



Dr. Mitra has placed the date of inscription sometime between 316, and 416 B. C.; and Prinsep has decided it to be of later date than the Asoka edicts. The author of *Corpus Inscriptionum Indicarum* agreeing generally with Prinsep, has placed it sometime between 175 and 200 B. C. *

Pandit Bhagwan Lal Indraji has, however, upset all the interpretations offered up till then by Prinsep, Mitra, &c., and has substituted a new one, according to which the inscription, in question, is dated sometime between 158 and 153 B. C. †; this interpretation has again been called into question by Dr. Fleet in a recent article in the *Journal of the Royal Asiatic Society*; thus it is seen that the interpretation is undergoing changes according as it is handled by different scholars. This difficulty is aggravated by the present indistinct nature of the characters inscribed on the wall, caused by the weathering action of the atmosphere. I have accordingly tried to fix the dates on principles based on architectural and sculptural considerations.

The Ananta Gūmphā seems to be contemporaneous with the remains at Bhārhit, for there is a great similarity existing between the nature of the sculptures, and the mode of execution. The stepped pyramid is a very striking feature of both, and this is very significant. Gaja-Lakshmi, the serpent, the

† *Corpus Inscriptionum Indicarum*, p. 28.

* *Actes du Sixieme Congres' Or*, tome iii pp. 174-177.



Buddhist rails, the Bodhi tree within an enclosure of rails are noticeable both in the Ananta Gümpha and Bharhüt sculptures. The capital of the pilasters of Ananta is formed by recumbent animals, and this is also noticed at Bharhüt. It is only in a pilaster of Ananta, and in no other Orissan caves, that rosettes, or bosses, and half-discs of full-blown lotuses are noticed, and we notice them at Bharhüt also; and the lower echinus or the capital of this pilaster only bears a resemblance to that of the Bharhüt pillar. The flying figures of nymphs flanking the tympanum of the doorway containing the figure of Gaja-Lakshmi, and carrying offerings in their left hands are very similar to the Bharhüt figures. The representation of *hamsa* or goose is noticeable in both. From these considerations I am inclined to place the Ananta Gümpha sometime between 250 and 200 B. C.

The Rani Gümpha, Jaya-Vijaya, Ganesa, and Swargapuri caves form a continuous series from the chronological point of view. The first two, however, are chronologically intermediate between the Bharhüt and Sanchi remains, and are hence placed in the period dating from 200 to 100 B. C. Ganesa, Swargapuri and some other minor caves are contemporaneous with the Sanchi remains, and I am inclined to place them in the first century B. C.

The intermediate uprights of the Buddhist rails sculptured in the caves, and into which the cross-bars have been

tennoned are usually provided with four vertical ridges to make them look like the uprights at Sanchi which present a decided semi-octagonal appearance; these ridges also end at top and bottom in small plane faces. I have already referred to the representation of *makara* or capricornus near the springing points of the arch-bands, e. g. of Rani, Jaya-Vijaya, and Ganesa Gümphas.

The sculptures of these caves are very similar. The floral devices sculptured in the arch-bands bear a striking resemblance to those of the right-hand pillar of the northern gateway at Bharhüt. The representation of a creeper ending in a full-blown lotus in the arch-bands of Ganesa and Rani Gümpha bears a close affinity to its counterpart at Sanchi.

I have already remarked that Rani Gümpha and Jaya-Vijaya are similar in many respects; both are two-storeyed. The stepped pyramids representing *Chaityas* are noticeable in both these caves, as in Ananta, and the Bharhüt remains. The representations of the running figures carrying trays containing offerings are similar in both. The sculptures of Rani Gümpha, however, resemble those of Bharhüt more than of Jaya-Vijaya; the representations of *hamsa* (goose), monkey and jack-fruit are met with both at Bharhüt and in Rani Gümpha.

I give below a chronological table showing the probable dates of excavating the important caves.



No.	Caves.	Date.
1	Hati Gümpha ...	300 B. C.
2	Ananta Gümpha ...	250 to 200 B. C.
3	Rani Gümpha ...	200 „ 100 „
4	Jaya-Vijaya ...	200 „ 100 „
5	Ganesa Gümpha ...	100 „ 1 „
6	Swargapüri Cave ...	100 „ 1 „
7	Jaina Gümphas such as Satbakhra Navamüni.	50 B. C. to 100 A. D.

Much difficulty is experienced in ascertaining the age of the Jaina Gümphas on the Khandagiri hill. From the elaborate character of the pillars and the images of the Jaina Tirthankaras it is obvious that the caves are later than the Buddhist ones; it can also be stated that the Jaina caves are decidedly much older than the Jaina temple at Gaya supposed to have been built by Amara Sinha, the great Sanskrit lexicographer, in the 6th century A.D., for we come across references of a powerful



Jaina dynasty of kings represented by *Kharvela*, in the *Hati Gümpha* inscription the latest possible date of which is the middle of the second century B. C. From this consideration alone we may surmise, in propriety, that there must have been caves excavated for the Jaina *Sramanas* in the neighbourhood of the *Hati Gümpha*; and the *Udaygiri* hill being already honey-combed with Buddhist caves, and in order to keep themselves rather aloof from the Buddhists, the Jaina hermits chose the *Khandagiri* hill for their habitations; and this may be assigned to the period from the first century B. C. to the first century A. D.

In the *Nava Müni* cave, however, is noticed an inscription referring to *Udyata Kesari* who, as I have proved at great length in Chapter VIII, flourished in the first quarter of the tenth century A.D. In this cave a disciple of *Küla Chandra*, a Jaina *Sramana*, is supposed to have lived. From this inscription the inevitable conclusion is arrived at that the cave, in question, must have been excavated sometime in the tenth century A.D.; but the conclusion loses its force when we see the figure of *Ganesa* carved on the ante-wall of the *Ganesa Gümpha* evidently a *Bauddha* cave of the first century B.C., or the figure of the Hindu goddess *Dürga* in a Jaina cave on the *Khandagiri* hill. It will be absurd to conclude that the *Ganesa Gümpha* or the *Jaina Gümpha* is a *Brähminical* one in



as much as the images of the Hindu pantheon are noticeable there. The figures, in question, were evident interpolations. By a parity of reasoning, and in view of the fact that Udyata Kesari was a great patron of Jainism it is probable that the inscription referred to is a spurious one not contemporaneous with the cave, and engraved simply as a mark of respect for one who was so noted for the catholicity of his views.

The survey of the caves to determine their relative positions in respect of the road leading from
Survey of the caves. Bhubanesvara, and passing through the two hills was made at my instance by some of my engineer friends who accompanied me during my brief sojourn in Orissa. The Plate I (C) clearly shows in plan the position of the caves. I have given below a serial list of them the numbering of which corresponds to that given in the plan. Some of the caves have been designated as nameless, for I could not either determine their names, or different names being offered by different guides they have been so styled; some of the names, I have found, have no significance either etymologically, or historically; hence I have been careful to attach more importance to their relative positions which are far more significant than meaningless uncorroborated names.

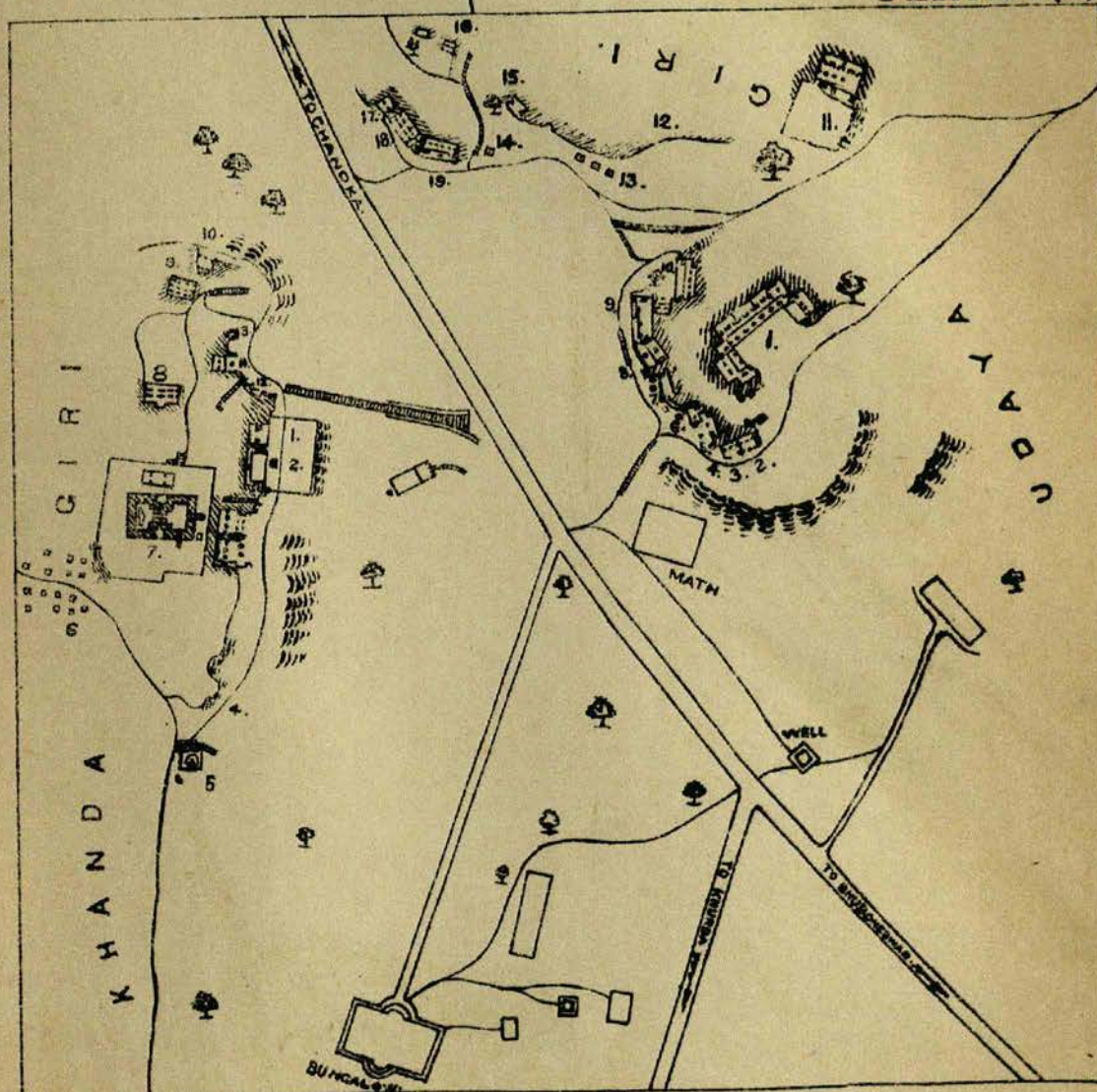


No.	Khandagiri Caves.	Udaygiri Caves.
1	Nameless	Rani Gümpha.
2	Nava Müni Cave ...	Nameless.
3	Satbakhra or Satghara Cave consisting of the Barbhüji, and Trisüla Caves.	„
4	Supposed grave of Lala- tendü (only a bare wall is visible).	„
5	Akasaganga ...	Swargapüri or Alakapüri.
6	Deva Sabha ...	Jaya-Vijaya Cave.
7	Jaina temple on the sum- mit.	Nameless.
8	Ananta Gümpha ...	„
9	Nameless	Vaikanthapüra & Patalpüri Caves.
10	„	Manchapüri.
11	„	Ganësa.
12	„	Nameless.
13	... ..	Hati Gümpha.
14	... ..	Sarpa Gümpha or Serpent Cave.
15	... ..	Tiger Cave or Byaghra Gümpha.
16	... ..	Nameless.
17	... ..	„
18	... ..	Jagannath Gümpha.
19	... ..	Haridas Gümpha.

SITE PLAN OF THE CAVES IN KHANDAGIRI AND UDAYAGIRI HILLS.

SCALE 200' = 1"

PLATE-I(C)



SURV. & LITH. BY J.L. SHOME.

**Dhauli
Inscription.**

It will not be out of place to make a passing reference to the inscription on the Dhauli hill or Dhavalagiri, a group of three hills or prominences to the south-east of Bhubanesvara. This portion of Orissa was held in great sanctity by the Buddhists, for the tooth-relic of Gautama Buddha had been preserved here for several centuries before it was removed to Ceylon in the beginning of the fourth century A. D.

It has been stated in the second chapter that Asoka conquered Kalinga which became the eastern limit of his vast empire. King Piyadasi Asoka caused his edicts to be engraved on a prominence of Dhavalagiri, called *Asvatthama* rock in the middle of the third century B. C. Though not very important from an architectural point of view, this rock is most well-known for the invaluable treasure it contains. This inscription throws a great flood of light on some obscure corners of Orissan history of which no other authentic record is available.

The inscription consists of eleven edicts, preceded and followed by two minor ones unlike those found elsewhere except at Jaugada in the Dt. of Ganjam. Dr. Hunter doubts the authenticity of the two minor edicts already referred to, and considers them as "added by the local Prince of Orissa."*

* Orissa, vol. I, p. 193.



This inscription has been edited by Prinsep, Wilson, Bühler, Senart, etc. Dr. Burgess has published in parallel columns the transcripts and translations of the Dhauli and Jaugada versions of Asoka's edicts by Dr. Bühler in "The Buddhist stūpas of Amaravati and Jaggayyapeta." In the summary given below I have followed all these versions of different scholars as far as practicable.

The first edict begins with the prohibition of the slaughter of animals for religious sacrifice, or food. The second describes his organization of systematic medical aid in his own kingdom, and that of "Antiochus, the Yona (or Yavana) Raja," and other kingdoms from the Himalayas to Tambapanni or Ceylon. The third enjoins a "public humiliation.....for the confirmation of virtue, and for the suppression of disgraceful acts"*; it also describes the duties to our parents, kinsfolks, Brahmins, and Sramanas. The fourth one amplifies the third. The fifth is with regard to the appointment of missionaries for "intermingling among all unbelievers with the inundation of religion, and with the abundance of the sacred doctrines"†. The sixth one is with reference to the appointment of instructors or Pativedakas to impart instructions having a bearing on the minutest details of our domestic lives. The seventh

* Prinsep's Translation.

† Same.



enjoins on the necessity of repentance, peace of mind and "undistinguishing charity." The eighth describes the duties of a king as compared with the practices of old. The ninth insists on the value of "the happiness of virtue." The tenth is a statement of Piyadasi's ideas of glory and reputation "for enforcing conformity among a people praiseworthy for following the four rules of virtue, and pious"*. The eleventh edict describes the manner in which the edicts have been composed and the purpose for which they have been incised, i. e. "with the intention that the people may act thus."†

* Prinsep's Translation.

† The Buddhist Stupas of Amaravati and Jaggyyapeta, p. 125



CHAPTER IV.

Græco-Roman Influence on Orissan Architecture.



Let us now turn our attention to the Græco-Roman theory propounded by the European scholars. In front of the Rani Gümpha is seen the figure of a guard of *Dwârpâla* wearing boots reaching up to the knee, and dressed in a flowing garment like a *châpkân* of the present day. The wearing of boots has led the scholars to think that there must have been European influence, or else how could the boots be represented; from this has sprung up a tissue of myths which, if analysed, would prove to be utterly baseless. That we had our national boots has been conclusively proved by Dr. Mitra in his *Indo-Aryans*, vol I. Even if we suppose that the boots were not Indian in origin there is no absolute certainty that they were introduced by the Greeks or Romans. Mr. Pococke has proved conclusively in his book entitled "India in Greece," by adducing a long chain of evidence that there was colonisation in Greece in pre-historic times, and that Indian thought and dialect had left an indelible impress on those of the Greeks. Pythagoras is believed to have come to Sakya Mûni



in India, and in the language of the author of the "History of Science*," "to the Indians he was perhaps indebted for his theology." From such intercommunion existing between the Greeks and Indians it can not safely be ascertained which of the two nations copied from the other. If we admit that the Indians copied the boots from the Greeks, what avails it to prove that the Greeks necessarily influenced the architecture of Orissa?

That the Greeks never exercised any influence on the Orissan architecture will be evident from the following considerations. There is a great deal of difference between the Indo-Aryan and Greek columns as far as outward shape is concerned. The Greek columns are invariably cylindrical, or circular in cross section, whereas those of the Indo-Aryan type may be circular, square, pentagonal, hexagonal, octagonal or even 16-sided in cross section. Different technical terms have been coined in *Manasara* to designate the different forms.

Square—Brahma Kanda (ब्रह्मकाण्ड)

Pentagonal—Siva Kanda (शिवकाण्ड)

Hexagonal—Skanda Kanda (स्कन्दकाण्ड)

Octagonal—Vishnū Kanda (विष्णुकाण्ड)

16-sided—Rūdra Kanda (रुद्रकाण्ड)

The monolithic column that is standing in front of the temple of Jagannath at Pūri is Rūdra Kanda.

* The History of Science, p. 12. (edited by Routledge.)



The Indo-Aryan columns have their characteristic cornice, frieze, architrave, capital, shaft, base, and pedestal. These features do not mainly correspond to those of the Greek or Roman type. The entablature, pedestal, plinth, and capital of Greek or Roman technology have their Indo-Aryan equivalents in our *Prastāra* or *Uttira* (प्रस्तार वा उत्तिरा), *Upapitha* (उपपोठ), *Upāna* (उपान) and *Bodhika* (बोधिका) respectively. The details of these parts of a column do not tally with Greek features. Far greater diversity of forms is noticeable in the Indo-Aryan capitals of columns, than we come across in the Doric, Ionic and Corinthian orders.

As the Greeks or Romans represent acanthus in the capitals of a particular order of columns, so do the Hindus represent lotus and *āmalaki* or *phyllanthus emblica*.

There are some who complain that the entablature of Indo-Aryan columns is narrow ; this is not generally the case ; there are instances of columns with narrow entablature and long-drawn shafts even in the edifices erected under the Emperor Augustus down to the time of Diocletian.

In *Mansara* 64 different types of the base of a column are mentioned ; no nation in the world, not to speak of the Greeks or Romans, has so many different modifications of column base.

In *Mansara*, columns have been classified according to the ratio the diameter bears to the height, and certain rules have



been enunciated to determine the slope in the case of tapering columns. During my brief sojourn in Orissa, I carefully studied the columns specially of the rock-cut caves at Udayagiri or Khandagiri, and I have noticed with wonder that this rule of proportion has strictly been followed. I cannot resist the temptation of citing the case of a tapering octagonal column in one of the caves at Khandagiri. I made a pencil sketch of it, and measured its height *in situ*, and applied the rule of *Manasara* to the measurements taken. I see that the rule of slope has been followed with almost mathematical precision, the discrepancy being $\frac{1}{2}$ ". I quote the rule below. The diameter at the top of a column below the moulding is the diameter of the base minus that at the base multiplied by the ratio which it bears to the height of the column. The Greek or Roman architects were guided by altogether different rules to determine the slope.

All these things tend to show that the Orissan architects had in view purely Indo-Aryan style in executing their works of architecture, or else the very formulæ or the rules enunciated in our Indian architectural treatises would not have been so rigidly followed.

The European scholars headed by Dr. Fergusson, Vincent Smith, etc. assert that the introduction of stone architecture in India is traced to the advent of the Greeks in India after its



conquest by Alexander. Vincent Smith has written as follows in an article on "Græco-Roman Influence on the civilization of India" in the Journal of the Asiatic Society. "No Indian example in stone either of architecture or sculpture earlier than the reign of Asoka (B.C. 260-232), has yet been discovered, and the well-known theory of Mr. Fergusson, that the sudden introduction of the use of stone instead of wood for the purposes both of architecture and sculpture in India was the result of communication between the empire of Alexander, and his successor and that of the Maurya dynasty of Chandra Gupta and Asoka, is, in my opinion, certainly correct."*

We quote the following from the Encyclopædia Britannica.

"Certain pillars erected by him (i. e. Asoka) and inscribed with his edicts are the earliest extant architectural remains of India."

Sir George Birdwood has struck the same chord in his "Industrial Arts of India" from which we quote the following :—

"The architecture of India begins with a strong admixture of Greek Art, the effects of which we are able to trace for centuries in the architecture of the valleys of Cashmere and Cabul."*

Let us consider the above remarks ; the invasion of India by Alexander is dated in the first quarter of the fourth century

* J. A. S. B. Vol. LVIII, Part I. p. 108.



B. C. ; the invasion was of a very short duration and was confined to the north-western limits of the Indian province. It was more of a formal nature than of an actual one. Considering the time, extent and situation we may consider the invasion of very little consequence, as not having affected the internal condition, much less the art of the Indians. In this advanced age of civilization, this short invasion affecting a small fraction of the whole area inhabited at present by a far more homogeneous race would hardly leave any impression worth the name. How infinitesimal would its effect be in those days of most inadequate means of communication when the country was parcelled out into small divisions inhabited by alien races, and ruled over by different kings having no community of interest to unite them into action against a common foe. This would have been more impossible in case of Orissa which is situated on the farthest east of India, and surrounded on all sides by trackless forests, and hilly fastnesses.

To influence the art and architecture of an invaded province it is necessary that the invaders should live among the conquered people for a very long time. We have been under the British rule for more than a century and a half in intimate terms of fellowship with the British people; but the amount of influence exercised on our art is quite incommensurate with it ; this is very natural, for the art of a nation is an index to



its genius moulded to its present shape being worked for centuries. Hence it is absurd to imagine that the brief invasion by Alexander could possibly influence forthwith the art and architecture of even the portion of India invaded, much less of Orissa. Following the parity of reasoning it will be equally absurd to consider for a moment that the expedition led by Col. Younghusband in Tibet has produced results similar to those estimated by Fergusson and others in respect of India. There is another thing to consider in this connection. Some of the caves of Orissa are at least as old as the invasion by Alexander, and some elaborate ones are little later than it. If it be possible for the ancient Indians to build cave temples approaching in arrangement and elevation a domestic building of no mean order (c. f. Rani Gümpha) would it be impossible for them to build the buildings themselves which are easier in execution than these elaborate cave temples. It cannot be questioned that the excavation of a cave temple requires greater care, skill and experience than the construction of a building entailing a manipulation of isolated stone blocks.

One of the main reasons leading the European scholars to uphold the Græco-Roman theory is the absence of any extant old stone building. I must admit that this fact presents a difficulty which it is apparently impossible to tide over ; but a



moment's consideration, and comparative study would obviate the difficulty. I think no evidence is to be adduced to prove that the kings of Orissa, or of any other Indian province had palaces with commodious chambers even in the mediæval times, if not in the period anterior to Alexander's invasion ; but how many palaces or chambers are still extant to prove their existence ? It is needless to point out that mighty lines of kings ascended the Orissa throne ; but curiously, there is not the least vestige of their palaces, except perhaps a few foundations densely covered with jungles, as at Bhubanesvara. This last vestige may in course of time disappear altogether from the face of the earth to afford a suitable theme for archæological research to future generations as to whether the mediæval Orissan architects were conversant with the principles of building dwelling houses of stone.

Dr. Burgess and others, however, concede that the only uses of stone that the Indians were conversant with, anterior to the invasion by Alexander are for constructing bridges, foundations and boundary walls which like the Druidical Cromlechs, Cyclopic walls, and Cloaca-maxima have no part in the history of Indian architecture. I do not know on what data is the above conclusion based. If the foundations extant of pre-historic buildings lead to it, the foundations extant of the mediæval times as noticed by me at Bhubanesvara may point



to the same conclusion ; again, if the knowledge of boundary walls be conceded to them what logical inaccuracy is there in allowing that they used stone in building the external walls of a building ? The durability, and efficiency as a building material of stone should have naturally impressed them with its significance, and should have naturally led them to reject wood, bamboo, or reed ; it does not stand to reason that the chain of reasoning followed by them in constructing boundary walls was different from that followed in the case of building the external walls of a structure which obviously demanded greater care and skill. By conceding to them the knowledge of stone as a suitable material for building bridges they make their position very untenable ; for, the construction of bridges is no easier task than that of domestic buildings.

Let me now consider it from another stand-point. It is stated in the temple archives at Puri that the Yavanas ruled in Orissa for 146 years. To the European scholars these Yavanas are synonymous with the Asiatic Greeks, and that they taught the children of the soil all the fine arts. Let us briefly analyse the premises on which this conclusion is based. The temple archives do not at all indicate who these Yavanas were ; the assertion in the archives is based on mere hearsays, and the conclusion which has drawn its vital principle from some incoherent hearsays cannot pass for truth ; even if we



admit that the Yavanas retained possession of Orissa for about a century and a half, there is no absolute certainty that the Asiatic Greeks are to be meant by this term.

The term Yavana connotes the Turks, Persians, Arabs, Sakas, Hüns, Magas, etc. There is no definite proof that the Greeks are to be meant. It is stated in Harivamsam that in order to carry out the orders of his preceptor, and to keep his vow, Prince Sagara enjoined on the Yavanas prohibition from the study of the Vedas, and the practice of the Vedic rituals; according to Smṛta Baudhāyana they have been termed Mlechhas for giving up their religious rites. Ordinarily the two terms Mlechhas and Yavanas are synonymous. In the Matsya Purāṇam the Mlechhas have been described as dark-complexioned like black collyrium—कृष्णचूर्ण सम प्रभाः. The Greeks were never dark-complexioned, not to speak of their resemblance in colour to collyrium. In the Rāmāyana the Yavana soldiers of Vasistha arrayed against those of Viśvāmitra have been described as "dressed in flaming yellow robes." The Greeks were never so attired. In this connection reference may be made to the satirical composition of Aristophanes meant against Euripides.

Moreover, to establish the Yavana theory we need not go beyond the confines of India. The Mlechhas or Yavanas lived both inside and outside India, and hence by the term



Yavana some non-Aryan primitive Indian race may be understood. We come across the following couplet in Brihat Parāśara Samhita.

“हिमपर्वत विन्ध्यादौ विनाशन प्रयागयोः ।

मध्ये तु पावनो देशो ऋक्षदेशस्ततः परम् ॥”

The holy land or Pūnya Bhūmi is surrounded on all sides by the Himalayas, the Vindhya, the Saraswati and Prayag ; and beyond these is the land assigned to the Mlechhas.

Hence we see that the major portion of India was the land of the Mlechhas. The Persians have been styled the Yavanas by the great Sanskrit poet, Kalidasa. In the fourth canto of Raghu Vamsam we come across the following two couplets regarding Raghu's conquest.

“पारसिकांस्ततो जितुं प्रतस्थे स्थलवर्त्मना ।

इन्द्रियास्थानिव रिपूंस्तत्त्वज्ञानेन संयमी ।

यवनीमुखपद्मानां सेहे मधुमर्द न सः ।

बालातपमिवाजानामकालजलदोदयः ॥”

What we aim at by the preceding remarks is to prove that we come across instances after instances in which the Yavanas have connoted races other than the Greeks. We cannot establish in the face of the above references that the Ionian or Asiatic Greeks ever came to settle in Orissa. We can, however, solve this enigma of the introduction of the Yavana element in Orissa by reference to a passage in the Samba



Pūrānam in which the sun-god is stated to have instructed Samba to introduce the Magas, Māmagas, and others from Śakadvīpa to perform the religious rites of the deity in the temple at Konarka.

“न योग्यः परिचर्यायां जम्बुद्वीपे समानव ।

मम पूजापरान् कृत्वा शाकद्वीपादिहानय ॥

मगश्च मामगाश्चैव मानसा मन्दगास्तथा ।

तन्मगान् ममपूजार्थं शाकद्वीपादिहानय ॥”

Hence from Orissan temples it is conclusively proved that the theory of the introduction of stone architecture by the Greeks is utterly erroneous. If it be possible in Orissa why should it not be in other parts of India equally advanced as Orissa.

We can judge the merits of the Græco-Roman theory by considerations based on general principles. It is a natural law that man at the early dawn of history must have recourse to such building materials as are easily accessible, and have sufficient durability. John Ruskin, the able critic of arts understood fully the significance of this first canon of architecture ; he has written to the following effect in his “Seven Lamps of Architecture.”

“Its first existence and its earliest laws must therefore depend upon the use of material accessible in quantity, and on the surface of the earth ; that is to say, clay, wood, or stone.”

India abounds in various stones adapted for building purposes, and also easily accessible ; hence it is inexplicable why should India furnish an exception to this fundamental canon of architecture. Professor Fletcher has also said to the same effect in his "History of Architecture."

"The centre of the Peninsula, and the hill country generally abound in excellent building stone which had considerable influence on Indian Architecture from the earliest times."*

General Cunningham recognises the existence of stone architecture in a period anterior to Alexander's invasion. We quote the following from the Archaeological Survey Report Vol. III., pp. 142-143.

"As the city of Girivraja or old Rājgriha was built by Bimbisara, the contemporary of Buddha, we have another still existing example of Indian stone building at least 250 years older than the date of Asoka."

We may pertinently quote here the observations of Dr. Lübke from his "History of Art" relating to the origin and growth of Indian Architecture. The learned doctor, while referring to the fact that the Indian style began with forms borrowed from other nations, observes, "If this, however, be the case still in the earlier Indian civilization, of which undoubtedly there is no certain knowledge, distinct national

* Professor Fletcher, History of Architecture. p. 606.



forms of art must have been already developed (i. e. before Alexander's conquest) and these Buddhism developed into monumental importance."

Dr. Sturgis has also taken a somewhat similar view of the case in his Dictionary of Architecture. He says that "In spite of these exterior influences the architecture of India is pre-eminently original, unlike that of any other land."*

In Fa Hian's Travels translated by Giles, I have come across a tediously long list of architectural examples, evidently of stone, which are dated as far back as the time of Bimbisara, Buddha, and even older than that, many of which Fa Hian saw in actual existence.

(1) "The pagoda of Fang-Kung-Chung at Pi-she-li or Baishali standing by which Buddha is stated to have said to Ananda that he would enter Nirvana very soon."

(2) In Chapter XXVIII, p. 66,

"From this point going south-east nine yu-yen, the pilgrims arrived at a small Ku-shi hill, on the top of which there was a stone chamber facing the south. When Buddha was seated within, the heavenly ruler Shih on this spot edified him with celestial music."

(3) In Chapter XXX, p. 72,

* Dr. Sturgis, Dictionary of Architecture, p. 461



"Six li further west, on the north side of the hill, and (consequently) in the shade there is a chamber called Chüti, where after the Nirvana of Buddha, the 500 Lo-hans compiled the Ching."

I need hardly point out that a stone chamber to accommodate 500 men is sufficiently spacious, and not a mere cave or cell excavated by primitive men simply to protect the body against elemental warfare.

That we had our indigenous stone architecture will be evident by reference to *Manasara*, *MayaMata*, *Casyapa*. In *Agni Pürānam* rules of architecture have been enunciated. In the *Matsya Pürānam* we come across the following,

“शिलान्यासस्तु कर्तव्यः प्रासादे तु शिलामये ।

इष्टकानान्तु विन्यासः प्रासादे चेष्टकालये ॥”

In another passage we have the following,

“आदावेवं समासेन शिलालक्षणमुत्तमं ।

शिलान्यास विधानञ्च प्रोच्यते तदनन्तरं ॥

शिला वा चेष्टका वापि चतस्रो लक्षणान्विताः ।

प्रासादादौ विधानेन न्यस्तव्याः सुमनोहराः ॥”

The two foregoing couplets refer to the selection of stone blocks of a superior quality, and the laying of well-dressed cubical stone blocks.

In the *Sreematbhagabatam*, I have come across the following passage referring to buildings and pylons built of stone.



सुरद्रुमलतोद्यान विचित्रोपवनान्वितं ।

हेमशृङ्गेर्दिविस्तृणभिः स्नाटिकाट्टाल गोपुरैः ॥५१

दशमस्कन्धे पञ्चाशदध्याये ।

In Bhabisya Pūṛṇam, Mahānirvāṇatantram, are found references to stone buildings which are quoted below.

कोटिकोटि गुणं पुण्यं फलं स्यादिष्टकालये ।

द्विपराह्णगुणं पुण्यं शैलजे तु विदुर्बुधाः ॥

भविष्यपुराणे ।

इष्टकगृहदाने तु तस्माच्छतगुणं भवेत् ।

ततोऽपुनरगुणं पुण्यं शिलार्गहप्रदानतः ॥२५

महानिर्वाणतन्त्रे त्रयोदशोऽध्याये ।

The last couplet speaks of the free gift of a stone building as more meritorious than that of a brick-built one.

Raghunandan, the great Indian jurist and lawgiver (स्नात) of the fifteenth century A.D. has quoted in his Mathapratisthāditattvam (मठप्रतिष्ठादितत्त्वम्) a passage from the Vrihatdharma-mottara, a book not extant now, referring to a stone temple. The passage quoted below describes the construction of a stone temple as more meritorious than that of a brick-built one.

वृणकाष्टमये पुण्यं मयैतत् कथितं द्विजाः ।

तस्माद्दशगुणं पुण्यं कृतेष्टकमये भवेत् ।

तस्माद्दशगुणञ्चापि निर्मिते शैलमन्दिरम् ॥

In the Agni Pūṛṇam, I have come across numerous passages graphically describing the details of stone architecture; from



the above considerations it is clear that India had her own stone architecture uninfluenced by any foreign example, and thriving under purely Indian auspices. In this respect the Indians followed their own traditions as did the builders of the palace of Osymandyas at Thebes, the temple at Karnak, or the pyramids at Gizeh. I quote below what Bury has said regarding the Indian styles of Architecture.

"The Indian styles, whatever their defects may be, have at least the merit of being original; for there can be little doubt but that they were invented in the country where we find them."*

Lieutenant Cole has expressed a similar opinion regarding Indian Architecture, which is quoted below.

"The Indian Architecture, like that of Egypt, Assyria, Greece, &c, is an important part of the History of the World's Art of Building, and that a student of architecture cannot complete his studies without the acquirement of, at least, some knowledge of Indian modes of building and decoration, and from these reproductions, which can be studied in his own country, he is able to derive a large number of suggestive principles.The people of India have for centuries been very considerable builders in ornamental styles of unusual purity."†

* T. Bury, *The Styles of Various Countries and Periods* (Rudimentary Architecture), p. 58.

† Lieut. Cole. R. E., *The Architecture of Ancient Delhi* (1872), p. 8.



CHAPTER V.

ARCHITECTURE OF THE MEDIÆVAL TIMES.

Architecture, as classified by John Ruskin, the able critic of arts, arranges itself under the following five different heads:—Devotional, Memorial, Civil, Military and Domestic.

The above five classes can be well illustrated by Indian examples.

Devotional—Such as the temples at Pūri, Bhubanesvara, Jumma Musjid, &c.

Memorial—The Taj Mahal, Itimuddowla.

Civil—Dewani Khas, Dewani Am.

Military—The forts of Delhi, Chunar, &c.

Domestic—Sishmahal, or every rank and kind of dwelling place.

In Orissa we come across the first type of Architecture i.e. Devotional. The other types have disappeared with the rise and fall of different dynasties that ascended the Orissan throne. There is no vestige left of the palaces, fortresses, moats, &c., of the powerful monarchs of the Lion or Gangetic dynasties, but the temples built by them still rear their soaring heads high up in the air. A few examples of the Memorial



type are still extant by reason of their association with the Devotional one.

The principal Brahminical styles of Architecture are the Dravidian, the Chālūkyan, and the Indo-Aryan. Their characteristic features are the following. In the Dravidian, the ground-plan is rectangular, and the superstructure is pyramidal; in the Chālūkyan, the ground-plan is star-like, and the superstructure is pyramidal, and in the Indo-Aryan, the ground-plan is square, and the superstructure is curvilinear. The Chālūkyan form seems to me an improvement on the Dravidian one by the addition of pilasters and buttresses to the structure. The Dravidian, and the Chālūkyan styles are extant in the Deccan, and the Indo-Aryan, in Hindoostan proper, or Upper India (आर्यावर्त). In Orissa the Indo-Aryan style prevails.

Dharwar, and Orissa are the ancient seats of Indo-Aryan style of architecture. The Dravidian style crept into, and hence adulterated the architecture of Dharwar; but that of Orissa is still in its native purity, unadulterated, and unfettered by the conventional formulæ of other styles. To whichever part of India may we turn our attention, *e. g.* Benares, Mathura, Brindāban, &c., we notice a curious mixture of the Indo-Aryan, Saracenic, and other styles. Orissa towers above all in solitary grandeur; this significant fact has raised it in the estimation



of those who study the genesis and evolution of architecture in India from a scientific stand-point.

The Orissan style of temple architecture has two main features similar in many respects (vide plates—II, III):—(i) the 'Vimana' (बिमान) or Bara Dewl, i.e. the towered sanctuary, or the sanctum or cella where the idol is enshrined. (ii) The 'Jagamohan' (जगमोहन) or the Audience Chamber for the pilgrims. The Vimana and Jagamohan are both square in plan; the former is a cube or a rectangular parallelopiped, surmounted by a curvilinear tower; the latter, the same, but surmounted by a pyramidal tower. This, I shall try to illustrate later on.

In the Dravidian, and Chalükyan styles the tower is many-storied, whereas in the Indo-Aryan one it is single-storied.

In very important temples, such as those at Püri and Bhubanesvara, two more features are added to the two already mentioned. (Vide Plate—XX.)

(1) The Nat Mandir—Festive Hall.

(2) The Bhoga Mandir—Hall of offerings.

In ordinary temples of Orissa the plinth does not exist; the structure rises at once from the ground level; but in important temples, it rises from the plinth which often presents an elegantly artistic appearance. I may refer to the plinth of the temple at Konarka which is pre-eminently beautiful. (Vide Plate—XXIII.)



The constructive peculiarities of the temple are very simple. The walls rise straight up till a cube or a rectangular parallelo-piped is described. From this height horizontal courses of stone project or bracket inwards ; this is called corbelling. The Uriya architects had recourse to this method of horizontal projection to reduce the internal dimensions of the room for roofing ; this method involves necessarily the construction of the sanctuary to a great height, thereby adding grandeur, and solemnity to the outward appearance. The horizontal projection, or corbelling continues till the internal dimensions contract to a reasonable proportion where the horizontal flags of stone cover the opening below, being supported on iron beams.

I do not think that the Uriya architects were ignorant of the principles of a radiating arch which is an assemblage of wedge-shaped voussoirs covering a space, and supported intermediately by their mutual pressure on each other caused by gravity, and ultimately by their pressure against the abutment or pier. The pressure on the abutment which is inclined, necessitates the construction of the walls to a great width in order to keep the line of thrust within the central third of the base for ensuring the stability of the structure. Thus the Uriya architects were wise in preferring the horizontal arch to the radiating one. "An arch never sleeps" says the pro-



verb ; this is indicative of distrust of the arch as a constructive element in ensuring permanency to any structure. This belief has a greater hold on the oriental mind than on the European one, and has consequently led our architects to have recourse to the trabeated style in preference to the arcual one in covering large spaces. Cole has detected this instinctive distrust, or rather horror cherished by the Hindus for an arch, in the temple of Hardeo Jee at Goverdhan. The following extract from his work, "Buildings in the Neighbourhood of Agra" will bear me out. "The eastern entrance to the 'mantapa' or porch is peculiarly characteristic of the horror which the Hindus had for a true arch."*

That the Uriyas were actuated by this belief will be evident from the following consideration. If we admit that the Uriyas were unacquainted with the principles of an arch there is no gainsaying the fact that they do not know its use now, at this stage of civilization ; but they will invariably set it aside as a principle of construction in constructing temples. In this case, the present is an index to the past ; the past will be best explained by studying the present. The sense of effecting permanency was so deep-rooted in their minds as to make them ignore the arch altogether as an essential principle of construction. This sense led the Egyptians, according to Barry,

* Archæological Survey of India, Buildings in the Neighbourhood of Agra by Cole, p. 34.



to deliberately "set it aside as a principle of construction"*. This sense of permanency coupled with that of convenience made the Orissan architects prefer the trabeated style all the more. There is another fact, in this connection, which is worth considering; an arch is usually employed as a constructive element where the building materials do not admit of being used in large blocks; this depends upon the geological formation of the country, and the skill of the architects in manipulating huge blocks. Professor Fletcher has laid stress on this point in his "Influence of Material on Architecture."†

The horizontal courses of stone that project inwards give to the inner face of the temple the unsightly appearance of a flight of inverted steps. The topmost courses are surmounted by an assemblage of sectoral slabs of stone, having, when put together, the appearance of an oblate spheroid with ribbed or denticulated surface. This is called *Amalaka Sila* (आमलक शिला) for bearing resemblance to *Amalaka* or *phyllanthus emblica*. (vide plate—III). Dr. Fergusson considers this resemblance a mistaken one, it being according to him an "insignificant berry"; hence "it could hardly ever have been adopted as an architectural pattern." Probably the learned doctor was ignorant of the significant fact that *Amalaki* and *Haritaki* formed as it

* E. M. Barry, R. A. Lecture on Architecture, p. 18.

† R. F. Fletcher, Influence of Material on Architecture, p. 8.



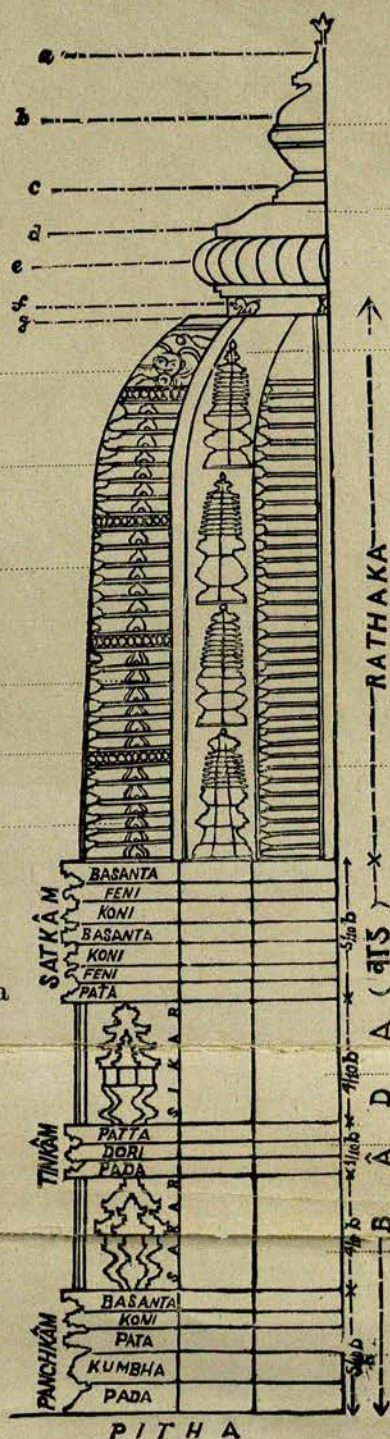
Anartha paga

First bhumi

Ghadchakda

Jangha

M. M. Ganguly





were the staple food of some of the ancient *rishis*, and are from time immemorial associated with ideas of sanctity and spiritual culture. "The melon or gourd" of the doctor, from which the idea is said to have been taken is far more insignificant to us than Amalaka was to him, and we see no reason why this Amalaka should not furnish the architectural pattern.

There is an intervening recess between the *Amalaka Sikā*, and the lower horizontal course referred to already. This is, as it were, the neck of the Vimana, and is technically called *Beki* (बेकि), and contains at definite intervals figures of lion, and fantastic dwarfish monsters. The *Amla* is capped by a flat dome having some resemblance to an unfolded umbrella which is technically called *Karpuri* (कर्पूरि); over this is placed the artistically carved *Kalasa Prastara* which serves the purpose of a finial, or pinnacle. (vide plate—II). Over the *Kalasa* is placed the trident, or discus, according as the temple is dedicated to Siva, or Vishnū.

These are the main features of an Orissa temple. I shall now dwell at greater length on the essential and subsidiary parts of a temple.

The Orissan temples are characterized by pilasters which are technically called *pāga* (पाग); the classification of the Orissan temple is based on the number of pilasters used. The central, end, and intermediate pilasters are technically



called *Rahapaga* (राहापाग), *Konakapaga* (कोणकपाग), and *Anarthapaga*. (Vide plate—IV).

The following are the different classes into which an Orissan temple is divided.

1. *Ekaratha* (एकरथ) Dewl, or an edifice having no pilaster ; it is a plain square in general ground plan.

2. *Triratha* (त्रिरथ) having one central pilaster or *Rahapaga*, and two *Konakapagas*, or end pilasters.

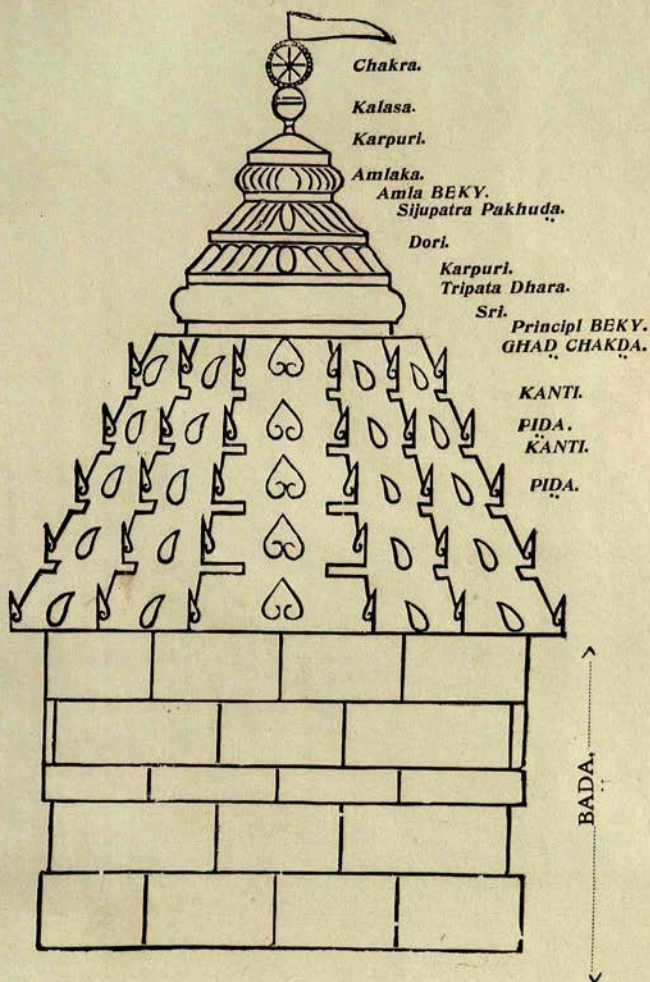
3. *Pancharatha* (पञ्चरथ), having one *Rahapaga*, two *Konakapagas* and two *Anarthapagas* or intermediate pilasters. (Vide Plate IV.)

4. *Saptaratha* (सप्तरथ) having two *Konakapagas*, 4 *Anarthapagas*, and one *Rahapaga*. Out of the four *Anarthapagas*, two are called *Parianarthapagas*.

5. *Navaratha* (नवरथ), having 4 *Konakapagas*, 4 *Anarthapagas*, and one *Rahapaga* ; out of the 4 *Konakapagas*, 2 are *Parikonakapagas*.

The *Brahmins*, *Kshatriyas*, *Vaisyas*, and *Sūdras* have the following classes assigned to them respectively—*Navaratha*, *Saptaratha*, *Pancharatha*, and *Triratha*. The *Ekaratha* temple is of no classic importance. I have not come across any temple of the *Navaratha* type either at *Bhubanesvara* or at *Pūri*. I might have noticed a *Navaratha* temple showing false pilasters ; this is like a pseudo-alum in Chemistry.

PLATE III.



ELEVATION OF PIDA DEWL

Sketch by M. Ganguly.



I give below illustrations of the different classes into which an Orissan temple is divided.

Ekaratha :—The *Vimāna* of *Vaital Dewl*, the *Jagamohanas* of *Vaital Dewl*, and the temple of *Parasūramesvara*.

Triratha :—The *Vimāna* of the temple of *Parasūramesvara*.

Pancharatha :—The *Vimānas* of *Lingarāja*, *Ananta Vasūdeva*, *Rājarāni*, *Brahmesvara*, *Bhaskaresvara*, *Meghesvara*, *Ramesvara*, *Siddhesvara*, *Kedāresvara*, *Yukti-Kedāresvara*, *Gauri*, *Yamesvara*, etc.

Saptaratha :—The *Vimāna* and the *Jagamohana* of *Sāri Dewl*.

The Orissan temple is also divided into two classes based on the nature of the tower over the cube. The tower may be either curvilinear or pyramidal. The former is called the *Rekha Dewl* (रेख देउल), (Vide Plate II), the latter, the *Piḍa Dewl* (पिंड देउल), (Vide Plate III). Hence the actual number of classes into which an Orissan temple can be divided is the number 10 derived from the simple mathematical process of combination of 5 things taken 2 at a time. To be more explicit, we have *Rekha Saptaratha Dewl*, *Piḍa Saptaratha Dewl*, *Rekha Navaratha Dewl*, *Piḍa Navaratha Dewl*, etc.

The *Jagamohana* or the Audience Chamber is always a *Piḍa Dewl*.

In a *Piḍa Dewl*, horizontal slabs of stone with their ends



turned up project forward ; these are called *Pidas*, and hence the name of the edifice. There is a recess between the horizontal courses of stone and the *Pidas* ; this is technically called *Kanti* (कान्ति). There are often deep and large recesses after an odd number of *Pidas*, say 3,5,7,9, etc. These are called *Para Ghar* or Pigeon nooks.

The *Pida Dewl* is again subdivided into 2 classes based on the height of the tower, e. g.,

(a) *Kath Chalia*.

(b) *Naha Chalia*.

The superstructure below the pyramid in a *Kath Chalia* is a perfect cube or a rectangular parallelopiped, and that in a *Naha Chalia* is invariably a rectangular parallelopiped.

In a *Kath Chalia Pida Dewl* the height of the pyramidal tower is usually two-thirds of the cube over which it rests ; in a *Naha Chalia* tower, the height of the pyramid is equal to, or five-sixths that of the cube or बाड़.

We come across the *Naha Chalia* type of *Pida Dewl* in the Jagamohana of the Muktesvara temple, the Bhogamandapa of Kapilesvara ; and the *Kath Chalia* type in the Jagamohanas of the great Lingaraja, Ananta Vasudeva temples, etc.

The Mohana is always a *Pida Dewl*, and is divided into the three following classes :—(a) *Ghantā Sree Mohana*, (b) *Nadi Mohana*, (c) *Pida Mohana*. The former is an ordi-



ANARTHA PAGA RAHA PAGA ANARTHA PAGA

KANAKA PAGA KANAKA PAGA

DOOR WAY

4 1/2 f 1 1/2 f 1 1/2 f 1 1/2 f

4 1/2 f 1 1/2 f 1 1/2 f 1 1/2 f

Sketch by M. Ganguly



nary *Pida Dewl* containing *Amlā*, *Sree*, *Tripataadhāra*, *Kalasa*, (vide plate II.) ; this is well illustrated in the Jagamohana of the great Lingaraja at Bhubanesvara, (vide plate XVII). The *Nadi Mohana* is a *Pida Dewl*, the *pidas* of which coalesce, so that no recess or *Kānti* is visible. A *Nadi Mohana* does not usually contain *Sree*, *Amlā*, &c, but it contains only the *Kalasa*. The Jagamohanas of Muktesvara, Siddhesvara, Rajarani belong to this type (vide plate XIV). Deviations from the standard type of a *Nadi Mohana* are often noticed, e. g. the Jagamohana of the Kedaresvara temple containing 6 ordinary *pidas*, and 6 *Nadus* or *Pidas* having no recesses ; this Jagamohana, again, contains the *Sree*, *Amlā*, *Tripataadhara*, *Kalasa*. The *Pida Mohana* is a distinct type of *Pida Dewl* consisting of ordinary *pidas*, and no *Amla*, *Kalasa*, etc. This type of structures usually ends in a flat terrace surmounted by battlemented or crest tiles. The best examples of this type are the Natinandirs of the temples of Jagannath (vide plate XX.), and the great Lingaraja at Bhubanesvara.

I shall now attempt to show the relative proportions of the different parts in the general ground plan of an Orissan temple taking up a *Pancharatha* by way of illustration.

Divide the side of the square A B C D (vide plate—IV) into 20 equal parts, and take 4 parts for Konakapagas or end



pilasters, 3 parts for Anarthapaga, and 6 parts for Rahapaga. The thickness of walls should be the same as the length of the Konakapaga.

The *Rekha Dewl* contains the following important features. (vide plate. II.)

1. Pavement or *Talapattana*.
2. Plinth or *Pitha*.
3. Cube or *Bâda*.
4. Curvilinear tower or *Rekha* or *Rathaka*.
5. Neck or the recess just below the *Amlaka Silâ* called *Beki* corresponding to (f) of the plate.
6. Denticulated blocks of stone or *Amlaka Silâ*. (e) of the plate.
7. Stone cap resembling an unfolded umbrella or *karpûri*. (d) of the plate.
8. Finial or *kalasa*. (b) of the plate.
9. Trident or discus.

In a *Rekha Dewl*, the cube or *Bâda* consists of five distinct divisions, each division being subdivided into several others. I give below the parts from below upwards *ad seriatim*.

1. *Janghâ*, otherwise called *Panchakarma*, or a work of five parts.
2. *Sâkhar* or *Bârândi*, i.e. the portion, above *Janghâ*, and below *Tinkarma* or *Tinkâma*.



3. *Tinkarma*, or a work of 3 parts, otherwise called *Bandhanā*.

4. *Sikkar*, othewise called the second *Bārāndi*; it is evidently a contraction of *Sikhar*.

5. *Saptakāma*, or a work of 7 parts, otherwise called the second *Janghā*, or upper *Janghā*.

Generally speaking, the *janghās*, upper and lower, are equal to each other; so are the *Bārāndis*; but the *Bārāndi*, as a rule, is a little less than the *Janghā* in height; the *Bandhanā* is one-third of the *Janghā* or *Bārāndi*. The following dimensions taken by me *in situ* will bear me out.

Siddhesvara temple :—

Jangha	...	...	...	3' - 11'
Barandi	...	...	...	3' - 5½"
Bandhana	...	...	...	1' - 3"
Upper Barandi	...	...	...	3' - 5"
Upper Jangha	...	...	...	3' - 9½"

Ananta Vasūdeva temple :—

(a) Jagamohana :—

Jangha	...	...	...	3' - ½"
Barandi	...	..	...	2' - 6"
Bandhana	...	..	...	0' - 11½"
Upper Barandi	..	...	...	2' - 6"
Upper Jangha	..	...	...	3' - ½"



(b) Vimana or Sanctum :—

Jangha	...	...	...	4' - 1½"
Barandi	...	...	...	3' - 4"
Bandhana	...	...	...	1' - 4"
Upper Barandi	...	...	...	3' - 4"
Upper Jangha	...	...	...	4' - 1½"

Lingaraja temple :—

(a) Vimana or Sanctum :—

Jangha	...	...	...	10' - 4½"
Barandi	...	...	...	9' - 10"
Bandhana	...	...	...	3' - 0"
Upper Barandi	...	...	...	9' - 3"
Upper Jangha	...	...	...	11' - 0"

(b) Jagamohana :—

Jangha	...	...	...	7' - 0"
Barandi	...	...	...	6' - 6"
Bandhana	...	...	...	2' - 0"
Upper Barandi	...	...	...	6' - 1½"
Upper Jangha	...	...	...	7' - 1"

(c) Natmandir :—

Jangha	...	...	...	4' - 11"
Barandi	...	...	...	4' - 1"
Bandhana	...	...	...	1' - 1"
Upper Barandi	...	...	...	4' - 1"
Upper Jangha	...	...	...	4' - 11"



I have taken many such measurements ; from these I have worked out the following proportions for the component parts of a *Bada*.

Lower Jangha : Barandi : Bandhana : Upper Barandi : Upper Jangha :: $1 : 5/6 : 1/3 : 5/6 : 1$; in some cases the proportions are $1 : 7/8 : 1/3 : 7/8 : 1$. In the generality of cases, the former proportions prevail. In the majority of cases the sum of the Janghas, upper and lower, is equal to that of the Barandis and Bandhana.

I may mention here that the *badas* of all the Rekha Dewls do not contain the usual five elements already mentioned ; as illustrations, I may cite the cases of the temples of Muktēsvara, and Parasūramēsvara which do not contain the last three component parts from below upwards. It is a very curious fact that the most picturesque temple of Muktēsvara, very reasonably styled, "the gem of Orissan Architecture," is provided with an ordinary plain *bada* having very few mouldings to adorn its surface.

Janghā consists of the following subdivisions (vide plate-IV. A.),—

- (a) *Pāda*
- (b) *Kūmbha*
- (c) *Patā*
- (d) *Kani*
- (e) *Basanta*.



In some *janghās* I have noticed the omission or the repetition of some of the elements ; as an example, in the temple of Müktesvara, some of the *janghās* of the Vimana or sanctum have the *Kani* wanting ; it has been replaced by a *Patā* ; again, in the temple of Parasūramesvara, *Patā* and *Kani* are altogether wanting ; the *Janghā* consists of 3 elements only, viz, *Kumbha*, and *Basanta* ; I may mention, here, incidentally that the second element of the *Janghās* of Parasūramesvara is again, not a *kūmbha* at all ; it shows a bold departure from the usual practice ; it resembles a *kūmiida* or an astragal, which is a semi-circle projecting from a vertical diameter. The *Janghā* of Parasūramesvara is technically called *Trikarmajangha* ; it is a non-descript.

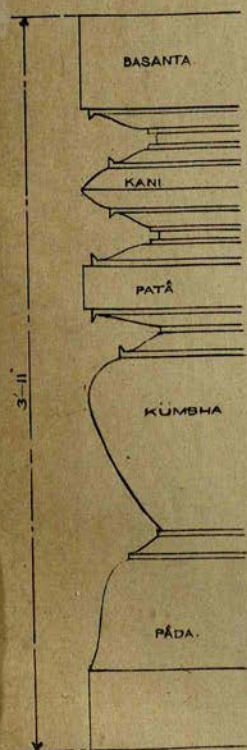
The *Pada* (Vide plate—IV. A.) consists of a fillet supporting a cyma reversa not deeply flected ; this is technically called *Mārani* (मारणी) ; the inflection of the convex element of the cyma is rather sharp ; the cyma ends in a cavetto of gentle curvature ; the cavetto terminates in either a recess or a small bead.

The idea of *Kūmbha* is derived from a vase or urn, and is invariably represented in almost all the temples ; it is an ovalo of gentle inflection, surmounted by a scotia ; the ovalo is often provided with an intermediate bead.

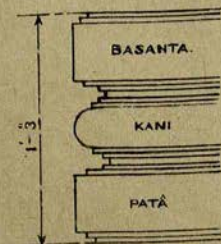
The *Patā* consists of a cyma recta supporting a fillet ending in a cyma reversa.



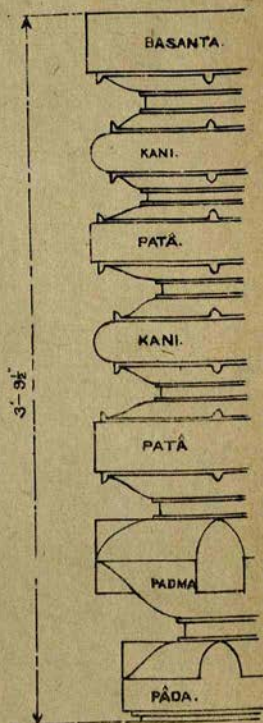
PLATE IV (A)



JANGHA
OR
PÂNCHKÂMA.
FIG. I.



BANDHANÂ
OR
TINKÂMA.
FIG. II.



UPPER JANGHÂ
OR
SAPTAKÂMA
FIG. III.

THE BADA MOULDINGS OF THE TEMPLE OF SIDDHESVARA.

SKETCH & LITH BY J. L. SHOME.



The *Kani* is like the *Patā* except that the fillet is replaced by two sloped lines. The *Kani* ends in a groove or recess, and over it rests the *Basanta* which is a veritable cyma recta supporting a fillet.

The following measurements taken down by me *in situ* at the Brahmesvara temple at Bhubanesvara will convey some idea as to the relative proportions of the above five elements of *Panchakarma* or *Janghā*.

The height of <i>Janghā</i>	„	3'-9 $\frac{3}{4}$ "
The height of <i>Pāda</i>	„	1'-4"
„ „ „ <i>Kumbha</i>	„	1'-1 $\frac{1}{2}$ "
„ „ „ <i>Patā</i>	„	0'-8 $\frac{1}{2}$ "
„ „ „ <i>Kani</i>	„	0'-4 $\frac{1}{2}$ "
„ „ „ <i>Basanta</i>	„	0'-4 $\frac{1}{4}$ "

From the above data we may safely fix the following proportions of the elements. *Pāda* : *Kumbha* : *Patā* : *Kani* : *Basanta* :: 4A : 4A : 2A : A : A, where A is some constant.

I draw the reader's attention to the proportions in Plate IV. A. taken from the temple of Siddhesvara.

The *Bārāndi* is a recess between the *Janghā* and *Bandhaṇḍ* (Vide plate.—XV). It is meant to contain human figures in *alto-relievo*; the *Bārāndi* contains niches at regular intervals for Dikpalas or the presiding deities of the cardinal points of compass (Vide plates, VII, X). The niche portion of the



Bārāndi usually consists of the *bāda* or the rectangular recess for the figure, *chāla* or a forward projection resembling an awning, and the *mastaka* or the moulding at the top. (Vide plate X). In very elaborate *Bārāndis* the niched portion consists of the following four parts from below :—

- (a) *Khūr Pristha*
- (b) *Bāda*
- (c) *Chāla*
- (d) *Mastaka*.

Khūr Pristha is like the *patā* of the *janghā* having a bead in the centre, instead of a fillet or horizontal projection ; this is surmounted by a moulding resembling a cornice in miniature.

Bāda is rather recessed, and presents a plain surface. In the *Bāda* referred to are placed small statuettes. *Mastaka* rests upon the awning and lends a special charm to the awning below by the distribution of light and shade.

In an ordinary *Pida Dewl*, the *Bāda* or cube has the following three parts :—

- (a) *Janghā*, worked or plain.
- (b) *Bārāndi*.
- (c) Upper *Janghā*,

In important ones, the *Bāda* consists of the usual parts as in a *rekha dewl*, e.g. the Jagamohanas of Lingaraja, Ananta-Vasūdeva, &c.