayastha Ambadeva, a feudatory of the Kakatiyas of Warangal ruling over Valluru. Tripurantaka inscription of Ammadeva dated 1212 A.D.1290 SIII Vol.IX No.465.

64. SII, X, Nos. 528, 536
65. SII, XVI, Nos. 52, and 53
66. Krishnaswamy Aiyangar, "Sources of Vijayanagar History"
67. These were the weapons mentioned in contemporary Telugu literature like Shaskara Ramayana, Harivamsam and Uttara Harivamsam and other works.
68. Kautilya op. cit. Bk. XIII Ch. IV pp. 443-444
69. Oppert, Gustav, "Niti Prakasika" Ch. III p. 43
70. Ibid, pp. 44-45
71. Ibid, p. 49
72. Ray J.N., "Fire arms in ancient India" IHq VIII No. 3 p. 267
73. Sühler, G., "Laws of Manu" SBE XXV, Ch. VII, v. 74 p. 227
75. Kautilya, op. cit. Bk. II Ch. XVII, pp. 112-113
76. Oppert, Gustav, "On the weapons, Army, Organization and Political maxims of the ancient Hindus" p. 66
77. Thousand pillar temple inscriptions of Kakati Rudra, dated 3.1084 A.P.1163-64 Ia XI p. 12-15
78. Elliot & Dowson, "History of India as told by its own Historians" VI, p. 219 and 454. Also Oppert G, op. cit. p. 52
79. Ibid, III Amir Khusru Tarikhi-Alal p. 31
82. Pant, G.N., "op. cit. p. 174
83. Kautilya op. cit. Bk. XIII Ch. IV p. 469
84. Ibid, p. 470
85. Venkatarasimhaya, N., "Telugutirivamsavali" Intr. p. 40
96. Sherwani, H.K. *JIH. XVI*, p.263 ff

97. Gopslreddi, Y. "*Note on the use of mining device in Deccan*" *Journal of Oriental Institute, M.S. University*, Beroda.

98. Elliott & Down *op.cit.* *Amir Khusru III*, p.559; *Islamic culture IX* p.478

99. *Ibid*

100. Erra Pregga *op.cit.* v.138 p.261

    *Mahalingam T.V. Mack. Mss. summaries II*, pp.308-310


103. Sherwani H.K. Ed. *"History of Medieval Deccan"* I, p.490

104. Kautilya, *op.cit.* Bk. II Ch. III, p.53

105. Sircar, J.N. *op.cit.* p.106

106. Singana, Madiki, *op.cit.* *Nitisäramu*, v.60

107. *Ibid*

108. Mallana, Praudhakavi, *"op.cit. vs. 42 and 43 p.97*

109. *Fāyaka rāja dvāraṁ*

*bāya tamatigāchuvāri kanni bhayaṁbul*

*bāyunu malinaśbedalunu*

*Sriyunu deaṁbu yaśamu jeṇdu gumārā||*

*Sāṁāhtu laharnisamun*

*Bhūmīśvaru nagaru dvāramulu gēvaka yi*

*chhā mṛrgamuṇa jēriḥchina*

*svāmiki rājyaṁbu tiramu chālaka yundun.*


110. Soma, Nachana *"Uttara Har-ṇamsamu"* *asvēsa I*, p. 91 line 4 p.61

*"Janavidēmaraka kāchu mata muchitamgaṇ"*
86. Kautilya *op. cit.* Sk. XIII, Ch. IV p.469
87. Sarcar, J.N. *op. cit.* p.94
88. Ibid Also Surendranath Sen "The Military system of the Marathas" p.36
89. Elliott & Dowson *op. cit.* Amir Khusru III, p.82
90. Udayagiri inscription of Krishnadevaraya NDI III u.40 and Chinna Ahobilam record SLIII, XVI, No.53.
91. Erra Pregada, 'Harivamsamu' v.24 p.247
92. Ibid, p.261 v. 138
93. Guddandlanu Pedda gunapambulunu gōtayondonda travvuchu
  nakkutulula
  rākattunaputeṇa gaıkoni narakuta yonaru dańchanamulu
  nodiselanu
  jālaṅganendunu savariṇchu tāmmla dōmarambulanu Saṅtulanu
gadala
gaganaṁbu mīrandhrakaṁbugā bodevi yaḥdevvart dalasūpanḥ:ayumaj"
94. Ibid, p.386
  Oh rājavarulāra mīruṇu mīvāru dādaye kōkkanellā Kaḍala
gadisi
  kōta bṛākudu līla guleṅadrōyudu tālōgre yaṭtra kaṭana
cḥayamulu
  purilōṇa jocḥhi visphurita gēhaṁbula yāḍha saṁchayamula-
  nāchikonu).
95. Sircar J.N. *op. cit.* p.101. Also verse 138 of Harivamsamu which gives a list of several implements required for
mining the forts.
96. Ibid, p.101
111. Ibid, v.92 p.61

"Kōta Sīngṇrinchi kottalaṃbulaṇella nattallu pannīnchi yāluvariki,
Baṇḍillu vettimchi, paigomma legeyinchi
guṇdu dūlamuvasikoyya gūrghi,
yagadita liṭa aīralavāda ḍravvinchi
velichuttu rāmulu velugu vetti
daṅchanamulu, daddadambulu nettiṇchi
palugādi talupulu balupuḥēsi
bālemulvetti, kroṅkulu, braddaparulu
gatti, gontaṁbu lodosellu, gettelamulu
nārasamulunu, vindulu nagarilōna
betti pettulu naduhatti mēṭti lāvu"

112. Ibid, v.93 p.61

113. Ibid, v.97 p.62

"Sare kōdana kripaṇa kaṅkaṭa sirastrānaṃbulaṃbuni Saṁ
gara samāviharivai nagara rakṣādakṣhataśjupu āā
rvari nidrambeda bāsi vāda nigama vyakhyanamuṇ māṇi ye
vvarichēta nagubāṭu dēka parabhāvajnumṇavai tammūṇā"

114. Ibid, v.34 p.102 , v.36

115. See Section II, Photographs of Warangal and Gandikota

116. Toy Sidney "op.cit. Ch. I

117. See Section II, photographs of Chandragiri

118. Bühler, G. Laws of Manu op.cit. Ch. VII, v.76 p.228
119. Someswara "Abhilashitartha Chintaweni" Ed. R. Samastastry
vs. 553 to 558

120. Singana Madiki op. cit. cites verses from Sabha parvam of
Maha Bharata, Nitisara and Parushathasara Nos. 56, 57, and 58.

121. Prepared on the basis of information supplied by Sewell's
"List of Antiquarian Remains in Madras Presidency", 1882
and Cousen's's List of Antiquarian Remains in His Highness
The Nizam's dominions". List appended separately.

122. Separate list furnished category-wise.

123. See Chapter V

124. Ibid

125. Ibid

126. Ibid

127. Ibid

128. Lake J "Journals of the Sieges of Madras Presidency"
in the years 1817, 1818 and 1819 Ch. VI p. 205.

129. Burgess, J. A. S. "Buddhist Stupas at Amaravati and
Jaggayapeta" Pl. XXI, fig. 2, Also Gangooly O. C. "Andhra
sculpture" fig. 63.

130. See Ch. V, Nagarjunakonda

131. Yezdani, HAR 1921-24 p. 2

132. Cousens, H "op. cit. Bhongir p. 51

133. A comparative study of the bastions and fort walls supports
the view of cousens. Also see the photographs of Aihole,
in Chalukyan architecture by Cousens, p. 29 fig. 4 and
ASI AR 1907-08, p. 189 para 2 Pl. LXIX. "An old world air
still clings to the village, now little more than 500 years
across which is greatly enhanced by a great portion of its
old primitive looking cyclopaean walls that still exist
with their square bastions at close intervals and the remains
of ancient stone paving in principal streets".
134. Yazdani, G, "HAR, 1921-24 p.2
135. Ibid
136. Brown, Percy, "Indian Architecture Islamic Period" Intr. p.2
137. See Section II photographs of Warangal and Gondikota
138. See Photographs of Warangal
139. See Photographs of Gutti