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PART III.

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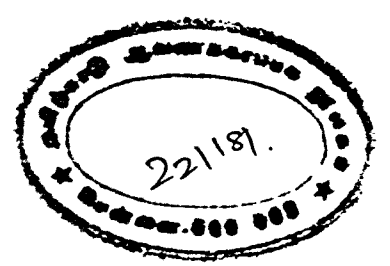
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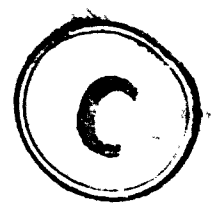
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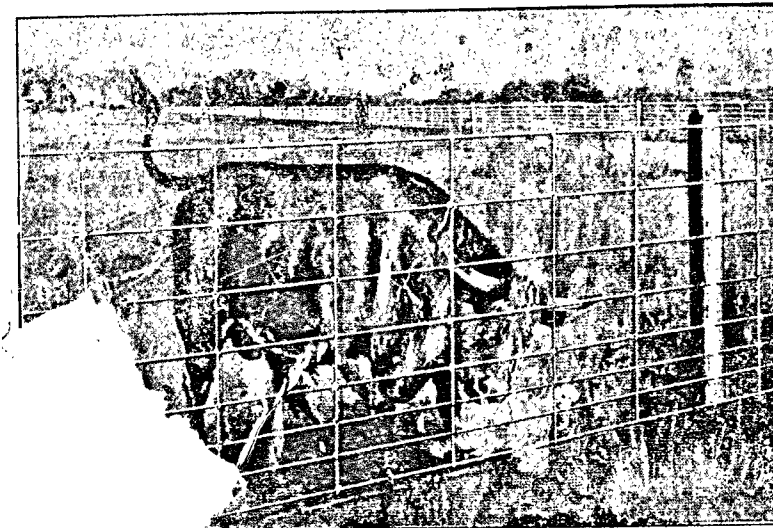
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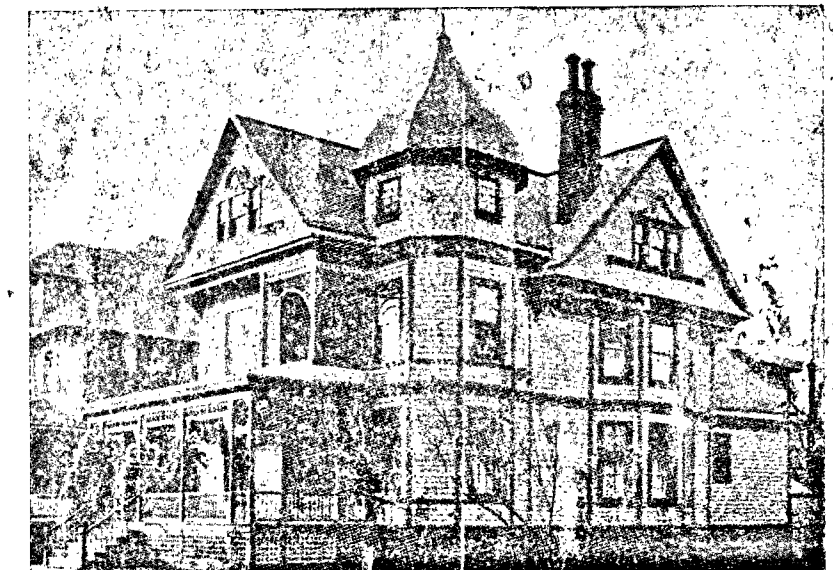
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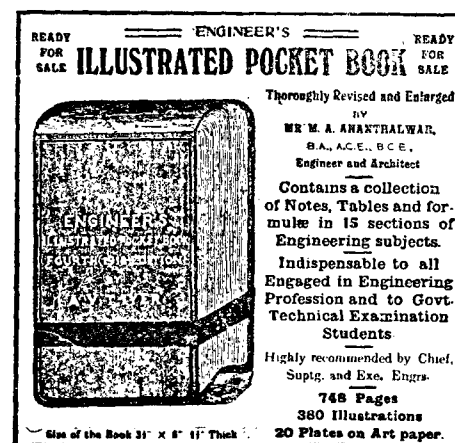
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Maharana Shri Mohandevji Narandevji Maharajah Saheb of Dharmapur.

Maharana Shri Mohandevji Narandevji, Maharaja Saheb of Dharam-
pur, was born on 9th January 1863. He came to the Gadi on 7th August
1891 at the age of 28. He is one of the enlightened rulers of modern
India who has had liberal education at the Rajkumar College, Rajkot. He
is very popular among his raiyats on account of his nobility of mind,
strength of character and charity. He takes great interest in educating his
subjects who for the most part belong to the backward Kaliparaj caste.
He has opened many schools in different parts of his territory including
a High School in the capital town. Education is given free in the whole
state and scholarships are awarded to deserving pupils to prosecute College and
other advanced studies. The Maharana has natural aptitude for **architecture**

and takes keen interest in it. He is a prince of active habits and is a great sportsman. As a High class Rajput of Solar dynasty he is a staunch adherent of the ancient religion of his forefathers. His charities are numerous. He has built many temples and has contributed large sums of money to deserving movements of a philanthropic character. There are many dispensaries for affording free medical relief to his rayats. He has abolished the cruel practice of sacrificing a large number of animals on festive occasions and in many other ways manifested a spirit of reform. He is second to none in his loyalty to the British Government. In January 1917 his rayats and well-wishers celebrated in a very enthusiastic manner and in a very elaborate scale the Jubilee of his 25 years' rule. He has two Kumars and one grand Kumar and is entitled to a salute of 9 guns.

The above are some of the units of measurements which have fallen into disuse as the *śilpis* got replaced by builders and architects of the modern type; the latter class are accustomed to use either the English, the French or other European unit for their measurements. With the comparative knowledge of the measurements as demonstrated in the previous pages, we will be in a position to study and appreciate the older proportions of structures and temples. Some *śilpis* devoted their whole study and practice of these measurements in the construction of religious structures; a few studied and applied themselves to the construction of houses, and another class to the making of idols for deities.

Viśva-bōdhāyana had, as stated in the Table in page 34, composed 50,000 *granthas*, enunciating rules for the construction of human habitations and for the making of idols for the deities. Sage *Chitra-sāra*, *Kāśyapa* and *Nala*, who sat at the feet of *Viśva-bōdhāyana* in the regions of the Himalayas, did also compose several verses; and, of these, the sage *Chitra-sāra* gave his chief attention to the building of human dwelling-houses only. This *śilpi*-sage should not be confounded with the other *Chitra-sāra*, a *Gandharva*, who was known as an adept in the art of building *Rathas* or cars for deities. *Chitra-sāra*, the *Śilpi*-sage deals, in great detail, on the ten modes of measurements which are formulated in the *Kāṁikāgama*. The ten varieties of the *Vāstu* or building-sites and their admeasurements according to the old canons will be taken up in the next chapter.

According to the *Chitrasāra Śilpa*, the measurements of structures are made in six ways, and no building can, according to him, be constructed without adopting all the six kinds of measurements. Besides these six, there are two other *mānas* or measurements known as *mānāṅgula* and *mātrāṅgula*, which are used exclusively for the making of idols, for the determination of their proportions, etc. The six different *mānas* pertaining to structures are known as:—

- i. *Māna* or the longitudinal measurements of sites extending east to west or north to south.
- ii. *Pramāṇa* or the breadthwise measurements of the sites.
- iii. *Unmāna* or the measurements of heights or thickness.
- iv. *Parimāṇa* or the measurements of depths.
- v. *Upamāna* or the measurements of slopes or curves.
- vi. *Lambamāna* or the measurements of verticals.

It would be useful to know the terms that are used as synonymous with the above six ways of measuring, as different words often occur

in the course of the explanations to express the same kind of measurement. The following is the text for the same as found in the *Chitrāsāra-Śilpa* :—

“ मानं प्रमाणमुन्मानं परिमाणोपमानकौ । लंबमानं षडैतानि मानानि कथयाम्यहम् ॥
आयाममायतं दीर्घं मानपर्यायवाचकम् । विस्तारं विस्तरं तारं विततं विस्तृतं ततम् ॥
तथैव विद्वत्विद्यासो विस्तारं विपुलं ततः । विष्कम्भं च विशालं च प्रमाणमिति कीर्तितम् ॥
हलं नीत्रं घनं विद्यात्प्रमाणे तु परिग्रहम् । उच्छ्रयं तुङ्गमुच्छ्रायमुन्नतं चोदयं तथा ॥
उत्सेधमुच्चमूर्ध्वं चाप्युन्मानमिति कीर्तितम् । निष्कमो निष्कृतिश्चैव निर्गमो निर्गतिस्तथा ॥
उदगमश्चोदगतिश्चैव उदगं पर्यायमुन्नतम् । इमान्युन्मानवर्गाणि प्रवेशश्च नतं तथा ॥
परिणाहं च नाहं च पृतिश्च पृतिरावृत्तम् । परिमाणमिति ख्यातं नीत्रं विवरमन्तरम् ॥
उपमानमिति ज्ञेयं लंबमानमथोच्यते । सूत्राणि लंबयित्वा तु प्रतिमां मानयेत्तथा ॥ तल्लंबमानमित्युक्तम् ”

“ *Mānam pramānam unmānam parimānōpamānakān* ;
Lambamānam shadāitāni māmāni kathayāmyaham ;
Āyamam āyatam dirgham māna paryāya-vāchakam ,
Vistāram vistaram tāram vitatam vistrītam tatam ;
Tathāiva vihrītir-vyāsō vistāri-vipulam tatah ,
Vishkam̐bham cha visālam cha pramānam iti kirtitam ;
Halam nirvam ghanam vidyāt pramānē-tu-parigraham ;
Ucchrayam tungam ucchrayam-unnatam chōdayam tathā ,
Utsēdham-uccham-urāhvanchā-pyūnmāmam-iti kirtitam ;
Nishkramō nishkritiś chāiva nirgamō nirgatis-tathā ;
Udgamas chōdgatischāiva udgam paryāyam unnatam ;
Imānyunmānavargāni pravēśascha natam tathā ,
Parināham cha nāham cha prītischa prītirāvritam ;
Parimānam-iti khyātam nirvam vicaram antaram ,
Upamānam-iti jñeyam lambamānam athōchyatē ;
Sūtrāni lambayitvā tu-pratimām-mānayēt tathā ,
Tal-lambamānam ityuktam..... ; ”

From *Kāmikāgama*.

The method of taking each such measurement is elaborated and the *Śilpis* are instructed to take particular note of these during construction, on pain of committing the worst sins and submitting themselves to the cruellest of divine visitations and punishments.

CHAPTER III.

ON THE VĀSTU OR BUILDING SITES.

The third *Adhyāya* of the *Mānasāra* describes the determination of *Vāstu* or sites suitable for villages, buildings, etc. But the order in which the *Śilpa-śāstra* is treated in the *Kāmikāgama* is slightly different, but in the main the same, as may be gathered from the following few verses quoted from the *Kāmikāgama* :—

“ ग्रामादीनां तु विन्यासो निवेशादिश्च कथ्यते । आदौ कालपरीक्षा स्यात् द्वितीयो देशनिर्णयः ॥
तृतीया भूपरीक्षा स्यात्प्रवेशार्थबलिस्ततः । स्वाकारः पञ्चमो भूमेः षष्ठः कर्षणमुच्यते ॥
शंकुसंस्थापनं पश्चादष्टमः पदनिर्णयः । नवमः सूत्रविन्यासो दशमो देवताबलिः ॥
गृहवीथ्यादिभेदः स्यादेकादश उदाहृतः । द्वादशो गर्भविन्यासस्ततो देवनिवेशनम् ॥ ”

“ *Grāmādinām tu vinyāsō-nivēśādīścha kathyatē* ,
Ādāu kālaparikshā syāt dwitīyō dēsanirnayah ;
Tritīyā bhū-parikshā syāt pravēśārtha-balis-tatah ,
Swikārah-panchamō-bhūmēh shashtah karshanam-uchyatē ;
Sanku samsthāpanam paschāt ashtamah pada-nirnayah ;
Navamas-sūtravinyāsō dasamō dēvatā balih ,
Griha-vidhyādi-bhēdas-syāt-ēkādasa udāhritah ;
Dvādasō garbhavinyāsas-tatō dēvanivēśanam . ”

From *Kāmikāgama* 33rd *Patala* or *Chapter*.

The order according to the *Kāmikāgama* is mainly as follows :—

- The investigation of suitable time for the commencement of buildings.
- The fixing of the sites.
- The examination of the soils.
- The sacrificial rites intended to ward off troubles due to flaws in the sites.
- The apportionment of places for the different parts of structures.
- The plough and the operation of levelling the sites.
- The determination of the points of the compass and the Orientation.
- The fixing of the foundations.
- The setting-out by lines and measurements.
- The sacrificial rites again before starting the work.
- The laying-out of the verandahs attached to buildings.

- xii. The ceremony of laying down a vessel containing gold, silver, copper, iron, lead, etc., near the main entrance or in the middle of the site.

It is curious that this custom noted in (xii) above, still survives in a refined form even among the Western nations in the ceremonials connected with the laying of the foundation-stone to important buildings.

In a work called *Vihagendra-Samhita* in the *Pāncharātrāgama*, there is another sub-head called *Dravya-Sangrahaṇa*, corresponding to the *Collection of Materials*, which properly should go between sub-heads (ii) and (iii) above. For the purpose of this work, we follow the order in which the subjects are taken up in the *Mānasāra* and explain in this chapter the determination of building sites or *Vāstu*, according to that book.

Vāstu (derived from the Sanskrit root वस=निवासे or *Vasa*, to dwell,) is the long-established name given to localities suited for the habitation of human beings.

Vāstu is classified in an address of *Śiva* to his Divine consort *Pārvatī*, in the *Kāmikāgama* into two kinds, thus :—

- i. स्थलप्रधानवास्तु, *Sthala-pradhāna vāstu* or building sites which are selected on account of the appropriate qualities of the soil met with in them.
- ii. जलप्रधानवास्तु, *Jala-pradhāna vāstu* or building sites which are selected in due regard to the suitability of water for purposes of human use.

The *Sthala-pradhāna vāstu* is again of two kinds; viz. *Harṇyādi* or *stationary Vāstu* and *Paryāṇkādi* or *portable vāstu*. The first comprises of the sites that are suitable for the location of structures of a permanent nature like temples, *maṇḍapas*, palaces, *sabhās* or courts, theatres and halls etc.

The above *Harṇyādi Vāstu* is differentiated in general terms by the *Śilpis* as under :—

- i. *Brahmajāti-Vāstu* or localities suited for the habitation of the *Brahmins*.
- ii. *Kshatriyajāti-Vāstu* or localities suited for the habitation of the *Kshatriyas*.
- iii. *Vaiśyajāti-Vāstu* or localities suited for the habitation of the *Vaiśyas*.
- iv. *Śūdrājāti-Vāstu* or localities suited for the habitation of *Śūdras*.

Of these four classes of *Vāstus*, the class to which a particular locality belongs can be determined by the examination of the nature of the soil, of its colour, smell, form and consistency etc. The soil of the site and the water available have to be both carefully investigated for the purpose of the above *vāstu*.

The second variety, the *Paryāṇkādi* or *portable Vāstu* relates to sites on which can be placed or lodged coaches, palanquins, cradles and the like, also stables for horses and elephants, temporary sheds, tents etc.

The *Paryāṇkādi vāstu* is likewise sub-divided into four classes as under :—

- i. *Syandana* or cars or vehicles moved by wheels.
- ii. *Śibika* or palanquins, cradles, etc., that are moved by men.
- iii. *Yāna* or draft animals used for dragging vehicles, such as horses, elephants etc., and
- iv. *Śayana* or cots, tents etc., which may be moved from place to place, at one's discretion.

In the choice of the above particulars, attention should be paid to look for suitable tree-shades, grass and herbage of the locality.

The *Jala-pradhāna-vāstu* is in three varieties, viz.,

- i. जांगलदेश, *Jangala-dēṣa* (*Dēṣa* here signifies *vāstu*) or sites where sub-soil water is met with in great depth and in small quantity amidst large excavations, through hard gravelly soil. The water met with will be brackish. The trees which grow on such sites are of the plantain, palmyra and jack varieties.
- ii. आनूपदेश, *Anūpa-dēṣa* or sites where water is met with, in which fragrant flowers like the red lotus, *nilōtpala* etc., flourish best. The water is tapped amidst fine white sand. Sometimes water fit for irrigation sprouts up from such a site profusely. Here flourish all sorts of superior vegetation which yield fragrant flowers, delicious fruits and delightful herbage congenial in all seasons to human enjoyment and
- iii. साधारणदेश, *Sādharāṇa-dēṣa* or the sites where the intermingling of the qualities of both (i) and (ii) are found.

The above classification of the sites is expressed in the following stanzas from the *Kāmikāgama Śilpa* :—

“ स्थिरं गुरुतरं भूरिशर्करं क्षारवारि च । युक्तमल्पीयसात्यन्तं स्वातेऽगधेऽपि जांगलम् ॥
कशेरुहैरवाकीर्णं रुढसौगन्धिकोत्पलम् । सूक्ष्मवालुकमानूपं कृषिकृत्युच्चलज्जलम् ॥
जांगलानूपसंमिश्रगुणं साधारणं मतम् । जांगलं कदलीतालपनसादितरुद्रवम् ॥

सर्वस्योचितं पुष्पफलवृक्षसुखोदयस् । सर्वसुखं सर्वहितमानूपमिष्यते ॥
तयोः संपर्कसंयुक्तं साधारणमुदाहृतम् । ”

Sthiram gurutaram bhūri-sarkaram kshāravāri cha;
Yuktam-alpiyasātyantam khātē gādhepi jāngalam;
Kasāruhāiravākirnam riidha sāngandhikōtpalam;
Sūkshmaśūlakamānūpam krishikṛityucchalajalam;
Jāngalānūpasammisra-gunam Sādhāranam matam;
Jāngalam kadalitāla panasādi-tarīdabhavam;
Sarvasasyōchitam pushpaphalavriksha-sukhodayam;
Sarvartu-sukhadam-sarva hitamānūpam ishyatē;
Tayōs samparkasamyuktam sādharanam udāhritam.

From *Kāmikāgama*.

The architects further divided the *Jala-pradhāna vāstu*, in the common language of the *Śilpis*, by ten or twelve nomenclatures known as *Śaiva*, *Brāhma*, *Vaishnava*, *Āindra*, *Āksha*, *Bhāutika*, *Āsura*, *Pisācha*, *Vārūṇa*, *Āgnēya*, etc., according to the species of vegetations, trees, creepers, and also according to the varieties of animals that lived and flourished over the soil. The classification is explained in the *Kāmikāgama śilpa* in the following verses :—

“ शैवं ब्राह्मं तथा वास्तु वैष्णवं चैन्द्रमेव च । अक्षि च भौतिकं चैव आसुरं च पिशाचकम् ॥
राक्षसं चैव वायव्यं वायव्याग्नेयकौ तथा । जानीयाल्लक्षणैरेतैर्भूगुणं देशिकोत्तमः ॥
कर्णिकारजुनाश्वत्थकपित्थाशोकधातकैः । स्थलारविन्दतुलसीदूर्वाभिर्व्यापृता मही ॥
विष्णुकान्ताखुकर्णभ्यां शाल्मलीगिरिशारिबैः । कपोतशुकहंसैश्च शैवी सा शुभदा मही ॥
बिल्वे. पलाशैर्देवैश्च कुशैश्च हरिणैस्तथा । होमद्रव्यैः सुगन्धैश्च भूर्वाह्वी शुभदा मता ॥
तिन्दुकैस्तिन्त्रिणीभिश्च करजैर्वैष्णुभिस्तथा । कार्पासार्कजपाभिश्च हंसपक्षिभ्यस्तथा ॥
निष्कण्टकैस्तथा वृक्षैर्या भूमिः सहिता भवेत् । वैष्णवी भूः समाख्याता शौर्यवीर्यप्रदा नृणाम् ॥
कदलीपनसाग्रेश्च पुत्रागैर्वकुलैस्तथा । पाटलेः सिन्धुवारैश्च तथा चामलकैः पुनः ॥
इन्दीवारैश्च वैश्यैश्च शूद्रैरेन्द्री मही मता । पाटल्यगरुगन्धाढया धनधान्यसमृद्धिदा ॥
अंकोलैश्च तथा वृक्षैर्माजालैर्नकुलैस्तथा । शशगोधाचकोरैश्च वृक्षैरौष्ठा मही मता ॥
शौर्यवीर्यकरी सा स्यात्प्रजासंपत्समृद्धिदा । निर्गुण्डीमाधवीदूर्वायंकोलैः किशुकैस्तथा ॥
मल्लिकाकरवीरैश्च मधुकैर्भौतिकी मता । अन्नदा पुष्टिदा नृणां भस्मगन्धसमन्विता ॥
भल्लातकैर्महावृक्षैर्दुष्टसत्त्वैः पलाण्डुभिः । किरातैः ककुभैर्मैत्रैः भूतैः सर्वैः समन्विता ॥
आसुरी युद्धदा भूमिः पिशाची पूतिगन्धिनी । या पूगौरावृता भूमिर्वाहणी सर्वसिद्धिदा ॥
सुहिस्लेष्मातकायैश्च संयुक्ता शुद्रशर्करैः । ऊपरा तोयहानि च आग्नेयी सर्वनाशिनी ॥ ”

“ *Sāivam brāhṁam tathā vāstu vaishnavam chāindramēva cha;*
Āksham cha Bhāutikam chāiva Āsuram cha Pisāchakam;
Rākshasam chāiva Vāyavyam Vārūṇyāgnēyakāu tathā;

Jāniyāllakshanāirētāu bhūgunam desikōttamah;
Karnikārārjunāswattha-kapitthāsokadhatakāih;
Sthalaravinda-tulasi-dūrvābhivyāpritā mahi;
Vishmukrāntā khukarnābhyām sālmaligiri sārībāih;
Kapōta suka hamsāischa sārē sa sūbhada mahi;
Bilvāih palāsāir-darbhaīscha kusāischa harināis-tathā;
Hōmad-dravyais sugandhāischa bhūrbrāmhi sūbhada matā
Tindukāis-tintrinibhīscha karajāi vēnubhīis tathā;
Kārpāsārkajapābhīis cha hamsapakshi-mrigāis tathā;
Nishkantakāis tathā vrikshāir yā bhūmīs sahita bhavēt;
Vāishnavi bhūis samākhyatā sāuryaviryapradā nrinām;
Kadali-panasāmraīs cha punnāgār-vakulāistathā;
Pātālāih sindhuvārāischa tathā chāmalakāih punah;
Indivārāischa vāisyāischa sūdrārāindri mahi matā;
Pātalyagaru-gandhādya dhana-dhānyasamriddhidā;
Ankōlāischa tathā vrikshāir-mārijālāir nakulāis tathā;
Sasagōdhāchakōrāischa vrikārāikshā mahi matā;
Sāuryaviryakari sa syāt prajāsampat-samriddhidā;
Nirgundī mādHAVI dūrvādyanankōlāih kimsukāistathā;
Mallikā-karavirāischa madhūkair bhautiki matā;
Annadā pushtidā nrinām bhasmaganāna-samanvitā;
Bhallātākāir mahāvrikshāir dushtasatvāih palāndubhih;
Kirātāih kakubhāih grudrāih dhūrtāis sarvāih samanvitā;
Āsuri yuddhadā bhūmih pisāchi pūtigandhini;
Yā pūgaurāvritā bhāmih vārūni sarvasiddhidā;
Smuhishmātakādyaīscha samyuktā kshudrasarkarāih
Usharā tōyahinā chr Agnēyi sarvanāsinī;

From *Kāmikāgama*.

The above classification is according to the main properties of the soil or water met with at the sites. But from these alone, the town-planner or builder has not the full category of all the varieties, to come to a proper decision about the class of site. The *Śilpis* have therefore further sub-divided each of these *vāstus* and gave nomenclatures of their own according to the geometrical form of the site, the smell of its soil, its softness or hardness, the taste of the soil when it was put on the tongue, its fertility and so forth.

It is very definitely stated that three factors usually go to make a place fit for human habitation, the *Sthala* or the soil, the *Tirtha* or the water and the *Mūrti* or the deity. In the formation of villages or in the

selection of *vāstu* sites, the older people paid great attention to the above stated factors. The soil was their first consideration inasmuch as vegetation depended upon the soil and on the sort of vegetation depended also the life and health of the locality.

No less heed was paid to the next factor, the water that was available on the surface or underground, for purposes of washing or drinking. The quality of water and the modes of finding out and tapping the sub-soil sources of supply were all carefully considered and, last but not the least important was, the Deity that presided over the locality and the temple that had to be built for the same.

In the evolution of villages from waste lands and wild areas as also in the evolution of cities, towns and even of house-sites, the ancients had high classic ideals and principles to guide them. They copied Dame Nature and God's creations mostly as they were fully conscious that science was the product of the natural phenomena. They invariably chose localities which appealed to the human sense and emotions as the most agreeable and congenial sites for man's habitation. The experience of the town-planner in every country, but more especially in India has been to select sites for human dwellings only where the maximum of favourable conditions could be procured to ensure the future prosperity of the dwellers. The central and foremost ideas that guided him seem to have universally been,

- (i) spirituality and godliness which could live only amidst cleanliness and sanitary surroundings ;
- (ii) selection of tracts where there were facilities for the growth of fine herbage, fruit and flower trees and where also there were extensive possibilities for agricultural operations. The soil must, for this purpose, be deep and good, and there should be quite a wealth of fresh water to help the vegetable and animal life on the spot.
- (iii) A constant supply of unobstructed sun-light and fresh air.

With this view, sites near the sea coast, river margins, near hillocks and other natural sceneries and around existing temples and tanks were always pitched upon for the construction of villages and towns. House-sites should not be within the range of the shades of mountains, forest trees, or even of temple gópurams.

Thus it was that *vāstu* or the science of the selection of suitable sites for dwelling-houses was a subject which engaged the primary attention of the ancient architects. An incident stated in a South Indian

Tamil work called *Paṭṭiṇappālai* is interesting. A *Chōla* King by name *Karikāl Chōla*, once rode out on his elephant into the adjoining forest where he came across a fat-looking fowl, standing across the way of the elephant, trying to attack him. The king was overtaken by surprise at the boldness of the cock and paused to enquire into the cause of the strange challenge of the tiny bird against the elephant. He soon found that the soil on which the cock flourished was very fertile and that particularly all the birds and animals that lived there thrived quite fat and strong. He at once took up the hint of the fitness of the soil, and ordered a town to be built there which is still known as *Kōliyūr* or the *fowl-city*. The profusely growing fruit and other trees, the delightful tanks full of lotus and other fragrant flowers at once indicated to the shrewd king the fitness of the soil and of the water, and he fixed the spot for the building of his palace, and other healthy dwelling-houses.

Similar views regarding the precautions to be taken in the choice of sites for a city are common amongst other nations also.

That such was the case is found explained in the Greek literature. Amongst the ancient Greeks, the choice of a *healthy situation* for a city was of the first importance. Marcus Vitruvius Pollio states in his Book I of Architecture, Chapter IV, "the neighbourhood of a marshy place must be avoided"; "a city on the sea-side exposed to the south or west will be insalubrious." "Surely much circumspection should be used in the choice of a temperate and healthy site for a city." He adds, "the precepts of the ancients, in this respect, should be ever observed. They always, after sacrifice, carefully inspected the livers of those animals fed on that spot whereon the city was to be built or whereon a stative encampment was intended. If the livers were diseased and livid, they tried others, in order to ascertain whether accident or disease was the cause of the imperfection; but if the greater part of the experiments proved, by the sound and healthy appearance of the livers, that the water and food of the spot were wholesome, they selected it for the garrison. If the reverse, they inferred, as in the case of cattle, so in that of the human body, the water and food of such a place would become pestiferous: and they therefore abandoned it, in search of another, valuing health above all considerations."

A very instructive account of the building of the city of Alexandria in Egypt was given by the above author to his King Cæsar of old. In a conversation between Dinocrates, the Grecian architect, and

King Alexander, the latter addressed Dinocrates thus, when he was making a selection of a wrong site for a city: "I admire the grand outline of your scheme, and am well pleased with it; but I am of opinion he would be much to blame who planted a colony on such a spot. For, as an infant is nourished by the milk of its mother, depending thereon for its progress to maturity, so a city depends on the fertility of the country surrounding it for its riches, its strength in population, and not less for its defence against an enemy. Though your plan might be carried into execution, yet I think it impolitic. I nevertheless request your attendance on me, that I may otherwise avail myself of your ingenuity." From that time Dinocrates was in constant attendance on the king, and followed him into Egypt; where Alexander having perceived a spot, at the same time naturally strong, the centre of the commerce of the country, a land abounding with corn, and having those facilities of transport which the Nile afforded, ordered Dinocrates to build a city whose name should be Alexandria.

The rules regarding the apportionment of parts of the *vāstu* site are also laid down, all with the air and strictness of religion and are practically made mandatory on the *Śilpis* who design or execute works,

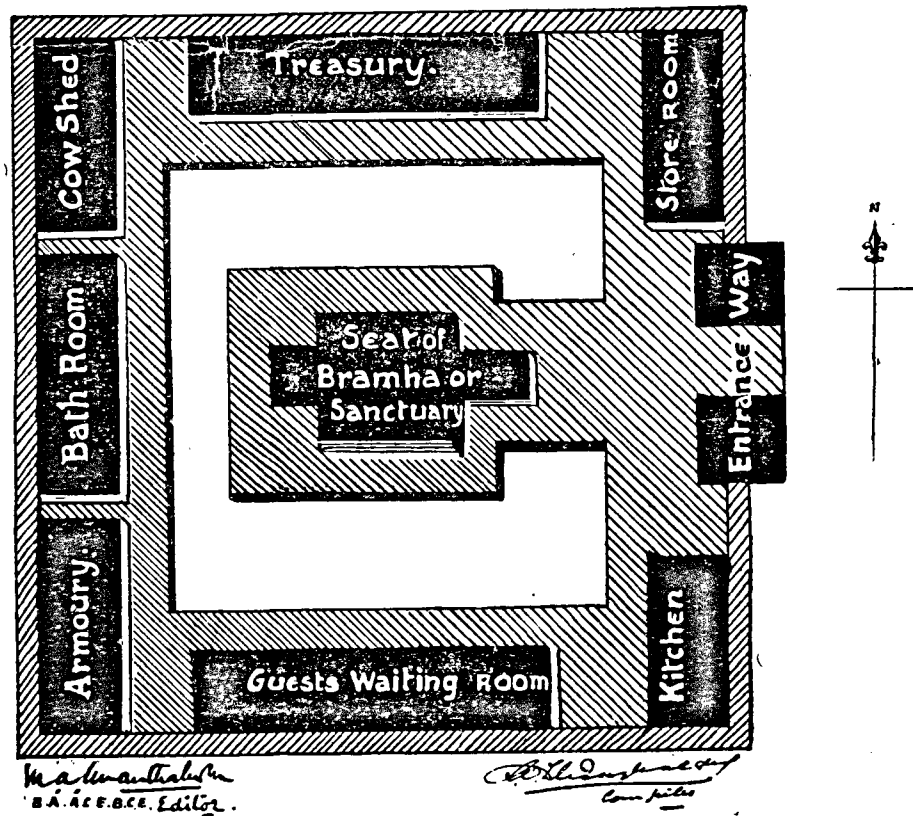


Plate 2:—Diagram showing the positions of rooms in temples according to the Garuda purana.

The apportionment as laid down cannot be said to be meaningless, as long as the law-givers have given great weight to the basic principles of sanitation and hygiology in every one of their rulings. The positions demarcated by them for the different parts of a temple is shown for purposes of clearness diagrammatically in the above sketch prepared in accordance with the *Garuda-purāṇa*.

The following is the text of the Ślōkas:—

“सुरेज्यः पूर्वतः कार्यो दिश्याग्नेय्यां महानसम् । कायनिर्गमनं येन पूर्वतः सूत्रमण्डपम् ॥
गन्धपुष्पगृहं कार्यमैशान्यां पट्टसंयुतम् । भाण्डागारं च कौबेर्यां गोष्ठागारं च वायवे ॥
उदाश्रयं च वाहण्यां वातायनसमन्वितम् । समित्कुशेन्धनस्थानमायुधानां च नैऋते ॥
अभ्यागतालयं रम्यं सशय्यासनपादुकम् । तोयाग्निदीपसंयुक्तं दक्षिणतो भवेत् ॥”
“*Surējyah pūrvataḥ kāryō diśyāgnēyyām mahānasam ;*
Kāyanirgamanam yēna pūrvataḥ sūtramantapam ;
Gandhapushpagriham kāryam āśānyām pāttasamyutam ;
Bhāṇḍāgāram cha kāūbēryām gōsthāgāram cha vāyavē ;
Udāśrayam cha vārunyām vātāyanasamanvitam ;
Samit-kusēndhanasthānam āyudhānam cha nāirite ;
Abhyāgatālayam ramyam sasayyāsana-pādukam ;
Tōyāgnidīpasambhṛityair yuktam dakshinatō bhavē ;

From *Garuda-purāṇa*.

The above plan shows the type according to which the allocation ought to be made; but in some temples, the order has necessarily to be slightly deviated, in which case, there are also alternative rules to be followed.

Similarly, the allocation of rooms in the *Vāstu* for human dwellings is shown in the diagram below.

The following is the text of the Ślōkas:—

“पूर्वादिशि स्नानगृहमाग्नेय्यां पाकमन्दिरम् । दक्षिणे चैव शयनं नैऋत्ये चायुधं गृहम् ॥
पश्चिमे भोजनगृहं वायव्ये पशुमन्दिरम् । भाण्डारं चोत्तरदिशि ऐशान्ये देवमन्दिरम् ॥”
Pūrvā-diśi snānagriham āgnēyyām pākamandiram ;
Dakshinē chāiva sayanam nāirityē chāyudham griham ;
Paschimē bhōjana-griham vāyavyē paśumandiram ;
Bhāṇḍāram chōttaradisi āśānyē devamandiram.”

From *Sanatkumāra griha vāstu*.

Some authors have suggested the allocation of places for the housing purposes differently. The cow-shed for milk-yielding cows should be made on the north; for other cattle, the shed should be on the west. The straw for these should be deposited on the south-west and the manure and rubbish will be thrown on the south-east. Some hold that the kitchen should

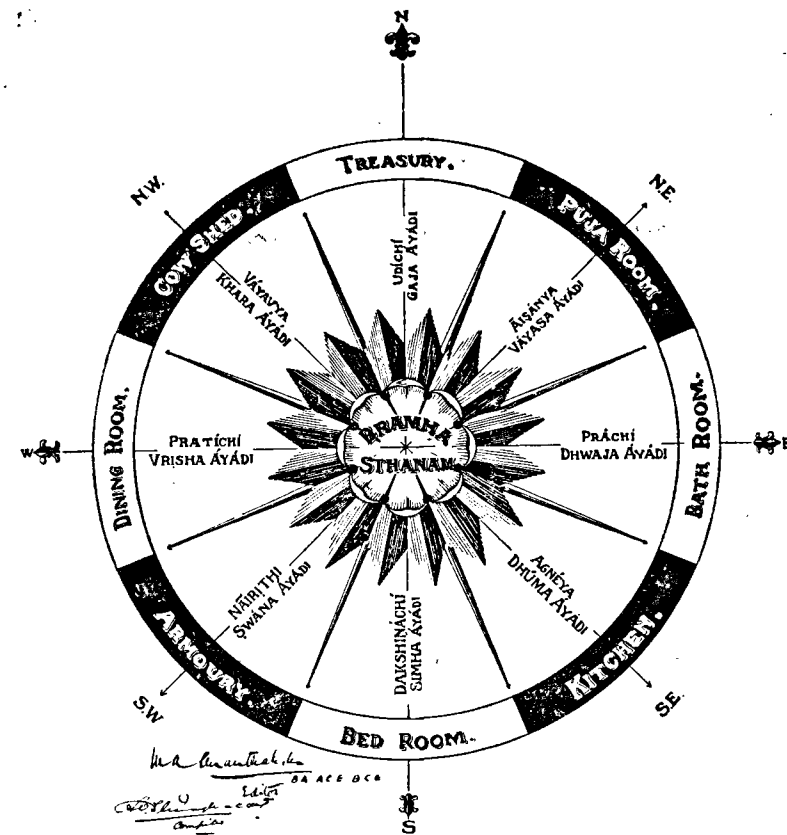


Plate 3.—Diagram showing the arrangement of rooms in a house-vastu, according to the Sanat-kumara Grihavastu.

be located on the north-east, the cattle on the east and the treasury-rooms on the south-east.

Thus, it is more the convenience of the prevailing directions of the winds, the intensity or otherwise of the sun, rain and cold in the locality that should be looked into than any particular rules formulated by any one author.

Another author finds authority for allotting five or seven rooms in each house as compartments for women, as bed room, and for having treasure in the north. He puts the
Place of worship in the north-east. Office and assembly-room on the south,
Dining Hall ... in the east. Store for utensils in the south-west, and
Cooking room in the south-east. Provision room ... in the west.

Privy should be located so as to face the north-west but not exposed to the direct light of the sun and the moon.

Lying-in-room should face the east or north, and kitchen (cooking place, chapel, and dining rooms) should be placed on the south.

Outside the building will be placed the draw-well on the north-east exposed to the sun, cattle shed and garden on the north and stables opposite to the house.

In South India, the custom is to provide for five well-defined parts of a house.

- i. Outer verandah intended to receive visitors.
- ii. The front hall where all rest at night.
- iii. Quadrangular structure with a courtyard in the centre. Dining and religious observances here.
- iv. The kitchen, nursery and toilet requisites, practically women's quarters.
- v. A long and open backyard of the house with well, bathing-shed, latrine, cow-shed, etc.

Two courtyards—inner and outer.

The building sites may be of any of the following seven forms, square, hexagonal, octagonal, oblong east to west, oblong north to south, triangular and circular: according to the *Kamikāgama*, the text runs as follows:—

“ चतुरश्रं समं यत्तु देवानां च द्विजन्मनाम् । अष्टषट्चतुरश्रायुक्तं तु नृपवैश्ययोः ॥
शूद्रस्यापि तथा संख्यं कल्पयेद्देशिकोत्तमः । श्रेष्ठं पूर्वार्धं वास्तु मध्यमं दक्षिणोत्तरम् ॥
मण्डलं च त्रिकोणं च अधमं परिकीर्तितम् ॥ ”

“ Chaturasram samam yattu devānām cha dvijanmanām;
Ashta-shat-chaturasrāya-yuktam tu nripavāisyayor-
Sūdrasyāpi tathā saṅkhyam kalpayet-*desikottamah*;
Śrēṣṭham pūrvārdham vāstu madhyamam dakṣhiṇōttaram;
Mandalam cha trikōnam cha adhamam parikirtitam.”

From *Kāmikāgama*.

- i. Square grounds suitable for the lodgings of Dévas. and Brahmins.
- ii. Hexagonal grounds, suitable for building palaces and mansions for kings and noblemen.
- iii. Octagonal grounds, suitable for the lodgings of Vaisyas or merchants.
- iv. Grounds which are longer east and west are classed as superior sites, suitable for the lodgings of all classes of men.
- v. Grounds which are longer north and south are said to be middling in quality.
- vi. Triangular grounds are classed as inferior and
- vii. Circular grounds are also classed as inferior.

Sites should not be triangular nor in the form of a barrel of a drum, broad in front and narrow at the back, and not close to ditches and pits nor close to water and marshes.

Near sea-coasts and river margins where grounds have to be adjusted according to the lie of the country, the formation of even triangular and circular grounds are permissible.

The above divisions into the seven varieties in form are more or less comprehensive and the suitability or otherwise of these must have been fixed on fairly rational lines, agreeably to the climatic conditions of this country. Though it is not definitely stated why the site for Brahmins should be square, that for a Kshatriya a hexagon, and that for a Vaisya an octagon, the sites extending lengthwise east and west are admittedly superior to those that extend longer north and south, inasmuch as the interior of the buildings constructed on the former can be fully exposed to and bathed daily by the highly disinfectant sun-beams, entering through the main entrances. There are also several rules for the arrangement of the doors and windows and the disposition of open spaces etc., the close adherence to which will safeguard sanitation, proper ventilation and lighting of the interiors of buildings. These details will again be taken up in a future chapter.

In the entire cosmic conception of the Hindus again, the whole Universe is as it were, the body of the Supreme Lord Vishṇu and this underlying motive is beautifully set forth in the following sloka from the *Mahābhārata-Vishṇu Sahasra-nāma* :—

“ भूः पादौ यस्य नः भिरिविदसुरनिलश्चन्द्रसूर्यौ च नेत्रे
कर्णावाशा शिरो द्यौर्मुखमपि दहनो यस्य वास्तोयमब्धिः ।
अन्तस्थं यस्य विश्वं सुरनरखगगोभोगिगन्धर्वदैत्यै-
श्चित्रं रंम्यतेदं त्रिभुवनवपुषं विष्णुमीशं नमामि ॥ ”

*Bhūh pādāu yasya nābhīr-viyadasuranilas Chandrasūryāu cha nētrē
Karnāvasā śirōdyāūr mukhamapi dahanō yasya vāstōyamabdhīh;
Antastham yasya viśwam suranarakhagagōbhōgi gandharwadāityāis.*

Chitram ramramyatēdam tribhuvanavapusham Viṣṇumīsam namāmi;

From *Vishṇu-Sahasranāma*.

His feet are the Earth, His navel is the Sky, His breath is the Wind, the Sun and the Moon are his eyes, the cardinal points are His ears, His head the Heavens, His face the fire, His residence the Ocean, His stomach the different worlds inhabited by the Dévas, men, birds, cattle, snakes, Gandharvas and Āsuras. Similar is the Hindu conception of a village or town and of even a temple or a house. The *Brahmāṇḍa gōla* or the map of the universe as described in the old Purāṇas and published by some Oriental scholars may be perused with interest and it will

show how the conception of the Universe in the form of God can possibly be established. The following is the text explaining this view :—

“ ग्रामः शरीरमंगं स्यादेवमर्त्यपरिग्रहः । उपाङ्गमिति विज्ञेयं विमानभवनादिकम् ॥ ”

Grāmas-sarīramangam syāt-dēvamartya-parigrahaḥ;

Upāṅgamiti vijñēyam vimāna-bhavanādikam.

From *Kāmikāgama*.

Again, in order to show everything as the manifestation of the Supreme Being, the earliest Indian astronomer, Bādarāyaṇa* divides the course of the Sun in the Zodiac into twelve parts of the divine body, round which the sun races during every year.

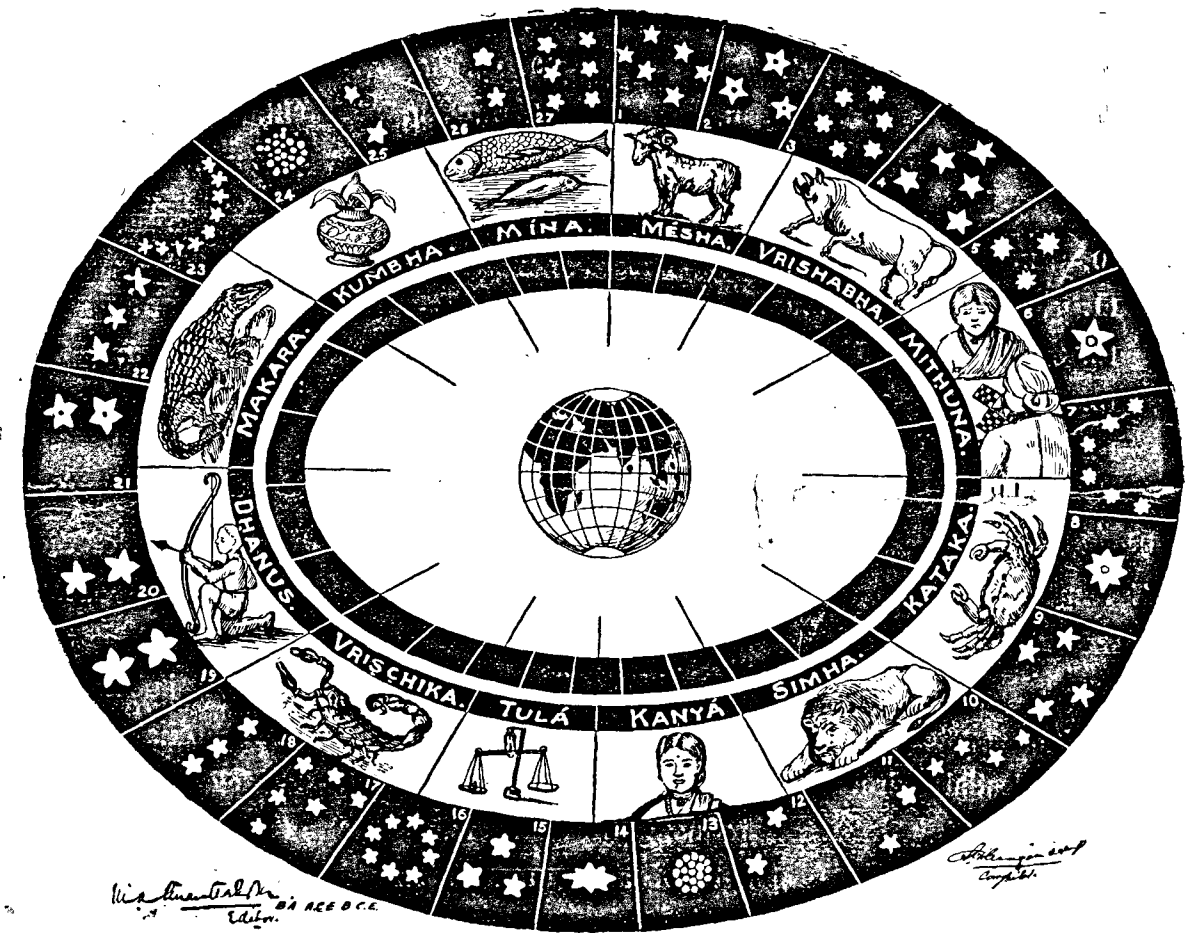


Plate 4.—Showing Sun's Ecliptic and the signs of the Zodiac and the twenty seven constellations.

THE TWELVE SIGNS OF THE ZODIAC.

Sanskrit.	Transliteration.	Greek.	Sanskrit.	Transliteration.	Greek.
1. मेष.	Mēsha	Aries.	5. सिंह.	Simha.	Leo.
2. वृषभ.	Vrīṣabha.	Taurus.	6. कन्या.	Kanyā	Virgo.
3. मिथुन.	Mithuna.	Gemini.	7. तुला.	Tulā	Libra.
4. कटक.	Kataka.	Cancer	8. वृश्चिक.	Vriśchika.	Scorpio.

* Vide Professor Max Muller's translation, in his work "India, what it can teach us?"

THE TWELVE SIGNS OF THE ZODIAC.—(continued).

Sanskrit.	Transliteration.	Greek.	Sanskrit	Transliteration.	Greek.
9. धनुः.	Dhanus.	Sagittarius.	11. कुंभ.	Kumbha.	Aquarius.
10. मकर.	Makara.	Capricornus.	12. मीन.	Mina.	Pisces.

THE TWENTY SEVEN CONSTELLATIONS.

1. अश्विनी.	Aswiní.	15. स्वाती.	Swatí.
2. भरणी.	Bharaní.	16. विशाखा.	Visákhá.
3. कृत्तिका.	Krittiká.	17. अनूराधा.	Anúrādhá.
4. रोहिणी.	Rohiní.	18. ज्येष्ठा.	Jyészthá.
5. मृगशीर्ष.	Mrigasirsha.	19. मूला.	Múlá.
6. आर्द्रा.	Ārdrá.	20. पूर्वाषाढा.	Púrváshádhá.
7. पुनर्वसु.	Punarvasu.	21. उत्तराषाढा.	Uttaráshádhá.
8. पुष्य.	Pushya.	22. श्रवण.	Śravaṇa.
9. आश्लेष.	Āślészha.	23. धनिष्ठा.	Dhanishthá.
10. मखा.	Makhá.	24. शतभिषक्.	Śatabhishak.
11. पूर्वफल्गुनी.	Púrvaphalguni.	25. पूर्वाभाद्रा.	Púrwābhádrá.
12. उत्तरफल्गुनी.	Uttara-phalguni.	26. उत्तराभाद्रा.	Uttarábhádrá.
13. हस्त.	Hasta.	27. रेवती.	Révatí.
14. चित्रा.	Chitrá.		

The Sun's apparent course round the Earth, or more strictly, the Earth's ecliptic round the Sun is divided into twelve Rasis or signs of the Zodiac, as shown in the diagram above. Both the Sanskrit and Greek names of the signs are given for the same. The angle subtended at the centre of the Earth by each of these signs is 30° while that subtended by each constellation is 13°-20'. The course in the heavens thus lies in a big celestial circle on which lie the twenty-seven constellations noted above (according to the Hindus); thus traversing each zodiacal sign, the Earth passes through a length of arc equal to two and a quarter of the stellar regions.

Similarly, the division of the ecliptic into the twenty-seven asterisms is more ancient than even that of the signs of the Zodiac. This division is made in what is known as the starry *Śimṣumara Chakrá* which forms again parts of the Vishṇu in a Yogic posture according to a *mantra* in the *Taittiriya Upanishad*. This idea is further intensified by details in a chapter on *Yōga* in the *Bhāgarata Purāṇa*. This conception of the body of the All-pervading one in every thing mundane was the key-note of the Hindu cosmology, and it is this conception that is drawn down even to the conception of this world, and to the division of countries in them.

their arrangement is exactly that which enables them to produce the least possible effect that can be obtained either from their mass or ornament. Had the four great outer Gópurams formed the sides of a central hall or court and the others gone on diminishing, in three or four directions, to the exterior, the effect of the whole would have been increased in a surprising degree. To accomplish this, however, one other defect must have been remedied. A gateway even one hundred and fifty feet wide in a wall nearly two thousand feet in extent is a solecism nothing can redeem ;

but had the walls been broken in plan or star-shaped, like the plans of Chalukyan temples, light and shade would have been obtained, and due proportions of parts, without any inconvenience. But if the Dravidians ever had it in them to think of such things, it was not during the seventeenth and eighteenth centuries, to which most things in this temple seem to belong."

"The temple which has been most completely marred by this false system of design is that at Srirangam, which is certainly the largest, and, if its principle of design could be reversed, would be one of the finest temples in the South of India. Here the central enclosure is quite as small and as insignificant as that at Trivalúr, and except that its dome is gilt, has nothing to distinguish it from an ordinary village temple."

This view of Fergusson on the constructive principle of the gópuras and vimánas in the Dravidian temple will be gone into in the next chapter. A few more of the architectural details of this ancient temple are illustrated showing some of the very elegant columns and brackets found in this renowned temple.

Plate VIII is a column from a twelve-pillared *manṭapam* situated on the northern side of the fourth court.

* Plate VIII showing the elevation of a stone column in a Manta-pam in the fourth enclosure of the Srirangam Temple.

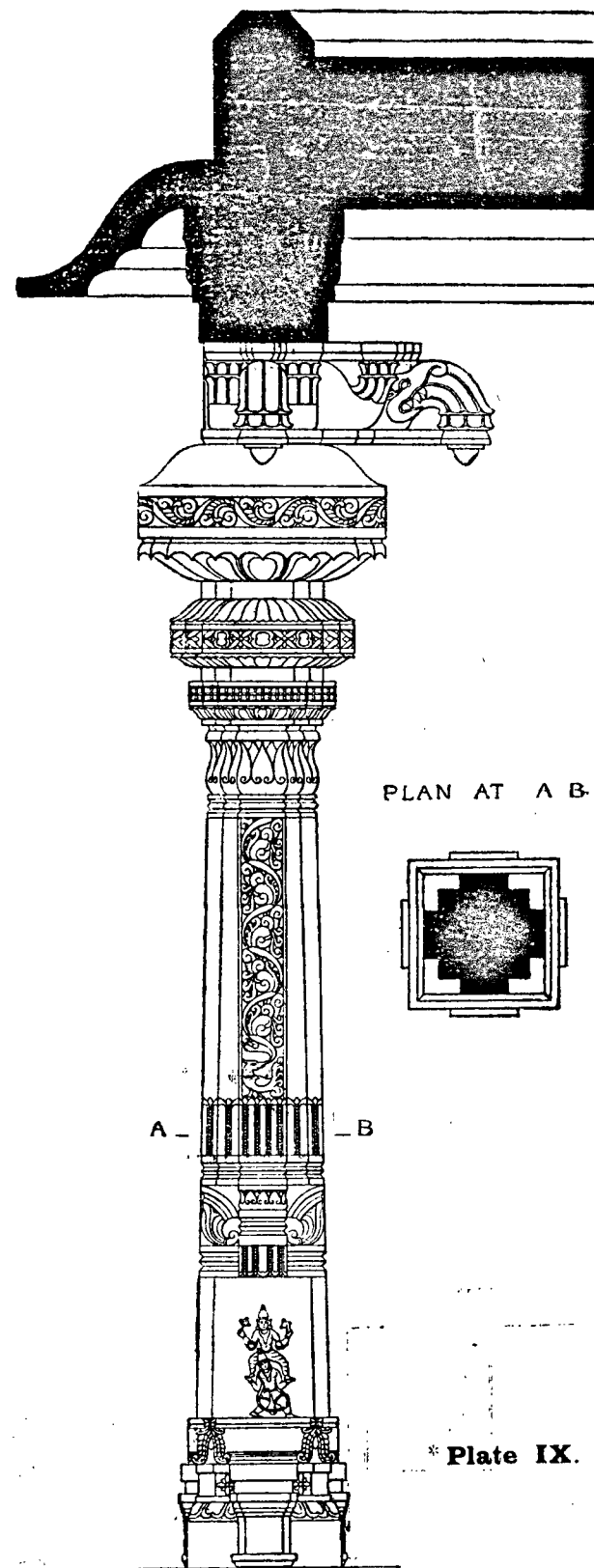
* Drawing adopted from Grigg's National Monuments in India.

B-3.

DRAVIDIAN STYLE

The shaft of the column rises over the head of a sitting lion and is similar in style to the pillars in *Bhimās rath* in Mahabalipuram. This feature of the pillar has also been a favourite one with the Egyptians and the Greeks who likewise made their pillars spring from over the heads of sphinxes or lions. The form of the capital over the shaft has all the appearance of a wooden model, the bulbous and the lotus capital suggesting the idea.

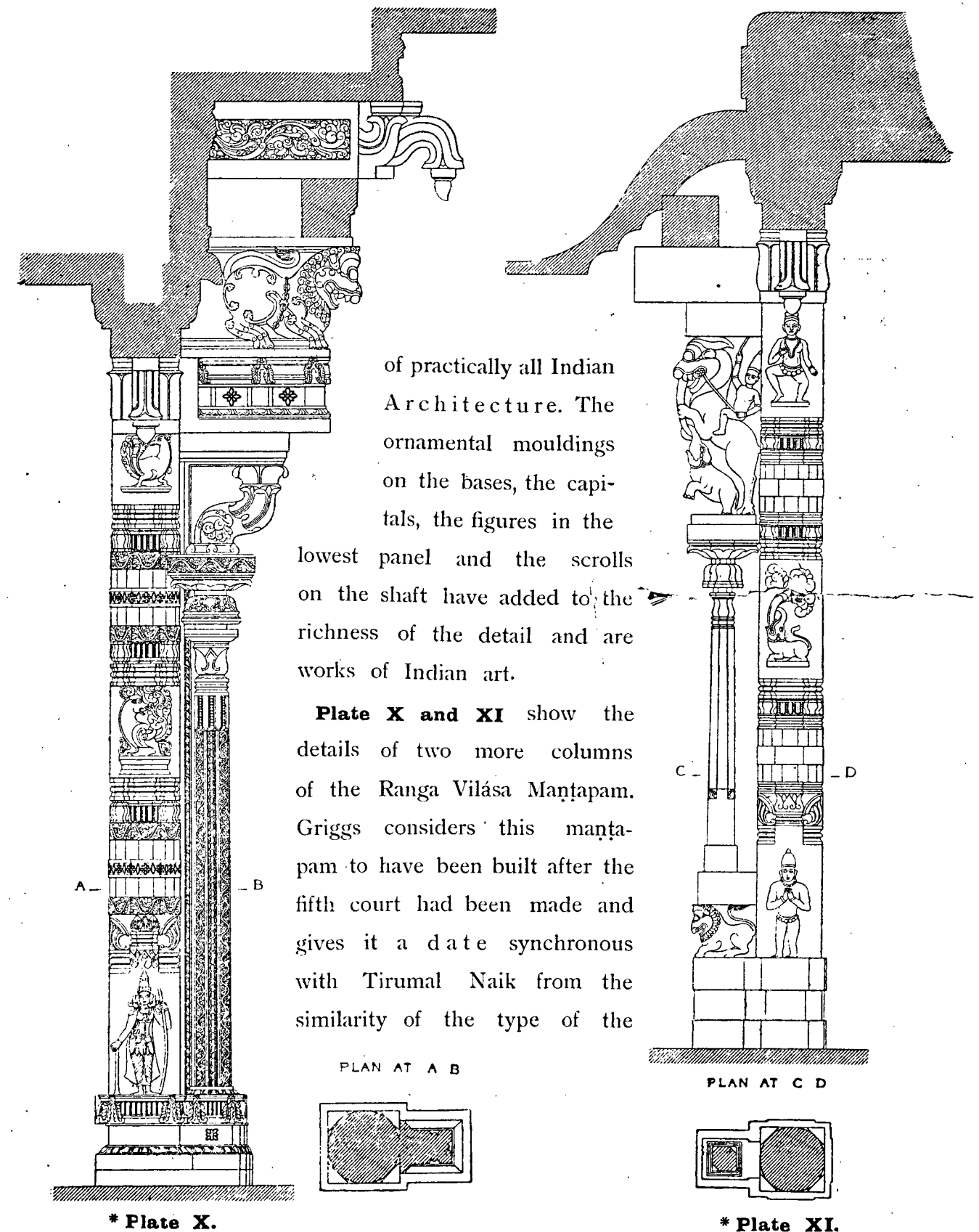
Plate IX is a capital from a Maṇṭapam at Srīrangam. The illustration is the plan and elevation of a handsome pillar in a four-pillared Maṇṭapam situate south of the third *prākāram* of the Srīrangam temple. The shaft is octagonal and is set elegantly over a square base. The shaft is in two parts divided by a polygonal hip as shown in the section at A B. The capital consists of three distinct tiers with the lower and the upper ones in the form of budding and blooming lotuses. It is topped over by a handsome corbel over which is imposed the beam and the entabla-



* Plate IX.

* Plan and elevation of one type of column with section of the roof shown at the top.

ture. The arrangement of the projecting eaves leading down the terrace waters over an S curve is a characteristic feature of the Dravidian and

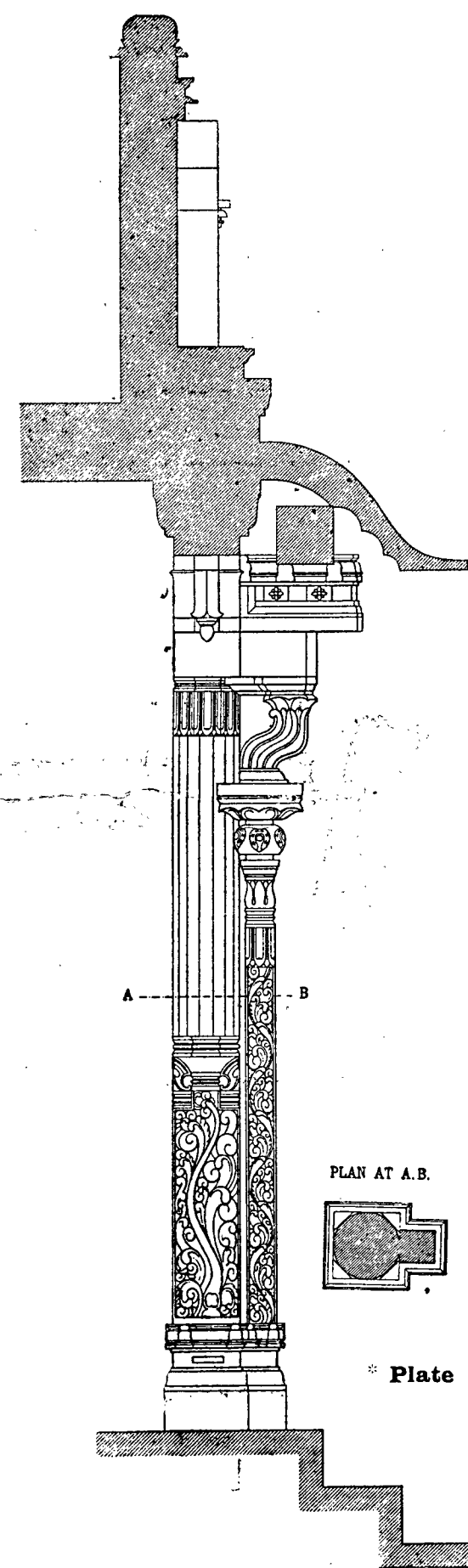


of practically all Indian Architecture. The ornamental mouldings on the bases, the capitals, the figures in the lowest panel and the scrolls on the shaft have added to the richness of the detail and are works of Indian art.

Plate X and XI show the details of two more columns of the Ranga Vilāsa Maṇṭapam. Griggs considers this maṇṭapam to have been built after the fifth court had been made and gives it a date synchronous with Tirumal Naik from the similarity of the type of the

* Plate X.

* Plate XI.

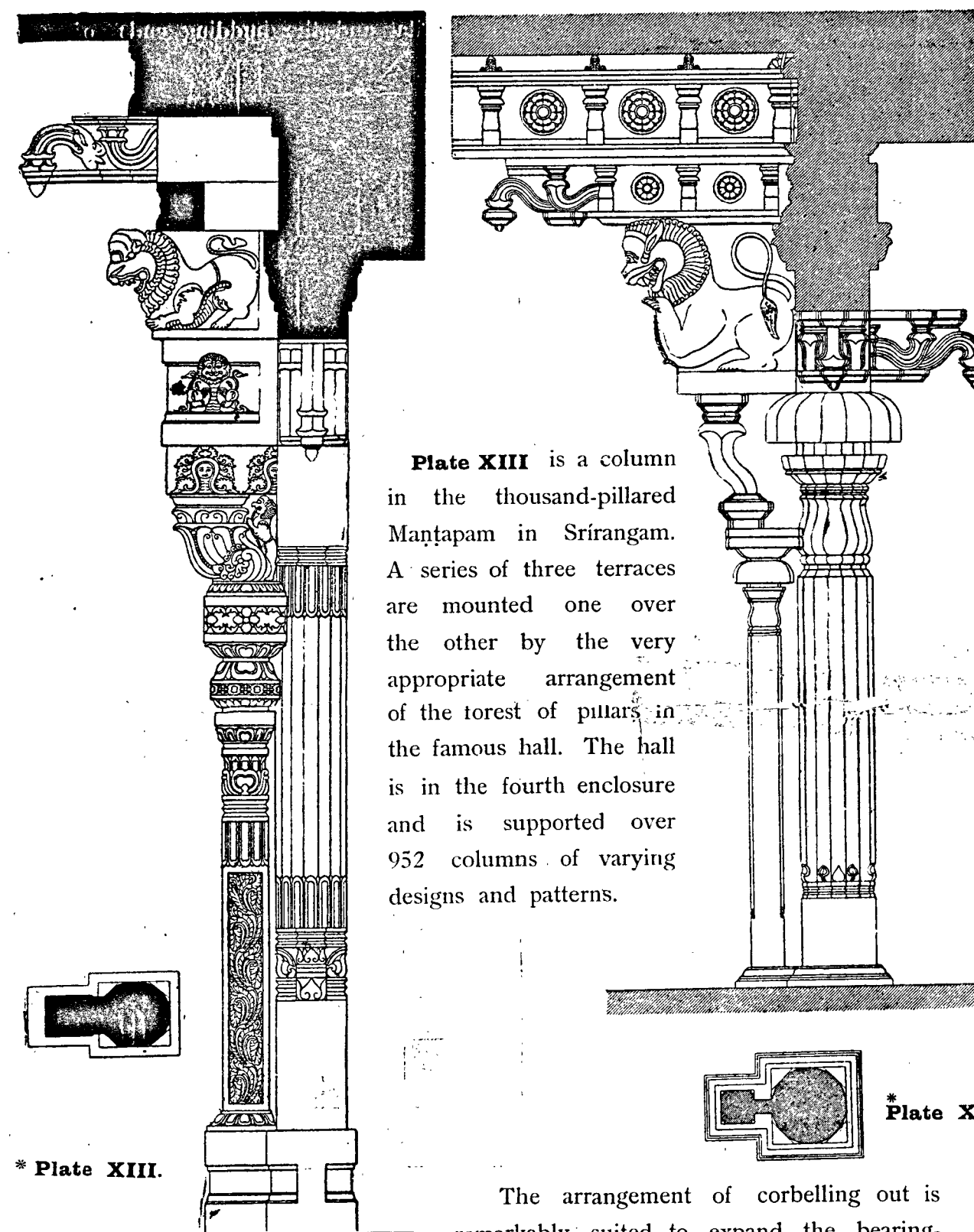


PLAN AT A.B.

* Plate XII, showing the section of another column in the Ranga Vilāsa Maṇṭapam showing the arrangement of the pedestal, base, shaft of the main and engaged pillars, the corbels and capitals.

columns with those built by the Naik in Madura. The elaboration in these columns show, as Griggs puts it, "considerable refinement in delicacy in design suggesting alike to those who work in stone or metal." We see in these the ingenious arrangements made by the ancient *śilpis* of adding to the mass of the columns without marring their beauty. The small engaged columns attached to the main shaft are intended to shorten the bay for the spans as in Plate X and to lend substantial support to the corbel and hanging eave as in Plate XI. The couchant lion-bracket arrangement in Plate XI and the rampant *yali* with the rampant elephant below it, fill up the bracket span with all the regard due to the statical equilibrium of these massive pillars and the weights loaded on them.

Among the works of the ancient *śilpis*, every detail was designed with an eye to *stability* and *durability* of the parts. Being works mainly of stone, they had to be made massive without infringing awkwardly on the æsthetic feelings of the spectators. Thus ornaments of a very elaborate kind were necessary and were introduced wherever and whenever possible. No labour nor money was stinted in giving a refined finish to every member.



* Plate XIII.

* Plate XIV.

Plate XIII is a column in the thousand-pillared Maṇṭapam in Srirangam. A series of three terraces are mounted one over the other by the very appropriate arrangement of the forest of pillars in the famous hall. The hall is in the fourth enclosure and is supported over 952 columns of varying designs and patterns.

The arrangement of corbelling out is remarkably suited to expand the bearing-surface for the beam or the architrave to a very large extent. In this case, the bearing afforded by the uppermost corbel is nearly four times the diameter of the main pillar, over which the corbels project in three offsets over the lotus and lion-shaped brackets.

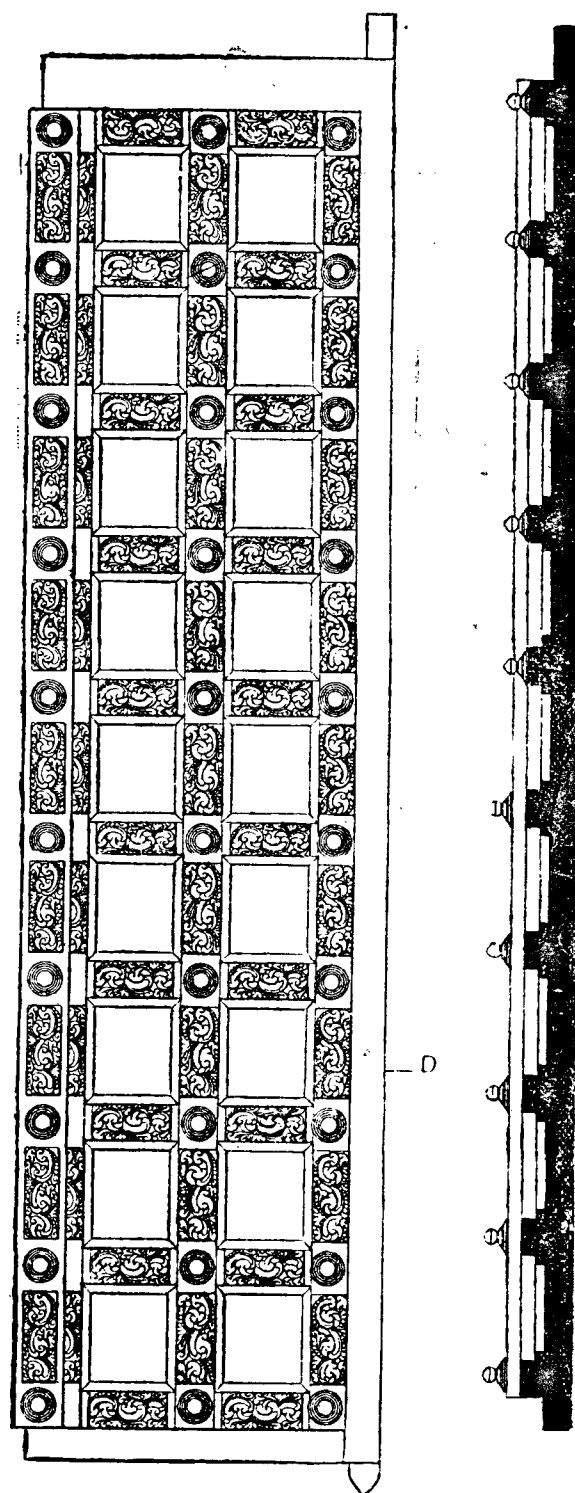
Plate XIV is the detail of a bracketted column in the thousand-pillared Maṇṭapam, the shape of whose capital and the budding ends of the projecting corbels indicate clearly a wooden model of a very ancient date.

Plate XV shows the details of a door with its frame and one leaf of the shutter.

As in stone or probably on a more lavish scale, the temple-builders worked at wood and metal work. The frame-work and the cross pieces are massive but finished with rich designs and by chisel-work and the junctions of the styles with the cross pieces are surmounted by heavy brass knobs of sound workmanship.

This ancient temple of Srīrangam contains many more Engineering and Architectural details good enough to form a grand life-study, exemplifying the canons of temple and town construction. It is needless to dwell further on this as we may have to come across many points common with this temple in future investigations of other shrines.

But we cannot leave this Dravidian centre without illustrating some of the details of a Śiva temple close to Srīrangam, commonly known as the *Jambukēśwara* swami temple.



PLAN AT C D

*Plate XV

THE JAMBUKĒSWARASWAMI TEMPLE.

Before closing the details of structures in Srīrangam, something of the style of the temple of *Jambukēśwara Swami* situated not far away from this temple on the same island has to be said. "Within a mile to the east," says Fergusson "however, of that much-lauded temple (Srīrangam), is another, dedicated to *Śiva*, under the title of *Jambukēśwara*, which, though not so large as that dedicated to *Srī Ranganātha* far surpasses it in beauty as an architectural object".

"Between the gōpurams of the second enclosure is a very beautiful portico of cruciform shape, leading to the door of the sanctuary, which, however, makes no show externally, and access to its interior is not vouchsafed to the profane. The age of the courts of this temple is somewhat earlier than that of its great rival, and being all of one design, they probably were begun and completed at once and from the simplicity of its parts and details must be earlier than the greater buildings of Tirumalai Nayyak."

Thus, not far from the Srīrangātha Swāmi temple above described and about a mile to the east of it is found the temple dedicated to Jambukēśwara Swāmi, in the village which goes by the name of *Tiruvānakaval*. This is also a walled temple like the former but has only five *prākāras*. The temple is reached by a main entrance on the west side over which there is a fine lofty gōpuram. There are also three gōpurams on the north-east and west walls, which are all unfinished. The temple premises spread over an area of about eighty acres, measuring west to east 2340 feet and north to south 1480 feet (*vide* Plate XVI). In the first enclosure, there is the magnificent hypostyle hall known as the *thousand-pillared maṇṭapam* with the famous tank of *Sūrya Tirtham* to its south, covering a space of 525 feet by 130 feet. In the maṇṭapam—*vide* Plates XVI and XVII—and round the tank there are altogether 839 columns. The section of the maṇṭapam in Plate XVII shows how the maṇṭapam rises by flights of steps from the tank side northwards. The tank is fed by a perpetual spring, which is one of the wonders of the place. The next inner court measures 1350 feet by 530 feet. It has only two entrances, one on the west and one on the east.

In the innermost court are many garden houses, dwelling houses and streets. In the second also, there are several houses towards the east side and many maṇṭapams.

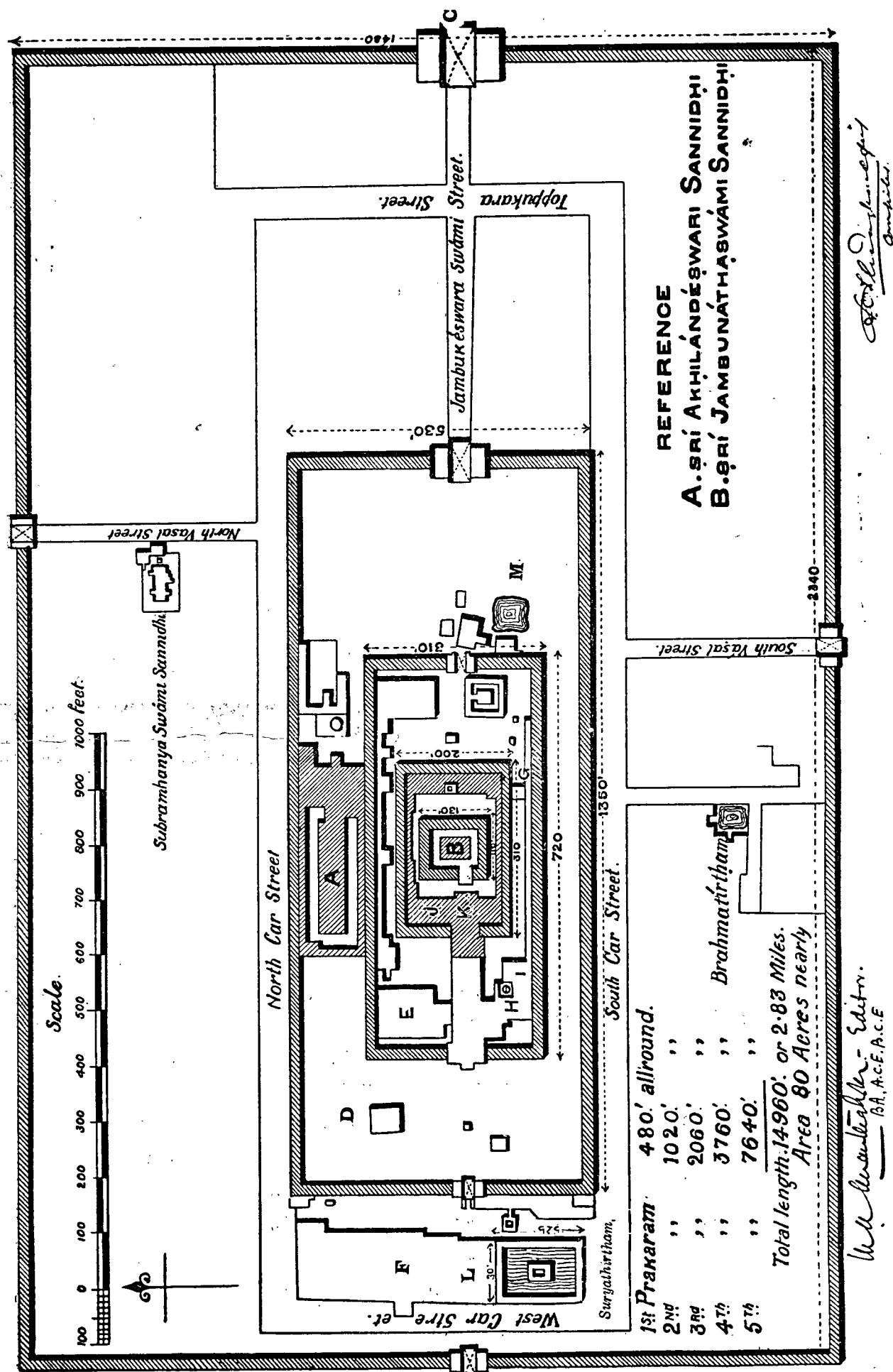


Plate XIV shows the plan of the Jambukēswara temple at Srīrangam. The third and fourth enclosures are full of *maṇḍapams* and smaller shrines and the names and their positions are marked under the plate. The description of this in the Trichinopoly Manual will be found interesting.

The name of the deity is Jambukēswara derived from *Jambuka* (*Xylia Dolabriformis*, the iron wood tree or *Eugenia Jambolanas*) and *Īṣwara*, a name for the god Śiva. The sanctuary in this temple contains a *lingam*, the emblem of Śiva of the name of Jambunātha Swāmi; there is an ancient *Jambu* tree close by, which is highly venerated and is said to be several hundred years old, from which probably the name is derived.

"The first or inner *prākāra*, in which the *Vimāna* is, measures 123 feet by 126 feet with a wall 30 feet high round it. The second is 306 feet by 197 feet, with a wall 35 feet high. There is a *gōpuram* 65 feet high in this enclosure and several small *maṇḍapams*. The third enclosure is 745 feet by 197, surrounded by a wall 30 feet high. There are two *gōpuras* in it 73 feet and 100 feet in height, respectively. There is a cocoa-tape in this portion of the building in which there is a small tank (called *Indratīrtham*) and a temple to which the image from the great Vishṇu Pagoda in the Srīrangam Island is brought for one day in the year. The wall surrounding the fourth enclosure is 35 feet in height and 6 feet in thickness, the fifth or outer enclosure contains 4 streets of houses".

This delightful place has a local story connected with its antiquity. The presiding deity of the locality is a *Śiva-linga* worshipped by a *Jambu-Rishi* who resided in the dense forest of Jambu trees there, and was hence called *Jambukēswara*—an *Ap-linga*, (Sansk. *Ap-water*) as the *Linga* in the sanctuary is ever bathed in a perennial spring of water, curiously filling the cell always. Long ago, before the denuding of the Jambu forest for building the temple there, an elephant of the forest worshipped the deity by an offering of a profuse douche of water poured everyday by him over the *Linga*. A spider likewise devoted to the worship of the same *Linga*, resented the rude act of the elephant and everyday stretched a web across over the *Linga* as if to ward off the savage diurnal bath. For long, the devotions were continued and the web got flooded. The deity in appreciation of the persistency of the devotions of the two creatures, each in its own way, is stated to have awarded emancipation to both. Hence the village now goes by the name of *Tiruvānai-ka* (the protector of the sacred elephant).

The temple is of as ancient a date as the Vishṇu temple on the island and has almost all the characteristics of the prevailing style.

* Plate XVII—Jambukeswaram Temple—1000 pillared Mantapam.

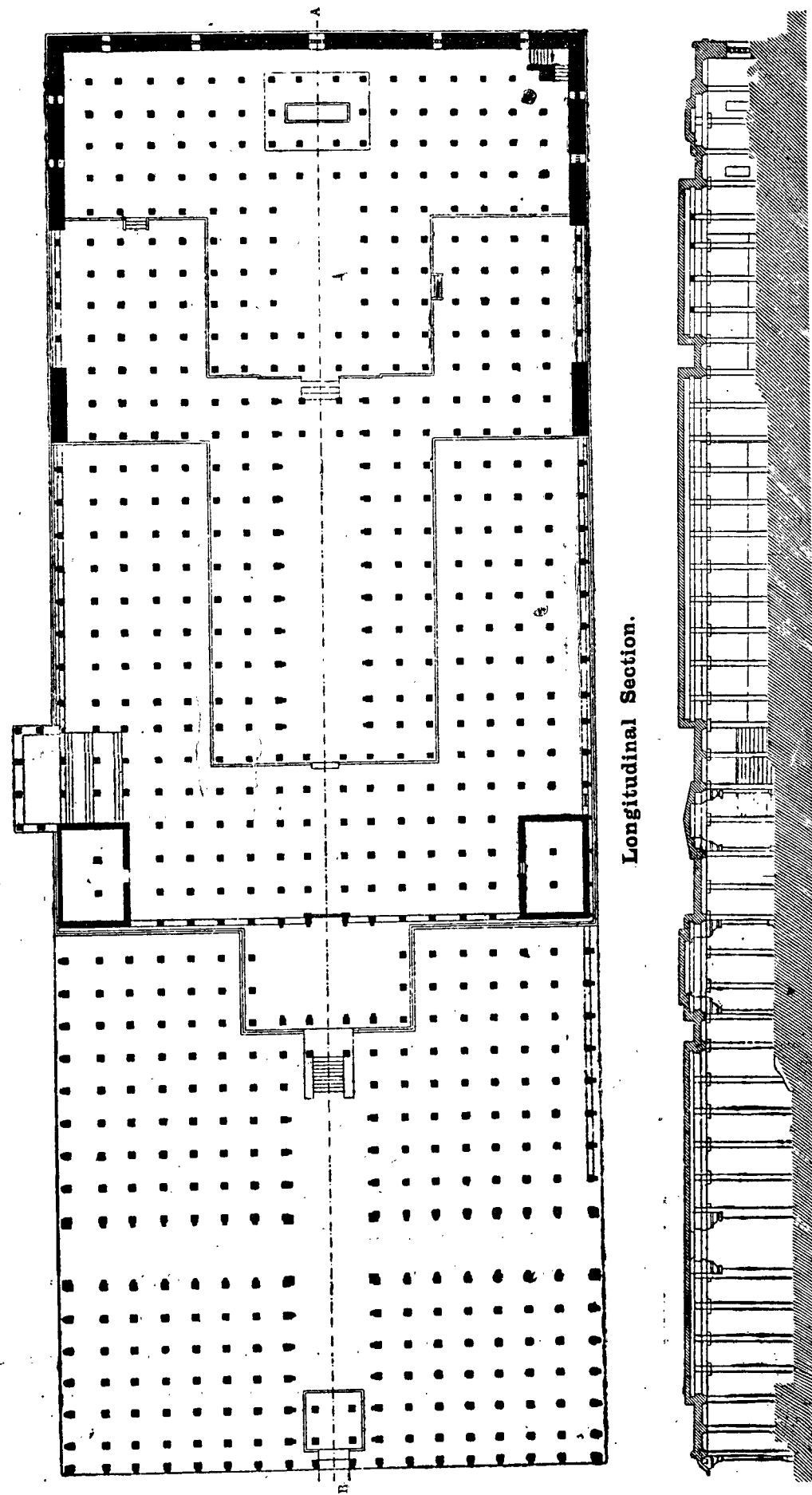


Plate XVIII—showing the elevation of an elaborate column in the Jambukeswara temple at Srirangam.

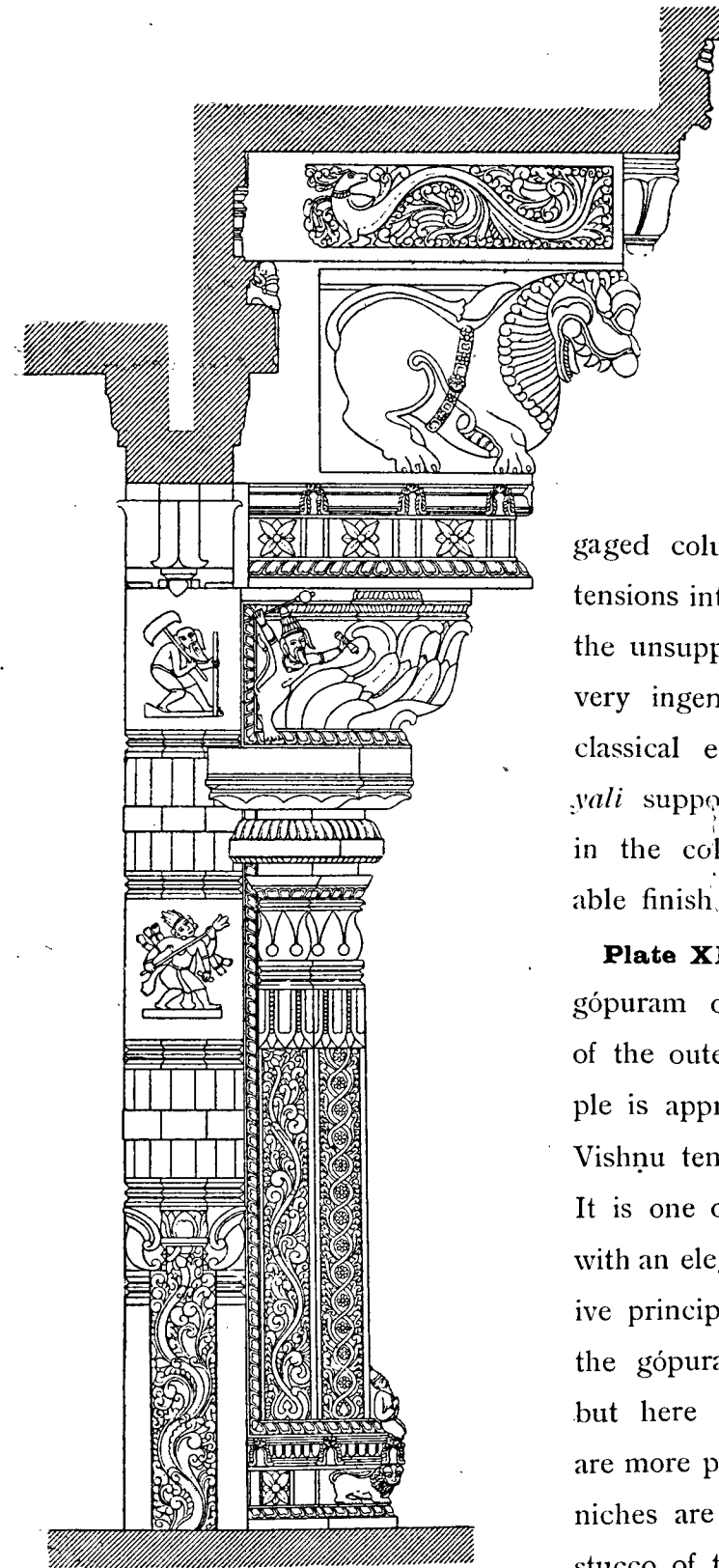


Plate XVIII shows the details of plan and elevation of a column in the thousand-pillared hall of the Jambukeswara temple.

The pillar is highly elaborate in design, the scrolls of foliation carved in panels being specially effective. This is an engaged column with two bracket extensions intended to reduce the bay of the unsupported lengths of roofs, and very ingeniously arranged. All the classical elaborations with *lotus* and *yali* supports are found incorporated in the column, giving a very agreeable finish to the whole support.

Plate XIX is the view of the main gōpuram on the west enclosure wall of the outermost *prākāra*. The temple is approached from the Srirangam Vishṇu temple through this gōpuram. It is one of nine floors, crested over with an elegant cupola. The constructive principle is nearly the same as in the gōpuram of the Vishṇu temple, but here the horizontal delineations are more pronounced and the numerous niches are studded with statuettes in stucco of the Purāṇic gods and their deeds. The gōpuram, however, looks exceedingly massive and too stunted for its height.

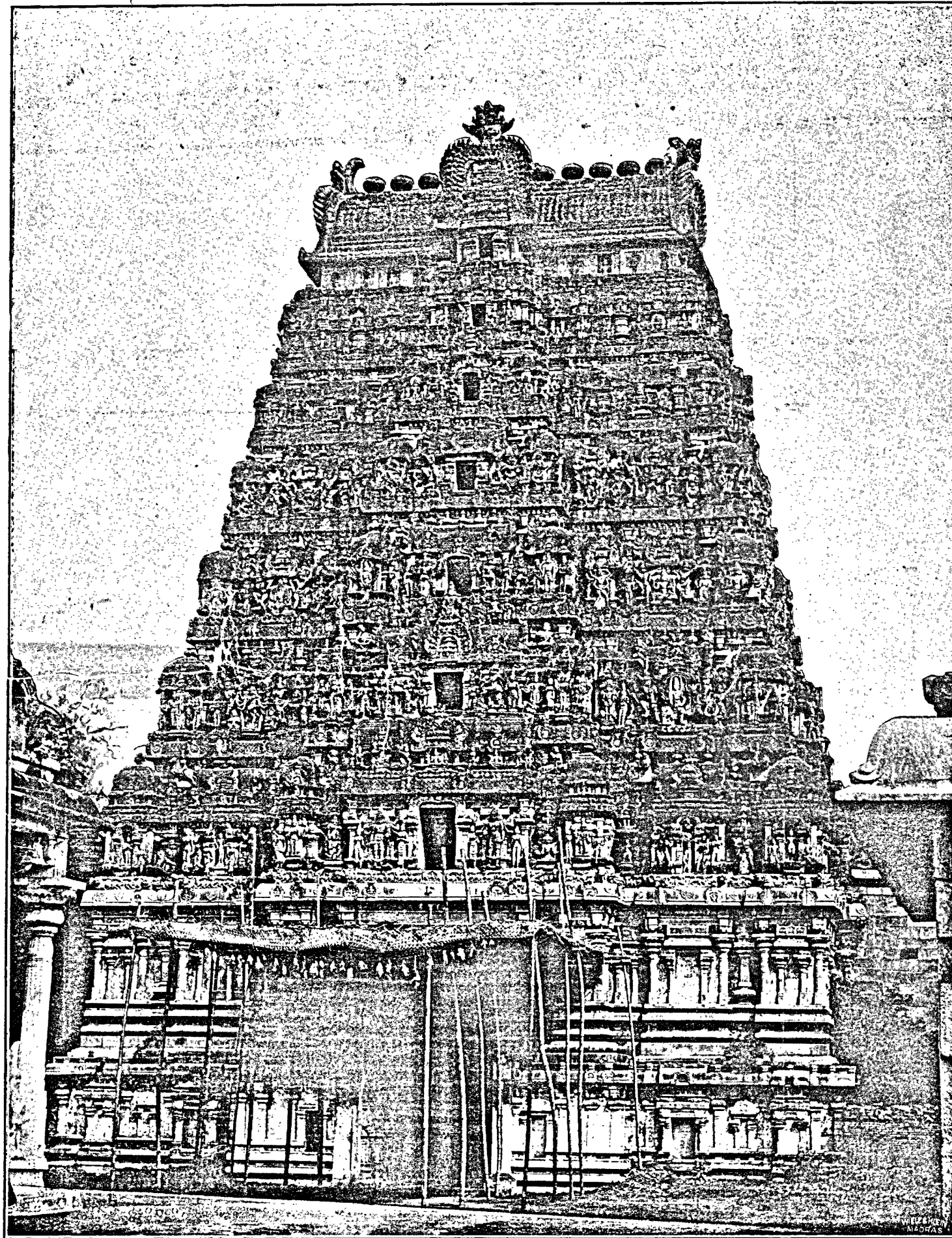


Plate XIX. showing the elevation of the West Gopuram of the Jambukéswaram Temple.

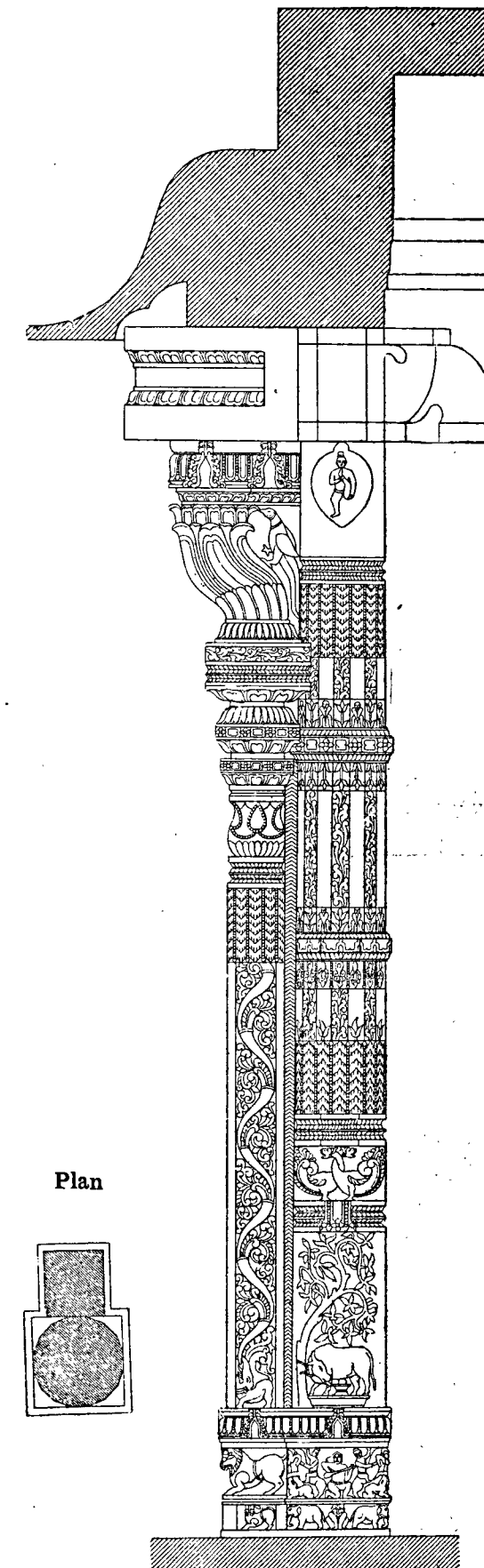


Plate XX shows the view of one of the end columns of a mantapam wherein are seen the disposal of the corbel, the entablature, the eave and the parapet above.

Here too, as in the previous one the elaborate design, the sculpture, the scrolls and figure devices are all noteworthy.

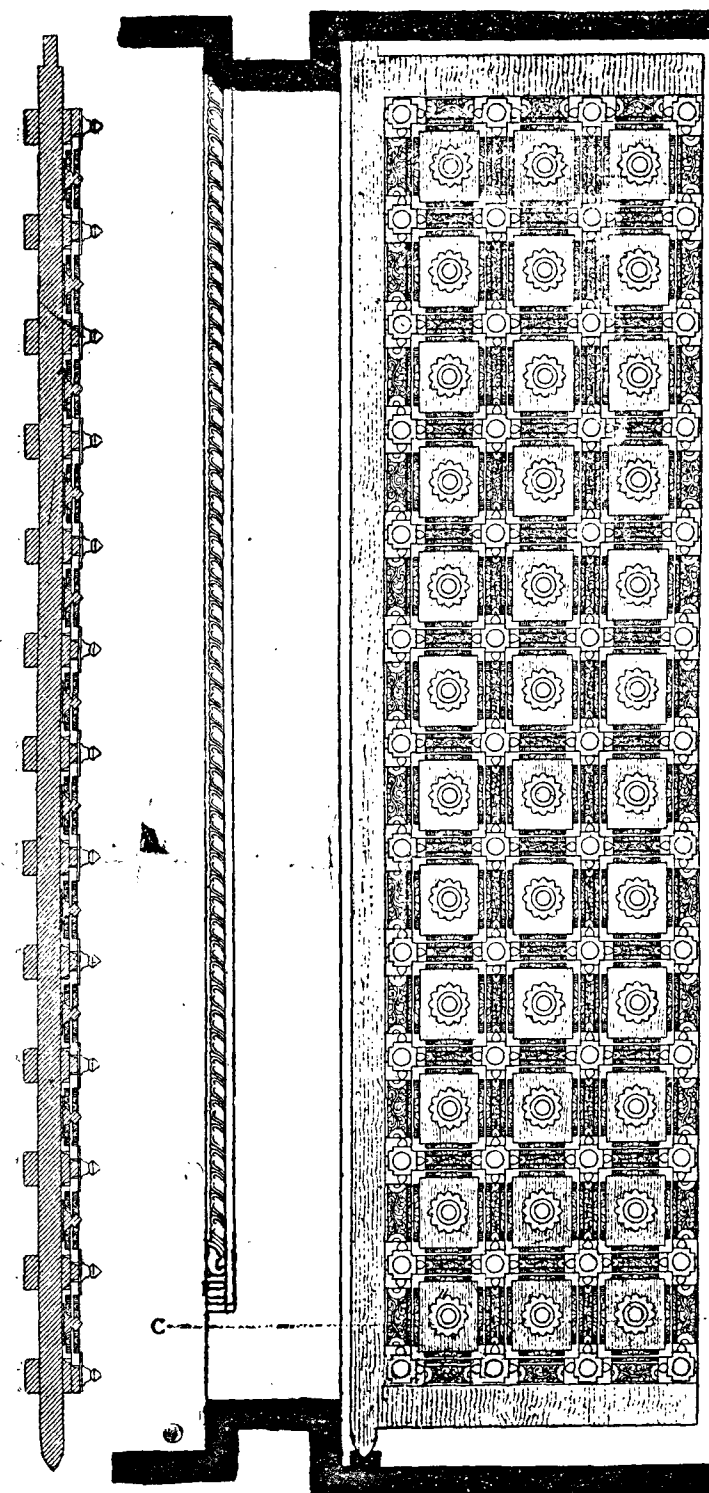
The proportions adopted for this magnificent stone column is quite in accordance with the śāstraic laws and in this case, the height of the shaft is about six times its breadth.

The form of the capital in this column is known as *push-pabandha* in Sanskrit and in the language of the Dravidian *śilpis* as *pu-dala-borikai*, a flower-headed capital. The main shaft being six diameters high and circular in plan goes under the name of *Rudrakantha* according to *Mānasāra*.

The double column upon the same base is a common device with the classical *śilpis* for facilitating the elaboration of designs and structural necessities.

*Plate XX, showing the elevation of a column in a square mantapam supported by twenty-four such columns

*Plate XXI.



PLAN AT C D

The illustration in the **Plate XXI** shows the front elevation of a massive door in the gateway which leads into the third court. It is studded with knobs made of iron as shown by the star-shaped figures over the door-surface. The door is in two leaves and the peculiarity of its pivot is remarkable. Each leaf works on two pointed ends resting on stone grooves, placed just behind the threshold. The arrangement is most suited to carry the heavy doors which, if hung in any other way by iron hinges or pegs, would have fallen forward by their immense weight and would have soon ceased to work in the easy manner peculiar to this arrangement.

***Plate XXI**, showing the plan of a wooden door in the Jambukéswara temple.

The several columns hitherto treated both in Srirangam Vishnu temple and in the Jambukéswaram temple exhibit the most pleasing effect

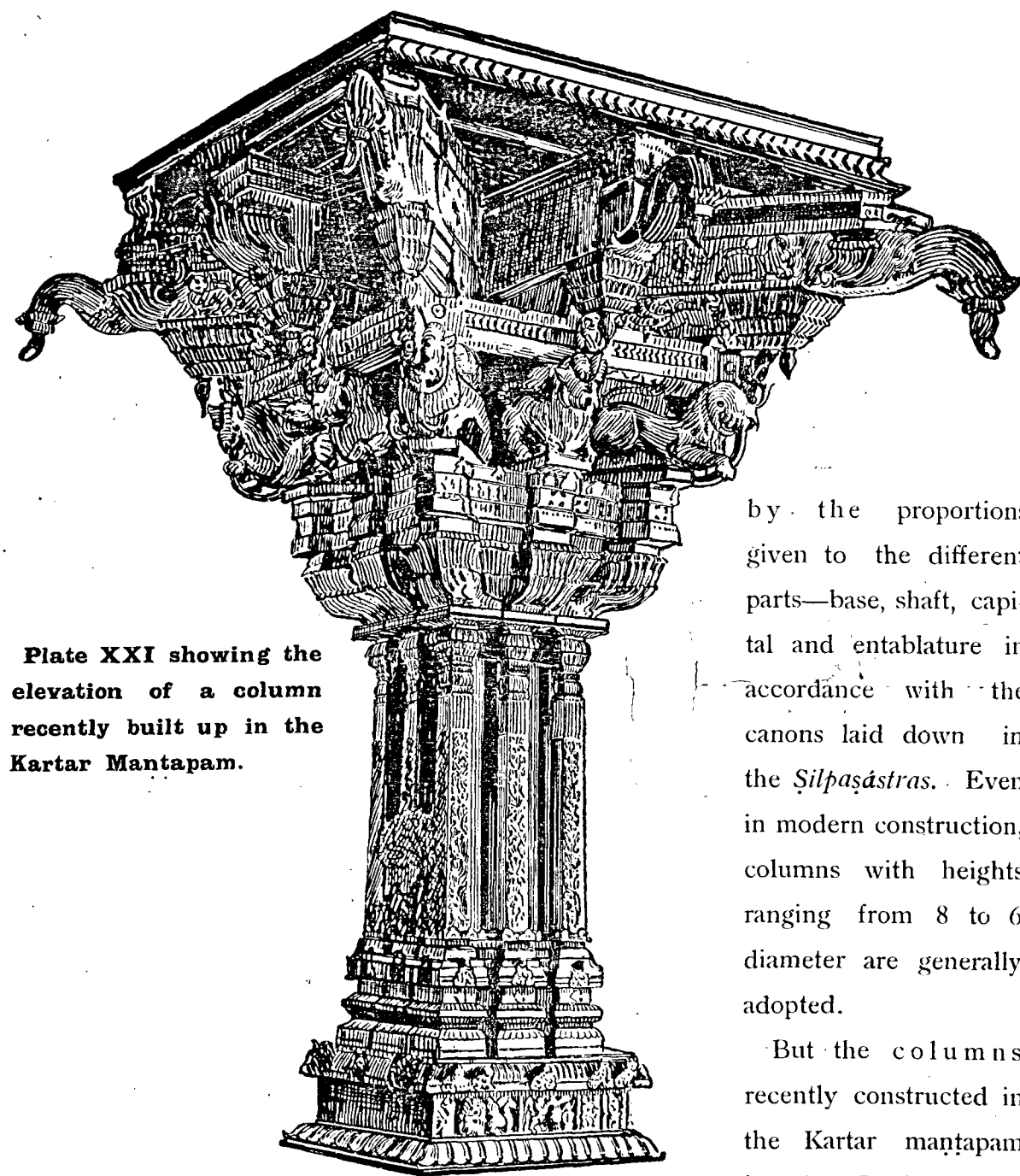


Plate XXI showing the elevation of a column recently built up in the Kartar Mantapam.

by the proportions given to the different parts—base, shaft, capital and entablature in accordance with the canons laid down in the *Śilpaśāstras*. Even in modern construction, columns with heights ranging from 8 to 6 diameter are generally adopted.

But the columns recently constructed in the Kartar mantapam in the Jambukéswara

temple have deviated from the rules laid down and present, therefore, an inharmonious appearance. The illustration in **Plate XXI** is the elevation of a column designed and recently constructed by a modern *Śilpi* and put up in the Kartar mantapam. The details are rich and elaborate, the base and the shaft leaving nothing to be desired; but it is in the adjustment of the proportions of the various parts of the column that the designer

has hopelessly failed. The capital, notwithstanding the fact that it contains all the classical *lotus* and *lion* corbels, and projections, looks absolutely massive, dull and top-heavy; the very look of the plate shows the column to be very unstable with its centre of gravity quite high up on it and has a jarring effect on the eye of the Engineer; this undesirable effect is produced by the architect or the *śilpi* not observing the classic canons of column construction. In this case, the shaft is less than two diameters in height and the capital is exceedingly massive and over-hanging, being about two diameters high and about four diameters broad. In the construction of this maṇṭapam, the high instincts of the merchant princes of South India to spend lakhs of rupees on the renovation of ancient temples have had their full play but it is lamentable that these generous donors were misled by the so-called *śilpis* who had little knowledge of the orthodox rules of temple and maṇṭapam constructions. Nor are the *śilpis* to blame either. This class of people had no means of access to the *Śāstras* nor had they any *Nalānda* University nor any kind of instruction or *śilpa* class where the *śilpaic* canons were taught as in times of old under the ancient rulers. The attempt, however, of the new temple-builders is laudable, although the production is out of taste, out of all proportion or harmony.

The instincts of both the *śilpis* and of the wealthy and generous classes of the religiously inclined people of India will find ample scope in their respective directions, if the former are afforded the opportunities for an insight into the theory and practice in the Engineering of religious construction in the chaste but renaissance methods.

The spirit of the laws should be taught and understood and works constructed or criticisms made in complete ignorance of such spirit are not worth having.

CHAPTER III. THE DRAVIDIAN STYLE.

THE STRUCTURAL IDEALS AND THE RELIGIOUS IDEALS.

The dictum of Fergusson quoted in the foregoing pages with reference to the descending size of the pyramids from the outer enclosures towards the innermost enclosure has been too studiously followed by his admirers, both Eastern and Western, without the least regard to the basic laws underlying the principles. The motif is least understood but is ridiculed, in a very light and jocose fashion. Except to those who have *not* studied the Hindu religious ideals in all their fineness, there is no want of *scale* nor of harmony in the arrangement of the lofty *gōpurams* outside and the small *vimānas* over the sanctum. After the fashion of Fergusson, a civilian officer of Madras, L. Moore, has criticised this feature of the temple thus:—

“As one drives up to the unfinished *gōpuram* on the south side, which is the usual entrance, and then through it, goes *on* into the first enclosure, the *gōpuras* look fine, and the general appearance of the buildings is striking; but they lead up to *nothing*, and the centre of the building is *mean and uninteresting*.”

With regard to criticisms like the above, we can but say it is only an one-sided view or rather an unconscious bias expressing itself without entering into the spirit of the Indian ideals of temple construction. The eastern and western standards of judgment, the religious ideals and the modes of following them are entirely different and it is only those that have thoroughly grasped all these that can speak of these with forbearance. Listen to what Havell says, entering deep as he does into the spirit of Indian standards; the following are extracted from his excellent work, “Ideals of Sculpture and Painting.”

“Nothing is more significant of the gulf which separates East from West than the general ignorance of Europe regarding *the ideals of Indian art*.”

“No European can appreciate Indian art who does not divest himself of his western prepossessions, endeavour to understand Indian thought, and place himself at the Indian point of view.”

"Only an infinitesimal number of Europeans, even of those who pass the best part of their lives in India, make any attempt to understand the philosophic, religious, mythological, and historical ideas of which Indian art is the embodiment; and without some understanding of these, even a trained artist will never be a competent or impartial critic of Indian art."

"The highest ideals of every national art have always centred themselves round the national conception of the Deity, and it is the Indian conception of divine beauty which gives the key to all Indian æsthetic thought, and shows most clearly the essential difference between eastern ideals and western."

It must be clearly understood that "The Hindu artist," as Havell says, "has an entirely different starting point. He believes that the highest type of beauty must be sought after, not in the imitation, or selection, of human or natural forms, but in the endeavour to suggest something finer and more subtle than ordinary physical beauty."

"This habitual reference to Western standards and ideals in their criticism of oriental work frequently leads European critics astray, and generally makes them constitutionally incapable of doing justice to Indian art. It is always unsafe to assume that the Indian point of view is the same as the European: the probability is that it will always be different."

"It is just in this different idea of realism and different outlook upon nature that we find the gulf which separates eastern thought and eastern art from western. The difference which the European and Anglicised Indian attributes of defective technical powers or undeveloped intellect, is really due to a different intellectual atmosphere and a different artistic temperament, created by the different answers which East and West give to the question—*what is reality?*"

The feature referred to is in reality a marvellous indication of the inner life of the pious Hindu, which should be understood before studying the *motif* of the town-planner. The ordained *Dharma* of the Hindu was ever to do righteous acts, to ward off evils and retire as early as possible from the wayward workings of the senses and their impressions. His one ambition was to destroy his personality, strive for no fame or worldly gains, but to bring round the altar of righteousness, beings who were going out of the region or who strayed beyond its limits. His *summum bonum* was to contemplate and realize by his *bhakti* the one Divine Soul, and to exclude

himself from the outside world of pomp and selfishness. This ideal is vividly materialized in the designs of the Hindu architects for a town or a temple. The place of worship is the sanctuary which should be as secluded as possible and nevertheless the most inspiring for meditative purposes. There is no pomp nor splendour in or over it and the design of the *Vimána* over the sanctuary is thus the lowest and meekest, not intended to catch the eye or even the mind of the observer. The prominent object in the *sanctum sanctorum* ought to be the undistracted and sole object of his vision or of his thought, and very often it is made dark, its sublimity increasing in proportion to the absence of light in it.

The ideal or standard of thought has been realized by only a few of the western critics and all those that have realized the underlying truth have never failed to appreciate the metaphysical and scientific worth of the same. Lord Valentia speaking of the temple of the Dravidian style at Ráméswaram says, "the whole building presents a magnificent appearance which we might in vain seek adequate language to describe."

An eminent Frenchman has said that the Hindu revelation is "of all revelations, the only one whose ideas are in complete harmony with modern science."

Show or pomp of any kind was a matter of insignificance to the Hindu, after once he reached to the stage of contemplation. *Śukrāchārya*, the reputed author of the ancient Sanskrit work called *Śukranīti-sāra* says that even the artist (meaning the *Śilpi*) should attain to the images of the gods by means of *spiritual contemplation* only. The spiritual vision is the best and truest standard for him. He should depend upon it, and not at all upon the visible objects perceived by the external senses.

"Spiritual contemplation." Here is the key-note of Hindu art, as it was that of the art of Frá Angelico and of other early Christian masters. "The whole philosophy of Indian art is in these two words, and they explain a great deal that often seems incomprehensible and even offensive to Europeans."

The Countess of Jersey wrote in the nineteenth century, "The ferment and unrest of the soul in the search of knowledge is soothed and laid at rest when the object of contemplation is reduced to a figure-head and finally to a point in a space. This contemplation of point in space results, in a self-absorbing delight which knows no end, and which places the soul high above all carnal wants and aspirations."

Maurice is assured that "the Brahmin is seeking after one Divine Unseen object, nay, that his aim in his whole life and discipline is to purify himself from outward, sensible things, that he may approach nearer to this one source of illumination." (*Vide* his "Religions of the World", p. 44.)

The above quotations from reputed orientalists must convince every one that judgments or criticisms arrived at without recognizing the respective standards of each country are of little value, as emphatically pronounced by Havell in his "Ideals of Indian Art" thus:—

"It is chiefly because the modern European usually refuses to recognise anything which is not evident to his *five known senses*, that he finds the difference so irreconcilable and the gulf so impassable. The Indian artist lives in a world of his own imagination, where the stolid Anglo-Saxon is unable to follow him; but, until the Western pedagogue brought Indian culture into contempt and stifled the inherited artistic instincts of Indian youth with his own pedantic formularies, the Indian artist found his traditional methods were perfectly adequate for obtaining that response from his public which every artist needs."

As it is important to enter into the spirit of the Indian ideals closely, we illustrate the motifs comparatively and explain the rationale of the high ideals, from which were evolved the design for the so-called 'atrophied *Vimānas*' and huge pyramidal *gōpurams*.

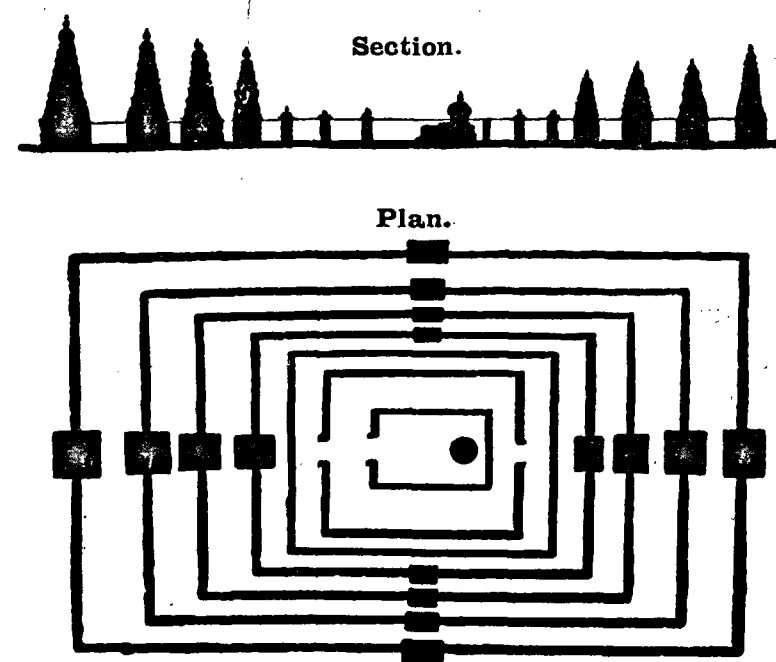


Plate A, diagrammatic Plan and longitudinal Section along the Gopuras and Vimana in the Srirangam temple, showing the descending bathos in the seven prakaras.

The Hindu ideal in brief is this and the canons of the *Śilpa Śāstras* regarding the construction of the *Vimānas* and the *Gōpurams* give strength to this *ideal*, on which the temples have been constructed.

To a truly Indian mind, the temple ought to be the centre of attraction and salvation, but at the same time, all attractions of the exterior senses or the *Bahirindriya* should end by the time the devotee reaches the *Garbhāgrīha* or the interior portions as above explained. The higher inner emotions or the *Antarindriya* should then begin to wake up. For this purpose, the finest landscapes, and prominent and highly flourishing localities were selected for the sites of temples and there they built the temple of the Deity in the centre and round and round it the worshippers and the devotees congregated in large numbers; the temple got extended by concentric or rather *conspicuous* enclosures added on, as more space was requisitioned by the growing demands due to the ingress of merchants to supply commodities for the population, and of artisans of all classes who gradually gathered in; and again, as the necessity for protection and public safety increased with the expansion of the city, massive and high walls had to be raised which served as fort-ramparts against periods of disturbance. There they built the stately *gōpurams* on all the sides of the temple, high towers which could be seen from long distances, and which served as lofty beacons, when illuminated during nights.

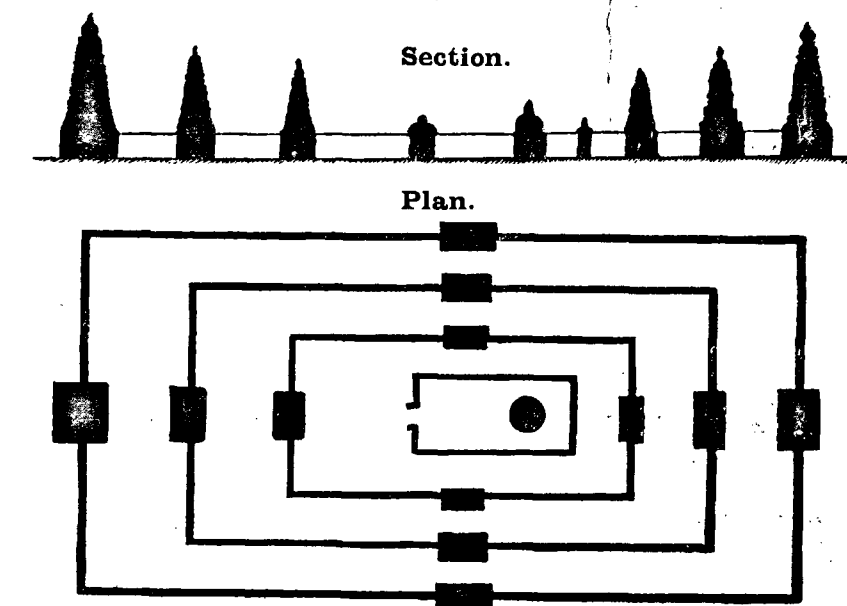


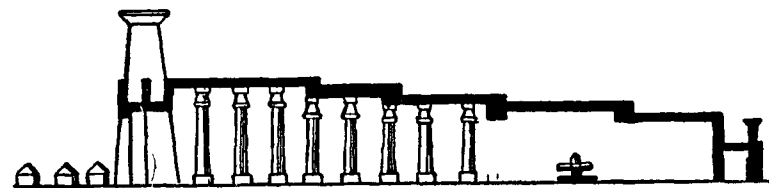
Plate B, showing diagrammatically a similar type of bathos observed in another Dravidian temple with four enclosure walls—the temple at Tiruvannamalai.

The reason for the bathos or the decreasing heights of the *gōpurams* from the outside to the inside in the Dravidian temples is thus strictly in

accordance with the ideals of the Hindu or rather the Brahminic conception of *spiritual greatness* as contrasted with *material greatness*. In the Hindu ideal, the latter was always subordinated to the former; while with nationalities who held the opposite views, who considered material ascendancy all supreme, the opposite of this style was necessarily the ideal. The bathos was reversed; the loftiest spires were placed in the centre, over the *sanctum sanctorum* or the holiest spot of the temple or church and the other outer spires were made lower and unimposing. To the Hindu and to others that followed similar tenets, the soul was eternal and everything in the body was a clothing—quite transient and unimportant; and in every work of such nationalities could be realized this ideal. Those who gave predominance to the body or the *corpus*, or who made no difference between the soul and the body, made the body important.

Plan of an Egyptian temple.

* Section.



* Plan.

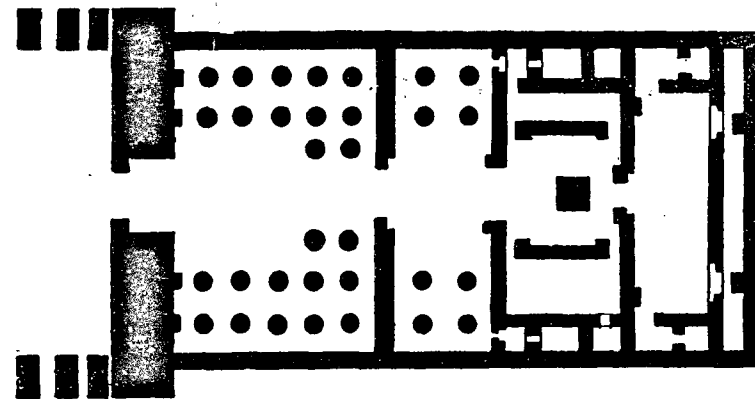


Plate C, showing diagrammatically the Plan and longitudinal Section of an Egyptian temple, showing the Hindu ideal, even in a simpler form.

It may be observed that there is no *Vimāna* or turret of any description over the *sanctum* in the Egyptian arrangement; at the outer entrance of the temple only, there are two pylons which correspond to the Indian *Gōpurams* and the section decreases and becomes simpler and

* Adapted from Banister Fletcher's "Comparative Architecture."

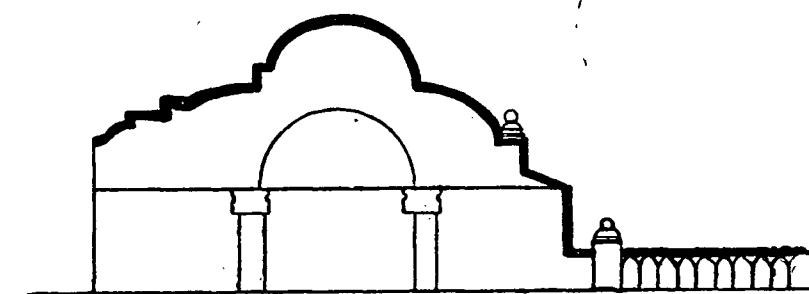
modest as we approach the holiest spot in the temple. This style was carried by the Aryans of India into Egypt.

Mr. Griggs who reproduced the photographs and drawings of Historical buildings from the fine collections in the office of the Curator of ancient monuments in India, while he argues in the strains of Fergusson, considers that the present big temple (at Srirangam) is due probably to the gradual development around the original central shrine, but that there is a great want of compactness in the general design. He says it is now a walled town with a number of spires and fanes dotted irregularly about; at the same time, he feels that "there is a great picturesqueness in the whole, viewed from a height or distance and much to admire in the *designs* and details of the individual structures."

Mr. Griggs further points out how Fergusson draws an analogy between the Egyptian and the Dravidian styles in these words:—

"It may be mentioned that the *gōpuras*, both in form and shape, resemble the pylons of the Egyptian temples. The courts, with pillars and cloisters, are common to both and very similar in arrangement and extent. The great Mandapas and Halls of 1000 columns reproduce the Hypostyle Halls, both in purpose and effect, with almost minute accuracy. The absence of any central tower, or *Vimāna*, over the sanctuary in Egypt is only conspicuously violated in one instance in India (Tanjore). Their mode

Section.



Plan.

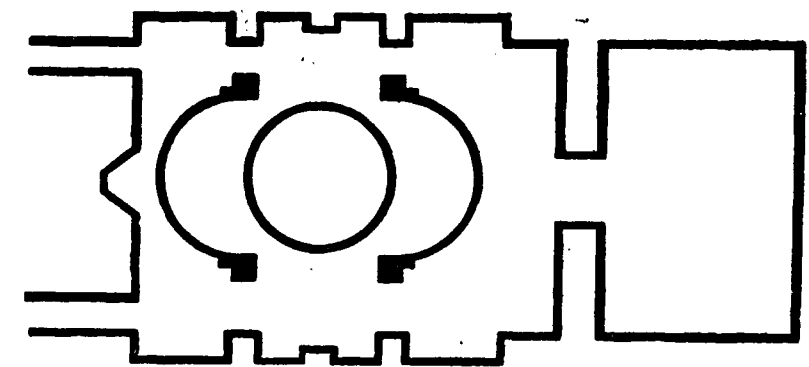


Plate D, showing diagrammatically the Plan and longitudinal Section of the Church of St. Sophia in Constantinople-Byzantine type.

aggregation and the amount of labour bestowed upon them for labour's sake is only too characteristic of both styles." Here Mr. Griggs adds, "whilst questioning the accident of this resemblance, Mr. Fergusson considers the interval of time so great as to negative the idea that the features of Dravidian Temples were imported from Egypt; but looking to the intercourse between the two countries certainly existing in remote ages, he allows that the seed may have been sown, which fructified long afterwards."

The sections in the following plates show that the principles of construction are of the very opposite type.

In the last illustration, it will be seen that the construction of the church partakes of the ideals of the religion practised by the Byzantines.

The holiest place is covered over by elegant domes while the outer entrance is made insignificant and unattractive. They believed in the necessity for show over the *sanctum* unlike the Dravidians. Similar were the motifs that prevailed in several countries, in Spain, Italy, France and the United Kingdom. In all their constructions of churches, they attached great importance to the erection of lofty domes, spires or

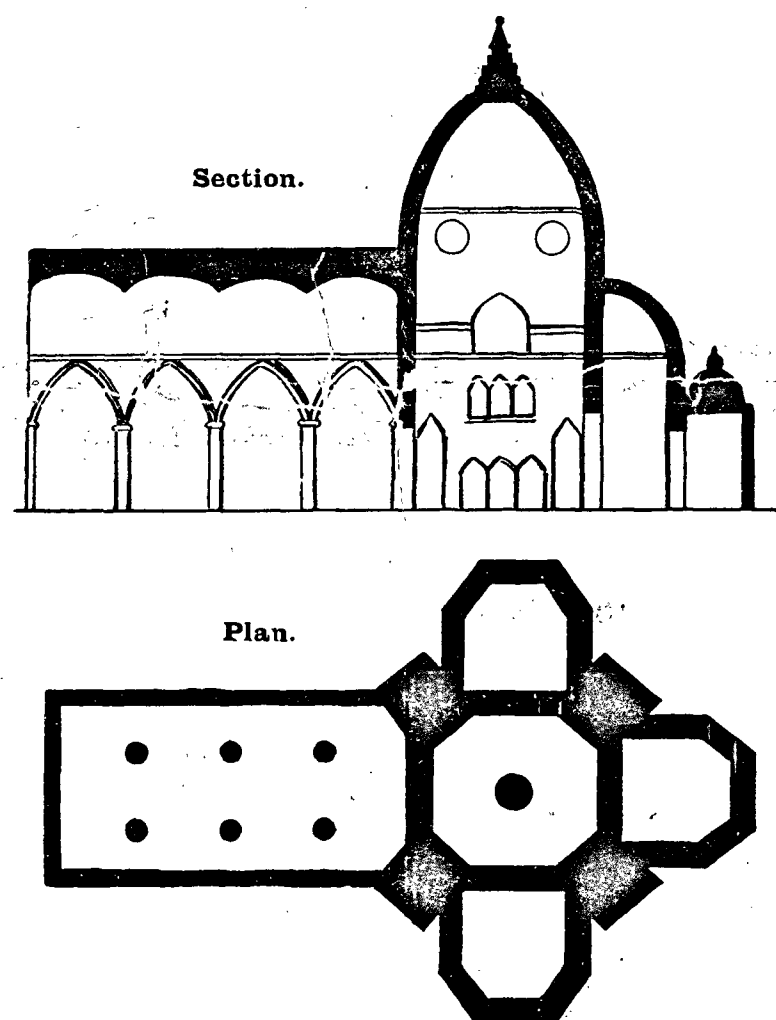


Plate E, showing diagrammatically the Plan and Section of a Florentine Church of the thirteenth century.

towers over the holiest spots or choirs in the churches and the few plans and sections illustrated are of a few notable existing specimens.

a French adventurer, who was for sometime employed at the court of Shah Jehan. But this theory has been disproved by E. B. Havell in his essay on 'The Taj and its designer.' The Taj is the outcome of the same genius and skill which was shown hundreds of years ago in this spiritual land of *Bhārata Varsha*. Neither any western nor any other eastern country can claim any share in the glory of making the Taj, with India".

Thus, the future of Indian greatness is again in our hands. The princes and the aristocracy of India have a great responsibility in this matter, for, on their patronage, the prosperity of the fine arts largely depends, as in the palmy days of old. When all educated Indians would feel that, by dishonouring the Indian artists who hold to their ancient traditions, they dishonour themselves, there is sure to be a rapid revival. The honour meted out to Indian artists should not be in proportion to their skill in imitating European art but in reproducing Indian types.

Imitation should be despised and *imagination* should sway in all new designs. There is not much outside what is not found in India as a work of art. "Europe of the present day," Havell points out, "has in art far more to *learn* from India than to *teach*. Religious art in Europe is altogether lost; it perished in the so-called *Renaissance*. In India, the true spirit of it still lives." As the same author further on observes, "we live in an age of transition, and in India, the ideals of two great civilizations are now in the melting pot, the dross will accumulate on the surface and when that is cleared away, the fine gold that is in both will be found beneath. From these, the precious metal for a new *Indian Renaissance* should be found."

This is all perfectly true and in order to show that we, by a patient study of the present day requirements and of all that was classically matchless, can beautify our buildings of this age, following the wholesome laws of the by-gone ages, one more design of a dwelling-house or bungalow is illustrated.

Some there have been who have learnt to think lightly of Indian styles of architecture; but there were also many European scholars whose steady work and appreciation it was that have aroused the undertaking of useful researches amongst the 'priceless stores of Oriental literature,' which lay so long neglected.

As we now live in a progressive era and we require more general and specific knowledge from year to year to adapt ourselves to the

C.—3.

MODERN ARCHITECTURE

Continuation of Page 24 of Book III, Part II.

new conditions, an adjustment to the changed environment is most essential.

Design No. 6.

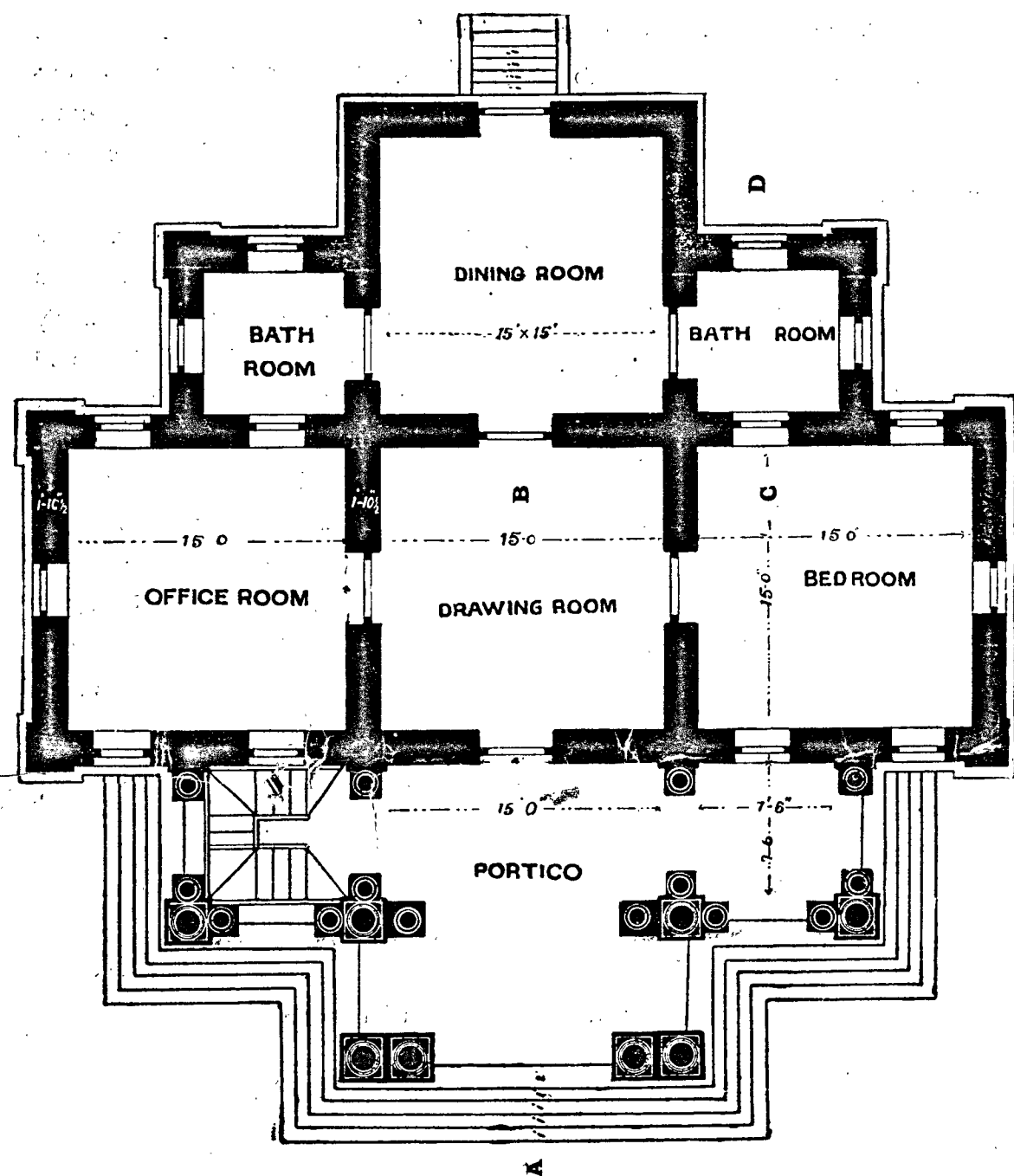


Plate VI-a—showing the plan at ground floor of a building of a Bungalow type.

Plinth area 2,565 sq. ft. { Extreme Length 58'-0"
Do. Breadth 56'-0"

Details of Design No. 6.

Ground Floor.

	ft. in.	ft. in.		ft. in.	ft. in.
Office room	... 15-0	× 15-0	Bath room	... 7-6	× 7-6
Drawing ..	... 15-0	× 15-0	" "	... 7-6	× 7-6
Bed ..	... 15-0	× 15-0			
Dining ..	... 15-0	× 15-0	Portico	{ ... 33-9	× 7-6
				{ ... 15-0	× 7-6

For, as emphatically pointed out by an American writer on the subject, all are agreed that "the industrial activity, eternally vigilant, discovers some

Design No. 6.

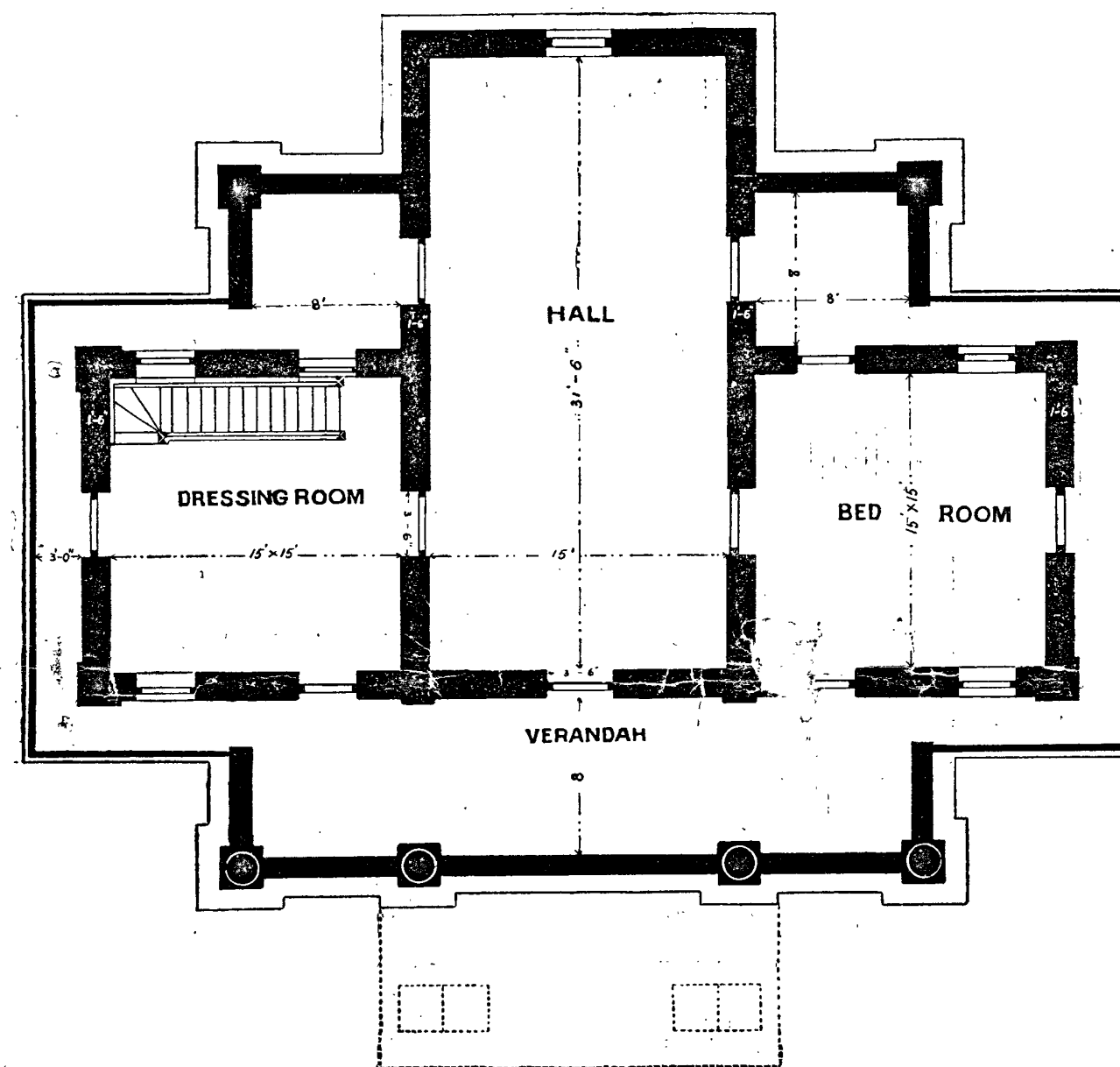


Plate VI-b.—showing the first floor Plan.

Plinth area 2,340 sq. ft. { Extreme Length 54'-0"
Do. Breadth 54'-0"

First Floor.

	ft. in.	ft. in.		ft. in.	ft. in.
Drawing room	... 15-0	× 15-0	Bed room	... 15-0	× 15-0
Hall	... 15-0	× 31-6	Verandah	... 8-0	× 9-33

new modes of utilizing nature's products. Science, ever alert and watchful, analyzing forces of nature and harmonizing her elements, creates a demand upon the modern architect to meet her requirements in the designing and erec-

Design No. 6.

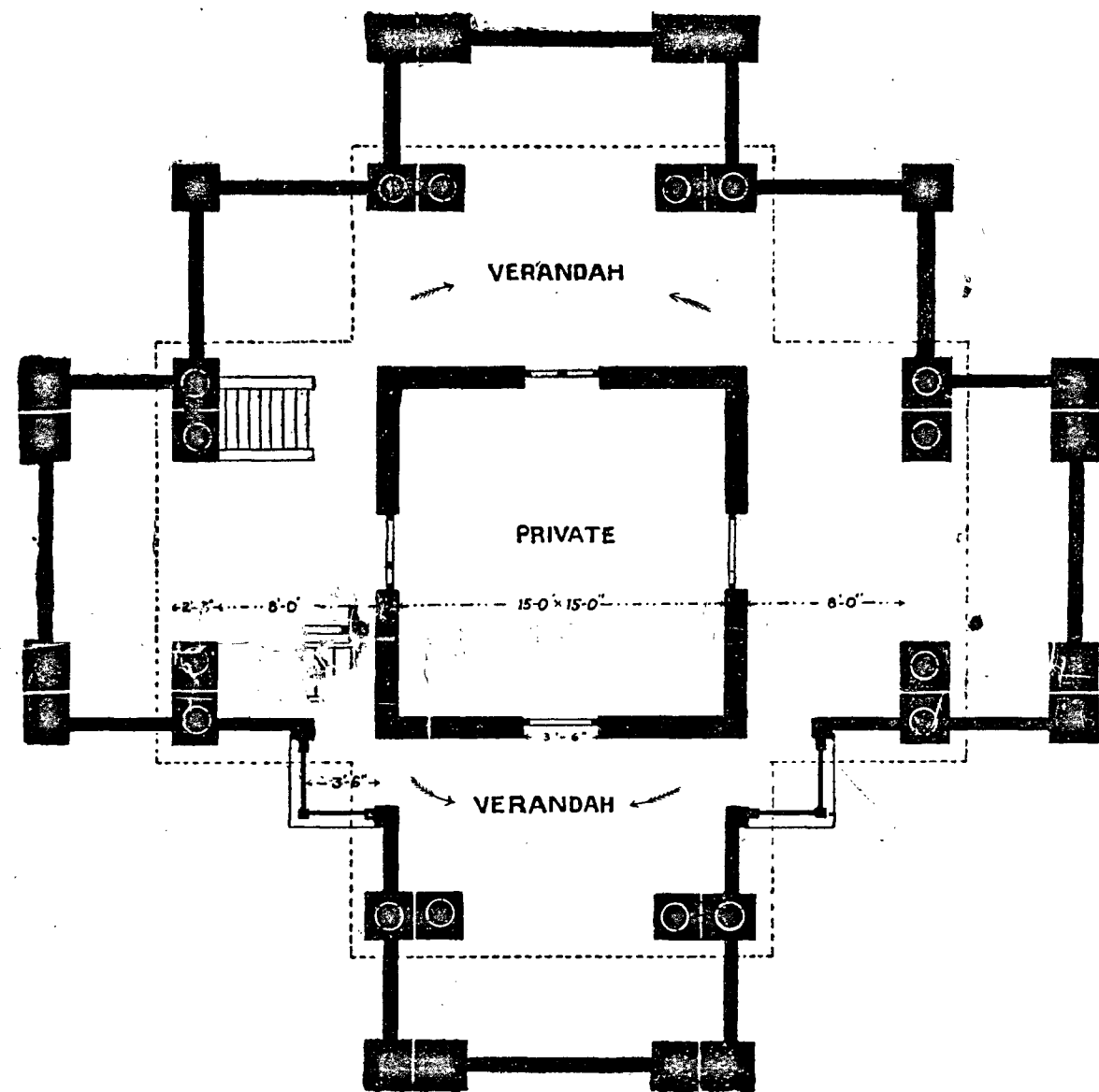


Plate VI-c—showing the Plan at second floor.

Plinth area 1,290 sq. ft. { Extreme Length 40'-6"
 „ „ Breadth 40'-6"

Second Floor.

Private room ... 15-0 x 15-0
 Verandahs on all the four sides.

tion of large workshops and store-houses, mammoth hotels or gigantic office buildings, while our progressive civilization demands that of the school-house, the church, the library and the printing house. The Civil Government requires her public buildings, from the prison to the Council Chamber, legis-

Section on A B C D.

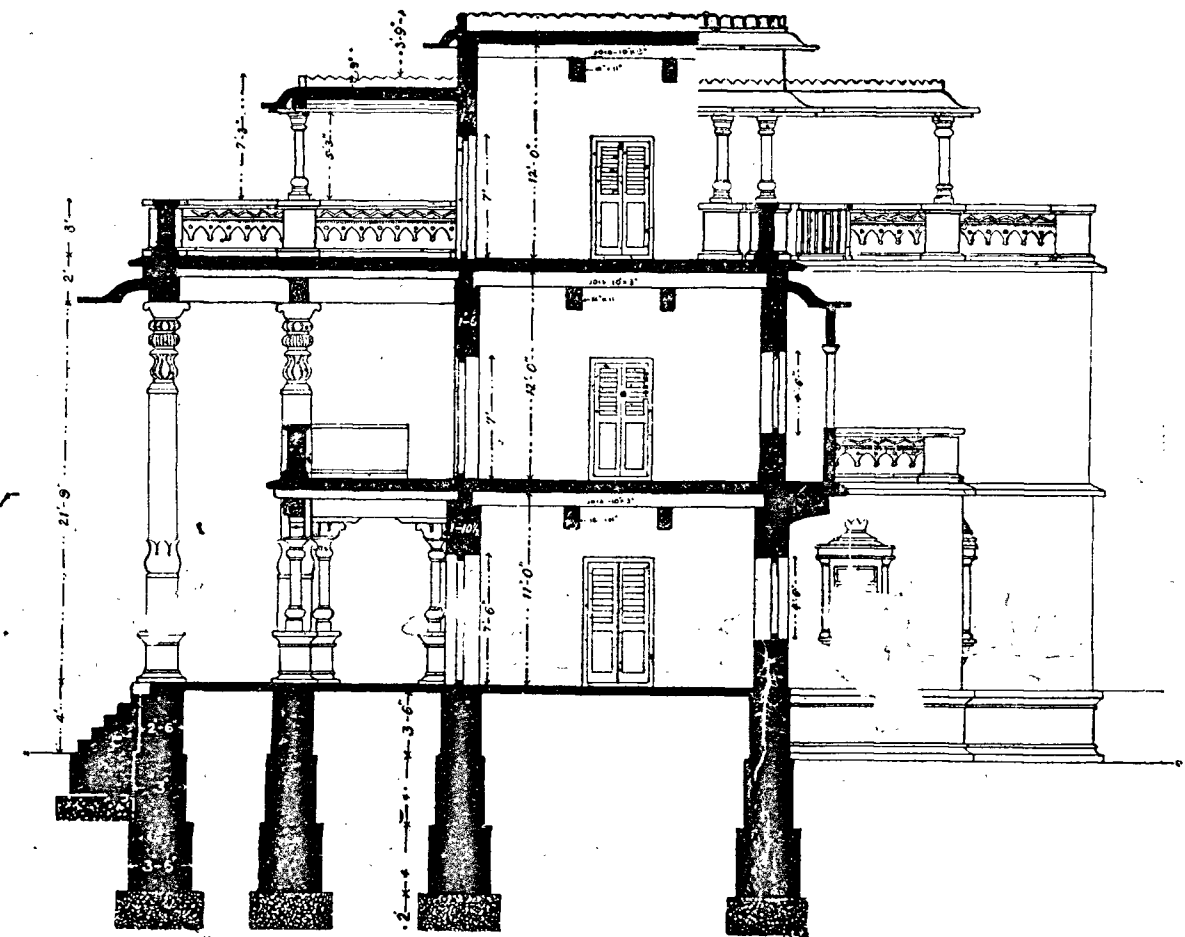


Plate VI-d. showing a longitudinal section of Design No. 6.

lative halls and courts of justice, etc., as also the post office buildings, customs and warehouses, and the like.

In the elevation below, everything is excluded which is foreign to the purpose. Any one can see all the dignity, strength and greatness of the Indian models in place of the banal, ugly and squalid types that we see introduced into this country by copying buildings of other countries and other standards.

The high stylobate, the columns running up to the height of two storeys, the lotus ornamentations at the capitals and bases of windows, and

more than all, the protruding balconies all adapted from the classical styles, give the structure a richness all its own. Even the arrangements of the eaves of the verandahs in the first and second floors are good examples for imitation.

Front elevation of Design No. 6.

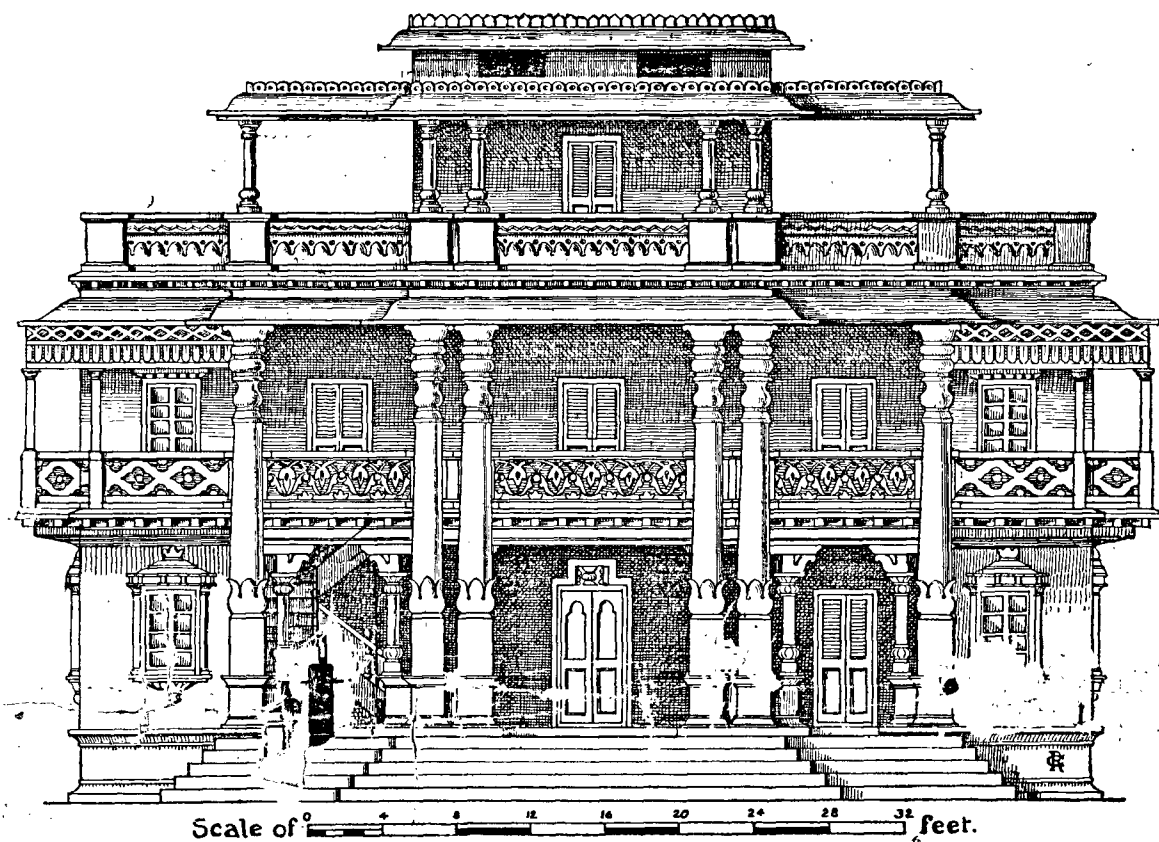


Plate VI-e.—showing the elevation of the Design No. 6 worked in the chaste Indian Renaissance style.

It is unfortunate that the Indian libraries do not possess the models of Indian architectural details and that there are no schools where the indigenous craftsmen can learn the Indian methods and types. Formerly, they had several seats of learning and universities for the learned professions, nurtured under the patronage of Rajahs and Nobles. "The great culture-centre of Asia at the time of Asoka were the Indian Universities of Takshasila, Benares, Srīdhanya, Kataka, on the banks of the Krishna, and Nalānda; according to Havell, "their influence was supreme, and compared with it, the whole influence of Hellenism on Indian art may be taken as a negligible factor." We have on Fergusson's testimony that Nalānda University was to Central India what Cluny and Clairvaux were to France in the Middle ages.



NF2
N7

