



the north-eastern one. Out of the eight *Dikpālas* four preside over the cardinal points of the compass, and these four with the rest are arranged according to a regular system. The figures on the left of the observer looking at a face represent the presiding deity for that face. I did not notice the least deviation anywhere, and this coincides exactly with the *Agni-Pūranam*.

In the *Chalūkyan* Architecture, too, I have noticed the introduction of the *Dikpatis** mounted on their respective vehicles ; but these vehicles do not tally with those of the Indo-Aryan style as noticed in Orissa, which, I have remarked above, are true to the text of the *Agni-Pūranam*. In the *Chalūkyan* Architecture again, uniformity has not been maintained in respect of the vehicles ; a great difference is noticed on studying the *dikpatis* represented in the panels of the flat ceiling of the *Antarāla mandapa* of Hariharesvara temple in Maisur territory, and those in the ceiling of the Kallesvara temple at Bagali*. The vehicles assigned by Ziegenbalg to the regents of the points of the compass in Southern India are very different from all those noticed above. I give below a tabular statement of all the different varieties of vehicles.

* Archaeological Survey of Southern India, Vol XXI. p. 32.



Dikpatis	Regent of	Vehicle of Orissan or Indo-Aryan style.	Vehicle. A.	Vehicle. B.	Vehicle according to Ziegenbalg
Indra	East	Elephant	Elephant	Elephant	Elephant
Agni	South-east	Goat or ram	Gray goat	Horse	Gray goat
Yama	South	Buffalo	Black Buffalo	Black Buffalo	Black Buffalo
Nirita	South-west	Human figure	Bhūta	Bhūta	Crocodile
Vaṛuṇa	West	Makara	Crocodile	Crocodile	Stag
Vayū	North-west	Stag	Stag	Stag	Bhūta
Kiṭvera	North	Seven jars	Horse	Gray goat	Chariot
Isana	North-east	Bull	Bull	Bull	Bull

A = Hariharesvara temple in Maisur.

B = Kallesvara temple in Bagali.

I may mention here incidentally a peculiarity noticed by me in respect of the *Dikpālas*; the niches in the lower *Barandis* of the *Anarthapāgas* contain the *Dikpatis* or *Dikpālas* with their characteristic vehicles; but the upper *Barandis* of some temples, *e.g.* *Ananta Vasūdeva*, *Sari Dewl*, *Sapta-matrika*, etc. are also found to contain the consort of the *Dikpatis*, having exactly similar features and vehicles.

Besides the eight *Dikpatis* stated above, two subsidiary ones are noticed in the *Agni-Pūṛaṇam* meant for the upper and lower regions; they are *Brahma* and *Ananta* respectively. A serpent either of gold, or silver is placed in the foundation before laying the courses of

Subsidiary
Dikpatis.



stone. This procedure was strictly followed in Orissa, and is still so done in the construction of temples. A block of stone carved with the lotus flower is placed on the topmost course of corbels as a representative of *Brahmā*, or of the Sun above. This piece of stone is called the *Garbha-Mūdra*. The stone block above the *Garbha-Mūdra* contains a hole as a receptacle for grains, and is accordingly called *Dhan-Mūdra*; over this comes the *Bali-Mūdra*, and the topmost one is called the *Ratna-Mūdra*; on this rests the *Beki*. It is stated that the *Ratna-Mūdra* is meant to contain the jewels, or treasures belonging to the temple. It is surmised accordingly that the broken dilapidated condition of many a temple is due to the attempts of the vandals in quest of the much spoken of treasures, at removing the *Beki*, or a portion thereof, which hastened their collapse.

I have already referred to the *Ashta-sakhis* which are analogous in character to the *Ashta Dikpatīs* in the outer decoration of an Orissan temple. These *sakhis* or maidens, eight in number, occupy the niches in the *Bārāndī* portion of the *Anarthapaga*, or they are seen to project from the *Barandīs* themselves in *alto-relievo*. These *sakhis* are female figures standing in artistic and graceful poses under the shade of umbrageous trees, these forming the background of the figures.

Ashta Sakhis.

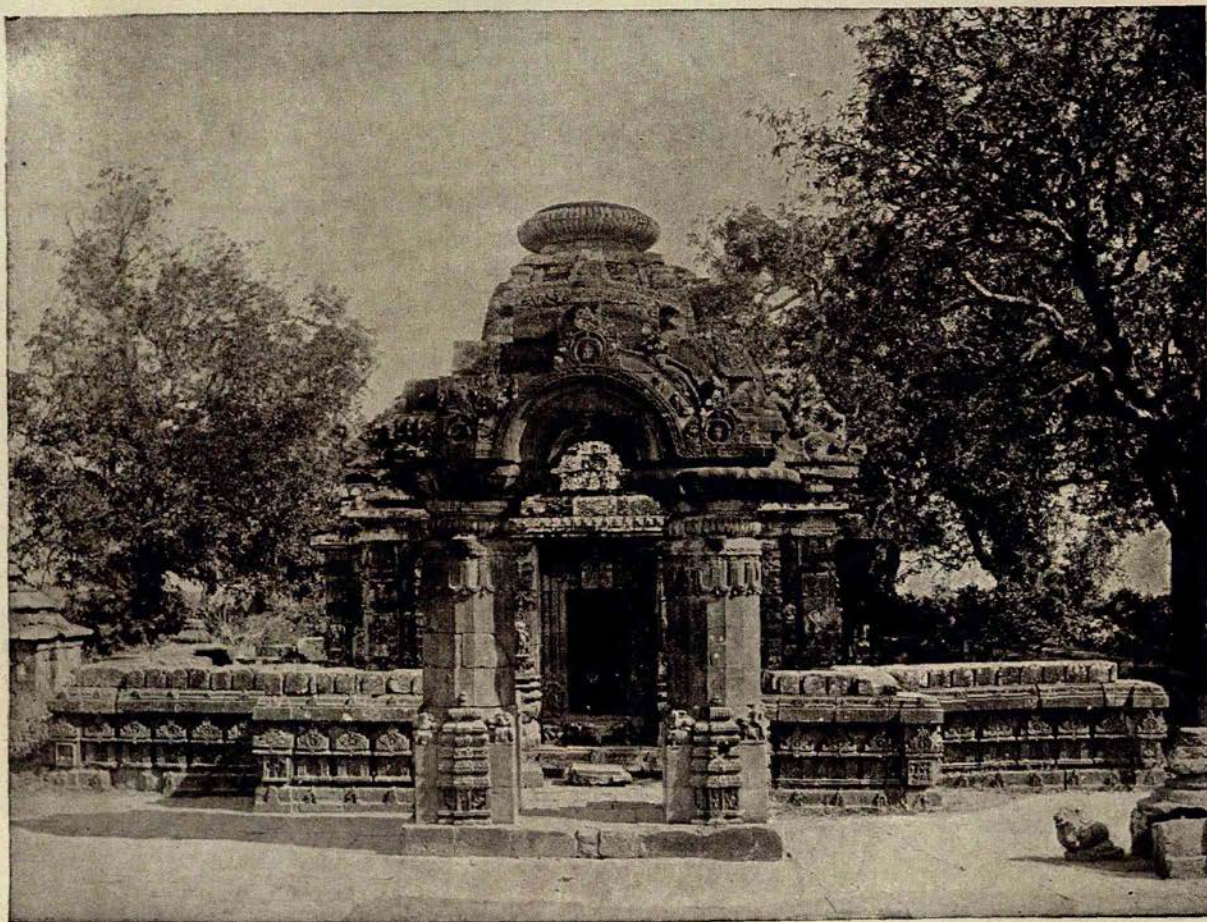


It is very difficult to trace clearly the genesis of the *sakhis* or maidens mentioned above. They are not probably derived from the Vishnuvite idea of the Ashta-sakhis; they seem to me to represent the eight *Saktis*, or female energies mentioned in the Agni-Pūranam. In the 262nd Chapter of the Agni-Pūranam, I have come across a reference to the Ashta-saktis, each of them again representing an octave, or a set of eight. Each of these different sets, or octaves confers when propitiated, a boon on the devotee; these are technically called *Ashtāṣṭaka-Sakti* (अष्टाष्टकशक्ति). Representation of Ashta-saktis has also been noticed in a piece of Buddhist sculpture discovered by General Cunningham at Sarnath sometime between 1835 and 1836.*

The *Naga* and *Nāgini*, or snake-god and goddess play an important part in the temple Architecture of Orissa; although primarily based on Brāhminical mythology, these **Naga & Nāgini.** are evidently Buddhistic. This will be proved by reference to page 312, *Lalita Vistara*, edited by Dr. Rajendra Lal Mitra.

The *Naga* and *Nāgini* ornaments are represented in pilasters in the recesses between the *Konaka* and *Anarthapagas* (vide plate -X); the *Naga* and *Nāgani* pilasters are often noticed to flank the main doorway, or the balustraded windows

* Dr. Anderson, Catalogue and Hand-book of the Archæological Collection in the Indian Museum, Part II, pp. 30-31.



The western facade of Muktesvara showing the Torana and enclosure wall with panels.

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of the Jagamohana, as in the case of the temple of *Rajarani* (vide plate XIV). The pilasters, rather the shafts thereof, in which they are carved, are cylindrical outwardly, and show the figures of *Nāga* with a hood of snakes, and a tail encircling the shaft, and with its end turned up. The *Nāga* column rests upon a rectangular portion showing representations of rampant lions supported on crouching elephants, or without them. The snake surmounting the god, or goddess may be three-hooded, five-hooded (vide plate X) and even seven-hooded.

I have come across a reference in the *Adi Parva* of the *Mahabharata* to the genesis of these *nāgas*; they are described as descended from *Kasyapa*, and one thousand in number. According to Hindu theogony, the *Nagas* form one of the classes of demi-gods, being associated with the *Yakshas*, *Rakshasas*, &c. The principal *Nagas*, according to the *Agni-Pūrāṇam*, are eight in number, and the Hindus while worshipping *Manasa*, the presiding deity of the *Nagas*, recite the following couplet referring to the eight principal *Nagas*,

अतन्तो वासुकिः पद्मो महापद्मश्च तक्षकः ।

कुलीर कर्कटः शङ्खो ह्यष्टौ नागाः प्रकीर्तिताः ॥

Though chiefly derived from the *Brahminical* mythology, the idea of the *Nagas* was much developed in the *Buddhist*



period, and we accordingly come across numerous references of this in the Buddhist literature, and find abundant representations in the extant Buddhist remains at Bharhüt, Ajanta, the cave temples of Orissa, &c.

The *Nagas*, according to Buddhist theogony, are one of the eight classes of demi-gods mentioned in the Buddhist scriptures in the following order,—*Devas*, *Nagas*, *Rakshasas*, *Gandharvas*, *Asūras*, *Garūḍas*, *Kinnaras*, and *Mahoragas*.* The *Nagas* are said to have the power of assuming human forms, and are spoken of as residing under the *Trikūta* rocks supporting mount *Merū*.

I have already referred to this in pp. 71-72 ; the *Nagas* of the old Buddhist school are very similar to those of the later *Brahminical* period ; this will also be evident on comparing the *Nagas* and *Nāginis* of the *Vidhūra-Panakaya Jataka* in the scene of the “worship of the Blessed One by *Airapata*, the serpent-king” sculptured at Bharhüt ; the sculptures of the *Nagas* of the *Gandhara* school bear a close affinity to those of the *Mediæval Orissan* group. In the very early Buddhistic representations, the *Nāgini* is single-hooded ; she eventually becomes many-hooded like her consort ; so the *Nāgini*, or

* Grünwedel, *Buddhist Art in India*, p. 43.

† Dr. Mitra, *Buddha Gaya*, p. 44.



Nagakanya is noticed to be many-hooded at Buddha-Gaya *; accordingly, the *Nāgini* of the mediæval Orissan school is represented as many-hooded like the *Naga*; this is the case not only in Orissa but in all parts of India where they are met with. The *Naga* and *Nāgini* carved in strong relief in the slab discovered† in the Gond country on the Narbada, and presented to the Asiatic Society of Bengal by the Hon'ble Mr. F. Shore in 1827 show unmistakable affinity to those of the Orissan school.

Another representative decoration of the conventional type is the *Sardūla*. It, I may mention in passing, has three *Sardūla* distinct varieties with different characteristics and different situations. They are the following :—(a) The *Uta-Gaja-viraja-Sinha*, (b) the *Uta-Gaja-Sinha*, (c) the *Chhida-uda-Gaja-Sinha*. The first variety is a rampant lion with pointed ears, leafy horns standing on a crouching elephant, and with its face turned back; it is met with in the recesses between Konaka and Anartha Pagas. The second variety is a rampant lion with an elephant's head turned back holding a human figure, male, or female (a *deman*) in its trunk; this variety of *Sardūla* is noticed in the recess between the

* Dr. Mitra, Buddha-Gaya, Plate XXI, Fig. II.

† Anderson, Catalogue and Hand-book of the Archaeological collections in the Indian Museum, Part II. pp. 308-309.



Anartha and *Raha pagas*. The third variety is a rampant lion standing on an elephant, and mounted by a male, or female figure holding the reins passing through the mouth of the lion from which a beaded tassel dangles. This variety is never met with on the surface of the *Vimāna*, or *Jagamohana*, but in the recess of the portion separating the two.

The carvings that decorate and line the front doorway are three in number, and are invariably the same with all the ordinary Orissan temples. They are called **Carvings lining the doorway.** *Dali*, *Gelbai*, and *Bara-Jhanji* respectively in order of distance from the door-sill or jamb (Plate V (A), fig. II, 6, 4, 3). The *Dali* (Plate V (A), fig. II, 6) is a sort of scroll-work ; the intermediate one, i.e. the *Gelbai* (Plate V (A), fig. II, 4) is a sort of arabesque worked in low relief consisting of fanciful human, or animal figures combined with floral forms. The third, or the farthest one is called *Bara-Jhanji*. (Plates V, fig. 5. and V (A) fig. II, 3). The *Bara-Jhanji* is a sort of weed growing in tanks. In big temples the above carvings are five or six in number. (Vide plate V (A), fig. II). The doorway of the *Jagamohana* at *Konārka* may be cited as a typical illustration of this. The deep recesses between the carvings already referred to are also nicely carved, generally with *Jali*, or lattice, or wicker work.

The door carvings appear incased in frames ; these



frames with the carvings go round the three sides of the doorway, the bottom sill being excepted, which, again, is intercepted by a carved stepping stone; in the top sill, the *dāli* and *barajhānji* are repeated, whereas a change in the *gelbāi* scenes is often introduced. In the top sill, the floral portion of the arabesque is often omitted, as in the case of Muktēśvara temple, where the fanciful human scenes have been changed into one of rows of flying nymphs following close upon one another.

It may be noted here that the *barajhānji* mentioned above is noticed in a door-sill exhumed from the remains at Buddha

Barajhanji, a
Buddhist sculpture.

Gaya* ; the *Barajhānji* of the mediæval Orissan school is exactly similar to that of the Buddhist remains assigned by Dr. Mitra to a period between the first century B. C. and the first century A. D.† It is curious to note that the floral device resorted to by the Buddhists at such an early age has been incorporated in the Hindu sculpture of mediæval Orissa, and its exact form and situation have been strictly followed; among the broad and varied succession of door carvings, *barajhānji* occupies the position farthest from the door opening.

From the centre of the top sill projects a block of stone

* Vide Plate XLVIII, Fig. 3, Buddha Gaya by Dr. Rajendra Lal Mitra.

† Ibid, p. 247.



containing the figure of Lakshmi in relief. The figure of Lakshmi carved on the topsill. Lakshmi is noticed in two situations, and is accordingly called Gaja-Lakshmi and Mahalakshmi.

The Gaja-Lakshmi is represented as sitting on a full-blown lotus with one leg hanging down ; she is flanked by two elephants, the trunks of which are raised over the head of the goddess, and are about to pour water over her head. The Gaja-Lakshmi is usually noticed in the top sill of the doorway ; the second variety is not so frequently met with. The Mahalakshmi is a figure of Lakshmi seated on a lotus without the attendant elephants ; the front entrance of the temple of Muktesvara shows the figure of Mahalakshmi carved on the door-sill.

The jamb carvings. The jamb carvings, already referred to, do not start from the level of the door-sill, but from a portion a little higher up ; this portion of the jamb on each side of the doorway contains a representation of a *pida-dewi*, and a panel containing the figures of Ganga, Yamüna, Mahakala and Nandi. In the left panel are Yamüna and Nandi, and in the right one, are carved Ganga and Mahakala, Ganga and Yamüna being on the extreme left of their respective panels. Ganga and Yamüna are represented with their characteristic vehicles ; Ganga stands on a Makara or capricornus, and Yamüna, on a tortoise. In some temples the figures of Ganga and Yamüna are omitted.



The occurrence of *Gangā*, *Yamūnā*, and the arabesque containing human figures in the jambs of doorways is traceable in the *Gūpta* style of architecture, the latest example of which is found extant sometime between the 6th and 7th centuries A. D. The doorway discovered by Beglar* in Buxar in the district of *Sahabad* in Bihar, and belonging to the sixth century A. D. bears a very close resemblance to the door frame of the *Orissan* style ; there we come across the "rich arabesque with human figures", the goddesses *Gangā* and *Yamūnā* with their respective vehicles ; the figures of *Nandi* and *Mahakāla*, however, are not met with there.

I do not understand why the figures of *Gangā* and *Yamūnā* have been carved in the panels of the jambs, nor do I discover any reason of their association with *Nandi* and *Mahakāla* ; for, on going through some of the *Pūranas* and the two most important lexicons *Vachaspathya*, and *Sāṁdaka* *kalpa-drūma*, I do not anywhere find any reference to these associations.

I really doubt as to whether the male figure in the left panel is that of *Nandi* at all, although there is a hint in the 221st chapter of the *Agni-Pūranam* of the services of *Nandi* as a guard or *dvarpāla*. In the *Kalika-Pūranam*, I have

* Anderson, Catalogue and Hand-book of the Archaeological collections in the Indian Museum, Part II, p. 269.



come across several passages narrating the posting of Bhringi and Mahākala as sentries* at the entrance ; so the figure of Bhringi really passes for that of Nandi ; the figures may probably be those of Vetala and Bhairava, for these were no other than Bhringi and Mahākala, as is borne out by the passage from the *Kalika-Pūranam* quoted in the foot-note†.

The architrave in front of the entrance is carved with the seated human figures of the planets, nine in number, according to Hindu astrologers. The architrave is often divided into panels for containing the figures mentioned above ; these panels have often the trefoiled arches surmounting them. The architrave has often at the two ends two additional panels for the *dwārpālas*, or guards, or for the conventional dwarfish figures, or *Vetalas*, as they are called. This *Navagraha* architrave is also seen in front of the doorway separatig the sanctum from the Jagamohana.

Nava-Graha or
nine planets.

* “क्रमादगणेशो कृत्वा तौ द्वयो द्वारि न्ययोजयत् ॥”

कालिकापुराणे ४५ अध्यायः ।

“यदा सा नर्त्यये याता गौरी अरुहरान्तिकम् ।

तदा भृङ्गिमहाकाशौ द्वाभ्यो द्वारि प्रतिष्ठितौ ॥”

कालिकापुराणे ४६ अध्यायः ।

† “भुजं गते महाकाशे मानुषस्थे च भृङ्गिणि ।

वेताल भैरवाख्ये च तस्माभूते द्विजोत्तमाः ॥”

कालिकापुराणे ८५ अध्यायः ।



The names of the planets are given below *ad seriatim*, e.g. the Sun (रविः), the Moon (चन्द्रः), Mars (मङ्गलः), Mercury (बुधः), Jupiter (बृहस्पतिः), Venus (शुक्रः), Saturn (शनिः), the Ascending Node (राहु), and the Descending Node (केतु). I need hardly mention that the Sun, Moon and the nodes are not planets, and it is out of place here to offer an explanation from their stand-point. These planets, however, are supposed to govern the destinies of mankind, and to exercise a great influence over anything connected with the human race; and hence hymns to the Navagrahas are repeated every morning by the orthodox Hindus to propitiate them, and to invoke their blessings for granting them health, wealth and prosperity in their daily pursuits. The introduction of the Navagraha figures, hence, was invariably meant to ensure prosperity to the persons who built the temples, and to prevent any evil happening to the temples themselves.

The Chālukyān doorways are similar to the Indo-Aryan ones as far as the wide succession of richly carved jamb mouldings is concerned; the usual order or succession in which the mouldings or carvings in an elaborately worked doorway are noticed is the following, viz.,—two mouldings, one slender well-carved pilaster, two mouldings, one slender well-carved pilaster, a carved recess, a big pilaster plainly carved. The carvings showing fanciful human

Indo-Aryan and
Chālukyān door-
ways compared.



figures, or *gelbāi* or Manusya Kautūk (मनुष्य कौतुक), in Orissan technology, are noticed here; the *dālī* or scrollwork is also noticeable. The figures of Bhairava like Nandi, Mahakāla of an Orissan doorway are seen near the base of the pilasters referred to above. Gaja-Lakshmi is prominent in the centre of the top-sill or lintel of the doorway, as we see here, but the *Navagraha* architrave is not met with. The *Navagraha* figures are noticed in the panels of ceilings.

I have already remarked that the Representative type is an important feature of the Orissan school of sculpture. I cited several instances to illustrate this. I give below a few more examples of the Representative type. These are so commonly met with that they may be considered as important accessories to temple decoration.

The *Vetāl* is a pot-bellied, sitting, human figure with raised hands struggling to uplift the structure. This figure is sunk in bas-relief in panels surmounting the pilasters nearly at the top of the *bāda* (Vide plates VI, VII); these are also sunk in small pilasters flanking the niches (vide plate X), or the doorway. The *Vetāl* is noticed in Chalūkyan Architecture also; there it is called by the name of Bhūta, or demon. I think that the *Vetāl* has a distinct Buddhistic origin, and is probably derived from one of the eight Buddhistic demi-gods.



The Kirttimūkha is a sort of conventional decoration generally found with arabesque on the face of pilasters, or at the top of statuettes placed in the niches. It is the mouth of a horned lion from which issue beaded tassels, which in the cases of statuettes form an ornament of the foiled arches surmounting the figures. The Kirttimūkha with the beaded tassel dangling from it is technically called *Rāhūr Mūkher māla* (राहुर मुखेर माला). I have noticed this ornamental decoration in Chalūkyan Architecture. A distinctly pronounced type of Kirttimūkha is noticeable in Buddhist sculpture at Buddha Gaya.*

Floriage rather than foliage was a prominent characteristic of the mediæval Orissan school as it was in the early Greek period, or Doric age before the Alexandrian era. Orissan sculpture is very rich in flowers of various stages of growth; and among the flowers, the lotus was selected to be the choicest floral device; it became pre-eminently the national form of floral decoration. As the early Egyptians took a great fancy to lotus and papyrus, the Greeks to anthemion or palmette, the early Christians to the lily (the fleur-de-lis), the Indians are noticed to do the same to lotus from the earliest dawn of history. The lotus has a pan-Indian interest from the decorative

Lotus as an
ornamental
device.

* Dr. Mitra, Buddha Gaya, Plate XLIX, figs. 4 and 5.



point of view. In India this floral device is resorted to in decorating the base, pedestal, and capital of columns. In the magnificent *torana* or gateway (Vide Plate VIII) in front of the temple of Müktesvara, the lotus leaves have been very nicely depicted ; the lotus has also been used as a pendant hanging from the ceiling ; as instances, I refer the reader to the Jagamohanas of Müktesvara, Brahmesvara. The gods of the Hindu Pantheon are made to hold full-blown lotus, or lotusbuds in their hands ; they are made to sit on lotus thrones, or to stand on lotus pedestals, or to rest their feet on lotus footstools.

The curvature of the petals of a full-blown lotus has been selected to designate the *cyma reversa* and *cyma recta*, for these two curves are technically called *Padma* (पद्म), or lotus. The outer faces of the Orissan temples are decorated with discs, or half-discs of lotus ; the *Bhos* (भो), I have already described in the last chapter, contain insets of lotus.

The fundamental idea on which the sense of decoration, or ornamentation is based, is contrast. either
Contrast. in the domain of the flat, or the relieved. In the former, there is a contrast between light and darkness, and in the latter, between light and shade ; in the former, the play of lines is the characteristic feature, and in the latter, the play of masses ; in the latter case, colour may or may not be



used. The Orissan decoration belongs to the class of the relieved in which colour has not been used.

I shall briefly dwell on the different forms of carvings used, and the plates illustrating them will convey a rough idea as to the curves of various degrees of flexure resorted to in designing the ornamental devices.

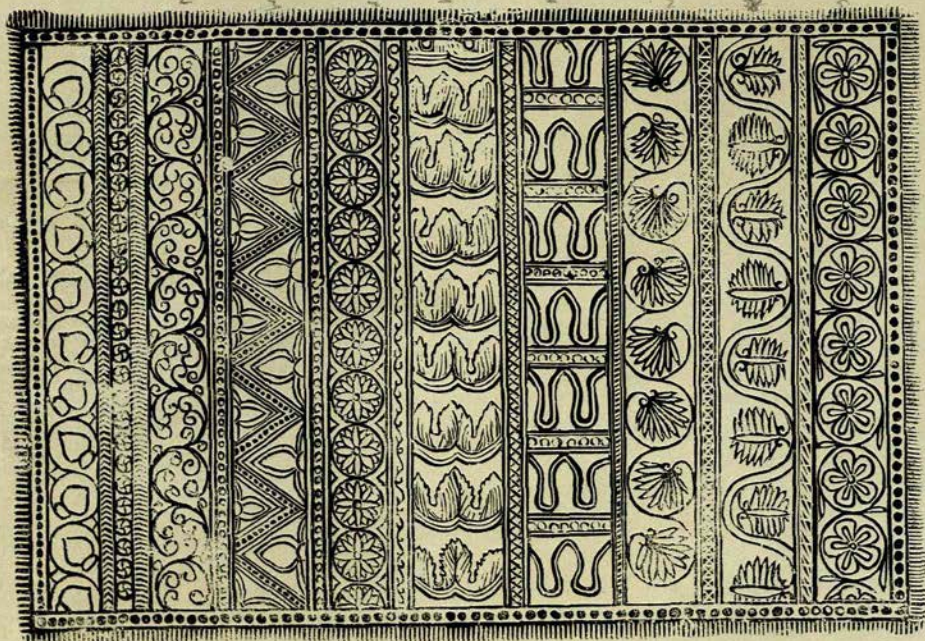
The carvings illustrate both the principles of Gradation, and Contrast, but never a compromise between the two principles which is positively injurious from an æsthetic point of view. I need hardly point out that the purpose sought to be served is never so done by introducing a compromise which invariably impairs the beauty meant to be enhanced. The Orissan architects were fully conscious of this, and owing to this consciousness, is never seen an attempt at rounding off the corners, or angles, which are kept perfectly rectangular, and not curved in the least.

The contrast afforded by angularity has a definite psycho-
Contrast and Gradation compared. logical effect ; apart from the stand-point of light and shade, it has a sense of severity and strength attached to it. This angularity, let it be rectangular, has a decided tendency to excite, and the curvature illustrating gradation exercises a pleasing effect. The skill of an architect lies in effecting a happy combination of contrast and gradation, not in a particular portion of the form, but



in different parts of it. On a careful examination of the mouldings, and the pilasters, it will be apparent that the severity of form has been best ensured by maintaining an angular character as far as practicable under the circumstances. This, I have remarked, is an effect of contrast. As far as the decoration of the main form is concerned, it may be said that the Orissan architects were consummate masters of this art of carefully selecting forms illustrative both of contrast and gradation.

As a good illustration of the principle of contrast and gradation, I may refer to the ornamental decorations on the *Rekha* surface just over the *Rahapaga* of the *Muktesvara* temple (vide plate VI). Straight lines running vertically are noticed to divide the decorated surface, and on both sides of the straight lines as chords, are placed successively pairs of semicircles, or segments of circles having the springing point of one as the centre of its counterpart. The semicircles have also been so nicely arranged about the consecutive straight lines or directrices that the lower element of one pair is placed adjacent to the upper one of another pair in respect of the next directrix; in this way, a nice contrast illustrating the principle of Uniformity of Halves has been effected. This design is so exquisitely beautiful that it hardly fails to exact the admiration of a passing observer.



Ornamental Carvings and Floral Devices of the temples of Orissa

Sketch by M. Ganguly



In Orissa, as in Moresque Architecture, harmony of form has been brought about by the proper gradation and contrast of straight and curved lines.

The Orissan sculpture is very rich in scrolls and arabesques, and different technical terms have been coined to designate the different varieties. The scroll and

Scroll and
Arabesque.

the arabesque are combinations of the two following types of decoration, *e. g.*, (1) the Representative or Symbolical, (2) the *Æsthetic*, or purely Decorative; both the scroll and the arabesque show the conventional representation of the Representative type. The scroll, I have noticed in Chapter III, has been resorted to as an ornamental device from the remotest historic period we are familiar with; it is noticeable in the ancient Egyptian and Greek works of art.

The scroll that we come across in the Orissan school of sculpture, is derived from the idea of a creeping plant with its tendrils, leaves and flowers; the Orissan technics are based on the inclusion or exclusion of any one of the above three elements in or from the main stem. Thus on referring to plates V(A) and V(B), it will be seen how the different varieties of scrolls have been represented*. The following classification is given.

* Of course, all the figures on the plates are not scrolls.



(a) *Phul latâ* (फुललता).

(b) *Nati latâ* (नटीलता).

(c) *Patra latâ* (पत्रलता).

(d) *Vana latâ* (वनलता).

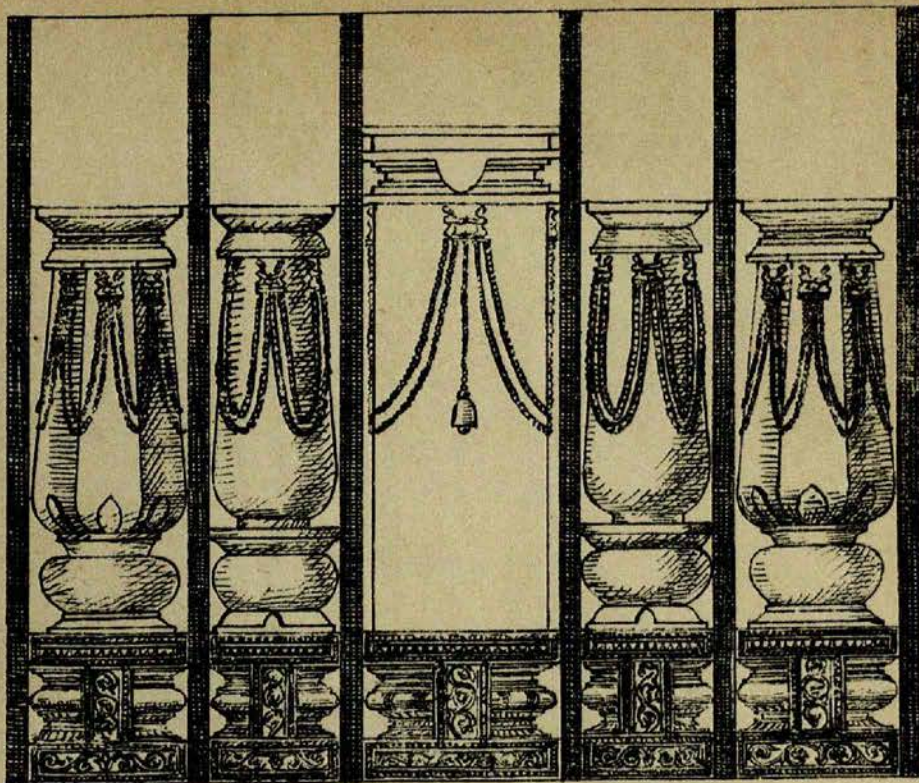
Phul latâ is a scroll work enclosing flowers ; this device may be with, or without tendrils. The first, second, third and the sixth rows on Plate V are examples of *Phul latâ* ; in the first one, tendrils are noticeable, and two scrolls cross each other so as to form definite contiguous circles. The eighth row is an illustration of *Nati Latâ* which is a scroll work of a creeping plant with a luxuriant growth of tendrils. The ninth or the last row is an example of *Patra latâ* showing a creeping plant and the leaves thereof. For the *Vana latâ*, the reader is referred to Plate VII ; the carving in the *Bârândi* portion of the second pilaster on the left shows the densely-foliaged *Vana latâ*. An illustration of *Patra latâ* is given below.



The fifth row on Plate V, is an example of *Barajhânji* described at great length already. The seventh row is technically called *Mâli-phul-phâdikâ*. (*Phâdikâ* means a triangle ; *Mâli* = beaded).

FIG. I.
SCALE $\frac{1}{16}$ TH.

PLATE-V(A)



BALUSTRADED WINDOW OF RÂJARÂNI.

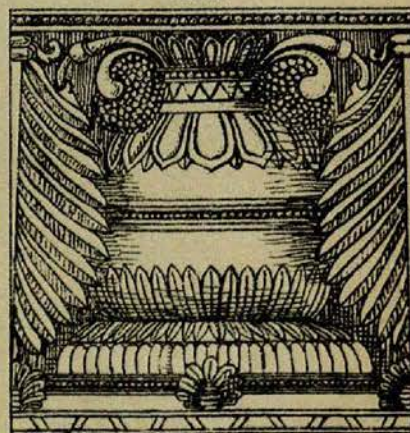
FIG. II.

FIG. III.



CARVINGS ROUND DOORWAY.

SKETCH & LITHO BY J. L. SHOME.



NOT TO SCALE.

FLORAL DEVICE OF VAITÂL AND
PARASURÂMESVARA.



The ordinary scroll work is called *Dālī*; it shows several convolutions in the centre; this is like a succession of spirals reversed alternately. This is technically called *Sāda-dālī* [Vide Plates V(A), & V(B).]; a rich variety of the same may exhibit flowers, leaves, tendrils, etc.

The Orissan architects were superior to their Greek or Roman brothers in the different types of ornament used. The Greek ornament was neither constructive, nor symbolical or representative, but it was a purely decorative one. Their ornaments were something like an excrescence which, if removed, would not affect the constructive peculiarity of the temple; nor do their decorations convey any sense of pleasure and pain except that due to geometrical symmetry; in this respect the ornaments of the Orissan school resemble those of the Egyptian one.

I must admit that, generally speaking, an attempt is noticeable in Orissan Architecture to make the ornaments outshine the constructive grace; this sense, when carried to an excess, has caused them to create in some cases an "over-decorated ugliness."

On referring to the plates that follow, it will be apparent that the surface has often been decorated with the repetitions of the same ornamental device placed at regular intervals; by this rhythm of spacing, the

Rhythm of
spacing.



sense of monotony or weariness is much relieved, and a sense of ocular pleasure, though not a purely mental one, is aroused. This spacing is like the rhythm of the waves of sound, or cadence in music, and has an equally pleasing effect.

Music and Decoration are analogous in character ; rhythm is noticeable in both ; in the former, the rhythm of time and spacing is in respect of time, in the latter, of spacing ; as rhythm of time plays an important part in the sweetness of a tune, so does that of spacing in case of ornament ; in fine, art itself is a rhythmical expression ; nay it is more. As music is a combination of rhythmic sounds, so is decoration one of measured or well-balanced forms, or details. Hence, it is necessary for the efficiency of expression of a piece of decoration that, not only should the details be artistic but that they should also be artistically arranged ; however natural your details may be, if the arrangement be defective, the whole effect is lost ; and even if the individual, or component parts be executed inartistically their artistic arrangement may be very impressive.

The above effect has been sought to be ensured by the introduction of various geometric figures, or patterns including zigzag, diaper, *jāli*, or lattice or wicker work and various sorts of scrolls. I refer my readers to plates V, V(A), V(B), and VI.

The diaper work is noticed to have been resorted to in decorating the external faces of temples. I refer the rea-

Plate VI.
Southern Facade of Mukteswara.

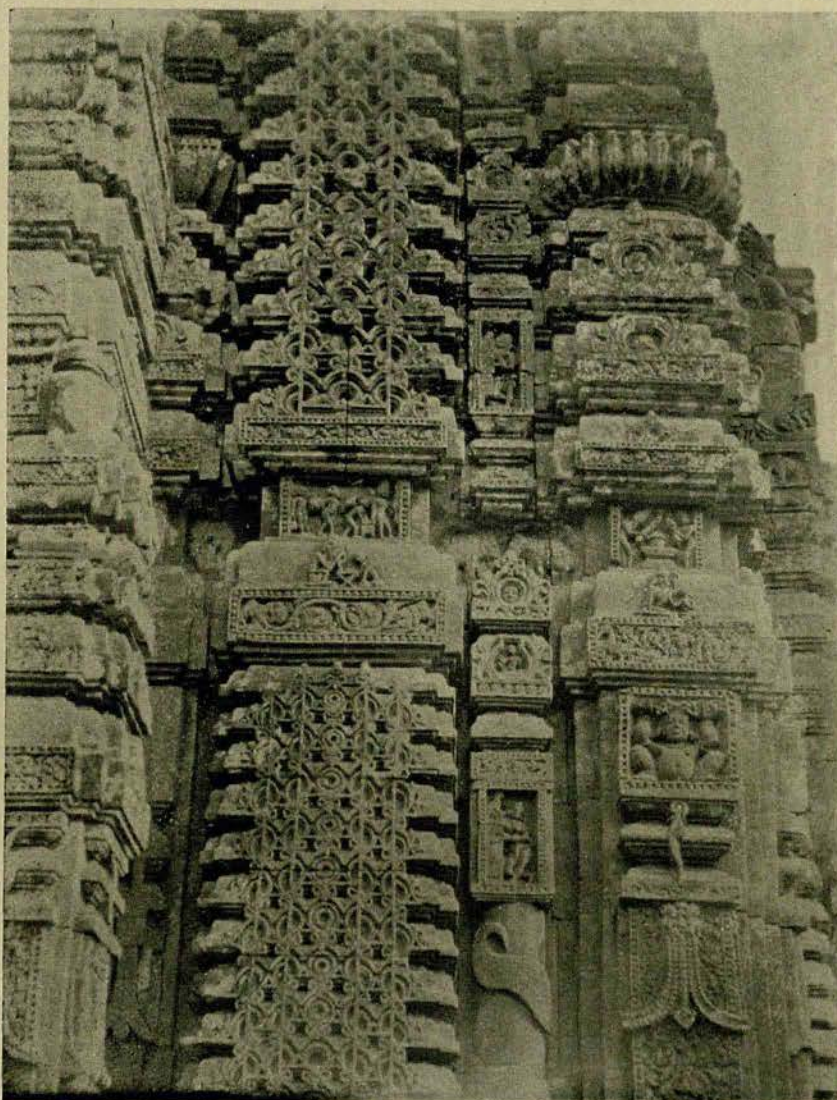


Photo by A. Ghose F. C. S, F. G. S.

Printed by K. V. Seyne & Bros.



ders to plates VI, VII and X; the diaper work on the face of the *vimāna* of Müktesvara, (vide plates VI, VII and X) is technically called *Phānd-granthi* (फांदग्रन्थि); it has been described on page 190; it differs from that noticed on the *pāgas* of the Lingaraja temple at Bhūbanesvara. This is a geometric diaper, and has a very pleasing effect. In this case, however, the patterns are not sunk below the general surface; and the workmanship is called *cameo* as opposed to *Cavo-Relievo*, or *Intaglio rilievo*.

The diaper as I have noticed above is a sort of combination or a repetition of geometric patterns; equal-spaced repetition in sculpture can be skilfully effected by curves of contrary flexure as the sine curve symbolical of the propagation of sound and light waves; this has been largely used in the Buddhistic and mediæval decorations. This repetition can also be brought about in various rectangular forms of which the zigzag, the fret, etc. are examples.

The zigzag is a simple variety and combination of lines; the fret, either carved in stone or painted on canvas, serves as a nice ornamental device very simple in design requiring only little geometrical accuracy in execution. I have not noticed anywhere in Orissan sculpture the fret as an ornamental form except in the temple of Parasūramesvara, and that too as a solitary instance in the third

Diapers.

Geometric
Figures.

Fret



panel from below upwards in the recess between the Konak and Anarth pagas at the south-west corner of the *vimāna*.

Repetition can also be effected by a definite arrangement of geometric figures such as rectangles, parallelograms, etc ; these are illustrated by the *Jāli* or wicker work of the Orissan school ; the *jāli* resembles a lattice or wicker work ; the retiform character of the *jāli* varies in different forms ; the reticulation may either be formed by small horizontal squares, or squares with the diagonals vertical. In the former case, the *jāli* is called a *Patā jāli*, and in the latter, *Bānkā Jāli* where the reticulation is said to be diamonded. The *Jāli* represented in the window of the Jagamohana of Muktesvara (vide plate IX) is an instance of this form. There are yet two more forms of *Jāli*, e.g, the *Bilkhūjā Jāli*, and the *Phūl Jāli*. In the former, the small squares are arranged so as to form parallelograms, or rectangles, the interior filling in of which is effected by graceful carvings of single leaves or petals [vide plate V. (B)]. In the latter case, the small squares form triangles, or other rectangular figures, the inset being carved with flowers, petals, &c.

The Orissan sculpture is superior to the Saracenic or Moresque one by reason of having the representative, or symbolic form of treatment in addition to the purely æsthetic one resorted to by the latter

Orissan and
Saracenic sculp-
tures compared.



school ; but it should be borne in mind that the Saracens had a rich variety of curves, tracery, interlacings having inscriptions elaborated into them. The Orissan inscriptions are noticed to be usually incised on the jambs of doorways, or some obscure portions of the temples, or on slabs inserted in the compound walls. As illustrations of these, I may cite the case of the temples of Lingaraja, Kedareshvara, Patalesvara (Puri), Ananta Vasüdeva, &c.

The Saracenic inscriptions entail a nice design showing exquisite symmetry, elaborate and well-balanced details, viz, tracery, interlacings, &c. We do not notice a rich variety of interlacings in Orissan sculpture ; but the one resembling the tail of a snake and found round doorways, as at the Bhogamandapa of Puri, or the Jagamohana at Konarka is exquisitely beautiful, and is not in any way inferior to the guilloche of the Greek, or any interlacing of the Saracenic school, or that of the comparatively modern Cinquecento as noticed on the face of Santa Maria de' Miracoli, Brescia.* This Orissan carving bears some resemblance to the rope ornament of the Egyptians ; another type of interlacing noticed by me is worth mentioning in this connection. It was noticed round a niche on the northern face of the Vimana of Parasüramesvara. This is

* R. N. Wornum, Analysis of Ornaments, The Characteristics of Styles, Plate on p. 97.



a very ingenious device showing the appearance and disappearance of the parent stem of a plant at regular intervals.

The interior of an Orissan temple is never decorated with the exception of Müktesvara, Brahmesvara and the Vaitāla

Interior decoration.

Dewl. The reason is not far to seek. The design of the temple is such as not to afford sufficient air and light inside it. The interior is purposely meant to be shrouded in mystic darkness. It is to be rendered solemn in keeping with the solemn occasion of communion of the devotee's soul with the deity ; here, the soul must rise above the trifles of the world ; hence the necessity of decoration is dispensed with ; to this is due the entire absence of ornamentation inside as contrasted with the profusion of outside decoration. The remarks of M. Paoul Rochette* with regard to this in the case of Gothic Architecture do not hold good here at all ; it is neither "a striking defect," nor "a veritable absurdity," as observed by him in the case of Gothic Architecture, but absolutely necessary.

The Hindu temples are not halls of congregational worship like the Christian churches, or Mahomedan mosques ; hence the amount of diffused light streaming through the entrance leading to the Jagamohana is considered as sufficient for the purpose ;

* E. Viollet-Le-duc, Lectures on Architecture, p. 414.

† Dr. Sturgis, Dictionary of Architecture and Building.



if the windows were considered superfluous in Grecian temples which were also "not halls of worship, but shrines for the protection of the statue of a divinity, and for the deposit of votive offerings",† and if in them the sun-light streaming through the entrance doorway was considered sufficient, how much more should light be reasonably dispensed with in a temple of the Indo-Aryan style.

I have already remarked that Architecture was a veritable "petrified religion" to the people of Orissa ; as religion degenerates into cant and hypocrisy, architecture shows signs of convention, deceit or falsehood. Architectural Deceits, according to Ruskin, are threefold, (1) Constructive or Structural Deceit, (2) Colour Deceit, (3) Deceit by reason of "the use of cast or machine made ornaments of any kind". The last kind of Deceit is not noticed in Orissan Architecture, and was obviously not possible considering the situation, fitness, and the time when it flourished ; the second form is noticed to some extent, and more at Puri than at Bhūbanesvara. The main temple at Puri is covered with stucco plaster, and coloured with different pigments ; by this method, all that is unworkman-like has been concealed from the public view ; moreover, this gave them an incentive to execute works badly, and in haste ; hence this had a decided tendency to debase them as architects. The stone blocks have, in many cases, been dyed in red ochre

in such a way as to make the grey or yellow stone blocks look like red sand stones, a variety not to be found in the locality. This artifice of painting or dyeing has made many with Dr. Mitra as one of them, commit the grave blunder of taking them for red sandstones. I should admit here that this device of stucco plaster resorted to by the architects was necessary in some cases, e.g, at Puri. By concealing the stone surface it has effectively prevented the weathering action of the stone over which it has been applied. At any rate the second form of Deceit is not so objectionable as the first one, for it is not very assertive, or constructive in character, though it is objectionable by reason of its very existence ; for though a greyish variety may pass for a red one, the structural design is not affected in the least. This practice of stucco is noticeable in the pre-historic, Grecian and Mycenæan structures. At Nineveh, a sort of stucco used to be applied as an external coating to the clay walls. In Chaldæa, the walls used to be "faced with a skin of glazed and coloured brickwork of many colours."*

The spirit of simulation or dissimulation is notoriously flagrant in the first form ; for here the very soul of the edifice is roughly handled. Let us see how we can justly detect any such Deceit in the case of the Temple Architecture of Orissa. This we can best

Deceit in Ori-
ssan Architec-
ture.

* Fletcher, Influence of Materials on Architecture, p. 8.



ascertain by standing outside a temple and looking at it. The temple looks like a curvilinear tower surmounted by a rather flat dome ; and the immediate inference that the observer makes is that the inside must necessarily present the form of a vaulted ceiling, or some such thing. When he goes in and looks up, his expectation is at once frustrated ; instead of a high vault his vision is intercepted by a low flat roof formed by flags of stone. His architectural taste, however imperceptible it may be, receives a rude shock at once. This is the result of Architectural Deceit or falsehood ; the uniformity or unity of form could not be maintained both inside and outside ; though the outward form has been introduced out of a particular motive, the same motive should have been kept in view inside too. The observer is not bound to consider that the dome-shaped stone at the top is a solid block, or a combination of blocks meant to keep the four walls from being thrust inwards ; nor should he think that a trabeated style does not admit of a vaulted ceiling as is the case with an arcual one. He would simply seek for a uniformity, or a continuity of the same both inside and outside.

In architecture we have an experience of two distinct and contrary mental states, viz, *Æsthetic* comfort and discomfort.

Æsthetic com-
fort and discom-
fort.

The string courses, pillars, buttresses or pilasters, and architraves, or a combination thereof afford



a sense of satisfaction and repose or relief by disclosing the reasons of their introduction. An Orissan temple affords in an eminent degree this relief or æsthetic comfort. In some case, however, a contrary effect is noticeable. On looking at the huge lion projecting from the *vimāna* so as to look floating in the mid-air, one is sure to think more or less that the figure is threatening to come down and to crush him ; this sense of the danger of being crushed produces a sense of discomfort which is termed æsthetic discomfort.

Zoology of the temples :—

The zoology of the temples is varied and indicates a decided improvement on what is noticed in the Buddhist period. The animals that are found abundantly represented are the lion and the elephant ; they are often found together, the former standing over the latter in the crouching state. This, according to some, is representative of the ascendancy of Brahminism over Buddhism, the votaries of which held the elephant in great sanctity. This is probably indicative of the ascendancy of one dynasty, the Kesaris, over another. The Kesaris came to power before the Gangas ; but it is difficult to ascertain the dynasty supplanted by the Kesaris. The lion was the emblem of the Kesaris, whence the name of the dynasty is derived, and the elephant was that of the unknown dynasty referred to. This ascendancy has been signalised by the efforts of art. Instead



of any graphic account, or even mention of this fact in any historic document, or legend we have a symbolic representation of it in the recesses of temples.

The victory by the Kesaris must have been an epoch-making event, or else its representation would not have influenced the architecture of Orissa in such a remarkable degree, for almost all the temples of mediæval times in the Puri district are invariably found to contain in the narrow recesses between the pilasters representations of a lion standing over a crouchant elephant. These lions are, as a matter of fact, fantastic monsters having leafy horns, pointed ears, elaborate manes and a beaded tassel dangling from the mouth. This is the sculptor's *Sardūla* which does not obtain in nature. In this connection I may invite the reader's attention to a somewhat similar representation of huge rampant horses in the Dravidian style of Architecture, e. g. the Vellore temple. From this conventional representation of *Sardūla* we should not come to the conclusion that the Uriyas had no knowledge of the physiognomy of a lion ; in support of the above remark, the lion on the Jagamohana of the Müktesvara temple may be cited by way of illustration.

The lion has been represented in various situations. It is seen on both sides of the main entrance as a guard, or a *dwārpāla*, and towering over a crou-

Different varieties of the lion.



chant elephant. It is seen in a similar posture projecting from the Rekha of the sanctum at a definite height. It is also placed on the roof of the Jagamohana, and is invariably found in one of the three following postures, e. g. (1) *Udā-sinha*, or flying lion, as in the temple of Yukti-Kedaresvara, (2) *Jhāppā-sinha*, or rampant lion, as in Kedaresvara, (3) *Kshepā-sinha*, or mad lion, as in the temple of Muktasvara. The lion is also noticed in the intervening space below the Amlaka Sila referred to already. This representation of the lion is called *Dupichchā-sinha*, or two lions placed back to back.

I have dwelt at some length on the abundant representation of the elephant in chapter II ; the importance
The elephant of Orissa as the breeding place of elephants reached the farthest limits of India, and it is no wonder to see it so largely represented. The most natural, life-like carvings of elephants are noticed in the temples of Ananta Vasūdeva, Sari Dewl, Konarka, &c. Elephants in procession, following close upon one another are noticed usually on the face of the Basanta, and Pada portions of the Jangha ; they are also noticed on the faces of the Pidas of the Jagamohana, e. g. Konarka. The artists of the Buddhist period far excelled those of the later times in depicting the elephant in various scenes.

The huge monolithic elephant at Konarka carved out of a



single block is worth mentioning (vide Plate XXVI). It may be said to have been copied from nature ; and in consequence of this, it has exacted the unstinted admiration from the most captious critics of art.

The elephant of the temple at Konarka

The horse

The horse is noticed to be too frequently represented ; but unlike the mediæval sculpture of Europe it is far less met with than the lion, or the elephant. It is often seen enclosed in panels with beaded borders on the face of the *pidas*, or the *Basanta* of the *Janghâ*. At Konarka it has been abundantly represented ; and the huge one in front of the Jagamohana at Konarka may be considered a masterpiece, the like of which we very rarely come across, and it may reasonably be "the pride of some metropolitan museum in Europe and America."* We may pertinently quote the following observations of Prof. Havell in respect of this magnificent work of art. "The superbly monumental war-horse in its massive strength, and vigour is not unworthy of comparison with Verocchio's famous masterpiece at Venice."† This horse, or the elephant already referred to, may appropriately figure well if inserted in the hunting sculpture of the Lombards, and may compare favourably with the noblest examples of sculptural treatment in Europe, e. g.

* Havell, Indian sculptures and Painting, p. 146. † Ibid, p. 147.



"the lions of Egypt, the Ninevite bulls, and the mediæval griffins." †

Among the animals that I have observed in Orissan temples, the following are worth mentioning :—the lion,
Other animals elephant, horse, boar, duck, peacock, pigeon, crocodile, bull, cow, deer, hare, monkey, goose ; the tiger, owl and crow have not been noticed by me. These animals have no classical sanctity attached to them, and to this perhaps, is due their omission from the temple zoology of Orissa.

The monkey (*Macacus Rhesus*) in various scenes of life, as
The Monkey in the Buddhist period, (vide Chap. III) was a favourite subject with the artists from the remotest antiquity down to the middle ages. I have described at great length the famous monkey scene noticed in the window moulding of the Jagamohana of the Muktesvara temple (Vide Chapter VIII and Plate IX). The agility and playfulness characteristic of the monkey coupled with motherly tenderness have been so very graphically described that they leave a very deep and lasting impression on the mind of a most casual observer.

The bull is seen represented in an Orissan temple, more especially in those belonging to the Saiva sect.
The Bull. It is observed in the Jaina Gümphæ at Khandagiri as the Vahana of Rishava Deva, the first Tirthankara of the

† Ruskin, *The Stones of Venice*, Vol. I., p. 208 (edited by L. March Phillips).



Jainas; in a Saiva temple it is represented as the *Vahana* or carrier of Siva. The huge bull carved out of a single block and placed in a small temple abutting on the north side of the *Nat-Mandira* within the precincts of the *Linga Raj* temple, *Bhūbanesvara*, may be cited as a well-proportioned and nicely carved example of the animal.

The *Makara* like the lotus is an ornamental device which can be traced from the earliest Buddhist period down to the Mediæval times, and which is met with in all the Indian styles of architecture and sculpture. In chapter III, the *makara* or *capricornus* has been noticed as an ornament in the arch-springing from the distended jaws of which floral devices have been made to issue; it is also noticed at *Sanchi*, *Bharhūt*, *Amaravati*, etc. In the Mediæval Orissan sculpture the *makara* is seen as a gargoyle, or long projecting spout through which rain water, or temple washings are meant to be discharged clear of the wall; it is also noticed at the springing of the arched gateway or *torana* in front of the temple; the *torana* of the temple of *Muktesvara* may be cited as an example (vide plate VIII).

The most elaborately and artistically worked gargoyle of *Rama Chandra's* temple at *Konarka* may be cited as a fine specimen of this decorative form. This gargoyle compares favourably with those in the *Meaux Cathedral*, *Eglise*



d' Eu or the bell-tower, Toulouse, restored by Viollet-le-duc.

The Makara is represented in various forms, with huge distended jaws set with teeth, with a short, or elongated curling snout, or trunk, and magnificently carved fins and tail.

It may be mentioned that this representation is conventional, and the reason is not far to seek ; for the animal is a purely mythical one not found in nature ; but there is a uniformity in this conventional representation throughout India as is borne out by the study of the Chälükyan sculpture of the Kanarese districts.

On going through the Silpa Sastras to ascertain the relative proportions of the different limbs of the body of an image, be it human or divine, I have carefully noticed that no mere convention having no scientific basis has been resorted to by the Indian sculptors. A comparative study of the proportions used by them, and an actual measurement taken of human limbs would convince one of the fact that they studied human physiognomy thoroughly ; of course, the relative proportions recorded by different Indian schools do not strictly tally with one another, but the discrepancy is ordinarily of such a trifling nature that it may safely be neglected, and the figures belonging to the different schools may for all practical purposes be considered the same.



I have worked out the relative proportions of the Orissan school of sculpture from measurements taken by me *in situ*, and compared them with those given in *Sūkra-Nīti*, a text ascribed to *Sūkracharya*. I have found the text of *Sūkracharya* to suit Orissan sculpture more than *Mānasara* quoted by Dr. *Rājendra Lal Mitra*.* Before I submit the tabular statement for the consideration of my readers, I should make a few prefatory observations explaining briefly the general principle, and the technics followed by the Indian sculptors. The images are classified according to the ratio the head from crown to chin bears to the whole body. Thus they are called *Pancha Tala*, *Shada Tala*, *Sapta Tala*, *Asta Tala*, *Nava Tala*, according as the ratios are $\frac{1}{8}$, $\frac{1}{6}$, $\frac{1}{5}$, $\frac{1}{4}$ and $\frac{1}{3}$ respectively.

The term "Tala" has been clearly defined in *Sūkranīti* thus.

स्वस्वमुष्टेष्टतुर्योऽंशो ह्यङ्गुलं परिकीर्त्तितम् ।

तदङ्गुलैर्द्वादशभिर्भवेत् तालस्य दीर्घता ॥

82 Sloka, 4th ch, 4th Prakaranam.

i.e. 12 *angūlas* make one *Tala*, an *angūla* being $\frac{1}{12}$ th the width of the fist.

Tala is a standard of lineal measurement in sculpture, meaning a span, or the distance from the tip of the thumb to that of the middle finger.

* Mitra, *Indo-Aryans*, vol. I, pp. 136-37



The images are Sapta Tala, Nava Tala, &c., according as they are found in different climes; the images of gods, or goddesses with a few exceptions are usually made Sapta Tala. I shall presently show that the images in Orissa have been made Sapta Tala from the Buddhist period down to the mediæval times. The author of Sukraniti recommends Sapta Tala images for the Kali Yuga, or the present age†. Sūkra-charya has, however, laid down the proportions for Nava Tala, and has instructed to reduce them to Sapta Tala, Asta Tala, &c., by the simple mathematical process of the Rule of Three.

In the tabular statement (A) given below, I have given the measurements of a Nava Tala image in a separate column, and have deduced therefrom those for a Sapta Tala one by the process stated above, and also the relative proportions in decimals taking the whole body as the unit, or standard of measurement. To test the accuracy of the relative proportions as fixed by the Indian school of sculptors is given below the statement (B) showing the measurements of different limbs of a full-grown adult taken by me personally.

* सप्ततालायुज्जता वा मूर्त्तीनां देशभेदतः ।

सदैव स्त्री सप्तताला सप्ततालश्च वामनः ॥

84 Sloka, 4th Ch, Sukraniti.

† दशताला कृतयुगे वेतायां नवतालिका ।

अष्टताला जापरे तु सप्तताला क्लीं मृता ॥

Ibid, 89th Sloka.



*Tabular Statement—(A), showing the relative proportions for a
Sapta Tāla image.*

Limb of the body.	Nava Tala Angūlas.	Sapta Tala Angūlas.	Relative Proportions in Decimals.
Height of man ...	108	108	1
Head (from crown to chin) ...	12	$12 \times \frac{1}{8}$	·142
Forehead ...	4	$4 \times \frac{1}{8}$	·047
Nose ...	4	$4 \times \frac{1}{8}$	·047
Nose to chin ...	4	$4 \times \frac{1}{8}$	·047
Neck ...	4	$4 \times \frac{1}{8}$	·047
Neck or shoulder to Breast ...	12	$12 \times \frac{1}{8}$	·142
Breast to Navel ..	12	$12 \times \frac{1}{8}$	·142
Navel to Penis ...	12	$12 \times \frac{1}{8}$	·142
Thigh ...	24	$24 \times \frac{1}{8}$	·284
Knee ...	4	$4 \times \frac{1}{8}$	·047
Leg ...	24	$24 \times \frac{1}{8}$	·284
Heel	4	$4 \times \frac{1}{8}$	·047
Arm up to the finger ends ...	48	$48 \times \frac{1}{8}$	·568
Arm from shoulder to elbow ...	20	$20 \times \frac{1}{8}$	·238
Arm from armpit to elbow ...	13	$13 \times \frac{1}{8}$	·120
Arm from armpit to the end of middle finger	28	$28 \times \frac{1}{8}$	·259
Palm ...	7	$7 \times \frac{1}{8}$	·064
Middle finger ...	5	$5 \times \frac{1}{8}$	·046
Thumb ...	$3\frac{1}{2}$	$\frac{7}{2} \times \frac{1}{8}$	·032
Index finger ...	3	$3 \times \frac{1}{8}$	·0277



Tabular Statement—(A), showing the relative proportions for a Sapta Tāla image—contd.

Limb of the body.	Nava Tala Angūlas.	Sapta Tala Angūlas.	Relative Proportions in Decimals.
Ring finger	3	$3 \times \frac{8}{7}$	'0277
Little finger	2	$2 \times \frac{8}{7}$	'018
Foot	14	$14 \times \frac{8}{7}$	'129
Great toe	2	$2 \times \frac{8}{7}$	'018
Ankle	$2\frac{1}{2}$	$\frac{5}{2} \times \frac{8}{7}$	'023
2nd toe	$2\frac{1}{2}$	$\frac{5}{2} \times \frac{8}{7}$	'023
3rd toe	$1\frac{1}{2}$	$\frac{3}{2} \times \frac{8}{7}$	'013
4th toe	$1\frac{1}{2}$	$\frac{3}{2} \times \frac{8}{7}$	'013
Forehead (length)	8	$8 \times \frac{8}{7}$	'074
Eyebrow (end to end)	8	$8 \times \frac{8}{7}$	'074
Space between eyebrows	$\frac{1}{2}$	$\frac{1}{2} \times \frac{8}{7}$	'004
Eye (length)	3	$3 \times \frac{8}{7}$	'0277
„ (width)	2	$2 \times \frac{8}{7}$	'018
Pupil of the eye	1	$1 \times \frac{8}{7}$	'009
The root of the nose	1	$1 \times \frac{8}{7}$	'009
The tip of the nose	2	$2 \times \frac{8}{7}$	'018
Ear (Length)	4	$4 \times \frac{8}{7}$	'037
„ (Breadth)	3	$3 \times \frac{8}{7}$	'0277
„ Thickness	$\frac{1}{2}$	$\frac{1}{2} \times \frac{8}{7}$	'004
The Bridge of the nose	3	$3 \times \frac{8}{7}$	'0277
Height of nose	$1\frac{1}{2}$	$\frac{3}{2} \times \frac{8}{7}$	'013



Tabular Statement—(A), showing the relative proportions for a Sapta Tāla image—contd.

Limb of the body.	Nava Tala Angūlas.	Sapta Tala Angūlas.	Relative Proportions in Decimals.
From neck to shoulder	8	$8 \times \frac{1}{7}$	'074
Breast between arms	24	$24 \times \frac{1}{7}$	'222
„ „ teats	12	$12 \times \frac{1}{7}$	'111
Face between ears (curved length)	16	$16 \times \frac{1}{7}$	'148
Ear to chin (curved length)	8	$8 \times \frac{1}{7}$	'074
Ear to nose	8	$8 \times \frac{1}{7}$	'074
„ „ eye	4	$4 \times \frac{1}{7}$	'037
Face	4	$4 \times \frac{1}{7}$	'037
Lip	$\frac{1}{2}$	$\frac{1}{2} \times \frac{1}{7}$	'004
Circumference of head	32	$32 \times \frac{1}{7}$	'296
Width of head	10	$10 \times \frac{1}{7}$	'092
Length of head	12	$12 \times \frac{1}{7}$	'111
Circumference of neck	22	$22 \times \frac{1}{7}$	'203
„ „ chest	54	$54 \times \frac{1}{7}$	'500
„ „ „	47	$47 \times \frac{1}{7}$	'435
Thickness of chest near breast	12	$12 \times \frac{1}{7}$	'111
Circumference of waist	44	$44 \times \frac{1}{7}$	'407
Height of do	4	$4 \times \frac{1}{7}$	'1039
Width „ do	6	$6 \times \frac{1}{7}$	'055
Circumference of hip of female figure	43	$43 \times \frac{1}{7}$	'435
Do. do male figure	42	$42 \times \frac{1}{7}$	'388



Tabular Statement—(A), showing the relative proportions for a Sapta Tala image—contd.

Limb of the body.				Nava Tala Angūlas.	Sapta Tala Angūlas.	Relative Proportions in Decimals.
Circumference of arm near armpit	...			18	$18 \times \frac{8}{9}$	'166
Do do elbow	...			16	$16 \times \frac{8}{9}$	'148
Circumference of head near elbow	...			14	$14 \times \frac{8}{9}$	'129
Do do wrist	...			10	$10 \times \frac{8}{9}$	'092
Width of palm	...			5	$5 \times \frac{8}{9}$	'046
" " Meta-tarsus	...			5	$5 \times \frac{8}{9}$	'046
Circumference of thigh near hip	...			32	$32 \times \frac{8}{9}$	'296
Do knee	...			29	$29 \times \frac{8}{9}$	'268
Do leg near knee	...			16	$16 \times \frac{8}{9}$	'148
Do ankle	...			12	$12 \times \frac{8}{9}$	'111
Do middle finger (near root)	...			4	$4 \times \frac{8}{9}$	'037
Do middle toe (near root)	...			5	$5 \times \frac{8}{9}$	'046

I give below the text in original from which the above proportions have been taken.

नवताल प्रमाणे तु मुखं तालिमितं स्मृतम् ।

चतुरङ्गुलं ललाटं स्यादधो नासा तथैव च ॥८०

नासिकाधश्च हन्वन्तं चतुरङ्गुलमीरितम् ।

चतुरङ्गुला भवेद् शीवा तालेन हृदयं पुनः ॥८१

नाभिस्तस्मादधः कार्श्या तालेनैकेन शोभिता ।



नाभ्यधश्च भवेन्मोदं भागेनैकेन वा पुनः ॥८२
 द्विताली ह्यायतावुरु जानुनी चतुरङ्गले ।
 जङ्घे जरुसमे कार्ये गुल्फविश्वतुरङ्गलम् ॥८३
 नवतालात्मकमिदमूर्ध्वमानं बुधैः स्मृतम् ॥८४
 शिखावधि तु केशान्तं त्र्यङ्गुलं सर्व्यमानतः ।
 दिशानया च विभजेत् सप्ताष्टदशतालिकम् ॥८५
 चतुस्तालात्मकौ बाह्व ह्यङ्गुल्यन्तावुदाहृतौ ।
 स्कन्धादि कूर्परान्तं च विंशत्यङ्गुलमुत्तमम् ॥८६
 त्रयोदशाङ्गुलं चाधः कक्षायाः कूर्परान्तकम् ।
 अष्टाविंशत्यङ्गुलस्तु मध्यमान्तः करः स्मृतः ॥८७
 सप्ताङ्गुलं करतलं मध्या पञ्चाङ्गुला मता ।
 सार्धत्रयाङ्गुलीऽगुष्ठस्तर्जनीमूलपर्व्वभाक् ॥८८
 पर्व्व्वयात्मकोऽन्यासां पर्वाणि त्रीणि त्रीणि तु ।
 अर्द्धाङ्गुलिनाङ्गुलेन हीनानामा च तर्जनी ।
 कनिष्ठिकानामिकातोऽङ्गुलीना च प्रकीर्त्तिता ॥८९
 चतुर्दशाङ्गुलौ पादौ ह्यङ्गुष्ठो द्वाङ्गुलो मतः ।
 सार्धद्वयाङ्गुलोऽङ्गुष्ठस्तन्मिता वा प्रदेशिनी ।
 प्रदेशिनी द्वाङ्गुला तु सार्द्धाङ्गुलमथेतराः ॥९०
 शिरोऽङ्गितौ पाणिपादौ गूढगुल्फौ प्रकीर्त्तितौ ॥९१

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शास्त्रमानविहीनं यदरम्यं तद्विपश्चिताम् ।
 अष्टाङ्गुलं ललाटं स्यात् तावन्मात्रौ भ्रुवौ मतौ ॥९२
 अर्द्धाङ्गुला भ्रुवोर्लिखा मध्ये धनुरिवायता ।



नेत्रे च चाङ्गुला यामे द्वाङ्गुले विस्तृते शुभे ॥१०७
 तारका तत्तृतीयांशा नेत्रयोः कृष्णरूपिणी ।
 द्वाङ्गुलं तु भ्रुवोर्मध्यं नासामूलमथाङ्गुलम् ॥१०८
 नासाग्रविस्तरं तद्वद् द्वाङ्गुलं तद्वलिद्वयम् ।
 शुकनासाकृतिर्नासा पुष्पवद् द्विविधा शुभा ॥१०९
 पिष्पावसदृशं नासापुटयुग्मं सुशोभनम् ॥११०
 कर्णौ च भ्रूसमी च यौ दीर्घौ च चतुरङ्गुली ।
 कर्णपालीत्यङ्गुला स्यात् स्थूला चाद्वाङ्गुला मता ॥१११
 नासावंशोऽद्वाङ्गुलस्तु कृष्णः सार्धङ्गुलीनतः ॥११२
 ग्रीवामूलाच्च स्कन्धान्तमष्टाङ्गुलमुदाहृतम् ।
 बाह्वन्तरं द्वितालं स्यात् तालमात्रं स्तनान्तरम् ॥११३
 षोडशाङ्गुलमात्रं तु कर्णयोरन्तरं चतुर्तम् ।
 कर्णहन्वग्रान्तरं तु सदैवाष्टाङ्गुलं मतम् ॥११४
 नासा कर्णान्तरं तद्वत् तद्वच्च कर्णनेत्रयोः ।
 मुखं तालद्वतीयांशमोष्ठावद्वाङ्गुली मतौ ॥११५
 द्वात्रिंशदङ्गुलः प्रोक्तः परिधिर्मस्तकस्य च ।
 दशाङ्गुला विस्तृतिस्तद् द्वादशाङ्गुलदीर्घता ॥११६
 ग्रीवामूलस्य परिधिर्द्वाविंशत्यङ्गुलात्मकः ।
 हृन्मध्यपरिधिर्न्ययश्चतुःपञ्चाशदङ्गुलः ॥११७
 हीनाङ्गुलं चतुस्तालं परिधिर्हृदयस्य च ।
 आस्तनान् पृष्ठदेशान्ता पृथुता द्वादशाङ्गुला ॥११८
 सार्धत्रितालपरिधिः कव्याश्च द्वाङ्गुलाधिकः ।
 चतुरङ्गुलं उत्सेधो विस्तारः स्यात् षडङ्गुलः ॥११९
 पञ्चाङ्गागे नितम्बस्य स्त्रीणामङ्गुलतोऽधिकः ।



बाह्यमूलपरिधिः षोडशाष्टादशाङ्गुलः ॥१२०
 हस्तमूलाग्र परिधियत्तुर्दशदशाङ्गुलः ।
 पञ्चाङ्गुला पादकरतलयोर्विस्तृतिः स्मृता ॥१२१
 ऊरुमूलस्य परिधिर्द्वाविंशदङ्गुलात्मकः ।
 जनविंशत्यङ्गुलः स्यादूर्ध्वग्रपरिधिः स्मृतः ॥१२२
 जङ्घामूलाग्रपरिधिः षोडश द्वादशाङ्गुलः ।
 मध्यमामूलपरिधिर्विज्ञेयश्चतुरङ्गुलः ॥१२३
 तर्जन्यनामिकामूलपरिधिः सार्द्धत्राङ्गुलः ।
 कनिष्ठिकायाः परिधिर्मूले त्र्यङ्गुल एव हि ॥१२४
 स्वमूलपरिधेः पादहीनोऽग्रे परिधिः स्मृतः ।
 हस्तपादाङ्गुष्ठयोश्च चतुःपञ्चाङ्गुलं क्रमात् ॥१२५
 शूक्तनीतिसारे चतुर्थाध्यायस्य चतुर्थप्रकरणम् ।

Tabular Statement—(B), showing the measurements of a full-grown adult as compared with Sapta Tala proportions.

Limbs of the body.	Measurements taken.	Relative proportions deduced.	Relative proportions for a Sapta Tala image
Height of the full-grown adult	5'—6 $\frac{1}{2}$ "	1	1
Head	9 $\frac{1}{2}$ "	'142	'142
Forehead	2 $\frac{1}{2}$ "	'037	'047
Nose	2 $\frac{1}{2}$ "	'037	'047
Nose to chin	2 $\frac{1}{2}$ "	'041	'047
Neck to breast	9 $\frac{1}{2}$ "	'142	'142
Breast to navel	10"	'150	'142
Knee	2 $\frac{1}{2}$ "	'037	'047
Arm up to the finger ends	2'—6"	'451	'568
Arm from shoulder to elbow	1'—1"	'195	'238
Arm from armpit to elbow	10"	'150	'120



Limb of the body.	Measurements taken.	Relative proportions deduced.	Relative proportions for a Sapta Tala image.
Palm	4 $\frac{1}{8}$ "	'061	'064
Middle finger	3 $\frac{1}{4}$ "	'048	'046
Thumb	2 $\frac{1}{2}$ "	'037	'032
Index finger	2 $\frac{3}{4}$ "	'041	'0277
Ring finger	2 $\frac{7}{8}$ "	'043	'0277
Little finger	2 $\frac{1}{4}$ "	'033	'018
Foot	10 $\frac{1}{4}$ "	'154	'129
Great toe	2	'03	'018
Forehead (length)	5 $\frac{1}{4}$ "	'078	'074
Eyebrows (end to end)	5 $\frac{1}{4}$ "	'078	'074
Eye (length)	6 $\frac{1}{2}$ "	'022	'0277
" (width)	6 $\frac{3}{4}$ "	'011	'018
Ear (length)	2 $\frac{1}{2}$ "	'037	'037
" (breadth)	1 $\frac{3}{4}$ "	'026	'0277
Neck to shoulder	5 $\frac{1}{4}$ "	'070	'074
Breast between arms	1'-2"	'21	'222
" " teats	9"	'135	'111
Face between ears	9"	'135	'148
Ear to chin (curved length)	5 $\frac{1}{4}$ "	'078	'074
Ear to nose (do)	5"	'075	'074
Ear to eye	3 $\frac{5}{8}$ "	'039	'037
Circumference of head	1'	'33	'296