INDIAN ARCHITECTURE

ACCORDING TO

MĀNASĀRA-SĪLPASĀSTRA
INDIAN ARCHITECTURE
ACCORDING TO
MĀNASĀRA-ŚILPAPĀṢĀTRA

BY
PRASANNA KUMAR ACHARYA, I.E.S.
M.A. (CALCUTTA), Ph.D. (LEIDEN), D.Lit. (LONDON),
University Professor of Sanskrit, Allahabad.

PUBLISHED BY THE OXFORD UNIVERSITY PRESS
LONDON NEW YORK BOMBAY
CALCUTTA MADRAS
"What the learned world demand of us in India is to be quite certain of our data, to place the monumental record before them exactly as it now exists, and to interpret it faithfully and literally."
CONTENTS

Acknowledgment ........................................ iii
Preface: Connotation of Śilpa-Śāstra and Signification of Mānasāra .......... 1

    I.—Vedic Literature ................................ 5
    II.—Buddhist Literature ................................ 9
    III.—Classical Literature:—
    (a) The Epics ........................................ 17
    (b) The Purāṇas ........................................ 19
    (c) The Āgamas ......................................... 23
    (d) Miscellaneous Treatises ................................ 29

II.—Śilpa-Śāstras: Summaries and Synopses of—
    (a) The Mānasāra ...................................... 34
    (b) The Mayamata Śilpa-Śāstra ............................ 36
    (c) The Aṃśumad-bheda of Kāśyapa ......................... 92
    (d) The Viśvakarma-Śilpa ................................ 96
    (e) The Āgastya .......................................... 100
    (f) The Sanatkumāra-Vāstu-Śāstra ......................... 102
    (g) The Śilpa-Śāstra of Maṇḍana .......................... 103
    (h) The Samgraha ...................................... 106

III.—Position of the Mānasāra in Literature:—
    (a) The Types of Buildings ............................. 111
    (b) The Measurements ................................... 121
    (c) The Five Orders ..................................... 125
    (d) The Three Styles .................................... 130

IV.—The Mānasāra and Vitruvius Compared:—
    (a) The Extent and Popularity .......................... 134
    (b) Similarity in Number and Titles of chapters .......... 137
    (c) Similarity in Training of architects ................. 137
    (d) Similarity in Preliminary chapters .................. 142
    (e) Similarity in Town-planning ........................ 143
    (f) Similarity in Forms, Species and Foundations of Buildings .... 147
    (g) Similarity in Columns ................................ 149
    (h) Similarity in division of Compound into five courts ...... 154
    (i) Similarity in Doors .................................. 155
    (j) Similarity in Sculptural measures ..................... 156
    (k) Similarity in Linguistic style ....................... 158
    (l) Similarity in mysterious Titles .................... 159
## CONTENTS

V.—Age of the Mānasāra:—

(a) The Brāhat-samhitā ... ... ... 160
(b) The Bhavishya and Matsya Purāṇas ... 163
(c) The ancient Professors of Architecture ... 164
(d) Types of buildings and columns ... 167
(e) The Matsya, Garuda and Agni Purāṇas 168
(f) The Artha-sāstra, Kāmandakiya-nīti and Śukra-nīti 169
(g) The Daśakumāra-charita ... ... 170
(h) The Holai Inscriptions ... ... 171
(i) The Sūrya-siddhānta, Lilāvati and Siddhānta-śiromāni 172
(j) The ten types of twelve storeyed buildings representing ten provinces ... ... 173
(k) The three styles representing three geographical divisions of India ... ... 176
(l) Identification of Nāgara, Vesara and Drāvida styles ... 180
(m) Division of Royalty into nine classes ... 181
(n) The extent of Gupta Empire ... ... 184
(o) The prevailing Religion ... 185
(p) Developments in Literature, Language and fine Arts 193
(q) Unfaded memory of Seven Gupta Kings ... 195
(r) Conclusions ... ... 198

Appendix: The Language of the Śilpa-Sāstra 199

General Index ... ... 215
ACKNOWLEDGMENT.

I take this opportunity to offer my respectful thanks to the Government of the United Provinces of Agra and Oudh, to whose generosity I owe the publication of this volume as also my three other books: *A Dictionary of Hindu Architecture, The Manasāra (Sanskrit Text)* and *The Architecture of Manasāra* (English Translation of the Text). For the arrangement I am indebted to the distinguished lovers and encouragers of Oriental scholarship, Sir Claude de la Fosse, C.I.E., M.A., D.Litt., the then Director of Public Instruction and the first Vice-Chancellor of the reconstructed Allahabad University, and Dr. F. W. Thomas, the Librarian of India Office, London. For an encouragement I am indebted to Rai Rajeshwar Bai Sahib, O.B.E., the Minister of Education, Kunwar Jagdish Prasad, C.I.E., O.B.E., I.C.S., the Educational (now Chief) Secretary, and Mr. A. H. MacKenzie, M.A., B.S., the Director of Public Instruction.

To Dr. Thomas I am, further, grateful for many helpful directions and for procuring for me the available manuscripts and placing at my disposal the books in the India Office Library where I made a special study of the Purānas and the Epics. Professor L. D. Barnett, M.A., Litt. D., who was my teacher at University College, London, initiated me to the study of the Agamas at British Museum, London; he also taught me the various South Indian scripts and helped me with his scholarly instructions for which I am grateful to him. Under the guidance of Professor J. P. Vogel, Ph.D., a summary of the Manasāra was prepared at Leiden University, Holland, and I am grateful to him for his assistance. I am thankful to the authorities of the Government Manuscripts Library, Madras, for permission to use the Library where I studied the available manuscripts on Indian Architecture.

To the late lamented Dr. D. B. Spooner, the then Director-General of Archaeology, I owe all the facilities to work at the rich Archaeological Library at Benmore, Simla, where, at the encouragement of his talented wife, two difficult sections of this volume (III, V) were completed.

The first proof was turned out without diacritical marks which were not then available at Government Press. I owe to Mr. H. K. Ghosh, the Manager of the Indian Press, an arrangement by which their chief proof-reader, Mr. Ajit Kumar Banerji, put in these marks and has thereby earned my gratitude. To Dr. Meghnath Banerji, a great lover of our ancient store of knowledge and a versatile genius, I owe the revision of the second proof. For many useful suggestions and improvements I am indebted to my esteemed colleague Professor H. N. Randle, M.A., D.Phil., who very readily and generously took the trouble of going through
the whole book at the revision stage of the penultimate proof. To another colleague of mine, Pandit Kshetresh Chandra Chattopadhyaya, M.A., I owe an important reference, among other occasional assistance, recorded under note 1, page 198. I am thankful to one of our research scholars, Pandit Kesoram Pandya, M.A., for selecting most of the words on which I have written notes under the Index.

Last but not least I am pleased to record my grateful thanks to Major W. C. Abel, M.B.E., V.D., lately the Superintendent of Government Press, Allahabad, and to his able successor, Mr. D. W. Crighton, and to their staff for their ever sympathetic and kind treatment towards me and for their patient and careful handling which was necessary in bringing out a volume like this.

SANSKRIT DEPARTMENT,
UNIVERSITY OF ALLAHABAD:
August, 1927.

P. K. ACHARYA.
PREFACE

THE term *Śilpa* means an art, fine or mechanical. It covers some sixty-four such arts. But here *Śilpa-śāstra* is used in the sense of Vāstu-śāstra, this latter term being less usual.¹ The literal rendering of Vāstu-śāstra would be 'science of architecture,' but a complete Vāstu-śāstra deals with more than what is generally understood by architecture. In the Vāstu-śāstras the term architecture is taken in its broadest sense and implies what is built or constructed. Thus in the first place it denotes all kinds of buildings, religious, residential, and military; and their auxiliary members and component mouldings. Secondly, it covers town-planning; laying out gardens; constructing market-places including ports and harbours; making roads, bridges, gateways, triumphal arches; digging wells, tanks, trenches, drains, sewers, moats; building enclosure walls, embankments, dams, railings, landing-places, flights of steps for hills and bathing ghāts, and ladders. Thirdly, it connotes articles of furniture such as bedsteads, couches, tables, chairs, thrones, wardrobes, baskats, cages, nests, mills, conveyances, lamps and lamp-posts for streets. It also includes the making of dresses and ornaments; such as chains, crowns, head-gear and foot and armwear. Architecture also includes sculpture and deals with carving of phalli, idols of deities, statues of great personages, images of animals and birds. It is also concerned with such preliminary matters as the selection of site, testing of soil, planning, designing, finding out cardinal points by means of a gnomon, dialling, and astronomical and astrological calculations.

All these matters are systematically treated in the standard work on the subject known as the *Mānasāra*. Under this short title the work has been catalogued and generally referred to. But the complete title, as appears from the seventy colophons of the text, is the

¹ Western scholars like Dr. Burrose have also used the expression *Śilpa-śāstra* in this sense (see Imperial Gazeteer, II. 178).
Mānasāra-vāstu-sāstra. Some manuscripts have the title Mānavasāra. It is stated on the fly-leaf of some other manuscripts that those manuscripts were copied from a Śilpa-sāstra which is apparently meant to be the title of the original work.

The etymological rendering of the word mānasāra is 'the essence of measurement,' sāra meaning essence and māna measurement. It may, however, be rendered by 'the standard measurement' or 'the system of proportion' as has been done by the author of An Essay on the architecture of the Hindus.\(^1\) In this sense the full title Mānasāra-Vāstu-sāstra would imply a Vāstu-sāstra or science of architecture, where the essence of measurement is contained, the standard measurement followed, or the system of proportions embodied.\(^2\)

There is an ambiguity as regards the signification of the title of this standard work. The colophon annexed to each of the seventy chapters contains the expression Mānasāra Vāstu-sāstra. This is apparently intended to mean either the Vāstu-sāstra by Mānasāra or the Vāstu-sāstra named Mānasāra.\(^3\) In other words, Mānasāra would seem to be such a name as may be applied to the author as well as to the work.\(^4\) In a passage in the treatise itself the term mānasāra has been used in both these senses.\(^5\) Therein it is held that 'all this is stated to have been compiled by the ancient Mānasāras. This great science was formerly revealed by all the gods beginning with the Creator and the King of gods. Having been compiled therefrom, this treatise Mānasāra is made

\(^1\) Rām Rāz, p. 9 note.

\(^2\) There are several other treatises of which the titles end in sāra, meaning essence; for instance, Viśākha-sāra, Jyotisāra, Ācāra-sāra, Laghu-Śilpa-jyotisāra, Śilpa-sāstra-sāra (śaṅgraha).

\(^3\) But from the locative use of mānasāra, the latter sense seems to be the usual one.

\(^4\) The same ambiguity apparently attaches to titles like Kauṭilya-arthasastra. But the titles like Saṅkumāra-vāstu-sāstra, Maya-Śilpa-sāstra, Gārga-sāmhitā or Śakraniti would indicate only the first category.

\(^5\) इत्तमिति चतुर्थमुक्तं मानसारपुराणः पितामहेन्द्रपुरुषः
सामलेखवरिण्दशाख्यवरे पुरोविद्यम्।

सामसालमुख्य हि मानसारम्
शास्त्रेः इत्तः काहितार्थमेतत्॥ (LXX. 114-8).
for the benefit of the people'. In this passage the term manasāra is once used in the sense of a generic name (of architects), and secondly as the title of a treatise implying 'the essence of measurement,' which is the etymological rendering of manasāra. This latter sense is explicitly expressed in another passage where it is stated that 'having successively collected in a concise form the essence of measurement from the sūtra' this treatise is compiled.¹ The former sense is also substantiated by several other passages. In one place it is stated that 'the treatise, compiled by the sages or professors of architecture called Manasāras, was named after the sage or architect Manasāra.'² There is yet another ambiguity in this passage, Manasāra being once a generic name in the plural and in a second place a personal name in the singular. As a generic name it is used in another passage where it is stated that 'there are many Manasāras.'³ Then thirty-two sages or professors of architecture are specified by names⁴, wherein māna or measurement is associated with four names—Māna-sāra, Māna-kalpa, Māna-bodha and Māna-vid. It is not unlikely that the sages or professors, with whose names māna or measurement is associated, are intended to be distinguished from the rest as being specialists in 'measuring' which is a very important feature of the science of architecture. It is also used exclusively as a personal name when it is stated 'by all great sages or professors, Manasāra and others.'⁵

All the available external references to Manasāra, however, point to its being used mostly as a personal name. In the Dasa-kumāra-charita of Daṇḍin, Manasāra is mentioned as the king of Malwa. With him was engaged in war the king Rajabhauśa of Pāṭaliputra who

¹ मानसारे शास्त्रेसंग्रह: कमलव । (XXXIII. 2).
² मानसारे ऋषियों संग्रह: मानसारमुनिनामकमासी । (I. 39).
In this line two epithets, Rishi and Maṇi, one in the plural and the other in the singular, are supplied to the name Manasāra.
³ मानसारे शास्त्रे: श्रुत: । (LVIII. 11).
⁴ See pages 163; SC note 3.
⁵ सकलमुनिवर्मानसारादिमुखः । (LXIX. 216).
cross-beams. The hymns of the Atharva-veda give some information about the construction of a house, but the details are extremely obscure. According to Zimmer, four pillars (upiter) were set up on a good site, and against them beams were leant at an angle as props (prolimit). The upright pillars were connected by cross-beams (prolimit) resting upon them. The roof was formed of ribs of bamboo cane (varsha). The walls were filled up with grass in bundles (palada), and the whole structure was held together by ties of various sorts (nahana, prashana, samdansa, parishvanjalaya). It was composed of several rooms, and it could be securely shut up.

Atri is stated to have been thrown into a machine room with a hundred doors, where he was roasted. Vasishtha desired to have a three-storied dwelling (tri-dhru-tara-nam). Mention is made of a sovereign who, exercising no oppression, sits down in this substantial and elegant hall built with a thousand pillars, and of residential houses with such pillars as are said to be vast, comprehensive, and thousand-doored. Mitra and Varuna are represented as occupying a great palace with a thousand pillars and a thousand gates.

1 Dvr and dvra, R. V. I, 13, 6.
2 A. V. VIII, 3, 22; XIV, 1, 63.
3 Vajasaneyi-Samhita, XXX, 10.
4 Sata-patha-Brhamana, XI, 1, 1, 2; XIV, 3, 1, 13.
5 Upamit (pillar), R. V. I, 50, 1; IX, 5, 1.
6 A. V. IX, 3, 1.
7 Parimit (cross-beam), A. V. IX, 3, 1.
8 Ibid., page 230.
10 Whiteway, Translation of the Atharva-veda, 326, et seq.

11 It seems likely that, as the ribs were of bamboo and were probably fixed in the ridge, the roof was wagon-headed, like the huts of the Todas at the present day (see illustrations of rivers, The Tepas, pp. 25, 27, 28, 51), and the rock-cut Chaityas or Assembly halls of the Buddhists in Western India, in some of the earliest of which the wooden ribs of the arched roof are still preserved. See Ferguson, History of Indian Architecture II, 136, cf. 126.

12 A. V. IX, 3, 4, 5.
13 R. V. VII, 85, 6.
15 Ibid., IV, 200.
16 Ibid., II, 313.
17 Ibid., IV, 179.
18 Compare R. V. II, 41, 6; V. 62, 6; VII, 85, 5.

A. V. III, 13; IX, 3, which contains prayers for the stability of a house at the time of its construction.
reasonable when he comments on this by saying that "this is but an exaggerated description of a royal residence such as the poet had seen."

The Śatvasūtras, which are but the supplementary portions of the Kalpa-Sūtras, treating of the measurement and construction of the different Vedas or altars, furnish us with some interesting structural details of the Agnis, the large altars built of bricks. The construction of these altars, which were required for the great Soma sacrifice, seems to have been based on sound scientific principles and was probably the beginning of religious architecture (temple-building) in India.

These altars could be constructed in different shapes, the earliest enumeration of which is found in the Taśṭṭṭirīya-Saṁhitā. Following this enumeration, Baudhāyana and Āpastamba furnish us with full particulars about the shape of all these different chitis (altars) and the bricks which were employed for their construction. Everyone of these altars was constructed of five layers of bricks, which together came up to the height of the knee; in some cases 10 or 15 layers, and proportionate increase in the height of the altar were prescribed. Every layer in its turn was to consist of two hundred bricks, so that the whole Agni (altar) contained a thousand; the first, third, and fifth layers were divided into two hundred parts in exactly the same manner; a different division was adopted for the second and the fourth, so that one brick was never laid upon another of the same size and form.

1 Muir, Samhiti Texts, V, 455.

Compare R. L. Mitra, Indo-Aryan, I, 27: "Pillars, spacious doors and windows, though frequently mentioned, are not decisive indications of the existence of masonry buildings; but bricks could not possibly have originated unless required for such structures; for it would be absurd to suppose that bricks were known and made, and yet they were never used in the construction of houses."

2 V, 4, 11.

(i) Chaturākṣa-chit—so called because it resembles the form of a falcon and the bricks out of which it is composed are all square shaped.
(ii) Kāṅka-chit—in the form of a heron (cf. Burnell, Cat., 29, of a carrion kite) is the same as ākṣa-chit except the two additional feet.
(iii) Alaj-chit—is the same except the additional wings.
(iv) Pragha-chit—is an equilateral triangle; and the
(v) Ubbhātāḥ-Pragachit—is made up of two such triangles joined at their bases.
(vi) Rathachakrachit—is in the form of a wheel; (i) a massive wheel without spokes, and (ii) a wheel with sixteen spokes.
(vii) Droga-chit—is like a vessel or tube, square or circular.
(viii) Purīchāya-chit—has a circular outline and is equal to the Rathachakrachit, differing in the arrangement of bricks which are to be placed in six concentric circles.
(ix) Sambhāya-chit—is circular in shape and made of loose earth and bricks.
(x) Kārma-chit—resembles a tortoise and is of a triangular or circular shape. Cf. Thibaut, J.A., S.B., 1876, part I.
The first altar covered an area of \(7\frac{1}{2}\) purushas, which means \(7\frac{1}{2}\) squares, each side of which was equal to a purusha, i.e., the height of a man with uplifted arms. On each subsequent occasion the area was increased by one square purusha. Thus, at the second layer of the altar one square purusha was added to the \(7\frac{1}{2}\) constituting the first chiti (altar), and at the third layer two square purushas were added and so on. But the shape of the whole and the relative proportion of each constituent part had to remain unchanged. The area of every chiti (altar), whatever its shape might be — falcon, wheel, tortoise, etc., — had to be equal to \(7\frac{1}{2}\) square purushas.

Frequent mention is made also of villages, towns and forts, and cities with hundred enclosures or fortifications are referred to. On this Muir remarks that although they are only alluded to as figurative expressions of the means of protection afforded by the gods, they no doubt suggest the idea of forts consisting apparently of a series of concentric walls, as actually existing in the country at that time.

From references like these many scholars are of opinion that the authors of the Vedic literature were not ignorant of stone forts, walled cities, stone houses, carved stones, and brick edifices.

---

1. Thus squares had to be found which would be equal to two or more given squares, or equal to the difference of two given squares; oblongs were turned into squares and squares into oblongs. Triangles were constructed equal to given squares or oblongs and so on. A circle had to be constructed, the area of which might equal as closely as possible that of a given square. See illustrations in *The Pāṇini*, new series, June, 1876, no. 1; volumes I and IV, 1883; old series, June, 1874, no. 37, volumes IX and X, May, 1876.

2. R. V. 1, 29, 8; 141, 1; II. 20, 8; iv. 27, 1; 50, 20; vi. 8, 7; 15, 14; 29, 8; 36, 1.

3. R. V. 1, 166, 8; vii. 15, 14.

II  BUDDHIST LITERATURE

"In the Buddha’s time and in that portion of northern India where the Buddhist influence was most early felt—that is to say, in the districts including and adjoining those now called the United Provinces and Behar"—the arrangements of villages were practically similar. "We nowhere hear of isolated houses. The houses were all together, in a group, separated only by narrow lanes. Immediately adjoining was the sacred grove of trees of the primeval forest . . . . . . Beyond this was the wide expanse of cultivated field, usually rice-field." Villagers are described as "uniting of their own accord to build mole-hills and rest-houses and reservoirs, to mend the roads between their own and adjacent villages, and even to lay out parks." 1

The exact details of town-planning are not available. But "we are told of lofty walls, ramparts with buttresses and watch-towers and great gates; the whole surrounded by a moat or even a double moat, one of water and one of mud. But we are nowhere told of the length of the fortifications or of the extent of the space they enclosed. It would seem that we have to think not so much of a large walled city as of a fort surrounded by a number of suburbs . . . From the frequent mention of the windows of the great houses opening directly on to the streets or squares it would appear that it was not the custom to have them surrounded by any private grounds. There were, however, no doubt, enclosed spaces behind the fronts of the houses, which latter abutted on the streets." 2

1 Buddhist India, Rhys Davids, 42, 43, 49: compare Jat. 1. 109.
2 B. D. ibid. pp. 63-64.

Of. The hill fortress, Giriraja, four and a half miles in circumference, is said to have been built by Mahā-Govinda, the architect. Bimbisāra is stated to have built Rājagṛha, king's house, which was three miles in circumference. "The stone walls of Giriraja are the oldest extant stone buildings in India." Mention is also made of Ayodhī, Barānśa, Kāmpīla, Kesāmbī, Madhura, Mithila, Sāgara, Sāketa, Sāvatthi, Ujjain, Vesāli and other cities, of which however few architectural details are given. (Vimāna-Vatīthu, commentary, p. 82).

Compare Dīgh. XIX, 38:


dunpuru kaḷiṇḍāṇam kāsāṇaṇaṇaṇu pātān̄ 
mahīśasāṃ pānārhuḥ samyogatām rākṣakaṃ ||
muhīla cānandaṃ chaḥ pathroṇuḥ mahāpiṭaka 
varāḥsasāṃ cānandaṃ ete gāvinda-mahāpiṭita ||

But detached references to individual buildings, as distinct from villages and towns, are found in abundance in the canonical texts as well as the Jātakas. At places it appears as if Buddha were delivering discourses on architecture. As a matter of fact, he enjoined upon his devotees the supervision of building construction as one of the duties of the order. It is stated in one of the early texts that the Bhikkhus were told on a certain occasion by the Blessed One, after the delivery of a religious discourse, with respect to dwellings, thus: 'I allow you, O Bhikkhus, abodes of five kinds—Vihāra, Ardhāhayoga, Prāsāda, Harmya, and Gaha.'

Buildings are thus divided into five classes. But the details of the distinguishing features are not methodically given in the texts, obviously because these are not architectural treatises.

Vihāras are the well known monasteries or temples of the Buddhists, originally implying halls where the monks met. Ardhāhayogas seem to be a special kind of Bengal buildings, partly religious and partly residential. Prāsādas are wholly residential storeyed buildings; Harmyas are a larger and more pompous

---

1 Chullavagga, VI. 17, 1; transl. pp. 212-216.
2 Vinaya Texts, Mahāvagga, I. 39, 4, p. 173-74; Chullavagga, VI. 1, 2, p. 158.
3 The commentator Buddhaghoṣa has, however, submitted an explanatory note. Vihāra is the well known Buddhist monastery. Ardhāhayogas, which literally means 'half-joining', is stated by this commentator to imply Saravas-vaṣaṇa-grīha or 'gold-coloured Bengal houses' as rendered by Oldenberg and Rhys Davids. There appear, however, no such houses in Bengal, nor is this class of buildings mentioned in the Śilpa-śastras. It is clear, however, that these are meant to imply some sort of luxurious buildings of the than Buddhist. Regarding prāsādas Buddhaghoṣa simply says that it is a long Prasāda. Rhys Davids has made several conjectures—'a long storied mansion, or the whole of an upper storied, or the storied buildings.' Sir M. M. Williams seems to explain this by 'the monks' hall for assembly and confession.' Harmya is stated to be a prasāda with an upper chamber placed on the topmost storied. The references to the use of prāsāda and harmya as found in the Śilpa-śastras, general Sanskrit literature, and the archaeological records will be found in the writer's Dictionary under those terms. Gaha literally means cave and would seem to refer to underground buildings. One of the Jātakas (Umaṇṇa, p. 330) actually contains an elaborate description of an underground palace, and there are the rock cut temples as in the famous Ajanta caves. According to Buddhaghoṣa these gaha buildings are of four kinds, namely, these built of bricks, stone, wood, or earth. Rhys Davids has rendered sīlahā by built made in a rock, and left out the translation of paśa (Sanskrit paśa, meaning sand, dust, or crumbling soil) gaha. Buddhaghoṣa has thus explained the paśa-tenāri under Mahāvagga I. 30. 4—

'प्रश्नेसिनी विषुवकण्याचरणारा पासातो दोषासह इतिवर्णीति' पासातो शेख | गूढ्याः पञ्चायुष्याः सिलारुष्या धारारुष्या रंगुनहाः ।

Compare also Oldenberg and Rhys Davids, Vinaya Texts, translation, Mahāvagga, p. 173, note, also Chullavagga, p. 168, note 2.
type of storeyed buildings. Guhās seem to be less dignified buildings, originally built underground for middle-class people. The extensiveness of these buildings can be imagined from the length of time devoted to getting a house completely built. Thus, it is stated that "with reference to the work of a small Vihāra, it may be given in charge (to an overseer) as a Navakamma (new work) for a period of five or six years, that on an Adhikayoga for a period of seven or eight years, that on a large Vihāra or a Pasāda for ten or twelve years." That the long periods were not idled away will be clear from the following details of houses gathered from the Vinaya texts.

The selection of building sites shows a highly developed good taste. The ārama (rest-house), well fitted for quiet people, is stated to be built "not too far from the town and not too near, convenient for going and for coming, easily accessible for all who wish to visit him, by day not too crowded, by night not exposed to too much noise and alarm..." The whole compound is enclosed with ramparts (prākāra) of three kinds, namely, brick walls, stone walls, and wooden fences, which are again surrounded with bamboo fences, thorn fences, and ditches.

Houses were built comprising "dwelling-rooms and retiring-rooms, and store-rooms, and service halls and halls with fire-places in them, and store-houses, and closets, and cloisters, and halls for exercise, and wells, and sheds for the well, and bath-rooms, and halls attached to the bath-rooms, and ponds, and open-roofed sheds (maṇḍalas)." These buildings are meant to be dwelling houses; so it is stated that "an upāsaka (devotee) has built for his own use a residence, a sleeping room, a stable, a tower, a one-peaked building, a shop, a boutique, a storeyed house, an attic, a cave, a cell, a store-room, a refectory, a fire-room, a kitchen, a privy, a place to walk in, a house to walk in, a well, a well-house, a yantra-griha (which is supposed by Bühler to be "a bathing place for hot sitting baths"), a yantra-griha room, a lotus pond and a pavilion."

The inner chambers are divided into three classes, called Śīvikā-garbhā or square halls, Nālikā-garbhā or rectangular halls, and Harmya-garbhā which appears

---

1 Chullavagga, VI. 17, 1 (Translation, page 214).
2 Chullavagga, VI. 5, etc., and Mahāvagga.
3 Chullavagga, VI. 4, 8 (Translation, page 187).
5 Chullavagga, VI. 4, 10 (Translation, page 189).
6 Mahāvagga, III. 5, 9 (Translation, page 304), also III. 6, 6 (Translation, page 309).
to be a large dining-hall.¹ The verandahs (alāṅkāra) seem to have been a special characteristic of these buildings. The Blessed One (Buddha) says, "I allow you, O Bhikkhus, covered terraces, inner verandahs, and over-hanging eaves."² The storeyed buildings (prāśāda) are stated to be furnished with "a verandah to it, supported on pillars" with capitals of elephant-head.³

Details of gates, doors and windows are also elaborate. Gateways are built with rooms and ornamental screen-work over them.⁴ And gates are made of stakes interlaced with thorny brakes.⁵

Doors are furnished with "door-posts and lintel, with hollows like a mortar for the door to revolve in, with projections to revolve in those hollows, with rings on the door for the bolt to work along in, with a block of wood fixed into the edge of the door-post, and containing a cavity for the bolt to go into (called the monkey's head), with a pin to secure the bolt by, with a connecting bolt, with a key-hole, with a hole for a string with which the door may be closed, and with a string for that purpose."⁶ The windows are stated to be of three kinds according as they are

¹About the last Buddhaghosha seems to be doubtful and says हमिष्ववशा तिन्भावार्गवशा भवुनिस्वलावनवशा वा;—but about the other two terms he is clear: सिलिकाभवशा तिन्भावार्गवशा नालिकाभवशा तिन्भावार्गवशा बिश्याश्रता बिनुष्ठितिन्तुवलावा द्विवलावा (Chulukṣaṇa, VI, 4, 3). But Oldenberg and Rhys Davids seem to have been wholly misled when they translate these last two by "pailankshen shaped and quartz measure shaped" about the latter of which Indians of even to-day are quite unfamiliar.

²Chulukṣaṇa, VI, 3, 3. (Translation, page 175), commented on by Buddhaghosha: पालिका नाम पण्यणुष्ववशा बुब्हानति। (Compare Abhidhānapādīpikā, verse 219). पश्वय नाम च निषेधवशा च पवित्रता च पादंति हनति, ततो विहार द्वारे उल्लवति कुटुड़ निहिर्वला करतौस्सम पर्ययवचनसम, पवित्रता न पूणि वृष्णि। पक्कुटन्त न भवस्सम समाला परिताणार्गो बुब्हाति पक्कुटन न पवित्रः। पालिके का न तत्तमयाम वसं द्वारा तत्ते द्वार्षके पालिके बुब्हाति करतं ब्यासनयुक्तं।

³Ibid, VI, 14, 1. (Translation, page 206): हमिष्ववशा तिन्भावार्गवशा घास्राखण्ड supported on the frontlet globes (kUMBha) of elephants, says Buddhaghosha.

⁴Chulukṣaṇa, VI, 3, 10 (Translation, page 169); 3, 10. तो सम which excellent examples in stone have been found at the Sāntē and Bharhut Tups, (Translation, page 179).

⁵Ibid, VI, 3, 10, (Translation, page 179).

⁶Ibid, VI, 3, 3 also 2, 1 and 17, 1. (Translation, pages 177, 181, 215). Compare the distinction between क्रवार (door proper) and द्वार (doorway or gateway) (Translation, page 160, note 3). The keys are stated to be of three kinds, as they are made of bronze, hard wood or horn (VI, 2, 1; Translation, page 162).
made with railings, lattices, and slips of wood. The shutters are adjustable and can be closed or opened whenever required. Five kinds of roofing are mentioned—brick-roofing, stone-roofing, cement-roofing, straw-roofing, and roofing of leaves. The roof is first covered over with skins (?) and plastered within and without; then follow whitewash, blocking, red-colouring, wreath-work and creeper-work. The floors were of earth, not of wood, and were restored from time to time by fresh clay or dry cow dung being laid down, and then covered with a whitewash in which sometimes black or red was mixed. From the parallel passage in Mahāvagga (I, 25. 15) and Chullavagga (VIII. 3. 1), it would seem that the red colouring was used rather for walls, and the black one for floors. It appears, however, that with a view to removing the dampness gravel was spread over the floor.

There were stairs of three kinds, namely, brick stairs, stone stairs, and wooden stairs. And they were furnished with ālambana-bāha or balustrades. A more detailed description of flights of stairs (sopāna) is given in the Mahā-Sudassana Sutta: "Each of these had a thambhā, evidently posts or banisters; sīhīga, apparently cross-bars let into these banisters; and unkīsam, either a head-line running along the top of the banisters, or a figure-head at the lower end of such a head-line." Thus it is clear that very minute details also are mentioned in this literature. The subject, therefore, seems to have been treated in a more than casual manner.

1 Chullavagga VI. 2. 3. वेदिकावातपां वेदिकासाकर्तिः, of which वेदिकाका has been explained by Rhys Davids in his note on Mahā-Sudassana Sutta. I. 60. (see R. D.'s Buddhist Suttas, page 269). जालवातपां वातपां च जालकवरः, of which जाल litreally means 'not' but corresponds to lattice. R. D. advises to compare Anglo-Indian 'jalousia' (page 169). सालकवातपां वातपां च यम्सक्वस्यातपां च, which possibly means with slips of wood arranged horizontally as in our Venetian blinds" (page 163). In spite of all these the learned Orientalists, Rhys Davids and Oldenberg, would say that "There were, of course, no windows in our modern sense, but only spaces left in the wall to admit light and air, and covered by lattices of three kinds" (note on Ibid. VIII. 2. 2, Translation, page 379).

2 Chullavagga, I. 25. 15, (Translation, page 160); Chullavagga, VIII. 3. 10, (Translation, page 179). Compare also VI. 3. 8. 2, 3, etc.

3 Mahāvagga, I. 11. 6. (Translation, page 97); the rendering of the term 'egumpheti' which also occurs in Mahāvagga, I. 11, by 'skins' seems doubtful and unsuitable. Buddhaghosa in his note at the latter place says गुम्फेजिक गृहिणानि गृहिणी द्रव्यात्त वेदिकवा क्षयति।

4 Rhys Davids and Oldenberg, note on Chullavagga, VI. 20. 2. (Translation, page 215).

5 Compare Chullavagga, V. 11. 5.

6 Chullavagga, V. 11. 6. (Translation, page 96).

7 Mahā Sudassana Sutta, I. 50. See also R. Davids, 'Buddhist Suttas', page 263, and compare Chullavagga, VI. 3. 5.
The entrance to the great houses was through a large gateway. To the right and left of the passage-way were the treasury and grain stores. The gateway led into an inner courtyard round which were chambers on the ground-floor. And above these chambers was a flat roof called the upari-prasada tala, the upper flat surface of the house, where the owner sat, usually under a pavilion, which answered the purpose at once of a drawing-room, an office, and a dining-hall."

"In the King's palace there was accommodation also for all the business of the state, and for the numerous retinue and the extensive harem. The supplementary buildings included three institutions which are strange to us, and of considerable historical interest."

"We are told several times of a building of seven storeys in height." Professor Rhys Davids seems to be of the opinion that these buildings must have some connection with the seven-storeyed Ziggurats of Chaldea. "But in India the use to which such seven-storeyed palaces were put was entirely private, and had nothing to do with any worship of the stars." Still he would add that "in this case also the Indians were borrowers of an idea."

"Another sort of building historically interesting were the hot-air baths, described in full in Vinaya texts. They were built on an elevated basement faced with brick or stone, with stone stairs leading up to it, and a railing round the verandah. The roof and walls were of wood, covered first with skins, and then with plaster; the lower part only of the wall being faced with bricks. There was an ante-chamber, and a hot-room, and a pool to bathe in. Seats were arranged round a fire-place in the middle of the hot room; and to induce perspiration hot water was poured over the bathers."

In the Digha Nikāya there is a description of "another sort of bath, an open-air bathing tank, with flights of steps leading to it, faced entirely with stone, and ornamented both with flowers and carvings."

---

1 Satto-bhānika-pāśāda, Jataka, 1, 227, 316; 5, 53, 426; 6, 577. R. Davids refers to a building "still standing at Pulastī-pura in Ceylon and the thousand stone pillars on which another was erected at Anuradhapura." (Buddhāst India, page 70).

2 III, 105-110, 207. "After the bath there was shampooing, and then a plunge into the pool." "It is very curious to find," observes Rhys Davids "at this very early date in the Ganges valley a sort of bathing so closely resembling our modern "so-called 'Turkish bath'. "Did the Turks", he asks, "derive this custom from India?" (Ibid, page 74).

3 Buddhist Sutras, translated by R. Davids, (page 262 foll.), who refers to "several ancient baths still to be seen at Anuradhapura in a fair state of preservation, in spite of the more than two thousand years that have elapsed since they were first constructed." (Ibid. page 76).
The Dāgabas or topes were another class of monuments erected in the cemeteries. They were pre-Buddhistic in origin but became very prominent after Buddha. The priestly records, however, ignore these topes, because they were erected "more especially by those who had thrown off their allegiance to the priests, and were desirous to honour the memory of their teachers, who were leaders of thought, or reformers, or philosophers."

"The first step was probably merely to build the cairn more carefully than usual with stones and to cover the outside with fine chunam plaster to give a marble-like surface. The next step was to build the cairn of concentric layers of the huge bricks in use at the time, and to surround the whole with a wooden railing."

"Even in the Buddha's time the size of these monuments had already reached very considerable dimensions. The solid dome erected by the Sākiyas over their share of the ashes from the Buddha's funeral pyre must have been about the same height as the dome of the St. Paul's measured from the roof." ²

From the books referring to the earlier Buddhist period stone seems to have been used only for pillars, walls and stair cases. A palace of stone is once mentioned in a fairy land. According to Rhys Davids, "the superstructure at least, of all dwellings was either of wood-work or brick-work. In either case it was often covered, both internally and externally, with fine chunam plaster-works, and brilliantly painted in fresco, with figures or patterns, four of which have been preserved, namely, wreath-work, creeper-work, fine-ribbon-work and dragon's-tooth-work. When the figures predominated the result is often called a picture-gallery (chittāgāra)." ³

The articles of furniture, which form an important part of the architectural subjects, are also elaborately described in the Buddhist literature. Benches were made long enough to accommodate three persons. The bedstead (pallavāka) or

---

¹ Pinaun texts, 4. 308.
² Cl. White Pajavanada, chap. 35, and the writer's Dictionary.
³ R. Davids, page 83-4. References to a large number of topes will be found in the writer's Dictionary under śrāpa. Buddhaghosha's enumeration of the parts of a palace also shows the popularity of the subject in architecture in Buddhist literature. "Ayam phasso nāma yathā pāśādam patva, thambe nāma, cāndhabhasambhāranāmaṁ balavapsaye tuo saaghāta bhatti, pādaṭṭa-gopānasipakkhamahavatīyo thambe buddha thambe, pāthānīta evam eva sahaṭhasampa-yuttadhamanāmaṁ balavapsaye hoti." (Atharavac, para 238, page 107, ed. Müller).
⁴ Jat, 6.260.
⁵ Pinaun texts, Translation, 2, 67; 4, 47.
⁶ R. Davids, page 63.
⁷ Chullavagga, VI, 13, 3. (Translation, page 209).
divan was a separate piece of furniture.\footnote{Chullavagga, VI. 14.1; VI. 8.1, etc., (Translation, page 209, 197); Mahāvagga, V. 10.3, (Translation, page 27).} Large couches (āsandi) or chairs seem to have been important articles of furniture.\footnote{Ibid. VI. 14.1, VI. 8.1, etc., (Translation, page 209, 197); Mahāvagga, V. 10.3, (Translation, page 27).} Couches covered with canopies are also mentioned.\footnote{Rhye Davids and Oldenberg render āsandita twice by cushions and once by couches, and Childers by ‘chairs’ (see his Dictionary). It seems to imply Sanskrit asanda which means ‘a seat.’} Mention is made of a large variety of chairs, namely, rectangular chair (āsandako), arm chair, sofa (sattāsagga), sofa with arms to it, state chair (bhadda-piṭhama), cushioned chair (piṭhikā), chair raised on a pedestal (etaka-pada-piṭham), chair with many legs (āmalaka-vastika-piṭham), leaning board (phaḷakama), cane-bottomed chair (kokechham) and straw-bottomed chair.\footnote{Mahāvagga, V. 10.3; (Translation, page 27).} Mention is also made of the litter or sedan-chair.\footnote{Chullavagga, VI. 2.4; (Translation, page 165). Renderings are mostly those made by Rhye Davids and Oldenberg depending on Buddhaghosha’s note. Compare also Chullavagga, VI. 20.2 and VIII. 1.3. Apasāma-phalakama as a ‘‘board to lean up against’’ is also mentioned in Mahāvagga, I. 25, 15, 16. For arm-chair and sofa there seems to be another expression ‘apasāma,’ see Buddhaghosha’s note on Chullavagga, VI. 2.4.} Valuable carpets, rugs, pillows, curtains, and such other luxurious decorations also are elaborately described. Thus mention is made of ‘‘coverlets with long fleece, counterpanes of many colours, woolen coverlets white or marked with thick flowers, mattresses, cotton coverlets dyed with figures of animals, rugs with long hair on one or both sides, carpets inwrought with gold or with silk, large woollen carpets such as the naṭch (dancing) girls dance upon, rich elephant housings, horse rugs or carriage rugs, panther or antelope skins, large cushions and crimson cushions.’’\footnote{Mahāvagga, V. 10.3; (Translation, page 27).} Pillows are of various kinds; they are stated to be of both ‘‘the size of a man’s head’’ and half ‘‘the size of a man’s body.’’ The Buddha allows the Bhikkhus ‘‘to comb out the cotton, and make the cotton up into pillows if it be of any of these three kinds, cotton produced on trees, cotton produced on creepers, and cotton produced from potaki-grass.’’\footnote{Chullavagga, VI. 2.4; (Translation, page 165).} The bolsters made for the use of high officials were of five kinds as they were stuffed with wool, cotton cloth, bark, grass or leaves. There were also coverlets for them.\footnote{Mahāvagga, V. 10.3; (Translation, page 27).} The smaller articles like the floor cloth, mosquito curtain, handkerchief and spittoon did not escape the notice of the then house-decorators.\footnote{Mahāvagga, V. 10.3; (Translation, page 27).}
III.—CLASSICAL LITERATURE

THE EPICS.

The Epics furnish copious description of cities, storeyed buildings, balconies, porticos, triumphal arches, enclosing walls, flights of stone masonry steps for tanks and a variety of other structures, all indicative of a flourishing architecture in the country.

The plan of the city of Ayodhya is strikingly similar to the town-plan given in the Manasara and other architectural treatises.1 "The temples (devayatana) in this city (Ayodhya) were as resplendent as the sky. Its assembly-halls, gardens, and alms-houses (prapā) were most elegant; and everywhere were arranged extensive buildings crowded with men and women. The houses were as mines of gems, and the abodes of the goddess of fortune. The steeples (śikhara) of the houses were as resplendent as the crests of mountains and bore hundreds of pavilions (vimāna) like the celestial palace of the chief among the Devas. The rooms were full of riches and corn, exquisitely gilt and decorated, and seemed as charming as pictures; and they were so arranged that men could pass from one room to another without perceiving any inequality (in the floor)." 2

The Mahābhārata contains short but comprehensive accounts of the cities of Devarakā (III, 15), Indraprastha (I, 207, 307), a floating city (III, 173, 3), Mithilā (III, 207, 7), and others.

In the Sabhā-parvan there are interesting descriptions of some assembly-halls. Maya built an assembly-hall for the Pāṇḍavas (chapter I). A description is given also of the assembly-hall of Indra (chapter VII), of Yama (chapter VIII), of Varuna (chapter IX), of Kubera (chapter X), and of Brahman (chapter XI).

A large number of houses were needed for the accommodation of the kings invited to Indraprastha on the occasion of King Yudhishthira's royal feast, Rājasūya, and the poet describes the lodgings assigned to the guest: "O king, these and many other princes of the middle country (India proper) came to the great ceremonial, Rājasūya, of the sons of Pāṇḍu. By order of the virtuous monarch, to

1 See writer's Dictionary under Nagara.
2 Rāmāyana, I, 5, 9-15. Compare also the description of Lankā, Lankā-kānya (VI), 3rd Sarga.
them were assigned dwellings replete with refreshments of every kind, and having by them charming lakes and ranges of ornamental plants. Those houses were lofty as the peaks of the Kailāsa mountain, most charming in appearance, and provided with excellent furniture. They were surrounded on all sides by well-built high walls of a white colour. The windows were protected by golden lattices and decorated with a profusion of jewellery. The stairs were easy of ascent; the rooms were furnished with commodious seats, and clothing, and garlands; and the whole was redolent with the perfume of the finest agallochum. The houses were white as the goose, bright as the moon, and looked most picturesque even from a distance of four miles. They were free from obstructions, provided with doors of uniform height, but of various quality, and inlaid with numerous metal ornaments, even as the peak of the Himālaya. The princes were refreshed by the very sight of those mansions.”

“In the story of Nala, allusion is made to a lofty balcony from which men were seen from a great distance; and in the Rāmāyana, Mantharā looks out from an upper window of the palace to notice the rejoicings of the people in the street on the nomination of Rāma to the Vice-Kingship of Kosala.”

“In the city [described in the epics] special palaces existed for the King, the princes, the chief priests, ministers, and military officers. Besides these and humble dwellings (the larger houses being divided into various courts), there were various assembly-halls, courts of justice, and the booths of small traders with goldsmith’s shops, and the work-places of other artisans.”

“The words torana, arched gateway; kāmya, masonry house; devyatana, temple; sabhā, assembly hall; prāśāda, palace; kikha, steeple; and vimāna, pavilion, in the above extract [from the Rāmāyana] are noteworthy. None of them can consistently be applied to huts and thatched houses for which the poets invariably use different words. Prurient fancy may extol and exaggerate, but it never suffices to create names of material objects which the fanciful have never seen or heard of; a Ruskin may amuse himself and his readers by building an imaginary palace in the air, but his ideas are always of the earth, earthly, taken from material objects with which he is familiar.”

---

3 Compare the Mānasā, under Prākāra, in the writer’s Dictionary.
4 Of “These courts have mosaics pavements of gold” (R. VI. 37, 37, 50; Mbh. 1, 165. 20; 11-33 and 34).
5 Hopkins, J. A. O. S.; 13, under city.
6 The Queen of the Air, by John Ruskin, 1869.
7 Mitra, ibid, page 33-34.
The Purānas generally deal with the subject of architecture in more detail than the classes of literature referred to above. Casual references like those given above from the preceding classes of literature are frequently met with in all the nineteen great Purānas. Some nine Purānas have, however, treated the subject more systematically, and have materially contributed to the later Śilpa-sāstras themselves. The Matsy-Purāṇa, for instance, has eight comprehensive chapters dealing in great detail with architecture and sculpture. In one of these chapters accounts are given of eighteen ancient architects. One chapter is devoted to the column which is the regulator of the whole composition of a building. Columns are divided into five classes, as in the western system, and their component parts into eight mouldings exactly like those of the Graeco-Roman orders. Buildings are described in two chapters together with their architectural details, such as plans, measures, classifications, pavilions, halls, storeys, steeples, and cupolas. Some of the building materials are also discussed in a separate chapter. The remaining three chapters are devoted exclusively to sculpture. One of these deals with a very technical subject, namely, the tālamāna or proportionate measures of an image; and in the other two the images of the Phallus and its Pedestal are described.

The Skanda, which is another early Purāṇa, has devoted three chapters to the subject. One of these refers to the laying out of a large city. In another, mention is made of the construction of a golden hall and three chariots in accordance with the descriptions supplied, and the names of the architects are

1. वायु, स्कंद (also called कुमार), मत्त्य, विष्णु, मारवत, पश्च, महाद, चर्म, अश्व
2. लिङ्ग, नारद, माकेश्वरे, बराह, ग्राम, लिङ्ग, कृम, महाराढ, बड़वेंद्र and सतियो 

* Chapters 252, 255, 257, 258, 261, 263, 269 and 270.

* See pages 161-62.

* Chapter 255—स्तम्भांविनिषेध

* For details see pages 147, 148, 123.

* Chapters 269—(प्रासादलक्ष), and 270 (महदपलक्ष)

* Chapter, 277—दारागरण

* Chapters 258—(नवताल लक्ष), 292 (पिथालक्ष), 203 (लिङ्गलक्ष)

* For details see page 81.

* माहेश्वरखण्ड, Part II, chapter 20—खण्ड विष्णुकेश्वरे निमास्पितमहेश्वरेन्द्रनाथवेंद्रनमु
The Garuda-purāṇa makes some valuable additions to the contributions of this class of literature to architecture. One of the four chapters devoted to this subject deals systematically with all the three classes of buildings, namely, residential, military and religious, as well as with the laying out of pleasure-gardens and pavilions therein. Thus, in this chapter residential buildings, forts and fortified towns, temples and monasteries are described along with garden-houses. The following chapter treats exclusively of religious buildings. The remaining two chapters are devoted to sculpture, one dealing with rules regarding the construction of an image and the other with the installation of images in temples.

The Agni, among all the Purāṇas, has dilated on the subject at great length. There are sixteen chapters of which one deals with town-planning, two with residential buildings and the remaining thirteen with sculpture. The importance of its contributions to the Śilpa-śāstra lies, however, specially in two things. First, it seems to have been aware of the Mānasāra, the standard work on architecture. Secondly, its chapter on town-planning is a real addition to the Purāṇa's contributions to architecture. Temples and residential buildings are described in two chapters. The treatment of sculpture also is unique, and is the most exhaustive of all the...
accounts given in the Purāṇas. It deals with almost all the classes of religious images, both of male and female deities, as well as of those not falling under either of these categories. Thus, of the thirteen chapters on sculpture, one is devoted to the description of the sun-god,¹ one to the ten incarnations of Vishnu,² two others also to Vishnu under the name of Vāsudeva,³ one to the guardian angel of the house,⁴ one to the goddess of fortune,⁵ two to the female deities in general,⁶ four to the Phallus and its Pedestal,⁷ and the remaining one to the stone gods, Śilagrāma and others.⁸

The Nārada-purāṇa practically completes the Purāṇas' contributions to architecture. In a single chapter it describes the construction of pools, wells and lanks as well as temples.⁹ The Liṅga-purāṇa supplements the contributions by adding an account of the construction of sacrificial pits together with a description of temples and the installation of deities therein.¹⁰

The Vāyu, which is one of the very early Purāṇas, maintains its unique position by dealing with the construction of various temples built upon mountain tops.¹¹ Examples of these temples are still found on several peaks of the Himalaya and the Vindhya ranges. For the Brahmāṇḍa-purāṇa there was very little left to add. In a single chapter it describes the construction of temples and residential buildings.¹²

The Bhavishya, apparently a late Purāṇa, has also nothing new to contribute. Three of its chapters are devoted to sculpture.¹³ Architecture proper, comprising the description of temples, is treated in a single chapter.¹⁴ The most striking

¹ Chapter 51—सुयादिग्रहान्तमालक्षणम्
² Chapter 49—मलयादिदशावतारक्षितम्
³ Chapters 44—वास्तवंवाद्विद्वितिम्, and 60—वास्तवंवाद्विद्वितितिविचि:
⁴ Chapter 43—पासौदेवताप्रकाशम्
⁵ Chapter 63—लक्ष्मीप्रतिमार्थिति:
⁶ Chapters 60—द्वीपप्रतिमालकस्म, and 53—द্঵ीपप्रतिमालकस्म।
⁷ Chapters 59—लिङ्कलक्षणम्, and 64—लिङ्कमानादिक्षमनम्, 45—पिलंिक्षाकलशक्षणम्, 55—
⁸ Chapter 46—शालछामादिकृतिलालक्षणम्
⁹ Part I, Chapter 13—देवतारुक्तापापीतदायाठ्यिमांकिम्
¹⁰ Part II, Chapter 49—वाककुक्षलिङ्कलक्षणम् क वषेषति द्वादश वार्तनविचिनिनिःश्चाश्च
¹¹ Part I, Chapter 39—शालितिविचिनियदेवतालकोकिम्
¹² Chapter 7—सूतादिग्रहान्तम्
¹³ The Mahāyāna-purāṇa, Chapter 12—प्रतिद्वष्टकरणप्रतिमालक्षणम्
The Brahmāṇḍa-purāṇa, Chapters—
¹⁴ The Brahmāṇḍa-purāṇa, Chapter 180—प्रासादलक्षणम्

feature of this Purāṇa is that the number, name and other architectural
details of the buildings described in it are identical with the twenty types
found in the Matsya-purāṇa, and the Brihat-saṁhitā of Varāhamihira.

The Brihat-saṁhitā, usually classed under the astronomical and astrological
treatises, is but a semi-Purāṇa, dealing, as it does, with heterogeneous subjects like
the Purāṇas themselves. Its authorship is attributed to Varāhamihira who is sup-
posed to be one of the nine traditional gems in the court of a mythical Vikramāditya³,
and is thus imagined to be a contemporary of Kālidāsa, a poet of unrivalled fame.
In this treatise there are but five chapters devoted to both architecture and sculpture.
But the subjects have been treated with a master hand. The chapters open with a
definition of the science of architecture, and the author goes on to describe, briefly
but succinctly and to the point, the suitable building sites, testing of soil, general
plan, comparative measures of storeys and doors, and carvings thereon, and
other important parts of a building. The preliminary subjects are described in
the opening chapter.⁵ Then follows the description of the buildings proper,
under the same twenty types as in the Matsya and Bhavishya Purāṇas, the
names and details being identical.⁶ The preparation of cement is discussed
in a separate chapter.⁷ One whole chapter is devoted to the construction
of the necessary articles of house-furniture, such as bedsteads, couches, and seats.⁸
Quite consistently with his sense of proportion Varāhamihira devotes only one
chapter to sculpture, where too the details of images are described in a
scientific manner which is distinctly missing in other ancient literature.⁹ He is,
however, accused of being “in the habit of uncritically copying his authorities”
and misappropriating their materials. But in his treatise seven architectural
authorities are mentioned distinctly.¹⁰

¹ For details see pages 114—118.
² For the names of the nine gems, see page 161, note 1.
³ Chapter 66—वास्तुविजय
⁴ Chapter 66—प्रासादविलक्षणम्
⁵ For fuller details, see pages 117, 115, 116.
⁶ Chapter 67—वज्रकोणलक्षणम्
⁷ Chapter 79—शाल्यासनलक्षणम्
⁸ Chapter 58—प्रतिमालक्षणम्
⁹ मायें and मन्त्र (LVI, 30-31), बसिन्ध (LVIII, 8), महाकर (LVIII, 53), विश्वकर्मन (LI, 29),
लक्षित (LVII, 6, 15) and मम (LI, 29, LVII, 8),
THE AGAMAS

The term Agama generally implies a traditional doctrine or precept, a sacred writing or scripture and hence the Vedas. But there is a special class of works inculcating the mystical worship of Śiva and Śakti like the Tantras; they belong to South India and are known as the Agamas. They are encyclopaedic works like the Purāṇas, whose ultimate object is also to discuss the worship of the Triad. The Purāṇas, however, deal with all the three deities forming the holy Trinity, although Vishnu has received preference and to his worship fourteen of the Purāṇas are devoted. The Agamas, on the other hand, deal mostly with Śiva. Obviously they are intended to represent the Purāṇas of South India. These Agamas of Dākhināṭya are in fact more extensive than the Purāṇas of Āryāvarta. There are as many as twenty-eight recognized Agamas, while the number of the great Purāṇas is not more than eighteen or nineteen.

The Agamas, like the Purāṇas, incidentally deal with architectural subjects; their contributions to the Silpa-śāstra are, however, more extensive and valuable. Some of the Agamas deal with very technical matters, which are not met with in the Purāṇas. Moreover, some Agamas to all intents and purposes are but architectural treatises. The Kāmikāgama, for instance, devotes sixty chapters out of a total of seventy-five to architecture and sculpture, and its treatment of the subjects can hardly be surpassed by that of an avowedly architectural treatise. Just like a Silpa-śāstra it begins systematically with the preliminary matters, such as the testing and preparation of soil, selection of sites, scheme of measurement and the finding out of the cardinal points by means of gnomons for the orientation of buildings, and the ground plans. Buildings proper are described under twenty types, just as in the Matsya and Bhavishya Purāṇas, as well as the Brihat saṁhitā.

1 Compare the traditional definition of the Agama:

प्रागान्त पञ्चब्रह्मानु मर्य च भिन्नानि।
भूतं च वान्यद्वाय तस्मानामनुस्थितं॥

2(1) कामिकागम, (2) सुप्रभावगम, (3) वागजागम, (4) चिन्त्यागम, (5) कर्णागम, (6) विजयागम, (7) दीपागम, (8) सहस्रागम, (9) सहस्रागम, (10) संध्यानागम, (11) चिन्त्यागम, (12) निक्रमागम, (13) लक्ष्म्यावागम, (14) चिन्त्यागम, (15) चिन्त्यागम, (16) रूद्रागम, (17) वृक्षागम, (18) ब्रिहस्पतागम, (19) विस्तारागम, (20) विस्तारागम, (21) वृक्षागम, (22) चिन्त्यागम, (23) चिन्त्यागम, also called वेण्णागम, (24) सहस्रागम, (25) सहस्रागम, (26) चिन्त्यागम, (27) चिन्त्यागम, and (28) वान्यागम.

3 See page 19, note 1.
But, unlike the Purāṇas, there is in the Kāmikāgama a discussion of architectural matters under some very highly technical classifications, such as the styles, Nāgara, Drāvidā and Vesara; shapes, masculine, feminine, and neuter; Śuddha, Miśra, and Saṅkīrṇa, depending respectively on a single material, mixture of two materials, and the amalgamation of many materials; Saṃchita, Asaṃchita and Apasaṃchita otherwise known as Sthānaka, Āsana, and Sayana, which, in case of temples, depend on the erect, sitting, and reclining postures of the image. Another very technical matter referred to is āyādī formulas so very important in selecting the right proportions. For the close similarity of this Āgama with the Śilpa-sāstras it is, however, necessary to glance over the following pūtālas or chapters together with the corresponding chapters of the standard Śilpa-sāstra, the Mānasāra, which is referred to in more detail elsewhere in this volume:

11. Bhū-parikshā-vidhi—examination of soil (Mānasāra, chapter IV, bearing the same title).
15. Saṅku-sthāpanā-vidhi—gnomons (M. VI).
16. Mānopaśakaṇa-vidhi—system of measurement (M. II).
17. Pāda-vinyāsa—ground-plan (M. VII).
20. Grāmādi-lakshaṇa—laying out villages and towns (M. IX, X).
22. Āyādi-lakshaṇa—a special kind of architectural and sculptural measurement used in selecting the right proportion (M. LXIV).
24. Daṇḍikā-vidhi—dealing with doors and gateways (M. XXXVIII, XXXIX, XXXIII).
28. Grāmādi-vinyāsa—more details on villages and towns (M. IX, X), cf. 20.
30. Grāmādi-aṅga-sthāna-mārṣa—more details on villages and towns (M. IX, X), cf. 20, 26, 28.

¹ For fuller information, consult the writer’s Dictionary under these terms; and also see page 118
² For details see the writer’s Dictionary under Shahvarga; and also see page 122, note 1.
³ See pages 37 to 91.
32. Bāla-sthāpana-vidhi—the installation of Bāla.
33. Grāma-griha-vinyāsa—the arrangement of houses in villages and towns (M. IX, X), cf. 20, 26, 28, 30.
34. Vāstu-sānti-vidhi—not mentioned in M.
35. Śālā-lakshana-vidhi—halls, etc. (M. XXXV).
36. Vīsesha-lakshana-vidhi—not mentioned in M.
37. Dvi-śālā-lakshana-vidhi—houses with two compartments, in many places in M.
38. Chatuḥ-śālā-lakshana-vidhi—houses with four compartments, not in one place in M.
39. Vardhamāna-śālā-lakshana—more details on Śālā (M. XXXV), cf. 35, 37, 38.
40. Nandyāvarta-vidhi—more details on Śālās (M. XXXV), cf. 35, 37, 38, 40.
41. Svastika-vidhi—more details on Śālās (M. XXXV), cf. 35, 37, 38, 40, 41.
42. Paksha-śālā-vidhi—more details on side-halls or ante-chambers (M. XXXV), cf. 35, 37, 38, 40, 41, 42.
43. Asti(Hasti) śālā-vidhi—more details on Śālās (M. XXXV), cf. 35, 37, 38, 40, 41, 42, 43.
44. Mālikā-lakshana-vidhi—a special kind of buildings (cf. M. XIX to XXX).
45. Lāṅgala-mālikā-vidhi—more details on Mālikā buildings, cf. 45.
47. Padma-mālikā-vidhi—more details on Mālikā buildings, cf. 45, 46, 47.
48. Nāgarādi-vidhi—not separately treated in M.
50. Ādyeshtaka-vidhāna-vidhi—laying the foundation stone; in many places in M.
51. Upapīṭha-vidhi—pedestals (M. XIII).
52. Pāḍa-māna-vidhi—pillars (M. XV).
53. Prastara-vidhi—entablatures (M. XVI).
54. Prāśāda-bhūshāna-vidhi—the articles of house furniture (M. L).
55. Kannha-lakshana-vidhi—the neck parts of buildings, in many places in M.
56. Śīkhara-lakshana-vidhi—the top parts of buildings, in many places in M.
57. Stūpika-lakshana-vidhi—steeple or domes of buildings, in many places in M.
58. Nalādi-sthāpana-vidhi—construction of waterways and drains, in many places in M.
59. Eka-bhūmyādi-vidhi—buildings of one and more storeys (M. XIX-XXX).
60. Mūrdhni-sthāpana-vidhi—construction of tops of buildings, in many places in M.
61. Liṅga-lakshana-vidhi—the Phallus (M. LII).
63. Ankurārpaṇa-vidhi—literally sowing the seed, not separately treated in M.
64. Liṅga-pratishṭā-vidhi—installation of the Phallus (M. LII).
65. Pratimā-lakṣaṇa-vidhi—images (M. LXIV, etc.).
66. Devatā-stāpana-vidhi—installation of images of deities (M. LI, LIV, LV, LVI, LXIV, etc.).
69. Maṇḍapa-stāpana-vidhi—pavilions (M. XXXIV).
70. Prākāra-lakṣaṇa-vidhi—courts and enclosures (M. XXXI).
71. Parivāra-stāpana-vidhi—temples of attendant deities (M. XXXII).
72. Vṛishabha-stāpana-vidhi—the bull, the riding animal of Śiva (M. LXII).
73. Gopura-stāpana-vidhi—the construction of gate-houses (M. XXXIII).

The Karanāgama also devotes much space to architecture and sculpture. There are thirty-seven chapters in this Āgama, which deal with these subjects exhaustively. It makes a distinct addition to the Āgamās’ contributions to the Silpa-śāstras. It contributes two valuable chapters dealing with the details of the nine and ten tāla measures. This is also a highly technical matter concerning sculpture and entirely missing in the Purāṇas. This Āgama also has close similarities with the Mānasāra, which will appear, however imperfectly, from the following list of chapters:

Part I, chapters (paṭalas)—
4. Ādyeyostaka-vidhi—laying the foundation stone, mentioned in many places in M.
5. Adhisṭhāna-vidhi—bases (M. XIV).
9. Liṅga-lakṣaṇa-vidhi—the Phallus (M. LII).
10. Mūrdhna-ṭṭhaka-lakṣaṇa—ornaments at the topmost parts of buildings.
11. Pratimā-lakṣaṇa—images (M. LXIV, LI, LIV to LXII).
12. Sri-māna-daśā-tāla-lakṣaṇa—intermediate type of daśa (ten) tāla measurement, used for the images of females (M. LXVI).

3. For details consult the writer’s Dictionary under Tālāmāna, and see pages 81-95, 94-95.
13. Kānīśṭha-daśa-tāla-lakṣaṇa—the smallest type of daśa (ten) tāla measurement (M. LIIX).
14. Nava-tālottama-lakṣaṇa—the largest type of nava (nine) tāla measurement (M. LIIX).
20. Ankurārpāna-vidhi—literally sowing the seed
41. Mahābhiseka-vidhi—great coronation or anointing (cf. M. XLIX).
56. Vāstu-homa-vidhi—sacrificial offerings in connection with the construction of a house, cf. 16.
59. Linga-sthāpana-vidhi—installation of the Phallus (M. LII), cf. 9.
60. Parivāra-sthāpana-vidhi—the temples of the attendant deities (M. XXXII).
66. Parivāra-bali—more details on the attendant deities, cf. 60.

Part II, chapters (paṭalas)—
4. Kila-parikṣā—the nail at the top.
5. Gopura-viḍhāna—gate-houses (M. XXXIII).
8. Śakti-lakṣaṇa—female deities (M. LIV).
15. Nayanamīlaṇa—chiselling the eyes (M. LXX).
19. Śayanāropana—bedsteads (M. XLIV).
98. Matha-pratishtā—monasteries.

The Suprabhāṣa-āgama has devoted only fifteen chapters to architecture and sculpture. Nor has it anything new to add to the Āgamas' contributions to the Śālpa-tāstras. But its unique nature consists in the fact that it has quite
successively summarised all important matters in a comparatively small space, and in respect of brevity, explicitness and precision it surpasses even the Brīhat-svaṁhitā of Varāhamihira. This Āgama has apparently drawn upon a Śilpa-śāstra. Its similarities with the Mānasāra, discussed elsewhere in detail, may be partly apparent from the following list of its chapters read together with the corresponding portions of the standard Śilpa-śāstra:

22. Karauḍhikāra-lakṣaṇa—on the constructive arts, dealing with uṣṇīṣha (head gear), śāna (seat, chair), paryanka (bedstead, couch), sīhāsana (throne), vaṅga (courtyard, theatre), and stambha (column), (Mānasāra, XLIX, XLIV, XLV, XLVI, XLVII, XV, etc.).
26. Tarunālāya-vidhi—a special kind of building.
28. Ādyeshtaka-vidhi—laying the foundation-stone, mentioned in many places in M.
30. Āṅguli-lakṣaṇa-vidhi—the aṅgula (finger-breadth) measurement (cf. M. II, LV).
32. Mārdhniśṭaka-vidhi—an ornament on the top-most part of buildings.
33. Līṅga-lakṣaṇa—the phallus (M. LIII).
34. Sakala-lakṣaṇa-vidhi—images of Īśvara and other deities (M. LI to LXIV).
35. Ankurāpāna-vidhi—sowing the seed.
36. Līṅga-pratishṭha-vidhi—installation of the phallus (M. LIII); cf. 33.
37. Sakala-pratishṭha-vidhi—installation of the images of Īśvara and other deities, cf. 34.
38. Śakti-pratishṭha-vidhi—installation of the images of the female deities (M. LIV).

The Vaikhānasāgama has two chapters on sculpture, one of which deals with the general description of images and the other with the ten-tāla measures. The Aṁśumud-bhedāgama has a single chapter on the ten-tāla measures. Instances like those given above can be culled from the remaining Āgamas also; but the multiplication of illustrations is not likely to furnish any new information. It is, however, clear that architecture was a favourite subject for the authors of the Āgamas also.

---

1 See pages 118, 119.  
2 See pages 117, 118, 119.  
3 See pages 110-113, 117-119.

1There is an architectural treatise bearing the title Śilpa-śāstra, the authorship of which is attributed to Kāṭyāapa. Consult the writer’s Dictionary, Appendix; and see pages 94 to 97.
MISCELLANEOUS TREATISES

The works on royal polity deal with architectural matters in a more than casual way. The Kautiliya Artha-śāstra, for instance, devotes some seven chapters to the subject, containing a large number of structural details. There are interesting descriptions of forts, fortified cities, town-planning, and military and residential buildings.¹

The Śukra-nāti deals with both architectural and sculptural objects. Rules and structural details are given along with interesting descriptions of forts and fortified towns, of temples and other kinds of buildings, and of various sorts of images.² In this treatise sculptural details are more numerous in some respects

¹Chapters 23—अनपद विवचन ।
23—भूमचिन्द्रविवचन ।
24—दुग्मविवचन ।
25—दुग्मविवचन ।
The last two deal with the laying out of fortified towns and forts.
65—वास्तुक, पुढ़वास्तुक (residential and military buildings).
66—वास्तुविहाय, लोमाविषय, मध्यदालापन etc. For full details see the writer's Dictionary under Dūrga, Nagara, and Grāma.

²Chapter IV, Section 4.:

1. दूर्गमित्रालिंकलयवस्था—the construction of temples and other kinds of buildings. For details of royal palaces see the concluding portion of chapter I.

2. प्रतिमानिमालिंकलयवस्था—images.

3. दूर्गमित्रालिंकलयवस्था—the images of the riding animals of deities.

4. भद्रपरिमालिंकलयवस्था—the image of Gaṇapati

5. शक्तिमित्रालिंकलयवस्था—images of the female deities.

6. दूर्गमित्रालिंकलयवस्था—images of Bāla (Child Kṛṣṇa).

7. दूर्गमित्रालिंकलयवस्था—the images measured in the seven ēka (eagla) and other ēka measurements.

8. एशाचौमित्रालिंकलयवस्था—the images of the demesne.

9. महाप्रतिमायपनवस्था—the repair of the damaged images.

10. उत्सवविहारवस्था—Festival in connection with installation of images.

Section 6—

1. दूर्गमित्रालिंकलय—construction of forts (and fortified towns).

For full details see the writer's Dictionary under तलमस्त.
than even in the Śilpa-śāstras. Repair of broken images, for instance, is an important matter in sculpture, which has been dealt with in detail in this treatise. Another important contribution made by the Sutra-nīti to the Śilpa-śāstras is the description of the seven-tāla measures which are generally applicable, both in India and the West, to well proportioned human figures only.

Avowedly historical works are not numerous in Sanskrit. Of the two treatises, one is concerned with the reign of a single king and the other with the events of a country covering many reigns. In both these treatises architecture has been given its already well-recognised place.

The Harsha-charita is a history of Harshavardhana of Kanauj, during whose reign the famous Chinese traveller Hieun Tsang visited India. In this history it is stated that "the palace had besides the harem always more than three courtyards; the outer one being for people and for state reception, the next inner one for sardars (chiefs or nobles) and the third one for intimate persons only. The palaces were stately buildings, though not of stone. The floors, however, are described as made of shining stones. The columns and walls were ornamented with gold and even precious stones, There was usually a several storeyed building with inner gardens of flower-beds and large fruit trees." 1 Mention is made also of detached buildings like the Maṇḍapas or pavilions for the purposes of sābhā (council hall), sātra (inn), prāpad (drinking-house), and prāg-vaṁśa. 2 The useful articles of house furniture, such as thrones (sīmāhāsana), couches (sāyana), and asandā, meaning chairs, are also described. 3

The Rāja-taraṅgini of Kalhana, dealing with the history of Kashmir, refers frequently to architectural objects like castles (Bāna-tāla) 4, monumental buildings (Charitya), 5 and monasteries (Vihāras). 6 But in these references very few structural details are to be met with. The references of Kalhana to temples and other buildings also generally lack constructive details. 7 But interesting structural details of some shrines merely referred to in Kalhana's work are elaborated by

---


2 Harsha-charita, page 176:

बहुपराचितविकटसमासिकनिरक्षायां शासितश्रेयः पश्चात्तदप्रभुः |

See also ibid, page 157.

3 H. C. page 103, ibid, 163.

4 VIII, 1666.

5 I, 103, 179; III, 380, 381; IV, 200, 204.

6 I, 93, 94, 98, 103, 140-144, 146, 147, 169, 199, 200; III, 9, 11, 13, 14, 355, 380, 464, 476; IV, 79, 114, 159, 200, 210, 215, 216, 252, 307; VI, 171, 175, 303; VIII, 196, 1336; VIII, 246, 248, 3402, 2410, 2417, 2431, 2433, 3835, 3853.

7 Compare, e.g., the Śrādā temple (I, 97), Śrādā-sthāna (VIII, 2550, 2700), etc.
Major C. B. Bates in the Gazetteer of Kashmir and have been given in a note by Sir M. A. Stein.

The astrological and astronomical treatises frequently refer to architectural topics, especially those bearing upon auspicious times. In a pamphlet of this class twenty-one things are stated to be observed in connection with building a house. A famous astronomical treatise, the Gîrga-samhita, deals with a large number of purely architectural subjects, such as the courts, compounds, compartments, rooms, dimensions, and location of doors.

1 page 339.

"The temple is approached from the lower slope of the hill by an imposing stone staircase which leads up in sixty-three steps to the main entrance of the quadrangular court enclosing the temple. It is about 10 feet wide and rises rather steeply between two flanking walls of massive construction, broken in six steps or flights. The entrance to the court is through a gateway, provided with the usual double porch of Kasmirian architecture."

"The temple, which occupies the centre of the quadrangle, forms a square cela conforming in plan and elevation to the usual features of Kasmir architecture. It is raised on a basement 24 feet square and 3 3/9" high. The walls of the cela proper rise about 2 feet from the edge of the basement. They are adorned on the north, east and south by trefoil arches and supporting pilasters both projecting in relievo. Below these arches are small trefoil-headed niches covered by double pediments."

"The entrance to the interior of the cela is approached by stairs 3 3/4 feet wide with flanking side walls. There is an open portico in front of the door projecting about 4 feet beyond the pilasters on each side of the doorway. It is supported on the outside by two pillars. The interior of the cela forms a square of 12 feet 3 inches, and has no decoration of any kind."

(Kalhana's Rajatarangini, vol. II, notes, page 263 fol.)

कालकान्तिका नमः प्रकाशकलसकालात्मक ।
प्रह्मेश्वरानं राजप्रभेद्यशेषचाष्टिकाल ।
वास्तुविद्याय वास्तुकलाय तथा वास्तुकलितिकालितिकाल ।
कालपत्तिकालात्मकस्त्रिप्रभृति दादिपुर ॥

(Laghu-Silpa-jyotishā-śāstra, verses 3-5).

* The manuscript in the Trinity College, Cambridge, is in a mutilated condition. The contents of the first and second chapters, fol. 67-68, are almost illegible. The following are a little better—

(i) वास्तुविद्याय चतुर्मात्रिकालान्तिकालितिकालितिकालिति: (fol. 60 a).
(ii) गाणियाय वास्तुविद्याय चतुर्मात्रिकालान्तिकालितिकालितिकालिति: (fol. 60 a).
(iii) दारस्विधा: (chap. 2, fol. 67 b).
    दारियाण्तिकालितिकालितिकालिति: (fol. 57 b).
    दाराकलितिकालितिकालिति: (fol. 60 b).
(iv) पृथिविकालिति: (fol. 68 b).
The more authoritative works like the Sūrya-siddhānta,¹ the Siddhānta-tīrōmaṇī,² and the Lālāvati³ deal exhaustively with a very technical matter bearing upon architecture, namely, the description of gnomons which were used for finding out cardinal points. The subject is architecturally very important, inasmuch as it refers to the orientation of buildings.⁴

The poetical works of Kālidāsa, Bhavabhūti and others refer occasionally to architectural matters. In the Vikramorvaśī, for instance, mention is made of a flight of stairs made like the waves of the Ganges.⁵ The Uttara-Rāma-Charita refers to an architecturally important matter, namely, cement which is specially described in some Śilpa-sāstras.⁶ In the same work Nala, the son of the heavenly architect Viṣvakarman, is mentioned as an engineer who built the bridge joining India with Ceylon.⁷

Of this class of works, the Mrīchēkhakatīka, which is a modernized drama, dealing as it does with the ordinary affairs of worldly people, refers very frequently to architectural matters which are too numerous to be included here.⁸ A very interesting description of the gateway and as many as eight courtyards into which the whole compound is divided, is given in the fourth Act. This description is further

---

¹ Chapter III, verses 1—4.
² Chapter VII, verses 36–40.
³ Part II, chapter II, section VII.
⁴ Compare the writer's Dictionary under Šākka, and for full details see page 37.
⁵ ग्रहातर्कस्तिकविषिकोपान, see also मणिस्वर्य (Kālo's ed. 1903, Act. III, page 73).
⁶ व्यवहार, Act III, preceding verse 40.
⁷ Act III, verse 45. Compare the Rāmāyaṇa, युधकार, chapter 33, verses 41–42.
⁸ In the Mānasāra also Nala is mentioned as an architect, see Mānasāra, chapter II.

Act I. यूद्देश्वर, threshold (verse 17); पवारक, side entrance (83; also H. 83); IV. 129, VI. 209, 211, etc.; तुषाशाला, courtyard (30); पारसागिरिश्वालयवाद्याकंत-पालिका, door of the top palace (52; VIII, 232, 233; IX. 347, 349, 350, 351).

Act II. अट्राचंदन, merchant quarters (88, 196); बहिर्गाराला, outer hall (101, 117), बाह्यत्र-चुरुशाला, inner court (107, 108, 109; VI. 204).

Act V. शाकα, fence (117); चरामासागिरिश्वालयकंत-पालिका, root of the garden-house (177).

Act VI. अभिलीक्ष, main gate (216).

Act IX. वैवर्मवाहिनी, court of justice (289, 291).

Act X. वैभवकाव्यमोः, court of justice (289, 309, 306, 307, 320, etc.).

वृक्षवेंत्र, grass lawn (211).
full of architectural details. This reference is specially important owing to the fact that in the Mānasāra as well as the Purāṇas and the Āgamas the compound, however big it may be, is divided into not more than five courts, the fourth of which is technically called prākāra in the Mānasāra.¹

Traces of an advanced state of architecture are found also in works like grammars and lexicons. Yāska in his Nīruktā mentions several words which can be used for masonry houses only.² In the later lexicons like the Amarakosha lists of several architectural terms are met with.³ Derivations of words like bhāskara, sculptor; iṣṭaka, brick; stambha, pillar; aṭṭālikā, edifice are found in Pāṇini’s grammar. They no doubt imply the existence of brick and stone buildings in those times.

¹ See page 51.
³ Amarakosha, Section on towns and houses (Chapter II, section ii named para-sarga, verses 1–26; pages 116–126, ed. Śivadatta, Bombay, 1916).
⁴ Mitra, ibid, I, 19.
II

SILPA-ŚĀSTRAS

A SUMMARY OF THE MĀNASĀRA

CHAPTER I

The table of contents (Samgraha)

The first verse is an invocation to Brahmā, the Creator of the Universe. In the second verse it is stated that the science of architecture (Vāstu-śāstra) had come down from Śiva, Brahmā and Vishnu, through Indra, Bṛihaspati, Nārada and all other sages, to the seer (ṛishi) Mānasāra who systematised it.

After this, the titles of the chapters are given in order. The colophon of the last chapter (named Nayanonmilana) in all the complete manuscripts gives the number of the chapter as seventy-one. The manuscript called I, the codex archetypus of my text, has made up the number seventy-one by repeating the chapter Strimūna-madhyama-daśatāla; in one place it is numbered 66 and in the second 67. The only explanation of this number 71 for the last chapter is to suppose that the copyists of all complete and independent manuscripts were equally careless in numbering the chapters. This supposition is corroborated by the fact that the contents of the work do not show that any chapter is missing.

The last verse of the first chapter states the reason why the book is named Mānasāra, and explains the importance and authority of the work. It is called Mānasāra after a sage of that name. And as an authoritative work on art and complete in all respects, it has been accepted by the best among the leading artists.

CHAPTER II

The system of measurement (Mānopakaraṇa-viḍhāna)

The first part of this chapter gives a mythical genealogy of the artists. From the four faces of Brahmā, the Creator of the Universe, originated in order the
heavenly architect Viśvakarman, Māya, Tvaśṭar and Manu. Their four sons are called respectively Sthapati, Sūtra-grāhin, Vardhāki and Takshaka. These four evidently represent the progenitors of the four classes of terrestrial artists.

The sthapati is highest in rank; he is the master-builder. The sūtra-grāhin is the guru of vardhāki and takshaka; while the vardhāki is the instructor of the takshaka.

The sthapati must be well-versed in all sciences (śāstras). He must know the Vedas. He must have the qualifications of a supreme director (āchārya).

The sūtra-grāhin also should know the Vedas and the Śāstras. He must be an expert draftsman (rekhājña).

The vardhāki too should have a general knowledge of the Vedas. But the object of his special study is painting (chitra-karman).

The takshaka must be an expert in his own work, i.e., carpentry.

The second part of this chapter deals with the system of measurement:

The paramānu or atom is the smallest unit of measurement.

8 paramāṇus = 1 rathadhūli (lit. ear-dust).
8 rathadhūlis = 1 bālāgra (lit. hair’s end).
8 bālāgras = 1 likhā (lit. a nit).
8 likhās = 1 yūkā (lit. a loose).
8 yūkās = 1 yava (lit. a barley corn).
8 yavas = 1 āṅgula (lit. finger’s breadth).

Three kinds of āṅgulas are distinguished, the largest of which is made of 8 yavas, the intermediate one of 7 yavas, and the smallest one of 6 yavas.

12 āṅgulas = 1 vitasti (span).
2 vitasti or 24 āṅgulas = 1 kishku-hastu (small cubit).
25 āṅgulas = 1 prajāpatya-hasta.
26 = 1 dhanurmukhi-hasta.
27 = 1 dhanurgraha-hasta.
4 hastas = 1 dhanus (bow) or danda (rod).
8 dandas = 1 rājju (string).

Directions are given with regard to the use of the four different kinds of cubits (hasta) enumerated above. Conveyances (yāna) and couches (śayana) are said to be measured in the cubits of 24 āṅgulas, vimāna in the cubit of 25 āṅgulas, buildings (vāstu) in general in the cubit of 26 āṅgulas, and villages, etc., in the cubit of 27 āṅgulas. The cubit of 24 āṅgulas may, however, also be used in measuring all these objects.

In the concluding portion of this chapter directions are given for the preparation of the yard-stick (hasta), the rod (danda), and the measuring string (rājju). The
former two objects should be made of the wood of certain trees, which are enumerated. In the same manner certain fibres are to be used as materials for the rope. The presiding deity of the yard-stick and the rod is Vishnu, and that of the measuring rope Vasuki, the king of serpents.

CHAPTERS III, IV, V.

The classification of vāstu (Vāstu-prakarana)

Examination of soil (Bhū-parikshā) and Selection of site (Bhūmi-saṅgṛaha)

The first part of the third chapter defines vāstu (dwelling or habitation) and divides it into four classes. The place where men and gods reside is called vāstu. This includes the ground (dharā), the building (harmya), the conveyance (yāna), and the couch (paryása). Of these, the ground is the principal one, for nothing can be built without the ground as a support. The building (harmya) includes prasāda, maṇḍapa, sahā, tālā, prānā, and (a)rañga. The conveyance (yāna) includes ādika, syandana, sībikā and ratha. The couch (paryása) includes pañjara, maṅchali, maṃchu, kikāṣṭha, phalakoṣana and hīla-paryása.

The second part of the third chapter as well as the fourth and fifth chapters deal with the same subject, namely, the site, on which a village, town, fort, palace, temple, or house, is to be built. The soil is examined with regard to its contour, colour, odour, features (rūpa), taste and touch. The level of the ground as well as the characteristic vegetation of the site are also minutely examined.

If a plot of land is found to be satisfactory on all or most of these points, it should be selected for a village, town, fort or house, as the case may be. But even after this selection it would be wise to test the ground in some other ways. A square hole of one cubit deep should be dug on the selected site and be filled with water. After twenty-four hours the chief architect should mark the condition of the water in the hole. If all the water be dried up by this time, the earth must be very bad. But if, on the other hand, there remains some water in the hole, the selected plot of land would be fit for any building purposes.

Another final test is this: a similar hole is dug on the plot and filled up with the earth taken out of it. If this earth fills up the hole exactly, the land is fair; if this earth be not quite enough to fill up the hole the ground must be very bad, but if this earth overfills the hole, the soil must be very good for any building purposes. The import of both tests seems to be that in the former case porous soil is avoided, while in the latter case loose soil is said to be unfit for the construction of a building.
After this final selection the ground should be ploughed over. The concluding part of the fifth chapter gives a minute description of the oxen and the plough to be used in ploughing the selected site.

CHAPTER VI

The gnomon (Śāṅku-sthāpana-vidhāna)

The object of this chapter is to lay down rules on the principles of dialling and for ascertaining the cardinal points by means of a gnomon.

The gnomon is made of the wood of certain trees. It may be 24, 18, or 12 angulas in length, and the width at the base should be respectively 6, 5, and 4 angulas. It tapers from the bottom towards the top.

For the purpose of ascertaining the cardinal points, a gnomon of 12, 18, or 24 angulas is erected from the centre of a watered place (saṅkha-sthala) and a circle is described with the bottom of the gnomon as its centre and with a radius twice its length. Two points are marked where the shadow (of the gnomon) after and before noon meets the circumference of the circle. The line joining these two points is the east-west line. From each of these east and west points a circle is drawn with their distance as radius. The two intersecting points, which are called the head and tail of the fish (tīmi), are the north and the south points. The intermediate regions are found in the same way through the fish formed between the points of the determined quarters.

As regards the principles of dialling, each of the twelve months is divided into three parts of ten days each and the increase and decrease of shadow (avacchāhāyā) are calculated for these several parts of the different months.

Why the subject of the present chapter is important for architecture is evident from the rules regarding the orientation of buildings. Here it is said that a building should preferably face the east or the north-east, but that it should never be made to face the south-east, as this is considered inauspicious.

The chapter closes with a passing reference to the kliha-śāṅku which appears to denote wooden stakes posted in different parts of the foundations made for constructing buildings thereon.

CHAPTER VII

The ground-plan (Pada-vinyāsa)

When a site is selected for constructing a village, town or building thereon the ground is divided into different numbers of squares. Thirty-two kinds

---

1. Cf. Vitruvius, Book IX, Chap. VIII, "...the principles of dialling and the increase and decrease of the days in the different months" (translated by Gwill).
of such schemes are distinguished by as many different names according to the number of squares into which the whole area is partitioned out. The whole scheme has been arranged in such a manner that in each case the number of partitions represents the square of the serial number. The eighth plot, for instance, which is called Chandita, comprises a division into sixty-four squares, while by the ninth plot, which bears the technical name of Paramaśādhika, the ground is divided into eighty-one squares.

Each of these squares is assigned to its presiding deity. Some deities, however, are lords of more than one square. The lord of the central square is always Brahmā. Charagi, Vidārikā, Pātanā and Rākhasi are the presiding deities of the four corners. A detailed description of all the squares of the eighth and the ninth plans is given in the text. Then the forty-four deities, who are enumerated in connection with the Paramaśādhika scheme, are described in the form of as many dhāyanas. This portion is of some iconographical interest.

Finally, the presiding deity of the site (vāstu-puruṣa), who is described as hump-backed and of crooked-shape, is said to occupy the habitated area (vāstu) in such a manner that his limbs cover the several squares or groups of squares which, as set forth in the former part of the chapter, are assigned to and named after various deities. As he is supposed to lie down with his face turned downward, his head being in the central square on the east side (assigned to Śūrya), his right and left hands must be in the partitions of Agui (S. E.) and Isāna (N. E.) respectively, and his right and left feet in those of Nairjīt (S. W.) and Vāyu (N. W.) respectively. The middle part of his body occupies the central portion of the plot, which, as we saw, is assigned to Brahmā.

CHAPTER VIII

The offerings (Balikarma-vidhāna)

Different kinds of offerings (bāla) are prescribed for the various deities enumerated in the preceding chapter, who are supposed to preside over the different partitions of the Paramaśādhika or Maṇḍūka ground-plan. These offerings consist of milk in its various forms, butter, rice and sesame, parched grain (tāja), honey and sweetmeat (modaka, offered to Sugrīva), incense and lamps, flowers and fruit. Blood is offered to Asura, dried meat to Mriga, dried fish to Boga (Disease), and sea-fish to Bhringarāja. The four demons, namely, Rākhasi, Pātanā, Vidāri and Charagi, also receive their share, the first-mentioned evil spirit in the shape of meat of goats mixed with blood.
In the bringing of these offerings the master-builder (ethapati) takes a leading part.

CHAPTER IX

The village (Grāmalakhaṇa-vidhāna)

According to the Mānasāra, there is not much difference between a village, a town, and a fort. All are fortified places intended for the residence of people. A town is the extension of a village. A fort is in many cases nothing more than a fortified town, with this difference that a fort is principally meant for purposes of defence, while a village or a town is mainly intended for habitation.

A detailed description of the plan of villages, towns, and forts, and the arrangement of the various buildings which they contain is given in the text.

Villages are divided according to their shapes into eight classes, called dandaṭa, sarvato-bhadra, nandyāvarta, padmaka, svastika, prastara, kārmuka and chatur-mukha.

Each village is surrounded by a wall made of brick or stone; beyond this wall there is a ditch broad and deep enough to cause serious obstruction in the event of an attack on the village. There are generally four main gates at the middle of the four sides, and as many at the four corners. Inside the wall there is a large street running all round the village. Besides, there are two other large streets, each of which connects two opposite main gates. They intersect each other at the centre of the village, where a temple or a hall is generally built for the meeting of the villagers. The village is thus divided into four main blocks, each of which is again subdivided into many blocks by streets which are always straight and run from one end to the other of a main block. The two main streets crossing at the centre have houses and foot-paths on one side of the street. The ground-floor of these houses on the main streets consists of shops. The street, which runs round the village, has also houses and foot-paths only on one side. These houses are mainly public buildings, such as schools, libraries, guest-houses, etc. All other streets generally have residential buildings on both sides. The houses high or low are always uniform in make. Drains (jala-dvāra, lit. water-passage) follow the slope of the ground. Tanks and ponds are dug in all the inhabited parts, and located where they can conveniently be reached by a large number of inhabitants. The temples of public worship, as well as the public commons, gardens and parks are similarly located. People of the same caste or profession are generally housed in the same quarter.
The partition of the quarters among the various sects cannot be said to be quite impartial. The best quarters are generally reserved for the Brahmins and the architects. Such partiality to the artists is not met elsewhere in Sanskrit literature. The quarters of the Buddhists and the Jains are described in a few lines. The habitations of the Chaṇḍālas, as well as the places for cremation are located outside the village-wall, in the north-west in particular. The temples of fearful deities, such as Chāmunda, are also placed outside the wall.

CHAPTER X

Towns [and Forts] (Nagara-vidhāna)

As stated above, a town is a large village. According to the Mānasāra, it appears that the dimensions of the smallest town-unit are 100 × 200 danda; the largest town-unit is 7,200 × 14,400 danda. A town may be situated from east to west or from north to south according to the position it occupies. There should be one to twelve large streets in a town. It should be built near a river or a mountain and should have facilities for trade and commerce with the foreigner (dvipāntara-vartin). Like a village, it should have walls, ditches and gates, drains, parks, commons, shops, exchanges, temples, guest-houses, colleges, etc. For purposes of military defence, the towns are generally well fortified.

Towns are divided into eight classes: rajasāni, nagara, pura, nagari, khasa, khurva, kshaka, and pattana. The distinction between them is slight, the general description given above being applicable to all. But it may be noted that the city called pattana is a big commercial port. It is situated on the banks of the sea or a river, and is always engaged in exchange and commerce with foreigners who deal specially in jewels, silk clothes and perfumes, etc., imported from other countries (dvipāntara).

Forts are first divided into eight classes, called sībira, vāhinī-mukha, sthāniya, dīronaka, sanvidhā or vardhaka, kolaka, nāgama, and skandhāvāra. There is a further division of these forts according to their position. They are known as mountain fort (giri-dūrga), forest fort (vana-dūrga), water-fort (jala-dūrga) chariot fort (ratha-dūrga), gods’ fort (deva-dūrga), marsh fort (pānka-dūrga) and mixed fort (miśra-dūrga).

The mountain fort is subdivided into three classes, according as it is built on the top of the mountain, in the valley, or on the mountain-slope.

All these forts are surrounded with strong walls and ditches. The wall is made of brick, stone and similar materials. It is at least 12 cubits in height and its thickness at the base is at least 6 cubits. It is provided with watch-towers.
CHAPTER XI

The dimensions of buildings of various storeys (Bhumilamba-vidhāna)

The name of this chapter is “Bhumilamba,” which literally means the height of the storey. The Kāmikagāma (pāṭala 50, verse 1) defines this name, Bhumilamba, thus: “Chatur-akādī samsthānam bhūmi-lambam iti smritam.” The chapters on the subject, in both the works, Mānasāra and Kāmikagāma, deal with the measurement of length, breadth, and height of buildings of one to twelve storeys.

The various shapes of buildings are mentioned in the opening lines of the chapter. They may be square, rectangular, round, octagonal, or oval. Buildings of all kinds, such as the vimāna or temple, the harmaya or palace, the gopura or gate-house, the sāla or hall, the maṇḍapa or pavilion, and the veśman (residential houses generally) should have one of these five shapes.

Buildings are again divided into four classes—jāti, chhanda, vikalpa or samkalpa, and ṛkha—which are frequently referred to in the subsequent chapters. These four classes seem to have different characteristics in different cases.

The proportion between height and width is expressed by five technical names, tāntika, paushtika, pārshnika (sometimes called jayada), adbhuta, and sarvakāmika. When the height of a building or idol is $\frac{3}{2}$ times of its width, it is called tāntika, the paushtika height is twice the width, the pārshnika or jayada height is $\frac{5}{4}$ of the width, the adbhuta height is $\frac{7}{4}$ of the width, and the sarvakāmika height is $\frac{9}{4}$ of the width. This proportion of height and width is not, however, strictly followed all through. There is a slight variation in some cases. But the proportions given above are the most common. The measurement of length, breadth and height is invariably divided into three types: large, intermediate, and small. The tāntika and the paushtika heights are prescribed for the large type of measurement, the pārshnika or jayada for the intermediate type, and the adbhuta and the sarvakāmika for the small type.

Five series of length and five series of breadth are prescribed here for each of the several classes of buildings of one to twelve storeys. But in some subsequent chapters as many as nine alternatives of length or breadth are prescribed for one and the same object.

The five series of breadth in the small type of one-storeyed buildings are 2, 4, 6, 8 and 10 cubits, and the five series of length are 3, 5, 7, 9 and 11 cubits. In the intermediate type the five series of breadth are 5, 7, 9, 11 and 13 cubits, and the five series of length 6, 8, 10, 12 and 14 cubits. In the large
type, the five series of breadth are 6, 8, 10, 12 and 14 cubits, and the five lengths are 7, 9, 11, 13 and 15 cubits.

All the classes of buildings of one to twelve storeys are in this way measured separately. The dimensions of the twelve-storeyed building in its three types are given briefly. In the small type they are 35, 37, 39, 41, 43 cubits, in the intermediate type 36, 38, 40, 42, 44 cubits, and in the large type, 37, 39, 41, 43, 45 cubits. These are the fifteen kinds of Vipula, and the height should be as before.

These are the measurements in the jāti class of buildings. Three-fourths, half and one-fourth of these are prescribed for the chhaunda, the vikalpa and the abhāsa classes respectively.

The concluding part of this chapter prescribes the number of storeys allowed in edifices according to the social status of their occupants. In the first instance reference is made to the various classes of kings, of whom the one highest in rank, namely, the chakravartia or universal monarch, is said to inhabit a palace of five to twelve storeys. The residence of the heir-apparent (yuvārāja), as well as those belonging to the chief feudatories (śāmanta-pramukhya), should have one to three storeys.

CHAPTER XII

The foundation (Garbhanyūsa-vidhāna)

The foundation is classified under three heads, namely, for buildings, for villages, etc., and for tanks, etc. The last named foundation is meant for a cistern, well or tank (vāpi-kūpa-tūjaka, etc.

The depth of the excavation (garbha-bhājana) in case of a village, a town or a fort (grāma, nagara, pura, pattana, kharvata, kosṭha, kola, etc.) is stated to be of five kinds, and varies in accordance with the size of the construction. Similarly for a building or a well suitable depth of the excavation is prescribed.

The foundation of buildings is further divided into two classes as it may belong to temples or to human dwellings. Of temples, those of Vishnu and Brahmā are dealt with, and the others are said to be like these.

1 The description of these dimensions is much closer in the Kāmakāmasūtra (paṭālā 50). According to this work, the width of a twelve-storeyed building is 70 cubits and the height 100 cubits. It expressly states (stotra 32) that it is never desirable that buildings should be larger than 77 cubits in height and 70 cubits in width.

2 Cf. below, chapter XLI. In the present passage only six out of the nine classes are mentioned, the maṇḍala, pātañjala and pāsaḥa having been omitted.
For human dwellings there are four classes of foundations according to the caste of the occupier, Brāhmaṇa, Kṣatriya, Vaiśya or Śūdra. In the laying of a foundation ritualistic prescriptions play a prominent part, the actual process apparently being the same in all cases.

The depth of the excavation is equal to the height of the basement. The four corners and sides, built of brick or stone, are equal. The cavity is filled with water, and ten kinds of earth, such as earth taken from an anthill, from a crab-cave, etc., are placed at the bottom.

Portions of certain plants are then deposited on the four sides: the root of the blue lotus (utpala-kānda) to the east, the root of the white lotus (kumuda-kānda) to the south, sauṇandhi (a kind of fragrant grass) to the north, and some other plant to the west. Above these are to be placed grains of ten kinds of cereals, to wit, sūlī (rice) to the north-east, vṛšī (rice) to the east, kṛdara (paspalum scrobiculatum) to the south-east, kāngū (panicum italicum) to the south, mūdga (phaseolus mungo) to the south-west, māsha (phaseolus radiatus) to the west, kulatttha (dolichos uniflorus) to the north-west and tila (sesamum indicum) to the north.

The twelve kinds of breadth and length of the excavation to suit buildings of one to twelve storeys are respectively 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25 anūgas; and 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26 anūgas. And its height should be equal to the breadth, or less by \( \frac{1}{2} \) or \( \frac{2}{3} \) of the breadth.

The concluding lines of this chapter deal with the measurement of bricks, with which buildings of one to twelve storeys are preferably built, and also with the ceremonies in connection with the laying of the foundation-stone (lit. first brick, prathameshṭaka). The breadth of a brick may be from 7 to 29 or 30 anūgas. The length is greater than the breadth by \( \frac{1}{2} \), \( \frac{1}{4} \), or \( \frac{1}{2} \); or is twice of the breadth. The thickness should be half of the breadth.

### CHAPTER XIII

**The pedestal (Upāpitha-vidhāna)**

The opening lines of the chapter describe the height of the pedestal as compared with the base. This height is said to be of nine kinds, which are worked out by nine proportions. Five of them are those expressed by the technical terms kāntika, pauṣṭika, jayada, adbhuta and savvakāṃikā (\( \frac{1}{4}, \frac{1}{2}, \frac{1}{4} \) and \( \frac{1}{2} \)). Rām Rāz on the authority of a Tamil manuscript says that the height of the pedestal is to be reckoned from one-quarter to six times of the height of the base.
The next topic of this chapter refers to the measurement of the projections (nirguna) of pedestals. The height of the pedestal is divided into 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 or 15 equal parts; of these 1, 2, 3, 4, 5, 6, 7 or 8 are given to the projection. The nine kinds of projection are 1, \(1\frac{1}{4}\), \(1\frac{1}{2}\), 2, \(2\frac{1}{2}\), 2\(\frac{1}{2}\), 2\(\frac{1}{2}\), and 3 hastas. The projections may be 1, \(1\frac{1}{4}\), 2, \(2\frac{1}{2}\), 3, \(3\frac{1}{2}\), 4, 5, 6, 7, 8, or 9 dandaas.

After this, the pedestals are divided into three classes known as vedi-bhadra, prati-bhadra, and mañcha-bhadra. Each of these is subdivided into four types. The measures of the moldings of each of these twelve kinds of pedestals are given in detail.

The remaining portion of the chapter contains the names and measurement of the various moldings which are to be employed in each of the twelve kinds of pedestal.

CHAPTER XIV

The base (Adhishthana-vidhana)

The heights of the bases are of twelve kinds, beginning at 30 angulas and ending at 4 hastas, the increment being by 6 angulas. These twelve heights are used respectively in twelve different storeys one above the other. The heights of the bases are said to be 4 hastas in the houses of the Brähmanas, 3 hastas in those of the Kshatriyas, 2 hastas in those of the Vaisyas and 1 hasta in the houses of the Sudras.

Some sixty-four bases are described under nineteen different types called pada-bandha, uraga-bandha, pratikrama, kumuda-bandha, padma-kesara, pushpa-pushkala, śri-bandha, mañcha-bandha, īreni-bandha, padma-bandha, kumbha-bandha (or kula-bandha), vapra-bandha, vajra-bandha, śri-bhoga, ratna-bandha, patta-bandha, kukshi-bandha, kampa-bandha, and śrīkānta. Of each of the bases the moldings and ornaments are described in detail.

CHAPTER XV

The pillar (Stambha-lakshana-vidhana)

The opening lines divide the subject matter into five heads, namely, the measurement of pillars, their shapes, their ornaments and moldings, the collection of wood for the purpose of making pillars, which may, however, be made of stone, and the ceremonial and process of erecting pillars.

The height of a pillar is measured from above the base to below the uttara, or above the pedestal from the jamman to the uttara. The height of a pillar, in other words, is measured from the plinth up to the lowest member of the
entablature, so as to include the capital. In an important passage in the Kāṣyapa, quoted by Rām Rāz, it is stated that the measurement may also be taken from the cimbia of the shaft, exclusive of the base.

The height of a pillar is twice, one-and-a-half times or one-and-a-quarter times that of its base, or the height of the pillar begins at $2\frac{1}{2}$ hastas and ends at 8 hastas, the increment being by $\frac{1}{6}$ angulas or $\frac{1}{2}$ hasta. But according to Kāṣyapa, the height of the pillar may be 3 times that of the base; or 6 or 8 times that of the pedestal. The width (diameter) of a pillar may be $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$ or $\frac{1}{3}$ of its height, or $\frac{1}{2}$, $\frac{1}{3}$ or $\frac{1}{4}$ of the height if it be a pilaster (kudya-stambha). The width of the pilaster, according to the Mānasāra, is 3, 4, 5 or 6 mitras (angulas), and twice, thrice or four times of these should be the width of the kampa. The height of a pillar being divided into 12, 11, 10, 9 or 8 parts, the one of these parts may be the breadth of the pillar, and at the top it is diminished by one-fourth.

The column admits of different shapes. A square pillar is called brahma-kānta. An octagonal one is called vishṇu-kānta. A sixteen-sided or circular one is known as rudra-kānta. A pentagonal one is called siva-kānta, and the hexagonal one skanda-kānta. These shapes are stated to be uniform from bottom to top. But the base may be quadrangular.

With respect to dimensions and ornaments the five kinds of columns—brahma-kānta, vishṇu-kānta, rudra-kānta, siva-kānta, and skanda-kānta—are called chitra-karna, padma-kānta, chitra-kumbha, pālika-stambha, and kumbha-stambha. A sixth one, koshtha-stambha, in the latter division, is stated to be two-sided, and is the same as the kudya-stambha or pilaster.

It should be noticed that the former set of five names refers to the shapes of the shafts, whilst the latter set of five names is based on the shapes of the capitals, but in the detailed description both the capital and shaft are included.

Some special kinds of pillars are also described, such as Chitra-karna, Padma-kānta, Chitra-kumbha, Virā-kaṇṭha, Pālika-stambha, Kumbha-stambha, and Koshtha-stambha. Then follow the description and measurement of the mouldings of the pillars.

Columns, when in rows, must be in a straight line. "The intercolumnation may be two, three, four or five diameters; it is measured in three ways, 1st, from the inner extremity of the base of one pillar to that of another; 2nd, from the centre of the two pillars; and 3rd, from the outer extremities of the pillars including the two bases." There seems to be no fixed intercolumnation. This has been left to the discretion of architects who are, however, required to be particularly careful with regard to beauty and utility.
Minor pillars should be proportionate to the main pillar. A main pillar with one minor pillar (upapāda) is called eka-kānta, with two minor pillars dvikānta, and with three minor pillars tri-kānta. A main pillar with four minor pillars is called brahma-kānta, with five śiva-kānta, with six skanda-kānta, and with eight minor pillars, it is called vishnu-kānta.

There is a long description of the collection of wood for purposes of pillars. The details seem to indicate that at the time when the Mānasāra was composed, wood was frequently used for making columns; stone pillars are also mentioned, but pillars made of brick alone are not particularly dealt with. It is, however, stated that stone, brick and wood were used for making different parts of a column. The square ādhāra or base of a stone pillar, it is stated, should be made of stone, and that of the wooden pillar of wood. But at the end of the next chapter, it is added that all the parts of a column should be made of stone (śilā), wood (dāru) or brick (ishṭaka). In the middle of the same chapter the use of these three materials is elaborately discussed. The pillars, etc., are called svaddha (pure) when made of one material, niśāra (mixed) when made of two materials, and sarakṣa (amalgamated) when made of all the three (or more) materials.

The concluding part of this chapter deals with ceremonies in connection with erecting columns. They are essentially ritualistic. It is directed that the column should be posted (estayet) at the side of a mandapa or pavilion.

CHAPTER XVI

The entablature (Prastara-viḍhāna)

The height of the entablature (prastara), as compared with that of the base (adhisthāna), is of six kinds. The height of the former may be equal to that of the latter, or less by \( \frac{1}{4} \), or greater by \( \frac{1}{4} \) or \( \frac{1}{2} \); or it may be twice; or, in cubit (hasta) measurement these six kinds of height of the entablature begin at 7 cubits and end at 4 1/2 cubits, the decrement being by 1/2 cubit. These six kinds of entablatures are respectively used in the houses of the gods, the Brahmins, the kings (or Kshatriyas), the crown-princes (yuvarṣa), the Vaiṣyas and the Śūdras.

The height of the entablature is said to be \( \frac{1}{4} \) or \( \frac{1}{2} \) of, or equal to, that of the pillar (pāda), or greater by \( \frac{1}{2} \) or \( \frac{1}{4} \). Yet another set of six heights is described. The height of the pillar being divided into eight parts, seven, six, five, four, three, or two parts may be assigned to that of the entablature.

The greater portion of the chapter is devoted to an enumeration of the various mouldings and the measurement of each of the eight different kinds of entablatures.
In this chapter the roofing (prachchhādāna) of buildings is described. It is stated that a brick-built building may be furnished with a wooden roof, and that the roofs of stone buildings should also be built of stone.

CHAPTER XVII

Wood-joinery (Sandhikarma-vidhāna)

The definition of the name (sandhikarman) of the chapter is given in the opening lines. The joining of pieces of wood for buildings is called sandhi-karman. Several kinds of wood-joining are described in detail. It would be impossible to give here a resume. But it may be noted that wood was very largely used in constructing houses of various kinds; some parts of pillars too were made of wood, as has already been pointed out. Doors were mostly made of wood. The same was the case with couches, ears, chairs, etc.

The wood-joining is of various kinds and forms. Pieces of wood are said to be joined in such a way as to make the nandyāvarta, svastika, sarvato-bhadra and such other shapes. Some kinds of wood are strictly forbidden to be joined with some others. Fresh timber, it is stated, should under no circumstances be joined with seasoned wood.

CHAPTER XVIII

The general description of buildings (Vimāna-vidhāna)

The contents of the chapter are divided into the following headings: the classification of the vimānas of one to twelve storeys; the three styles of architecture; the characteristic features of the stūpika or pinnacle, the stūpī-kīla or pinnacle staff, the lūpā, and the mukha-bhadra; and the ceremonies of fixing the pinnacle staff.

The description begins with the making of the foundation; but this subject has already been dealt with in the 12th chapter.

The classification of vimānas of one to twelve storeys is elaborately described here, their absolute dimensions having already been given in the 11th chapter called Bhūmilamba-vidhāna. Each of the twelve classes is subdivided into three types, according to their size—large, intermediate and small. Whilst the width of the small type of one-storeyed building is 1, 2, 3, 4, 5, or 6 parts, it should be 5, 6, or 7 parts in the intermediate type, and 6, 7, or 8 parts in the large type. These 'parts' appear to be the partitions of the façade bordered by two pilasters (pāda).
The three styles of architecture are called nāgara, drūvida and vissara which are apparently geographical names. The distinguishing feature seems to be the general shape of the sikhara.

In the third place the measurement and mouldings of the pinnacle (stūpi or stūpikā) are given in detail. The height of the stūpi is one cubit (hasta) in the houses of the Śūdras, two cubits in those of the Vaisyas, two cubits and a half in the houses of the crown-princes (yuvarāja), three cubits in the houses of the kings (kṣatriya), three cubits and a half in the houses of the Brāhmans, and four cubits in the houses of the gods, that is, in temples.

Building materials are then discussed. Four kinds of material are distinctly mentioned: stone, brick, wood, and iron (lauha).

Buildings are made of one, two, three or all four of these materials, but preference is given to the use of one material alone. With regard to materials, buildings are divided into three classes, namely, sūdra (pure) made of one material alone, miśra (mixed) made of two materials and viṅkirta (amalgamated) made of three or more materials.

The term stūpi-kīla literally means the nail or pin of the stūpi. Its form is described clearly. It is quadrangular at the base, octagonal at the middle, circular at the top, and tapering gradually from bottom to top. The width at the top is one angula.

Then two more architectural members are described, namely, the lūḍa and the mukha-bhadra. The former is explained by Rām Rāz as "a sloping and a projecting member of the entablature, representing a continued pent roof. It is made below the cupola [sikhara], and its ends are placed as if it were suspended from the architrave, and reaching the stalk of the lotus below."

The mukha-bhadra, or front tabernacle according to the same author, indicates an ornamental niche, which occupies a central position in the façade of the building.

The chapter concludes with a description of the ceremonies in connection with fixing the stūpi-kīla.

CHAPTER XIX

The one-storeyed building (Ekabhūmi-vidhāna) ²

The chapter opens with various classifications of buildings. They are first divided into four classes called jāti, chhanda, vikalpa, and ubhōsa. Here they are considered with regard to their measurement. The jāti class is said to be

---

3. Cf. Ibidem pp. 49-50; plate XXI.
measured in the purva-hasta, the first kind of cubit, i.e., the cubit of 24 angulas. The chhanda is measured in \(\frac{1}{8}\) cubit, the vikalpa in \(\frac{1}{3}\) of this (?), and the abhasa in \(\frac{1}{4}\) cubit or span.

A further classification is into sthanaka, asana and sayana, which are also called respectively, samohita, asamohita and aposamohita. This classification also refers to measurement. In the sthanaka class the measurement of the height is considered, in the asana the breadth is taken into consideration, and in the sayana the width is measured. It should be noted that these three classes, namely, sthanaka, asana, and sayana, have a further significance with regard to the object of worship. In the sthanaka buildings the idol is in an erect posture, in the asana buildings in a sitting posture, and in the sayana buildings in a recumbent posture.

A third classification refers to the shape. Buildings are classed as masculine (purna) when they are equisangular or circular, and as feminine when they are rectangular. Male deities are installed in masculine temples, and female deities in feminine temples. It is added, however, that the images of the latter may be placed in masculine temples too.

After this introduction comes the description of one-storeyed buildings. The absolute measurement is referred to in the chapter called Bhoomi-lamba (dimensions of storeys). The comparative measurement and plan are described here at great length. The whole height of the building is divided into a certain number of equal parts which are distributed in a happy proportion amongst the different members, namely, the base, the pillar, the entablature, the neck, the dome and the pinnacle. Similarly the length of the entire temple is divided into a certain number of equal parts which are also distributed amongst various rooms and halls, namely, the garbha-grha or shrine, the antarala or anteroom and the mandapa or pavilion. These component parts of the building are described in detail in subsequent chapters, as also the gate-houses (gopura), courts (prakara) and such other architectural members as doors, windows, arches, and so forth. In the present chapter a detailed account is given of the water-channeled (nala), which is meant to be an outlet for the water.

The eight kinds of one-storeyed buildings are known as jayantika, bhoga, trivikala, svasti-bandhana, tikara, hasti-prishtha, skandhatara, and kekara.

The concluding portion of this chapter as well as of the next eleven chapters are devoted to an enumeration of the various deities with whose images the doors and walls of buildings should be decorated.

The Buddhist and Jain temples, dealt with in only two lines, are directed to be similarly built, with this difference that in these temples the images of the Buddhist and Jain gods should be installed instead of the images of the Brähmanas,
Buildings of two to twelve storeys.  

The contents of these eleven chapters of the Mānasāra may be conveniently summarised together. They deal respectively with two-storeyed (āvi-tāla), three-storeyed (tri-tāla), four-storeyed (chatus-tāla), five-storeyed (pāñcha-tāla), six-storeyed (ṣaṭ-tāla), seven-storeyed (ṣaṭ-tāla), eight-storeyed (ashtā-tāla), nine-storeyed (nava-tāla), ten-storeyed (daśa-tāla), eleven-storeyed (ekādaśa-tāla), and twelve-storeyed (dvādaśa-tāla) buildings. In each of these chapters we find a classification of the peculiar kind of edifice under discussion followed by an account of certain details, in particular the location of the divine images with which the walls are decorated. Thus the buildings of two storeys are divided into eight classes which are called śrīkara, vijaya, sidāha, paushṭika, kāntika, adbhuta (also prabhūtaka), svastika, and puṣṭkala. Those of three storeys are likewise divided into eight classes, called śrīkānta, āsana, sukhālaya, ketara, kamalāgā, brahma-kānta, meru-kānta, and kailāśa. The same eightfold division is found in connection with the four-storeyed buildings; here the names are viṣṇu-kānta, chatur-mukha, sadā-tika, rudra-kānta, śiva-kānta, mañjika-kānta, veśā-kānta, and indra-kānta. The eight classes of the five-storeyed buildings are called aśvātata, bhūta-kānta, viśva-kānta, mūrti-kānta, yama-kānta, gṛiha-kānta, yajña-kānta and brahma-kānta. In the case of the buildings of six storeys there are no less than thirteen classes, the technical names of which are padma-kānta, kāntāra, sundara upakānta, kamala, rātīa-kānta, vīpulākha, jyotish-kānta, savorūha, vīpulākkiṣṭa, svastikānta, nandīśvara, and iva-kānta. The seven-storeyed buildings are divided into eight kinds—pundarika, śrīkānta, śrībhoga, dhārana, pañjara, ṛtramāgāra, karmya-kānta, and hima-kānta. The eight classes of eight storeyed buildings are called bhū-kānta, bhūpa-kānta, svarga-kānta, mahākānta jana-kānta, tapas-kānta, satya-kānta, and deva-kānta. Those of nine storeys are divided into seven kinds—saura-kānta, raurava, chandīta, bhūshaṇa, viṣvita, supratikānta, and viśva-kānta, of which the first four represent the small type of nine-storeyed buildings, the next two the intermediate type, and the last one the large type. The ten-storeyed buildings are divided into six classes which are named bhū-kānta, chandra-kānta, bhavana-kānta, antariksha-kānta, megha-kānta, and abja-kānta. Buildings of eleven storeys admit of six varieties—sambhū-kānta, śa-kānta, chakra-kānta, yama-kānta, vajra-kānta, and akra-kānta. Finally, buildings of twelve storeys are divided into ten kinds—pāñchaśa, drāviḍa, madhya-kānta, kālinga-kānta, viṇaśa, keraṇa, vaṇa-kānta,
māgadhu-kānta, janaka-kānta and gurjara. (spīrjaka). It deserves notice that in this instance the terms by which the classes are designated are apparently geographical names.

In chapter XXX we find, moreover, an elaborate account of staircases (sopāna).

CHAPTER XXXI

The courts (Prākāra-vidhāna)

The chapter begins with the announcement that five kinds of prākāra buildings will be described in connection with bati (offerings), parivāra (attendant deities), sōbhā (beauty), and rakshana (defence).

But the main object of the chapter is evidently to describe the various courts into which the whole compound is divided. The description of five such courts is given. The first or innermost court is called the antar-māṇḍala. The second is known as anta-nihāra and the third as madhyama-hāra. The fourth court is technically named prākāra. The fifth and last one is known as the mahāṃaryodā or the extreme boundary." As the title of the chapter indicates, the greater part of it describes only the fourth court. Here it may be briefly observed that this prākāra is also divided into the jōtī, chhandu, vikalpa, abhāsa and kānya classes. Under each class a number of buildings (sālā) is exhaustively described. A further classification (saśkīraṇa, etc.) is made with regard to the materials of which the prākāra buildings are made. These materials are the same as in other cases, namely, stone, brick and timber.

The shrines of the attendant deities (parivāra-vimāna) and the gate-houses (gopuras) are very briefly described in conclusion, the next two chapters being entirely devoted to a special treatment of these two subjects.

CHAPTER XXXII

The attendant deities (Parivāra-vidhāna)

The temples of these deities are directed to be built round the prākāra. At the eight cardinal points of the innermost or the first court, the temples of a group of eight deities are built. Groups of sixteen and thirty-two deities are located in the second and the third courts respectively. Between the third and the fifth courts is said to be a special pavilion. After an elaborate description of the location of temples for each of the deities of the three groups, the attendant deities of Vishnu are described in detail.

With regard to the family of Vishnu, it may be pointed out that it also includes the same three groups of eight, sixteen and thirty-two deities. The second group
relating to Vishnu includes Buddha too. The well known ten incarnations of Vishnu, except the Matsya (fish) and the Kurma (tortoise) are included in the third group.

The temples of the Baudhas and Jinas, it is expressly stated, should be constructed according to the rules of their own Sāstras.

It should be noticed that the description of the temples intended for so many deities does not contain any measurements, etc. The text is solely occupied with the location of these temples or deities in the compound. But a considerable portion of the chapter is devoted to the description of maṇḍapas for such purposes as bathing, sleeping, assemblies, performances of musicians and dancing girls, and stabling of cows and horses.

CHAPTER XXXIII

The gate-house (Gopura-vidhāna) 1

Gate-houses (gopura) are built in front of each of the five courts into which the whole compound is divided. The gopura belonging to the first court (antar-maṇḍala) is technically called the dvāra-lokhā or 'the beauty of the gate'; that belonging to the second court is known as dvāra-tālā or gate-house. The gate-house of the third court is called dvāra-prāśada, and that of the fourth court (prākāra) has the name of dvāra-harmaya. The gate-house of the fifth or outermost court (mahāmaryādā) is known as mahāgopura or the great gate house.

Each of these five classes of gate-houses is subdivided again into three kinds—the small, the intermediate, and the large. Gate-houses are exhaustively described under these fifteen kinds. They are further divided into ten classes with regard to the number of architectural members designated as tīkhara (dome), stūpikā (pinnacle), gala-kūṭa (neck-peak), and keśudra-nāsi (vestibule). A gopura is thus technically called śribhoga when its tīkhā is like a tāla, and it has a circular surrounding stūpikā, and is furnished with a gala-kūṭa, four keśudra-nāsīs, and eight mahānāsīs. The remaining nine classes are called respectively śrivīṭāla, visheṣu-kānta, indra-kānta, brahma-kānta, skanda-kānta, tīkhara and saunyā-kānta. The names of two of these ten classes are evidently missing.

The fifteen kinds of gate-houses referred to above may have one to sixteen or seventeen storeys. But the details of those of one to five storeys only are given, others being left to the discretion of the artists and stated to be built in the same way as those described so minutely.

1 Ram Bās, Essay, pp. 58—61; plates XXXVI—XLII.

This term in Prakrit form (duḥraśahā) occurs in the Mṛchhakatika (ed. Stenzler), p. 72, 13, in the description of Yasantasauna’s palace (Act V) which is divided into seven courts.
The measurements, both absolute and comparative, of length, breadth and height of each storey belonging to each of the fifteen kinds of gate-houses are described at great length. The ornaments and mouldings of each storey are also given in detail. The garbha-griha (cella or sanctum) as well as all other rooms together with their different parts, such as pillars, entablatures, walls, roofs, floors, doors, windows, etc., are exhaustively discussed.

The measurements, etc., of the gate-houses are discussed in comparison with those of the main buildings also. Then follows a lengthy description of their solid (ghana) and hollow (aghana) parts. The description of some interior members is also included in this section.

The chapter closes with an interesting description of windows, not only for gate-houses, but also for other kinds of buildings, both religious and residential. The general plan of windows seems to be this: a post or pillar is fixed in the middle to which are attached two perforated screens (jālaka and phalaka). These admit of various patterns represented by the following names, by which they are classed with regard to their shapes, nāga-bandha, valli, gavāksha (cow’s eye), kuśjarūksha (elephant’s eye), swastika, sarvato-bhadra, nandyāvarta, and pushpa-bandha (bouquet or bunch of flowers). They are decorated with floral and foliated ornaments, as well as with decorative devices in imitation of jewels. The measurement of length, breadth and thickness is entirely left to the discretion of the artist. But it is stated in conclusion that according to some authorities the width of the windows for gate-houses varies from 1½ to 5 cubits (hasta), the increment being by six aṅgulas.

CHAPTER XXXIV

The maṇḍapa (Maṇḍapa-vidhāna)

The term maṇḍapa generally means a temple, pavilion, bower, shed or open hall. But the word has been used in three technical senses in this chapter. It is used to imply a house in the country, etc., or built on the sea-shore or the bank of a river, tank, or lake; secondly, it is used to imply all the detached buildings in a compound which is generally divided into five courts. But in the most general sense, it implies various sorts of rooms in a temple or residential building; for the greater part of this long chapter is devoted to a description of these rooms.

After an account of the architectural members indicated by the technical terms bhūti, alānda and prapā, follows the lengthy description of maṇḍapas. Seven maṇḍapas are said to be built in front of the prāśāda or the main edifice. They are technically called hima, nishadaja, vijaya, mālaya, pāriyātra,
gandha-mādana and hema-kūṭa respectively. The first is said to be used for the purpose of a bath-room, the second for a study, library or school (adhyāyana), and so forth. Various parts of these buildings, such as walls, roofs, floors, verandas, court-yards, doors, windows, columns, etc., are described in detail. Besides these seven, various other classes of mandapās are also described exhaustively. Their technical names together with the main purposes for which they are built may be given here.

The mahuja mandapa is used as a library-room, the vijaya for marriage ceremonies, the padmaka as a temple-kitchen, the sīcha as an ordinary kitchen, the padma for collecting flowers, the bhadrā for a water-reservoir, store-house, etc. the śīva for unhusking corn, the vedā for an assembly-hall, the kula-dhārana for storing perfumes, the sukhāśa for a guest-house, the dārava for an elephant's stable, and the kauśika for a horse-stable, the saukhyaka and others built on the banks of the sea, river, lake, etc., are meant for purposes of pilgrimage, and the jayāla and others for summer residence. The plan, ornaments, etc. of each of these various classes are described in detail.

The chapter closes with a description of the forms of mandapās. Those of temples and of the houses of the Brāhmaṇas should have the jāti shape, the chanda shape is given to the mandapās of the Kshatriyas, the vikalpa shape to those of the Vaiśyas, and the abhāsa shape to those of the Śūdras. But according to some, these four classes are also to be based on the form of the bhadrā or front tabernacle.

The mandapās of two faces are called daṇḍaka and those of three faces svastika; but the latter may also have the lāṅgala or plough shape. The mandapās of four faces are known as chatur-mukha, those of five faces as savatc-bhadrā and those of six faces as maṅgika.

A short description of mandapās in villages or towns is given at the end. Their principal members are said to be the lupa, prastara, prachchhādana, sabbha and kūṭa, etc. Mandalas are also built on the roadside and elsewhere.

All classes of mandapās mentioned above are described separately, according as they may belong to a temple or to the houses of the Brāhmaṇas, the Kshatriyas, the Vaiśyas and the Śūdras respectively.

CHAPTER XXXV

The Śala (Śala-vidhāna)

The distinction between the śāla, the mandapa, and the griha, to each of which a separate chapter is devoted, is not quite clear. The three terms are used more or less in the same sense, to imply houses in general. All of them consist of the same parts and are used for similar purposes. In the compounds go-śāla (cowshed),
atva-sālā (horse stable), pātha-sālā (college or school), etc., the word sālā indicates a detached building; while in pāka-sālā (kitchen), etc., it may imply a hall or room. In the present chapter sālā is used mostly in the sense of temples and of residential buildings for Brāhmaṇas, Kshatriyas, Vaiśyas and Śūdras.

Like villages, sālās are first divided into the same six classes of daṇḍaka, svastika, maulika, chatur-mukha, sarvato-bhadra, and vardhamāna. Some of these with a fixed number of halls are said to be temples, while others varying in the number of rooms are meant for the residence of people of different castes. A distinction is made with regard to the number of storeys they should be furnished with. The maximum number of storeys a sālā has is twelve. The various storeys of all these sālās are described in detail. Eleven alternative breadths, eleven lengths, and five heights, are given to each sālā. It should be observed that the width is generally the standard of measurement in Indian architecture; the length and the height being in most cases determined in comparison with the breadth. The height is described here by the general formulas indicated by the five technical names, śāntika, paśupīka, jayada, dhanada (in other places sarva-kāmika), and adhūta. Many alternatives in measurement are, however, modified by the rules of āyādī-shaḍ-varga, as in all other places.

The plan and characteristics of the six classes of sālās, both religious and residential, are described in detail. The various parts, mouldings and ornaments of a sālā are the same as those of an ordinary house. Columns, walls, roofs, floors, domes, doors, windows, staircases, arches, arcades, etc., are minutely described.

A special feature of the present chapter is the consideration of the times and season proper for the building of a sālā. Certain months and seasons are stated to be quite unsuitable for this purpose. Astrological and ritualistic considerations form another peculiarity of this chapter. Some classes of sālās are said to suit particular people born under the influence of certain planets and stars.

The chapter closes with an account of the rules of shaḍ-varga as applied to sālās, and with an enumeration of the various parts of a sālā.

CHAPTER XXXVI

The location and measurement of houses (Gṛiha-māna sthāna-vinyāsa)

The main object of the chapter is to describe the arrangement and situation houses in the compound. The breadth of a house is said to be of five kinds, namely, from two or three daṇḍas to ten or eleven daṇḍas, the increment being by two daṇḍas. The length may be equal to twice the breadth. Houses are stated to be
built in a village, town, port (pattana), kheṭaka, grove, or hermitage, near a hill or mountain, or on the bank of a river, etc.

In the 34th chapter various sorts of mandapas have been stated to be located in different parts of the five courts into which the whole compound of a temple is divided. In the present chapter, structures intended for various purposes are located in the different squares into which an inhabited area is divided according to the parama-sádhika plan described in the 7th chapter called Pada-vingása.

The Brahma-sthāna or the central square is stated to be unfit for a residential building. The temple of the family god is generally built in this part. Round this are constructed the dwelling houses for the master of the family, his wife and children, and servants, sheds for cows, horses, poultry, etc., the kitchen and dining hall, etc., rooms for guests, for reading or study, for the daily sacrifices of the upper caste-people, for amusements and music, for the dancing girls, and for all other domestic purposes. The arrangement of these different structures is, however, slightly different according to the caste and social position of the family. But the general plan of the dwelling houses for a family is the same in all cases.

CHAPTER XXXVII

The first entry into the house (Griha-prveśa-vidhāna)

The ceremonies in connection with the opening of and first entry into a house are described in detail. An auspicious day and moment, and the worship and sacrifice in this connection, are still usually observed in India. The masters of the ceremonies are stated to be the sthapati and the sthēpaka. They lead the procession in circumambulating the village and the compound before the ceremonial entry into the house. The head of the family and his consort are usually the chief figures in these affairs. After completing the worship and sacrifice, a prayer is offered to the guardian angel of the house (Griha-Lakṣaṇa) to confer male offspring, wealth, and long life, on the master of the house. After the solemn entrance into the house has been performed, the householder should feed the Brāhmaṇas, and present the architects and their followers with rich gifts.

CHAPTER XXXVIII

The location of doors (Devāra-sthāna)

Doors and gates have already been described on various occasions. Two separate chapters are now devoted to the arrangement, location, measurement and ornamentation of doors to be used in all kinds of buildings. Such a special description

1 The mantra to be recited runs:

हे ज्ञूणम् गृहकर्ताेर प्रद्रश्यस्थनात्मिः।
सूःसूः कर्म चासृष्ण्य प्रश्ययामि नमस्तुः॥

...
of windows has already been noted at the end of the 33rd chapter on gate-houses (gopura).

It is stated in this chapter that four main doors are constructed on the four sides of all kinds of buildings of gods and men. In most cases four smaller doors are also made at the four corners. Many other smaller doors are prescribed in the intervening spaces. Drains (jala-dvāra) are made underneath the house.

The main doors are always furnished with a flight of steps. In many buildings, the entrance-door is made, not at the middle of the frontage, but on either side of it. But in some houses they may be made in the middle of the front wall. In the case of kitchens, in particular, the main doors must be at the middle of the wall.

It is also stated expressly that where it is inconvenient to make so many smaller doors, as prescribed here, they should be replaced by windows.

The materials with which doors are constructed are mainly timber; but stone is used in some exceptional cases.

CHAPTER XXXIX

The measurements of doors (Dvāra-māna-vidhāna)

The common rule is that the height of a door should be twice its breadth. But various alternative measurements are also given. The height of the larger doors may vary from 1½ cubits (hasta) to 7 cubits, the increment being by 6 āṅgulas. The height of the smaller doors varies from one cubit to three cubits, the increment being by 3 āṅgulas. In the former case, therefore, we have twenty-three, in the latter seventeen, varieties of dimensions.

These dimensions are prescribed for doors in the jāti class of buildings. But other measurements are given for doors in houses of the ekhanda, vikalpa and ābhāsa classes. The alternative dimensions are modified by the application of the shad-varga formulas.

The door-posts and other parts of the door are then described at great length. Doors are generally double but single doors are also mentioned.

Doors are profusely decorated with foliated and floral ornaments. The images of Ganesa, Sarasvati and other deities should be carved over the entrance.

CHAPTER XI

The royal palace (Rāja-grīha-vidhāna)

Palaces are divided into nine classes with regard to their size, according as they may belong to a king of any of the nine classes enumerated in the next chapter. Each class of palaces, whether of a chakravartin, mahārāja, narendra, mañḍalesha,
etc., admits of nine sizes. For each of the nine main classes it is further laid down, that they should consist of a certain number of halls (kālā). Thus the palace of the chakravartin, universal monarch or emperor, should have from one to seven halls; that of the adhīrūja (or mahārūja) from one to six halls; that of the narendra from one to five halls, and so forth.

Then the location of the various palace buildings is minutely described on the basis of the Paramatādhika plan explained in the 7th chapter called Pada-vīnyāsa.

The Brahma-pīṭha is installed in the Brahma-sthāna, the square in the centre. The main palace of each of the nine classes of kings is then located in certain of the remaining squares—Indra, Varuṇa, Yama, Pushpadanta, etc. Among the other palace buildings enumerated we find mention of the residences of the queens, the princesses, and the private council-hall.

Other buildings, which are necessary adjuncts to the dwelling of an Indian king, are the coronation pavilion (abhishekādi-maṇḍapa), the arsenal (āyudhālaya), the store-house (cātu-nikshepa-maṇḍapa), the house for keeping ornaments (bhūkshanālaya), the dining-hall (bhōjan-maṇḍapa), the kitchen (pachanālaya), the flower pavilion (pūrṇa-maṇḍapa), the baths (maññālaya), the bed-chamber (stūनālaya) and several others. These all belong to the inner part (antah-tīlā) of the palace.

In the outer part (bāhī-tīlā) are situated the residences of the crown prince (yuvarāja), of the family priest (purūchita), of the ministers and others, likewise the hall of public audience (sthāna-maṇḍapa), temples, etc.

Pleasure-gardens, flower-gardens, groves, tanks, etc., are assigned their proper places. Stables for horses, elephants, and cow-sheds, etc., are generally made near the main gate. Other animals, which are kept within the royal enclosure, are rams, cocks, deer and antelopes, monkeys, tigers, and peacocks. Pavilions to witness ram-fights and cock-fights (mesa-yuddhārtha-maṇḍapa, kūkṣita-yuddha-maṇḍapa) are specially mentioned. The jail (kārūgāra) is located in a rather out-of-the-way place, such as the Bārīṣa or the Antarikshā part. At the end of the chapter it is stated that for the rest the arrangement is left to the choice of the king and to the discretion of the architects.

CHAPTER XLI-XLII
Royal courts and characteristics of kings (Rājānga-lakṣaṇa, Bhupāla-lakṣaṇa)

These two chapters deal with the royal courts, the classification of kings, the qualities which are required in a good ruler, and so forth.
Kings are divided, in descending progression of rank, into nine classes namely, chakravartin, mahārāja (or adhirāja), mahendra (or narendra), pārśnika, pātṛadhara, mandalaśa, pātṛbhāj, pṛhāraka, and astragṛhīn.

The opening and closing lines of chapter XLI describe the general qualifications of all kings. They should know philosophy and religion and must be learned in all the Śāstras, and in the political, military, civil and moral laws. They should be haughty (uddhata), gracious (lalita) and generous (udātta) in their behaviour. They should have the direct knowledge of and control over the subordinate kings and ministers. They should themselves be great warriors and wise in all matters. The treasury should always be kept full and they should themselves be religious and of strict morals. They should be the protectors of their subjects. They should possess peace of mind, love of fame, good taste in matters of art, and fondness for music (gandharcaśātra).

Then it is stated of each of the nine classes of kings what should be the number of his horses, elephants, soldiers, women and queens. The astragṛhīn, for instance, who is least in rank, is said to possess 500 horses, 500 elephants, an army of 50,000 soldiers, 500 female attendants and one queen (mahīśī). The pṛhāraka, who follows next, has 600 horses, 600 elephants, 100,000 soldiers, 700 beautiful women and two queens. The highest figures are reached in the case of the chakravartin or universal monarch.

Chapter XLII begins with the classification of kings mentioned above. The extent of their kingdom and some special characteristics of each of the nine classes of kings are then described. The empire of the chakravartin reaches as far as the four oceans (chatuḥšoḍara). He is the suzerain of all subordinate kings. He is strict in his judgment of right and wrong, but protects the people with kindness and mercy. He is famous and the most fortunate of all. The next king (mahārāja or adhirāja) is the lord of seven kingdoms. He has the six principal kingly qualities (gaṇa), the six strengths (bala), and the three powers (lakti). He is also versed in politics (nīti). He is born either in the Solar or in the Lunar race. The remaining seven classes of kings are similarly described.

---

4 The six 'qualities' (gaṇa) of a king are found in Maṇu, VII, 100:

| संप्रच च बिन्धाच वेव शामास्त्रवेव च       |
| स्मृतिमानसंधर्भं च पद्यानं चिन्तवेतस्या ||

"Let him (the king) constantly think of the six measures of royal policy (gaṇa), viz., alliance, war, marching, halting, dividing the army, and seeking protection." (Bühler, S. B. R. XXV, p. 241). But according to another source the six gaṇa or qualities of a king are valor, energy, firmness, ability, liberality and majesty. The three royal powers (lakti) are found in the Amaṇḍaśāstra 2, 5, 1, 19—Jaṅγaśa śastra prabhāvataḥ āhu maṇtrajāh, "the three powers come forth from majesty, energy and good counsel."
A point of great historical interest in this passage is that royalty is no longer the monopoly of the Kshatriyas. A king may belong to any of the four castes—the Brāhmaṇas, the Kshatriyas, the Vaiśyas, and even the Śūdras. The prāhāraka is expressly stated to belong to any of the four castes.

The nine kinds of crowns, which pertain to these nine classes of kings, are then described. This subject, however, is more elaborately treated in the 49th chapter (Abhisheka-lakṣaṇa). Next comes the description of the nine kinds of thrones used by the nine classes of kings. Here other royal insignia, particularly the white umbrella (ākāvuka-chhuta) and the chowrie or fly-whisk made of the yak's tail (chāmara) are also mentioned. Thrones, it will be noticed, are fully dealt with in the 45th chapter (Sihhāsana-lakṣaṇa-vidhāna).

The next point of importance is the rate of royal revenue. The chakrawartin takes only one-tenth of the produce as his share. The mahārāja takes one-sixth, the narendra one-fifth, the pūrshnika one-quarter, the pāṭadhāra one-third; the exact proportions of the other kings' shares are not given. No tax should be illegally imposed. Punishment and fines should be legal and moderate. The temples, as well as the Brāhmaṇas, the hermits and similar people should be supported by the state.

At the end of the chapter it is stated that this description of kings is made on the authority of the Vedas, the Purāṇas, and the Śāstras.

CHAPTER XLIII

Cars and chariots (Ratha-lakṣaṇa-vidhāna)

Cars and chariots are constructed for the ceremonial and ordinary use of gods, Brāhmaṇas and kings, as well as for war and other purposes. The wheels and other parts of cars, their shapes, their measurements, their ornamentations and mouldings are described in order.

The chapter begins with a minute description of the wheel, the most important part of the car. It is always circular, and is furnished with a strong tyre of similar shape. All its parts, together with their measurements, are described in detail—the kukhi (navel, lit. belly), akha (axle), śikha or danta (axle-band), chhindra (hole) and the kha (axle-bolt, linch-pin), etc. Particular trees yielding timber for the wheel are enumerated. On a double support (called ādhāra and upādhāra), which rests on the axles, is raised a lofty structure which is provided with balconies (bhūdra) and profusely decorated. It may have as many as nine storeys, the height of each upper storey being smaller than that of the one just preceding. The exact proportion is not given.
The forms of cars are next discussed. With regard to their shapes, cars are divided into seven classes—nabhasvarna-bhadra, prabha-ja-chnab-hadra, vina-bhadra, pavana-bhadra, prishada-bhadra, indra (or chandra).hadra, and anika-bhadra. The first of these is square, the second hexagonal, the third should have two bhadras, and the fourth, three bhadras; the fifth and the sixth should have ten bhadras, and the last one should be furnished with twelve bhadras.

The description of the different shapes of cars is rather confusing. According to another classification given here the square cars are called nagara, the octagonal ones dravida, the circular ones vesara, the hexagonal ones andhra (randhra ?), and the oval ones kalinga.

These cars, in accordance with the different purposes referred to above, have various kinds of wheels and other members. Thus a fighting car has three wheels, the car for mock fighting has four wheels, one for ordinary festivals (nityotsava) has five wheels, one for special festivals (mahotsava) may have six, seven, eight, nine or ten wheels. In the same manner the number of vedis (platforms) varies according to the special purpose for which a car is to be used.

Thus it is stated that the chariot of the universal monarch (svarabhavuna), should have one to nine vedikas, that of the maharaja one to seven vedikas, that of the narendra one to five vedikas, and so forth. The cars of Vishnu and Shiva should consist of one to nine vedikas, those of Buddhist and Jain deities one to seven vedikas, and in the case of other gods the number should be four, or one to five.

These cars should be decorated with peacock’s feathers, crowns, arches (torana), little bells, bright mirrors, fans and garlands. There should also be carved images of various deities, particularly on the upper part of the structure, while the basement is adorned with representations of lions, elephants and crocodiles (hari-kara-nakara-vipaki), with foliated ornamentation and with figures of dancers (naṭaka), bhūtas and yakshas.

CHAPTER XLIV

Couches (Śayana-vidhāna)

Couches are meant for the use of deities, the twice-born and members of other castes. They are said to be of two kinds, the small (Bala-paryanka) and the large (Paryaṅka), the one being distinguished from the other by its size alone.

The measurement and various parts of the two kinds of couches are described separately. The width of the Bala-paryanka may vary from 11 to 25 aṅgulas,
the increment being by 2 āṅgulas. This makes eight varieties. The pāryāśka proper admits of nine varieties, as they may be from 21 to 37 āṅgulas in width with increments of 2 āṅgulas.

It may be pointed out that they are generally furnished with four legs, and castors are attached to the legs so that they may easily be moved from one place to another. The legs of royal couches should be decorated with lions. The proportion of breadth to length shows that couches are generally rectangular in shape.

Special mention is made of swings suspended from four chains, which are said to be used by the gods, the Brāhmaṇas, the Kshatriyas, etc.

The material of which couches and seats (āśana) are constructed is the wood of certain trees. For the legs special kinds of timber are recommended.

CHAPTER XLV

Thrones (Simhāsana-lakshaṇa-viṣhāna)

The expression simhāsana implies a seat marked with a lion. This lion-seat or throne is made for the use of deities and kings. Royal thrones are divided into four classes. The prathamaṃśana is said to be fit for the first (prathama) coronation, the maṅgala throne for the coronation called maṅgala. The vīra throne for the vīra-coronation, and the viṣhāya throne for the viṣhāya-coronation. What is evidently meant is that these four thrones are employed for the four successive stages of the coronation of one and the same king.

As for the deities, the nityārçhana throne, as the name indicates, is used for daily worship, the nityotsara throne for ordinary festivities, the viśēṣaṃśana throne for special worship; and the mahotsara throne for great festivals.

Next comes a further division of thrones into ten kinds. An account of the general plan as well as the measurements of the various parts of them is given in detail. They are technically called—padmāsana, padma-ketara, padma-bhadra, trībhadra, trīvīśāla, trībandha, trīmukha, bhadrāsana, padma-bandha and pāda-bandha. Nine kinds of dimensions are given to each of the above mentioned thrones. But the right proportion in each case should be selected by the application of the rules of caḍ-varṣa.

Of the ten kinds, the first, padmāsana, is used as the throne for Śiva or Vishnu, the padma-ketara for the [other] gods and for the chakravartin, the padma-bhadra for the adhīrāṇa (i.e., the mahārāja); the trībhadra is suitable for the adhīrāṇa and the narendra, the trīvīśāla for the narendra and the pārshvaika, the trībandha for the pārshvaika and the pāṭṭadhara, the
Trimukha for the Mandala, the Bhadrāsana for the Puṣabhājī, the Padma-bandha for the Prāharaka, and the Pāda-bandha throne for the Astragāhīn. It is expressly stated that lion-shaped legs should not be made for the throne of the last class of kings. But in the case of all other kings, the thrones are marked with lions and furnished with six legs. They are generally placed facing the east. But the thrones of deities should face the four quarters.

At the end of the chapter the author says that the 'thrones of Viṣṇu, Rudra, Jina, Indra, and all the [other] prominent gods, and also of the kings have thus been described.' It should be noticed that in the description itself no reference whatever is made to thrones of the Buddhist or Jain deities as the term Jina would seem to imply.

CHAPTER XLVI

Arches (Torana-vidhāna)

The torana or arch is stated to be an ornament for the thrones (āsana) of gods and kings. It is supported on dwarf pillars (aṅkhra) which rest on the pedestal (pīṭha) of the image. The arch admits of various shapes. It may be circular, triangular, crescent-shaped, bow-shaped or of any other suitable form. Directions for making these arches, as well as the measurements of their constituent parts are given in detail. With regard to their ornamentations, arches are divided into four kinds, technically called patra-torana (foliated arch), pushpa-torana (floral arch), ratna-torana (jewelled arch), and chitra-torana (ornamental arch).

The various ornaments of arches are then described in detail. The top of the torana should be decorated with figures of the heavenly musicians, Tumburu and Nārada, while makaras (crocodiles) are placed at the sides. The arch is supported by leoglyphs (vyāli) which are placed on both sides of the pillars. For the rest the patra-torana, as the name indicates, is mainly adorned with foliated ornament the pushpa-torana with flowers, and the ratna-torana with jewels. Among the other decorative devices mentioned we find the effigies of different classes of semi-divine beings, such as pakṣhas, vidyādhara, kinnaras and kinnarīs. At the end of the chapter it is said that arches may also be made without any ornamentation (chitra-kīna).

CHAPTER XLVII

The Theatre (Madhyaraṅga-vidhāna)

In the first verse we meet with the expression mukta-prapāṇga which appears to be used in the same sense as madhya-raṅga. It is provided with dwarf pillars
or pilasters (āṅghri-pāda), and consists of various other members (masūraka, vedi, maṁcha, kuṭṭima, upāśita, etc.), and is decorated with uttaras, vājanas, mukṣṭi-bandhas and lūpās. It should be furnished with four bhadras (or with one bhadra) and with eight or sixteen kshudra-nūśis. The upper portion is adorned with figures of leogryphs (vyāli) and crocodiles (mukara). From the last but one verse of the chapter it is evident that there must be a close connection between the mukta-prapāṇga, on the one hand, and the simhāsana, the mukara-torana and the kalpa-vriksha, on the other hand, the latter three subjects being discussed in the two immediately preceding and the following chapters.

From this verse it will be seen that the materials to be used for the mukta-prapāṇga, etc., are wood, stone, brick (terra-cotta?) and various kinds of metal (loha, literally iron).

CHAPTER XLVIII

The ornamental tree (Kalpa-vriksha-vidhāna)

The name of the chapter is Kalpa-vriksha which literally means a mythical tree granting all wishes or, in other words, an all-productive tree. But here it is undoubtedly a decorative device surmounting a seat (ūsana) or throne. It is also mentioned in connection with the mukta-prapāṇga, the mandapa and the mukara-torana.

The minute description and measurement of the various parts of the tree are given. Its trunk (pāda) is wound with a serpent, with expanded five-fold hood. The measurements of the snake, of its hood, and of its tail are described in detail. The number of branches as well as their size varies according to the special purpose of the throne, for the decoration of which the tree is meant. The tree is beautifully decorated with creepers, leaves, and flowers of various colours and forms. Jewels and garlands of pearls are inserted in suitable places. The figures of deities, siddhas, vidyādharas, monkeys, etc., are placed in the intervals between the branches.

Many other particulars regarding this ornamental tree are left to the discretion of the artist.

CHAPTER XLIX

Crowns and coronation (Abhisheka-lakṣaṇa-vidhāna)

The chapter is divided into two parts: the first part describes the crowns of gods and kings, and the second deals with the ceremonies of the coronation of kings.
The chapter opens very unusually with the description of the lavish presents to be made to the architects. These gifts consist, among other things, of girls, wealth, land, houses, and servants, both male and female.

After this introduction there follows an enumeration of the various head-dresses used by gods and kings, namely, jata, mauli, kiriti, karanja, surukraka, kundala (kuntala?), kesabandha, dhammilla, alaka, chudda, mukuta and patta ( turban).

Of these the last-mentioned is subdivided into three kinds, called foliated, jewelled, and floral turbans (patra-patta, ratna-patta, and pushpa-patta).

The jata (matted hair) and the mukuta (lit. diadem) are said to suit Brahma and Siva. The kiriti and mukuta are suited to Narayana (i.e., Vishnu). Other minor gods wear the karanja and mukuta. The love-goddess, Rati (Manonmani), wears a jata, mauli, mayala or kundala. Sarasvati and Savitri put on a kesabandha and a kundala. All the female deities may wear a karanja or mukuta.

Among the kings, the chakravartin (svarabhauma) and the adhiraja wear the kiriti. The narendra puts on a karanja, and the parshika a sirastraka. But the chakravartin and other kings may wear a karanja or mukuta. The patra-patta is suited to the patta-ahara, the ratna-patta to the parshika, the pushpa-patta to the patalkhaj, and the pushpa-mala (flower wreath) to the praharak and the astragroha.

The kundala (or kuntala) and mukuta are prescribed for the queen of a chakravartin, the kesabandha for the queens of an adhiraja and a narendra, the dhammilla and kundala for the queens of a parshika, a patalkhara, a mayalela or a patalkhaj, and the alaka and chudda for the queens of a praharak and a astragroha.

The height of a crown varies with the importance of the divine or royal bearers; it is set forth at considerable length. Next is described in detail the number of gold pieces and precious jewels in the crowns worn by the kings of various ranks and by their consorts. The forms of these crowns are then described.

The second part of the chapter deals with the royal coronation (abhisheka). Of the coronation ceremonies of the chakravartin and other kings, four stages are prescribed, which are called prathama (here called prupta), mahgala, viru, and vijaya. In this matter, too, the architects take a leading part. The shapati, the sthapa, and the Brahmin priest perform the aukurarpaya and all other ceremonies ending with the adhivasa. Afterwards the king is anointed with various auspicious substances. This is the abhisheka proper. The king is
then adorned with the royal robes, the sacred thread, and various ornaments, and led to the coronation hall (abhikshaka-mandapa) which is furnished with the madhyavanga, the royal thrones, the wish-yielding-tree (kalpatiksha), the ornamental arch (torana), and other emblems of empire. The king and the queen take their places side by side on their thrones, the queen being on the left side of the king. The crown is held by the leading priests (purotiva-purogah); but it is actually placed on the king's head by the sthapati and the two sthapakas at an auspicious moment during the pronouncement of svasti and other auspicious sounds. After this the king is garlanded, anointed, and besprinkled with various substances of good augury. Then the king mounts an elephant and circumambulates the city amidst acclamations of felicity. On the occasion of the entry into the palace a curious ceremony takes place in order to determine the success awaiting the new king, as well as the future prosperity of the kingdom. Various auspicious and inauspicious things are arranged in a hall in the palace. The king is led there blind-folded and has to pick up anything he chooses. The thing thus picked up by the blind-folded king points to the prosperity of the people and victory of the king, or the opposite.

'If the rice-porridge or rice be touched [by him], there will be an increase of rice. If the heap of corn is touched by the [royal] hand, there will be plenty of food (shakhiksha). If gold and other precious metals be touched, it indicates that the subjects will prosper. If the sword or other weapons be touched, it bespeaks the king's prowess. It would be unfortunate for the whole kingdom, if any inauspicious things be touched by the king.'

The chapter closes with a recapitulation of the four forms of coronation, the directions as to the conduct of the ceremonial regal procession, and a reference to the authorities (Vedas and Puranas) under which the coronation ceremonies are prescribed.

CHAPTER I

The ornaments of the body and articles of furniture (Bhushana-lakshana-vidhana)

In the first verse it is announced that the chapter is devoted to a description of the ornaments of gods and kings. But in reality only the first part of

---

1 Cf. Hultsch, South Indian Inscriptions, Vol. 1, p. 64, 11. 22-35, where in an Eastern Chalukya grant the maharastpasa is mentioned among the royal insignia. Professor Hultsch quotes Sanderson's Canarese Dictionary, where the word is explained as 'an honorary wreath or string of flowers, etc., raised upon poles and carried in front of one, as an emblem of distinction.'
the chapter deals with ornaments proper, and the remaining portion deals with certain miscellaneous articles of furniture, such as lamp-posts, fans, mirrors, swings, and so forth.

The first part is called 'ornaments of the body' (aṅga-bhūṣhaṇa), and the second 'external ornaments' (bahir-bhūṣhaṇa).

Ornaments proper are here divided into four classes, namely, patra-kalpa, chitra-kalpa, ratna-kalpa, and miśrita. All these are suited to the deities. The emperor or universal monarch (chakravartin, sārvabhauma) can put on all these ornaments excepting the patra-kalpa. The adhirāja and narendra can wear both the ratna-kalpa and the miśrita. The miśra-kalpa is prescribed for all other kings.

The patra-kalpa ornaments are so called, because they show foliated decoration. The chitra-kalpa kind consists of floral and foliated designs, precious stones, and nāṭaka. The ratna-kalpa variety is made of flowers and jewels. The miśra-kalpa decoration consists of leaves and jewels, and, in short, a mixture of all others. These four kinds, it should be observed, are specially made for the images of gods and kings only.

The following is a list of the personal ornaments mentioned in the course of the chapter:

Kiriṭa—a diadem, a crown.
Sīra-vibhūṣhaṇa—a head-ornament.
Chūḍāmanī—a crest-jewel.
Kūṇḍala—an ear-ring.
Tāṇaka (or tāṇaka)—a kind of ear-ornament.
Makara-bhūṣhaṇa—an ear- pendant decorated with makaras (makarāṅkita-kūṇḍala).
Kuṇāka—a bracelet.
Keyūra, kaṭaka—an armlet worn on the upper-arm.
Valaya—an armlet worn round the upper-arm (bāhumūle) or on the fore-arm (prakosṭha).
Mani-bandha-kalāpa—a jewelled ornament worn on the fore-arm.
Kīkini-valaya—a bracelet (or anklet) fitted with little bells.
Āṅguliyaka—a finger-ring.
Ratnāṅguliyaka—a jewelled finger-ring.

1 Cf. mukta-kalāpa (Kumāra-sambhava I. 49).
Hāra 1  a string of pearls worn round the neck.

Arāha-hāra  

Māla—a garland or necklace hanging down from both shoulders.

Vana-māla—a garland of wild flowers (?).

Nakshatra-māla 2—a necklace of 27 pearls.

Dāma—in a garland or string worn round the shoulders.

Stana sūtra  a cord or chain worn round the breasts.

Suvarṇa-sūtra  

Pura-sūtra—a cord or chain worn round the chest.

Udara-bandha—a girdle worn round the waist.

Kuṭī-sūtra—a cord or chain worn round the loins.

Mekkhalā—a girdle, a belt.

Suvarṇa-kaṭhaka—a golden cuirass (or bodice?).

Nīpura—an anklet.

Vālaya—a bracelet.

Pāda-jāla-bhūṣaṇa—a net-like ornament worn on the feet. 3

The following articles, which are reckoned to belong to the 'external' ornaments (bhairbhūṣaṇa), are described in great detail: (1) the dīpa-danda (lamp-post); (2) the vyajana (fan); (3) the darpana (mirror); (4) the maṇjūśā (basket, chest, box); (5) the dolā (swing or palanquin); (6) the tula (balance) of kings; and (7) the paśjara (cage), nīda (nest) for domestic animals and birds.

The lamp posts (dīpa-danda) 4 are of two kinds, the stationary, placed in front of the house, and the movable. The former are made of wood, iron or stone, the latter of wood or iron. They may be square, octagonal, or circular in shape. The vedikā (platform) or the pedestal at the bottom of these is generally shaped like a lotus. Lamp-posts generally taper from the bottom upwards. Various other parts and also the mouldings of lamp-posts are described in detail. Their measurements are also given.

---


2 A nakshatra-māla (lit. a star-cluster) consists of 27 pearls in accordance with the number of nakshatras or lunar mansions. Cf. Brihad-śaṅkīrṭi, LXXXII, 34.

3 A few more terms of uncertain meaning are mentioned, namely: viṭṭhika (=iṭaka ?), bālopana, hālīka, pārśma, kṣetabāja and smālikā.

4 In literature we find the evidently synonymous expression dīpaṣṭhaka (lit. lamp-tree).

The fan-post (vyajana-danda) as well as the fan itself is described in a like manner. These posts are made of timber or iron, but the fans appear to be made of leather.

Nine alternative measurements are prescribed for the mirror, namely, from 5 (or 6) aṅgulas up to 21 (or 23) aṅgulas. Mirrors should be quite circular (suvarita) with the edge a little raised. The surface must be perfectly bright, the rim being decorated with linear ornament (rekhā) and the reverse with the figures of Lakshmi and others. An account of the various parts is given in detail.

Three kinds of maṅjūshas are described in detail. They are made of either timber or iron, and are square, rectangular or circular in shape. They generally consist of one, two or three compartments or chambers (koshtha). The pārna maṅjūshā looks like a box or trunk. The taila (oil) maṅjūshā is apparently a receptacle for oil. It does not differ from the other, except in its greater height. The third kind is called vastra maṅjūshā and is easily identified with a wardrobe or linen-chest. Its breadth is said to vary from one to three cubits, the height and length being proportionate to the breadth.

The word dola means both a swing and a palanquin. But as the description opens with the statement that the height of the post or pillar (pāda) varies from three to eight cubits, there can be little doubt that the passage refers to a swing. We may assume that the phalaka, which is repeatedly mentioned in this connection, must be the swing-board. The swing is said to be used by both gods and men.

The balance consists of the horizontal balancing rod or beam, the strings by which the scale pans are suspended, and the scale pans themselves. The two pans are made of iron, the rod of timber or iron, and the jīka (lit. tongue) and the toṇa (lit. arch) are always made of iron. The various parts of the balance are described minutely together with their measurements.

A large portion of the chapter is devoted to a description of cages (pañjara). A number of birds and other animals are enumerated, and the size

---

1 From the description given in the text it may be conjectured that 'the royal balance' in question was meant to be used by kings in performing the ceremony of having themselves weighed against gold and precious stones which were afterwards distributed among the Brahmanas. This ceremony, known as tula-purusha-dana, was performed on certain special occasions, such as the coronation, or on the day of a solar or lunar eclipse, or on New Year's day. Cf. A. H. Lingener, The tula-purusha-dana monument at Hampi. Annual Report Archaeological Survey of India for 1912-13, pp. 142 sqq., plates LXXXIV.
of the cage in which they are kept is given, the measurements admitting in each instance of nine different varieties. The following is a complete list:

<table>
<thead>
<tr>
<th>Material</th>
<th>Size of Cage</th>
<th>Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mrigua-nabhi-bigala (musk cat?)</td>
<td>1-2 hastas</td>
<td>3 angulas</td>
</tr>
<tr>
<td>Suka (parrot)</td>
<td>9-23 angulas</td>
<td>2</td>
</tr>
<tr>
<td>Chitaka (rains-cuckoo or eosulus melanoleucus)</td>
<td>7-23</td>
<td>2</td>
</tr>
<tr>
<td>Ochakora (partridge or perdix rufa)</td>
<td>7-23</td>
<td>2</td>
</tr>
<tr>
<td>Marala (a crow-phesant, ? a goose or duck)</td>
<td>7-23</td>
<td>2</td>
</tr>
<tr>
<td>Paravata (turtle dove)</td>
<td>7-23</td>
<td>2</td>
</tr>
<tr>
<td>Nilakantha (roller)</td>
<td>25-73</td>
<td>6</td>
</tr>
<tr>
<td>Kujariva (ground-man)</td>
<td>5-21</td>
<td>2</td>
</tr>
<tr>
<td>Khojariva (?)</td>
<td>7-23</td>
<td>2</td>
</tr>
<tr>
<td>Kukuta (cock)</td>
<td>15-31</td>
<td>2</td>
</tr>
<tr>
<td>Kulala (phasianus gallus)</td>
<td>15-31</td>
<td>2</td>
</tr>
<tr>
<td>Naku'a (mongoose, viverra ichneumon)</td>
<td>11-27</td>
<td>2</td>
</tr>
<tr>
<td>Tittirii (francolin partridge)</td>
<td>7-23</td>
<td>2</td>
</tr>
<tr>
<td>Godhara (?)</td>
<td>9-25</td>
<td>2</td>
</tr>
<tr>
<td>Vyaghra (tiger)</td>
<td>1 3/4-3 hastas</td>
<td>6</td>
</tr>
</tbody>
</table>

CHAPTER LI

The Triad (Trimiirti-lakshana-vidhana)

The Indian Triad, to which the title of the chapter refers, consists of the three great gods, Brahma, Vishnu and Siva. The chapter may be divided into two parts. The first part deals with the materials (dravya) of which the idols of all other deities as well as of these three are made. The second part describes the external features of the Triad.

The materials for making idols are nine, namely, gold, silver, copper (tana), stone, wood, sudha (stucco, also mortar and plaster), tarkara (lit. gravel or grit), abhasa (marble) and earth (terra-cotta). All the materials enumerated are well known except abhasa, of which a special description is given.

Abhasa is subdivided into three kinds, called chitra, ardhacitra, and abhasa proper. If it is perfectly transparent (sarvanga-drityamana, lit. which can be completely seen through) it is called chitra; if only half transparent, it is known as ardhacitra; and in case it is partially (lit. one fourth) transparent,
it is called ābhāsa proper. This description, however, does not help us to identify ābhāsa with any certainty. It may have some affinity to crystal, but the latter has been referred to elsewhere by its own common name, sphaṭika. The ordinary meaning of the word ābhāsa is splendour, light, transparency. It implies undoubtedly a transparent substance. I am inclined to think that it may refer to some particular and more or less transparent variety of marble (alabaster ?), of which various other kinds, such as white, black, red, yellow, etc., are described in the next chapter in connection with the materials of which the pīgha or yoni part of the phallus (liṅga) of Śiva is made.

The second part begins with an account of the different classes of images. An idol may be stationary (sthāvarā) or movable (jaṅgama); erect, sitting or recumbent. The movable images are used especially on the occasion of festivals. The three or four poses (bhānga), called ābhāṅga, samabhāṅga, and triabhāṅga, are discussed more fully at the end of chapter LXVII.

The remaining portion of the chapter is devoted to a minute description of the images of Brahmā, Vishnu and Śiva, the three gods constituting the Trimūrti.

Brahmā should have four arms and four faces. He should wear a diadem and the matted hair of an ascetic (jaṭā-mukuta-maṇḍita). Two of his hands should be in the gift-besteowing (vārūda) and refuge-granting (abhāya) attitudes. The four attributes held in his hands are the water-pot (kuṇḍika), the rosary (akṣha-mālā), and the large and small sacrificial ladles (ṣrukt-sruva). The various ornaments, with which his body is to be adorned, are described in great detail. As to his clothes, he is said to wear a strip of bark (chāva) and an upper garment (uttariya). His whole body should be of golden colour. Brahmā is accompanied by his two Saktis (female energies), the goddesses Sarasvatī and Savitri, standing to his right and left respectively.

Vishnu is also four-armed (chatur-bhuja), but has one head. His head-gear is the diadem called kīriṇa. He wears a yellow garment, while the colour of his body is dark blue (śyāma). His chest is adorned with the symbol called śrivatsa. Two of his hands are in the gift-besteowing and refuge-granting attitudes. His attributes are the lotus-flower, the mace (gada), the discus (chakra), and the conch-shell called Pāṇchajanya. Among the numerous ornaments which bedeck his limbs, special mention is made of the graceful garland of wild flowers (vana-mālā) which hangs down by both his legs. At the back of his head there is an ornamental nimbus (śrīvaṭ-chakra, lit., a head-disc). Vishnu is likewise attended by two goddesses (Sakti), apparently Lakshmi and Bhū-devi (the Earth-goddess).
Śiva, the third member of the Triad, is four-armed and is, moreover, distinguished by a third eye, which is placed in the middle of his fore-head. Like Brahmā, he wears the matted hair of the ascetic. The figure of Gangā (the river personified) as well as the crescent are inserted in his head-dress, the latter on the left side. On the left side of his neck there is the mark of the deadly poison kālakūṭa. His dress consists of a tiger-skin reaching down to the knees, and a waist-cloth. His complexion is said to be red. Two of his hands are in the attitude of granting a boon (vara) and of conferring security (abhaya). In the remaining two hands he holds an antelope (hariya) and a tabor or hand-drum. Śiva is accompanied by the goddess Pārvatī who keeps standing or seated on his left side.

Images of the three members of the triad are said to be measured in the largest type of the dasa-tāla measurement and those of their consorts in the middle type. The particulars of these two types of measurement are not discussed here, but reserved for an elaborate treatment in two separate chapters.

The pedestals are also dealt with in a separate chapter. Here it is very briefly stated that the pedestals of the triad should be of the padma-pīṭha or the māhā-pīṭha kind, and be furnished with a propā (canal), a torana (ornamental arch), and kalpa-vriksha (ornamental tree).

The chapter closes with a statement that the particulars not mentioned here with regard to the making of these idols, should be supplied according to the rules of the Śāstras.

CHAPTER LII

The Phallus (Līṅga-vidhāna)

Various classifications of phallus are given. They are classified first into six heads—śaiva, pāṣupata, kūta-mukha, māhāvṛata, vāma, and bhairava; secondly into four—samakarpa, varhamāna, sīrṇa, and svastika, fit to be worshipped by Brāhmaṇas, Kshatriyas, Vaiśyas, and Śūdras respectively; thirdly into four with regard to height—jāti, cīhanda, vikalpa, and ākhāsa; fourthly into

1 Elsewhere the complexion of Śiva is stated to be white.

2 The name of the second attribute which occurs also in the iconographic portion of the 7th chapter, appears to be ṛgala. But this word usually indicates a large kettle-drum, whereas the tabor which is one of Śiva's emblems is called Ṛamaṇa.

3 The phallus worship is very popular in India: this is unmistakably proved by the fact that the number of Līṅgas or phalli in India is estimated at thirty millions of which the best known are Viśveśvara at Benares, Somānātha in Gujarāt, Mahākāla at Ujjainī, etc.
three types, with regard to width—nāgara, drāvida, and vesara; fifthly into four—daivika, mānusa, pāvana, and ārsha, the four together being called svayamabhū or udbhūta; sixthly into two—ātmārtha (for one's own worship), and parārtha (lit. for others, for public worship); again into two—ekalīna (single), and bahu-linga (phalli in a group); or into many kinds—vajra, suvarṇa, etc., with regard to the material; and lastly into two—khaṇika (for temporary worship) as contrasted with the permanent linga. All these kinds of phalli are described at great length. Various alternative measurements are prescribed for each of them. In some cases as many as thirty-six alternative heights are suggested. But in most cases their number is nine. The nine alternative heights of the phallus are determined in some cases by a comparison with different parts of the body of the worshipper (yajamāna). The height of the phallus may reach the worshipper's sex-organ, navel, heart, breast, arm-joint (bāhu-simānta), chin, nose, eye, or be equal to his full length. Another comparative measurement is given with regard to the garbha-grīha (the cells of the temple in which the phallus is enshrined). Various absolute measurements also are given in some cases. These measurements vary according to the four classes, jāti, chhanda, vikalpa, and ābhāsa, mentioned above. In the jāti class the height may vary from 1 to 9 cubits (hasta), the increment being 1 hasta. The chhanda class admits of nine varieties, namely, from 1 to 6 1/2 cubits, the increment in this case being 1 1/2 hasta. In the third class (vikalpa) the height varies from 1 to 4 1/2 hastas with increments of 1 1/2 hasta, and in the fourth class (ābhāsa) from 1 1/2 to 2 1/2 hastas with increments of 1 hasta. Thus each of the four said classes admits of nine varieties of height. The breadth of the phallus is in like manner discussed at great length. The impracticability of so many alternative measurements is, however, removed by the application of the rules of āyādi-shodvarga, which are described in detail at the end of the chapter.

The second part deals with the pītha which is the stand upon which the phallus proper is placed. The prāṇāla (lit. canal, drain) or yoni-āvara, and all other parts of the pītha are described in detail, together with their measurements. The same subject is discussed in greater detail in the next chapter. The general appearance of a phallus is well-known; the Māṇḍara does not deviate much from it. The mūla or the lower part, technically called Brahma-bhāga, says our author, is square (chatur-āśra, lit., four-cornered), whereas the middle part, called Vīshnu-bhāga, is octagonal (aṅgūrābhā), and the upper part, called Śiva-bhāga, is round.

1 The term svayamabhū (self-existent, self-created) indicates natural objects of worship. Such svayamabhū-lingas are even to this day worshipped at several tirthas of Kāśmīr. Cf. Kalhana's Rājatarangini, a chronicle of the kings of Kāśmīr, translated by M. A. Stein, vol. I, p. 22 (note 1, 113).
But these shapes of the three parts may be interchanged in some cases. The top is sometimes shaped like a bud (kuḍmāla) or a leaf (paṭtra).¹

The phallus proper and the paṭha are generally made of the same material. But when they are made of very precious substances, such as jewels, gold, etc., the material of the two may differ. The paṭha is mostly made of marbles of various colours such as white, red, yellow, black, etc. Precious stones are inserted in the different parts of the phallus.

The chapter closes with an account of the various fruits to be derived from phallus worship, and of the formulas of the āyādi-shadvarga.

CHAPTER LIII

The Pedestal of the Phallus (Pāṭha-lakṣhayā-vidhāna)

It has been pointed out in the previous chapter that the paṭha² forms the yoni or the lower part of the phallus. The paṭha must match the phallus of which it forms the lower member. There must, consequently, be as many kinds of paṭhas as there are of the phalli. But the mouldings of the paṭha are described under four classes, technically called, bhadrā-paṭha, śrībhadrā, śrībhājā, and upapāṭha. The principal parts of the paṭha are the nāla (lit. canal), the jala-dhāra (lit. drain), the ghṛita-vāri, the nimma, and the paṭṭikā. These are, it may be observed, the various parts of which an ordinary yoni (female organ) is formed. The name of the principal mouldings are the following: prathama or janman, padma, kshepaṇa, kandhara, kampa, ūrdha-paḍma, vājana, ghṛita-vāri, and vṛīta-kumbha.

A minute description and measurement of all these and other mouldings of paṭhas of various kinds are given in detail. With regard to their shape, the paṭhas, like the phalli (and, in fact, all other architectural and sculptural objects), are divided into three types, nāgara, drāvida, and vesara. The paṭhas of the nāgara class are said to be square, those of the drāvida type are octagonal, and the vesara ones are round (vṛīta).

CHAPTER LIV

The female deities (Śakti-lakṣhayā-vidhāna)

The following female deities are specially described: Sarasvati, the goddess of learning; Śāvitrī; Lakṣmi, the goddess of wealth or fortune; Mahī, the

¹ A variant reading gives shhatra (an umbrella).
² The term paṭha means a stool, seat, chair, throne, pedestal, an altar. The well-known fifty-one Pāṭha-śāhīnas are the sacred spots where the parts of the body of Sātī (Pārvati), the consort of Śiva, fell after she had been cut to pieces by the discus of Viṣṇu. As the liṅga or phallus symbolically represents Śiva, so the paṭha does his consort Pārvati.
earth-goddess; Manonmani, the goddess of love; Durgā; and the Seven Mothers (Saptā-mātrī) collectively so called. Of these, Lakshmi is distinguished into Mahā-(or the great) Lakshmi, and Sāmānyā (the ordinary) Lakshmi, the latter being installed in all the family chapels. The Seven Mothers consist of Vārāhi, Kaumārī, Chāmunda, Bhiravī, Māhendrī, Vaishnavī, and Brahmapī. These seven goddesses are measured in the nava-tāla system, and all other female deities in the daka-tāla system. The details of these measurements are discussed in two separate chapters, wherein the comparative measurements of the several parts of the various limbs of the body are given. It may be pointed out here that according to the daka-tāla system the whole length of the body is ten times the face, while in the nava-tāla, it is nine times, and hence in the ashta-tāla it should be eight times the face, and so forth.

The characteristic attributes and poses, and the ornaments, decorations, etc., of each of these female deities are described in detail.

The goddess Sarasvatī is represented as seated on a lotus-seat. Her complexion is white like crystal. She is four-armed; in her two right hands she holds a saṃdariṇī and a rosary (akṣa-mālā), and in her two left hands a book (pustaka) and a water-pot (kundika). There exists, however, also a two-handed variety of the Sarasvatī image. Her ornaments, which are described in detail, include ear-pendants of the type called grāha-kundaḷa (makara-kundaḷa).

Śivitri, who is seated on a lotus-seat to the left of Brahmā, may be white and red (īveta-rakta) or dark blue (śāma). She has two arms and two eyes, in other words, she assumes a purely human shape. She holds a blue lotus-flower (utpala) in her right hand, while her left hand is stretched out in the pose of granting a boon (vara). Śivitri too is adorned with various ornaments.

Lakshmi, the goddess of good fortune, looks benign (prasanna-vadanā), her complexion is like pure gold. She has four arms. Her upper right hand is raised in the attitude of granting security (abhaya), and in her other right hand she holds either a red lotus flower (pādma) or a rosary. The attributes held in her left hands are a tabor or hand-drum (gīḍhima) and a blue or red lotus flower. As befits the goddess of luck, she is bedecked with gorgeous ornaments and jewels.

In contradistinction with the Great Lakshmi (Māhā-Lakshmi) thus described, the ordinary Lakshmi is said to have only two hands in each of which she holds a red lotus flower (rakta-pādma). Her distinguishing feature is that she is placed between two elephants with uplifted trunks. A brief account is given about representations of Lakshmi as the spouse of Viṣṇu.

---

1 Should we read it adāra (mirror)? The regular attribute of Sarasvatī, however, is the lute (viśā).
The Earth-goddess (*Māhi-sakti*), who is placed on the other side of Vishnu, is said to be two-armed and two-eyed. In her right hand she holds a blue lotus (*upala*); with her left hand she indicates the granting of a gift. She has a dark blue (*śyāma*) complexion and wears *makara* ear-rings.

Durgā, also called Gaurī and Pārvatī, the consort of Śiva, is two-armed. She holds a blue lotus in her right hand and her left hand is in the pose of granting a gift (*vara*). She is distinguished by all the marks of female beauty and is profusely adorned with ornaments. She has a dark blue (*śyāma*) complexion and wears yellow garments. She is placed to the left of Śiva, or of his symbol, the *kiśga*.

Maṇṇamani, the goddess of love, is four-armed and three-eyed. Strange to say, her hair-dress is said to be the matted hair (*jaṭā*) of an ascetic. Two of her hands are in the attitude of assuming protection (*abhaya*) and of granting a boon (*vara*). In each of the two other hands she holds a lotus-flower. Her complexion is red and white (*vṛtta-rākta*) or dark blue (*śyāma*). It appears that this Śakti also is reckoned as belonging to the retinue of Śiva, in whose temple she is worshipped.

Finally, the Seven Mothers are described. In general these Śaktis have the same emblems and distinguishing features as their male counterparts. Brahmāṇi and Rudrāṇi, for instance, who are the Śaktis of Brahmā and Rudra (or Śiva) respectively wear the matted hair of the ascetics. Brahmāṇi has four faces and four hands, in two of which she holds a rosary (*akeša-mālā*) and a water-pot (*kunda*). Rudrāṇi has a white complexion, her attributes are the antelope (*hārēśa*) and the noose (*pāśa*). Vaishnavi and Vārāhi, who are both Śaktis of Vishnu, are distinguished by a dark blue (*śyāma*) complexion and hold the discus (*chakra*) and conch-shell (*śaṅkha*), which are the well-known emblems of Vishnu. Vārāhi has a boar’s head.

The chapter closes with a very brief reference to the plumb-lines which are more fully treated in a separate chapter.

**CHAPTER LV**

**The Jain Images (Jaśna-lakshana-viṭhaṇa)**

The opening lines describe in detail the various kinds of measurements used in Indian sculpture.

The linear measurement is divided into six kinds, *māna, pramāna, parimāna, lamba-māna, unmāna, and upamāna*.

The measurement from the foot to the top of the head is called *māna* which is in fact nothing but height. *Pramāna* is the measurement of breadth (*vistāra*);
**Paribhāṣa** is the measurement of girth or circumference (paritāh); **lamā-māna** is the measurement along the plumb-line or the line drawn perpendicularly through the different parts of the body, the māna or the measurement of the height being determined by the surface of the body; **uṃmāna** is the measurement of thickness (uṃman) or diameter; and **upamāna** is the measurement of interspace (antara), such as that between the two feet of an image; this measurement is evidently taken from one plumb line to another.

The primary measurement (ādi-māna) refers to comparative measurement and is divided into nine kinds. The height of an image is determined 1st, by comparing with the breadth (tāra) of the whole temple (harmya); 2ndly, with the height of the cella or sanctum (garbha-grīha); 3rdly, with the height of the door (deśa-māna); 4thly, with the measurement of the base (adhiśhāna); 5thly, by expressing it in hastas; 6thly, in the tāla system; 7thly, in aṅgulas; 8thly, by comparing with the height of the worshipper; and 9thly, with the height of the riding-animal (vāhana) or with the height of the principal idol (mūla-bhera).

Absolute measurement in cubits (hasta), etc., is given in the case of many architectural and sculptural objects.

The aṅgula (lit. finger) measurement has reference to both comparative and absolute measurements. Three kinds of aṅgulas are expressly distinguished, and a fourth aṅgula is added later.

(a) The barāṅgula is the measurement taken by the aṅgula or finger of the main idol.

(b) The mānāṅgula refers to the ordinary absolute measurement in aṅgulas, one aṅgula being equal to eight yavus (barley grains) or 1⁄4 of an English inch.

(c) The mātrāṅgula is the measurement determined by the length of the digit and the width of the middle finger in the right hand of the master (kartyā).

(d) Another kind of aṅgula measurement is determined by dividing the whole length of the body of an image into a number of equal parts each of which is called a deka-labhāṅgula or simply dehāṅgula. In the last sense, aṅgula is used to mean simply a part. Thus both aṅgula and part (aṃśa) are indiscriminately used throughout the work. If the length, etc., of a building or image is divided into a number of equal parts for some special purpose, each of them is called aṅgula or aṃśa indiscriminately. This lack of discrimination has been very confusing in many places, rendering it extremely hard to distinguish an absolute measurement from a comparative one.

The height of the image is determined by comparing it with the height of the worshipper (yajomāna). It may be of nine kinds, according as it extends from the
foot of the worshipper to his sex-organ, navel, heart, breast, arms, chin, tip of the nose, hair limit (on the forehead), or to his full height. The tālāmāna admits of many varieties: the ten tāla measurements vary from one tāla to ten tāla; each of these is again divided into three types, the uttama or the largest, the madhyama or the intermediate, and the adhama or the smallest. Thus an image is of the daṅka-tāla measurement when its whole length is equal to ten times the face inclusive of head. In the largest type of the daku-tāla system, the whole length is divided into 124 equal parts which are proportionately distributed over the different limbs of the body; in the intermediate type, the whole length is divided into 120 equal parts, and in the smallest type, into 116 equal parts. In the navu-tāla system, the whole length would be nine times the face, in the ashta-tāla, eight times, and so forth. Several of these tāla measures are described in detail in the subsequent chapters.

The varieties of the alternative measurements in each case are simplified by the application of the rules of āyādi-shad-varga.

The main object of the chapter, namely, the description of the Jain deities, is thus submerged in a lengthy discussion of the various measurements used both in architecture and sculpture.

Like all other idols, the images of Jain deities too may be stationary or movable; they may be in the erect or in the sitting posture. They have a purely human shape, and wear neither robes nor ornaments. On the chest the trivātā symbol is marked in gold. They are placed on a throne decorated with the makara-torana, and the ornamental tree (kalpa-vriksha), and are attended by Nārada and other sages, by Yakshas, Vidyādhara, Siddhas, Nāgendras, and Lokapālas, etc. All these attendants, it should be observed, are also known as Hindu deities.

The twenty-four Tirthaṅkaras or Jain saints, are referred to but not specified.¹

CHAPTER LV

The Buddhist images (Buddha-lakshana-vidhāna)

The account of these images too is very meagre. Evidently the author had in mind solely effigies of Buddha, not of other Buddhist deities. This is clear from his description. These figures, he says, which may be either erect or in the sitting posture, are placed on a throne (śīhāśana) and are distinguished by the aśvattha tree as well as by the kalpa-vriksha or mythic wonder-tree. The latter, as we have seen, is represented in connection with other divine beings as well, but

¹ Of James Burgess, Digambara Jainas Iconography, Indian Antiquary, vol. XXXII, pp. 459 seqq., for the full list of the Jain Saints; see also the writer's Dictionary of Hindu Architecture,
the āsṇava or fucus religiosus is characteristic of Buḍḍha, as the Bodhi-tree under which he attained enlightenment (Bodhi) belongs to that species. Another peculiar mark of Buddha, which has been duly noted by the author, is the uṣṇīṣa or protuberance of the skull (uṣṇīsajñvala-mulika). For the rest the appearance of Buddha is purely human. He has a full face, a long nose, smiling eyes and elongated ears. His body is fleshy, his chest broad, his belly round and his arms long. He wears a yellow garment (piṭāmbura-dhara) and his complexion is white. Like other idols, the Buddha images are made of wood, stone or iron (loka). They are measured according to the largest type of the daka-tāla system.

CHAPTER LVII

Images of sages (Muni-lakshana-vidhāna)

The seven well-known patriarchs or sages (rishi or muni) are taken to illustrate the three varieties of the tāla measurement. They are Agastyā, Kāśyapa, Bhrigu, Vaśishṭha, Bhārgava, Viśvāmitra, and Bharadvāja.

Agastyā is bright blue (śyāma) in colour, Kāśyapa yellow (piṭa), Bhrigu dark or black (krīṣṇa), Vaśishṭha red (rakta), Bhārgava brownish (piṅgula), Viśvāmitra red (rakta), and Bharadvāja yellow (hāridra, lit. turmeric-coloured). They are represented in a purely human shape, being 'two-armed and two-eyed'; they wear yellow garments and the sacred thread (yajña-sūtra) and are distinguished by the matted hair of the ascetics (jatājñāta). In their two hands they hold a staff (duṇḍa) and a book (pustaka). Of Agastyā who is mentioned first among the seven sages, it is stated particularly that he is corpulent (braha-kukshita) and hump-backed (kubjākara).

Of these seven sages, Agastyā is measured in the seven-tāla, Kāśyapa and Bhrigu in the eight-tāla, and the rest in the nine-tāla. The details of these three tāla measurements are given subsequently.

In the sapta or seven-tāla measurement, the whole length of the image is seven times the height of the face which is generally twelve aṅgulas (9 inches) in the Indian system. This length is divided into $12 \times 7 = 84$ equal parts, of which the proportional distribution among the different limbs is explained at great length.

In the ashta or eight-tāla system, the whole length is similarly divided into 96 equal parts, and in the nine-tāla into 108 equal parts.

1 The āsṇava mark between the brows, which is another distinguishing feature of Buḍḍha, is not noticed in the course of this description.
CHAPTER LVIII

Images of Yakshas, Vidyādharas, etc., (Yaksha-vidyādhara-vidhāna)

The present chapter deals briefly with four classes of semi-divine beings, namely, Yakshas, Vidyādharas, Gandharvas, and Kinnaras. They are said to have two arms and two eyes, in other words, they assume a purely human appearance. They are adorned with the crown known by the name of karanda. The colour of the Yakshas is stated to be dark blue (śyāma) and yellow (piśa), that of the Vidyādharas dark red (śyāma-rakta) and yellow. The images both of the Yakshas and the Vidyādharas are measured according to the nava-tāla system. The Yakshas are distinguished from the Rākshasas, the latter being evil spirits, while the former are regarded as supernatural beings of a benevolent and inoffensive disposition. The Yakshas act as attendants (anuṣhara) and chowry-bearers of the gods. The Vidyādharas are a kind of fairies possessed of magical power. Here apparently they are described as Atlantes. The Gandharvas are celestial choirs, and celebrated as musicians.

The description of the Kinnaras is contained in a Mālini stanza at the end of the chapter. "The legs are like those of an animal, the upper part of the body is like that of a man, the face is like that of Garuda (the bird of Vishnu) and the arms are provided with wings. He is adorned with a diadem and a red lotus, has the beautiful hue of a flower, and holds a lute (vīṇā). These are the characteristic features of the Kinnara." 

CHAPTER LIX

Images of devotees (Bhakti-lakshana-vidhāna)

Devotees are divided into four classes according to the four stages of holiness, and are called sālokya, sāmīpya, sārūpya, and sañyāja.1 Sālokya is the result of devotion (bhakti), knowledge (jñāna) and renunciation (vairāgya). Knowledge combined with renunciation leads to sāmīpya. Sārūpya is produced in the worshipper by meditation alone, and sañyāja is attained by the true knowledge (of God).

The images of the sālokya class of worshippers are measured in the largest type of the nava-tāla system, in which the whole length is divided into 112(?) equal parts. Those of the sāmīpya class are measured in the smallest type of the

---

1 It may be noticed that the body of the Kinnara is a combination of the body of a man, an animal, and a bird.

2 The sālokya-chalisa is also mentioned in the Bhāgavata-purāṇa, IX, 4, 67. The literal meaning of the four terms in question is: dwelling in the same world (tīrtha, as the deity), dwelling in the vicinity (of the deity), being in conformity (with the deity), and being united (with the deity)
daśa-tāla system, in which the whole length is divided into 116 equal parts. Those of the sārūpya class are measured in the intermediate type of the daśa-tāla system, in which the whole length is divided into 120 equal parts. And the figures of the sārūpya class are measured in the largest type of the daśa-tāla system, in which the whole length is divided into 124 equal parts.

The first two systems, namely, the largest type of the nava-tāla and the smallest type of the daśa-tāla, are minutely described in this chapter. The other two systems, that is, the intermediate and the largest types of the daśa-tāla, are treated subsequently in two separate chapters.

CHAPTER LX

Riding animals of the Gods: the Goose (Vāhana-vidhāne

Hamsa-lakṣaṇa)

The chapter opens with the announcement that the vāhanas of the Triad (Trimūrti) will now be described. But only one of them, namely, the Goose (hamsa), is described in this chapter; the other three, the Garuda, the Bull, and the Lion being described in the next three chapters. In these four chapters, the term vāhana is used to designate the various animals and birds used by the gods and goddesses for riding.

The goose is the vāhana of Brahmā. The limbs of the goose are said to be measured in the largest type of the dvi-tāla system. The details of this system are described minutely. The Goose is white all over, with red legs and golden beak.

The chapter closes with the statement that rows of geese should be beautifully carved or painted in the temples of the gods and in the mansions of Brahmins and kings: they are figured on the entablature (prastara), on the upper part of the uttara, on the kuṭa, niḍa, and grīva (neck).

CHAPTER LXI

The Garuḍa (Garuḍa-māna-vidhāna)\(^1\)

The chapter opens with a lengthy discussion on the application of the rules of āyūdi-śād-varga in order to reconcile various comparative measurements suggested for the Garuḍa and other riding animals of the gods.

---

\(^1\) The Garuḍa is a mythical bird, the sovereign of the feathered tribes and the enemy of the Serpent (Nāga) race. There is a tradition that Garuḍa is the son of Kāsyapa and Vināta. Hence the patronymic Valmāteya by which he is often designated. The myth of the birth of Garuḍa is told in the Mahābhārata, Adi-pāra, chapter 10.
Garuda is the vāhana of Vishnu. His limbs are measured in the navā-tāla system, the details of which are given in a previous chapter. He is figured in an erect or sitting posture, and as meditating on Vishnu with joined palms. The arrangement of his various limbs and their colour, etc., are described at great length. The Garuda is figured partly as a human creature and partly as a bird. He is provided with feathers, with wings painted in five colours, and with a beak (tuṇḍa); but, on the other hand, the description refers to his arms (prakoshṭha), his ears and hair (keta). He wears various ornaments (sarvālankāra-samyuktā) including a diadem of the kind called karanda (lit., a basket) and is gorgeously painted in a great variety of colours. He is described as being of a terrific appearance (ugradris). His worship is stated to be conducive to the destruction of the enemy (śātru-nāśa).

CHAPTER LXII

The Bull (Vrishabhā-lakṣhāṇa-vīdhāna)

The bull Nandin1 is the animal of Śiva. Its image, which may be either recumbent or erect, is placed facing the Śiva temple on a pedestal (pīṭha), either inside the shrine, or in a pavilion (manṭḍapa) in front of the temple, or at the door. It is not measured in any tāla system. Various absolute and comparative measurements are prescribed. Its height, for instance, may be equal to the height of the idol (of Śiva), or up to its ears or arms, or the height may be from one cubit to nine cubits, or equal to three-fourths or one half of the height of the door of the temple. The bull Nandin is made either solid or hollow, of iron (lōkaja), stone, wood, abhāsa (marble), ratna (precious stone), sudhā (stucco), baked clay (terra-cotta ?) and śarkaṇa (grit).

The description and measurements of the various limbs of the bull are given in great detail. From the description it would appear that the bull of Śiva is white in colour except the four legs, the hoofs, and the ears, which are red. He is covered with a tiger-skin and wears not only garlands round the neck but even foot-rings or anklets (nīpurva).

1 The image of the bull Nandin is regularly found in front of temples dedicated to Śiva. A well-known example is the colossal recumbent bull, placed opposite the famous vimāna of Tanjore. It is hewn out of one block of black granite and measures 16 feet in length and 13 feet in height. A remarkable bronze Nandin, which is found at Brāhmaṇ (Chamba) in the Western Himalayas and which, on the evidence of an inscription, may be assigned to the seventh century A. D., is illustrated in the Antiquities of Chamba State (Archaeological Survey of India, New Imp. Series, vol. XXXVI, Part 1, plate X).
MĀNASĀNA

CHAPTER LXIII

The Lion (Śimha-lakṣaṇa-viḍhāna)

The lion is the last of the four divine vāhanas, to which a chapter is devoted.¹

As in the case of the bull, the image of the lion is not measured in any tūla system. The absolute measurements of the various parts of the lion, expressed in aṅgulas, are enumerated. The lion is made in an erect, sitting or recumbent posture. His tail is generally equal to his height. His four legs are like those of the tiger. His colour is white, but his mane should be red. The shape of his nails and teeth is compared to that of the crescent (tūla-chandra, ardha-chandra).

CHAPTER LXIV

The image (Pratimā-vidhāna)

This chapter, which is missing in all the manuscripts but one, opens with the announcement that herein will briefly be described the measurements from head to foot of the sixteen attendant deities of the Vishnu temple. It will be remembered that in the 32nd chapter on 'attendant deities' (Parivāra-vidhāna) groups of eight, ten, sixteen and thirty-two deities have been mentioned, who are stated to occupy subsidiary shrines in the compound of a large Vishnu temple.

But the contents of the chapter, in reality, do not expressly describe any of the groups of deities in question. The first part deals with the various kinds of comparative measurements already discussed at the beginning of the 55th chapter on the Jain deities. The second part elaborately describes the rules of the āyādi-shaḍ-varga, which have been repeatedly mentioned whenever a variety of measurements was suggested for any particular object.

The comparative measurement is distinguished into twelve kinds, according as it is compared with the phallus, the main Vishnu image, the width of the sanctum (garbha-griha), the breadth of the main temple (harmya, prāśāda), the door, vaṁśa, basement, pillar; or is based on cubit (hasta) measurement, tūla-measurement, the measurement of the worshipper, and aṅgula measurement.

¹At the beginning of the chapter (and again in the concluding verse) the lion is loosely indicated as 'the riding animal of the gods' (daśaṅkha vāhanam). It is, however, well known that the lion (or the tiger) is more particularly the animal of Parvati, the consort of Śiva. It is hardly necessary to point out that of the other deities, both male and female, each, as a rule, has his or her own vāhana, e.g., Kārttikeya the peacock, Gāṇeśa the mouse, Indra the elephant, Yama the buffalo, Sūrya a chariot drawn by seven horses, Varuṇa a crocodile (mahāra), Kubera a man (whence his epithet nara-vaṁśa), etc.
The *āṅgula* is further distinguished, as already pointed out, into three kinds, namely, *śīṅga* or *keraṅgula*, the *mūnāṅgula*, viz., *āṅgula* of eight *yavas* or $\frac{1}{4}$ inch, and the *dekalābāha-āṅgula*, viz., one of the equal parts into which the whole length of an image is divided. The measurement obtained from a comparison with the height of the main idol or the worshipper is of nine kinds, as it may reach the full length (of the idol or the worshipper), his eyes, nostrils, chin, arms, breast, heart, navel, and sex-organ.

Other measurements obtained from a comparison with the phallus and various parts of the temple, such as the door, the pillar, etc., admit of many varieties and proportions.

**CHAPTER LXV**

The largest type of the *daśa-tāla* measurement (*Daśa-tāla vidhāna*)

In this system the whole length of an image is divided into 124 equal parts, which are proportionately distributed over the different parts of the body from head to foot. The measurement of breadth, etc., of the various limbs is not included in these 124 parts. The measurement of the hand, etc., is also excluded. All the numerous parts of the body are minutely described. Such minute measurement as that of the finger-digit, the interspace between two toes, etc., has not escaped the notice of the author of the *Mūnasāra*.

**CHAPTER LXVI**

The intermediate type of the *daśa-tāla* measurement (*Madhyama-daśa-tāla-vidhāna*)

The female deities of the higher order are generally measured in this system. The whole height of the image is divided into 120 equal parts which are proportionately distributed over the various parts of the body from head to foot. The details are minutely described.

The face is taken as the standard of the *tāla* measurement, and is generally twelve *āṅgulas* or about nine inches in length. The face is stated to be of oval shape (*kukkuṭāṅga-saṃvākāra*, lit., 'shaped like the egg of a hen'). The eye-brow is shaped like the bow (*chāpākāra*), the eyes like a fish (*matsyākāra*), the nose like the sesame flower (*tilapushpākṛiti*), and the nostrils (*puṭa*) like a bean (*vishpāva-bīja*).

According to both Indian and European canons, a well proportioned male human figure is equal to eight times (*ashta-tāla*) the length of the face, and a female human figure is seven and a half times the length of the face. "The other rules
arrived at by the Indian artist do not appear to be divergent from those evolved by the European artist, and if in Indian sculpture the results are not good in some instances, it is the fault of the artist and not attributable to the guide book."

CHAPTER LXVII

The plumb-lines (Pralamba-takṣaṇa-vidhāna)

The plumb-lines, as has already been pointed out, are lines drawn through the body of an image in order to find out accurately the perpendicular and the horizontal measurements of the different parts of the body.

This is done by means of an instrument, called pralamba-phalaka, which is a square plank of four, three, two, or one angula in thickness, with the sides equal to three-fourths or one-half of the length of the image. Another plank of the same size is used as the stool on which the image is placed. The first mentioned plank (pralamba-phalaka) is fixed to the crown of the head of the image. The planks are kept parallel to each other. Holes are made in the upper plank, wherefrom are suspended strings at the other end of which are attached small balls of iron or stone. The number of holes and strings suspended from them, by which the plumb-lines are determined, varies from five to eleven, according to the different postures and poses of the image. The five principal plumb-lines consist of one drawn from the centre of the upper plank corresponding to the crown of the head, and four on the four sides of the body. Two other lines drawn adjoicing the right and left sides of the face make the number seven. Another two lines drawn on the right and left sides of the back of the head make the number nine, and two lines drawn from the two arm-pits make the total of the lines eleven.

The line drawn from the crown of the head (śikāmaṇi, lit., crest jewel) passes by the diadem and the head-dress, the middle of the forehead, the eye-brows, the nose, the chin, the neck, the chest (hrīdaya), the navel, the sex-organ, the thighs, between the knees, the ankles (nalakas), the heels, the soles of the feet, and the two big toes. This is evidently drawn along the surface of the body in a perfectly erect or straight posture of the image. The other plumb-lines touch different parts of the body; but they are not particularly mentioned here.

Very minutely are described the comparative and the absolute measurements of the perpendicular distance between different parts of the body by a plumb-line, as well as the horizontal distance from one line to another. The distance, say, between the two big toes, is said to be eight angulas. The variation of these measurements in different postures and poses is carefully considered.

1 T. A. Gopinath Rao, Elements of Hindu Iconography.
The three postures of images, namely, erect or standing (sthānaka), sitting (āsana) and recumbent (kayana), are frequently mentioned in the Mānasāra.¹

In the present chapter a special reference is made to the three bhaṅgas or poses which are distinguished in Indian sculpture. They are known as sama-bhaṅga or equipoise, ābhanga or a slight flexion, ati-bhaṅga or an excessive flexion, and tri-bhaṅga or of three flexions.²

CHAPTER LXVIII

The first casting of the image (Madhūchchhishṭa-vidhōna)

The chapter opens with an enumeration of the names of phalli and ascetics (muni), as well as of architects,³ but the subject proper is the casting of an image in wax (madhūchchhishṭa). The sthāpata and the sthāpaka prepare the wax, but the manner of its preparation is not expressly described. All kinds of images, temporary or permanent, stationary or movable, are moulded in wax. The process appears to be this. Some part of the image is covered with a thin copper-leaf (tāmra-patra) and the wax is laid on two or three angulās deep. Mulikā (?) is spread above the part covered with wax. The idol is heated after it has been besmeared. If the master likes, the smearing may be done with melted iron too. One half of the image, which is not covered with earth, is washed in water. The process is repeated several times. If any of the minor limbs be lost through this process, the image should be furnished with it again

¹ Each of these three, of course, admits of a variety. The sitting posture (āsana) is in particular distinguished into various forms in Indian literature and sculpture, such as the padmāsana, bhadrāsana, rajyāsana, virāsana, anuttirasana, yogāsana, etc. In some books, even eighty-four postures are enumerated. Those manners of sitting form part of the eight-fold observances of ascetics.

² The expression tri-bhaṅga (and tri-bhaṅgis) is applied to Krishna in his aspect of the divine cow-herd (Gopāla), playing the reed-pipe. Cf. Een onbekend Indischicomplots (Gopālaki-chandrika). Tekst met inleiding door W. Caland. (Verhand. Kon. Akad. v. Wetensch. te Amsterdam N. R. Dl. XVII. No. 3. Amsterdam 1917, p. 46, 1. 1 (mukhata-vibhāngajñata-tri-bhaṅgānga-gopalaṇa) and p. 124, 1 32 (tri-bhaṅgis).

³ The six kinds of phalli (jyotira-līṅga) enumerated here are: śiva, pākṣapata, kālanukha, mahāśrava, vāsamana and bhaṅga. Cf. above, where the fifth class is called āsana. The names of the savas are Agastya, Kātyāpa, Bṛigu, Gautama, Bhāgava, Gālāya (Gārīg), etc., cf. above. The expert authorities on architecture are the following: Viśvākarma, Viśvesa, Viśvasāra, Prabhodhana, Vṛnda, Maya, Vrāśāya, Muni, Nāha, Mānava, Mānakalpa, Mānasa, Prashāya, Mānabodha, Viśvabodha, Naya, Ādisesa, Viśala, Viśvakāyana, Viśvarudha, Mahāsāntara, Viśvarudhipati, Parāśarāyana, Kālayāya, Chaitiya, Chitraka, Āvara, Śākukāsha-vahāha, Bhānu, Indra, Lokāśa, and Sārus.
after having been heated. But if the head or the middle of the body (madhyākāya) be damaged, the whole image should be changed. If the master does not approve of the image, it should be recast. The whole process in its different stages has to be attended by many ritualistic ceremonies.

In other texts the process of casting an image is much more clearly described:

"If images have to be cast in metal, the wax must first be melted and poured (out of the mould) and all defects removed with cloth."¹

"If the images be required to be made of earth, rods (of metal or wood) must be (inserted in them), if of metal, they must first be prepared well in wax,"²

"If an image is to be made of metal, it must first be made of wax, and then coated with earth; gold and other metals are purified and cast into (the mould) and a complete image is thus obtained by capable workmen."³

"In regard to bronze images," says Mr. Rao, "it is believed by some that India could not have known the cire perdue method of making metal images earlier than about the 10th century, A.D., and that India must have therefore borrowed it from Europe. That the art of casting metals in wax moulds is much earlier in India can be shewn in more ways than one." In support of his assertion, Mr. Rao cites the three above mentioned quotations.

CHAPTER LXIX

The defects of the limbs (Anga-dūshāna-vidhāna)

The chapter opens with the announcement that it will describe the evil consequences of a defective construction of buildings, which threaten the king, the kingdom, and the maker. It is laid down that no part of a building should be larger or smaller than what is prescribed. But nothing is further stated about the defects themselves. Nor are images separately mentioned. The penalties for defective construction are enumerated with regard to the different architectural members, such as doors, staircases, columns, walls, domes, spires, etc. Thus, it is stated that, if the altar (vedikā) be too small, the master will lose his eye-sight; if the pinnacle (stūpikā) be too large or too small, the people will be afflicted with poverty; if the columns be too large or too small, the family of the master will be exterminated, and so forth.

No such penalties, however, are mentioned for defects in sculptural objects.

¹ Karanāyana, II. V. 41.
² Suprabhadāgama, XXXIV. 21.
³ Vīshnu-sambhāta, Pañjāla, 14.
⁴ Elements of Hindu Iconography.
CHAPTER LXX

The chiselling of the eye (Nayanomvilana-lakshana-vidyana)

When the Indian sculptor has carved a divine image, the ceremony of chiselling (lit., opening) the eyes of the idol is the final function, by which it is, as it were, imparted with eye-sight and rendered fit to be worshipped. The custom is quite ritualistic, although it is stated here that it should be carried out by the architect. The ceremonies consist in the worshipping of different deities, in performing the sacrifice with the holy fire, and in the ratna-buddhi (lit., purifying the jewel), etc.

The setting of precious stones in the different parts of the phallus, and in the images of the deities is also described in the present chapter.

This last chapter of the work closes with the statement that this science of architecture and sculpture was originally described by Brahmā, Indra and all the other gods, and that the Mānasāra has been compiled on the basis of these authorities.

It will be noticed that of the seventy chapters of the Mānasāra the first eight are introductory, the next forty-two deal with architectural matters, and the last twenty are devoted to sculpture. In the introductory chapters full accounts are given of such preliminary matters as the table of contents, the system of measurement, the necessary training and qualifications of the different classes of architects, the selection of site, testing of soil, planning, designing, dialling, finding out cardinal points, and astronomical and astrological calculations. Next are given all the architectural details of various kinds of villages, towns and forts; joinery, dimensions and foundations of buildings; pillars and their component parts such as pedestals, bases, shafts and entablatures; storeys varying from one to twelve in ordinary buildings and to seventeen in gate-houses; compounds and courts of edifices, their gate-houses, their attached and detached buildings, their compartments halls and chambers, their doors, windows and the openings, their courtyards, quadrangles, and arches; royal courts, palaces, thrones and crowns; cars, chariots and other conveyances; articles of furniture such as bedsteads, couches, tables, chairs, wardrobes, baskets, cages, mills, lamps; dresses and garments; and ornaments such as chains, armlets, head-gear and foot wear. In the concluding portion are given the sculptural details of idols of deities of the Hindus, the Buddhists and the Jains, statues of great personages, and images of animals and birds.¹

Thus it may be concluded that as a standard work on architecture in the widest sense of the term, the Mānasāra is perfectly complete and methodical in all respects.

¹ See pp. 1, 137—156.
THE MAYAMATA ŠILPA-ŚĀSTRA

The next well-known Šilpa-Śāstra is the Mayamata attributed to one Gānemā-āchārya.¹

A detailed summary of this work is not necessary. The following list of thirty-six chapters placed side by side with the similar chapters of the Mānasārā will show that in respect of the titles of chapters, their sequence and contents the Mayamata and the Mānasārā are identical.²

(1) Saṁgrahādhyāya—table of contents—Mānasārā, chapter I.
(2) Vāstu-prakāra—classification of architectural subjects—Mānasārā,³ chapters IV, V.
(3) Bhū-parikṣā—testing of soil, Mānasārā, chapters IV, V.
(4) Bhū-parīgraṇa—testing of soil, Mānasārā, chapters IV, V.
(5) Mānopakaraṇa—materials (system) of measurement, M. II.
(6) Dik-parīchheda—chapter on finding out cardinal points, M. VI.
(7) Pāda-devatā-vinyāsa—ground plan, M. VII.
(8) Bāli-karma-vidhāna—offerings to gods, M. VIII.
(9) Grāma-vinyāsa—villages, M. IX.
(10) Nāgara-vidhāna—town planning, M. X.
(11) Bhū-lamba-vidhāna—dimensions of storeys, M. XI.
(12) Garbha nyāsa-vidhāna—foundations, M. XII.
(13) Upapīṭha-vidhāna—pedestals, M. XIII.
(14) Adhishṭhāna-vidhāna—bases, M. XIV.
(15) Pāda-pramāṇa-draya-saṁgraha—columns, M. XV.
(16) Prastāra-prakaraṇa—entablatures, M. XVI.
(17) Sandhi-karma-vidhāna—(wood) joinery, M. XV.
(18) Śikhara-karaṇa-bhavana-samāpti-vidhāna—making the finials and finishing the building, M. XVIII.
(19) Eka-bhūmi-vidhāna—one-storeyed buildings, M. XIX.
(20) Dvi-bhūmi vidhāna—two-storeyed buildings, M. XX.

¹ Oriental Manuscripts Library, Madras, Catalogue, volume XXII, no. 13538; also 13034–13039
² Compare the colophon इति गतमाध्यमिविरचितावर्ष (?) मममात दिशप्पास्त्रः।
³ The edition of the Mayamata by M. M. Gaṇapati Śastry contains only the first thirty-four chapters. Besides it does not seem to have made use of the manuscripts mentioned elsewhere. But there is no reference to three other manuscripts in this edition.
⁴ The Mānasārā has ‘Mānopakaraṇa’ for chapter II, which is placed in chapter V of the Mayamata.
(21) Tri-bhūmi-vidhāna—three-storeyed buildings, M. XXI.
(22) Bahu-bhūmi-vidhāna—buildings of more than three storeys, M. XXII—XXX
(23) Prakāra-parivāra—courts, and temples therein of the attendant deities; in the Mānasāra these two subjects are treated in two chapters, XXXI, XXXII.
(24) Gopura-vidhāna—gate-houses, M. XXXIII.
(25) Maṇḍapa-vidhāna—pavilions, M. XXXIV.
(26) Śālā-vidhāna—halls, M. XXXV.
(27) Griha-māṇḍhikāra—(location and) measurement of houses, M. XXXVI.
(28) Griha-praveṣa—first entry into a newly built house (opening or housewarming ceremony), M. XXXVII.
(29) Rāja-veṣa—vidhāna—royal palaces, M. XI.
(30) Dvāra-vidhāna—doors; in the Mānasāra this subject is described in two chapters, XXXVIII, XXXIX.
(31) Yānādhikāra—conveyances, M. II, XLIII.
(32) Yāna-sayanādhikāra—carts and chariots, couches and bedsteads, M. XLIV, XLV.

Sculptural subjects are abridged in only four chapters:
(33) Linga-lakṣhana—the Phallus, M. LII.
(34) Pitha-lakṣhana—the Pedestal of the Phallus, M. LIII.
(35) Anukarma-vidhāna—minor works on sculpture, LI, LIV, LV, LXIII, LXV, LXX.
(36) Pratimā-lakṣhana—images in general, M. LXIV.

It should be noticed that in respect of the titles of chapters, their sequence except in one instance, and contents and method of treatment, the Mayamata runs exactly like the Mānasāra, step by step. It is hardly necessary to point out that in chapter 22 of the former the chapters XXII—XXX of the latter are abridged, to the great relief of readers. So also chapter 30 of the former is an abridgement of chapters XXXVIII, XXXIX of the latter. Chapters XLI (royal courts) and XLII (characteristics of kings) of the Mānasāra, which have very little use in an architectural treatise, have been prudently omitted in the Mayamata. Chapters XLV to L of the Mānasāra, which deal respectively with thrones, arches, theatres, ornamental trees, crowns, ornaments and articles of house furniture, are left out in the Mayamata, apparently as matters of detail.

Sculpture is said to be the hand-maid of architecture. This statement, in its restricted sense, is however appropriate only to religious architecture, that is,

---

1 Compare Śāstri, ibid, where Chatur-bhūmyāśīla is added at the beginning.
2 Compare Śāstri, ibid, where it is read Chatur-griha-vidhāna.
temple-building. But in a treatise which is concerned with all sorts of buildings—
religious, residential, military—undue space and preference for sculpture have
been economically avoided in the Mayamata. In this treatise, as has already been
pointed out, sculpture dealing with the Phallus, Pitha, images and minor
matters, is described in four chapters, while in the Mānasāra nearly two-thirds of
the whole book, comprising twenty chapters, is given to these subjects; and in the
Āṇiṣumādi-bhedā of Kāśyapa to be discussed presently, which is avowedly a
sculptural treatise, nearly half the space, comprising chapters 46 to 84, is devoted
to matters of sculptural detail.

It does not, therefore, seem unreasonable to suppose that in the compilation
of the treatise named Mayamata, whether by Gānnamāchārya as stated in the
colophon, of Ms. no. 13038, Oriental Manuscripts Library, Madras, Catalogue,
volume XXII, page 8763) or by some body else, the Mānasāra has been largely
drawn upon.

In consideration of the fact that with the Mayamata (Ms. no. 13037, fol. 213a)
the Mānasāra (1a) has become mixed, I am further led to believe that the
manuscript of the Mayamata in the Madras Oriental Library seems to be an
abridgement of the Mānasāra.

The fact that one Mayamata is included in the list of thirty-two authorities
mentioned in the Mānasāra itself does not present much difficulty in accepting this
view. Mayamata, like Manu (or Mānasāra), is apparently a generic name,
and the treatise catalogued under the title Mayamata-varṣya-tātra need not
necessarily be ascribed to the authority mentioned in the Mānasāra.
THE AMSUMAD-BHEDA OF KĀŚYAPA

This is another well known treatise on architecture and about the next largest in size to the Mānasāra. There is also a striking similarity between the Amsumad-bhedha and the Mānasāra as will be shown by the following lists of chapters of these treatises:

(1) Karshānas—ploughing of the selected site, Mānasāra, chapter V.
(2) Prāsāda-vāstu—classification of buildings, Mānasāra, chapter III.
(3) Vāstu-homa—sacrificial offerings to the presiding deity of the site, Mānasāra, chapter VIII.
(4) Prathameshṭaka-vidhi—laying the foundations; in the Mānasāra this subject is dealt with in several places and not in a separate chapter.
(5) Upapiṭha-vidhāna—pedestals, Mānasāra, chapter XIII.
(6) Adhūshṭhāna-vidhi—bases, M. XIV.
(7) Nāla-lakshana,—canals; in the Mānasāra this subject is referred to in several places and not in a separate chapter.
(8) Stambha-lakshana—columns, M. XV.
(9) Phalaka-lakshana—planks, M. LXVII.
(10) Vedikā-lakshana—platforms, railings; in the Mānasāra this is described in many places.
(11) Jālaka-lakshana—perforated windows, M. XXXIII (concluding portion).
(12) Torāṇa-lakshana—arches, M. XLVI.
(13) Vṛṣṭā-spriṇṭita-lakshana—in the Mānasāra this is not described in a separate chapter.
(14) Stambha-torāṇa-vidhi—arches upon columns, M. XII.
(15) Kumbha-tala-lakshana—capitals of columns; this also is not described in any one chapter in the Mānasāra, but is referred to in many places.
(16) Vṛṣṭā-spriṇṭita-lakshana—same as chapter 13.
(17) Dvāra-lakshana—doors, M. XXXVIII, XXXIX.
(18) Kampa-dvāra-lakshana—a special door, M. XXXVIII, XXXIX.
(19) Prastara-lakshana—entablatures, M. XVI.
(20) Gaḷa-vidhāna—necks; this is also not described in any one chapter in the Mānasāra.
(21) Śikhara-lakshana—tops, finials; in the Mānasāra, this also is referred to in many places.
(22) Nāśikā—noses, wings; in the Mānasāra this is described in several places.
(23) Mānopakarana—system of measurement, same title in M. II.
(24) Māṇa-sūtrādi-lakṣhaṇa—measuring strings, M. II.
(25) Nāgarādi-vidhi—towns, etc., M. X.
(26) Garbha-nyāsa-vidhi—foundations, etc., M. XII.
(27) Eka-tala-vidhāna—one-storeyed buildings, M. XIX.
(28—30) Dvi-chaturtha-tala-vidhāna—two to four-storeyed buildings, M. XX—XXII.
(31) Kūṭādi-lakṣhaṇa—finials, in the Mānasāra referred to in many places.
(32—39) Paścham-bhām-bhām-vidhāna—five to twelve-storeyed buildings, M. XXIII—XXX.
(40) Trayodaya-tala-vidhāna—thirteen-storeyed buildings, and
(41) Shodaśa-bhām-vidhāna—sixteen-storeyed buildings, subjects of these two chapters (40, 41) are dealt with in M. XXXIII.
(42) Mārdhesṭaka-vidhi—the brick at the top; in the Mānasāra referred to in many places.
(43) Prākūra-lakṣhaṇa—courts, M. XXXI.
(44) Maṅga-qaṭpa-lakṣhaṇa—pavilions, M. XXXIV.
(45) Gopura-lakṣhaṇa—gate-houses, M. XXXIII.

The remaining portion of this treatise, except the last two chapters on villages, deals with sculpture more elaborately than in the Mānasāra. It will be noticed that the purely architectural topics are more exhaustively described in the Mānasāra.

(46) Sapta-māтриka-lakṣhaṇa—the seven mothers (female images), M. LXIV.
(47) Vināyaka-lakṣhaṇa—image of Vināyaka or Ganesa; not specified in the Mānasāra, but see chap. LVII, XLI.
(48) Parivāra-vidhi—images of attendant deities, M. XXXII.
(49) Liṅga-lakṣhaṇa-oddhāra—unearthing the phallus, cf. M. LLI.
(50) Uttama-daśa-tala-purusha-māna—the largest type of ten-tāla measure as applied to male deities, M. LXV.
(51) Madhyama-daśa-tala-purusha-māna—the intermediate type of the ten-tāla measure as applied to male deities, M. LXVI, LXI.
(52) Uttama-nava-tala—the largest type of the nine-tāla measure, M. LVII, XLI.
(53) Madhyama-nava-tāla—intermediate type of the nine-tāla measure, M. LVII, XLI.
(54) Adhama-nava-tāla—the smallest type of the nine-tāla measure, M. ibid.
(55) Ashta-tala—the eight-tāla measure, M. LVII.
(58) Sapta-tāla— the seven-tāla measure, M. LVII.
(57) Pītha-lakṣaṇaṃddhāra—the pedestal of the phallus, M. LIII.
(58) Sakalā-sthāpana-viḍī—the installation of the images of Īśvara and three other deities, M. LI.
(59) Sukhaśāsana—the posture of an image, M. LXVII.
(60) Sukhaśāsana—the posture of an image, M. LXVII.
(61) Chandra-śekhara-ṃūrti-lakṣhaṇa—the image of Chandraśekhara (Śiva), M. LI.
(62) Vṛjaha-vāhana-ṃūrti-lakṣhaṇa—the image of the bull, the riding animal of Śiva, M. LXII.
(63) Nṛitta-ṃūrti-lakṣhaṇa—the image of dancing (Śiva), M. LI.
(64) Gāṇgādhara-ṃūrti-lakṣhaṇa—the image of the Ganges-bearing Śiva, M. LI.
(65) Tripura-ṃūrti-lakṣhaṇa—the image of Śiva in the pose of killing Tripura (demon), M. LI.
(66) Kalyāṇa-sundara-lakṣhaṇa—the image of Kalyāṇa-sundara, M. LI.
(67) Ardha-nārīśvara-lakṣhaṇa—the image of Śiva combined with his consort Pārvati, M. LI.
(68) Gajaha-ṃūrti-lakṣhaṇa—the image of Gajaha (Ganapati).
(69) Pāsupata-ṃūrti-lakṣhaṇa—the image of Pāsupata (Śiva), M. LI.
(70) Kāulkāl-ṃūrti-lakṣhaṇa—the image of a skeleton, M. not specified.
(71) Haryardha-Hara-lakṣhaṇa—the combined image of Vishnu and Śiva—M. LI.
(72) Bhikṣaśāmatā-ṃūrti-lakṣhaṇa—the image of Śiva in the pose of a beggar.
(73) Chandōshanugraha, M. not specified.
(74) Dakṣiṇā-ṃūrti-lakṣhaṇa—the image of Dakṣiṇā, M. not specified.
(75) Kāla-ṃūrti-lakṣhaṇa—the image of Kāla, M. not specified.
(76) Lingodbha-lakṣhaṇa—revelation of the phallus, M. LII.
(77) Vṛikṣa-saṃgraha—collection of wood, M. XV.
(78) Śūla-lakṣhaṇa—the pike, M. not specified.
(79) Śūla-pāṇi-lakṣhaṇa—the image of Śūlapāṇi (Śiva), M. LI.
(80) Rajju-bandha-lakṣhaṇa—binding of rope.
(81) Mṛit-saṃskāra-lakṣhaṇa—the process of casting images in earth, referred to in many places in the Manasāra.
(82) Kalka-saṃskāra-lakṣhaṇa—preparation of mixtures.
(83) Varna-saṃskāra-lakṣhaṇa—preparation of colours.
(84) Varna-lepana-medhya-lakṣhaṇa.

The contents of chapters 78-84 are referred to in several places in the Manasāra.
(85) Grāmādi-lakshana {villages, M. IX.
(86) Grāma-lakshana }

In this treatise architecture proper is treated in the first forty-five and the last two chapters. These forty-seven chapters are similar in many respects to the first fifty chapters of the Mānasara. The Amśumad-bheda deals much more elaborately with sculptural objects in thirty-nine chapters in place of some twenty chapters of the Mānasara. But purely architectural topics are more exhaustively described in the Mānasara which seems in any case to have largely influenced the other work in these matters.
THE VIŚVAKARMA-SILPA

The most popular treatise on architecture is naturally the one attributed to Viśvakarman, the heavenly architect. There seems to have been more than one title to this work: one is called the Viśvakarma-Prakāśa or Viśvakarma-Vāstu-lāstra; another is called the Viśvakarmiyay-Silpa, apparently the same as the Viśvakarmiyay-Silpa-lāstra. The one designated as Viśvakarma-Prakāśa or Viśvakarma-Vāstu-lāstra deals with directions on the building of houses, the making of roads, tanks, etc. The treatise contains thirteen chapters in which the following topics are dealt with:

1. Maṅgalācharana—auspicious preliminaries (benediction).
2. Vāstu-purushotpatti-varnanam—the origin of the presiding deity of the house.
4. Griha-praveśa—first entry into the house or house-warming, M. XXXVII.
5. Khana-vidhi—digging (ploughing) the soil, M. V.
7. Bhūmi-phalāni—fruit of soil, M. IV, V.
8. Grihārambha samaya-vidhi—auspicious time for beginning a building, M. includes this in many places.
10. Āya-vyāvyāsādāni phalāni, M. LII, XXXIX, IX, XXX, LXIV, LV.
13. Dwāra-māṇāni—measurements of doors, M. XXXIX.
15. Grihānām sālā-niruṣaya—halls of houses, M. XXXV.
16. Grihārambha-kāla niruṣaya—almost the same as (8).
18. Šayyā-mandira-bhavana-sumana-sudhārādi-grihānām laksapaṇi (see below the comparisons of the Purāṇas and Āgamaś), referred to in many places in M.

* Eg. Catalogue, page 1150. A treatise bearing the same title was published by the Venkatesvara Press, Bombay, in Saṅgītā 1953, Saṅkya, 1817, another at Benares in 1838. The same treatise is stated to have been translated into "Bhāṣā under the title" Pāśāma Viśāsa" by Mukula Saktidhara Šarmā, at Lucknow in 1866.

In the Oriental Ms. Lib. Madras, there is a Ms. bearing the title "Viśvakarmiyay-Silpa-Śāstram" (see Catalogue vol. XXI no. 10367).
(19) Pādūkā-upānahā-manohādinām māna-lakshāna—measurement of foot wear, shoes, couches, etc., referred to in many places in M.

(20) Śāṅku-nilā-nilā-nirnaya—finding out the cardinal points, etc., by means of a gnomon, M. VI.

(21) Vāstu-deha-lakshanā-pūjana-chalī-dāna—offerings. M. VIII.

(22) Śilā-nilāsa—referred to in many places in M.

(23) Prāṣāda-vidhāna—buildings, described in many places in M.

(24) Śilpa-vyāsa, M. not specified.

(25) Prāṣāda-nirnaya, M. XIX—XXX.

(26) Pithikā-lakshana—pedestals (of the phallus), M. LIII, XIII.

(27) Mandapa—pavilions, M. XXXIV.

(28) Dwāra-lakshana—doors, M. XXXVII, XXXIX.

(29) Vāpi-kūpa-tadāgodya-nilā-kriyā—making of tanks, wells, pools, gardens, referred to in many places in M.

(30) Dāru-chandesana-vidhi—cutting wood, M. XV.

(31) Griha-praveša-nirnaya—almost the same as (4), M. XXXVI.

(32) Griha-praveša-kāla-suddhi, M. XXXVII.

(33) Sayyāsana-dolikādinām lakṣaṇa—bedsteads, seats, palanquins (hammocks), almost the same as (18).

(34) Dūrka-nirnaya—forts and fortified cities, M. X.

(35) Śalva-jiśṭānam, salyodhāra—semi-astrological topics, referred to in many places in M.

(36) Nāgara-sambandhi-rāja-grihādinām nirnaya—the places in cities, M. XLI.

It should be noticed that most of these topics of this version of Visvakarmaman refer to non-architectural and chiefly astrological matters. It is also worth notice that this treatise leaves out sculptural topics altogether.

The Visvakarmiyā-nilpa⁴, apparently the same as is mentioned in Rajendralāla Mitrā’s notices of Sanskrit manuscripts, is a Nāgari copy made in

⁴ In Rājā Dr. Rajendralāla Mitrā’s “Notices of Sanskrit Ms.” (Vol. II, no. 731, p. 142).

Of the other version, Visvakarmiya Śilpa-Sāstra, the Madras Ms. noted above, which was copied by Niḥla Sārappā on Saturday, the 8th day of the bright fortnight of the Aśvina month in the year 1250, contains a statement referring to Visvakarma’s debt to Brahma, Indra, Maya, Bhūrīvī, Bhūrīvā, Bhūrīvā, Dhrva, Gautama, Gārgeya, Mānu, Vajrasya, and Bāriṇ. Agastya is also referred to.

It is stated to have been founded on the revelation of Visvakarma and traced back successively to Bhāratadeva, Pārāśara, and Śomānu. In the Mānasā, the origin of the science is attributed to Śiva, Brahma, and Vishnu, and through Indra, Viṣṇusūra, Nārada, and others it was revealed to Mānasārā; Visvakarma, Maya, Viśvā, and Mānu represent the heavenly architects, and Viṣṇasūra, Śrīrājāra, Vardha, and Tāhaka form the guild of modern architects; but there are thirty-two other architectural authorities mentioned in the Mānasā. vitamin.
1872 from an original written in the Hala-Kāṇḍi character, the older codex being in the library of the Rāja of Tanjore. "None of the Mss. examined by Mr. Burnell is perfect or even tolerably correct. This treatise is apparently a compilation, as it is written in the Tāntric style, having Śiva for its narrator." The contents are classified under the following seventeen chapters:

1. Viśvakarmotpattih karma-viśesha-bhedena vyavahṛta-takshaka-varddha-kyādi-sabda-vyutpattih cha—origin of Viśvakarman, derivation of the words takshaka, varddha, etc., M. II.

2. Satyādi-yuga-jāta-narocchhatā-pramāṇaṁ, yajñīya-kāśṭhena prastareṇa vā deva-pratimā-nirmāṇe māṇādi—height of man in different ages of the world, wood and stone for the construction of images.

3. Takṣhbakasya garbhāhānādi-samskāra-kathanāṁ, garbhottpatti-kathanādi cha—sacraments for sculptors and carpenters.

4. Śiva-liṅgādi-pratishṭhārtham sabbhā-nirmāṇādi—halls for the installation of Śiva's phallus and other gods, M. LII.


6. Ratha-nirmāṇa-vidhi-kathanam—cars and chariots, M. XLIII.

7. Ratha-pratishṭhā-vidhiḥ—consecration of cars, M. XLIII.

8. Brāhma-Māheśvarayādinaṁ svarūpādi-varṇādi—characteristics of Brāhma, Māheśvarī and other goddesses.


10. Suvarṇa-rajata-maṇīyādi-nirmīta-yajñopavita-kathanāṁ, dig-bhedena deva-sthāpana-prakāraṇi, meru-dakshina-sthitā-bema-śīla-kathanādi cha—sacred thread of gold, silver, maf ji fibre, the cardinal points at which images of gods and goddesses are to be installed; qualities of the (stone-god called) Hema-śīla (lib., golden stone) to be found to the south of the Meru mountain.


12, 13. Mukuṭa-kirīṭa-jāta-mukuṭādi-nirmāṇa-prakāraṇi—crows, crests and head-gear, M. XLIX.

14. Svāhāra-deva-rasa-simhāsana-nirmāṇa-prakāraṇi, Pumar viśesēva kirīṭa-lalāṭa-paṭṭikādi-nirmāṇa-prakāraṇ, Devatāyā mandirasaya cha jirṇoddhāra-prakāraṇ—movable and fixed thrones for images; crests, crowns, bands and other head-gear; repairs of temples, M. XLII, XLV.

15. Liṅga-mūrti-mandira-dvārādi-kathanā—proportions of doors of temples to Phalli, M. XXXVIII, XXXIX, LXIV.
(16) Pratimā-mūrti-mandira-dvārādi-kathana—proportions of doors of temples to (other) images, M. XXXVIII, XXXIX.

(17) Vighnēśa-mūrti-mandirādi-nirmāṇādi-vidhi—temples for the images of Vighnēśa and other matters.

This portion of the treatise of Viśvakarman is chiefly sculptural. The treatment of the subject is in detail, although not so elaborate as in the Aśṭamad-bheda of Kāśyapa. I am inclined to think that the two versions form in fact the complete treatise attributed to Viśvakarman.

We have seen that Viśvakarman refers to the authority of Mayamata1. If this Mayamata be the same person as the author of the Mayamata discussed above, and there seem reasons to think so, Viśvakarman might have been indebted to the Mūnasāra through Mayamata, if not directly. Even the brief comparison of the two treatises given above may serve to indicate that there may have been such a relation of indebtedness between the Viśvakarma-silpa and the Mūnasāra.

1 See note 1, page 97.
THE AGASTYA

Agastya is a name frequently cited, we have seen above, as an authority on architecture. Unfortunately the manuscripts discovered are incomplete and devoted solely to sculpture. One of the manuscripts bearing the title Agastya-Sakalādhikāra contains the following chapters:

(1) Māna-samgraha—system of measurement, Mānasāra II, LV.
(2) Uttama-dāsa-tāla—large type of the ten-tāla measure, M. LXV.
(3) Madhyama-dāsa-tāla—intermediate type of the ten-tāla measure, M. LVI.
(4) Adhama-dāsa-tāla—small type of the ten-tāla measure, M. XLII.
(5) Pratima-lakshana—general rules on images, M. LXIV.
(6) Vṛishabha-vāhana-lakshana—bull, the riding animal of Śiva, M. LXII.
(7) Naṭeśvara-vidhi—image of Naṭeśvara (dancing Śiva), M. LI.
(8) Shodāsa-pratima-lakshana—sixteen images, M. L XIV.
(9) Dāru-samgraha—collection of wood, cf. M. XV.
(10) Mṛit-saṁskāra—preparing earth for images.
(11) Varna-saṁskāra—preparation of colours.

In a Madras manuscript the following topics are described:
(1) Māna-samgraha-viśesha—specially on measures, M. II, LV.
(2) Uttama-dāsa-tāla—large type of the ten-tāla, M. LXV.
(3) Madhyama-dāsa-tāla—intermediate type of the ten-tāla, M. LXVI.
(4) Somāskanda-lakshana—image of Soma and Skanda, M. not specified.
(5) Chandra-śekhara-lakshana—image of Śiva, M. LI.
(6) Vṛishabha-vāhana-lakshana—image of the bull, M. LXII.

Chapters 7 to 18 seem to be missing. It is not clear whether or not the following 7-14 (which numbers are not found in the compilation) are to be attributed to Agastya:

(7) Tripurāntaka-lakshana—image of Śiva, cf. M. LI.
(8) Kalyāṇa-sandara-lakshana—image of Kalyāṇa-Sundara.
(9) Ardhā-nārīśvara-lakshana—image of Śiva, M. LI.
(10) Pāṣupata-lakshana—image of Śiva, M. LI.
(11) Bhikṣāṭama-lakshana—image of Śiva as a beggar, M. not specified.
(12) Chaudēśāṅgraha-lakshana—image of Śiva, M. LI.
(13) Nakṣiṁa-mūrti-lakshana—image of Nakṣiṁa.

* In the Oriental Mtr. Lib., Madras, there are two fragmentary Ms. ascribed to Agastya (Cat. vol. XXII, nos. 18046, 18047). They deal with astrological matters bearing upon architecture. In the same library (Cat. vol. XXII no. 18068) there is a large Ms. of 429 pages of 25 lines to a page of paper 19 1/2" X 8"; two large portions of this compilation are ascribed to Agastya.
(14) Kāla-dahana-lakshana—image of Śiva(?)
All these refer to the images of Śiva described in M. LI.

(15-18) Apparently missing.

(19) Pratimā-lakshana—images, M. LXIV.
In another portion of the compilation the following chapters are numbered as shewn in parallel column:

(20) (3) Upāpiṭha-vidhāna—pedestal (for image), M. XIII, LIIIa
(21) (9) Śūla-māṇa-vidhāna—measurement of pikes for images.
(22) (10) Rajju-bandha-saṃskāra-vidhi—making ropes, M.II.
(23) (11) Varna-saṃskāra—preparation of colours.
(24) (12) Akshi-mokshana—chiselling the eye, M. LXX.

We have seen above that Agastya is mentioned together with Maya as one of the authorities, on which Viśvakarma's treatise is based. Agastya was, therefore, presumably known to Viśvakarman. Owing to the incomplete nature of Agastya's extant works the connection of Agastya with Mayamata and with the Mānasāra is not clear at present. It is true, however, that several chapters of Agastya are strikingly similar to, if not taken from, the corresponding chapters of the Mānasāra.
Another authority frequently referred to is Sanat-kumāra. There are several fragmentary manuscripts of his treatise. But they are incomplete. In one of the manuscripts the following subjects are dealt with:

1. Gṛiha-sārthīpāna—construction of houses, M. XXXVI.
2. Nakshatra-graha-yoga-vidhi—constellation of planets and stars (in determining the auspicious times) in connection with the building of houses.
3. Graha-lagna-vidhi—almost the same as (2).
4. Taru-tantra-vidhi—on trees (wood, for building houses with).
5. Bhū-parikshā-vidhi—examination of soil, M. IV, V.
8. Gṛiha-praveśana—first entry into the newly-built house, M. XXXVII.

This treatise of Sanat-kumāra is stated to have been based on the works of Brahman, Śakra, Yama, Bhārgava, Āṅgirasa, Maya, Gautama, Gārgya, Manu, Vyāsa, Bṛigu, Viṣvakarman and others.

The same list is differently given in another manuscript (no. 13064), where Śakra is replaced by Chandra and Maya is omitted.

But in other manuscripts (nos. 13062, 13068) Śakra is not replaced by Chandra although Maya is omitted.

As we have seen above, Viṣvakarman acknowledges his debt to Maya. And Sanat-kumāra mentions Viṣvakarman as his authority; it is, therefore, not unlikely that of these lists the first one, which contains Maya, is correct. And if the view that Maya is indebted to the Mānasāra be accepted on the grounds discussed above, it would be easy to infer that Sanat-kumāra may be also indebted, directly or indirectly, to the Mānasāra.

Egg. III. 3151, 2680; Oppert, vol. I, no. 8239, page 569. In the Oriental Manuscripts Library, Madras, there are nine manuscripts (Cat. vol. XXII, nos. 13060—13069).

Madras manuscripts, no. 13060.
THE ŚILPA-SĀTRA OF MANḌANA

The treatise of Manḍana, otherwise called Rāja-vallabha-Manḍana, Sūtradhāra-Manḍana, and also perhaps Bhūpati-vallabha, is unique in a sense. He seems to be a historical person. He is stated to have been "in the employ of king Kumbhakarna of Meḍapātha and the husband of Mirābāi." According to Tod, king Kumbha ruled over the country of Mewar from 1419 to 1469 A.D.1 This treatise bears the titles Śilpa-sātra, Vāstu-sātra, and also Prāśāda-Manḍana-Vāstu-sāstra.2 It deals with the architectural disposition of houses, palaces and temples in the following fourteen chapters:

1. Mūraka-lakṣaṇa.
2. Vāstu-lakṣaṇa—characteristics and classification of architectural objects, Mānasāra, III.
3. Āyādi-lakṣaṇa—architectural formulas of measurement, M., LXVI.
4. Prākāra-yantra—vāpi-kūpa-tadaga-lakṣaṇa—courts, machines, tanks, wells, pools, described in several places in M.
5. Rāja-griha-niveśādi-lakṣaṇa—opening the royal palaces, M. XL, XXXVII.

The 28th verse (tōka) of this chapter (5) mentions the Maitreya-Purāṇa as an authority on the subject.

6. Eka-sāla-dvi-sāla-griha-lakṣaṇa—houses with one and two halls (compartment), described in many places in M.
7. Dvi-sāla-tri-sāla-chatuḥ-sāla-griha-lakṣaṇa—houses with two, three and four halls, described in many places in M.
8. Sayana-simhāsana-chhatura-gavāksha-sabhāśāta-vedika-chatushṭaya-dipa-lakṣaṇa—bedsteads or couches, thrones, umbrellas, windows, eight-councils, four-platforms, and lamps, apparently an abridged collection of several subjects described in M. XLIV, XLV, XXXIII, etc.

9. Rāja-grihādi-lakṣaṇa—royal palaces, M. XL.
10. (Māpīra)-Ksheṭrādībhūta-lakṣaṇa.

2 Egg. 3142, 1291; 3147, 2335.

Apparently one of these Ms. is published with some diagrams by Bhāratī at Baroda, 1891.

Five other manuscripts are ascribed to Manḍana, (i) Vāstu-Manḍana, (ii) Vāstu-Manḍari, (iii) Vāstu-sāra, (iv) Rāja-Manḍana, and (v) Āpa-tattva.
(11) Dina-suddhi-griha-niveśa-griha-praveśa-vivāha-muhūrtta-lakṣaṇa — auspicious times with regard to beginning the construction and entry into the house, and the wedding.


(13) Jyotisha-lakṣaṇa — astrology (astronomy).

(14) Śakuna-lakṣaṇa — auspicious signs.

The manuscript bearing the title Prāsāda-Maṇḍana-Vāstu-śāstra by Śūrtrāhāra Maṇḍana (Egg. 3147, 2253) contains the following eight chapters, which, except the first one, are apparently in continuation of the 14 chapters stated above:

(1) Miśra-kalaśa,

(15) (2) Ayatanādhikāra — buildings (temples).

(16) (3) Bhitti-pīṭha-maṇḍ[ap]a-vāra[dvāra]-garbha-griha-udumbara-pramāṇa — walls, pedestals, open courts, doors, shrines, etc., M. XIII, XXXIV, XXXVIII, XXXIX, etc.

(17) (4) Pramāṇa-drishti-paṇḍita-sthāna-śikhara-kalāśa-lakṣaṇa — measures, sight (perspective), pillars, finials, towers, M. II, XV, etc.

(18) (5) Rājyādi-prāsādādhikāra — royal kingdoms, palaces, etc., M. XL, XLI, XLII, etc.

(19) (6) Keśaryādi-prāsāda-jāti-lakṣaṇa, pañcha-kshetra-pañcha-chatvārimiśan-meru-lakṣaṇapāḍhyāya — Keśari and other classes of buildings, forty-five types of buildings beginning with Meru; compare M. XVIII, XIX — XXX, and see comparison of the Maṇasāra with the Purāṇas and the Āgamas discussed below (page 113f).

(20) (7) Maṇḍapa-bālāṅka-sambharānādhikāra — open courts, M. XXXIV.

(21) (8) Jirnoddhāra-bhinna-dosha-sthāvara — ratishṭhā, Śūtradhāra-pūjā, Jina-prātishṭha-vāstu-purusha-vinyāsa — repairing and other defects, consecration of movable images, offerings to architects (carpenters), consecration of Jain images, description of the presiding deity of the house, M. LXIX, II, VIII, LV, VII, etc.

As has already been suggested, these two parts of Maṇḍana’s treatise, in some respects, seem to be two overlapping portions of one work. Other treatises ascribed to Maṇḍana are fragmentary and useless for any attempt to combine the several portions into a complete whole. The important points of this historical treatise are well worth notice. First its date is pretty certain, secondly it mentions the Matsya-Purāṇa, and lastly it contains a list of forty-five buildings,
classified under five headings, bearing titles and giving details which correspond exactly with the lists and titles discovered in many important treatises.\footnote{The Agni-Purāṇa, the Garuḍa-Purāṇa; also the Matsya-Purāṇa, the Bhaviṣhya-Purāṇa, the Bṛhat-Saṁhitā as well as the Kāmiṇīgama, the Suprabhādogyā and the Mānasāra (see under section III. pp. 110—130).}

Another point of importance is the fact that many of its chapters contain matters which are in fact different topics and have been more logically described under different headings in the Mānasāra and other works. It is, therefore, likely that Maṇḍana’s work is more or less a compilation from many sources.
THE SĀMГRAHA

This work is avowedly a compilation (sāmgraha). It bears the title Sītha-
sāmgraha, and to our great relief it expressly mentions the sources it has been
compiled from.¹ In fact several of the architectural treatises compared above
and many more not mentioned here are evidently compilations, although the
authors have not acknowledged their debt, nor even mentioned the sources drawn
upon. This point is convincingly illustrated in the following instance.

The following chapters in the order found in the manuscript are ascribed to—

I.—Mānasāra:
Under 7, Gomukha-lakṣāna—under this heading there is no separate
chapter in the eleven manuscripts of the Mānasāra so far known to
exist.
(13) Upāpyāha-lakṣāna—pedestals; (M. XIII).
Under 15, Vṛishabha-lakṣāna—image of the bull, the riding animal
of Śiva, (M. LXII).

II.—Mayamāna:
Under 6, Dik-parīchehcheda—the cardinal points.
(23) Māndapa-vidāna—open courts.
(9) Grāma-vinyāsa—villages.
(20) Eka-bhūmi-rodhāna—one storeyed buildings.
Under 86, Sthapati-lakṣāna—characteristics and qualifications of the
architect.
(24) Gopura-vidāna—gate houses.
(13) Upāpya-vidāna—pedestals.
(1) Adhishṭhāna-vidāna—bases.
(20) Dvi-bhūmi-vidāna—two storeyed buildings.
Under 20, Tri-bhūmi-vidāna—three storeyed buildings.

III.—Kāśyapa:
Under 7, Prastara-lakṣāna—entablatures.
" " Adhishṭhāna-paṭala—bases.
" " Nāla-pramāṇotsedhālaṃkaraṇa—drains and canals.
Under 24, Dakshitā-mūrti-paṭala—image of the goddess Dakshinā.
Under 22, Nyṛita-lakṣāna—image of dancing Śiva.

¹ Oriental Manuscripts Library, Madras, Cat. vol. XXII, no. 18006. It comprises 429 pages of
25 lines to a page of paper 13â½" X 8".
IV.—Viśvakarman:
Under 6, Gopura-lakṣaṇa—gate-houses.
Under 38, Śāyana-lakṣaṇa—bedsteads and couches.
(86) Sthapati-lakṣaṇa—characteristics and qualifications of the architect.
(14) Āyādi-sampad-artha-viśhāna—the formula of Āya, etc.

V.—Agastya:
Under 1, Māna-samgraha-viśeṣa—system of measurement.
Under 2, Uttama-daśa-tāla—the large type of the ten-tāla measure.
Under 3, Madhyama-daśa-tāla—the intermediate type of the ten-tāla measure.
Under 4, Soma-skanda-lakṣaṇa—image of Soma and Skanda.
Under 5, Chandra-sekhara-lakṣaṇa—image of Śiva.
Under 6, Vṛisha-viśhāna-lakṣaṇa—image of the bull, the riding animal of Śiva.

It is not known for certain whether or not the following, under 6 and 19, are to be ascribed to Agastya.

Under 6, Tripurāntaka-lakṣaṇa—image of Śiva.
... "Kālyāṇa-sundara-lakṣaṇa—image of Kālyāṇa-Sundara.
... "Ardha-nāriśvara-lakṣaṇa—image of Śiva.
... "Pāśupata-lakṣaṇa—image of Śiva.
... "Bhikṣātana-lakṣaṇa—image of Śiva.
... "Chandesāṅgraha-lakṣaṇa—image of Śiva.
... "Dakṣiṇā-mūrti-lakṣaṇa—image of Dakṣiṇā.
... "Kāla-dahana-lakṣaṇa—image of Śiva.
Under 19, Pratimā-lakṣaṇa—images in general.
(3) Upālītha-viśhāna—pedestal.
(9) Śūla-māna-viśhāna—pike.
(10) Rajju-bandha-saṃskāra-viśhāna—preparation of ropes.
(11) Varṇa-saṃskāra—preparation of colours.
(12) Aksbi-mokshaṇa—chiselling the eyes of an image.

VI.—Bṛigu:
Under 7, Ratha-nimāṇa—construction of chariots.

VII.—Paulastyā:
Under 22, Dakṣiṇā-mūrti-nimāṇa—the image of that deity.

VIII.—Nārada:
Under 14, Krīṣṇa-lakṣaṇa—image of Krīṣṇa.
IX. - Nârâyana:
Under 20, Râma-Lakshmana—the images of Râma and Lakshmana.

X. - Mausalya:
Under 7, Ratha lakshana—chariots.

XI. - Sesha-bhûshya:
Under 36, title missing.
Under 22, Ekatâla-vidhâna—one storeyed buildings.

XII. - Chitra-sâra:
Under 14, title missing.
(7) Pratimâsâra (?).

XIII. - Sârasvata:
Under 28, Chandesvara-vidhâna—the image of Chandesvera.

(23) Garuda-lakshana-pâtalâ—the image of the garuda bird;
Râma-Lakshmana-pâtalâ—the images of Râma and Lakshmana. (The term 'pâtalâ' usually used in the Āgamas, indicates that these chapters may have been borrowed from some Āgamas).

Under 20, Gopura-mâna—gate-houses.
(1) Mâna-samghrâhâdi—the system of measurement.

XIV. - Viśva-sâra:
Under 20, Aśva-mâna-vidhi—image of the horse.

" " Vira-bhadra-lakshapa—image of Virabhadra.

" " Skandha—image of Skanda.

" " Tripuri—image of Tripuri.

" " Pratimâdi—images, etc.

XV. - Chitra-jñâna:
Under 20, Dhvaja-danda-pâta-lakshana—flag, staff and banner.

" " Jirnooddhâra—repairs.

XVI. - Kapîñjala-samhitâ:
Under 20, Garuda-lakshana—image of the Garûḍa bird.

XVII. - Kaumudi:
Under 29, Pratimâ-lakshana—images in general.

XVIII. - Brahma-sîlpa:
Under 15, Sayana-lakshana—bedsteads and couches.
XIX.—Brahma-yāmala:
Under 5, Chāmundī-dhyāna—characteristics of the demoness Chāmundī.
Under 20, Daśavatāra-lakṣaṇa—images of the ten incarnations of Vishṇu.

XX.—Dipti-tantra:
Under 15, Līṅga-lakṣaṇa—Phallus

XXI.—Dipti-sāra:
Under 8, Gopura-lakṣaṇa—gate-houses.

Of these, it will be noticed, numbers one to five refer to treatises discussed above, six to ten refer to authors whose treatises are not mentioned here, and the rest refer to treatises and not to their authors. In fact, it is practically impossible to trace the authors of these latter treatises, as is the case with several others dealing with architecture and cognate arts.

The brief sketch of this compilation as well as the other illustrative Silpa-Śastras presented above incidentally substantiate two theories. Most of the architectural treatises, whether or not ascribed to an author, historical or mythical, are but compilations. Some of these have actually acknowledged the sources drawn upon while others have not. This practice of misappropriating somebody else’s property is prominently shown in works like the Purāṇas and the Āyamas, which in most cases are undeniably huge compilations gathered together from various sources dealing with heterogeneous subjects. The second theory is that the Mānasāra, though itself a compilation, because the author seems to have consulted some thirty-two authorities on architecture, appears to be the standard work on the subject, inasmuch as it is the most complete, scientific, and probably the oldest extant record. This last impression is, further, strengthened by comparison of the Mānasāra with the architectural portions of the Purāṇas, the Āyamas and the Brihat-samhitā in detail.¹

¹ See section III, pp 110—133.
III

POSITION OF THE MĀNASĀRA IN LITERATURE

With a view to ascertaining the position of the Mānasāra in relation to the non-architectural literature it will be necessary to discuss the points of similarity in detail. It is, however, practicable, in an article like this, to take into consideration only the architectural portions of works which deal with the subject specially. For the purpose of an elaborate treatment, we propose to compare the Mānasāra with the Agni-Purāṇa, the Garuḍa-Purāṇa, the Matsya-Purāṇa, the Bhavishya-Purāṇa, the Brhat-samhitā, the Kārikāgama, and the Suprabhedāgama.

It has been pointed out at the outset that architecture comprises a variety of subjects. But it cannot be denied that the fundamental business of the architect is with buildings, residential, religious, and military. It appears to be a fashion among many peoples of the past as of the present to designate individual buildings by proper names with or without a meaning. It seems to have been a custom among the ancient Hindu architects to describe buildings under some such names. In the eight treatises we have proposed to compare in detail, we find buildings bearing proper names classified and described in the following way.

1. In the Mānasāra, the main buildings are described in some thirteen chapters. Their common features from bottom to top are given under storeys varying from one to twelve. They are also classified under styles—Nāgara, Vesara, and Drāvida—chiefly in accordance with the shape of the topmost part; under sizes; as Śuddha, Miśra, and Saṁkīrṇa in accordance with the materials of which they are built; under Jāti, Čhanda, Vīkalpa, and Ābhāsa.

---

1 Compare, for instance, Whitehall, Guildhall, Mansion House, Cosy Corner, Gordon Castle, Benmore, Barnes Castle, Svaśīka, Vijaya, Vibhūka, Indra-kānta, Chatur-mukha, Pañchāla, Drāvida Kāmāla-Bhavana, Chitta-Viśrāma, etc.

2 Chapters XVIII to XXX, see the summary of contents in the preceding section under XVIII.

3 For details of these styles, see the writer's Dictionary under Nāgara.

4 Large, intermediate and small.

5 (a) Śuddha or pure, made of one material (brick, iron or wood).
   (b) Miśra or mixed, made of two materials.
   (c) Saṁkīrṇa or amalgamated, made of three or more materials. M. XVIII, 138–142.

110
in accordance with the various lengths of the cubit with which the buildings are measured\(^1\); under Śthānaka, Āsana, and Śayana, which are otherwise called Samchita, Asamchita, and Apasamchita respectively\(^2\); and under shapes, Purulīṅga (masculine), Strilīṅga (feminine)\(^3\), and Napumṣaka (neuter).

The details of the ninety-eight types of buildings described according to the number of storeys are given below. The numerical figures on the left indicate the serial numbers, and those on the right refer to the lines or verses of the chapters:

I. The eight kinds of single storeyed buildings with their characteristic features, chapter XIX—(1) Vaijayāntika, with round spire (śrake), pinnacle (śirah), and neck (grīṣṭa) (line 116); (2) Bhoga has karna or ears (187); (3) Śrīviśāla has the bhada or front tabernacle in it (168); 4) Svastibandha has octagonal finial (śrake) (168); (5) Śrīkara has quadrangular śikhara or steeple (170); (6) Hastiprisha has oval steeple (171); (7) Skandatarā has hexagonal spire and neck (172); (8) Kesara has the front tabernacles in the centre of the side-towers at the corners of the roof, and its nose, head, and neck are round or quadrangular (173–175).\(^4\)

II. The eight kinds of two storeyed buildings, chapter XX (The general features are the same in all the eight kinds; the distinction lies in the different proportions given to the component parts from above the ground floor to the top):

(9) Śrīkara (lines 94, 2–9); (10) Vijaya (94, 10–15); (11) Siddha (94, 16–18); (12) Paushṭika (94, 19–25); (13) Antīka (94, 25–27); (14) Adhīṣṭha (94, 28–33); (15) Svastika (95, 34–41); and (16) Pushkala (94, 42–43). The projection, the general description, and the carvings on the doors, when these buildings are used as temples, are given (44–93, 96–110).\(^5\)

III. The eight kinds of three storeyed buildings, chapter XXI:

(The general features and characteristic marks are similar to those of two-storeyed buildings).

(17) Śrīkāṇṭa (lines 2–11); (18) Āsana (12–21); (19) Sakhālaya (22–30); (20) Kesara (31–32); (21) Kamalāṅga (33–38); (22) Brahmākānta (39–40); (23) Merukānta (41–49); and (24) Kailāśa (50–52).\(^6\)

---

\(^1\) M. XIX, 3–6.

\(^2\) Referring respectively to height, breadth, and length, ibid 7–8, 10–11. The three latter sets also refer to the features of the idols in case of temples, namely, erect, sitting, and recumbent.

\(^3\) Equilateral and rectangular respectively. But in case of temples, the former contains the male deities while the latter may contain both female and male deities, ibid 14–17. For the neuter class see the Kāmikāgama below.

\(^4\) For further details see the writer's Dictionary under akhabhumi.

\(^5\), \(^6\) For further details see the writer's Dictionary under dvitāla, and tritāla.
The general features, characteristic marks and other details of the following kinds are similar to those of the two-and three-storeyed buildings.

IV. The eight kinds of four-storeyed buildings, chapter XXII:
   (25) Vishnukānta (lines 3-12); (26) Chaturmukha (13-24); (27) Sadāśiva (25-33); (28) Rudrakānta (34-43); (29) Īvrākānta (44-46); (30) Mañchakānta (47-57); (31) Vedikānta (58-59); and (32) Indrakānta (60-88).\footnote{1, 2, 3, 4, 5, 6, 7, 8}

V. The eight kinds of five-storeyed buildings, chapter XXIII:
   (33) Airāvata (lines 3-12); (34) Bhūtakānta (13-15); (35) Viśvakānta (16-18); (36) Mārtikānta (19-24); (37) Yamakānta (25-29); (38) Grihakānta (30-33); (39) Yajnakānta (33-40); and (40) Brahmakānta (41-42).\footnote{8}

VI. The thirteen kinds of six-storeyed buildings, chapter XXIV:
   (41) Padvamānta (lines 3-12); (42) Kāntāra (13-14); (43) Sundara (15); (44) Upakānta (16); (45) Kamala (17-18); (46) Kaṭmakānta (19); (47) Vipulākṣa (20); (48) Jyoti(sh)kānta (50); (49) Saroruha; (50) Vipulākritika (53); (51) Svastikānta (53); (52) Nandyāvarta (54); and (53) Iṣekakānta (55).\footnote{3}

VII. The eight kinds of seven-storeyed buildings, chapter XXV:
   (54) Pundarika (lines 3-23); (55) Śrīkānta (24); (56) Śrībhoga (25); (57) Dhārava (26); (58) Paṇḍara (27); (59) Āśramagāra (28); (60) Haracyakānta (29); and (61) Himakānta (30).\footnote{2}

VIII. The eight kinds of eight-storeyed buildings, chapter XXVI:
   (62) Bhūkānta (lines 3-21); (63) Bhūpakānta (22-28); (64) Svargakānta (29-34); (65) Mahākānta (35-39); (66) Janakānta (40); (67) Tapa(s)kānta (41-42); (68) Satyakānta (43-45); and (69) Devakānta (46-47).\footnote{6}

IX. The seven kinds of nine-storeyed buildings, chapter XXVII:
   (70) Sarvakānta (lines 5-9); (71) Raurava (10); (72) Chandita (11-12); (73) Bhūshaṇa (13-14); (74) Viveṣa (20-22); (75) Supratikānta (23-26); and (76) Viśvakānta (27-33).\footnote{3}

X. The six kinds of ten-storeyed buildings, chapter XXVIII:
   (77) Bhūkānta (lines 6-8); (78) Chandrakānta (6-8); (79) Bhavanakānta (9-13); (80) Antarikshakānta (14-15); (81) Meghakānta (16-17); and (82) Abjakānta (18).\footnote{7}

XI. The six kinds of eleven storeyed buildings, chapter XXIX:
   (83) Śambhukānta (lines 3-7); (84) Isakānta (8-0); (85) Chakrakānta (10-14); (86) Yamakānta (15-17); (87) Vajrakānta (18-24); and (88) Akrakānta (24-33).\footnote{8}

\footnote{1, 2, 3, 4, 5, 6, 7, 8. For further details, see the writer's Dictionary under chatusṭala, pașchātala, shaṭtala, saptaṭala, ashtātala, navatāla, daśatāla, and ekādaśatāla.}
XII. The ten kinds of twelve-storeyed buildings, chapter XXX:

(83) Pāñchāla (lines 8-16); (86) Drāvida (8-10); (91) Madhyakānta (11-14); (92) Kaśiṇagākānta (14-16); (93) Varāṭa (Virāṭa) (17-27); (94) Kerala (28-30); (95) Vaṁśiṇa (31-32); (96) Magadhakānta (33-34); (97) Jana (ka)kānta (35-36); and (98) Śphurjaka (Gurjaraka) (7, 37-84; description of the twelfth storey).  

2. Agni-Purāṇa, chapter 42. V. 1-9 (general plan), 10-25 (plan with reference to the idol), chapter 104, V. 1-11, 22-34 (further general plan), 11-21 (names, classes, shapes, and description of forty-five kinds of temples).

Five divisions depending on five shapes (plans), and each including nine kinds of temples (chapter 104, V. 11-13):


3. Garuḍa-Purāṇa (chapter 47) has exactly the same general plan (V. 1-20, 32-47), five shapes, five classes (V. 21-23), and forty-five kinds of buildings (V. 24-32), but the wording is not identical. The fourth class is read Māniika (V. 21) in the general description but the name 'Maṇiika' (V. 30) is given later on:

I. Vairāja—square (V. 21-22) — includes the same 9 kinds; but (7) Nandika is read as Nandana, and (6) Charuka is correctly read as Ruchaka, (V. 24-25).

---

1 These ten kinds are named, it should be noticed, after the historic places, well marked in the ancient geography of India, which cover the whole length and breadth of the continent. The topography of these places is described elsewhere (pp 173-174). For the architectural details of these buildings see the writer's Dictionary under these ten terms. The description of the twelfth storey is given under Drāvidaakānta.
II. Pushpaka—rectangular (V. 22—23)—includes nine kinds, where (10) Valabhi is correctly spelt, (13) Visāla is read as Vimāna, which is apparently a mistake in the Garuda-Purāṇa because (3) Vimāna is a kind of building included in the square (I) Vairāja class. But the reading of class (II) seems better in the Garuda-Purāṇa, which may be quoted: (10) Valabhi, (11) Griharāja, (12) Śālāgriha, (13) Mandira, (14) Visāla (text has 'Vimāna'), (15) Brahma-mandira, (16) Bhavana, (17) Uttambha, and (18) Śīvikā (for Śīvikā)-veśma, (V. 26—27).


IV. Mapika—oval (V. 30)—has nine kinds, of which (31) (32), and (33) are read as Garula, Śimha and Bhūmukha respectively, (V. 29—30).

V. Trivishtapa—octagonal (V. 21, 23)—has nine kinds, readings again seem better here: (37) Vaira, (38) Chakra, (39) Mushtika (preceded by Bahru, V. 31), (40) Vakra, (41) Svastika, (42) Khadga, (43) Gadar, (44) Śrīvyriksha, and (45) Vijaya, (V. 31—32).

4. The Matsya-Purāṇa, chapter 289:

The description of the general plan (verses 1—7) is followed by that of the special plan (verses 8—20).
The names (V. 28—30), description of architectural details (V. 31—40), measures (47—51) and division (53—54) of twenty types of buildings:

(1) Meru has 100 cupolas (ṛiviṇga), 16 storeys (bhāmikā), many variegated steeplers (śikharā), and is 50 cubits broad (V. 28, 31, 53); (2) Mandara has 12 storeys, many steeples and faces, and is 45 cubits broad (V. 28, 37, 47, 53); (3) Kailāsa has 9 storeys, many steeples and faces, and is 40 cubits broad (V. 32, 47, 53); (4) Vīmāna-chēhānda has 8 storeys, many steeples and faces (ānana), and is 34 cubits broad (V. 25, 32, 33, 47, 53); (5) Nandi-vardhana has 7 storeys, and is 32 cubits broad (V. 29, 33, 48, 53); (6) Nandana has 7 storeys, and is furnished with viśāpa or horns, and is 30 cubits broad (V. 29, 33, 48, 53); (7) Sarvatobhadra has 5 storeys, 16 corners with various shapes, is furnished with art-galleries (chitrāśali), and is 30 cubits broad (V. 29, 34, 35, 48, 53); (8) Vallabhi-chēhāndaka has 5 storeys, many steeples and faces, and is 16 cubits broad (V. 35, 50, 53); (9) Vṛisha should resemble the height and length of the bull, be round and without corners, should have 5 cupolas, 2 storeys, and should be 4 cubits broad at the central hall (V. 30, 36, 44, 45, 53); (10) Simha resembles the lion and is 16 cubits broad, is adorned with the famous chandrasāli (top rooms, gable-windows), and by the width of the front neck 6 storeys high (V. 29, 36, 40, 49, 53); (11) Gaja resembles the elephant, and is 16 cubits broad, and has many
chandaśālīs or top rooms (V. 36, 41, 49, 53); (12) Kumbha resembles the water-jar, has 9 storeys, 5 cupolas (an̄dās), and is 16 cubits broad (V. 37, 49, 53); (13) Samudraka has 16 sides around, 2 chandaśālīs (top rooms) at the two sides, 2 storeys (V. 38, 53); (14) Padma has 3 storeys, 16 corners, a variegated steeple, and is 20 cubits broad (V. 39, 40, 49, 53); (15) Garuda has the grihārāja (? around, 7 storeys, 3 top rooms, and 8 cubits broad, and there should be 86 (?) compartments (bhūmikā, lit., storeys; V. 42) all around the outside (V. 41, 43, 51). There is a similar Garuda-building with 10 storeys and a second Padmaka-building with 2 storeys more (? 12 storeys, V. 43); (16) Hamsa is 10 cubits broad (36, 51); (17) Varuṇa is 20 cubits broad (V. 29, 40, 53). No special description is given of the remaining: (18) Chaturastra (four-cornered, V. 28, 53); (19) Ashṭāra (eight-cornered, V. 29, 53); (20) Shodāśastra (sixteen-cornered, V. 29, 53).^{1}

Similar types of buildings are described almost in the same way in both the Bhavishya-Purāṇa and the Brihat-samhitā.

5. The Bhavishya-Purāṇa, chapter 130, names (V. 23–26), description of the architectural details and measures (V. 27–35) of the twenty kinds of buildings (same as in the Brihat-samhitā, see below):

(1) Meru, 39 cubits high and 32 cubits broad, has 12 storeys, various windows (kuhara), and four gateways (V. 27).
(2) Mandara, 30 cubits broad, and has 10 storeys (V. 28).
(3) Kailāsa, 25 cubits broad, has steeples and 8 storeys (V. 28).

The description of the following is clearer in the Brihat-samhitā, quoted below; the names may be given here:

(4) Vimāna with latticed windows (V. 29).
(5) Nandana (V. 29).
(6) Samudra (V. 30), Samudra (V. 24) as in the Brihat-samhitā (LVI. 28, 5).
(7) Padma (V. 30).
(8) Garuda (V. 31).
(9) Nandi-vardhana (V. 28; Nāhilī, V. 31).
(10) Kuñjara (V. 32).
(11) Grihārāja (V. 32), Brihat-samhitā (LVI. 25) has 'Guhārāja,'
(12) Vṛisha (V. 33).
(13) Haṁsa (V. 33).
(14) Ghaṭa (V. 33).
(15) Sarvatobhadra (V. 34).
(16) Simha (V. 35).

^{1} Compare the three divisions of these buildings according to size.
(17) Vṛttā (as in the Brāhot-saṁhitā, LVI, 29, 49); but here (V. 33) it reads Vṛṣha like (12), which is apparently a mistake (see V. 30).

No special description is given of the remaining:

(18) Chatuṣṭhākoṇa (four-cornered. V. 25), Matsya-Purāṇa (chapter 269, V. 28, 53) has Chaturaśra; and Brāhat-saṁhitā (VI. 25) has Chaturaśra.

(19) Ashtāśra (octangular; V. 25).

(20) Shodāśaśra (sixteen-cornered, V. 25).

Varahamihiśra seems to have taken these from an earlier Purāṇa and improved them in the Brāhat-saṁhitā.

6. The Brāhat-saṁhitā, LVI. 1—19:

The religious merits acquired by building temples (V. 1—2); suitable sites—in the garden, wood, banks of rivers, (seas), tanks (V. 3—8); ground (V. 9); general plan (V. 10); situation of doors (V. 10); comparative measures of length, breadth and height (V. 11), of the adytum (garbha, V. 12), of the doors and their different parts (V. 12—14); carvings on the door (V. 15); comparative measures of the idol, pedestal, and door (V. 16); the heights of storeys (V. 29—30).

This is followed by a classification (V. 17—19) and an account of the architectural details (V. 20—23) of the same twenty kinds of temples (prisāda) as are given in the Matsya-Purāṇa and the Bhatīṣhya-Purāṇa. The names of these buildings are given below, details being almost the same as in the Purāṇas:

(1) Meru (V. 20).
(2) Mandara (V. 21).
(3) Kailāśa (V. 21).
(4) Vimāna- (ohchhanda) (V. 17—22).
(5) Nandana (V. 22).
(6) Samudga (V. 23).
(7) Padma (V. 23).
(8) Garuda (V. 24).
(9) Nandivardhana (V. 24).
(10) Kuṭija (V. 25).
(11) Guhāraja (V. 25).
(12) Vṛṣha (V. 26).
(13) Haṁsa (V. 26).
(14) Ghaṭa (V. 26).
(15) Sarvatobhadra (V. 27).
(16) Simha (V. 28).
(17) Vṛttā (V. 18—28).
(18) Chatush-kona (V. 18—28).
(10) Ashīśa (V. 18—28).
(20) Shodāsāra (V. 18—28).

7. The Kānikāgama, pātala LV:

The four classes:
Jāti (V. 128), Chhanda (V. 129), Vikalpa (130), and Ābhāsa (130).

Pātala XLV:
Further classifications:
(1) Sāmkhita, Apasāmkhita, and Upasāmkhita (V. 6).*
(2) Nāgara (6, 12, 13), Drāviḍa (6, 14, 15), and Vesara (7, 16—18).
(3) Jāti (7, 19), Chhanda (7—20), and Vikalpa (7—20).
(4) Suddha (7, 21), Miśra (7, 22), and Samkīrṇa (7, 22).
(5) Puh-linga or masculine, also called Sāmkhita (8, 9), Strī-linga or feminine (9, 10), and Napūṃsaka or neuter (11).

This class (5) does not refer (like the Mānasūra) to the sexes of the deities. Here they appear more like residential buildings: their characteristic features are determined by architectural details. The distinguishing marks of the divisions in the other four classes (1 to 4) are similar to those of the Mānasūra noticed above.

In Pātala XXXV, Śalās, in almost the sense of Prāśāda, are divided into five classes: Sarvatobhadra (87, 88), Varṛdhāmanā (87, 88), Svastiṣka (87, 89), Nandya-varta (87, 90), and Charuka (87, 91).

Their technical names *:
(1) Sindhuka (XLV, 23—28); (2) Sāṃpūra (29—30); (3) Merukūṭa (31); (4) Kshema (32—34); (5) Sīva (35—38); (6) Harma (39—40); (7) Sāmīya (40); (8) Viśāla (41); (9) Sarvakałyā (43—49); (10) Viṣaya (50); (11) Bhadra (51); (12) Raṅgamukha (52); (13) Alpa (53—54); (14) Kōṣa (55—58); (15) Geya (58—59); (16) Sāra (60); (17) Pushkara (61, 63); (18) Adbhuta (61a); (19) Samkīrṇa (62); and (20) Danda (64).

8. The Suprabhadāgama, Pātala XXXI (named Prāśāda):

Three styles of temples—Nāgara, Drāviḍa, and Vesara (38—39).


* This Paṭala refers to the description of a single building and its component parts.
So also does the Paṭala XLV (see under Mālikā); it is named Mālikā-īlakṣaṇa) and does not mean anything but Prāśāda: Cf. Prāśāda-ṛṣya-dīrghaḥochā prosa prāśāda-mālikā (11, 4).

* For further details see the writer's Dictionary under these terms and Mālikā.
Mandapas are first divided into four classes:

Devamandapa, Snapanam (bath)-mandapa, Brisha (bull, nandin)-mandapa, and Nritta (music)-mandapa (96—97, 98—99); and further classified under epithets, Nandavritta, Srijaveritta, Virasama, Jayabhadra, Nandyavarta, Manibhadra, and Visaha (100—104).

The attention of readers is invited to the lists of the buildings described in the eight works under observation.

The list in the Manasa contains in 12 classes (storeys) 98 types of buildings; the Agni-Purana has in 5 classes (or divisions) 45 types, the Garuda-Purana also has in the same 5 classes (or divisions) the same 45 types; the Matsya-Purana has in 3 divisions 20 types, the Bhavishya-Purana has left out the broader divisions but contains the 20 types; the Brihat-samhita in the very same way contains the 20 types; the Kamilakama has in 3 divisions (of various kinds) 20 types; and the Suprabhedagama has left out all the minor divisions but preserves the most important one, namely, the 3 styles (Nagara, Vesara, Dravida), which comprise 10 types of buildings.

The various broader divisions, such as Suddha, Samchita, Sthansaka, Jati, Pumlinga, etc., we have seen in the Manasa, are repeated in the same terms and same sense in the Agamas. The most important division into the styles—the Nagara, Vesara and Dravida—is also preserved intact in the latter works. These are purely architectural divisions, and they are not taken into consideration in the non-architectural treatises like the Puranas and the Brihat-samhita. Even the broadest division into storeys, under which the Manasa describes the buildings in 12 or 13 chapters, has lost its prominence in the latter works.

Thus the Manasa has the largest number of the types, namely, 98. The Agni-Purana and the Garuda-Purana have 45 types each. The Matsya-Purana, the Bhavishya-Purana, the Brihat-samhita, and the Kamilakama have 20 types each. The Suprabhedagama has the smallest number of types, namely, 10.

The technical names of these types of buildings are, as we have seen above, common in many cases. We have also seen that in some instances the architectural details are identical. The lists of the Agni-Purana and the Garuda-Purana on the one hand, and the Matsya-Purana, the Bhavishya-Purana and the Brihat-samhita, on the other, are strikingly similar. Of the works containing the lists of 20 types, the Brihat-samhita has the best description. But in respect of brevity, explicitness and precision, the Suprabhedagama, which contains the smallest number of types, surpasses all. And it happens that the smaller the types the better the description.
The common names of the types, the identity of their details, and the similarity in the description may not be accidental. The grades in the linguistic style and in the explicitness and precision of the description do not seem unconnected. And the variations in the number of types of buildings treated in these works may not also be meaningless. But before hazarding an opinion it will be better to compare some of the other important points of similarity between the Mānasāra and the architectural portions of the other works.

Amongst others, the three crucial features in architecture, at least so far as these ancient records are concerned, seem to be the measurement, the orders or columns, and the styles. Similarities in these respects are hardly accidental and may be ascribed to a common origin.
MEASUREMENTS

(A) The linear measurement is divided into six kinds:

(1) Manà, (2) Pramàna, (3) Parimàna, (4) Lamba-màna,
(5) Unmàna, and (6) Upamàna (M. LV. 3—9).

References to these measurements are met with also in non-architectural treatises, like the Matsya Purâna (chapter 258, V 16), the Suprabhâdâgama (patula, XXXIV, 35), as well as in the Bimbamâna (British Museum, Ms. 658, 5292, verse 9).

(B) The primary measurement (ûdimâna) refers to comparative measurements and is divided into nine kinds:

The height of an image is determined by comparing it with the

(1) breadth of the main temple,
(2) height of the adytum,
(3) length of the door,
(4) measurement of the basement,
(5) cubit,
(6) tâla,
(7) ângula,
(8) height of the worshipper, and
(9) height of the riding animal (M. LV. 10—15).

Each of the measurements is again divided into nine kinds (M. LV. 22).

Under (1), (2), (3), (4), the proportions naturally vary on various occasions but the general methods are similar in these treatises; compare, for instances the Suprabhâdâgama (XXXI 1—15).

The ângula (finger breadth) and the basta (cubit), (5), (7) measures are in fact of the same class. The finger breadth, equivalent to \( \frac{1}{2} \) inch, is perhaps the earliest unit of measurement invented by human brain. Though not liable

---

1 Measurement from the foot to the top of the head is called Manà (which is nothing but height).

Pramàna is the measurement of width or circumference (patita).

Lambamàna is the measurement by the plumb-line or the lines drawn perpendicularly through different parts of the body, the manà or the measurement of height being taken by the surface of the body.

Unmàna is the measurement of thickness (nimma) or diameter.

Upamàna is the measurement of interspace (anta), such as that between the two feet of an image.

Pramàna, unmàna and manà are also mentioned in the Šukra-nità (I. 310), but their meanings are not quite clear.
to being lost in the course of time, it has its own defects, namely, the finger of two persons is hardly of equal breadth, and the finger of a person is liable to change owing to various natural causes. Apparently with a view to avoiding these defects finger-breadth is ascertained by the measures of certain other objects, atom, car-dust, hair-end, nit, louse, and barley-corn. 1 The largest size of finger breadth is stated to be equal to eight barley corns, the intermediate seven barley corns, and the smallest six barley corns. Again, for the same purpose, this standard measure is divided into three kinds—māṇāṅgula, mātrāṅgula, and dehalabdhāṅgula. Of these, māṇāṅgula, which is equal to eight barley corns, is meant to be the unit proper. Mātrāṅgula is the measure taken by the middle finger of the master who makes an image (or a building), dehalabdhāṅgula is the measure equal to one of the equal parts into which the whole height of a statue is divided for sculptural measurement. 2

This āṅgula measure is practically the same in almost all the Indian works bearing upon measurement, for instance—

(1) Mānasāra (II 40–45, 46–47, 48–52, 53–64, LXIV, 49–53, etc.).
(2) Brīhat-saṁhitā (LVIII, 1–2).
(3) Siddhānta-śiromani, ed. Bāpuḍeva (p. 52).
(5) Brahmāṇḍa-Purāṇa (part I, section 2, chapter VII).
(6) Matsya-Purāṇa (chapter 258, verses 17–18).
(7) Vāstu-vidyā, ed. Gaṇapati Śāstrī (I, 3–5f).
(8) Bimba-māna (Ms. British Museum, no. 558, 5292, verse 9f.)
(9) Suprabhedāgama (XX. 1–9, 10–16, 20–26, etc.).
(10) Kauṭiliya-Artha-śāstra, ed. Shama Śāstrī (p. 106); compare also
(11) Manu-saṁhitā (VIII, 271).
(12) Rāmāyaṇa (VI, 20,22).
(13) Śata-patha-Bṛahmaṇa (X, 2, 13, III, 5, 4, 5).
(14) Aitareya-Bṛahmaṇa (VIII, 5).
(15) Chhāndogya-Upanishad (V, 18, 1, etc.).
(16) Śulva-Sūtra of Baudhāyana (J. R. A. S. 1912, 231–233, notes 1, 2).

---

1 8 atoms = 1 car-dust.
2 car-dusts = 1 hair-end.
3 hair-ends = 1 nit.
4 nits = 1 louse.
5 nics = 1 barley corn.
6 barley corns = 1 āṅgula.
7 For further details see the writer's Dictionary under āṅgula.
The tāla-māna (under 6) is a sculptural measure. The length of face inclusive of head is taken as the unit of measurement. But it seems more convenient to have the particular span, namely, the distance between the tips of the fully stretched thumb and middle finger, which is technically called tāla, as the unit. It admits of many varieties: ten tāla measures are mentioned in the Mānasāra, while the Bimbamāna has reference to twelve kinds. Each of these ten or twelve varieties is again divided into three types, namely, uttama or large, madhyama or intermediate, and adhama or small. Thus an image is of the ten (dasa) tāla measure when its whole length is ten times the face. In the large type of the ten tāla system, however, the whole length is divided into 124 equal parts which are proportionately distributed over the different parts of the body; in the intermediate type the whole length is divided into 120 equal parts, and in the small type into 116 equal parts. In the nine (nava) tāla system, the whole length would be nine times the face, in the eight (ashta) tāla eight times, and so forth.

The principle of the tāla measure is fundamentally the same in all the works dealing with the subject, although certain differences in matters of detail are noticed, compare, for instance,—

(1) Mānasāra (LX, 6—35, LVII, LIX, 14—64; 67—100; LXVI, 2—78; LXV, 2—179).
(2) Bimbamāna (verses 17—72, 91—138, and appendix X).
(3) Suprabhedāgama (XXXIV, 30—34; XXX, 31—40).
(4) Brihat-samhitā (LVIII, 4).
(5) Aṁśumadbheda of Kāśyapa (fol. 251, Eg. 3148, 3012).
(6) Bramhāṇḍa-Purāṇa (Part I, Anusānga-pāda, VII, 97).
(7) Matsya-Purāṇa (chapter 258, verse 19).

The details of the tāla measures from the following authorities are given by Mr. Rao:

(8) Śilpa-ratna.
(9) Aṁśumadbhedāgama.
(10) Kāṇḍikapāgama.
(11) Vaikhānasāgama.
(12) Kāmikāgama.

1 Matsya Purāṇa, chapter 258, verse 19.
2 Muktamāna karavya sarvavayava-kalpanā.
3 Aṁśumadbhedā of Kāśyapa, fol. 251. (Ms. Eg. 3148, 3012).
4 One to ten tāla (M. LX, 6—35, etc.).
5 One to twelve tāla (Appendix).
Another exclusively sculptural measure is that mentioned under (8), (9), namely, the height of an image is compared with the height of the worshipper (yajamāna), and the height of the riding animal (vāhana) is compared with the height of the main idol. Each of these admits of nine varieties. The height of an image may be equal to the full height of its worshipper, and may extend up to his hair-limit on the forehead (sometimes it is stated to be the eye-line), nose-tip, chin, arm-limit (to the shoulder), breast, heart, navel, and sex-organ. The height of the riding animal is in the same manner compared with the height of the main idol.

Corresponding to the abovementioned sculptural measures there are exclusively architectural measures also.

The architectural gāyata-māna\(^1\) or the comparative heights of the component members of a structure corresponds to the sculptural tāla-māna or the comparative heights of the component limbs of a statue.

The ghana-māna or the measurement by the exterior, and the aghanā-māna or the measurement by the interior, of a structure is also exclusively architectural.\(^2\)

In another architectural measure the height of a structure is compared with its breadth. It admits of five proportions, technically called, Śāntika, Paushṭika, Jayada, Sarva-kāmika, or Dhanada, and Adhikāra, the height being respectively equal to breadth, 1\(\frac{1}{4}\), 1\(\frac{3}{4}\), 1\(\frac{1}{2}\), and twice of the breadth.\(^3\)

These latter items, highly technical and extremely minute in detail, are found in no other treatises under observation than the Mānasāra. Thus in respect of at least purely architectural and sculptural measurement the Mānasāra, of all these works, should occupy the first place.

---

\(^1\) Mānasāra. L.V. 36–33 etc.

\(^2\) See the writer’s Dictionary, and compare the Mānasāra, XXVII, 36–40; XXI, 36–33; XXXIII, 134–140; 121–117, 248; XLV, 86, 97–101; LIII, 29–34; XIII, 36–40, etc.

\(^3\) See the writer’s Dictionary, sub voce.

\(^4\) See the writer’s Dictionary, under Utseśha.

When a large number of absolute measures are prescribed for the one and the same object, the right proportion is selected by the test of six formulas technically called, aya, vyaya, pākha, yoni, vāra, and tithi or artha (see details in the writer’s Dictionary under Sādh-varga).
THE FIVE ORDERS

Like the five Graeco-Roman orders, Doric, Ionic, Corinthian, Tuscan and Composite, columns in ancient India also were divided into five main orders or classes. In the Mānasāra they are called Brahma-kānta, Vishnu-kānta, Rudra-kānta, Śiva-kānta, and Skanda-kānta. These divisions are based on the general shapes of columns. With respect to dimensions and ornaments the five orders are called Chitra-karna, Padma-kānta, Chitra-skambha, Pālıkā-skambha, and Kumbhastambha. A sixth variety in the latter division is pilaster and not pillar proper, and is called Koshta-skambha and Kudya-skambha.

Among the Purāṇas, these details are very clear only in the Matsya-Purāṇa. In this Purāṇa as well as in the Brīhat-samhitā the five orders are called Būchaka, Vajra, Dvi-vajra, Prallinaka, and Vṛiṣṭa.

Of the Āgamas, the Suprabhedāgama contains the essential details. The names of the five orders according to this Āgama are Śri-kara, Chandra-kānta, Saumukhya, Priya-darsana, and Šubhan-kari; the last one is stated to be the Indian composite order, being compound of Saumukhya and Priya-darsana, just as the Graeco-Roman composite order is a compound of Corinthian and Ionic.

Between the European and the Indian columns, however, there is obviously a striking point of difference. Of the Graeco-Roman orders, the five names have been left unchanged, while in India the names of the five orders have varied in various treatises referred to above. It is true, all the same, that the criteria of divisions are essentially the same in the Mānasāra, the Āgamas, the Purāṇas, and the Brīhat-samhitā. We have also seen above that the Mānasāra contains two sets of names of the five orders, one set referring like the Āgamas, the Purāṇas, and the Brīhat-samhitā, to the shapes of the columns, or more precisely the shafts, while the other refers mostly to the capitals. The works other than the Vāstu-sāstras

---

1 Chapter XV, 20—22, 31, 70, 40, 73, 294.
2 Also mentioned in Corpus Inscriptionum Indicarum, volume III, p. 252, 253; Epigraphia Indica, XII, p. 812, 816; V. 151.
3 Mānasāra, XV, 84.
4 Matsya-Purāṇa, chapter 255, 1—6.
5 Brīhat-samhitā, VII: 27—80; also J. R. A. S. (N. S.), VI, p. 255, notes 1, 2.
6 See, for instance, the Kāmikāgama, Pañca XXXV, 24—25, 161, LV, 260, etc.
7 Suprabhedāgama, Pañca, XXXI, 65—67.
8 See references given above, and for further details consult the writer's Dictionary under stambha.
as represented by the Mānasāra have not kept this distinction clear. What we can reasonably infer from this as regards the mutual relation of these treatises will be further elucidated by a consideration of the component parts of the column. The question of variation of the names of the five orders in the Indian works can perhaps be explained. While in Europe the origin of the names of the five orders is traced to historical geography, in India the names were based on the shapes of columns. And as the Indians are comparatively religious and poetical rather than historical in temperament and imagination, they chose mythological and poetical names according to the spirit of the times when these various works were composed. Thus in the Mānasāra, we see the orders bearing the names of mythological deities, Brahma, Vishnu, Rudra, Siva, and Skanda; as well as called Chitra-karra (variegated ear), Padma-kanta (graceful like lotus), Chitra-skambha (of variegated shaft), Pālikā-stambha (edged like a measuring pot), and Kumbha-stambha (of jug-shaped capital); while in the Āyana, they bear highly poetical names—Śrī-kara (beautifying), Chandra-kanta (graceful like the moon), Saumukhya (of very charming face), Priya-duśana (sight-pleasing), Śubhaṅkari (auspicious), and in the Purāṇas, and the Brihat-samhitā, they are called Ruchaka (beautiful, pleasing), Vajra (club, hence lasting), Dev-vajra (doubly lasting), Pralinaka (firmly attached, hence a pilaster), and Vṛttā (round, hence solid and dignified).

With regard to the names and the functions of the component parts of the column the variation is a little less marked. But these subservient parts, called mouldings and common to all orders, vary in number. Thus in the Mānasāra, which of almost all the treatises deals separately and exhaustively with the pedestal, the base, and the entablature, mention is made in connection with the pillar, of five mouldings apparently of the shaft, namely, bodhikā, mushti-bandha, phalakā, tatiṅka, and ghāfa. The Suprabhedāyana describes two sets of seven mouldings, one set referring to the column of the main building and the other to that of the pavilion—daṇḍa, maṇḍi, kaṇṭha, kumbha, phalakā, viṇa-kaṇṭha and potikā; and bodhikā, uttara, vijana, mūrdhikā, tulō, jayanti, and tala. These increasing number of mouldings have reached the significant number of eight in the Matsya-Purāṇa, the Brihat-samhitā and the Kirana-tantra, and bears the

1 Doric is derived from the species of columns first seen in the cities of Doric (Vitruvius, IV. 1). That species of which the Ionians (inhabitants of Ionia) were the inventors has received the appellation of Ionic (ibid.). Callimachus constructed columns after the model of the tomb in the country about Corinth, hence this species is called Corinthian (ibid.). The other two orders, Tuscan and Composite, are of Italian or Roman origin. The Tuscan order has reference to the country of Tuscany, formerly called, Etruria, in Italy (Gwilt encyclopedia of architecture, article 175).

2 Mānasāra, XLI, 16–18.

very same eight names, to wit, vāhana, ghaṭa, padma, uitoroshṭha, bāhula, bhāra (or hāra), tulā, and upatulā.

The significance of the number eight referred to above lies in the fact that the component parts of the Greco-Roman orders also are eight in number, and like the five orders themselves, their names are always the same ever since their introduction, though most of them have been given more than one name. They are called, (1) the ovolo, echinus or quarter round; (2) the talon, ogée or reversed cyma; (3) the cyma, cyma-recta or cyma-tium; (4) the torus; (5) the scotia or trochilos; (6) the cavetto, mouth or hollow; (7) the astragal; and (8) the fillet, listel or annulet.

The Mānasāra refers to five mouldings: the Suprabhedāgama describes seven; and the Matsya-Purāṇa, the Brāhata-saṁhitā, and Kīrana tantra, each, makes mention of eight mouldings. But if the very large number of mouldings, described in the Mānasāra in connection with the pedestal, the base, and the entablature, be also taken into account, the Mānasāra will certainly exceed all other treatises under notice. Thus in the Mānasāra we can detect the following mouldings, (1) abja, ambuja, padma or saroruha (cyma); (2) antara, antarita, antarāla or antarika (fillet); (3) anghri; (4) aṁśu; (5) argala; (6) adhāra; (7) āliṅga; (8) āśana; (9) bhadra; (10) bodhiṅkā; (11) dala; (12) dhāra-(kumbha); (13) gala, griva, kamtha or kandhara (dado); (14) ghaṭa; (15) gopāna-(ka); (16) hāra (bead); (17) janman (plinth); (18) kapota; (19) kampa, kampana (fillet); (20) karṇa; (21) kumbha; (22) kumuda (torus or astragal); (23) kendra; (24) kshepaṇa; (25) māṣṭi-bandha; (26) mūla; (27) mṛṣṭa-la or mṛṣṭa-liṅkā; (28) nāṭaka; (29) nāśi; (30) nimma (drip); (31) paṭṭa or paṭṭikā (fillet); (32) prati or pratika; (33) prati-vakra; (34) prati-vājana; (35) prati-bandha; (36) prati-maṇḍala; (37) pāduka; (38) prastara; (39) phalakā; (40) ratna, compounded with kampa, paṭṭa, and vapra; (41) tāṭikā;

2 See figures 867-874 and article 3539. Gwilt, Encyclopaedia of Architecture: Glossary of Architectural Terms, Plate XXXIV.
3 See the writer's Dictionary, under upapīṭha, adhikāśa and prastara.
4 There are mouldings which bear a large number of names or synonyms, e.g.,
(i) Kapota, prastara, maṇḍa, prabhūkṣūla, gopāṇa, vīṇā, valabhi and matra-vāraṇa.
(ii) Prati-prastara, prati-vājana, annanta, avasāṇa, vidhāna and vidhānaka.
(iii) Prati-rūpa, dalakāra, vajana, vajana, kshepaṇa, vistra, paṭṭa, uttara, paṭṭikā, kampa, trika, maṇḍa and antarita.
(iv) Tula-saṇḍha, jayanti and phalakā.
(v) Kapota, vacra-hasta, lūpā, gopāṇaka and chandra.
(vi) Sanghraha, māṣṭi-bandha, मादालa, udhrta-hasta, valabhi and dhāraṇa.
(vii) Nāṭaka, anta, mṛṣṭalīka, valikā, chitrāṅga and kutikāśrūka.
(viii) Uttrara, vajana, adhāra, adhaya, śayana, udhrta, mūrdhaka, mahā-tāli and svavānišaka.
There are a number of compound mouldings also, such as, Kampa-karpa, Karpapadma, Kshudra-kampa, Kshudra-padma, Kshepanambuja, Mahambuja, Padma-kampa, Ratna-kampa, Ratna-pattā, Ratna-vapra, Vajra-pattā, etc.


In the Suprabhedāgama only four classes2 of bases are mentioned, namely, Padma-bandha, Caśira-bandha, Pāda-bandha, and Prati-krama. The Kāmikāgama has only the general description of the base.3

In the Mānasāra sixteen types of pedestals are described in detail under three classes, namely, Vedi-bhadra, Prati-bhadra, and Mañcha-bhadra. Only scanty information of the pedestal is found in the Kāmikāgama, the Suprabhedāgama, and a Tamil version of the Mayamata.5

As regards the entablature, various mouldings and their measurements are described under eight classes in the Mānasāra. The Kāmikāgama, the Suprabhedāgama6 and the Vāstu-vidyā7 have only briefly referred to the general description of the entablature.

The comparative measurements of the column proper and the pedestal, the base, and the entablature, are also given in more detail in the Monasāra than in the Āgamas and some of the architectural treatises.8

1 Mānasāra, XIV, 11-387. See details in the writer’s Dictionary under adhiṣṭhāna.
2 Suprabhedāgama, XXXI, 17.
3 Kāmikāgama, XXXV, 33, 33, 114, 116, 122; XIV, 103.
4 Mānasāra, XIII, 37-137. See details in the writer’s Dictionary under upaśṭhā.
5 Paṭala, XXXV, 115, 122.
6 Paṭala, XXXI, 12.
8 Chapter XVI, 22-119. See details in the writer’s Dictionary under prastara.
9 XXXV, 27-29; XIV, 1-4, 7-8, 9-30, 47.
10 XXXI, 68-71, 72-74.
11 Rām, Sampāli Sāstrei, IX, 23, 25.
12 See details in the writer’s Dictionary under kumbhā, upaśṭhā, adhiṣṭhāna and prastara.
Thus in respect of the names of columns, the number of their subservient parts called mouldings, and also the base, the pedestal and the entablature, as well as their comparative measurements, the Manosara will always occupy the first place among all the treatises under observation.
THE THREE STYLES

The style is also a technical and purely architectural subject. Thus it is not dealt with in the Purāṇas, not to speak of the epics or other poetical works where, as shown above, casual references to architecture and sculpture are met with. In some of the epigraphical documents and the Brihat-samhāta mention of the styles is occasionally made. The Āgamas contain a little more detail, while in the Mānasāra the subject is exhaustively treated.

The Nāgara, Vesara, and Drāvida are the three broad styles distinguished in the Mānasāra. They are applied to both architecture and sculpture. With reference to the construction of cars or chariots a fourth style is mentioned. This is called Randhra, which seems to be a corrupt form of Andhra. In an epigraphical record, Kalinga is mentioned as a distinct style of architecture. But if the identification of Vesara with Telugu or Tri-Kalinda be accepted, the Kalinga and the Andhra would be the two branches of the Vesara style. In the case of twelve-storied buildings, which are the most magnificent and imposing edifices as described, twelve special types, not necessarily the styles, of residential dwellings are also mentioned in the Mānasāra. All these names are geographical, implying the twelve provinces into which the then India was divided architecturally, if not also politically. And these types are distinctly based on geographical divisions, in exactly the same way as the three styles, the Nāgara, Vesara and Drāvida, as also the two branches of the Vesara, the Kalinga and Andhra, are based. The

1 Mānasāra, XVIII, 92–104: The Nāgara style is distinguished by its quadrangular shape, the Vesara by its octagonal or hexagonal shape, and the Drāvida by its round shape (p. 176, note 1). For details, see p. 176 f. and the writer’s Dictionary under Nāgara.
2 Mānasāra, I, III, 63–64. XXI, 72–73. XXVI, 76. XLIII, 124–125, etc.
3 Mānasāra, I, III, 100. LIII, 46–47, etc.
4 Mānasāra, XLIII, 194–195.
5 In the record itself it is, however, stated that the Nāgara, Vesara, Drāvida, and Kalinga are four types, not styles, of buildings. (An inscription on the capital of a pillar in the Amritāvara temple at Holal; Government of Madras, O. O. no. 1260, August, 1016, Progress Report of the Assistant Superintendent for Epigraphy, Southern Circle, 1914-15, page 90).
6 Pāñchāla, Drāvida, Madhyakānta, Kalinga, Va(Vi)śāka, Kālaka, Vasūka, Māgadha, Janaka and Sphū(Gur)jaks (Mānasāra, XXX, 5–7). We have seen in the previous section, 98 kinds of mansions are described in the Mānasāra. In the above mentioned Holal inscription a reference is made to 64 kinds of mansions.
GRACE-ROMAN orders, on which the European styles of architecture are mainly based, are also but geographical names.¹

In the Kāmikāgama, as well as in the Suprabhedāgama, frequent references to the three broad styles, the Nāgara, Vesara, and Drāvida, are made².

The distinguishing features of these styles are practically exactly the same in all the three works, namely, the Mānasāra, the Kāmikāgama, and the Suprabhedāgama³. The Āndhra and the Kālinga branches of the Vesara style are not mentioned in the Āgamas. But we have seen that the Kāmikāgama, like the Matsya-Purāṇa, the Bhāvishya-Purāṇa, and the Bṛihat-saṁhitā, describes twenty kinds of mansions, while the Suprabhedāgama has reference to ten kinds. These varieties of buildings, as also the sixty-four kinds mentioned in the Hoḍal inscription, and the ninety-eight kinds described in the Mānasāra, do not, however, represent the styles which fall only under three broad divisions, namely, the Nāgara, Vesara and Drāvida.

In the Bṛihat-saṁhitā⁴, a clear mention is made only of the Drāvida style in regard to the measurement of the face, although the other styles may be said to have been implied. It is stated that according to one’s own aṅgula (finger’s breadth) the face (of an image) should be twelve aṅgulas (nine inches) broad and long; but as stated by the architect Nagnajit the face should be twelve aṅgulas long and fourteen aṅgulas broad in the Drāvida style. Obviously, therefore, the former measurement refers to other existing styles or those which are not specified here.

In regard to the styles also, then, the Mānasāra must be undoubtedly given the first place amongst all these works which for the purpose of the present item of comparison comprise practically the Āgamas.

In the light of all these facts—merely to deal with the question in its aspects as they concern the Mānasāra—it seems to me impossible to resist the following conclusion. There appears to have been a relation of indebtedness between the Mānasāra and the other works, both architectural and non-architectural. Except in a few instances noted above, it is, however, difficult to state definitely that the Mānasāra is the debtor or creditor to this or that work in respect of this or that matter. Most of the difficulties, it is needless to observe, hinge upon the chronology which is the irritating point in the Sanskrit literature. If the chronology of

¹ See page 128 and foot-note 1.
² Kāmikāgama, LXXV, 6-7, 12-15, etc.; Suprabhedāgama, XXXI, 37-39, etc.
³ For details see the writer’s Dictionary under Nāgara.
⁴ Chapter LVIII, 4.
the works discussed above were definitely known, it would have been easier to assume that the works earlier than the Mānasāra had been known to its author and those later than the Mānasāra had been influenced by it. Except in cases of support by archaeological records, epigraphical or non-epigraphical, the dates assigned to Sanskrit works are mostly but provisional. I have discussed elsewhere the available materials and the reasons which have induced me provisionally to place the Mānasāra somewhere in the fifth to seventh century of the Christian era. In view of the essential points of comparison and the accepted chronology of the works which have been critically studied by scholars, I should say that the Brihad-saṃhitā and the later Āgamic and Paurānic works, in respect of architectural and sculptural matters, as well as most of the avowedly architectural manuscripts, are debtors to the Mānasāra, while it is a debtor itself in respect of the same matters to the Vedas and the early Epic works as also to the early polytechnical treatises (like the Kauṭilya-Artha-sāstra and the Kāmandakiya), and to the avowedly architectural works of the thirty-two authorities mentioned in the Mānasāra, which might have existed till its own time. Besides, it cannot but have been based on the actual observation and measurement of extant architectural and sculptural objects; in this matter lies the special importance of the Mānasāra.

An objection may be raised here. It is possible that those works which are stated above to have been debtors to the Mānasāra might have been influenced directly by those which are asserted to have been the creditors to the Mānasāra. Such an objection, however, can be easily disposed of. The Mānasāra, in whichever period of history it is finally placed, has become a standard work on architecture and sculpture, because we have seen, first, it is the largest of its kind; secondly, its treatment of the subjects is most exhaustive; and thirdly, in it the subject-matter has been scientifically classified and systematised. And when there is a standard work existing, it is natural and highly probable that those who treat the subject rather casually or less exhaustively, should draw upon it instead of going to the original sources except in some special instances. For the ordinary meanings or synonyms of a word we generally consult a standard dictionary, rather than attempt to trace the history, phonology, morphology, and semasiology of the word. An analogical instance may perhaps make the point clearer. Pāṇini’s grammar makes mention of some nineteen pre-existing grammatical works, and it has been placed by later scholars somewhere in the fourth or third century of the pre-Christian era. Like the works on rhetoric and prosody, grammars cannot be prepared without consulting the existing literature, because the sole business of these works is to generalise certain regulating features of literature. The
methods of the pioneers of law books, as well as the grammar, the *Alaṅkāra Śāstra*, and the *Silpa-Śāstra*, must have been inductive. Pāṇini, as he acknowledges generously, has been indebted to his predecessors; it is also clear from his work that he himself has consulted the preceding Vedic and post-Vedic literature. It is true that grammars have been prepared after Pāṇini also. But when Pāṇini's grammar reached the status of a standard work, his rules and regulations were naturally followed in the later literature. The later grammarians also must have been influenced by Pāṇini. In the field of grammar and literature Pāṇini's grammar is, therefore, the regulating and controlling standard work. In the same way, and more clearly and significantly, it seems to me, the *Mānasāra* occupies a unique position in literature, both architectural and non-architectural.
IV

THE MĀNASĀRA AND VITRUVIUS

As has already been pointed out in the Preface, the name Mānasāra is of ambiguous significance. It is, however, clear from the preceding chapters that the text bearing the title Mānasāra is a standard treatise on Indian Architecture. It is divided into seventy chapters each bearing a distinct title. In 1834 in his Essay on the architecture of the Hindus, Rām Rāz referred to the first few chapters of the Mānasāra from a single fragmentary manuscript to which he had access. Since then several manuscripts have been discovered; but owing to some serious difficulties stated in the Preface nobody had made any attempt to deal with this huge text in any way for a period of 80 years till the present writer undertook in 1914 to edit it for the first time. This, the first, edition is based on all the eleven available manuscripts which are written in five different scripts in a language branded as "barbarous Sanskrit." Figures, sketches, or illustrations of any kind are absolutely wanting in all these manuscripts.

Vitruvius is the name of Roman architect. His treatise, on which in a sense European architecture is based, seems to have been composed twenty-five years before the Christian era. "The materials for a life of Vitruvius are only to be found in his own treatise. Among the ancient authors he is merely mentioned by Pliny as one of those writers from whom he compiled; and by Frontinus, in his treatise on Aqueducts, as the first who introduced the Quintanain measure."  

The title of Vitruvius's treatise is lost, if it originally had one. The editio princeps, printed at Rome, in or about 1486, bears no title. The unique position of this treatise is, however, sufficiently clear from the fact that since its first appearance in the fifteenth century there have been till 1807 forty-two editions of the work, practically in all the European languages. There are seventeen editions in Latin, eleven in Italian, two in Spanish, six in French, four in German, and two in English1. It is divided into ten books, which too do not bear any titles. Each

---

1 See Gwilt, XV—XXV, for fuller details of the following:—
Latin editions—
1486—Editio princeps printed at Rome by George Herolt begins without title—"Sulpitius lectori salutem." Polanus says "there are but few errors in this edition."
book contains a number of chapters varying from seven to twenty-two. The chapters also have not any proper titles. The treatise deals with both civil

1496.—Printed at Florence. According to Fabricius the orthography of this edition is more correct than in the preceding one.

1497.—The name of the editor does not appear. With a few slight variations this is little more than a reprint of the Florence edition. In this the chapters of the first book are differently divided from those of the two former editions.

1511.—This is the first illustrated edition. It contains many wood-blocks and figures. Jocundus (the editor) altered the text of the two former editions in many places.

1513.—The figures in this edition are the same as in the preceding, but considerably reduced and more imperfectly kept.

1522.—This is a reprint of the preceding edition with the same blocks for the figures.

1523.—This was probably edited by Will. Hayon of Lyons. This is a counterpart of the Giunta edition. Some of its figures are taken from the first Italian edition of 1521 which is noticed herein after.

1543.—The text is nearly the same as that of Jocundus. The figures of the wood-blocks are partly borrowed from the Giunta edition and partly from the Italian edition of 1521.

1550.—The text is the same as that of the 1543 edition. But it contains notes of Philander which were first published at Rome in 1544.

1553.—Philander himself superintended this edition, chiefly following the Giunta text, which he collated with several MSS. The wood-blocks are better than in any preceding edition."

1567.—Barbaro in this seems to have mostly followed Philander's edition of 1552.

1586.—Harwood says that "the editor of this edition was Jo. Tornasenius junior, and that it is more correct, though less elegant than that produced by the father in 1552."

1649.—With commentary of Melbonius on those chapters relating to musical notation. This was the best edition of the author produced at that time. "De Last professes to follow the text of Philander's edition; but neither was this accurately done, nor were the notes of Philander, nor the Lexicon of Balduin given entire, as the title would import."

1768.—By Marchese Berardo Gallani at Naples with an Italian version noticed under the Italian editions. Harwood says that this is "a fair and valuable edition."

1800.—The text of this edition is of little value. Nor its plates well executed. It has no notes appended but it contains the glossary in five languages.

1807.—It contains notes.

1807.—In the same year another edition was published. The second and third volumes are devoted to commentaries on the text. In contains, however, no plates. "This is the best edition of the author which has appeared."

Italian editions—

1521.—This is one of the earliest and rare version of Vitruvius. It was translated with the assistance of Benedict Jarvis by Caesar Casarianus who was one of the architects of the Cathedral of Milan. One of the plates contains a plan and two sections of this Cathedral.

1524.—This is a repetition of the preceding edition but without the notes of Caesar Casarianus.

1535.—This is copied from the preceding edition, but the index is not quite so copious.

1536.—A translation of the first five Books. Perugia.

1556.—With Barbaro's commentary.
and military architecture. The rules respecting military engines, "now incomprehensible, but doubtless in his time sufficiently clear," are laid down in the last book. The treatment of civil architecture includes both temples and residential buildings. "That he should have met with opposition from his brethren is quite consonant with later experience, for the rabble of ignorant builders, and artisans, and draftsmen are of the same class as those that flourished subsequently to Vitruvius." From this remark of Gwilt it appears that Vitruvius was induced to "write his treatise with a view to assisting the uneducated professional architects" who, like those of India, depended solely on the knowledge handed down to them from their equally uneducated forefathers.

'Certain points of similarity between the Mānasāra and the treatise of Vitruvius are so striking that they raise a presumption that the two works are in some way dependent on each other.' This thesis\(^1\) is proposed to be illustrated in this section.

<table>
<thead>
<tr>
<th>Year</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1567</td>
<td>With Barbo's commentary.</td>
</tr>
<tr>
<td>1584</td>
<td>Similar to the preceding edition.</td>
</tr>
<tr>
<td>1629</td>
<td>Very similar to the preceding edition.</td>
</tr>
<tr>
<td>1641</td>
<td>Little differing from the preceding.</td>
</tr>
<tr>
<td>1768</td>
<td>In Napoli, accompanied with the Latin text.</td>
</tr>
<tr>
<td>1790</td>
<td>Another edition by Gallant, similar to the preceding, but without the Latin text.</td>
</tr>
</tbody>
</table>

Spanish editions—
- 1602—Without plates.
- 1787—Large folio with plates.

French editions—
- 1547—First version in French; Jean Martin, Paris.
- 1672—A reprint of the preceding; Cavallat, Paris.
- 1618—Printed from the two preceding editions by Jean de Tournes at Geneva.
- 1678—Translated by Perrault; Figures are numerous and well executed.
- 1684—With plates, best of Perrault's editions.

German editions—
- 1548—With plates on wood-blocks cut by Erard Schaein.
- 1675—A repetition of the preceding; Basle.
- 1614—Another repetition with a little different title.
- 1786—With a life of Vitruvius in the first volume. This edition contains many illustrations of the author.

English editions—
- 1771—Translated from the original Latin by Newton, London.
- 1791—Second volume with many plates.
  It exhibits defective knowledge of Latin, but the notes are good.
  Latterly a portion was translated by Wilkins.
  After Joseph Gwilt's translation there have been several others in English.

\(^1\) Submitted as such to Leiden University by the present writer.
Practically seven-tenths of both the works is avowedly architectural.

Out of the seventy chapters of the Mānasāra the first fifty deal with architecture proper, and out of the ten books of Vitruvius the first seven deal with the same subjects.

The remaining twenty chapters of the former are devoted to sculpture, and the remaining three books of the latter deal mostly with war instruments, machines, and engines. Of the similar seven-tenths in both the works, the names of many chapters, and the contents too in most instances, are the same.

The Mānasāra opens, following the usual custom, with a prayer to the Creator Brahmā and touches upon the origin and development of the science of architecture, from Śiva, Brahmā, and Vishnu, through Indra, Bṛhaspata, and Nārada, to the class of Rishis called Mānasāra, and concludes the introduction with a list of the chapters.

Vitruvius too opens with a prayer to his patron, Cæsar, and acknowledging his obligations to Cæsar's father and sister, concludes with a proposal to give an account of the magnificent edifices Cæsar had built, and to develop all the principles of the art.

The next chapter (II) in the Mānasāra deals with two distinct subjects, the system of measurement (mānopakaraṇa) and the requisite qualifications of an architect (Śilpa-tukhaṇa).

The corresponding chapter is marked I instead of II by Vitruvius, because the preceding chapter goes without any numbering, as it is called Introduction. This, the present, chapter deals exactly like the corresponding chapter in the Mānasāra with two distinct subjects under the heads, "what architecture is" and "of the education of an architect." The former of these two subjects has again been treated in the following chapter, namely, III, of the Mānasāra, and is noticed below. The striking similarity in the training demanded of the architect by the two authorities may be noticed here.

According to Vitruvius "an architect should be ingenious, and apt in the acquisition of knowledge. He should be a good writer, a skilful draftsman, versed in geometry and optics, expert at figures, acquainted with history, informed on the principles of natural and moral philosophy, somewhat of a musician, not ignorant of the sciences both of law and physic, nor of the motions, laws and relations to each other, of the heavenly bodies." The absolute necessity for these qualifications has been very satisfactorily elaborated by Vitruvius.

In the Mānasāra, artists are first divided into four classes. Together they form the guild of architects, each an expert in his own department but possessing a general knowledge of the science of architecture as a whole. They consist of the chief architect (Sthapati), the draftsman or the designer (Sūtra-grāhīn), the painter (Vardhaki), and the joiner (Sūtra-dhāra).
According to the *Mānasāra* the chief architect is expected to be well versed in all the sciences. He must possess a knowledge of all the Vedas and all the Śāstras. He must be proficient in law, mathematics, history, geography, painting, draftsmanship, mechanics, and deep "in the ocean of the science of architecture." He must be very learned, meritorious, patient, and dexterous, a champion, of large experience, of industrious habits, and of noble descent, full of resource and capable of application to all kinds of work. He must possess a wide outlook, bold temperament, and self-control. He must be above committing errors. He must have a good name and be faithful to his employers (lit., friends). He must be endowed with all the qualifications of a supreme managing director. He must not be deformed or have any disease or disability; he must also be free from the seven vices, namely, hunting, gambling, day-dreaming, blackmailing, addiction to women, etc.

A similar set of qualifications is also demanded of each of the other three artists; but the *Śūtragrāhīna* is expected to possess an expert knowledge of draftsmanship, the *Vardhāki* of painting, and the *Śūtradhāra* of carpentry.

The utility or the possibility of so many attainments in a single person has not been expressly discussed in the *Mānasāra*. But Vitruvius has submitted an interesting explanation.

It is familiar to everybody that for success in any profession in life one must be clever, industrious, honest and generous. It is also easily understood that an architect, who has got to do both manual and brain work, must not be deformed and must be free from any disease or disability.

According to Vitruvius he is required to be a good writer also, because an architect is to commit to writing his observations and experience, in order to assist his memory. Drawing is employed in representing the forms of his designs. Geometry, which forms a part of mathematics, affords much aid to the architect; to it he owes the use of the right line and circle, the level and the square, whereby his delineations of buildings on plane surfaces are greatly facilitated. Arithmetic estimates the cost, and aids in the measurement of the works; this, assisted by the laws of geometry, determines those abstruse questions wherein the different proportions of some parts to others are involved. The science of optics enables him to introduce with judgement the requisite quantity of light according to the aspect. Unless acquainted with history, he will be unable to account for the use of many ornaments, which he may have occasion to introduce. For history the expression *purāṇa* is used in Indian literature and it implies mythology or mythological stories which are as a rule depicted in the buildings of a nation. There are, however, other uses of history for an architect.
"Moral philosophy," says Vitruvius, "will teach the architect to be above meanness in his dealings and to avoid arrogance, and will make him just, compliant and faithful to his employer; and what is of the highest importance, it will prevent avarice gaining an ascendancy over him; for he should not be occupied with the thoughts of filling his coffers, nor with the desire of grasping everything in the shape of gain, but by the gravity of his manners and a good character, should be careful to preserve his dignity." These precepts of moral philosophy are prescribed by our Indian authorities almost in the same terms. We have seen above that the architect is required to be of noble descent, pious and compassionate. He must not be malicious or spiteful. He must be content and free from greed. He must be truthful and possess self-control. He must be above the seven vices. He must be faithful to his employer. He must not have excessive desire for gain. He must be of good behaviour and generous enough to forgive his rivals.

"The doctrine of physic is necessary to him in the solution of various problems, as for instance, in the conduct of water, whose natural force, in its meandering and expansion over flat countries, is often such as to require restraints, which none know to apply but those who are acquainted with the laws of nature." This matter too has been more exhaustively discussed in various chapters of the Mānasāra.

"Music assists him in the use of harmonic and mathematical proportion." In these matters, the Mānasāra is rather too elaborate; in most individual cases, nine proportions have been suggested and the selection of the right proportion and harmony has been made dependent on the application of the six formulas which are treated in a very technical manner based on mathematics. According to Vitruvius, music is moreover absolutely necessary in adjusting the force of the balistae, catapultae, and scorpions, in whose frames are holes for the passage of the homotona, which are strained by gut-ropes attached to windlasses worked by hand-spires. Unless these ropes are equally extended, which only a nice ear can discover by their sound when struck, the bent arms of the engine do not give an equal impetus when disengaged, and the strings, therefore, not being in equal states of tension, prevent the direct flight of the weapon. A knowledge of music is especially useful to the architect in building theatres, lecture rooms, and such other halls where the spread of sound is taken into particular consideration. Both Vitruvius and the Mānasāra are equally enthusiastic in speaking about it. The former, further, says that the architect "would, moreover, be at a loss in constructing hydraulic and other engines if ignorant of music." "Skill in physic enables him to ascertain the salubrity of different tracts of country, and to determine the variation of climates for the air and water of different situations being matters of highest importance, no building will be healthy without attention to these points."
A very elaborate account of the selection of sites and the examination of soil is given in the Mānasāra and other architectural treatises. The salubrity of the tracts is minutely ascertained with reference to the site where a village, town, fort, palace, temple or dwelling house is to be built. The soil is examined with regard to its contour, colour, odour, features, taste, and touch. The level of the ground as well as the characteristic vegetation of the site, as pointed out above, are also minutely examined.

"Law should be an object of his study, especially those parts of it which relate to party-walls, to the free course and discharge of the eaves’ waters, to the regulations of cesspools and sewage, and to window lights. The laws of sewage require his particular attention, so that he may prevent his employers from being involved in law-suits when the building is finished. Contracts, also, for the execution of the works, should be drawn up with care and precision, because, when without legal flaws, neither party will be able to take advantage of the other."

Law, as explained by Vitruvius, is not mentioned in so many words in the list of accomplishments given in the Vāstu-śastras quoted above. But most elaborate instructions are given in the Arthaśāstra and other treatises on party-walls, the sewage system, and on windows and other openings.

"Astronomy instructs him in the points of the heavens, the laws of the celestial bodies, the equinoxes, solstices, and courses of the stars; all of which should be well understood in the construction and proportions of clocks." In the Vāstu-śastras dialling is an important subject; but astronomy, which is always mixed up with astrology, has been drawn upon particularly with regard to the auspicious moment invariably observed in almost all matters.

Vitruvius has added an explanatory note on the expression 'all sciences' of which the architect is required to have sufficient knowledge. This explanation will indeed throw a clear light upon a similar expression, sarva-śāstra, used by the Indian authorities. But for the following note of Vitruvius, we might have taken the term sarva-śāstra as an exaggeration, which is very often found in Sanskrit literature to imply nothing more than a general knowledge.

"Perhaps, to the uninformed mind," begins Vitruvius, "it may appear unaccountable that a man should be able to retain in his memory such a variety of learning; but the close alliance with each other, of the different branches of science, will explain the difficulty. For as a body is composed of various concordant members, so does the whole circle of learning consist in one harmonious system."

---


See quotations from these works under Bhā-varāhī in the writer's Dictionary.

See the writer's Dictionary under Jaladeśa and Valāyana.
On this account, Pythius, the architect of the noble temple of Minerva at Priene says, in his commentaries, that an architect should have that perfect knowledge of each art and science, which is not even acquired by the professors of any one in particular. This seemed rather too much to Vitruvius, so he asks "how can it be expected that an architect should equal Aristarchus as a grammarian, yet should he not (sic) be ignorant of grammar. In music, though it be evident he need not equal Aristoxenus, yet he should know something of it. Though he need not exceed, as Apelles, in painting, nor as Myron or Polycletus, in sculpture, yet he should have attained some proficiency in these arts."

"Thus also, in the other sciences," concludes Vitruvius, "it is not important that pre-eminence in each be gained; but he must not, however, be ignorant of the general principles of each. For in such a variety of matters, it cannot be supposed that the same person can arrive at excellence in each, since to be aware of their several niceties and bearings, cannot fall within his power. Wherefore Pythius seems to have been in error, forgetting that art consists in practice and theory. Theory is common to, and may be known by all, but the result of practice occurs to the artist in his own art only. The physician and musician are each obliged to have some regard to the beating of the pulse, and the motion of the feet, but who would apply to the latter to heal a wound or cure a malady? So, without the aid of the former, the musician affects the ears of his audience by modulations upon his instrument. The astronomer and musician delight in similar proportions, for the positions of the stars which are quartile and trine, answer to a fourth and fifth in harmony. Throughout the whole range of art, there are many incidents common to all. Practice alone can lead to excellence in any one. That architect, therefore, is sufficiently educated, whose general knowledge enables him to give his opinion on any branch when required to do so. Those unto whom nature has been so bountiful that they are at once geometricians, astronomers, musicians, and skilled in many other arts go beyond what is required of the architect."

Further observations are perhaps unnecessary with a view to reiterating the striking similarities between the Mānasāra and Vitruvius on this point. This series of similarities between the injunctions of the two standard works on such an important matter as the training of the architect, the very soul of architecture, seem to have been due to something more than mere coincidence.

The next chapter (III) in the Mānasāra, called Vāstu-prakaraṇa, defines vāstu or habitation and divides it into four classes, ground, building, conveyances, and couch (dharā, harma, yāna, and paryaśka).
Chapter (IV), called Bhū-parivkshā or examination of soil, deals with the site where a village, town, fort, palace, temple, or dwelling is to be built, and examines the soil thereof with regard to contour, colour, odour, features, taste, touch; the elevation of the ground; and the luxuriance of certain plants, trees, and grasses.

Chapter (V), called Bhūmi-sangraha or selection of site, deals further with the soil before it is finally selected for a building site.

The next chapter (VI) considers the orientation of buildings, and recommends that a building should preferably face the east or north-east, and never the south-east. Reasons have not been discussed fully, beyond stating that this is auspicious or that is inauspicious. Incidentally, the principles, mechanics, and details of dialling have been exhaustively discussed.

The following chapter (VII) discusses the design or division of the site selected for a village, town, or house, into a number of plots. Thirty-two schemes are distinguished, each of which is divided into squares of various numbers.

Following the usual custom, this introductory section concludes with a chapter (VIII) on offerings to various deities. In this matter too the chief architect takes a leading part.

The corresponding chapter (II) of Vitruvius is called, "Of those things on which architecture depends." It deals with the fitness (ordinatio) and arrangement (dispositio), also proportion, uniformity, consistency and economy, and is divisible into three heads, ichnography, orthography and scenography, which considered together constitute design.

The next chapter (III) is called, "Of the different branches (building, dialling, and mechanics) of architecture," and the chapter following (IV) is named, "Of the choice of healthy situation," which deals with the climatic conditions and elevation of the building site as well as with its aspects or orientation. Unlike in the Mānasāra, the consideration of fog, rains, heat and cold, which are peculiarities of the European countries, has been given prominence here. The explanations of aspects recommended are satisfactory. "A city on the sea-side," it is stated, "exposed to the south or west will be insalubrious; for in summer mornings, a city thus placed would be hot, at noon it would be scorched. A city also with a western aspect would even at sunrise be warm, at noon hot, and in the evening of a burning temperature. Hence the constitution of the inhabitants of such places, from such continual and excessive changes of the air, would be much vitiated." After citing opinions of physicians and others and supporting by illustrations, it is further stated, "When, therefore, a city is built in a marshy situation near the sea coast, with a northern, north-eastern, or eastern aspect, on a marsh whose level is higher than the shore of the sea, the site is not altogether improper; for by means of sewers the waters may be discharged into the sea; and at those times, when
violently agitated by storms, the sea swells and runs up the sewers, it mixes with the water of the marsh and prevents the generation of marshy insects; it also soon destroys such as are passing from the higher level, by the saltiness of its water to which they are unaccustomed." The frequent mention of the sea-side, it is needless to point out, is due to the situation of the prominent Italian cities on the sea-shore, and of Rome, in particular, which was the object of special study to Vitruvius.

Vitruvius has also elaborately treated the subject of dialling in as many as four chapters (Book IX, chapters I, II, VIII, IX).

In this matter of dialling, as in many others, Vitruvius of course differs in certain details from the Mānasāra. For instance, regarding the principles of dialling each of the twelve months is, in the Mānasāra (VII), divided into three parts of ten days each and the increase and decrease of shadow are calculated in these several parts of the different months. Vitruvius (Book IX, chapter VIII) on the other hand discusses "the principles of dialling and the increase and decrease of the days," not the shadow thereof, in the different months.

In both these works, therefore, this introductory section comprises exactly eight chapters, which bear similar titles and deal with the same subjects practically in the same way.

Town-planning is the next topic treated in both the works, and it covers exactly two chapters both in Vitruvius (Book I, chapters VI, VII), as well as in the Mānasāra (chapters IX, X).

The Mānasāra describes the subject under two heads, Grāma-lakshana and Nagara-vidhāna, and three categories, village, town and fort. Villages are divided into eight classes, called dāṇḍaka, savatobhadra, nandiyāvarta, padmaka, svastika, prastara, kārmuka, and chaturmukha; each of these, as the names indicate, represents a particular design and lay-out. Towns are also divided into eight classes: rājadāni, nagara, puro, nagari, khaṭa, kharṣṭa, kubjaka and pattana. These refer more to the situation and distribution of buildings than to their shapes or designs.

Forts are first divided into eight classes: śīhara, vāhinimukha, dhvaniya, dronaka, samaviddha or vardhaka, kolaka, nigama, and skandāvāra. According to their situation, they are further classified into mountain fort (vana-durga), water fort (jala-durga), chariot fort (ratha-durga), gods' fort (deva-durga), clay fort (paśka-durga), and mixed fort (miśra-durga). The mountain fort is sub-divided into three classes, according as it is built on the top of the mountain, in the valley, or on the mountain slope.

According to the Mānasāra there is, however, not much difference between a village, a town and a fort. The town is the extension of a village. And the fort is in many cases nothing more than a fortified town. There seems to be only this
difference that a fort is chiefly meant for purposes of defence, while a village or town is mainly intended for habitation and commerce. But the village scheme seems, all the same, to have originated from the plan of the military camp.

Each village is surrounded by a wall made of brick or stone. It is supported by ramparts. Beyond this wall there is a ditch, broad and deep enough to cause serious obstruction in the event of an attack on the village. There are generally four main gates at the middle of the four sides, and as many at the four corners. Inside the wall there is a large street running all round the village. Besides, there are two other large streets, each of which connects two opposite main gates. They intersect at the centre of the village, where a public temple or hall is generally built in which the villagers may meet. The village is thus divided into four main blocks, each of which is again subdivided into many blocks by streets which are always straight, and which run from one end to the other of a main block. The two main streets crossing at the centre have houses only on one side facing the street. The ground floor of these houses on the main streets consists of shops. The street which runs round the village also has houses only on one side. These houses are mainly public buildings, such as schools, colleges, libraries, guest-houses, liquor saloons. All other streets generally have residential buildings on both sides. The houses, high or low, are always uniform in make. The drains and sewers are made towards the slope of the village. Tanks and ponds are dug in all the inhabited parts and located in such quarters as can conveniently be reached by a large number of inhabitants. The temples of public worship, as well as the public commons, gardens, and paras are similarly located. People of the same caste or profession are generally housed in the same quarter. The habitation of the dead body burners (chandālas) as well as the places for cremation are located outside the village wall to the north-west in particular. The temples of fearful deities, such as Chāmundā, are also located outside the wall.

A town may be situated from east to west or from north to south according to the position it occupies. There should be one to twelve large streets in a town. It should be built near a river or a mountain, and should have facilities for trade and commerce with foreigners. It should be furnished with walls, moats, ditches, gates, drains, parks, commons, shops, exchanges, temples, guest-houses, colleges, etc. The king and his court usually reside in a town, and traders and forum are essential element in its population.

Forts are also surrounded with strong walls and large and deep ditches. The wall is made of brick, stone, and similar lasting materials. It is at least eighteen feet in height and its thickness at the base is at least nine feet. The wall is provided with watch-towers.
Fortified cities are specially honoured with the residences of the king, the princes, priests, ministers, and military officers. There are also humbler dwellings as well as courts of justice, arsenals, traders' booths, shops, work-houses for artisans, various assembly halls, dancing halls, liquor saloons, and gambling halls.

According to Vitruvius (Book I, chapter V)—

"When we are satisfied with the spot fixed on for the site of the city, as well as in respect of the goodness of the air, as of the abundant supply of provisions for the support of the population, the communications by good roads, and river or sea navigation for the transport of merchandise, we should take into consideration the method of constructing the walls and the towers of the city. From the exterior face of the wall, towers must be projected from which an approaching enemy may be annoyed by weapons; from the ambuscades of these towns, right and left, an easy approach to the wall must be provided against; indeed they should be surrounded by uneven ground, and the roads leading to the gates should be winding and turned to the left from the gates. By this arrangement the right sides of the attacking troops, which are not covered by their shields, will be open to the weapons of the besieged."

"The thickness of the walls should be sufficient for two armed men to pass each other with ease. The walls ought to be tied, from front to rear, with many pieces of charred olive wood; by which means the two faces, thus connected, will endure for ages.

"The distance between each tower should exceed an arrow's flight. The walls will be intercepted by the lower parts of the towers where they occur, leaving an interval equal to the width of the tower, which space the tower will consequently occupy. The towers should be made either round or polygonal. A square tower is a bad form on account of its being easily fractured at the quoins by the battering ram; whereas the circular tower has this advantage, that when battered, the pieces of masonry whereof it is composed being cuneiform, cannot be driven in towards their centre without displacing the whole mass. Nothing tends more to the security of walls and towers, than backing them with walls or terraces; it counteracts the effects of rams as well as of undermining."

"In the construction of ramparts, very wide and deep trenches are to be first excavated, the bottom of which must be still further dug out for receiving the foundation of the wall. This must be of sufficient thickness to resist the..."
pressure of the earth against it. Then, according to the space requisite for drawing up the cohorts in military order on the ramparts, another wall is to be built within the former, towards the city. The outer and inner walls are then to be connected by cross walls, disposed on the plan after the manner of the teeth of a comb or a saw, so as to divide the pressure of the filling-in earth into many and less forces, and thus prevent the walls from being thrust out." The materials are stated to be "what are found on the spot, such as square stones, flint, rubble stones, burnt or unburnt bricks." (Book I, chapter V).

"The plan of the city should not be square, nor formed with acute angles, but polygonal, so that the motions of the enemy may be open to observation." (Book I, chapter V).

"The lanes and streets (of which no details are given) of the city should be set out, the choice of sites for the convenience and use of the state remains to be decided on; for sacred edifices, for the forum, and for other public buildings. If the place adjoin the sea, the forum should be seated close to the harbour; if inland, it should be in the centre of the town. The temples of the gods, protectors of the city, as those of Jupiter, Juno, and Minerva, should be on some eminence which commands a view of the greater part of the city. The temple of Mercury should be either in the forum or, as also the temple of Isis and Serapis, in the great public square; those of Apollo and Father Bacchus near the theatre. If there be neither amphitheatre nor gymnasium, the temple of Hercules should be near the circus. The temple of Mars should be out of the city, in the neighbouring country, that of Venus near to the gate. According to the revelations of the Horatian Haruspices, the temples of Venus, Vulcan and Mars should be so placed that those of the first be not in the way of contaminating the matrons and youth with the influence of lust; that those of Vulcan be away from the city, which would consequently be freed from the danger of fire, the divinity presiding over that element being drawn away by the rites and sacrifices performing in his temple. The temple of Mars should be also out of the city, that no armed frays may disturb the peace of the citizens, and that this divinity may, moreover, be ready to preserve them from their enemies and the perils of war. The temple of Ceres shall be in a solitary spot out of the city, to which the public are not necessarily led but for the purpose of sacrificing to her. This spot is to be reverenced, with religious awe and solemnity of demeanour, by those whose affairs lead them to visit it." (Book I, chapter VII).

It should be observed that in the Mānasāra eight distinctive plans of villages, and some twenty-five varieties of commercial cities and military forts have been described with all details. In town-planning, the Indian authority has recommended almost all the suitable designs, square, rectangular, and polygonal.
But Vitruvius recommends only the polygonal. In the matter of the disposition of temples within the city wall and outside, the two authorities very strikingly correspond. In both the treatises the fear-inspiring deities are similarly located outside the city wall.

The following seven chapters (XI—XVII) in the Mānasāra serve the purpose of a preamble to the subsequent chapters dealing with buildings. *4*

The first of these (XI) is named, Bhūmi-lamba or height of storey, in the Mānasāra. It is defined in the Kārnikāgama as the dimensions of the four sides. The contents of the chapter in the Mānasāra describe in detail the measurement of length, breadth and height of buildings of one to twelve storeys, assigned to persons of different ranks. The five forms, namely, square, rectangular, round, octagonal and oval, are prescribed for buildings of different classes, jāti, ekahanda, vikalpa and ābhāsa. These shapes are equally applicable to religious, military and residential buildings. A palace of five to twelve storeys is stated to suit the emperor or the universal monarch, highest in rank among the nine classes of kings. Residences of one to three storeys are assigned to the heir apparent and the chief eunuchies, and so on.

The title of the corresponding chapter of Vitruvius (Book VI, chapter VIII) is more significant. It is called, "Forms of houses suited to different ranks of persons." As in the Mānasāra buildings are divided exactly into five classes, though the criteria of classification are different. It is stated (Book III, chapter II) that "there are five species of temples, whose names are, Pyenostylos, that is, thick set with columns; Systylos, in which the columns are not so close; Diastylos, where they are still wider apart; Arseostylos, when placed more distant from each other......; Eustylos, when the intercolumniation......is of the best proportion." "The conditions of temples are distinguished," it is further stated (Book III, chapter I), "by their different forms. First, that known by the appellation In Antis, then the Prestylos, Peripteros, Pseudodipteros, Dipteros and Hypaethros." "Circular temples are constructed, of which some are Monopteral;......others are called Peripteral." (Book IV, chapter VIII).

As regards the distribution of buildings it is stated (Book IV, chapter III) that "temples of the Doric order are erected to Minerva, Mars and Hercules; on account of whose valour, their temple should be of masculine proportions, and without delicate ornament. The character of the Corinthian order seems more appropriate to Venus, Flora, Proserpine, and Nymphs of Fountains; because

---

*4 Of these seven preliminary chapters the twelfth, on foundation (prābhā-nyāsa), should have been in the place of the eleventh which treats of dimensions of buildings (bhūmi-lamba), as in Vitruvius's treatise.
its slenderness, elegance and richness, and its ornamental leaves surmounted by volutes seem to bear an analogy to their dispositions. A medium between these two is chosen for temples to Juno, Diana, Bacchus, and other similar deities, which should be of the Ionic order, tempered between the severity of the Doric and the slenderness and delicacy of the Corinthian order." (Book I, chapter II).

As regards secular buildings, it is laid down that "the houses of bankers and receivers of the revenue may be more commodious and elegant than those of persons of middling condition in life. For advocates and men of literature, houses ought to be still handsomer and more spacious, to suit the reception of persons on consultations. But for nobles, who in bearing honours, and discharging the duties of the magistracy, must have much intercourse with the citizens, princely vestibules must be provided, lofty atria, and spacious peristyliums, groves, and extensive walks, finished in a magnificent style. If, therefore, houses are erected, thus adapted to the different classes of society, there will be nothing to reprehend, for they will be suitable to their destination." "I have thus described," concludes Vitruvius, "the proportions of town residences as I promised. I shall now proceed to those of houses in the country." (Book VI, chapter VIII).

It is needless to point out that the subject matter of this chapter is virtually the same in both the authorities. The small differences are due to the local conditions and requirements of the two different countries.

The next chapter (XII), called Garbha-nyāsa in the Mānasāra, deals with the foundations whereupon buildings, villages and tanks are built. The foundation is excavated in the ground best suited for a structure to the depth of a man's height with uplifted arms. It is laid down that the bottom of the pit thus excavated must be rocky or watery, in other words, it must reach rock or water. It implies that the best soil for receiving foundation, when it is not erected on water, is rock, gravel or closely pressed sandy earth.

The depth of the foundation-cave is equal to the height of the basement. The four corners and sides, built of brick or stone, are equal. This cave is filled with water and ten kinds of earth; thus the earth from an ant-hill, a crab-hole, etc., is placed at the bottom, and closely pressed and hardened by means of wooden hammers shaped like the elephant's foot. Portions of certain plants are then deposited on the four sides, the root of the blue-lotus to the east, the root of the white-lotus to the south, and so on. Upon these are placed grains of ten kinds of cereals such as phascolus mungo, phascolus radiatus, dolichos uniformus, sesamun indicum, and so on. The vault is built thereon, the details of which need hardly be repeated here. Upon such *strong* foundations, the strength
whereof varies according to the weights of the buildings above, various structures are constructed.

"When we are satisfied," says Vitruvius (Book I, chapter V), "with the spot fixed on for the site of the city......their foundations should be carried down to a solid bottom, if such can be found, and should be built thereon of such thickness as may be necessary for the proper support of that part of the wall which stands above the natural level of the ground. They should be of the soundest workmanship and materials, and of greater thickness than the walls above." Importance of solid ground is emphasised and it is again stated (Book III, chapter III) "if solid ground can be come to, the foundations should go down to it and into it, according to the magnitude of the work, and the substruction be built up as solid as possible. Above the ground of the foundation, the wall should be one-half thicker than the column it is to receive, so that the lower parts which carry the greatest weight, may be stronger than the upper part......Nor must the mouldings of the bases of the columns project beyond the solid. Thus, also, should be regulated the thickness of all walls above ground. The intervals between the foundations brought up under the columns should be either rammed down hard, or arched, so as to prevent the foundation piers from swerving. If solid ground cannot be come to, and the ground be loose or marshy, the place must be excavated, cleared, and either elder olive, or oak piles, previously charred, must be driven with a machine, as close to each other as possible, and the intervals between the piles, filled with charred. The heaviest foundations may be laid on such a base."

These details are also strikingly similar in both the authorities; and this similarity seems to be due to some thing more than mere coincidence.

The next four chapters (XIII—XVI) in the Mānasāra deal with the column and its different parts, the pedestal, base, shaft and entablature, and their various mouldings. Vitruvius also treats the subject in exactly four chapters (Book III, chapter III, Book IV, chapters I—III). But the titles of the chapters are a little different; they are named in the Mānasāra, upāpiśa or pedestal (XIII), adhīsthāna or base (XIV), stambha or shaft (XV), and pratāra or entablature (XVI); and Vitruvius calls them, 'columns and their ornaments' (Book III, chapter III), 'origin of the three sorts of columns and the Corinthian capital' (Book IV, chapter I), 'ornaments of columns' (ibid, chapter II), and 'Doric proportions' (ibid, chapter III).

Vitruvius, in the Doric, Corinthian, and Tuscan orders, makes no mention of pedestals, and in the Ionic order he seems to consider them rather as a necessary part in the construction of a temple than as belonging to the order itself" (cf. Book V, chapter VII). In the Mānasāra twelve kinds of pedestals are described with detailed measurements of the various mouldings of each pedestal. A
comparison of these with similar details of pedestals, quoted in full in the writer's Dictionary from European authorities other than Vitruvius, makes it clear that the Indian pedestals surpass the Græco-Roman pedestals in variety, beauty of proportion and the richness of ornaments.

As regards the base also there is in the Mānasāra a larger variety of types, sixty-four in number, described in detail with their mouldings and ornaments. A comparison of the details gathered together in the writer's Dictionary will show that the Indian bases and pedestals are made more systematically and afford a greater variety of proportions than those of the Græco-Roman orders. In European orders the forms and dimensions of both base and pedestal are fixed by invariable rules with respect to the orders in which they are employed, while in the Indian orders the choice is left to the option of the architects.

There are, however, more similarities between the Indian and the Græco-Roman entablatures, consisting of four parts, the capital, architrave, frieze and cornice. "But the massiveness of the Indian entablature offers a striking contrast to the lightness of the Grecian." This is shewn by a comparison of details, given in the writer's Dictionary, of eight kinds of Indian and some five kinds of Græco-Roman entablatures.

But the point to be clear about is whether or not there is some fundamental resemblance between the Indian and the Græco-Roman column as a whole. This is a crucial point; because the column in a building is stated by authorities to be the regulator of the whole composition; and it is the one feature of the ancient architecture, which illustrates its rise and progress as well as its perfection and weakness.

Like the five Græco-Roman orders, called Doric, Ionic, Corinthian, Tuscan, and Composite, columns in ancient India were also divided into five classes or orders.

In the Mānasāra they are called Brahman-kānta, Vishnu-kānta, Rudra-kānta, Śiva-kānta, and Skanda-kānta. These divisions are based on the general shapes. With respect to dimensions and ornaments they are called Chitra-karṇa, Padma-kānta, Chitra-stambha, Pāṭikā-stambha, and Kumbhā-stambha.

In the Mātya-Pūrāṇa, the Bṛhat-saṁhitā, and the Kīrāṇa-tantra they are called Ruchaka, Vajra, Deva-vajra, Prālinīka, and Vṛtta. In the Suprabhado-gama the names of the five orders are Śrī-kara, Chandra-kānta, Saumukhya, Priya-dārśana, and Subhaskari. This last one is expressly stated to be the Indian composite order, being a compound (mūṣrīta) of Saumukhya and Priya-dārśana, exactly like the Græco-Roman Composite order which is a compound of Corinthian and Ionic.¹

¹ For references see page 125 and the foot notes, and the writer's Dictionary under stambha.
Between the European and the Indian columns, there is a point of difference. In the Græco-Roman orders, the names of the five orders do not vary while in India the names of the five orders have varied in various treatises referred to above. It is true, all the same, that the criteria of divisions are essentially the same in all these authorities. The variation of the names of the five orders can perhaps be explained. The names of the Græco-Roman orders, according to Vitruvius and other European authorities referred to in the Encyclopædia of Architecture by Gwilt, are geographical.

In India, on the other hand, the names of the orders were based on the shapes of the columns. And as the Indians are comparatively more religious and sentimental than critical in temperament and imagination, they chose mythological and poetical names according to the spirit of the times, when these various works were composed. Thus in the Mānasāra we see the orders bearing the names of mythological deities, Brahmā, Vishnu, Rudra, Śiva, and Skanda; as well as the poetical names like Chitrapāla (variegated ear), Chitraskambha (variegated capital), Padma-kānta (graceful like lotus), Kumbha-stambha (of jug-shaped capital), and Pālīkā-stambha (shaped like a measuring pot). In the Agama, the names are more poetical: Śrīkara (beautifying), Chandra-kānta (graceful like the moon), Saumukhya (of a charming face), and Subhākara (auspicious). In the Purāṇa, the Bṛhad-samhitā, and the Kīrṣṭa-tantra, the names combine beauty and utility—Ruchaka (pleasing), Vrītta (round and dignified), Vajra (beautiful and solid like the club), Devi-vajra (doubly so), and Pralīna-ka (firmly attached).

With regard to the names and functions of the component parts of the column the variation is a little less marked. The number of these subservient parts, called mouldings and common to all orders, is very significant. Thus in the Mānasāra, which, of almost all the treatises, deals separately and exhaustively with the pedestal, the base, the column or shaft, and the entablature, mention is made, in connection with the pillar, of five mouldings apparently of the shaft. They are called bhedikā, musti-bandha, phalakā, tāqīka, and ghaṭa. But the total number of mouldings, when the base, pedestal, and entablature are also taken into consideration, is forty-seven. The Śrīvibhaktāgama describes two sets of seven mouldings, one set referring to the column of the main building and the other to that of the pavilion. They are called respectively danda, manda, kaṇṭha, kumbha, phalakā, vīra-kaṇṭha and potikā; and bhediḥa, uttara, vājana, mūradhiḥa, tulā, jayanti and tala.

1 See page 125, note 1. The contents of the four following para are referred to in more detail elsewhere in this book (p. 125 f.); their repetition here is felt unavoidably necessary.
This increasing number of mouldings has reached the significant number of eight in the Matsya-Purāṇa, the Brihat-samhitā, and the Kirana-tantra, and bears the very same eight names—vāhana, ghaṭa, padma, uttaroshṭha, bāhula, hūra, tulā, and upa-tulā.

The component mouldings of the Greco-Roman orders are also exactly eight in number, and like the five orders themselves their names have remained invariable ever since their introduction, though most of them have been given more than one name. They are called (1) the ovolo, echinus or quarter round; (2) the talon, ogée, or reversed cyma; (3) the cyma, cyma-recta, or cymatium; (4) the torus; (5) the scotia or trochilus; (6) the cavetto, mouth, or hollow; (7) the astragal, and (8) the fillet, listel, or annulet.

Some of the eight mouldings of the Indian order can be identified, with a reasonable certainty, with the corresponding mouldings of the Greco-Roman order. Padma, for instance, implies lotus (petal), and cyma also suggests the same thing. Uttaroshṭha, literally the lower lip, and the cavetto, mouth or hollow are apparently the same. Hūra, meaning chain, seems to imply the same object as the torus, bend, or astragal. Ghaṭa means a pot; it may correspond to the ogée, talon or reversed cyma. Vāhana is that which supports anything, and the abacus also serves the same purpose; so they may correspond to each other. Tulā and upa-tulā otherwise called vājana and uttarā seem to correspond to the fillet, listel or annulet.

The proportionate measurement of the columns is another important point of comparison. The details are discussed in the writer's Dictionary. The first Indian sort is six diameters high, the second seven diameters, the third eight diameters, the fourth nine diameters, and the fifth ten diameters high.

"Concerning the proportions of columns," says Rām Rāz (page 38), "the second sort of column in the Hindu architecture may be compared with the Tuscan, the third with the Doric, the fourth with the Ionic, and the fifth with the Corinthian or Composite pillar." He further adds that "there are other columns in the Indian architecture, not only one diameter lower than the Tuscan, but one to two diameters higher than the Composite." The same is also the case with the European columns. "The orders and their several characters and qualities," says Gwilt (2588), "do not merely appear in the fixed species of columns into which they have been subdivided, but are distributed throughout the edifices to which they are applied."

"Both the Indian and Grecian columns are diminished gradually in their diameter from the base to the summit of the shaft, a practice which has never been observed in the Egyptian; on the contrary, a diametrically opposite rule has been observed in their shafts, which are made narrower at the bottom than at the top... The proportion in which the diminution at the top of the columns of the two former (Indian and Greco-Roman) is not seen to have been regulated by the
same principle, though not by the same rule. The general rule adopted by the Hindu architects in this respect is that the thickness at the bottom, being divided into as many parts as there are diameters in the whole height of the column, one of these parts is invariably diminished at the top; but in the Grecian and Roman architecture, the diameter of the upper part of the shaft, in a column of fifteen feet in height, is made one-sixth less than its thickness at the base; and in a column of fifty feet, the diminution is one-eighth. The higher the columns are, the less they diminish, because the apparent diminution of the diameter in columns of the same proportion is always greater according to their height, and this principle is supposed to have been discovered with greater scientific skill, and is adduced as one of the proofs of the highly refined taste of the Greeks; but we observe that precepts derived from the same principle have been taught and practised in India from time immemorial.

The point at issue is not the actual identification. The striking similarities in the names of the mouldings, like padma or cyma, hûra or bead, or in the names of orders like the Mitrita or Composite, may sometimes be attributed to inexplicable coincidence. But in view of other striking similarities between Vitruvius and the Mûnasâra, such as the classification of orders into exactly five, and the division of subservient parts, called mouldings, common to all the orders, into eight, and also the proportionate measurement varying equally from six to ten diameters, and tapering almost in the same way, there would seem to have been something more substantial than mere coincidence. An influence, direct or indirect, of the one upon the other, seems highly probable. I venture to think, further, that there might have been a relation of indebtedness between the two authorities.

The concluding chapter (XVII) of this section in the Mûnasâra deals with joinery. No separate treatment has been accorded by Vitruvius to this subject.

The next chapter (XVIII) in the Mûnasâra is a summary of details concerning buildings of various storeys and kinds described in chapters XIX—XXX. The following chapters, XXXI—XXXVI, deal with attached buildings of various descriptions and requirements. Chapter XXXVII refers to the first entry into a newly-built house. Doors are separately described in two chapters, XXXVIII—XXXIX; also the royal palaces and courts are described in chapters XL—XLII. Cars and chariots, couches and thrones are treated in the next three chapters, XLIII—XLV. Arches are separately described in chapter XLVI, so also the theatre (Madhya-râga) is treated in chapter XLVII. And this architectural portion of the Mûnasâra ends with the description of ornamental tree (chapter XLVIII), crowns (chapter XLIX), and ornaments and articles of furniture (chapter L).

1 For more details see pages 47—70.
The sculptural portion of the work (chapters LI—LXX) deals with the art of carving and measuring images. This portion practically comprises illustrations of the tāla measures. Vitruvius, as we shall show presently, has not treated the subject separately; he has mixed it up with the architectural description.

With regard to these subjects the comparison between the Mānasāra and Vitruvius need not be lengthy. Both these authorities in matters of detail must necessarily differ from each other even if one were translated from the other, because the local conditions and national requirements are entirely different regarding not only residential buildings but also temples. On the broad lines of methods and principles, however, the comparison can be briefly continued in the expectation of fruitful results.

Thus, in the Mānasāra, the whole compound of the house is divided into five courts (chapter XXXI), each of which is furnished with a gate-house (chapter XXXIII), and a large number of detached buildings are also built within each court (chapters XXXII, XXXVI, XIX—XXX).

Vitruvius also divides the compound into exactly five courts, which are, however, not used simultaneously (Book VI, chapters III—VII). "There are," says Vitruvius, "five species of courts, which receive their names from their forms. The Tuscan, the Corinthian, the Tetrastyle (with four columns), the Displuviatum (open at the top), and the Testudinatum (roofed)." In the Mānasāra also, it should be noted, five technical names have been given to these five courts, antar-mandala (innermost court), antanihāra (the second court), madhya-nihāra (the middle court), prākāra (the fourth court) after which the chapter has been named and which is stated to be first introduced in the Mānasāra, though as many as seven courts are described in the Myichchhakatīka. The fifth one is called mahā-maryāda or extreme boundary. Thus in the Mānasāra the courts receive their names from their situation, and not from their forms. Forms are discussed in the Mānasāra also. In fact the treatment of this subject, like all others, is by far the more exhaustive in the Mānasāra. Even the five gate-houses of the five courts have been treated at great length in a separate chapter (XXXIII) and given five technical names, dvāra-labhā (beauty of the gate) belonging to the antar-mandala or first court, dvāra-tēla (lit., 'gate house', of the second court), dvāra-prāsāda (lit., edifice of the gate), dvāra-haryā (lit., palace of the gate), and mahā-gopura (lit., great gate-house).¹

Within these courts, buildings of different requirements have been similarly distributed by the two authorities. For instance, in the Mānasāra, chapter XXXVI is called Griha-māna-sthāna-vinyāsa, literally meaning, 'location and measurement of house', and chapter XXXII is called parisāra-vidhāna, meaning, 'the

¹ For references see pages 51, 52.
buildings for the members of the family" (of gods). The corresponding chapters (Book VII, chapters I, II, IX) are named by Vitruvius "situation of buildings according to the nature of different places," "proportions of private buildings to suit the nature of the sites," and "proportions of houses in the country." Detached buildings, situated both within the compound and outside, have been described in the Mānasāra in two very long chapters XXXIV, XXXV) called Mandapa and Sālā. The term Mandapa is used to imply, first, a house or pavilion set up in a village or on the bank of a sea, river, tank or lake; secondly, all the detached buildings within a compound which is divided into five courts; lastly, it implies various sorts of rooms in a temple or residential building. Sālā also implies almost the same kinds of buildings; but they are more commodious, and their forms and twelve storeys are taken into special consideration. Chapter VI (Book I) called by Vitruvius "distribution and situation of buildings within the walls" may be compared with 'Mandapa' and 'Sālā' with respect to general principles and methods. But Vitruvius's treatment of the subject is comparatively brief. The brevity of his account of individual buildings also becomes obvious when the 'arrangement and parts of Grecian houses' and 'interior of the cell and the arrangement of Pronaos', described in two small chapters (Book VI, chapter X, Book IV, chapter IV), are compared with the exhaustive description of similar subjects detailed in some thirteen chapters (XVIII-XXX) in the Mānasāra.

Doors are separately described by both the authorities. Vitruvius calls the chapter "Proportions of the doors of temples" (Book IV, chapter VI). In the Mānasāra the subject is treated under two chapters (XXXVIII, XXXIX), called Deāra-sthāna (location of doors) and Deāra-māna (measurement or proportions of doors). Both the authorities classify doors under three species. Vitruvius calls them Doric, Ionic, and Attic; and in the Mānasāra they are called Chhanda, Vikalpa, and Ābhāsa. Here is a striking point of similarity with respect to an important omission. In the Mānasāra the Jāti class always goes with the other three classes mentioned here. Vitruvius has also omitted Corinthian and Tuscan which generally go with Doric and Ionic. In the Mānasāra the height of the door is stated to be, as a general rule, twice its breadth. "Their width," says Vitruvius, "is found by dividing the height into two parts and a half, and taking one and a half for the width below." Single folded as well as double-folded doors are mentioned in the Mānasāra. Vitruvius has also referred to four-fold doors. Indian doors are decorated with foliated and floral ornaments, as well as with the images of deities. "These doors," says Vitruvius, "are not to be inlaid cerestra in two folds, but single folded, and to open outwards." According to Vitruvius doors are generally constructed in the middle of the
front wall. But according to the Mānasāra doors may also be constructed sometimes not in the centre of the frontage, but on either side of the middle.

Windows are not separately described by Vitruvius. But in the Mānasāra a long account of them has been given at the end of chapter XXXIII; similarly an account of stair-cases, omitted by Vitruvius, is found in the Mānasāra at the end of chapter XXX. No separate mention has also been made by Vitruvius of arches, to which subject an entire chapter (XLVI) has been devoted in the Mānasāra. Vitruvius has left out the accounts, given in the Mānasāra, of cars and chariots (chapter XLIII), couches (XLIV), thrones (XLV), crowns (XLIX), ornaments of the body and articles of house furniture (M. LI), as well as the ornamental tree (XLVIII).

In the Mānasāra, on the other hand, a very brief reference is made to an object resembling a theatre, to which Vitruvius has devoted several chapters (Book V, chapters III—IX). Vitruvius has not treated separately the royal palaces found in the Mānasāra (chapters XL—XLII), nor does the Mānasāra contain any account of his special buildings, such as 'Forum and Basilica,' 'Treasury, Prison, and Curia,' 'Harbours and other buildings in water' (Book V, chapters I, II, XII). Building materials, though frequently mentioned, are not described in the Mānasāra under separate chapters. Vitruvius has devoted some eight chapters (Book II, chapters III—X) to the subject of building-materials, namely, bricks (compare the Mānasāra, chapter XII, last part), sand (M. XII), lime (M. LI), Pozzolana, stone quarries (M. XV), timber (M. XV) and fire, called Supermas and Infernas, and the Apennines.

Vitruvius deals with painting and preparations of colours in the larger part of a book (VII) of fourteen chapters. This subject, as well as Vitruvius's books (VIII—X) on Instruments, Machines and Engines, have no place in the Mānasāra. In place of these matters, some twenty chapters (LI—LXX) of the Mānasāra have been devoted to sculptural matters to which only the following brief and casual reference has been made by Vitruvius (Book III, chapter I):

"In truth they (symmetry and proportion) are as necessary to the beauty of a building as to that of a well formed human figure, which nature has so fashioned, that the face, from the chin to the top of the forehead, or to the roots of the hair, is a tenth part of the height of the whole body. From the chin to the crown of the head is an eighth part of the whole height, and from the nape of the neck to the crown of the head the same. From the upper part of the breast to the roots of the hair a sixth, to the crown of the head a fourth. A third part of the height of the face is equal to that from the chin to the under side of the nostrils, and thence to the middle of the eyebrows the same; from the last to the roots of the hair, where the forehead ends, the remaining third part. The length of the foot
is a sixth part of the height of the body. The fore-arm a fourth part. The width of the breast a fourth part. Similarly have the other members their due proportions, by attention to which the ancient painters and sculptors obtained so much reputation.

"The navel is naturally placed in the centre of the human body, and if, in a man lying with his face upward, and his hands and feet extended, from his navel as the centre, a circle be described, it will touch his fingers and toes. It is not alone by a circle that the human body is thus circumscribed, as may be seen by placing it within a square. For measuring from the feet to the crown of the head, and then across the arms fully extended, we find the latter measure equal to the former; so that the lines at right angles to each other, enclosing the figure, will form a square."

"If nature, therefore, has made the human body so that the different members of it are measures of the whole, so the ancients have, with great propriety, determined that in all perfect works, each part should be some aliquot part of the whole; and since they direct that this be observed in all works, it must be most strictly attended to in temples of the gods, wherein the faults as well as the beauties remain to the end of the time." This is all about the defects, to which in the Mānasāra practically a whole chapter (LXIX), one of the two concluding chapters of the work, is devoted. It is called Aṅga-dūshana, literally, 'defects of the limbs.' In both the authorities the subject is discussed in connection with sculptural objects, but curiously enough, defects and consequent penalties concerning images and idols have been entirely left out both by Vitruvius and the Mānasāra. Both the authorities have referred to the subject as concerning buildings only. This sort of similarity can hardly be due to mere coincidence.

"It is worthy of remark," says Vitruvius, "that the measures necessarily used in all buildings and other works, are derived from the members of the human body, as the digit, the palm, the foot, the cubit, and that these form a perfect number, called by the Greeks Tēleios." Phonetically this sounds like what the Indians call Tāla; and there is a similarity in meaning also. In the above quotation Vitruvius has briefly referred to only the eighth variety with which the male human figure is measured also by the Indian authorities. Details of the tāla measures given in the writer's Dictionary need not be repeated here. It should also be noted that in both the authorities the face from the chin to the top of the forehead is taken as the standard of all the tāla measures which number ten in the Mānasāra.  

---

1 Tēleios is an adjective from tēlos, meaning end, and tāla is derived from tāla and implies the distance between the ends of two fingers (see page 123).

2 See page 123 above.
The last point of comparison between Vitruvius and the Mānasāra is in respect of the linguistic style. We have already pointed out that Silpa-śāstras or architectural treatises in India were written in a very peculiar style. Sanskritists like Dr. G. Bühler and Sir R. G. Bhandarkar have truly branded it as the 'most barbarous Sanskrit.' This remark really means that all possible sorts of violation of the rules of grammar and rhetoric have been committed in the language of the Silpa-śāstras. The matter has been discussed elsewhere in great detail, which need not be repeated here. One of the theses presented by the writer before the Leiden University and passed in his favour by that learned assembly after long discussion was this:

"The ungrammatical style of Sanskrit revealed in the branch of literature of which the Mānasāra is a representative, is due to the want of literary proficiency on the part of the professional architects who seem to have been the authors of it." With this the following apology, for ungrammatical style, of Vitruvius may very fruitfully be compared:

"I beseech you, O Caesar," says Vitruvius, "and those who read this my work, to pardon and overlook grammatical errors; for I write neither as an accomplished philosopher, an eloquent rhetorician, nor an expert grammarian, but as an architect: in respect, however, of my art and its principles, I will lay down rules which may serve as an authority to those who build, as well as to those who are already somewhat acquainted with the science." (Book I, chapter I).

I cannot help thinking that if the writers of the Silpa-śāstras generally, and the author of the Mānasāra in particular, were conscious of the nature of their style they would certainly have added to their treatises an apology like that of Vitruvius.

There is yet another curious similarity between Vitruvius and the Mānasāra. It is regarding the titles of both the works. Both are hidden in a mystery. Vitruvius's work bears practically no title. It is called by his translators 'The architecture of Marcus Vitruvius Pollio.' It has been pointed out in the Preface that the term 'Mānasāra' also admits of various interpretations. For a sage, Mānasāra is a very unfamiliar name. No such sage is mentioned in the various branches of Sanskrit literature except in this newly discovered Vāstu-śāstra. A king of Malwa, however, bore this name. As a derivative name, Mānasāra, meaning essence of measurement, and suitable for the title of a work like this, has some philological resemblance with mensuration. The derivative meaning of the term 'Vitruvius' is uncertain. The point, however, to which attention is invited, is the curious similarity between the treatise of Vitruvius and the Mānasāra in respect of the uncertain signification of their titles.
There is also an uncertainty lurking over the ages in which the architecture of Vitruvius and the Mānasāra were composed. It is likely that the former was composed twenty-five years before the Christian era. This conjecture is based mainly on Vitruvius’s mention of his patron, Julius Caesar. But there is no mention of anybody under whose patronage the Mānasāra might have been composed.

The similarities so briefly outlined will be more convincing to those who have carefully studied both Vitruvius and the Mānasāra.

Those who are, however, inclined to think like myself and refuse to attribute all these affinities to mere chance, will be anxious to find out the connecting link between the two authorities. The question was put before the Oriental Conference held in Calcutta in January, 1922, to point out the link about the existence of which there seems no reasonable doubt. A learned discussion was held on the paper but no suggestion was received on this point.

There is the expedition of Alexander the Great to explain the Grecian influence on the Gāndhāra sculpture. The Questions of Menander may perhaps stand for the title Milinda-pañha. There is again the Romaka-siddhānta to indicate the influence of the Roman astronomy upon the Indian Jyotisha-stāstra which had, however, already established itself as one of the six essential limbs of the Veda, the most ancient extant lore of human learning. Similarly the art of building, which is intimately connected with all living beings, was developed by the ancient Hindus at the early Vedic period. But the Silpa-stāstra, which is but an analysis and commentary of the art, was necessarily evolved much later. There are reasons to think that the Mānasāra is not the first work in which the ‘essence of measurement and the system of proportions’ were codified in the form of Sāstra, though this may be the standard treatise.

‘Until the missing link is found out, it is, however, possible to think that there was some work or works, or some floating traditions, which influenced both treatises. It will, therefore, serve no useful purpose in trying to further develop the nature of the various similarities between Vitruvius and the Mānasāra. I would not, therefore, hazard an opinion at present as to the precise nature of the connection between these two treatises There are arguments which might support a claim of priority on behalf of either work. I shall be content, for the present, if the learned world be convinced that there are undeniable similarities between the two standard works and that these affinities do not seem to be accidental.
AGE OF THE MĀNASĀRA

In trying to establish, in the preceding section, a relation of influence between Vitruvius and the Mānasāra, one of my objects was to find out a land-mark for the latter, as the date of the former is known approximately.

"From the fragments of inscriptions relative to the Vitruvia family found in the neighbourhood of Farmiae (the present Mola di Gaeta), it has been presumed without a great stretch of probability, that it was in this territory Vitruvius was born. The age in which he lived was doubtless between the time of the death of Julius Cæsar and the battle of Actium, though some have assigned it to the reign of Titus. But his omission of the mention of a great number of magnificent buildings, erected after the time of Augustus, and his especial mention of the theatre of Pompey as the only one of stone, sufficiently prove that such a conjecture is not warranted by circumstances. The dedication, moreover, points to Augustus as the patron of Vitruvius, and the incident of C. Julius, the son of Masanissa, who was born in the army of Julius Cæsar, having lodged with him, as related in the third chapter of his eighth book, seems clearly to indicate the time of his existence. It is likely that the following treatise (of Vitruvius) was composed when he was advanced in life, and that it was presented to his patron after he had assumed the title of Augustus, that is, twenty-five years before the Christian era, inasmuch as he speaks of a temple erected to Augustus, in his Basilica at Fano."¹

The other land-mark may perhaps be supplied by the following thesis admitted by Leiden University. "There seems to have been a relation of indebtedness between the Mānasāra, on the one hand, and on the other hand, the architectural portions of the Agni-purāṇa, the Garuḍa-purāṇa, the Matsya-purāṇa and the Bhavishya-purāṇa, the Kāmikāgama, the Upabhogadgama, and the Brihat-samhitā." The reasons for and the arguments in favour of such a belief have been discussed in great detail elsewhere,² and need not be repeated here. For further scrutiny and more minute comparison, the Brihat-samhitā of Varāhamihira, one

¹ Prof. Gwilt, Preface, xii.
² See pages 110-181.
of the nine gems at the court of a mythical Vikramāditya, is selected. Professor Kern has given a probable date, 550 A. D., to the Brāhmat-samhitā. The ages of the Purāṇas and the Āgamas mentioned in the thesis are more conjectural.

Although primarily not a treatise on architecture the Brāhmat-samhitā has devoted five chapters (LIII, LVI, LVII, LVIII and LXXIX) to this art. Three of these, called Vāstu-pidā or the science of architecture, Prasāda-lakṣaṇa or the description of temples under twenty types, and Sayyāsana-lakṣaṇa or the description of bedsteads and couches, deal with architecture proper; and the other two, called Vajrapā or the first casting of images and Pratvā-lakṣaṇa or the description of images, briefly refer to sculpture. The following similarities between the Mānasāra and Brāhmat-samhitā may be noticed:

<table>
<thead>
<tr>
<th>Origin and development of the science of architecture</th>
<th>Mānasāra</th>
<th>Brāhmat-samhitā</th>
</tr>
</thead>
<tbody>
<tr>
<td>I, 1.</td>
<td>LIII, 1.</td>
<td></td>
</tr>
<tr>
<td>III.</td>
<td>LIII, 2–3 (details differ).</td>
<td></td>
</tr>
<tr>
<td>VII.</td>
<td>LIII, 42–69, 83–84.</td>
<td></td>
</tr>
<tr>
<td>VIII.</td>
<td>LIII, 99–100.</td>
<td></td>
</tr>
<tr>
<td>XI.</td>
<td>LIII, 4–26; LVI, 29–30.</td>
<td></td>
</tr>
<tr>
<td>XVIII.</td>
<td>LVI, 3–8 (site), 9 (ground), 10–16 (general), 17–19 (twenty types).</td>
<td></td>
</tr>
<tr>
<td>XIX.</td>
<td>LVI, 23, 26.</td>
<td></td>
</tr>
<tr>
<td>XXIII.</td>
<td>LVI, 27.</td>
<td></td>
</tr>
<tr>
<td>XXIV.</td>
<td>LVI, 22.</td>
<td></td>
</tr>
<tr>
<td>XXV.</td>
<td>LVI, 24.</td>
<td></td>
</tr>
<tr>
<td>XXVI.</td>
<td>LVI, 21.</td>
<td></td>
</tr>
<tr>
<td>XXVIII.</td>
<td>LVI, 20.</td>
<td></td>
</tr>
<tr>
<td>XXXIII.</td>
<td>LIII, 118.</td>
<td></td>
</tr>
<tr>
<td>XXXIV.</td>
<td>LIII, 70.</td>
<td></td>
</tr>
</tbody>
</table>

The existence of these gems as contemporaries has been held to be untenable.

This refers to Kern's edition published by A. S. Great Britain and Ireland. In some other editions, for instance, in that of Sudhākara Drivedi, Benares, Vikrama era 1658, these chapters have got a different numbering. Our references to the Brāhmat-samhitā are mostly to Kern's edition.
<table>
<thead>
<tr>
<th><strong>Manasāra</strong></th>
<th><strong>Brīhat-samhītā</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceremonial entry into a newly-built house</td>
<td>XXXVII. LIII, 125.</td>
</tr>
<tr>
<td>Situation and measurement of doors</td>
<td>XXXVIII. LIII, 26—27, 70—82; LVI, 10, 12—16.</td>
</tr>
<tr>
<td>Phalli</td>
<td>LII. LVIII, 53—55.</td>
</tr>
<tr>
<td>Images of female deities</td>
<td>LIV. LVIII, 56.</td>
</tr>
<tr>
<td>Images in general</td>
<td>LXIV. LVIII, 31—52, 57—58 (ends abruptly)</td>
</tr>
<tr>
<td>Largest type of ten tāla measures</td>
<td>LXV. LVIII, 4—30.</td>
</tr>
<tr>
<td>First casting of images</td>
<td>LXVIII. LVIII, 1—8.</td>
</tr>
</tbody>
</table>

An elaborate discussion has already been introduced regarding the types of buildings\(^1\) and the five orders\(^2\). Two other points of special interest and general importance may be elaborated here.

The ground plans are treated under twenty-four schemes in the *Manasāra*. Of these, descriptions in detail are given of the eighth and the ninth schemes which consist respectively of sixty-four and eighty-one squares. In the *Manasāra* it is stated, by way of explanation, that these two plans were much in use. Varāhamihira also has described only these two plans. In the *Brīhat-samhītā* there is not the slightest reference to the other twenty-two schemes. As is usual with him, Varāhamihira has changed the names or location of the squares here and there. Another striking point of similarity is that only the square plans are described in both the treatises, although in the *Manasāra* five shapes or forms are given to the buildings. Varāhamihira also has referred to the round type of buildings. Corresponding to these shapes there should be the ground plans also. But these are unexpectedly missing in the *Manasāra* and also in the *Brīhat-samhītā*. But the details of round or circular plans and also of triangular plans, both consisting of eighty-one squares, have been quoted from a mythical Bharata-muni by Bhaṭṭotpala, a commentator of the *Brīhat-samhītā*. So in matter of such a striking omission also Varāhamihira seems to have faithfully followed the *Manasāra*, Garga, or whatever else his sources might have been.

The other point proposed to be discussed here is that concerning the sources of the *Brīhat-samhītā* in architectural matters. Varāhamihira says that the science of architecture has come down to him from Brahmā (Kamalabhā) through several generations of sages. He further admits that all matters relating to

---

\(^1\) See pages 111—119.  
\(^2\) See pages 125—128, 140—152.
architecture are taken from Garga, and small portions of the architectural treatises of Manu and others have been put in from memory.¹

The names of the sages passed over here may be gathered together from casual references. Mention is made of Vasishtha, Maya, Visvakarman, Bhāskara and Nagnajit.² The Purānas are not mentioned by Varāhamihira. But some of the Purānas are no doubt earlier than the Brihat-samhitā.³

It has been shown that with regard to the technical names and other details of the twenty types, under which temple-buildings are described, the Matsya-purāṇa (chapter 269, verses 23–53), the Bhavishya-purāṇa (chapter 130, verses 27–35), and the Brihat-samhitā (chapter 56, verses 20–28) are identical.⁴ The Bhavishya-purāṇa (chapter 130, verses 15–26, 36–37, 27–35) can be read, letter for letter, in the Brihat-samhitā (LV 8–19, 30, 20–28). When verses 22 and 36–37 of the former are compared with the identical verses 15 and 29–30 of the latter, it seems as if Varāhamihira were the debtor.⁵ It should be noted that the linguistic defects of the Bhavishya-purāṇa are removed in the Brihat-samhitā.

¹ See page 194.
² See pages 114–118.
³ See pages 114–118.
⁴ See pages 114–118.
⁵ See pages 114–118.
Similar illustrations can be drawn from the *Matsya-purāṇa* and the *Bṛhat-samhitā* also. For instance of the former verses 2 (chapter 255), 19 and 20 (chapter 270) can be compared with the latter in respect of LIII, 28 and LVI, 12, 13. Varāhamihira's is apparently the improved version in the revised edition. On this ground one is tempted to place these Purāṇas before the *Bṛhat-samhitā*. But Varāhamihira himself has not admitted his debt to these authorities. In these circumstances priority might be claimed for him.

There is one other point, which deserves special notice. In the *Matsya-purāṇa* eighteen professors of the science of architecture are mentioned, namely, Bhrigu, Atri, Vasishṭha, Viṣvakarman, Maya, Nārada, Nāgajīta, Viśālaksha, Purandara, Brahman, Kumāra, Nandiśa (Śiva), Śannaka, Garga, Vāsudeva, Aniruddha, Śukra and Vṛhaspati. Of these eighteen professors, Garga, Maya, Viṣvakarman, Vasishṭha

and नेवें महत्त्वप्राप्तेः प्रेमसाधीः स्वत्सैर्येभि:।

मिन्ते: पश्चादतोसिः प्रदेशाभोविषयमेवं || 15.

सारे हस्तनृत चैव कथितं विष्णुमैत्रा || 29.

प्रादु: व्यापतयाचार मयमेवं विशिष्टितिः।

कपोलपालिनंयुक्ता न्यूना महत्तित्तुल्यताम || 30.

हर्षकिन्तु: स्यान्तवर्त्तो वज्रोद्ध्वते || 255, 2.

and सम्यव्यङ्ग्यम रक्षेण वज्रोद्ध्वते: । LIII, 28.

विस्तारार्थों मद्वेदवर्गम विनियोजना: समस्त:।

गम्भीरेण विलक्षणं द्वारं चिमुकाणयम || 270, 19.

and विस्तारार्थों मद्वेदवर्गम विनियोजना: समस्त:।

गम्भीरेण विलक्षणं द्वारं चिमुकाणयम || LVI, 12.

again तथा द्विपर्यावस्तोकमोऽवस्तुदुस्मयः।

विस्तारपात्प्रवृत्तम बाहुमय: शाख्ययेः: स्तुतम || 270, 20.

and उच्चारायात्पातं विलक्षणं शाख्यता तद्वृद्धयः।

विस्तारपात्प्रवृत्तम बाहुल्यशाखयेः: स्तुतम || LVI, 13.


Compare:

इति प्रस्तुतं स्वस्त्वस्तसास्तं पुरुर्गार्थ चोरस्ते।

गर्भात्मकः प्रक्षसास्तायो वृहदयः।

वृहद्योन्याश्वकः प्रतिवासु वास्तुशाक्षः।

स एव विजयकअजयं जगते हितायांकृतिश्चरणः।

वासुदेववादिपुरुष: वृमि:प्रकर्मच: संक्तित्वाविद्यां।

[Vīva-karma-prakāśa, Benares, 1885. XIII, 25—27].
and Naguajit have also been mentioned in the *Brihat-samhita*. Varāhamihira, the author of the *Brihat-samhita*, has included Bhāskara and Manu, who are not met with in the *Matsya-purāṇa*. The identity of these mythical sages is a vexatious matter in Sanskrit literature. One Bhāskara or Bhāskarāchārya was the author of the *Lilāvatī* and the *Siddhānta-siromani*. Of Manu, we shall presently speak more. But the *Matsya-purāṇa* does not include these names in its lists, nor does it mention Varāhamihira.

In the *Mānasāra* there is a list of thirty-two authorities, namely, Viśvakarman, Viśveśa, Viśva-sāra, Prabodhaka, Vṛita, Maya, Tvashṭar, Manu, Nala, Māna-vid, Māna-kalpa, Māna-sāra, Māna-bodha, Prashṭar, Viśva-bodha, Nayu, Ādisa, Viśala, Viśva-kāṣṭyapa, Viṣṭu-bodha, Mahātantra, Viṣṭu-vidyāpati, Parāśariyaka, Kāla-yūpa, Chaitya, Chitraka, Āvarya, Sādhakasāra-saṃhitā, Bhānu, Indra, Lokajña, and Saura. In the opening verse it is stated that the science of architecture has come down to the sage Mānasāra from Śiva, Brahmā and Vishnu, through Indra, Brihaspati, Nārada and all other sages. In a mythical genealogy of the artists it is further stated that from the four faces of Brahmā originated the four heavenly architects, namely, Viśvakarman, Maya, Tvashṭar, and Manu. Their four sons, called respectively, Sthapati or the chief architect, Sūtra-grāhin or the designer, Vardhaki or the painter, and Takshaka or the carpenter, represent the guild of the modern architects.1

It should be noted that Viśvakarman, Maya, Manu and Tvashṭar are mentioned twice, once to represent the heavenly architects, and again as modern architects. In the same sense Indra is also mentioned twice.

Viśva-karman and Maya, to whom many extant architectural treatises are ascribed, are common in the *Mānasāra*, the *Matsya-purāṇa*, and the *Brihat-samhita*. The *Mānasāra* and the *Matsya-purāṇa* have, therefore, in common five authorities, namely, Brihaspati, Indra under the name Purandara in the *Purāṇa*, Viśālakṣa alias Viśala in the *Mānasāra*, Viśva-karman, and Maya. The *Mānasāra* and the *Brihat-samhita* have in common Viśva-karman, Maya and Manu.

1 Chapters, LXVIII, I, II; see pages 96, 34, 35.
Visvā-karman, etymologically implying the Creator of the universe, is more or less a professional name for an architect. Manu is less so. This is a generic name. Mention is made of fourteen Manus, namely, Svāyambhuva, Svārochisra, Auttami, Tāmasa, Raivata, Chākshusha, Vāivasvata, Sāvarni, Daksha-sāvarni, Brahma-sāvarni, Dharma-sāvarni, Rudra-sāvarni, Rauchya-daivasvarṇi, and Indra-sāvarṇi. Manu is a sort of second Creator, the Indian Adam, representative of man and father of human race. It seems, however, clear that there must have been an architect Manu also in the ordinary sense of the term, because with him several architectural works are associated. He is stated in the Rāmāyaṇa to have built the ancient city of Ayodhya, the capital of king Rāma.

Maya is a more historical person. Several existing architectural treatises are ascribed to him. He may not be as old as the Zend Avesta. Ahura-Mazda and Maya-Asura are perhaps not one and the same person. But he is mentioned in unmistakable terms as the architect of a wonderful council hall, of which it is stated there could not be any parallel in the world of the mortals, and wereon all heavenly ideas were depicted in bricks and stones. He declares himself as a great post of architecture (mahākavi), a Ruskin, among the rivals of gods, and he is their Visvakarman who was the heavenly architect among the gods.

Footnotes:
1 Manusamhitā I, 63.
2 See the writer's Dictionary, Appendix I, where a note on the latest discoveries of the Maya civilization in America is also given.
3 Mahābhārata, Sāhā-parvan, chapter 1, 5, 9-12.

The famous commentator Nīlakṣaṇa adds the following note:
Like Manu, Maya is also a generic name. He is also known by some other personal names. So the Maya of the Mānasāra, of the Matsya-purāṇa and of the Brihat-samhitā may not be one and the same person. It is just possible that there might have been a Maya, who borrowed from or based his treatise in any case upon the Mānasāra. In fact it is perfectly clear from the list of authorities quoted from the Mānasāra that there must have been at least one more Mānasāra, from whom or from which our Mānasāra has borrowed. It has also been pointed out that the term Mānasāra has been used to imply both a person and a treatise. The uncertain identities and the confusing chronology are indeed stumbling-blocks in the field of Sanskrit researches.

In all items of comparison between the Mānasāra and the cognate works, we have seen that the Mānasāra contains fuller lists. In the present instance also there are more than thirty-two authorities mentioned in the Mānasāra, while the Matsya-purāṇa is content with a list of eighteen, and the Brihat-samhitā has specified only seven. But none of these three treatises has admitted the authority of either of the other two. From this it would appear as if they were quite ignorant of the existence of one another, being separated by an insuperable gap in time or space. But such a relation is untenable. I should say improbable, between the Matsya-purāṇa, the Bhavishya-purāṇa and the Brihat-samhitā in any case, unless however we choose to suppose that there might have been an unknown authority or some floating tradition, by which these treatises have been influenced in the same way even to the extent of chapter and verse, but without any knowledge of one another. But I have failed to satisfy myself with such a hypothesis. For we have seen identical passages in these works. All these three contain the same list of twenty types of buildings bearing the same technical names, and identical in other details. Buildings are described under certain types in all the architectural works. Their technical names have no signification. Unless one list is copied from the other, these names need not be identical. In fact such is the case with regard to the fuller list in the Mānasāra. Therein we have seen ninety-eight types of buildings described under more architectural divisions and with fuller architectural details.

विद्यां केरेति साध्यं बस्य स बिज्ञकमि | महाकविः शिक्ष्यते विद्याः | शास्त्रं मानसार इत्युपलक्षणं द्वाय-व्याकरणात्मकं भास्करानन्तरं लेखिके लेखिकेः च चतुर्दशवाचनानां तत्तजातोऽपि समाविकल्पिकाः अभिलाषिनानि मनोवर्तनं प्रदेज्यते: पक्षेम यह्यनन्तरं व्यास्कार्यं वि- 

* See pages, 39, 91.
* See page 91.
* See Preface, pages 2-3.
* See pages 110—111.
* See pages 168, 164.
* See pages 114—118.
than in these non-architectural works. But except in one or two solitary instances like Kailāsa, the names of these types of buildings are not identical. But there are certain similarities all the same. For instance, the Merukānta of the Mānasāra is read simply as Meru in the Purāṇa and the Bhṛihat-saṁhitā. This is certainly an improved reading, first, because Meru as the name of a mountain or as a geographical term is well known in Sanskrit literature, and secondly, ‘kānta’ in the expression ‘merukānta’ is meaningless. Similarly the reading Vṛitta of the Purāṇa and the Bhṛihat-saṁhitā is an improved version, a good emended form of vīrvita of the Mānasāra. Almost similar is the case with regard to another architecturally very important object, namely, the column or order, for the columns are stated by the authorities to be the regulator of the whole composition. In this case also the Mānasāra contains a fuller list. It has two sets of five technical names for the orders, while the Matsya-purāṇa and the Bhṛihat-saṁhitā contain only one set of the five orders. The names of these orders in the Mānasāra are different from those in the Purāṇa and the Saṁhitā, but Varāhamihira has given the very same five names to the orders as the Matsya-purāṇa, and they have also the very same eight names for the mouldings or the component parts of a column. The Mānasāra, as in all other cases, has a fuller list of mouldings also. It contains more than forty-seven mouldings for the pedestal, base, shaft, and entablature; the shaft being given five special mouldings. And as in the case of the types of buildings, there are some names of mouldings, for instance, yha and ṭará, common in the Mānasāra, the Matsya-purāṇa, and the Bhṛihat-saṁhitā.

So in three important architectural matters, namely, the preceding authorities, the types of buildings, and the orders and their component parts, the Mānasāra has fuller lists than those in the Matsya-purāṇa and the Bhṛihat-saṁhitā which are exactly identical in these matters. In these circumstances one is ordinarily likely to think that a later work only can make a thing more complete. But there is another essential point to consider, namely, that the Mānasāra is avowedly an architectural treatise, while the Matsya-purāṇa and the Bhṛihat-saṁhitā are not, their treatment of architectural matters is not casual, and in fact they have entirely left out purely architectural description. It is clear beyond doubt that the Purāṇa and the Saṁhitā must have consulted an architectural treatise for their information and guidance in architectural matters, just as they have, certainly, based their references, for instance, on medicine, to a standard medical treatise.

1 See pages 110.—112.
2 For instance, Naishadha-charita, 16; Bhṛīšhāra, Vairāgya-saṁta, 150, etc. Compare the terms like Sumeru, Utarameru, etc.
3 See pages 125—128.
If the Mānasāra had an opportunity of consulting Varāhamihira or the Matsya-purāṇa, the reading like Vyepita for Vyitta, or Meru-kānta for Meru could not have remained unamended in it. Besides, if the Mānasāra had been composed after the works like the Matsya-purāṇa and the Brihat-samhitā, why should it not have added these two to its long list of authorities? It would be no argument to say that the author of the Mānasāra might not have consulted these authorities or might have been quite ignorant of their existence. For, though not primarily works on architecture, the Matsya-purāṇa and the Brihat-samhitā have been well known to subsequent literature, and we shall presently show that the author of the Mānasāra had an extensive knowledge of things from a wide study and observation.

In these circumstances, though ready to readjust my views in the light of new facts, my present impression is that there must have been a direct influence between the Matsya-purāṇa, the Brihat-samhitā, and the Bhavishya-purāṇa while the connection between these treatises and the Mānasāra might have been indirect. The age of the Mānasāra, however, is indicated by other things also; and these will be discussed presently.

There are only a few treatises wherein the term Mānasāra is mentioned. The Agni-purāṇa as already pointed out, has some passages of uncertain meanings, wherein the term occurs. For instance, it is stated, that above the Suka-nāsa (literally, parrot's nose) or gargoyles, that is the water-spout, in a building, there should be a ṭedi or platform furnished with a neck. And this should be as prescribed in the Mānasāra (mānasāraka), or, the object of it is to make a passage for refuse (malasāraka). This latter interpretation seems untenable; for the adjective is used in the neuter singular, and ordinarily would not qualify a feminine singular noun. If the first rendering be acceptable, the expression would form a separate clause, iti mānasārakam, meaning, this is in accordance with the rules of the Mānasāra.

There are reasons to think that a relation of direct influence exists between the Agni-purāṇa and the Garuḍa-purāṇa. And through the latter the former may be connected with the Matsya-purāṇa, the Bhavishya-purāṇa and the Brihat-samhitā.

The Sukra-niti is another important work, which, though not an architectural treatise, deals largely with subjects relating to architecture and sculpture.

---

1 See Preface. Compare also note 2, page 154--155.
2 तद्धित'ि 'द यथविधि सक्षात मन्नानक्षम (सम्यक्ष्रानक्षम वर्णसर्वक्षम)। (Agni-purāṇa, XLI, 17.)
3 See pages 113--114.
4 See pages 114--118 and the writer's Dictionary under Pratistha.
5 See chapter IV Section 4. (1) देव मन्नानिष्ठितमामन्नानाय, (5) प्रतिमानिष्ठितमामन्नाया.
6 etc. (see details in appendix 1, in the writer's Dictionary).
is a work on royal polity ascribed to an author, Śukrāchārya, whose age has not been clearly established. It appears to be anterior to the Mātṛya-purāṇa, for the reason that the latter has included Śukra as one of its eighteen authorities. The question of the identity of Śukrāchārya with this Śukra must necessarily come in. But there is hardly a satisfactory answer to give.

In the Śukra-nīti we notice also a large number of passages common to it with another work called the Kāmandakiya-nīti which has been assigned by Dr. R. L. Mitra to the fourth century of the Christian era on the ground of its dedication to Chandra Gupta, existence of Hindu temples and absence of any trace of Buddhism in the fifth century A. D. when the Chinese traveller Hāfien visited Java, where in an island called Bali the work has been discovered. This Kāmandakiya-nīti, which has apparently borrowed from the Arthaśāstra of Vishnu Gupta, seems in its turn to have been freely drawn upon by the Agni-Purāṇa. This Purāṇa, we have shown, may have borrowed from the Mānasāra also.

This introduction of the Śukra-nīti, the Kāmandakiya-nīti and the Arthaśāstra, together with the Mātṛya-purāṇa, the Agni-purāṇa and the Mānasāra, may appear as an episode. But a time may come when the inter-relation of all these treatises will be more satisfactorily established.

The next external references to the name of Mānasāra are met with in a famous prose romance, the Daśa-Kumāra-Charita, by a very eminent author, Daṇḍin,

---

1 Page 164.
2 यथा प्रभावाद्भवन शास्त्रपते पथि लिखित ||
पार्श्वपर ४४२ नृत्तार ००८ गुप्त तित्रित || (Kāmandakiya-nīti, I–9).

Here, it is argued, Chandra Gupta refers to I, or II. Chandra Gupta, of the Imperial Gupta Dynasty who are assigned respectively to 320–325 A.D. and 376–420 A.D.

3 नीतिशास्त्रांकः योगार्थशास्त्रयोगार्थादायपि:
समुद्रदेश नमस्त्यम विष्णुनाय वेदांश ||
(Kāmandakiya, I–6).

Dr. Jacob places the Artha Śāstra in the fourth century B. C., (Berlin Academy Sitzungsberichte, 1911, pages 904–973; 1912, pages 832–849). Prof. Keith tends to bring it down to the second or first century B. C. (J. R. A. S. 1916).

4 Dr. R. L. Mitra, Kāmandakiya, Bibl. Ind. page 4.
5 See pages 110–118.

* Edited by Kale, Bombay, 1917; see page 4; repetition below is felt unavoidably necessary:

(i) Page 4, paragraph 3, line 3—मगनमात्रको मालवेष्वरः प्रलयप्राप्तामक्षयः समुन्तक टमानसारः मालसारः प्रति.............संभाषाभिज्ञः ध्वेन महाविष्टी निर्विद्या।
(ii) P. 4, para 1, line 8—मालवनाधी अवलोकेश्वर्यायो मग्नाराज्य प्राथः समकाल पृथ्वी

परमथथाधिपत्यः।
who "probably dates from the sixth century A.D." Therein Mánasāra is repeatedly mentioned in unmistakable terms as the king of Mālwa, (modern Mālwa), with whom was engaged in war King Rājahamsa of Magadha or Pāñalī-putra, the modern Patna. The latter was the father of Rājavāhana, the chief of the ten princes or Daśa-Kumāra after whom the work is named.

Here is a possibility of the Mánasāra being connected with the king of Mālwa bearing the name Mánasāra. There are several works in the Sanskrit literature, which seem to have been named after their patron, for instance, the Skanda-purāṇa is supposed by some scholars to have been associated with the name of Skanda-Gupta of the Imperial Gupta Dynasty. The Harsha-charita has undoubtedly been named after king Harsha. But nothing more is known about king Mánasāra of Mālwa; nor is anything stated, directly or indirectly, about him in the Mánasāra itself. On the other hand, the internal references to the expression Mánasāra, which have already been introduced elsewhere, prove that the term has been used in three different senses, namely, a treatise, an architect, and a class of sages or professors of architecture bearing the surname, like Manu or Maya, or the professional epithet, Mánasāra. In none of these senses, however, would the king of Mālwa fit in. If he were a real personage and had any connection with this standard treatise on architecture, and preferred to remain incognito, the author of the Mánasāra would have added a fourth ambiguity referring to his anonymous patron. In the body of the Mánasāra there are several passages, which will be presently discussed, evincing on the part of its author not only a clear knowledge of man and things of the then Magadha and Mālwa but also of all other chief cities and the broadest divisions of India of his time.

The third external reference to (the architect) Mánasāra is found in two epigraphical records of uncertain reading. In these unpublished documents the epigraphist reads the expression, which is used in two inscriptions to imply the name of an architect, as Mána-sarpā and not Mánasāra. In the light of information presented for the first time in our volumes, the epigraphist may perhaps be ready to revise his reading of the expression when the inscriptions are properly edited and finally published.

(iii) P. 12-13 - राजहल्या मुनिममात्र, ममवन, मानसार: प्रवेशं देववल्लि मां निमित्तवम् राज्ञमतुभिर्

(iv) P. 43-1-4 - धर्म्नित्वमुखरे नाम मानसारवानिनी.............नगरायेतस्मृतायथाहि विहाराय तक्षीय नोनायमविचारवृत्ति रेमे।

1 See Preface, pp. 2, 3.
2 Epigraphist's Report, Madras, 1801, nos. 207, 209. See pages 4, note 2; 120, note 3; 176, no
In an architectural compilation, *Salpa-samgraha*, of apparently a very late date, we have shewn already1, that the Mānasāra is quoted in its true form. About the worth of considering this reference I am rather doubtful. Not that I am unwilling to bring down the Mānasāra, but because there are several facts, which cannot fit in to a very late date, like 1830 A.D. when a manuscript2 of the Mānasāra was copied. The compilation could have easily consulted the Mānasāra even if the latter were placed side by side with Vitruvius, or before Maya-Asura of the Mahābhārata or Ahura-Mazda of the Zend-Avesta.

Of the internal evidences from the Mānasāra the following points may be considered.

For the orientation of buildings it was necessary for the Indian architects to ascertain the right cardinal points. For this purpose the Mānasāra in agreement with all complete works on architecture including Vitruvius, makes use of a gnomon3 obviously because the mechanism of the compass was not known to the ancient architects. For similar purpose the astronomical treatises also like the Sūrya-siddhānta, and the Lilāvati and the Siddhānta-siromani of Bhāskarāchārya use the gnomon. The calculation of the shadow is the main object in this matter, and the gnomon is used simply to ascertain the shadow. The sun’s rays falling on an object like the gnomon causes the shadow. So at first the obstructed light which gives rise to the shadow must naturally be taken from the sun. But the sun’s light is uncertain and cannot be adjusted according to the requirements of the scientific and advanced study. It is, therefore, not difficult to believe that the later astronomers easily found out some artificial and adjustable light to replace the natural and unadjustable light from the sun. In the Mānasāra only the sun’s light is made use of, while in the Sūrya-siddhānta and other astronomical works lamp light was used in order to measure the shadow. These latter works also followed an improved method in ascertaining the level whereupon the gnomon was erected in order to

---

1 See page 106.

2 Called *C* in the description of manuscripts attached to our edition of the Mānasāra. *B* is dated 1677 of the Śalivahana era (1623); *D* is dated 1665 of the Śaka era (1734). The remaining eight copies, A, E, F, G, H, I, J, K, are not dated.

3 For full description see the writer’s Dictionary under Śakku.

4 Sūrya-siddhānta, III, 1–4; Lilāvati, part 2, section 4, chapter 2; Siddhānta-siromani, last part, chapter VII, 36–49. Cf. Vitruvius Book I, chapter VI, Book IX, chapter IV, VIII. The actual process of working the gnomon for ascertaining the cardinal points and dialling is described in full detail from all these authorities in the writer’s Dictionary under Śakku.
calculate the movement of the shadow accurately. The methods followed in the Mānasāra are antiquated. It seems, therefore, that the Sūrya-siddhānta and other astronomical works must come after the Mānasāra.

The next internal evidence presented here for consideration is that concerning the knowledge evinced in the Mānasāra of the most prosperous countries throughout India. We have seen that ninety-eight types of buildings are described in the Mānasāra under twelve divisions, namely, of one to twelve storeys. Although sixteen-storeyed or even seventeen-storeyed gate-houses (gopuras) are mentioned, religious or residential buildings are not erected beyond twelve storeys. The technical names of buildings of one to eleven storeys are more or less poetical. But the buildings of twelve storeys, largest and most gorgeous of all edifices, bear more significant names:

They are called Māgadha, Janaka, Madhya-kānta, Varnāsaka, Virāṭa, Pāñcchāla, Sphū(Gū)ṛjaka, Kērala, Drāvida, and Kāliṅga. These are the names of ten countries which cover the length and breadth of India. At one time or another they seem to have been very prosperous, possessing as they did distinctive types of the largest and most magnificent edifices.

Magadha is the country of South Bihar, where the Pāli language was spoken. Janaka or the country of some twenty-one generations of Janaka kings, otherwise called Videha with capital city Mithilā, is North Bihar, which corresponds to the modern Tirhut and Purniyā divisions between the Gandakī and Kosi rivers. Madhya-kānta stands for the Madhya-desa, the middle country or the tract situated between the Himālayas and the Vindhya range to the east of Viniśāna and to the west of Prayāga or Allahabad. Some authorities make it the Doab. Varnāsaka is the country of the Vatsa kings, of which Kausāmbi was the capital city. It apparently bordered on Madhya-desa. Virāṭa is the country in the vicinity of the modern Jaipur wherefrom the Pāñcchāla country.

1 See pages 62, 47-51, 111-113.
2 Magadha is also mentioned in the Dakhakumāra-charita: प्रलिंगमवेशाः पुष्पयुज्य नाम नमसे, which was conquered by king Mānasāra of Mālava (see Preface p. 4, note). But Mālava is not honoured with a separate type of twelve-storeyed buildings; and it would appear strange and unusual if this king Mānāsāra were the patron of the Mānasāra, the standard work on architecture.
3 हिमालयन्यायं मयां न दुबिनिशानादिनः
4 प्रजावीर प्रवासमय: स मयासेव: स कौतित: || (Maunu, II, 21).
5 It was at the court of the king of Virāṭa that the Pandava princes and Draupadi passed the thirteenth year of their exile incognito. The Virāṭa princess Utāra was married to Arjuna’s son Abhimanyu who at the age of sixteen only gallantly challenged simultaneously seven most famous generals of the Kaurava army at the battle of Kurukshetra.
begins. The present town of Bairat is one hundred and fifty miles south of Delhi. Pāñchāla is the Punjab, "with a little territory in the more immediate neighbourhood of Hastināpura," extending north and west from Delhi from the foot of the Himalayas to the Chambal, Ahi-chhatta being the capital city of north Pāñchāla or Rohilkhand, and Kāmpilya of south Pāñchāla or the Gangetic Doab. The reading of the name of the country mentioned next is uncertain. I would read it Gūrajaka for Gūrjarsaka instead of Sphūrjkaka and identify it with the country of Gujarat. Kerala is the country of Malabar proper on the western coast extending farther down from Gujarat. Then comes Drāvida or the country, where the Tamil language is spoken, extending from Madras to Cape Comorin. This tract is roughly bounded by the Vindhya range on the north where Madhyadesa ends, Kerala or Malabar coast on the west, and Kāliṅga or Coromandal coast on the east. Kāliṅga implies the twelve-storeyed buildings of Kāliṅga, the country along the Coromandal coast, north of Madras, wherefrom the Drāvida country begins. It is clear, therefore, that India comprising these ten countries extends from the Himalayas on the north to the Cape Comorin on the south, from Bihar including perhaps north Bengal on the east to the Punjab and Gujarat on the west.

According to the Mahābhārata king Virāṭa's capital was called Matya which Cunningham finds in the neighbourhood of Jaypur. Wilson says: "Dinnepor, Rangpor, and Cooch Behar." Apparently there was more than one country of this name and one would appear in Northern India. Mann (II. 19) places Matya in Brahmarshi-desa.

As quoted in the Mahābhārata (Smith's History, page 348), it would seem to have occupied the Lower Doab. Mann (II. 19) places it near Kanauj. Wilson will have it extending north and west from Delhi from the foot of the Himalaya to the Chambal and separated by the Ganges into Northern and Southern Pāñchāla. Cunningham considers North Pāñchāla to be Rohilkhand with the capital city Ahi-chhatta represented by the ruins near Rāmnagar, and the South Pāñchāla to be the Gangetic Doab with the capital city Kāmpilya between Budāun and Farrukhshāh.

This term seems to mean literally something belonging to the first union of lovers characterised by joy in the beginning and some expectation of fear in the end. Of the ten names, it should be noted, this is the only one which as the name of a country can be doubted if the amended reading be not acceptable.

As applied to the classification of Brahmins (Pāñcha-Drāvida, namely, Drāvida, Kāliṅga, Gūrjara, Mahārāṣṭra, and Tālaṅga), it has a much wider application embracing Gujarat, Mahārāṣṭra, and all the southern countries.

The Kāliṅga proximi mari of Pliny.

जयघरास्मारस्व: छातातीरास्व: प्रते |
कलिन्गेश्व: संप्रको बाममामयरय: || (Tantra, see Apte's Dictionary)
बस्तिलिद्धितय: कलिन्गामिन्दुभ: योध। | (Rāmāyana, IV, 38)
A number of questions may now arise. Did these ten countries exist in a prosperous condition at any one time in the history of India? Did they ever possess gorgeous edifices of twelve storeys admitting of ten different types? How could the author of the Mānasāra come to know of them? Was the description of these buildings based on the details of the existing edifices, or was it meant to be an injunction to be followed in erecting edifices in these countries? Is there any reason to think that the Mānasāra is a technical treatise on architecture, and not a work on poly-technies like the Brāhat-saṃhitā dealing casually with architecture and sculpture, nor an encyclopaedic work like the Purānas of northern India and the Agamas of southern India, which too have incorporated within them architectural and sculptural as well as literary, religious, and scientific subjects?

That the Mānasāra is an avowedly architectural treatise meant for professional students of architecture and written by an architect, there need be no doubt. This will be clear beyond doubt even to a casual reader of this volume, not to speak of those who care to look up the writer’s Dictionary, and Text or Translation of the Mānasāra. To me it is, further, clear that the Mānasāra was largely based on details gathered together from the existing buildings and partly on details from the existing literature on the subject. It was, of course, meant to be a guide book; but it never aimed at being the sort of poem which is read for the beauty of its language or the general interest of its theme. It is very likely that the author of the Mānasāra was aware of the condition of buildings existing in the then India comprising the ten countries mentioned above. There might not have existed simultaneously buildings of twelve storeys in all the ten countries. What seems to be really meant is the distinctive types of magnificent buildings belonging to each of these countries. For the Mānasāra is not an history of buildings of any country; it is a guide book, and as such it must give illustrations and generalise its findings. It matters not, therefore, if these countries were not equally prosperous at any one time. It is sufficient that these countries had flourished, and that they were well known in the history of India, and also that every one of these could at some time or other claim prosperity, and magnificence. Of these, Pāñchāla and Drāvida are stated to be of the smallest types; next higher in size and importance are Madhyadeśa, Kalinga, Vīraṭa, Keraṇa and Varṣāka; the largest and most important are Magadhā and Janaka. Sphū(Gū)-ṛjaka is not specified (Mānasāra, XXX, 10–36).

1 About the existence of these types there need not be much doubt; because, for instance, Magadhā, Pāñchāla, Drāvida and others are used to imply types other than of buildings also. For instance Magadhā stands for a Prākrit language, a tribe of people born of a Vaiśya mother and Kshatriya father; Pāñchāla stands for one of the four styles of composition; and Drāvida for a language, a class of Brāhmīns, etc. The point is sufficiently elaborated later on.
The last question to answer is how the author of the *Mānasāra* came to know of these countries or divisions of India. If these countries were autonomous and independent of each other, the knowledge of them must have been received through literature, should a tour all over India for a purpose like this be thought an improbability in days before the establishment of the British Government. If on the other hand the internal affairs of all these countries were settled by a common and central authority, who alone could decide upon a policy for common good and under whom alone guide books like the *Mānasāra* discussing general methods and principles of building for all countries could flourish, there must have been an empire comprising all or most of these countries. The probability of the latter view is strengthened by the consideration of the styles of architecture, apart from the types of buildings discussed above. These styles are also designated by geographical names, which imply much broader divisions, namely, Northern, Southern and Eastern. They are called *Nāgara*, *Drāvida* and *Vesara*. In case of some architectural objects *Vesara* admits of two other branches, namely, *Andhra* and *Kalinga*, the three together constituting *Tri-kālīṅga* or three *Kālīṅgas*.

The *Nāgara* style is distinguished by its quadrangular shape, the *Drāvida* by its octagonal or hexagonal shape, and the *Vesara* by its round shape.

1. `वेदांत नागरं प्राकृत वेदांत द्राविडः स्वतं` (Mānasāra, XLIII, 144-5).

This is applied to cars and chariots. The rules referring to buildings proper are given in XVIII, 81-104; XXVI, 76; XXII, 72-73, etc., referring to sculpture proper, see for instance, TII, 78, 100; III, 45, 47, 53-54, etc.

2. द्राविडः भूताय व भूताय व धन्याय व (Suśruta, XXXI, 37-39).

These also refer to buildings. For rules referring to sculpture: see the *Kāmaśāstra*, LXX, 6-7, 13-19; and the *Pulakānātika*, LVIII, 4 (Bourbaki's edition).

An interesting record from *Vidal* is the ball cut out on the capital of a finely carved pillar in the Amīra-devi temple. It is called in the inscription a *Śūkra* pillar. Speaking of the sculptor who made it, the record says that he Barūma, the pupil of *Pādala* of *Sogo*, was a *Vāskyārman*, i.e., the architect of the gods in this Kali age; the master of the sixty-four arts and sciences, the clever builder of the sixty-four varieties of masons, and the architect who had invented the four types (styles) of buildings viz., *Nāgara*, *Kaliṅga*, *Drāvida* and *Vesara*.

(Preliminary report of the Assistant Archæological Superintendent for Epigraphy, Southern Circles, 1914-15, page 93.)

In another inscription (Ep. Carnat., vol. VIII, part 1, *Sarab Taluq*, Inscription, no. 276, Roman text, page 92, translation page 40, note 1) these styles are called "*Drāvida*, *Bhūmiya*, and *Nāgara*" of which *Bhūmiya*, which literally means 'grown up on the spot', may refer to the *Vesara* style with *Kalinga* and *Andhra* as its two branches.

These and many other quotations will be found in the writer's Dictionary under *Nāgara*. 
"So far as is yet known, we cannot point to any buildings... of very early date, or before the sixth or seventh century, if indeed quite so early." This is the statement made by authorities like Fergusson, Burgess, Smith and others. This may be referred to all parts and all styles of India. Cunningham has gathered together fragments of what he calls the Gupta style, of which, however, no single example in its entirety can be cited.

The Dravidian "temples generally consist of a square base ornamented externally by thin tall pilasters, and containing the cell in which the image is kept. In front of this may be added a mantapam or hall, or even two such, but they are not characteristic of the style. Over the shrine rises the sikhara, of pyramidal form, but always divided into storeys and crowned by a small dome, either circular or polygonal in shape. Another special feature of these temples is the gopurams or great gateways, placed in front of them at the entrances to the surrounding courts, and often on all the four sides. In general design they are like the vimānas or shrines, but about twice as wide as deep, and very frequently far more important than the temples themselves. Another feature is the cornices of double curve; in other Indian styles the cornices are mostly straight and sloping downwards. As the contemporary northern styles are characterized by the prevalence of vertical lines, the Dravidian is marked by the prevalence of horizontal mouldings and shadows, and the towers and gopurams are storeyed. Then the more important temples are surrounded by courts enclosing great corridors or prākāras, and pillared halls."

"The square rathas were evidently models of Buddhist vihāras, and became the designs from which the temples proper or vimānas of Southern India were for long copied; and further, the oblong rathas, like Arjuna's temple, appeared to have given the first form to the great gateways or gopurams."1 Pierced stone windows are found at Ellora and other places.

Regarding the Chālukyan style, which covers the Hyderabad territory, the Central Provinces, Berar, and the Marathi-speaking, and a part of the Kanarese-speaking districts of the Bombay presidency, it is stated that "the earliest temples within this area, however, are not very clearly marked off from the Dravidian and the more northern style—some of them have distinctly northern spires, and others are closely allied to the southern style." For instance, "the old temple of Pāpanāth at Pattadakal presents a curious combination of styles. The

1 Burgess cites (Imp. Gazetter, II, pages 172, 173) as example temples at Madura, Rāmāswaram, Tīmnoyello, Śrīrangam, Kānchi-puram; Pattadakal (Virūpākha temple), Ellora (rock-cut Kailāsa temple).
body of the temple is Dravidian but the Śikhara is a curious approximation to the form of the early northern Hindu or Indo-Aryan order, while in details the temple shows a strong leaning to the Dravidian." "Still in Mysore, Dharwar, and Belgaum, as well as in Berar and Maharatha districts, sufficient remains still exist to illustrate the various development of the (Chālukyana) style."

"In the Chālukyana temples the corners are often made prominent by increments placed over them, or the whole plan is star-shaped, the projecting angles having equal adjacent faces lying in a circle as in the temple of Belur in Mysore (built about 1120 A. D.)." There are other examples, where the Śikhara did not preserve the southern storeyed form but was rather stepped, forming square pyramid with breaks corresponding to the angles in the wall, and with a broad band answering to the larger face in the middle of each exposed side of the shrine, "The pillars are markedly different from the earlier Dravidian forms; they are massive, richly carved, often circular and highly polished. Their capitals are usually spread out while middle section of the shaft is richly carved with mouldings in the round. They are almost always in pairs of the same design." The richly carved and richly ornamented pierced windows belong specially to this (Chālukyana) style as we see it at Ajanta and elsewhere, just like the pierced stone windows employed in Dravidian temples at Ellora and other places. "The buildings were erected without mortar, and the joints were carefully fitted. The whole was covered with sculpture, often of geometric and floral patterns, intermixed with numerous mythological figures; and in the later examples, the courses of the base were carved with the succession of animal patterns prescribed for them in the Śīla-Sūstrus. This is very fully exemplified in the great temple of Hoysalesvara at Halebid."  

These peculiarities of the Dravidian and the Chālukyana styles are taken from existing examples. Most of these details are also found under the Drāvida style of the Mānasāra which, however, does not refer to the Chālukyana style as a separate order.

The Northern or Indo-Aryan style of architecture covers the whole area once occupied by the Aryans "usually designated as Hindustan" to the north of the Tāpti and Mahanadi rivers. "What is known as the Jain style of architecture in Western India is a development or variety of this Indo-Aryan order, and was used by the Hindus and Jains alike all over Rājputāna, Mālwa and Gujarāt. It was employed in its most ornate form by the Jains in their famous marble temples on Mount Abu, and by both the Jains and Hindus at Nāgdā near Udaipur. At Girnār also and Śatrunjaya in Gujarāt as well as Khajurāho in Bundelkhand are clusters of temple of this order."  

---

*Burgess, ibid. p. 175.  
*Ibid, pages 176, 177.  
*Ibid. page 177, 178.
"Under this style are classified monuments of very various orders which may be separated into two or more distinct types." The Vesara of the Mānasāra is apparently one of these orders.

The shrines and mandapas are square, and only slightly modified by additions to the walls of parallel projections, which in the earlier examples, were thin; the walls were raised on a moulded plinth (pītha) of some height, over which was a deep base [adhishṭāna], the two together rising, roughly, to about half the height of the walls; over this is the paralleled face of the wall, usually of less proportionate height than in the Chalukyan style, and though devoted to figure sculptures in compartments, the tall thin pilasters of the southern style have disappeared, over this is the many-membered architrave, and cornice, above which rise the spire and roof. The spires follow the vertical lines of the wall, and present no trace of division into storeys, but vary in details with the age. In the earlier examples the summit was crowned by a large fluted, circular block called amala (pure, shining)ṣīla, probably mistaken for Amalaka (Phyllanthus Emblica). The finial over this is of the shape of a vase, known as the Kalasha or Karaka." One of the most striking features of the style is the richly carved domes over their mandapas or porches. (Nothing can exceed the elaboration and delicacy of details in the sculptured vaults of the temples at Abu and Nāgdā). These, with the diversified arrangement of variously placed and highly ornamented pillars supporting them, produce a most pleasing impression of symmetry and beauty."

"The earlier examples were apparently astylar, then—like the southern forms—with columns arranged in the mandapas in groups of four, and later, especially in Western India, the larger domes or twelve pillars formed the central area of the halls. These mandapas in early examples were roofed with long, sloping slabs; but, to provide for carved conical roofs inside, their outer forms represented courses of masonry, which were carved as in temples of Kanarak, Bhuvanesvara (older; Ambaranāth, Baroli, Khajurāho, Abu and Chitor (mediaeval); Nāsik, Benares, Udaipur, Śatrunjaya, etc. (recent)."

The peculiarities of the Nāgara style, except in one or two rather unessential points, would correspond to these details of "Northern or Indo-Aryan style." The Amala or Amalaka šīlā is not mentioned in the Mānasāra under this appellation; but the murdhanīśṭikā (brick at the top) seems to serve the same purpose as the Amala-śīlā. The kalasha or dome, šikhā and śikhara, are the distinguishing features of the style found also in the Mānasāra in addition to the square shape.

"The temples at Bhuvanesvara ... differ very markedly from those in the west in being almost entirely astylar—pillars having been introduced in later
additions. They have the early form of sikhara—nearly perpendicular below, but curving near the summit; and the crowning member has no resemblance to any thing like the small domes on Chālukyan spires."

Burgess, following the classification of Fergusson, has included the style found at Puri, Bhuvesvara, and Kanarak under the Indo-Aryan or Northern style. But he has admitted that it "may be separated into a distinct order." What is called the Vesara in the Mānasāra seems to be identical with this style. The main characteristic feature of this style is, according to the Mānasāra, its round shape, and this is clearly exhibited by temples and images in the Orissan countries.

The identification of Nāgara with Northern India needs, however, an explanation. It seems to have been never before used exclusively in that sense. Moreover, it is the name of an extensive division in Mysore, a part in Tanjore and a number of ancient villages in the Deccan. But it is found used more frequently as the name of villages, towns and rivers in Bengal, Bihar, the United Provinces of Agra and Oudh, Rajputana, the Punjab, and Gujarat. Nāgara is also the name of a portion of the Skanda-Parāṇa, of a sect of northern Brahmins, and of a script. The Skanda-Parāṇa, which to some scholars seems to have been named after Skanda-Gupta (455-480 A.D.), the seventh emperor of the early Gupta dynasty, contains a part called Nāgara-kaṇḍa. In this part of the Skanda-Parāṇa it is claimed that the Nāgara Brahmins are superior to all other Brahmins. It is held that they came over from the north and settled down in Gujarat at a place known as Nāgarāmamandana-pura. From these Nāgara Brahmins, it is said, came the use of the Nāgari alphabet, which belongs exclusively to Northern India. Indeed it is very famous as the name of a script particularly of Northern India extending from Bihar on the east to the Punjab and Gujarat on the west, and from the foot of the Himalayas on the north to the Vindhya range on the south. This is the very tract which seems to have been covered by the Nāgara style about the time of the Mānasāra.

The southern and eastern tracts represented by the Drāvida and the Vesara styles can also be associated respectively with the Tāmil, and the Telugu including the Orissan scripts. As based on scripts and languages, these divisions, Nāgara, Drāvida and Vesara, have existed apart from the architectural styles.

The expression Nāgara is certainly not coined in the Mānasāra. Nāgara is a common name for the town, and Nāgara is an adjective therefrom and implies something connected with a city. Madurā of Southern India is apparently an identical

---

1 See the writer's Dictionary under Nāgara.
2 J. A. S. B., 1886, volume LXV, part I, pages 116-117. Basu’s collection of references in this Journal and many other quotations will be found under Nāgarā in the writer’s Dictionary of Hindu architecture.
name to Mathurā of Northern India. In the same way, the Nāgara-khanda of Mysore, the port Nāgore of Tanjore, and the village Nāgara of the Deccan can be accounted for. There are several things to prove conclusively that the Aryan influence and civilization were spread, from Aryavarta or Northern India, all over the Dākshinātya or Southern India. It is true that the borrowed names sometimes become more prominent than those of which they are but imitations. New York of America, for instance, is much more prominent than old York of old England. Similarly the name Nāgara, though originated in and indicating Northern India, might have become more prominent in Southern India.

All these divisions are indicated by terms which were already in use as class names. The architecture of the country is divided into three broad styles and ten types, corresponding to the geographical divisions and the political entities. And there seems to have been a bond of union between these entities, however autonomous and independent they may have been in their mutual relation. In the total absence or rather non-existence of a unifying authority, the growth of a record of generalization, a guide book for the whole country, would be highly exceptional if not improbable. In other words, the presence of a standard work on architecture like the Mānasāra seems to presuppose an empire comprising countries having their own styles, methods, and principles, which are recorded and illustrated under so many divisions. Whether or not such books of generalization could have been written in those ancient days of India even without the patronage, active or passive, direct or indirect, of an imperial authority, it will be useless, at any rate an unnecessary, discussion for our purpose. It is sufficient for me that the existence of such an empire may be taken to be conducive to the growth of such a treatise as the Mānasāra.

Existence of an empire at the time of compilation of the Mānasāra seems to be indicated also by the following facts.

In connection with construction and disposition, according to ranks, of royal palaces, thrones and crowns, royalty is divided into nine classes. They are called, in descending order, Chakravartin, Mahārāja or Adhirāja, Mahendra or Narendra, Purushva, Paṭṭadhar, Maṇḍalaśa, Paṭṭabhaś, Prāhāroka and Astra-grāhīa. The number of storeys and halls in a palace, the divisions of the whole compound into different courts, the quarters for royal personages and officials, and other buildings, which are necessary adjuncts of an Indian palace, are described. The royal qualities, courts, army, and rate of revenue in accordance with the class to which a king belongs, are also incidentally mentioned. A consideration of these matters might have helped us in arriving at a time in the history of ancient India, if the historical materials and especially chronological data were available.

1 Mānasāra, chapters XL, XLI, XI; see pages 75-60, 43 of this volume.
What, however, concerns us most here is to ascertain the relation existing between these nine classes of kings. They are mentioned by their common names, and not by proper and personal names.

An empire in any case has been expressly recognised in the Mānasāra. It is clearly declared that the empire of the Chakravartin or universal monarch reaches as far as the four oceans.\(^1\) So it must include the whole of India, divided into three divisions, Northern, Southern and Eastern, otherwise apparently known as Nāgara, Drāviḍa and Vesara. According to another classification, we have seen, this empire seems to have comprised ten kingdoms. But here the empire is stated to have nine kinds of rulers.

The Chakravartin is the suzerain of all the subordinate kings who send up tributes and taxes to him.\(^2\) The next king, called both Mahārāja and Adhīrāja, is the lord of seven kingdoms.\(^3\) Mahendra or Narendra is the master of three kingdoms, and more honourable than the Pārshnika, Patṭadhara, Māndaleśa, and Patṭabhāj classes of kings.\(^4\) The Pārshnika is responsible for the administration of one kingdom, and the Patṭadhara governs only half a kingdom.\(^5\) The rest seem to be chiefs rather than kings though they possess their own army and courts. The Māndaleśa is stated to be content with a manda or province, while half a manda or province is left to the charge of the Patṭabhāj.\(^6\) The Prāhāraka is the king of several jana-pada or divisions; and the Astragrāhin looks after several districts and is the ruler in a large city.\(^7\)

About the Adhīrāja it is stated that he must belong to the solar or the lunar race.\(^8\) The kings of these races are Kshatriya by caste. Nothing is specified regarding the caste or castes of the other classes of kings. But the Prāhāraka is expressly stated to be born in a Brahmin, Kshatriya, Vaiśya, or Śūdra family.\(^9\) This state of things points to a time when the Śūdras were also recognised as kings.

\(^1\) चतुर्वर्तको भौंि रेष्मेश्क्रवतो रक्षावान ।

\(^2\) जिन्ता पुरस्व वृद्धि परास्व प्रवृद्धिष्व संविदितं। (M. XLII, 6-7).

\(^3\) महेंद्र रहता मन्दलेश्वर चक्रवर्त्ति कालित। (M. XLII, 10).

\(^4\) एवं श्रेष्ठ भूपाला स्वे स्वे जनपदे करार।

\(^5\) म्योऽ चक्रवर्त्ति दिनां नं कुस्मान्विप। (M. XLII, 75-76).

\(^6\) M. XLII, 11-12.

\(^7\) M. XLII, 14-15.

\(^8\) M. XLII, 18, 21-22.

There does not seem to be much doubt that the recognition of these divisions presupposes the existence of an empire, the extent and the boundaries of which are made clear by the geographical classification of the ten types of gorgeous buildings and the three styles of the architectural and sculptural objects. These various divisions seem to represent the different schools of one system, the different branches of one united civilization and culture. For such an empire, it is not absolutely necessary to find out a political head who can keep together the apparently separate and exclusive entities under his direct military control.

When was there such an empire existing in India embracing the Nāgara, the Drāvida, and the Vesara portions all within itself? It is true perhaps that, even in the time of Mann tracts of the country south of Vindhyas were known to the Aryans, and truer still that in the time of king Āśoka, who partially conquered a portion of what we are now describing as Vesara and Drāvida, there was a friendly intercourse subsisting between the north and the south. But the south was south still, and did not come to be considered as forming, along with the north, part of one and the same whole. The idea of such an empire as would include whole India from the Himalayas to the cape Comorin, from Gujarat to Bengal, had not yet grown up. It was still to come, and arrived much later when all the different parts came to be united under one hand. This leads us to consider next the course of development of such an empire, the story of which as a matter of fact is the story of the gradual spread of the Aryan influence and power from Āryāvarta or Northern India southwards.

Dr. Bühler seems inclined to think that the Aryan conquest of South India took place "a considerable time before the Vedic period came to an end, and it certainly was an accomplished fact, long before the authentic history of India begins at the end of the fourth century B. C." ¹ According to Rhys Davids, till about the time of Buddha, Kaliṅga and part of the Deccan below the banks of the Godāvari were outside the area of Hindu settlement.²

King Āśoka conquered Kaliṅga and annexed it to his empire. The same monarch in his edict (XIII) refers to the Cholas, Pāṇḍyas, and Keralaputras as his pūchāntas or neighbours. It is evident from this edict of king Āśoka that the three South Indian powers—the Cholas, Pāṇḍyas and Keralaputras—were, till the third century B. C., quite independent of Magadha. But presumably the friendly relation, which had existed between king Āśoka and these three powers, opened for

¹ Aparastha, S. B. E., II, page XXXVI—XXXVII.
² Sātā-Nipāta, 1011; see also Anguttara Nikāya, I, 213; IV, 252, 256, 260; Vinaya texts, II, 146.

The account of Rama’s advance up to Ceylon as given in the Rāmāyaṇa reflects a travel rather than a conquest.
the first time the road of an exchange or amalgamation of two distinct civilizations, namely, the Aryan and the Dravidian. It is also not inconceivable that in or before the third century B.C., Andhra or Telugu country was in part Aryanised.

And lastly it is clear from the Allahabad pillar inscription of Samudragupta that this Indian Napoleon directed his campaigns against eleven kings of the south, nine named kings of Aryavarta, besides many others not specified, the chiefs of the wild forest tribes, and the rulers of the frontier kingdoms and republics. He had also diplomatic relation with very remote foreign powers. "Although it is at present impossible to identify every one of the countries, kings and peoples enumerated in the inscription, enough is known to enable the historian to form a clear idea of the extent of the dominions and the range of the alliances of the most brilliant of the Gupta emperors."

He conquered south Kosala in the valley of the Mahanadi, subdued all the chiefs of the forest countries, which constitute the tributary states of Orissa; and the more backward parts of the central provinces, Pishapura, the ancient capital of Kalinga; the hill-forts of Mahendragiri and Kottur in Ganjam; the kingdom of Manteraja on the banks of the Kolleru lake; Vengi between the Krishnâ and the Godâvari; Kânci to the south of Madras; Pâlakka in the Nellore district; Devarâshâra or the modern Mahârattâ country; and Erandapalla or Khândesh. This would imply the whole of the Dravida country bounded by the Coromandal and the Malabar Coasts. The only place left by Samudragupta for his son Chandragupta to conquer and to annex to the empire was Kathiawar in Gujarat.

"The dominions under the direct government of Samudragupta thus comprised all the countries of Northern India. It extended from the Hooghly on the east to the Jamnâ and Chambal on the west; and from the foot of the Himalayas on the north to the Narmâdâ on the south. Beyond these wide limits, the frontier kingdoms of Assam and the Gangetic delta, as well as those on the southern slopes of the Himalayas, and the free tribes of Rajputana and Malwa, were attached to the empire by bonds of subordinate alliance, while almost all the kingdoms of the south had been overrun by the emperor's armies and compelled to acknowledge his irresistible might. The empire thus defined was by far the greatest that had been seen in India since the days of Ašoka. He maintained diplomatic relations with the Kushan kings of Gandhara and Kabul, and the greater sovereign of the same race, who ruled on the banks of the Oxus, as well as with Ceylon and other distant islands."

We now see that it was not until the time of the Imperial Gupta dynasty that the kind of empire implied in such a work as the Mānasāra came into existence. It is not our intention to say indeed that before or after

---

*V. A. Smith, History of India (1909), pages 271-72.*
this there had been nothing in the shape of an empire. It cannot certainly be gainsaid that there was a flourishing empire under king Asoka. It cannot be denied either that there was an empire flourishing in the south independent of the Aryans, that of the Andhras, so far back as about the beginning of the Christian era. The Chalukyas also built up an empire after the fall of the early Guptas and remained powerful till about the middle of the eighth century, when the Government of the country passed into the hands of the Bāsakrakūtas for more than two hundred years. Harshavardhana of Kanauj also built an empire which, however, did not include within itself the Dravidian countries. What appears clear to us is that not till the reign of Samudragupta (326–375) or until Chandragupta II (375–413) was there any one empire which comprised the whole land, including the Telugu and the Tamil speaking places. It is further clear from the Allahabad inscription of Samudragupta that some of his subordinated kings belonged to the Śūdra caste.

The next internal evidence to be considered is one regarding religion. This is illustrated in the Mānasāra by the indifferent treatment accorded to the Buddhists and the Jains, and also by the unusually dignified manner of addressing the Brahmins as the gods on earth (bhū-sūra), and lastly by the predilection for Vaishnavism.

Two separate chapters are, however, devoted to the description of the Jain and the Buddhist images.¹

The description of the Jain deities, ostensibly the main object of a chapter, is submerged in a lengthy discussion of the various measurements used both in architecture and sculpture. The twenty-four Tirthankaras or Jain apostles are referred to, but not specified. The whole description of the Jain images is disposed of in a few lines at the back end of the chapter. The Buddhist images are also described in a very small chapter of eighteen lines only. The account of these images too is very meagre. Evidently the author had in mind solely the effigies of Buddha, not of other Buddhist deities. This slight seems to have struck the author himself. So he adds in conclusion that the rest should be in accordance with the directions given in treatises specially dealing with these images.²

The Buddhists and the Jains have been mentioned, it is true, in connection with all matters referring to people of different sects. But the indifferent treatment accorded to the followers of Buddhism and Jainism is clear beyond doubt. For instance, in connection with the village scheme described in a chapter of five hundred and forty lines, only two lines are devoted to them. The slight is all the more prominent from the fact that rather unwelcome quarters are reserved for the

¹ Chapters LV, LVI, see pages 76-79 of this volume.
² दीप प्रागुलकवल्क्योतिसंचायमवद्: | (M. LVI 18, the last line).
Buddhists and the Jains, and that the temples of their deities are built outside villages and towns.1

Similarly in connection with buildings of different storeys they are treated with indifference, and nothing is specified about them.2

The same treatment is also apparent in connection with the temples of attendant deities. The Buddhist and the Jain temples are passed over with the remark that they should be built according to the rules of their own Sāstras. It is true, however, that Buddha is recognised as one of the ten incarnations of Visnu, whose family consists of the three groups of eight, sixteen including Buddha, and thirty-two deities.

Again, in the chapter on pavilions (mandapa) which consists of five hundred and seventy-six lines, only one is given to the Buddhists and the Jains.3

In connection with the description of cars and chariots, it is stated in only one line that there should be one to seven platforms in the cars of the Buddhist and the Jain deities.4 Thrones and seats for the Buddhists and the Jains are left undescribed with the remark that they are thus stated.5

---

1 बहुधा वायुपदेः चेव नेक्ष्ये तु जनालयम् || (IX, 387)
   हुः गर्भपांते चेव बाहं जैन गतालयम् ||
   चन्द्रायं परमावधौ भालोपलेवर्जनामहि; || (IX, 406-6)

2 एवं तु वाक्रकथ्या वाक्रादिजनकालयम्
   तत्तद्वैमान्योथे तु वाक्रवाच्यसंकलात्
   (XIX, 252-9; two lines out of 263 lines).

3 देवास दिमाश्च चार्यक्ष्यो न्यायिनिरतकालेवर्जनादेवलये।
   (XXI. 72-74, last two lines).

4 त्वाद्रमन्यमधुः प्रस्वश्च भालक्षेत्रविष्णुजनकालेद्वैयक्षे। (XXII, 98-99).

5 See the summary, chapter XXXIV, pages 53-54.
   and compare the following: —
   नेक्ष्ये तु वाक्र वायुपदेः वाच्यसंकलात्
   बाहं च जिनक चेव तत्त्वाभासोक्मायवत्
   बाह्यस्तालं ताविनासम्बन्धतु ब्रह्मालये सबेशि।
   धारांस्यालयानासम्बन्धतु तत्त्वाभासो कुष्ठिना (XXIV, 149, 157, 165-6).

6 विष्णुविष्णुजनकालेद्वैयक्षे वेकादीवारिक दिनवादिकाः।
   वाक्रादिजनकालेद्वैवात्मसंस्कारानारत्नधिकाः
   (XLIII. 144-5).

7 विज्ञानस्तिसुकालेद्वैयक्षे सबेद्वमचक्षवारिकनाम।
   प्रासनानिन्न कथितानि तारि वे वेकादीवारिक कथितानि सुरूमः। (XLV. 211-212, last two lines).
Lastly in connection with the general description of images, the Buddhists and the Jains are left unspecified with a similar remark as before.¹

These are all the instances where the Buddhists and the Jains are at all mentioned. A significant point of omission also may be considered. Monasteries and such other architectural objects as are intimately associated with Buddhism and Jainism, have not been referred to, while the minute details of Brahmanical Hindu temples have been rather elaborately described. From all this, two points seem to me to be clear. First, the Buddhists and the Jains, at the time of the Mānaśāra, were not in a flourishing condition, secondly, they were not persecuted either. It was apparently a time of toleration for them.

The next point to be clear about, is, which religion had the preference? It was Vaishnavism. The following references will, I hope, confirm this view.

In support of the indifferent treatment accorded to the Buddhists and the Jains, the passages quoted above contain references to Śaivism and Vaishnavism also. Vishnu, Isāvara; Vishnu, Rudra; Vishnu, Trambaka; and Brahmā, Vishnu, Rudra are mentioned alongside Buddha and Jina². From this it must not be concluded, however, that Brahmā, Vishnu, and Śiva are treated in the same way as Buddha and Jina. In these passages it is directed how the latter should be treated, the former having been elaborately described. But in the treatment of Brahmā, Vishnu, and Śiva themselves a clear distinction and predilection have been shown. It is true that the opening verse is an invocation to Brahmā, not to Vishnu or Śiva, and that in the next verse the ultimate sources of the Śilpa-Śāstras, like many other Śāstras, have been ascribed to Śiva, Brahmā, and Vishnu.³ These deities are described in the usual order of Brahmā, Vishnu, and Śiva in the chapter dealing with the images of the Hindu triad.⁴

In describing the riding-animals (vāhana) of the Triad, the same order has been followed, the goose, the garuda bird, and the bull being treated in turn.⁵

¹ भावविश्वासः बुद्धम जिनक्ष्य च।
भयेयो च प्रात्मवनामवें मालं तु संप्रहम्॥ (XLXIV. 91—92)

² See notes 4, 5, page 188.
³ Mānasāra, I. I. 2.
⁴ गः श्रीशार तकलमुः कमलुः कमलक्षणः, this is the order; but in Sanskrit, the order may be changed; here, however, the terms form component parts of a dravida compound where the order of terms has some significance.
⁵ Chapter III, see page 70.
⁶ Chapters LX, LXI, LXII, see pages 81—92.
It is also true that the phallus of Śiva and his pedestal (pīṭha) have been elaborately treated in two separate chapters.¹ This, however, does not seem to have been due to the author’s or his patron’s predilection for Śaivism. For the phallus of Śiva is a very famous object of the Hindu sculpture; and it would have been given the prominence all the same even if the artist had belonged to an entirely different sect, because without this his treatise would have been incomplete. Similarly the extollation of the phallus worship added in conclusion may be explained.² Preference for Vaishnavism seems clear also from the following points:—

The whole compound of a large building is divided into five courts³ around which the temples of attendant deities are built. Brahmā, Viṣṇu and Śiva may individually possess attendant deities. There are, therefore, no reasons why the attendant deities of any one of the Triad should be specially treated, unless the author were closely in touch with the temples of any one group of the attendant deities, wherefrom his ideas and illustrations originated. In this connection the groups of eight, sixteen and thirty-two deities of the Viṣṇu family alone are illustrated. The ten incarnations of Viṣṇu are also dealt with. But no mention is made of the attendant duties of Brahmā or Śiva. This omission is significant, all the more because the Mañṣāra is avowedly a treatise on architecture. If the work had been compiled in a place where Śaivism or Brahmā worship was favoured, the temples of their attendant deities could not but have been described in this connection.

A similarly striking omission in connection with the Śiva temples is also noticed in another important matter, namely, the foundations. Foundations of buildings are divided into two classes—according as they belong to temples and to human dwellings. Of the residential buildings, there are four classes of foundations according to the four castes, Brahmīn, Kshatriya, Vaiṣya and Śūdra.⁴ Of temples, those of Viṣṇu and Brahmā are illustrated. Śiva is not mentioned at all in this connection beyond the author’s usual method of passing on with the remark that the others should be similarly done. Very little is authoritatively known about the places in India where Brahmā worship was ever so much favoured as Vaishnavism in Northern India, and Śaivism in Southern India. The author’s predilection for Vaishnavism seems to be indicated by this point also.

¹ Chapters LII, LIII, see pages 72–74.
² Chapter LI, see page 74.
³ Chapters XXXI, XXXIII, see pages 51, 52–53.
⁴ Chapter XXXII, see pages 51–52.
⁵ Chapter XII, see pages 42–43.
In the laying out of villages and towns also the Vishnu temples have been given preference. It is stated that the Vishnu temples may be built any where in the village under the innumerable epithets of Vishnu, such as, Śrīdharā in the east, Vāmana in the south, Vasudeva, Ādi-Vishnu or Janārdana in the west, Keśava or Nārāyaṇa in the north; Nṛsiṁha, Gopāla, Rāma (?) and others at the four corners. No such details are given regarding the Śiva temples. It is simply stated that the Isa (Rudra) temples may similarly be built in the quarters known as Rudra-jaya, Āpa-vatsya, Jayanta, Parjanya and such other quarters, which are by no means prominent places in the village.

In the case of towns, the Vishnu temples alone have been taken into consideration. In the capital cities, it is distinctly stated that the Vishnu temples should be built at the main entrance.

Mānasāra IX. 255 f., and 383; for instance:

...255

...273

See also 383, etc.
Similar illustrations from the body of the *Mānasāra* can be multiplied. But the point seems to be clear. Vaishnavism appears to have been the leading religion of the place where the *Mānasāra* was compiled. The author himself may have had a personal preference for Śaivism or even for Brahmā-worship; but his patron or the influence under which the author was working apparently had a leaning towards Vaishnavism in all its various phases and aspects, including even Buddha as one of the ten incarnations of Vishnu. Buddhism and Jainism, though by no means favoured religions, were allowed to continue. The influence seems to be one of non-interference, a universal toleration, with special preference for Vaishnavism.

In which period of the history of ancient India, then, could Buddhism and Jainism have got on alongside Brahmanical Hinduism? The state of things that is reflected in the generous treatment of the followers of different religions, was possible only in the period from the fourth to the eighth or ninth centuries of the Christian era. For during the reign of Aśoka in the third century B.C., and some time after, Buddhism was in a very flourishing condition, while after the eighth or the ninth century both Jainism and Buddhism were declining.

- During this period kings of three distinguished dynasties reigned in the country. The Gupta empire in its entirety dates from the reign of Samudragupta (326—375), more accurately from the reign of Chandragupta II (375—413). The seventh or last emperor of the Gupta dynasty is Skandagupta. The imperial authority of the Guptas perished with Skandagupta (455—480), and the empire broke up, although the dynasty continued till about the middle of the seventh century or perhaps a little later. The Chālukyas came into power in the south at the beginning of the sixth century after the fall of the Guptas, and remained powerful till about the middle of the eighth century, when the government of the Chālukya dominions passed into the hands of the Rāṣṭrakūṭas for more than two hundred

---

स्थानीय द्रोहक चैव संविद्य कारक तवः।
निगमं स्कन्धवारं च दुर्गी चाहिप विच च सवेत।
नगरार्दोभि संग्रामं प्रोक्तुर्गि च सततम॥
राज्यवधे नवलोकी बघुपुष्पजनास्रतम॥
मध्ये राजांयुं चैव नगरं इतस्मिष्यते।
तत्राम्बं नरसंगमं च विहृतवाचलं सवेत॥
राजानातीति तथाम विधिनिर्यश्यते सन्तः।

(*Mānasāra, X. 35—47.*
years. After their fall the Chälukyas again came into power.¹ Harsavardhana (606–648) also built up an empire in Northern India about the time when the Chälukyas were powerful in Southern India. None of these empires, however, comprised whole India. Buddhism and Jainism could not have flourished alongside Brahmanical Hinduism under the Rāṣṭrakutas. Some of the Rāṣṭrakutas Kings may have been in favour of Jainism but none seems to have favoured Buddhism. "Under them," says Sir R. G. Bhandarkar, "the worship of the Purānic gods rose to much greater importance than before. The days when kings and princes got temples and monasteries cut out of the solid rock for the use of the followers of Gautama Buddha had gone by, never to return."

"During the two centuries of the rule of the early Chälukya dynasty of Vatapi," says Vincent Smith,² "great changes in the religious state of the country were in progress. Buddhism, although still influential, and supported by a large section of the population, was slowly declining, and suffering gradual supersession by its rivals, Jainism and Brahmanical Hinduism. The sacrificial form of the Hindu religion received special attention, and was made the subject of a multitude of formal tracts. The Purānic forms of Hinduism also grew in popularity; and everywhere elaborate temples dedicated to Vishnu, Śiva, or other members of the Purānic pantheon, were erected. The orthodox Hindus borrowed from their Buddhist and Jain rivals the practice of excavating cave-temples."³ Jainism was specially popular in the southern Marātha country.⁴

On the other hand, the history of the early Gupta dynasty has all the necessary features. The empire of the Guptas comprised all the countries and divisions indicated in the Mānasāra. Brahmanical Hinduism was the leading religion, but Buddhism and Jainism were tolerated. King Meghavarman of Ceylon

¹ The early Gupta kings, about 300–520, the later Guptas 330–720 A.D.
² The Chälukyas of Badami, 530–753 A.D.
³ The Rāṣṭrakutas of Manyakhta, 733–973 A.D.
⁴ The Chälukyas of Kalyaní, 973–1190 A.D.
⁵ The History of Dekkan, p. 308.
⁶ V. Smith, ibid. p. 386.
See also Bhandarkar, ibid. p. 191.

⁷ There is no reference in the Mānasāra either to cave-temples or rock-cut pillars. Nor have free pillars like those of Aoka been specially described in the Mānasāra. There is no reason to think that an author who gives particulars of all sorts of buildings found all over the country should have remained entirely ignorant of these wonderful architectural objects. Their omission seems to have been due to this: the Mānasāra is not an history of architecture. It is a guide book and was intended to help professional architects. Architectural objects like the cave-temples, rock-cut pillars and free pillars had no more use for architects, presumably because they had become out of date at the time of the Mānasāra.
was allowed to despatch a mission with valuable presents to King Samudragupta for permission to build a monastery near the sacred Bo-tree at Gaya. The reign of Chandragupta II, the son and successor of Samudragupta, is noted for the visit of the Chinese pilgrim Fa-hien who, being a Buddhist pilgrim, necessarily saw everything through Buddhist spectacles. In his account mention is made of a number of monasteries along his journey from the Indus to Mathura in which neighbourhood he found twenty of these buildings. “It is evident that, with a Brahminical supreme Government, Hinduism of the orthodox kind must have been far more prominent than his account would lead the reader to suppose.”

Fa-hien was never “stripped by brigands, a misfortune which befell his successor Huien Tsang. Probably India has never been governed better. The Government did not attempt to do too much but let the people alone, and was accordingly popular.” Though “the sovereign was a Brahminical Hindu, the tendency to the harassing kind of persecution, which a Buddhist or Jain government is apt to display, was kept in check, and liberty of conscience was assured.”

During the long and rather obscure reign of the next emperor Kumāragupta (413–455) also Brahmanical Hinduism was the popular religion. This is clear from the fact that Kumāra, like his grandfather, celebrated the horse sacrifice, a ritual repugnant equally to Buddhism and Jainism. Both Skandagupta (455–480) and Narasimhagupta Bālāditya (485–535) “continued to pay their devotions to the Hindu gods, while exhibiting, like Harsha in the seventh century, a strong personal predilection for Buddhist doctrine.”

“Whatever may have been the causes, the fact is abundantly established that the restoration of the Brahmanical religion to popular favour, and the associated revival of the Sanskrit language, first became noticeable in the second century, were fostered by the western Satraps during the third, and made a success by the Gupta emperors in the fourth century. These princes, although perfectly tolerant of both Buddhism and Jainism, and in two cases personally interested in the former,

1 & 9 V. Smith, ibid. pp. 292, 293.
2 Paramārtha, a Buddhist of the sixth century, who wrote the life of Vasubandhu states that Vikramāditya of Ayodhya, who at first was a liberal patron of the Sāmkhyā philosophy, which is considered to have a strong affinity to both Buddhist and Jain doctrines, was induced by the eloquence of the celebrated Vasubandhu of Peshāwar to turn a favourable ear to the teachings of Buddhism and to patronize its professors with equal liberality. The Queen and Prince Bālāditya, who afterwards, about 485 A. D., succeeded to the throne as Narasimhagupta, both became disciples of Vasubandhu, and Bālāditya after his accession continued his favours to the Buddhist sage. The coinage and official inscriptions of the Gupta Kings are so distinctly Brahmanical that these statements might cause surprise.” But “it is fully confirmed by Huien Tsang, who describes Bālāditya as a zealous Buddhist.”

were themselves beyond question orthodox Hindus, guided by Brahmin advisers, and skilled in Sanskrit. An early stage in the reaction against Buddhist condemnation of sacrifice had been marked by Pushyamitra's celebration of the horse-sacrifice towards the close of the second century. In the fourth, Samudragupta revived the same ancient rite with added splendour; and in the fifth, his grandson repeated the solemnity. Without going further into detail the matter may be summed up in the remark that coins, inscriptions, and monuments agree in furnishing abundant evidence of the recrudescence during the Gupta period of Brahmanical Hinduism at the expense of Buddhism, and of the favour shown by the ruling powers to classical Sanskrit at the expense of the more popular literary dialects, which had enjoyed the patronage of the Andhra kings.

It is, further, clear from coins, inscriptions, and monuments that Vaishnavism was the predominating religion during the Gupta period. And this is the state of religious affairs evinced in the Manasara, namely, a Brahmanical Hinduism with preference for Vaishnavism and tolerant of both Buddhism and Jainism.

The appearance of treatises like the Manasara during the period of the early Guptas seems to be indicated by other reasons also. Following the spread and consolidation of the Gupta empire under Samudragupta there came a time of peace and quiet, especially during the reign of Chandragupta II, favourable to the cultivation of art and literature, and an intercourse of ideas and thoughts between the different parts forming members of one empire. It was in this Gupta period that a general literary impulse was extended to every department. In this classical period of Indian history an all-sided improvement in arts, literature and science came to be achieved. It was, again, during this period that the Sutra style of literature began to give place to the classic style. It has been shown elsewhere that the language of the Silpa-Sastras represented by the Manasara seems to be the meeting place of the two. Sanskrit was gradually raised to the position, which it long retained, as the sole literary language of Northern India.

"The literary revolution," says Vincent Smith, "necessarily was accompanied by corresponding changes in the art of architecture. The forms of buildings, specially adapted for the purposes of Buddhist ritual dropped out of use, and remarkable developments in the design of the Hindu temple were elaborated, which ultimately culminated in the marvellously ornate styles of the medieval period, extending from the ninth to the end of the twelfth century."

---

1 Smith, ibid. page 287.
2 See Appendix, and pages 211-214.
3 Smith, ibid. page 288; also refers to the seven characteristics of the Gupta style of architecture (see pages 195-206 of this volume).

Cunningham, Arch. Reports, IX. 42, I, V, X, XI, XIV, XVI, XX and XXI.

13
The external evidences, mainly based on a comparison between the Purāṇas and the Śiṣya-Sāstras also point to the same conclusions. The reasons have been elaborated for the belief that there is a relation of indebtedness between the Mānasāra on the one hand and on the other the Matsya-Purāṇa, the Bhavishya-Purāṇa, the Agni-Purāṇa, and the Bṛihat-sanhitā. "To the same age probably (Gupta period)," says Vincent Smith, "should be assigned the principal Purāṇas in their present form."

Bāha, the author of the Haṭha-charita who wrote about 620 A.D., "carries back the proof of the antiquity of the Agni, Bhāgavata, Mārkandeya and Vāyu Purāṇas four centuries further back than Alberuni, who in 1030 gives the list of the eighteen Purāṇas as given in the Viṣṇu Purāṇa, having seen three of them himself."

The discovery of the Bengal manuscript written in Gupta hand has assigned the Skanda-Purāṇa to the middle of the seventh century on palaeographical grounds. Many other early quotations from, or references to, the Purāṇas have been collected by Bühler, who points out that the account of the future kings in the Vāyu, Viṣṇu, Brahmāṇḍa and Matsya Purāṇas seems to stop with the imperial Guptas and their contemporaries.

"This last observation," adds Vincent Smith, "indicates that the date of the redaction of the four works named (including Matsya-Purāṇa, which seems to be intimately connected with the Mānasāra) cannot be very far removed from 500 A.D., the imperial Gupta dynasty having ended about 480 A.D. Bühler speaks of "future kings", because all the historical statements of the Purāṇas are given in the form of prophecy, in order to maintain the appearance of great antiquity in the books, which in their oldest forms were undoubtedly very ancient."

The Mānasāra seems, therefore, to point to the Gupta period in view of the accumulation of external and internal evidences, both political, religious and social, namely, the date of the Purāṇas; the existence of an empire comprising the whole of India; the division of royalty into nine classes including the Śūdras also; the popularity of the Brahmāṇical religion with predilection for the Viṣṇu cult and non-interference and toleration of Buddhism and Jainism; a general

---

2. Ind. Ant. XXV, page 333.
3. Ibid. pages 19, 20 compare also.
4. "The Vāyu Purāṇa in its present shape seems to be referred to the fourth century A.D. by the well-known passage describing the extent of the Gupta dominions, which is applicable only to the reign of Chandragupta I in 320–335 A. D."
5. The Purāṇas seem also to have been known to the author of the "Questions of Milinda (Milindapaṇḍita)" who composed a part of the work where the first references occur, almost certainly earlier than 350 A.D.

(S. B. E., volume XXXV, page 217).
impulse to arts and literature; the appearance of the peculiar Sanskrit of the Silpa-
Śāstras; and characteristics of architecture and sculpture consisting mainly of the
three styles and ten types of buildings.

At the time of the composition of the Mānasāra the memory of the first seven
Gupta princes seems to have been fresh in the minds of the people. An expression
gupta-vimśata has been used in the Mānasāra to imply saptā-vimśata or seven and
twenty. Gupta in the sense of seven seems to have been coined in the Mānasāra.
Perhaps it was due to the great fame and some patronage to the Mānasāra of the
early Gupta princes consisting principally of seven kings. For after the death
of Skandagupta in 460 A.D., the seventh king of the dynasty, the empire broke up:
the next princes, Puragupta Prakāśaditya and Narasimhagupta Balāditya being
but chiefs.

These conclusions are, however, in an apparent conflict with certain other
matters. Cunningham has gathered together fragments of the Gupta buildings,
wherefrom he draws the following peculiarities of what he calls the Gupta style:

"The chief characteristic features of the Gupta temples are:
(1) Flat roofs, without spires of any kind, as in the cave temples.
(2) Prolongation of the head of the door-way beyond the jambs, as in the
Egyptian temples.
(3) Statues of the rivers, the Ganges and the Jumna, guarding the entrance
door.
(4) Pillars, with massive square capitals ornamented with two lions back to
back; with a tree between them.

\[\text{Tahāgārakṛtī; svagātābhīshayā maveś]}
\text{Vārā prakāśa śyā: svatāśvābhīshayā maveś} \quad (Mānasāra, LXI, 28–33).

This refers to the following Shādvarga, a set of six formulas, with which any particular measurement must conform before it can be accepted—

| भाय | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \text{remainder of } \frac{\text{length} \times 8}{12} \) |
| कथ | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | breadth \( \times \frac{9}{10} \) |
| केन | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \frac{\text{length} \times 8}{27} \) |
| चेठि | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | breadth \( \times \frac{3}{8} \) |
| वार | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \frac{\text{Circumference, thickness or height} \times 9}{7} \) |
| तिथि | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \frac{C \times 9}{30} \) |
| or \{ | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \ldots \) | \( \frac{C \times 4}{2} \) |

More details will be found in the writer's Dictionary under Shādvarga.
(5) Bosses on the capitals and friezes of a very peculiar form like the Buddhist Stūpas or beehives, with projecting horns.

(6) Continuation of the architrave of the portico as a moulding all round the building.

(7) Deviation in plan from the cardinal points."

None of these characteristics seems to be applicable in its entirety to the buildings described in the Mānasāra. Spires or tikara and sikha as well as the kalāṇa or domes are the chief characteristic features of the buildings described in it. These seven characteristics would point to the antiquated period of structural architecture. And Cunningham himself admits the fact:

"The style is similar to that of the cave temples of Udayagiri, and of the structural temples at Eran."

"The use of flat roofs would seem to show that these buildings must belong to the very earliest period of structural architecture. When the architect, whose work has hitherto been confined to the erection of porticoes in front of caves, was first called upon to build the temple itself as well as the porticoes, he naturally copied this only prototype, and thus produced in a structural form the exact facsimile of a rock-hewn cave."

This seems to explain away the main objection. What is designated as the Gupta style points really to buildings of much earlier periods. By the time the Gupta dynasty was consolidated the methods and principles of architecture seemed to have considerably improved: the architect invented the use of domes and other ornaments over the 'flat roofs' copied in the earlier periods from the rock-hewn caves. In the Gupta period proper, as truly held by later scholars like Vincent Smith, "remarkable developments in the design of the Hindu temple were elaborated, which ultimately culminated in the marvellously ornate styles of the medieaval period, extending from the ninth to the end of the twelfth century." So the characteristics of the real Gupta buildings, notably those which existed under the Guptas and are discussed in the Silpa-Sāstrās, would be different from those given by Cunningham. The buildings described in the Mānasāra would conform, we have seen, to the characteristics of the Indo-Aryan and Chālukya-Draavidian styles recorded from the existing examples by both Fergusson and Burgess. But none of these extant examples belonged to a period earlier than the sixth or seventh century A.D. These were, however, not the first of their class: buildings of this class must have existed long before the sixth or seventh century, because the extant examples themselves clearly show that they have passed through different stages in their development.

Cunningham, Archaeological Survey Report, volume IX, page 42. Some drawings are given in this volume as well as in I, V, X, XI, XIV, XVI, XX etc.
The next objection may be one concerning the Gopuras, Prakaras and such other objects which have been exhaustively described in the Manasara. These are undeniably the peculiarities of southern architecture. This objection may be easily disposed of. There seem to be sufficient reasons to hold that the account of architecture in the Manasara has reference to buildings of all parts of India, comprising the northern, southern and eastern styles. The southern style might be as elaborately described as the northern or eastern, even when the Manasara was compiled under the patronage of a northern emperor.

The mixture of styles or the preferential treatment of one style over the other may similarly be accounted for. The "sporadic appearance of temples of a style removed from their proper area may be accounted for in various ways; great temples were constantly being visited by pilgrims on their way from one shrine to another, and the repute of any new fane was soon spread over all India; and thus, when a prince undertook to build a new temple, an architect (sthapati) of acknowledged ability might occasionally be sent for from the most distant province, and engaged to design the work, which of course, would be in his own style."1 In the very same way the author of the Manasara might have been sent for from southern India to compose the standard work on Indian architecture.

The last point to be considered is the mention of Manasara in the Daśa-kumāra-charita as a king of Malwa. This king Manasara is the hero of a fiction. There are no doubt historical facts concealed in a fictitious work. But it is not easy to sift facts from fictions. Those who are, however, inclined to connect the Manasara with this king of Malwa would assign the treatise to the seventh century, because the author of the fiction, Dandin, would be 'contemporary of Bhāravi' who is mentioned in an inscription of 634 A.D.2 and also of Harsha who reigned from 606–648 A.D.

Historical facts, as stated above, cannot generally be extricated adequately from the complexities of the fiction. Moreover although some vague conclusion has been inferred from the circumstantial evidence about the period in which Dandin, the undeniable author of the Daśa-kumāra-charita lived, no such vague idea even is available about the period or periods in which the semi-historical incidents described in the Daśa-kumāra-charita might have taken place. Besides King Manasara of the Daśa-kumāra-charita, it may be incidentally pointed out, was not the hero or even one of the chief characters of the fiction. He is stated, as pointed out above, to be the King of Malwa and a contemporary of King Rājahamsa of Magadha who was the father of Rājavāhana, the chief of the ten princes (daśa-kumāra). In the Daśa-kumāra-charita itself, King

---

1 Burgess, ibid., p. 178.
2 Macdonell, History of Sanskrit Literature, pages 334, 332.
Mānasāra is stated to have been engaged in a war with King Rāja-hamsa, that is all. There is in the fiction practically no direct or indirect reference made as to the nature of interest which King Mānasāra might have been in the habit of taking in literary or artistic matters; it must, however, be admitted that there were no real occasions for such a reference. In this connection another incident too may be advantageously taken into consideration; neither in the three styles mentioned in the treatise Mānasāra under three geographical names (Nāgara, Vesara and Drāvida) nor in the ten types of buildings bearing again geographical names and provincial divisions (Pāñchāla, Drāvida, Madhyakānta, Kalinga, Virāta, Kerala, Vanśaka, Magadha, Janaka, and Gṛjaka) is included Māhava which was presumably the capital city and provincial kingdom of king Mānasāra of the Daśa-kumāra-charita. In the circumstances it would be really doubly unwarranted to take any decision about the possibility or otherwise of King Mānasāra's patronage or instrumentality in the production of the standard treatise on architecture which, as its title would seemingly indicate, might have been named after him.

In view of these facts we venture to expect that the reader may be inclined to consider more seriously the other evidences which are undoubtedly more authenticated and substantial, including those regarding the connection of the Mānasāra with Matsya-Purāṇa (450 A. D.) on the one hand and the Brihat-saṃhitā (550 A. D.) on the other. On this assumption we shall perhaps be justified in placing the Mānasāra before the Brihat-saṃhitā and somewhere close to the Matsya-Purāṇa. In any event, we venture to hold that the evidences submitted above would warrant the extension of the period of the Mānasāra from 500 to 700 A. D.

In his two recently discovered works called the Avanti-Sudār-Kathā in prose and the Avanti-Sudār-Kathācāra in verse Daṇḍin, the author of the Daśa-kumāra-charita, is held to be "well learned in architecture of royal and divine structures."

(Proceedings of the second Oriental Conference, 1922, pages 194, 195; see also page 171 of this volume.)

Until, however, the identity of the real author of the Mānasāra is established, and the missing link connecting the Mānasāra with Vitruvius is discovered and definitely ascertained, it would not be quite possible to be more precise about the date of the Mānasāra.
APPENDIX

THE LANGUAGE OF THE ŚILPA-ŚĀSTRA

The following instances taken exclusively from the Mānasārā will, it may be hoped, illustrate the style of Sanskrit used in it. Similar illustrations have also been added from a number of inscriptions. They might also be taken from other Śilpa-śāstras; but they are left out for the present in view of the fact that these Śilpa-śāstras are still in manuscript form, and that until their publication, reference to chapter and verse will be practically useless. When a sufficient number of Śilpa-śāstras have been critically edited, and when lists of irregularities like the one we are presenting here have been made from different treatises, a useful attempt may be made to treat the subject in a more systematic manner.

CASE IRREGULARITIES

समरान्त for समरस्य VII, 247.
बलेन for पाल: III, 17.
चाटिद for चाटिद: VI, 37, 38.
मालवादिदिम for भालवादिदिमXII, 150.
सासनादिय for सासनादिय: (or भासनादिय) VII, 55 note.
हन्दवाके for हन्दवाके VIII, 47.
हन्द: चाटिय for हन्दवादिय: IX, 146.
हन्द्र for हन्द: VIII, 47.
हंद्र for हंद: VII, 91.
अध्य for अध्य: IX, 72.
पातिय for पाति: XI, 115.
कुम्भ for कुम्भ: XI, 115.
कार for कार: XI, 87.
कार for कारमयम: VII, 158.
कुम्भ for कुम्भ: VI, 34.
कार: for कार: IV, 30.
काम्य for काम्य: VIII, 13.
काम्य: for काम्य: III, 15.
जिज्ञास for जिज्ञास: XXV, 74.
धराविद्य: (3rd plural) for धराविद्य
(neuter singular), apparently for the sake of metre, III, 813.
नाम for नाम: II, 28.
II, 31.
पढ्य: for पढ्य: VI, 65.
पश्चात for पश्चात: XLIII, 142.
पश्चात for परमाद्व: II 40.
CASE IRREGULARITIES—(concluded)

बित्ये for बित्याय VIII, 31.
बिवस्वान for बिवस्वत: VII, 113.
बिशेषत: for बिशेषता II, 47.
बिस्तारे for बिस्तारथ: III, 24.
बिप्पालयम् for बिप्पालयम् or बिप्पालयम् I X, 257.
शालानो for शालाम: XXIV, 38; see also XXV, 34.
शास्त्रे for शास्त्रान: IV, 1.
शूद् for शूद्रायम: III, 34.
शापे for शापय: VIII, 39.
संस्त: पवान for संप्रभ: पवान I I, 54.
स्वयं for स्वयं: VIII, 37.
स्त: for स्तः VII, 51.
हिकाल for हिकाल: LXV, 169, 170,
note.
हिकाल for हिकाल LXVI, 9.

DISAGREEMENT IN GENDER, NUMBER OR CASE BETWEEN NOUN AND ADJECTIVE

लिङ्गान्त मैय्यकाप्त for मैय्यकाप्तानि XLV, 123.
पुरूषां मिलात सिंह (feminine plural noun, masculine plural pronominal adjective and neuter singular adjective), LII, 193, cf. 211, 212.

लिङ्गान्त मैय्यकाप्त for मैय्यकाप्तानि XLV, 123.
पुरूषां मिलात सिंह (feminine plural noun, masculine plural pronominal adjective and neuter singular adjective), LII, 193, cf. 211, 212.
IRREGULARITIES IN GENDER

DISAGREEMENT IN GENDER, NUMBER OR CASE BETWEEN NOUN AND ADJECTIVE—(concluded)

बलिन हार्यस्तु for ग्रंथु हार्यस्तु XXX, 66.
युक्त for युक्त: II, 31.
युक्तः णिका परिकोष्टिरत II, 43.
राज्यः (masculine or feminine noun in the first case neuter) वितानम (acc. feminine adjective) II, 74.
वस्तवाद्यः तत्त्विन for वस्तवाद्यः तत्त्विन LXX, 5.
विश्लेषणः प्रकर्ष for विश्लेषणः प्रकर्ष XLVIII, 34.
विशलेषित: प्रकर्ष: कुत्ताद LXX, 28.
स्वायाम for स्वायाम XII, 150; XXXIV, 281.

IRREGULARITIES IN GENDER

द्वाण्य (masculine) for द्वाण्य (neuter) VIII, 7, 9.
द्वाण्याम (neuter) for द्वाण्याम (feminine) XI, 120.
चनुर्ण (neuter) for चनुर्ण: (masculine) II, 52.
पक्ष (neuter) for पक्ष: (masculine) VIII, 50.
मत्र (neuter) for मत्र: (masculine) V, 30; VIII, 15, but मत्र: V, 7.
मित्र for मित्र (deity) VII, 170.
राम for राम: VII, 91.
वर्ण (neuter) qualifying घर (feminine) IV, 7.

वष्टु treated as feminine IV, 36, also note; treated as masculine, III, 6; confused (वष्टुः: तत्त्विन) LXX, 5, वितानम treated as neuter II, 49.
पक्ष (neuter) for पक्ष: (masculine) VI, 12.
वृद्धिं (neuter for feminine) XXXIII, 24.
श्रेष्ठ: used in neuter instead of masculine VI, 16.
मुत्तः (neuter) qualifying घर (feminine) IV, 7.
स्वायाम for स्वायाम (द्वायानाम) XII, 150, XXXIV, 281.
हस्त (neuter) for masculine II, 52; but masculine II, 51.
Declension mistakes

पार्थिव का पार्थिव: LXVII, 37, 82.
पूपला for पूपला: VII, 137.
सुविदा for सुविदा: LXVII, 33.
मन for मन: LIV, 3.
मान for either मान or मान: XXX, 79.
मिस्रस्थित (an impossible form): VII, 114.
रक्षा for रक्षा: IX, 323.
भु: for भु: L, 206.
विद्वान्य for विद्वान्य: XIII, 39.
विविधता for विविधता: VII, 138, 139.
विविधता for विविधता: XII, 86.
ब्रह्माण for ब्रह्माण: XXXIII, 67.
विद्वान for विद्वान: XXXV, 93.
वेश: for वेश: XXI, 65.
शाकु for शाकु: VI, 120.
शाला for शाला: XXII, 95.
शस्त्र for शस्त्र: XLIX, 139.

नामाय for नामाय: LXV, 174.
36 (not uniform, cf. 3, 4).
नाम for नाम: XXXIV, 541.
नामी: for नामी: XV, 804;
and }
नाम: VIII, 14.
नाम: for नाम: XXIV, 40.
पशु for पशु: XLIII, 142.
परित: for परित: X, 100.
परित: for परित: X, 100, note.
DECLENSION MISTAKES—(concluded)

नामम् for नामम्: XV, 304.
नाम् ... VIII, 14.
नामम् for नाम VII, 2, II, 13, 20, 36.
not uniform, cf. 43.
नाम for नाम् II, 23, 31.
पूपस्त्र for पूपान: VII, 137.
मन for मनं LIV, 3.
गिरस्त for गिरस्त: LIV, 121:
XLIX, 130.
गिर for गिर: XXII, 9, 41;
XXI, 48.
सब्हत used as सब XVI, 6.
हेम for हेंम LIV, 55.
हेमम् for हेम XLIX, 74, 83.
हेम used as हेंम XII, 144, 160, 161;
XV, 417.

OMISSION OF CASE-ENDINGS

किनिष्ट for either किनिष्टे or किनिष्ट: II, 48.
कर्मम् for कर्म XII, 212;
XVII, 2.
जन्म ने for जन्म XIII, 119, 144, 241, 260.
शाब for शाब: VII, 91.
पैशच for पैशचम् VII, 57, 58.

WRONG COMPOUNDS

विश्वास } for विश्वासस् or विश्वास VI, 20 and note.

विद्रेष for विद्रेष XI, 25, cf. 41, 45, 49.
प्रथमार्गे for प्रथमार्गा रथायि or प्रथम-रथायि IX, 222.
Wrong compounds—(concluded)

पदास्त्रिके for पदे or पदन्: शब्दिके VII, 127.
बिर्धारालय्यम for बिर्धारालय्यम or
बिर्धारालय्यम IX, 257.

Wrong Sandhi

प्रवेशप्रदेश for प्रवेशप्रदेश XXXIII, 81.
शादिको तत्त for शादियस्तत XXXV, 191.
चतुर्थ पक्ष for चतुर्थ पक्ष (compulsory sandhi ignored) IX, 199; XII, 199.
जम्मूपरिण for जम्मू उपारी XLV, 179, etc.
ढेक for ढेक XXXIV, 310.
देव कर्म for देव कर्म: II, 19, cf. 1, 8, 43.
ध्वजुण for ध्वजुण VI, 62.
इंगाक for इंगाक XXVIII, 24, (correct forms XXVIII, 28).
पुरुस्क for पुरुस्क XXXIV, 486.
भन्यांश for भन्यांश XXXIII, 231;
XXXVIII, 47.

Confusion between words

बता for वया IV, 27 note.
बाम for वा IX, 309 note.

Shab for शब LIV, 117.

Ungrammatical forms and impossible words

उद्रोभ्य for उद्रोभ्य II, 40.
उद्रोभ्य for उद्रोभ्य (adjective for abstract noun) XXI, 7.
उपरिष for उपरि XLV, 103.
चर for छार XXXIV, 418.
छार for छार XXXIX, 138, note.

उद्रोभ्य for उद्रोभ्य (adjective for abstract noun) XXI, 27; XL, 20;
LIX, 92, etc.

दीर्घ for दीर्घ (adjective for abstract noun) VII, 58.
दीर्घ for दीर्घ L, 207, 208, 209.
छार for छार XXXIV, 496.
Disagreement between Noun and Verb in Number, etc.

कुर्वीन्ता विचार्य्य्य: (active verb, passive nominative) IX, 78.
कुर्वीन्ता बिनिलय्य्य: (active verb, passive nominative) XXXII, 9.

विनिलय्य्य: कु (passive plural nom. and active, singular, imperative verb) LXIX, 68.

विनिलय्य्य: प्रावल देव LXX, 46.

Wrong Conjugations

द्वेतेन for द्वेतु LXX, 51, 54, 65, 80, 88, 94.

XV, 408.

पत्रिष्ठेन for पत्रिष्ठेवतः XLII, 60, 63.

परोशेन for परोशेवः V, 31, note.

पद्याते for पद्याति or पद्यातो XXXII, 170.

परिष्ठेवात for परिष्ठेवत XXXII, 83.

बन्धेत for बन्धेवः V, 17.

विनिलय्य्य for विनिलय्य्य (passive) VIII, 63.

ब्रुदश द्वेते for ब्रुदशेवः XXXI, 101.

Irregularities in Use and Forms of Verbs

चोयते for चोयतः II, 31.

परोश (infinitive absolute without finite verb) III, 16.

संज्ञाव for संज्ञाय or संज्ञाय VII, 38.

शाय for शायतिया XXXII, 10, 13, 33, 37, 43, 50, 58; LIV, 5.

Elimination of before कः-

वार for द्वार (contd.) 394, 408, 514, 521, 526, 529;

XXXV, 100, 120 note,

123 note, 233, 243, 265 note,

XXXIX, 128 note.

विनिलय्य for विनिलय्य XXVI, 14.

विनिलय्य: for विनिलय्य: IX, 186.

विनिलय्य for विनिलय्य XXX, 90.

विनिलय्य for विनिलय्य XXVI, 9, 7, 30 note.
Wrong Numerals

छन्द for छन्द: XXX, 17.
छन्द for छन्द: (ordinal for cardinal) XXXIX, 117.
छन्दिन for छन्दिन: XXXV, 6, 8, 12.
छन्दिन for छन्दिन: XXXV, 6, 8, 12.

विन्द for विन्द: XI, 25, cf. 41, 45, 49.
विष for विष: V, 82.
विष, विषाद, विषाल (indiscriminately used) XI, 81, 85, 86, etc.

Wrong Spelling

प्रीति for प्रीति: LIX, 93, 94, etc. [Sometimes it is noticed that प्रीति
is used to imply the finger or toe, while प्रीति to imply the finger-measure.]
प्रथ्व for प्रथ्व: XXV, 12.
पलिन्द्रक for पलिन्द्रक: LXIX, 8, 40.
कुलल, कुमल and कुलल: indiscriminately used XVIII, 102, 111, 119, 124,
131, 244, 249.
श्रीमल for श्रीमल: IV, 35.
कमल for श्रीमल: XXVII, 14.
कल्गु० for श्रीमल: IX, 309 note.
कल्गु० for श्रीमल: XXXIV, 418.
कल्गु० for श्रीमल (कल्गु०) VIII, 54.
कल्गु० for श्रीमल: XXXIX, 138 note.
कल्गु० for श्रीमल: VII, 198, 211,
XII, 120.

तिन्द्र for तिन्द्र: IX, 73.
तिन्द्र for तिन्द्र: (ordinal for cardinal) XXI, 7; XXII, 19.
पत्राद्व for पत्राद्व: XI, 23;
XIII, 10, 23;
XXXI, 33.
पत्राद्व, पत्राद्व, पत्राद्व: XI, 50, 51, 79.
पत्राद्व for पत्राद्व: XX, 33.
पत्राद्व for पत्राद्व: XXXIII, 19, 27
note, 108; XXXIX, 9.

तत्त्व for तत्त्व: III, 1;
XXX, 107;
XXXIII, 1, 3, 4.
तत्त्व for तत्त्व: XXXI, 11 note,
(correct forms 17, 23, etc).
तत्त्व for तत्त्व: XI, 15, 18;
XXIV, 6;
XXVII, 32;
XXXIV, 302.
(correct forms XXVIII, 21).
तत्त्व for तत्त्व: XXXIII, 274.
तत्त्व for तत्त्व: LIX, 85.
तत्त्व for तत्त्व: IX, 171, 175, 179.
तत्त्व for तत्त्व: XIV, 9, 26, 45, 60, 73,
148, 162, 176, 180, 184, 185, 217, 241,
260, 268, 270, 276, 279, 305, 306,
316;
XV, 103, 186, 215.
WRONG SPELLING — (continued)

किण्डा for किण्डा XVIII, 188, 197, 267;
(con't)
XXII, 89, 50, 51 note, 54, 64, 76 note, 79, 80;
XXV, 4, 11;
XXVI, 56 note;
XXVII, 13, 34 note, 37 note;
XXX, 19 note, 21;
XXXI, 94;
XXXII, 53, 131, 270 note, 272, 480 note;
XXIV, 129, 135, 137, 197, 268, 289, 327, 377, 392, 428;
XXV, 107, 132, 141, 212, 213, 226, 228, 229 note, 244.

Correct forms XVI, 62, 63, 75, 88;
XXII, 61.

हिन्दु for हिन्दु XXXI, 94.
हिन्दु for हिन्दु IX, 92 note.
हिन्दु for हिन्दु XLV, 143.
हिन्दु for हिन्दु XVIII, 188, 197.
हिन्दु for हिन्दु XXII, 6.
हिन्दु for हिन्दु IX, 73.
धनुष for धनुष II, 52, see note.
धन for धन VI, 67.
Wrong spelling—(concluded)

पिन्न, सूत्र (feminine used as masculine)
LI, 2, 3.

विष्णु: for शिल्पी LII, 147.

शिल्पित्व for शिल्पित्व VI, 26, etc.,

श्रेय for चैत IV, 23 note.

पद्म (for श) for XII, 25 note.

सग for सगा XVI, 6.

समुह for समुह IX, 64 note.

सिद्ध for सिद्ध VI, 32 note;
VI, 58 note;
VII, 236;
XVIII, 292;

(but सिद्ध XVIII, 316).

सत्क्रुद्ध for सत्कुरु XV, 24.

स्वर्थ for स्वर्थ XVIII, 4, and see note.

स्वर्ण for स्वर्ण XIX, 116, 117, etc.

हेम for हेमा XII, 144, 160, 161;
XV, 417;
LIV, 55.

Wrong metres

चन्द्रमृः—In this metre each verse should consist of eight syllables with only the following restrictions:

The fifth syllable of each पद्म should be short, the sixth syllable long, and the seventh syllable long and short alternately in the four पद्मs.

In quite a large number of instances these restrictions are disregarded in the Mānasōra, for example:

धृष्टिमविचित्र वष्णे शाक्ते संक्षेत्त: कमावत।
वनि न भ्रमायं वन्तुलभावं तदा || XI, 1, 2.
Here the fifth and the sixth syllables of the third pāda are not short and long respectively as required, but they are the reverse—long and short.

पूर्वकारणामात्रिय चाचुना पवित्रे | XLIII, 111.

Here the fourth pāda has only seven syllables.

उक्ति हि भूमिकाय स्थापत्तेकं चल्पितकम् I

विकर्जन कावथि हि हि करेश वृद्धिकथा || XI, 5, 6.

The fourth pāda of this verse is altogether irregular and unsuited in chandāstāma verse. The number of syllables is ten instead of eight.

मानकेरण चाचुना शिष्यस्वाभवपुर्वकम् II

पथ वासुकेरण भूप्रोसाविचि तथा || I, 10.

In the third pāda here, the sixth and the seventh syllables are not long as required.

देवानां भापनाय पद्वल्लस्वलक्षणम् || I, 12.

Here the fifth syllable of the first pāda which ought to be short is made long, while the sixth which should be long is made short.

पञ्च ति ब्रह्माल न्यस्त श्रव्यकायाधमानया |

चतुर्कृतं नामवश्य धनु: वुमेव पड़ृहलम् || VI, 33, 34.

Here the third pāda contains nine syllables instead of eight and the fifth syllable is long instead of short.

प्रत्ययों चतुष्कृतं चेंब नाम पैशा चमंब च || VII, 3.

Here the first pāda contains nine syllables.

For the irregularities in metre the whole of chapter XI is an illustration.

False metre: XLIII, 111;

VI, 113;

VIII, 10.

A typical abuse of particles for the sake of metre, चापितेव च LI, 64.

Unnecessary collection of particles for the sake of metre, निसिकाय चेतनु XII, 12.
Too many particles, च, for the sake of metre:
 IX, 285;
 IX, 401;
 IX, 358.

Repetition of the same term विस्तार, for the sake of metre, X, 20.

The use of a word (बहुः) for three times in the same line for the sake of metre, VII, 108.

Repetition of many verbs and particles in the same line for the sake of metre, VII, 262.

Untenable words for the sake of metre, XXXIII, 370.

Chapters end with verses of different metres, according to the rules of poetics, although the whole composition is nothing but versified prose entirely lacking in poetry, see XLV, 101, etc.

Illustrations of barbarous Sanskrit, IV, 24, etc, etc.
That this kind of language is not limited to the Manasāra nor even to the Śilpa-sāstra class of literature will be clear from the following illustrations picked up from inscriptions.

"Some peculiarities in spelling, the frequent use of single consonants for double ones, the use of short i and u for long i and u, and the occasional omission of the long ā (e.g. kemaṁtamase, no. v., Mahārajasya and matha, no. IXA), agree with the usage prevailing partly in all, partly some versions of Asoka's edicts and of other ancient inscriptions. They make it difficult to decide, whether some of the curious forms, to be discussed below, are due to negligence in spelling or to grammatical irregularities." (Jaina inscriptions from Mathura, Ep. Ind. vol. I, p. 373, para 2).

"The language of these inscriptions shows the mixed dialect, consisting partly of Praekrit and partly of Sanskrit words and forms, as clearly as the formerly discovered documents. A fixed principle, according to which the mixture has been made, so far as I can see, is not discoverable." (Ibid. para 3, first two sentences).

"The omission of the case terminations in words, which qualify others standing in the same case, is common, as Professor von Roth has shown (Abhandlungen des VII ten Int. Or. Congresses, Aryan, section, pp., 1 ff.) in the Rigveda. It occurs also not rarely in Pāṇini's Sūtras, is very frequent in the Northern Buddhist works, and is a fixed principle in the modern Indian Vernaculars as well as in other languages." (Ibid. p. 375, middle of first para).

"Thus in no. XVIII, there are only three words stāna, for sthāna, pratishtāpita for pratishtāpita, and perhaps chāndakā for chāndrakā, showing the influence of the Prakrit, though the great majority of the terminations are Prakritic." (Ibid. p. 175, second para, second sentence).

"Moreover, it (no. CV) furnishes a good example of the Sanskrit, written by the Yatis of our days, and it may be useful for settling the controversy regarding the origin of the 'mixed' dialects found in older books and inscriptions as well as that regarding the advisability of bringing by conjectural emendations, the language of somewhat older Jain authors such as Merutumga, Rajaśēkharā and Jinasandhana, into harmony with the rules of Sanskrit grammar."

(Jaina inscriptions from Śatrumājaya, first para, Ep. Ind. vol. II, p. 34).

"Altogether the inscription has not been written carefully, and, though corrected in several places, it is by no means free from serious mistakes. The rules of samādi are frequently disregarded, the verses of the genealogical portion are only partially numbered or have wrong numbers appended to them; single akṣharas and whole words or groups of words are either given quite wrongly
or left out; and I hope to prove below that even one or more whole lines have been omitted by the writer."


"The language is very incorrect Sanskrit prose, greatly influenced by the Prākrit or vernacular of the author. In some places the case terminations are altogether omitted; in others we have wrong cases, false genders, and inappropriate or incorrect verbal derivatives. The influence of the Prākrit is shown by the substitution of single for conjunct consonants, the substitution of ś for ş and sh, and the omission of medial y and final consonants (e.g. vidheynam for vidheyānām, kasyachi for kasyachit)."


"In Ushavādās cave [at Nāsik] we have one inscription (almost) entirely in Sanskrit, the rest are in Pāli or Prākrit, but we have an intermixture of Sanskrit words, and the conjuncts pra, tra, and ksha often appear. In these and the smaller inscriptions we have such words as bāra for dvāra, bārasaka for vārshaka, barīs for vārsha, udīsa for uddīśya, while the Pāli forms of these words are dvāra, vassika, rssa, and uddeṣṭā. Some of these inscriptions were engraved so late as the third century, when the Pāli could hardly have been the vernacular."

(Ind. Ant. vol. XII, p. 140, first column, middle).

It should be noted that bāra for dvāra, yiś for iśa, yeke for eka, vu(bu)ṭṭara for uṭṭara, etc., are frequently used in the Mūnasāra.

"As regards the origin of this mixed dialect, as well as of all other mixed dialects, I agree with professor Kern (Jaartelling, p. 108 ff.) and Dr. R. G. Bhāndārkar (Indian Antiquary, vol. XII, p. 146) that it is the result of the efforts of half educated people to express themselves in Sanskrit, of which they possessed an insufficient knowledge and which they were not in the habit of using largely. All the Jaina inscriptions from Mathurā were no doubt composed by the monks who acted as the spiritual directors of the laymen, or by their pupils. Though no inscription has been found in which the author is named, the above inference is warranted by the fact that numerous later documents of the same character contain the names of Yatis who are said to have composed them or to have written them. The Yati in the first and second centuries, no doubt, just as now, for their sermons and the exposition of their scriptures, used the vernacular of the day, and their scriptures were certainly written in Prakrit. It was a matter of course that their attempts to write in Sanskrit were not very successful. This theory receives the strongest support from the fact that the character and the number of the corruptions varies almost in every document, and from various single sentences,........,
which latter reads exactly like a piece from a stupid school boy's exercise. It is also confirmed by numerous analogies, such as the language of the janmas patras of the badly educated Joshis mentioned by Dr. Bhandarkar, the books of masons and carpenters, which have the rules for building houses in most barbarous Sanskrit, and many modern inscriptions, composed by clerks or yatis. A large number of specimens of the latter kind are contained in the collection of votive inscriptions from Pālitanā, lately copied by Mr. H. Cousens."

(Dr. G. Bühler, Jaina Inscriptions from Mathura, Ep. Ind. vol. 1, p. 377.)

"As to the language of other inscriptions [in caves at Nāsik] which, like those of Gotamiputra and his son, were not composed by learned men, one can easily understand how ignorant persons not knowing Sanskrit or Pāli well, but still not ignorant enough to know nothing of both, would compound together Sanskrit, Pāli, and vernacular words. Even in our days we find this phenomenon in the pātrikās or horoscopes written by our Joshis or astrologers, which are neither in pure Sanskrit nor in pure vernacular, but contain a mixture of both, and the Sanskrit words and forms in which are incorrectly written. And an explanation of this nature I have also to give of another variety of language that is found in the writings of the northern or Nepalese Buddhists. Unlike those of the Singalese and Burmese Buddhists these are written in Sanskrit, but in such works as the Lalitavistāra, or the life of the Buddha, we find along with prose passages in pure Sanskrit a number of verses which contain words or forms which are not Sanskrit. Thus, for instance we have—

Sarvasubhakarmahetah phalamidam triṇuttosya karmasya
Pājaraha bhavitum sarva jage anubandha ita imamantayaśam

"You will here see that karmasya, jage, and yatam are, as in the Pāli, treated like nouns in a. Arha is dissolved into araha,

"This language has, therefore, no fixed characteristics at all. We have seen that in such words as karma, jaga, and yata above, the final consonant is dropped, and these as in the Pāli and the Prākrits made nouns in a. But yatas the original Sanskrit form, is also used as in kirtiyatakha and these are instances in which other final consonants are preserved. Along with such a Pāli form as sunishyati noticed above, such a Sanskrit one as triṇvanti, is found. It therefore appears to me that this is not an independent language; but that the writers of the gūthās knew the spoken language or Pāli, and that they were imperfectly acquainted with Sanskrit, knowing enough of it to see that the assimilation of consonants was a vulgarity, but not acquainted with its grammar. They intended to write in the
more polished or literary language, but not knowing it well often used unconsciously the grammatical forms and the peculiar words of the vernacular. (At the time when the gāthās were written, the claims of the Pāli to be considered a separate language were probably not recognized, and it constituted the speech of the uninstructed.) Those who in this condition of things wished to write could not think of doing so in that form of speech, and therefore wrote in what they considered the language of educated men, but they knew it imperfectly, and hence produced such a heterogenous compound as we have seen."


These weighty opinions on the origin of a peculiar style of Sanskrit will, it may be hoped, support the following thesis submitted by the present writer to Leiden University regarding the growth of the language of the Śilpa-Śāstras.

"The ungrammatical style of Sanskrit revealed in the branch of literature, of which the Mānasāra is a representative, is due to the want of literary proficiency on the part of professional architects who seem to have been the authors of it."
GENERAL INDEX

A

Abhaṅga, slight flexion, a pose, 86.
Abhāṣa, a class of buildings, 41, 48, 110, 118, etc.; a type of door, 155; a kind of phalus, 72, etc.; a building material, a sort of marble, three kinds—chitra ardha-chitra and abhāsa proper, 70.

Abja, ambuja, padma or saroruha, names of a kind of moulding, partly corresponding to cyma, cymareeta or cymatium, 127.
Abja-kānta, a class of ten-storeyed buildings, 50, 112, etc.
Abu, marble temples at Mount of, 178; further details, 179.

Āchāra-sāra, an illustration of the names of books ending in sāra meaning 'essence,' 2.

Actium, the battle of, referring to the age in which Vitruvius, the famous Roman architect, might have lived, 160.
Adam, the father of human race corresponding to Manu, 166.

Abhuta, one of the five divisions of height of an architectural or sculptural object, determined in comparison with the width, the others being called kāntika, paushtika, pārohika or jayada, and sarvakāmika, 41, 55, 124, etc.; name of a class of two-

storeyed buildings also called Prabhutaka, 60, 111, 118, etc.

Ādhāra, a kind of support for a chariot, also called Upaḍhāra, 60; name of a moulding, 127, etc.

Adhirāja, one of the nine classes of kings, 59; for whose use different kinds of storeyed buildings, thrones, crowns, chariots, and ornaments, etc., are prescribed, 42, 60, 61, 67-68, etc.

Adhisaṁsāna, the base, its sixty-four varieties divided under nineteen different types bearing technical names, 44; illustrations of its being dealt with in all purely architectural treatises, 89, 92, 106; comparison with Vitruvius's, 149 fol.

Adhvīṣana, ceremony connected with the coronation of a king, 65.

Ādika, a kind of conveyance, first or fast conveyance, 36.

Ādimaṇa, primary measurement, 77; its nine varieties, 121, etc.

Ādiśāra, an architectural treatise or author like Mānasāra, one of the thirty-two authorities on architecture, 165.

Ādi-Vishṇu, one of the epithets of Vishṇu, an illustration of the popularity of the Vishṇu cult at the time of the Mānasāra, 189.
Ādyeśṭakavidhi, laying the foundation stone, 28, etc.

Āgama, a traditional doctrine; a special class of works, belonging especially to Southern India like the Purāṇas of Northern India, and numbering twenty-eight, 23; deals extensively with architectural and sculptural matters, 24–28, (109), 118-119, 125, 126, 128, 130, 131, 132, 151, 160, 175.

Agastya, an authority on architecture, 97, 100, 101, 107.

Agastya-sakalādhikāra, a treatise on architecture, 100.

Aghanā, hollow parts, 53; an architectural measurement taken by the interior of a structure, 124.

Agni-purāṇa, seems to be aware of Mānasāra, 4, 169; dilates on the subject of architecture at great length, 20; compared with various other treatises on architectural matters, 110, 160, 170; describes forty-five types of buildings under five classes which are identical with those given in Guruḍa-purāṇa, 113, 119; age of, 194.

Ahi-chhatra, the capital of north Pāṇḍhāra which is the name of a type of twelve-storeyed buildings, 174.

Ahura-Mazda, possible identity with Maya-Asura, 166, 172.

Āirāvata, name of a class of five-storeyed buildings, 50, 112.

Āitareya-Brāhmaṇa, reference to the anūgula measure from, 122.

Ājanta, rock-cut cave temples of, 10; richly carved and ornamented pierced widows at, 178.

Akrakānta, a class of eleven-storeyed buildings, 50, 112.

Aksha, axle of cars and chariots, 60.

Akshi-mokshaṇa, chiselling the eyes of an image, 101, 107.

Alaka-(chudā), a kind of head-dress used by the queens of Pṛabhāraka and Astragrāha classes of kings, 65.

Ālambana-bāhu, balustrades, references from Buddhist literature to, 13.

Alaṅkāra-sāstra, illustrates the inductive method of treatment of the subject matter as in the Śilpaśāstras, 133.

Alberuni, on the age of Purāṇas, 194.

Alexander, his expedition accounts for the Grecian influence on the Gāndhāra sculpture, 159.

Alinda, verandah, references from Buddhist literature to, 12.

Āliṅga, name of a moulding, 127.

Alpa, one of the twenty types of buildings mentioned in the Kāmi-kāgama, 118.

Amalaka, a large fluted circular block, being a characteristic feature over the summit of the earlier Indo-Aryan style of architecture, 179.
Āmalaka-vanṭika-pīṭham, chair with many legs, references from Buddhist literature to, 16.

Amara-kosha, the famous Sanskrit lexicon, refers to several architectural terms and illustrates the popularity of architecture in the dictionary class of literature, 33.

Ambaranāth, Indo-Aryan style of architecture of the mediaeval age at, 179.

Aṁṣu, name of a moulding, 127.

Aṁśumad-bhedā (of Kāśyapa), an architectural treatise of much reputation summarized, (91), 92; 99.

Aṁśumad-bhedāgama, references to architecture from, 28; reference to Tāla measure from, 123.

Andhra, one of the two branches of the Vesara style of architecture, 130, 131, 176; Aryanization of the country of, 184; patronage to popular literary dialects of the Andhra Kings, 193; empire of, 185.

Aṅghri, dwarf pillar, 63; name of a moulding, 127.

Aṅgfrasa, a treatise on architecture on which the Sanat-kumāra-vāstu-sāstra was based, 102.

Aṅgula, a finger, finger-breadth used as the standard measure, the smaller units of which it is made and its multiples, 35; the four kinds of, 77; similarly treated in all branches of Sanskrit literature, (121), 122.

Aṅguliyaka, an ornament, finger-ring, 67.

Anila-bhadra, one of the seven types of cars, 61.

Animals, for riding of gods, 81, 82, 83.

Aniruddha, one of the eighteen architectural authorities mentioned in the Matsya-purāṇa, 164.

Anta-nihāra, one of the five courts into which the compound of an edifice is divided, 51, 154.

Antarāla, anteroom, 49; a moulding, 127.

Antariksha-kānta, class of ten-storeyed buildings, 50, 112.

Antarita, otherwise called antara, antarāla and antarika, fillet, a moulding, 127.

Antar-mañdala, one of the five courts into which the compound of an edifice is divided, 51, 154.

Antika, a type of two-storeyed buildings, 111, also called Kāntika, 51.

Anukarma-vidhāna, minor works on sculpture, 90.

Apasamāchita, a type of building, 24, 49, 111, 118.

Āpa-tattva, one of the several architectural treatises ascribed to Mahādāna, 103.

Āpa-vaṭṣaya, name of a quarter, 189; compare ground-plan, 37-38.

Apelles, an eminent painter, 141.

Apollo, a deity, the temple of, 146.

Ārāma, rest-house, a garden house, elaborately described in Buddhist literature, 11.
INDEX.

Araṅga, probably for Raṅga, a class of buildings, 36.
Architecture, objects implied by, 1; one of the duties of the Buddhist order, 10; professors of, (89), 165.
Arda-hāra, string of pearls worn round the neck, a chain of sixty-four strings, 68.
Arda-nārisvara, image of Śiva combined with his consort Pārvatī, 94, 100, 107.
Arda-yoga, a type of Buddhist buildings, partly religious and partly residential, 10.
Argala, name of a moulding, 127.
Aristarchus, a grammarian, 141.
Aristoxenus, a famous musician, 141.
Arjuna, the temple of, 177.
Armōstulos, one of the five species of Vitruvius's temples, 147.
Ārha, a class of phalli, 73.
Artha-sāstra, of Kautiliya, the architectural matters described in, 29; an example of political works, 132; reference to party-walls, sewage system and windows, etc., from, 149; connection with Purāṇas and other works, 169-170.
Asambhita, a class of buildings, 24, 49, 111.
Āsana, a type of buildings in which the deity is carved in the sitting posture, 24, 49, 110; a class of three-storeyed buildings, 50, 111; one of the three postures, 86; seat, 97; name of a moulding, 127.
Āsand, chairs, 16, 30.
Āsandako, rectangular chair, 16.
Ashtāra, a class of octagonal buildings, 116 (its description); 117, 118.
Ashta-tāla, a kind of measurement, 75, see Tāla (121, 1:3).
Aśoka, 183, 184, 185, 190.
Āśramagāra, a class of seven-storeyed buildings, 50, 112.
Assembly-halls, of Indra, Yama, Varuna and Kubera as mentioned in Mahābhārata, 17.
Āsthāna-maulapā, hall of public audience, 58.
Astragal, name of a moulding, 127, 152.
Astragrāhin, a class of kings, 59, 181, 182.
Asura, a deity, name of a plot in the ground-plan (Pada-vinyāsa), 38.
Aśva-māna-vidhi, name of a chapter in the Viśvasāra dealing with the measurement of horse's image, 108.
Ātharva-veda, references to architectural matters from, 6.
Aśvatha tree, characteristic of Buddha, 78-79.
Atibhaṅga, excessive flexion, one of the poses in which an image is carved, 86.
Ātmārtha, (for one's own purpose), a class of phalli for personal worship as opposed to public worship, 73.
INDEX

Atri, a sage, 6; one of the eighteen Professors of architecture mentioned in the Matsya-purāṇa, 164.

Aṭṭālikā, edifice, one of several architectural objects mentioned in Pāṇini’s grammar, 33.

Attic, one of the three species of doors mentioned by Vitruvius, 155.

Augustus, a Roman king, 169.

Auttami, one of the fourteen Manus, 166.

Avachohāya, light shadow, calculation of, in connection with the cardinal points for the orientation of buildings, 37.

Āvarya, one of the thirty-two architectural authorities mentioned in Mānasāra, 165.

Āyādi-shad-varga, āya and other architectural formulas of measurement, 83, 24, 73, 74, 78, 103.

Ayodhyā, its town-plan, 17; builder of, 166; mentioned (as Ajoyya) in Buddhist literature, 9.

Āyudhālaya, arsenal, 58.

B

Babhru-(mushūkta), a type of building mentioned in the Agni-purāṇa, 114.

Bacchus, temple of, 146, 148.

Bādāmi, Chalukyas of, 191.

Bahir-bhūṣhaṇa, external ornaments, certain articles of furniture, 68.

Bahu-bhūmi-vidhāna, building of more than three storeys, the name of a chapter in the Mayamata-Śilpa-Śūstra, 90.

Bahu-līnga, phalli in group, a class of phalai, 73.

Bāhnīla, name of a moulding, 27, 152.

Bairat, town of, representing ancient Virāta, 174.

Ba(va)labhi, a rectangular type of building mentioned in the Agni-purāṇa, 113.

Bālāditya, a Gupta prince, 192.

Balance, architectural details of, 69.

Bāla-paryāṇaka, small couch, 36.

Balaya (valaya), a round type of building mentioned in the Agni-purāṇa, 113.

Bali, an island, 170.

Bali-karma, offerings to gods in connection with constructing a building, 89.

Bāṇa, the author of the Harsha-charita, 194.

Bāṇa-sāla, castles, 30.

Bārāṇasi, the builder of, 9.

Baroli, type of temple at, 178.

Base, (adhishṭhāna), different varieties of, 44, 128.

Bauddhas, temples of 52; images of the deities of, 78.

Bedsteads, architectural details of, 61-62; references from the Agamas to, 27.

Belur, type of temple at, 178.

Benares, type of temples at, 179.

Berāṅgula, a kind of measurement, 77, 84.
Bhadra, a type of pavilion used as a water-reservoir, store-house, etc., 154; balconies, 60; a type of square building mentioned in the Agni-purāṇa, 113; also in the Kāmikācāma, 118; a moulding, 127.

Bhadra-piṭha, one of the four classes of pedestals, 74.

Bhadra-piṭham, state chair, 16.

Bhradāṣṭā, a type of throne for the Paṭṭabhāj class of kings, 63.

Bhāgavata-purāṇa, references to a class of devotees from, 80.

Bhairava, a class of phalli, 72.

Bhairavi, one of the seven mothers, image of, 75.

Bhānu, one of the thirty-two architectural authorities mentioned in Mānasāra, 165.

Bhāra (hāra), name of a moulding, 127.

Bhurata, an architectural authority, 162.

Bhārgava, one of several architectural authorities on which the Sanatkumāra's Vāstu-jāstra is stated to have been based, 102.

Bhāravi, contemporary and date of, 197.

Bhāskara, one of several authorities on which the architectural portion of the Brīhat-samhitā appears to have been based, 163, 165.

Bhāskarāchārya, astronomical works of, 172.

Bhāṭotpala, a commentator of the Brīhat-samhitā, 162.

Bhāvabhūti, the great Sanskrit poet, architectural references from, 32.

Bhavana (bhuvana), a rectangular type of building mentioned in the Agni-purāṇa, 113, and the Garuda-purāṇa, 114.

Bhavana-kānta, a class of ten-storeyed buildings, 50, 112.

Bhavishya-purāṇa, architectural references from, 21; comparative study of, 23, 110, 119, 131, 160; twenty types of buildings from, 116-117; references to selection of site and examination of soil from, 140; identical with the Matsya-purāṇa and the Brīhat-samhitā, 163; age of, 194.

Bhikshāṇa-(mūrti-lakṣaṇa), image of Śiva in the pose of a beggar, 94, 100.

Bhoga, a type of single storeyed building, 49; with round ears (wings), 111.

Bhojana-mañḍapa, dining hall, a type of pavilion, 58.

Bhrigu, one of the authorities on which Sanatkumāra's Vāstu-jāstra is stated to have been based, 102; architectural references from, 167; further references from, 140; one of the eighteen professors of architecture mentioned in the Matsya-purāṇa, 164.

Bhringa-rāja, a deity, 38.

Bhū-devi, earth-goddess, image of, 71; see also Mahī, 74-75.

Bhūdharā, a round type of building mentioned in the Agni-purāṇa, 113.

Bhū-kānta, types of eight-and ten-storeyed buildings, 50, 112.
Bhū-lamba, dimensions of storeys, name of a chapter in the Maya-mata, 89; see Bhūmi-lamba.

Bhūmi-(lakṣaṇa), soil, name of a chapter in the Viśvakarma-Sīlpa, 96.

Bhūmi-lamba-vihāra, dimensions of buildings of various storeys, 41, 26; definition and contents of the chapter so named, 147.

Bhūmi-phalam, fruit of soil, effect of soil upon the building, a chapter of the Viśvakarma-Sīlpa, 96.

Bhūmi-saṅgraha, selection of site, details of, 36; comparative study of, 142.

Bhū-mukha, an oval type of building mentioned in the Garuda-purāṇa, 114.

Bhūpa-kānta, a class of eight-storeyed buildings, 50, 112.

Bhū-parigraha, selection of site, name of a chapter in the Mayamata-Sīlpa-sāstra, 89.

Bhū-parikalpa, examination of soil, details of, 36, 89, 102; comparative study of, 142.

Bhūpati-Vallabba, perhaps identical with the Sīlpa-sāstra of Maṇḍana, 103.

Bhūshaṇa, a class of nine-storeyed buildings, 50, 112; an oval type of building mentioned in the Agni-purāṇa, 113.

Bhūshaṇālaya, house for keeping ornaments in, a store-room for jewellery, 58.

Bhūtas, goblins, images of, 61; compare Yaksha, etc., 80.

Bhūta-kānta, a class of five-storeyed buildings, 50, 112.

Bhuvanesvara, type of temples at, 179; division of the style of architecture at, 180.

Bihār, country of Janakas, types of twelve-storeyed buildings at, 173.

Bimbamāna, references to sculptural matters from, 121, 122, 123.

Bimbisāra, a king, builder of Rāja-griha, 9.

Bodhika, name of a moulding, 126, 127, 151.

Boutique, a Buddhist building, 11.

Brahmā, image of, 71; name of a type of columns, 126, 151; according to Varāhamihira the science of architecture originated from, 162; in architectural matters the comparative treatment of, 187; the foundations of the temples of, 188; worship of, 190.

Brahma-bīga, the name of the square stand of the phalus, 73.

Brahma-kānta, square pillar, 45, 125, 150; a pillar with four minor pillars, 45, 46; a class of three-storeyed buildings, 50, 111; a class of five-storeyed buildings, 50, 112; a class of gopuras (gate-house), 52.

Brahma-mandira, a rectangular type of building mentioned in the Agni-purāṇa and the Garuda-purāṇa, 113, 114.

Brahman, one of the authorities on which Sanat-kumāra's Vāstu-Sāstra (science of architecture) is
stated to have been based, 102; one of the eighteen professors of architecture mentioned in the Matsya-purāṇa, 164.

Brahmāṇḍa-purāṇa, references to temples and residential buildings from, 21; angula-measures from, 122; tāla-measures from, 123; account of future kings ending with the Guptas in, 194.

Brahmāṇī, one of the seven mothers image of, 75.

Brahma-pīṭha, the royal chapel, 58.

Brahma-sāvarṇī, one of the fourteen Manus, 166.

Brahma-sthāna, the central plot in a village or town, where some public building is generally built, 56; the central place in a palace where the royal chapel is situated, 58.

Brahma-yāmala, an architectural treatise, 108.

Brāhmī, goddess, image of, 98.

Brahmor, in Chamba State, bronze Nandin from, 82.

Bṛhat-samhitā, by Varāhamihira, short description of, 22; method of treatment of architectural matters in, 28; definition of kāra from, 68; other works compared with, 109, 110, 116; twenty types of buildings from, 117, 118, 119; angula and tāla measures from, 122, 123; the five orders from, 125, 150; eight kinds of mouldings from, 127, 151, 152; styles of architecture from, 130, 131; probably based on Mānasāra, 132; references to selection of sites and examination of soil from, 140; relation with other works, 160, 167, 168, 194, 198; detailed comparison with Mānasāra, 161, 164; mention of architectural authorities in, 165; as a technological work, 175.

Bṛha, a type of pavilion where Nandini is housed, 119.

Bṛhaspati, one of mythical authorities on which Mānasāra is stated to have been based, 34.

Buddha, his image described, 78-79; Hindu settlement at the time of, 183; effigies of, 185; as one of the ten incarnations of Vishnu, 186, 190; temples and monasteries of the followers of, 191.

Buddha-charita, reference to monumental lamp pillars from, 68.

Buddha-glossa, his explanations of the five kinds of Buddhist buildings, 10; his explanations of inner chambers, 12; of other architectural objects, 13, 14, 15, 16.

Buddhism, treatment of, 185; monasteries associated with, 187; included in Vaishnavism and tolerated, 190; declining state during the early Chalukya dynasty of, 191; rise of Hinduism during the early Guptas at the expense of, 192, 193.

Buddhists, during Mānasāra indifferent treatment of, 185; further instances, 186, 187.

Buddhist images, description of, 78-79.
Buddhist literature, copious references to architectural objects in, 9-16.
Bull (Nandin), riding animal of Śiva, its description, 82.
Bundelkhand, styles of architecture of Khajuraho in, 178.

**G**

Callimachus, originator of the Corinthian order, 126.
Cape Comorin, southern boundary of an architectural division of India, 174.
Cars, description of, 60.
Casting of images, process described, 86-87.
Cavetto, name of a moulding, 127, 152.
Cement, as mentioned in Uttara-Kāma-charita, 32, in Brihat-samhītā, 22.
Ceres, temple of, 146.
Ceylon, ancient seven-storeyed and thousand-pillared buildings of, 14; Samudra Gupta's relation with, 184; King Meghavarna of, 191.
Chaityas, assembly houses of the Buddhists in Western India, 6; monumental Kasmirian buildings, 30.
Chakora, perdix rufa, cage of, 79.
Chakra, discus of Vishnu, 71; an octagonal type of buildings mentioned in the Agni-purāṇa, 113, and in the Garuda-purāṇa, 114.
Chakra-kānta, a class of eleven-storeyed buildings, 50, 112.
Chakravartin, emperor, palace of, 57; empire of, 59; one of the nine classes of kings, 181; his relation with other kings, 182.
Chāka-busha, one of the fourteen Manus, 166.
Chālukya, a style of architecture, its territory and characteristic features, 177, 178, 179; its comparison with other styles, 196; temples of, 178; unique crowning members in the buildings of, 180; empire of, 185; period of, 190; of the Badami line, 191.
Chāmunda, one of the seven mothers, the image of, 75.
Chāmudi-dhyāna, characteristics of the demoness Chāmudi, name of a chapter in the Brahma-yāmula, 109.
Chandeshānugraha, name of a chapter in Amśumād-bheda of Kāśyapa, 34; image of the deity described also in Agastya, 100.
Chāndirā, name of a plot in a particular ground-plan, 38; a class of nine-storeyed buildings, 50, 112.
Chandra, one of the authorities on which Sanat-kumāra's Vāstu-kāstra is stated to have been based, 102.
Chandragupta II, date and empire of, 185, 190; incidents of the reign of, 192; progress of art and literature in the time of, 193.
Chandrakānta, a class of ten-storeyed buildings, 50, 112; name of one of the five Indian orders as given in the Suprabhedāgama, 125, 126, 150, 151.
| Chandra-sālā, top-room, gable window, 115, 116. |
| Chandra-śekhara-mūrti-lakṣhāna, image of god Śiva, name of a chapter in the Amśumad-bheda of Kaśyapa, 94, and in the Agastya, 100, 107. |
| Chāpākāra, shaped like the bow, the eye-brow to be shaped like, 84. |
| Charagī, one of the four evil deities, 38. |
| Chariots, description of, 60-61. |
| Chāru-bandha, name of a type of bases, 128. |
| Charuka, a square type of building mentioned in the Agni and Garuḍa Purāṇas, 118, 118. |
| Chātaka, euculcus melanoleucus, cage of, 70. |
| Chatur-āśra, also called Chatush-kōṇa, a class of four-cornered (square) buildings mentioned in Matsya and Bhavishya Purāṇas, and Brahiṇī-samhitā, 116, 117, 118. |
| Chatur-mukha, a type of village, 39, 148; a class of four-storied buildings, 50, 112; a kind of hallas (śolās), 55. |
| Chatush-kōṇa, also called Chatur-āśra, a type of four-cornered (square) buildings, 117, 118. |
| Chhanda, a class of buildings, 41, 110, 118, 147; a type of phalli, 73; a kind of door, 57, 155. |
| Chhāndogya-Upanishad, angula measure in, 122. |
| Chhidra, hole of ears and chariots, architectural description of, 60. |
| Chitra, bark used as garment, of the image of Brahmā, 71. |
| Chitis, altars, particulars about their construction in Taittirīya-saṃhitā, Baudhāyana, and Āpastamba, 7-8. |
| Chiselling (the eyes of images), in Kānikāgama, 27, and in Manasāra, 88. |
| Chitor, Indo-Aryan or the Nāgara style of buildings at, 179. |
| Chitra, an octagonal type of building, 113. |
| Chitra-jñana, an authority on painting, 108. |
| Chitrakā, one of the thirty-two authorities on architecture mentioned in Manasāra, 165. |
| Chitra-kalpa, a class of ornaments, consisting of floral and foliate designs, to be used by the Chakravartin class of kings and gods, 67. |
| Chitra-karna, variegated ears, one of the five Indian orders of columns, 45, 125, 126, 150, 151. |
| Chitra-kumbha, a type of columns, 45. |
| Chitra-sāra, an authority on painting, 108. |
| Chitra-skambha, of variegated shaft, one of the five Indian orders, 125, 126, 150, 161. |
| Chitra-torana, a type of ornamental arch, 63. |
| Chittātrāgāra, a picture gallery, as stated in Buddhist literature, 15. |
| Cholas, neighbours of King Asoka, 183. |
INDEX

Chūḍā, a kind of head-dress, 65.
Chūḍā-mapi, crest-jewel, 67.
Chullavagga, a Buddhist work, architectural references from, 10, 11, 12, 13, 15, 16.
Chunam, a kind of plaster, 15.
Columns, as mentioned in Vedas, 6; in Purāṇas, 19; in Āgamas, 25; in Mānasāra, 44–46; in Mayamatā, 89; in Kāśyapa, 92; and in Viśvakarma-śilpa, 96; details and comparative study of, 125–129, 149–153, 168.
Composite order, both Indian and European, 125, 150, 151, 152.
Construction, penalties for defects in, 87.
Corinth, country of, 151.
Corinthian, an order of columns, 125, 147, 148, 150, 152, 154.
Coromandal, Kalinga type of buildings in, 194.
Coronation, as stated in Āgamas, 27; description of, 64–65; four stages of, 65; ritual ceremonies of, 66.
Couches, description of, 61–62.
Courts (and enclosures), as described Āgamas, 26; and in Mānasāra, 51; compared with those of Vitruvius, 155.
Crowns, varieties and description of, 64–66.
Cyma, cymarca or cymatium, name of a moulding, 127, 152, 153.

D
Dāgabas, tope, 15.
Daivika, a class of phalli, 73.
Daksha-Sāvarni, one of the fourteen Manus, 166.
Dakshinā-mūrti, image of the goddess Dakshinā, 94, 100, 106, 107.
Dāksinātya, Deccan, migration of culture from Áryāvarta or northern India to, 181.
Dala, a petal, name of a moulding, 127.
Dāman, garland worn round the shoulders, 68.
Daṇḍa, a class of buildings mentioned in the Kāmikāgama, 118; a moulding mentioned in the Suprabhedagama, 126, 151.
Daṇḍaka, a class of villages, 39, 143; a type of pavilion (maṇḍapa) with two faces, 54; a type of hall (sālā), 55.
Daṇḍin, the author of Daśa-kumāra-charita, 170, 197.
Darpana, mirror, 68; its architectural details, 69.
Dāru-chhvedana, cutting of wood, name of a chapter in the Viśvakarma-śilpa, 97.
Dāru-saṅgraha, collection of wood, name of a chapter in Agastya, 100.
Dārva, a type of pavilion (maṇḍapa) for an elephant's stable, 54.
Dāka-kumāra-charita, a prose romance, refers to Mānasāra as the King of Malwa, 170-171, 198; its age, 197.

Dāśa-tāla, ten-storeyed buildings, six types of, 50, 112.

Dāśa-tāla, ten-tāla measures, its details, 84; three kinds of, 100.

Dāśāvatāra, images of the ten incarnations of Vishnu, 109; see also ten incarnations, 188.

Deha-labdha-gūla, also called simply Dehāṅgula, a kind of measurement, 77, 84, 122.

Deva-durga; god's fort, 40, 143.

Deva-kānta, a class of eight-storeyed buildings, 50, 112.

Deva-mandapa, a type of pavilion, 119.

Devarāṣṭra, modern Mahratta country, included in the dominion of Samudra Gupta, 184.

Devāyatana, temples, as mentioned in the Epics, 17, 18.

Dhammilla, a kind of head-dress, reserved for use of a certain class of people, recognised as an architectural object, 65.

Dhanada, otherwise called Sarvakāmika, a kind of measurement, 55, 124.

Dhanur-graha-(hasta), a kind of measurement, a cubit of twenty-seven angulas, 35.

Dhanur-mushti-(hasta), a kind of measurement, a cubit of twenty-six angulas, 35.

Dhanus, measuring bow, a measurement of four cubits, 35.

Dhārā-(kumbha), a moulding, 127.

Dhārana, a class of seven-storeyed buildings, 50, 112.

Dharmā-Sāvarṇi, one of the fourteen Manus, 166.

Dhrúva, an architectural authority on whose work Viṣvakarma's treatise is stated to have been based, 97.

Dhruvādi-gṛihā-bheda, name of a chapter in Viṣvakarma's treatise on architecture, 96.

Dhva-jādyāya, name of a chapter in Viṣvakarma's treatise dealing with the making of flags, 96.

Dhyānas, description of the features of images, 38.

Dhalling, 1; details given under gnomon, 37; principles of and comparison with Vitruvius's, 143.

Diana, temple of, 148.

Diastylus, a type of temples with columns wide apart, 147.

Dīgha-Nikāya, a kind of bath described with architectural details in, 14.

Dik-parichāhheda, a chapter in the Mayamata dealing with cardinal points for the orientation of buildings, 89; 109.

Dik-pāla, quarter-masters, the images of, 98.

Dimensions (vistārāyāma-lakṣāhā) of building, 24, 41-42, 47, 49, 147.

Dīndima, hand-drum, an attribute of the image of Lakshmi (goddess of fortune), 75.
INDEX

Dipa-daṇḍa, lamp-post, an article of furniture, 68.
Dipa-lakṛṣṭa, a chapter in the Mandūra's Śilpa-tāstra dealing with architectural details of lamps, 103.
Dipta-tantra, a treatise on architecture, 109.
Dipteros, a type of building, 147.
Dipti-sāra, a treatise on architecture, 109.
Displuviatum, a type of courts open at the top, 154.
Doab, probably identical with Madyakānta which represents a type of twelve-storied buildings, 173.
Dolā, swing, palaquin, an article of furniture, 68, 69, 97.
Doors, their detailed description in Buddhist literature, 12; location and measurement of, 56, 57.
Doria, city of, wherefrom Doric order has been originated, 126.
Draftsman (rekhāgīna), qualifications of, 35.
Doric, an order of column, 1.5, 126, 147, 148, 150, 151, 152; a type of doors, 155.
Double-mant, reference from Buddhist literature to, 9.
Drāviḍa, a style of architecture, 24, 48, 110, 118, 119, 130, 131, 198; a type of twelve-storied buildings, 50, 113, 173, 174, 175; an octagonal type of cells, 61; a type of phallī, 73; distinguishing features of the buildings of, 176, 177, 178, 179; topography of, 180, 183.

Dravīḍian, peculiarities of the style of, 178; civilization of, 184; country of, included in the empire of Saṃdrā Gupta, 185.
Dronaka, a class of forts, 40, 143.
Dundubhi, a round type of building mentioned in Agni and Garuḍa Purāṇas, 118, 114.
Dūrga, forts and fortified cities, 97.
Dūrgu, also called Gaṇu and Pārvatī, consort of Śiva, detailed description of the image of, 75, 76.
Dvāra-harmya, gate-house of the fourth court, 52, 154.
Dvārakā, description of the city of, 17.
Dvāra (lakṣaṇa), doors, their description, 56, 57, 92.
Dvāra-māna, measures of the door, 57, 77, 96.
Dvāra-prāśāda, gate-house of the third court, 52, 154.
Dvāra-sālā, gate-house of the second court, 52, 154.
Dvāra-śobha, the beauty of the gate, gate-house belonging to the first court, 52, 154.
Dvāra-vidhāna, doors, their description, 90.
Dvi-bhūmi, two-storeyed buildings, 89, 106.
Dvi-chaturthi-tala-vidhāna, two to four-storeyed buildings, 93; various types of, 50, 111-112.
Dvi-kānta, a main pillar with two minor pillars, 46.
Dvi-vajra, an order of columns, 125, 126, 150, 151.
Earth-goddess, description of the image of, 76.
Eka-bhūmi, one-storeyed-buildings, 48, 89; eight kinds of, 48-49, 111.
Eka-bhūmi-rodhana, one-storeyed buildings, 106.
Eka-kānta, a type of main pillar with one minor pillar, 46.
Eka-linga, a class of phalli, 73.
Eka-tala-vidhāna, one-storeyed buildings, 83.
Elaka-padasa-pitham, a kind of chair raised on a pedestal, 16.
Ellora, pierced stone windows at, 177.
Entablature, comparative measures and varieties of, 46; noticed in various treatises, 128.
Eran, structural temples at, 196.
Eravapallā (Khandesh), limit of the Gupta empire upto, 184.
European styles (of architecture), use of the Graeco-Roman orders in, 131.
Kastylōs, name of a species of temple, 147.
Etruria, Tuscan order originated from, 131.
Examination of soil (bhū-pariksha), 35, 110.

F
Fahien, visit to Java of, 170; condition of the Gupta empire at the time of the visit of, 192.
Fano, temple at, 160.
Fan-post (vyajana-danda), description of, 69.
Farmiae, inscriptions relative to the Vitruvia family found in the neighbourhood of, 160.
Fillet, (listel or annulet), name of a Graeco-Roman moulding, 127.
Floating city, as mentioned in the Mahābhārata, 17.
Flora, a deity, Corinthian type appropriate to, 147.
Fort, noticed in Buddhist literature, 9; eight general varieties of, seven varieties according to situation, 40.
Foundation (garbha-nyāsa), noticed in Āyamas, 25; details of, 42; compared with those of Vitruvius, 149.
Foundation stone, laying of, 25, 26, 42, 149.
Frontinus, mention of Vitruvius by, and the treatise of, 134.
Furniture, articles of, as mentioned in great detail in Buddhist literature, 15-16, elsewhere, 66-70.

G
Gādā, the mace of Vishnu, 71; an octagonal type of building mentioned in Āgni and Garuḍa Purāṇas, 113, 114.
Gaja, an oval type of building mentioned in Āgni and Garuḍa Purāṇas, 113, 114; a class of buildings resembling the elephant, noticed in Matsya-purāṇa, 115-116.
Gajahā-mārti-lakshana, image of Gaṇeṣa, 94.
Gālā, (grīva, kantha or kandhara), dado, a moulding, 127.
Gala-kūta, neck-peak, a distinguishing feature of a type of gate-houses, 52.

Gala-vidhāna, name of a chapter of the Amśumadabheda of Kāśyapa dealing with the neck-part of buildings, 92.

Gānava, a class of phalli, 73.

Gandaki, the river of, forming the boundary of the Janaka country which used to have a special type of twelve-storeyed buildings, 173.

Gandha-mādana, a type of pavilion (mandapa), 54.

Gāndhāra, Kushan kings of, 184; sculpture of, 159.

Gandharvas, heavenly musicians, images of, 80.

Gangadharā-mūrți-lakṣaṇa, image of Śiva conveying the Ganges on his head, 94.

Ganges, flight of stairs like the waves of, 32.

Ganjam, hill forts of, 184.

Gannamāchārya, stated to be the author of Mayamata-nilpa-tāstra 89, 91.

Gānya-māna, a comparative measure of heights of the component members of a structure, 124.

Garbhā-bhājana, depth of the excavation, 42.

Garbhā-grihā, shrine, 49; cella or sanctum 53, 73, 83.

Garbhā-nyāsa, foundations, 28, 89, 93; different varieties of, 42, 43, 148.

Garga, the original main source of the architectural portions of Varāhamihira’s Bṛhat-samhitā, 162-163; one of the eighteen professors of architecture mentioned in Matsya-purāṇa, 164.

Gārgya-samhitā, an astronomical treatise, containing copious references to architectural matters and known more as a treatise on architecture, 31, 2, 140.

Gārgya, one of several authorities on which the Viṣṇu-tāstra of Sanat-Kumāra was based, 102.

Garuda, a mythical bird, genealogy of, 81; his image as the riding animal of Vishnu, 81-82, 108; an oval type of building, mentioned in Garuda-purāṇa, 114; also in Agni-purāṇa as Garutman, 113; types of buildings as noticed in Matsya-purāṇa and Bṛhat-samhitā, 116, 117.

Garuda-Purāṇa, various architectural objects described in, 20; compared with other treatises, 110; five classes and forty-five types of buildings noticed in, 113, 114, 119; comparative study of, 160; closely connected with Agni-purāṇa, 169.

Garutman, an oval type of building noticed in Agni-purāṇa, 113; in Garuda and Matsya Purāṇas and Bṛhat-samhitā as Garūḍa, 114, 116, 117.

Gāthās, linguistic style of, 213, 214.
Gautama, one of several authorities on which Sanatkumara's Vāstuśāstra was based, 102; originator of Buddhism, 191.

Gavāksha, cow's eye, a window, the general plan and different varieties of, 53.

Gaya, Ceylonese monastery at, 192.

Geya, one of the twenty types of buildings described in Kāmakāgama, 118.

Ghana, solid parts of gate-houses, 53.

Ghana-māna, measurement by the exterior of an object, 124.

Ghata, a class of buildings described in Bhavishya-purāṇa and Brihat-samhītā, 116, 117; a moulding resembling a pot, 126, 127; one of the five mouldings of the shaft, 151, 152, common in Mānasāra, Masya-purāṇa, and Brihat-saṃhitā, 168.

Gṛita-vāri, a moulding of the pedestal of the phallos of Śiva, 74.

Giri-vṛaja, details of the hill-fortress at, 9.

Girnār, northern style of buildings at, 178.

Gnomon (Śāṅku), its measures and use, etc., 37.

Godhāra, details of the image of, 70.

Guldeu-ball, as mentioned in Kanda-purāṇa, 19-20.

Gomukha-(lakṣhaṇa), cow's face, apparently an architectual object, 106.

Goose (hamsa), riding animal of Brahmā, details of its image, 81.

Gopāla, the child Kṛishna, temple of, 189.

Gopāna-(ka), name of a moulding, 127.

Gopura, gate-houses, 25, 27, 49, 90, 93, 106, 107, 108, 177; various classes, storeys and other details of, 52-53; reference to windows of, 57; sixteen or seventeen-storeys of, 173; belonging specially to South India, 197.

Gotamī-putra, peculiar style of Sanskrit in the inscriptions of, 213.

Græco-Roman orders, five varieties of, 125; geographical names of, 130, 151; four parts of the entablatures of, 150; eight mouldings of, 152; their striking similarities with the Indian orders, 150-153.

Grāha-kundala, ear-pendants, 75.

Grāha-pratimā, images of planets, 28.

Grāma, villages with hundred enclosures or fortifications as mentioned in Vedic literature, 8; plans, as described in Buddhist literature, 9; in Agamas, 24, 28; in Mānasāra, 39-10, eight classes of, 39; in Mayamata, 89, 106; compared with Roman village as described by Vitruvius, 143-144.

Grīha, houses, the types at Vedic period, 6; five kinds in Buddhist period, 10; dimensions and various classes as described in Mānasāra, 41-42; foundations of, 42-43; general description
of, 47-48; storeys of, 48-50; courts of, 51; compounds of, 52; location and measures of, 55-56; doors and windows of, of 57, 58; articles of furniture of, 15-16, 66-70.

Griha-kānta, a class of five-storeyed buildings, 50, 112.

Griha-kārikā, a treatise, selection of building-sites and examination of soil noticed in, 140.

Griha-mānadhikāra, measurement of houses, name of a chapter in Mayamata, 90.

Griha-praveśa, first entry into the house, ceremonies in connection therewith, 56, 90, 96, 97, 102.

Griha-rāja, king of houses, a rectangular type of building as noticed in Agni, Garuḍa and Bhavishya Purāṇas, 113, 114, 116.

Griha-sainsthāpana, construction of houses, as described by Sanatkumāra, 102.

Ground-plan (pada-vinyāsa), as stated in Kāmikagama, 24; thirty-two varieties and other details as given in Mānasāra, 37-38.

Guharāja, (see Griharāja), a class of buildings, as described in Brihat-samhitā, 117.

Guhās, underground buildings, cave-temples, 10-11.

Gujarat, twelve storeyed buildings of, 174; northern type of buildings in, 178.

Guptas, connection of the Skanda-purāṇa with, 171, 180; fragments of the style of architecture of, 177; characteristic features of the temples of, 195-196, pointing to earlier style, 196; empire of, 184, 185, 190; dynasty and period of, 190-191; prevailing religion at the time of, 192-193; end of the reign of, 194.

Gupta-vamśa, an expression coined to imply the number twenty-seven, its signification, 195.

Gūrdja (Sphūrdja), twelve-storeyed buildings in, 51, 113, 174, 198.

Guvā-vriksha, a round type of building as noticed in Garuḍa-purāṇa, 114.

H

Halebid, temple at, 178.

Halls (Śāla), different classes of, 54-55, 25.

Hamsa, goose, an oval type of building as noticed in Agni, Garuḍa, Matsya, and Bhavishya Purāṇas, 113, 114, 116; and in Brihat-samhitā, 117.

Harā, string of pearls worn round the neck, a chain of 108 strings, 68; a moulding, bead, 127, 152, 168.

Harmya, a magnificent type of storeyed buildings, mentioned in Buddhist literature, 10-11; masonry house, 18; building, being one of the four classes of Vāstu (architecture), 36; royal palace, 57; one of the twenty types of buildings as noticed in Kāmikagama, 118.
Harmya-garbha, large dining hall, as stated in Buddhist literature, 11-12.

Harmya-kānta, a class of seven-storeyed buildings, 50, 112.

Harsha, hero of the Harsha-charita, 171; period of the reign of, 197.

Harsha-charita, copious references to architectural objects from, 30; named after Harsha, 171; refers to some Purāṇas, 194.

Harsha Vardhana, ruler of Kanauj, 39; empire of, 185; period of the reign of, 191.

Haryardha-Hara, combined image of Śiva and Vishnu, 94.

Hasta, cubit, used as a measurement, different kinds of, 35, 121.

Hastinā-pura, Pāñchāla is situated in the neighbourhood of, 174.

Haasti-prishtha, a type of one-storeyed building, 49, 111.

Head-gears, different kinds of, 65, 98.

Hema-kūṭa, a type of pavilion, 54.

Hema-sīlā, golden stone, image of Stone-god, 98.

Hercules, temples of, 146, 147.

Heturian Haruspices, his directions regarding the situations of temples, 146.

Hieun Tsang, the Chinese traveller, visited India during Harsha’s reign, 30; condition of India at the time of his visit, 192.

Himaja, a type of pavilion, 53.

Hima-kānta, a class of seven-storeyed buildings, 50, 112.

Himālayas, the boundary of Madhya-deśa, 173, 174.

Himavat, one of the ten types of buildings as noticed in Suprabhedā-gama, 118.

Hinduism, its condition under the Rāṣṭrakūṭas, 191; at the time of the Guptas, 192—193.

Hindus, stated to have borrowed the practice of excavating temples from Buddhists and Jains, 191.

Holal inscriptions, sixty-four kinds of buildings mentioned in, 4, 130, 171, 176.

Hot-air baths, as described in Vinaya texts, 14.


Hyderabad, Chālukyan style of buildings in the territory of, 177.

Hypaethros, a type of temples, 147.

I

Idols, made of nine materials, 70; process of purification of, 27.

Ikahu-kānta, a class of six-storeyed buildings, 50, 112.

Images, two classes, sthāvara (stationary), and jaṅgama (movable), 71; of sages, 79; of devotees, 80; of demigods like Yaksas, 80; of riding animals and birds, 81—83; general description of, 83-84; of male and female deities, 84; first casting, etc. of, 86-87.

In Antis, one of the different forms of buildings, 147.
INDEX

Indo-Aryan style, (otherwise called the Northern or Nāgara), territory, varieties and peculiarities of, 178–180.
Indra, science of architecture originated through, 34; image of, 98; an authority on architecture called Purandara in the Purāṇas, 165.
Indraka (or Chandraka)-bhadraka, a class of cars, 61
Indra-kānta, a class of four-storeyed buildings, 50, 112; a class of gate-houses, 52.
Indra-prastha, description of houses in, 17, 18.
Indra-Sāvarṇi, one of the fourteen Manus, 166.
Indus, monasteries visited by Fahien along the route of, 192.
Ionians, associated with the Ionic order, 131.
Ionic, columns of the order of, 125, 150, 151; identified with an Indian order, 152; a type of doors, 155; pedestal of, 149.
Īśa, Śiva, his temples treated as inferior to those of Vishnu, 189.
Īśa-kānta, a class of eleven-storeyed buildings, 50, 112.
Iṣṭaka, brick, mentioned by Lāṇini, 33; measures of, 43.
Īsīs, temple of, 146.
Īśvara, Śiva, mentioned along with Vishnu, 187.
Īśvara-kānta, a class of four-storeyed buildings, 50, 112.
Italy, Tuscan and Composite orders originated in, 126.

J

Jain, images of, their details, 76, 185, 186, 187; authors of, 211.
Jainism, inferior treatment of, 187; the time of toleration of, 190, 191, 192, 194.
Jaipur, the territory of the Virāṭa type of twelve-storeyed buildings in the vicinity of, 173.
Jalā-dhāra, water-passage, drain, a part of the pedestal of the phallus of Śiva, 74.
Jalā-durgā, water-fort, 40, 143.
Jalā-dvāra, water-passage, drainage, drain, 39, 57.
Jālaka, a screen, perforated window, 53, 92.
Janka, a type of twelve-storeyed buildings, 51, 113, 175, 198; its territory, 173.
Jana-kānta, a class of eight-storeyed buildings, of twelve-storeyed buildings, 50, 51, 112, 113.
Janman, plinth, name of a moulding, part of a pedestal, 44, 127.
Jaṭā, a kind of head-dress, details thereof, 65.
Jātakas, references to architectural matters from, 10.
Jāti, a classification of buildings, its characteristic features, 41-42, 48-49, 57, 110, 118, 119, 147; a class of phalli, 73.
Java, Fahien’s visit to, 170.
Jaya-bhadra, a type of pavilion (maṇḍapa), 119.
Jayada, a formula of height, 55, 124.
Jayāla, a pavilion (mandaṇa) for a summer residence, 54.

Jayanta, name of a quarter in a ground-plan, 189.

Jayanti, a moulding, 126, 151.

Jayantika, a type of one-storeyed buildings, 49; also called Vaijayantika, 111.

Jīnaka, thrones of, 63.

Jīna-maṇḍana, a Jain author, 211.

Jīna-pratishṭā, consecration of Jain images, 104.

Jīrṇodhāra, repairs of temples, 98, 104, 110.

Julius Caesar, patron of Vitruvius, 19, 160.

Juno, temple of, 146, 148.

Jupiter, temple of, 146.

Jyotish-kāṇḍa, a class of six-storeyed buildings, 50, 112.

Jyotisha-lakṣhana, astrology, name of a chapter in the Śilpa-tāstra of Maṇḍana, 104.

Jyotis-sāra, an example of works ending in sāra, 2.

K

Kailāsa, a class of three-storeyed buildings, 50, 111; a round type of buildings having different varieties, as noticed in Agni and Garuda Purāṇas, 13, 114; a type of nine-storeyed buildings as noticed in Maṅga-purāṇa, 115; a type of eight-storeyed buildings as noticed in Bhavishya-purāṇa and Brihat-samhita,

116, 117; another type noticed in Suprabhāsedāgama, 118; identical in several works, 163.

Kākāśṭha, a kind of couch (paryaṇka), 86.

Kāla-dahana, image of Śiva, 101, 107.

Kāla-mūrti-lakṣhaṇa, image of Kāla, 94.

Kāla-kūta, deadly poison, a peculiar mark on the image of Śiva, 72.

Kāla-mukha, a class of phalli, 72.

Kālaṣa, a round type of building as noticed in Agni and Garuda Purāṇas, 113, 114.

Kāla-yūpa, one of the authorities on which Maṅga-sāra was based, 165.

Kalhana, his history of Kashmir wherein many details of architecture are met with, 31, 78.

Kālidāsa, the famous Sanskrit poet in whose works many architectural details are mentioned, 22, 32.

Kālinga-(kānta), an oval type of cars and chariots, 61; a distinct style of architecture, 130; one of the two branches of the Vesara style 131, 176; a class of twelve-storeyed buildings, 50, 113, 173, 174, 198; topography of, 174; comparative size of, 175; conquered by Asoka, 188.

Kalka-saṃskāra, preparation of mixtures, cement, 94.

Kalpa-Sūtras, of which the Śulva-sūtras deal with the details of altars or vedās, 7.
Kalpa-vriksha, the desire-fulfilling tree, ornamental tree, a decorative device for a throne and other architectural objects, 64, 78.

Kalyana-sundara, image of, 94, 100, 107.

Kalyani, Chalukyas of, 191.

Kamala, a class of six-storeyed buildings, 50, 112.

Kamalanga, a class of three-storeyed buildings, 50, 111.

Kamandakinya (niti-sastra), its similarities with the Sutra-niti, 170; a politechnical treatise, 132.

Kamikagama, a large variety of architectural subjects systematically treated in, 23, 24—26, 128; dimensions of storeys defined in, 41, 42, 147; comparative study of, 110, 119, 160, various classifications and types of buildings described in, 118; references to tala-mana from, 123; three styles of architecture noticed in, 131.

Kampa, fillet, a moulding, 74, 127.

Kampa-bandha, a class of bases, 128.

Kampa-dyura, a kind of moving door, 92.

Kampa-karna, a moulding, 128.

Kampana, fillet, name of a moulding, 127.

Kampilla, city of, 9.

Kampilya, capital of South Panchala, 174.

Kanyya, one of the five classes of prakara (court), 51.

Kanarak, the style of temples at, 179.

Kanauj, capital of Harsha-vardhana, 185.

Kanchi, conquered by Samudra Gupta, 184.

Kandhara, the neck, a moulding of the pedestal, 74.

Kang, panicum italicum, one of the ten kinds of cereals used for the foundations of buildings, 43.

Kankala-murti, image of a skeleton, 94.

Kanka, bracelet, an ornament, 67.

Kanta, a class of six-storeyed buildings, 50, 112.

Kanta, neck, a moulding, 126, 151.

Kantika, (also called Antika), name of a class of two-storeyed buildings, 50, 111.

Kapishala-samhita, a treatise, architectural details from, 108.

Kapota, a pigeon, a moulding, 127.

Karagara, the jail, details of, 58.

Kara (kara)garagama, references to architectural objects from, 26; process of casting an image described in, 87; references to tala-mana from, 123.

Karaadhihara-lakshana, name of a chapter in Karanagama, dealing with objects like columns, couches, chairs, head-gear, etc., 28.

Kara, a kind of head-dress, used by female deities, kings, and semi-divine beings, 65, 80.

Karumaka, a class of villages, 39, 143.

Karna, ear, name of a moulding, 127.
Karna-padma, name of a moulding, 128.

Karshana, ploughing of the site selected for a building, 92.

Kāśmirian architecture, details of, 31.

Kāśyapa, author of the Amśumad-bheda, 28, 99; father of Garuda, 81; references to architectural objects from, 106, 140.

Kāṭaka, an armlet, 67.

Kāṭi-sūtra, an ornament, a chain worn round the loins, 68.

Kaumāri, one of the seven mothers, image of, 75.

Kauśmudri, a treatise, references to architectural objects from, 108.

Kauśambī, capital of Vamsaka or the country of Vatsa kings, 173; noticed in Buddhist literature, (see Kośāmbi), 9.

Kauśika, a pavilion used as a horse-stable, 54.

Kauṭiliya-Artha-sūtra, ambiguous meaning of the title of, 2; references to architectural measurements from, 122; a polytechnical treatise, 132.

Kauṭuka-bandhana, experimental yoking for the purpose of ploughing the building-site, 27.

Kendra, centre (of a circle), name of a moulding, 127.

Keralā, a class of twelve-storeyed buildings, 60, 113, 173, 175, 198; topography of, 174.

Keralā-putras, independent of Magadha at the time of Aśoka, 183.

Kēśa-bandha, a kind of head-dress, used by female deities and queens of certain classes of kings, 65.

Kēśara, a class of single-storeyed buildings with front tabernacles in the centre, 49, 111; a class of three-storeyed buildings, 50, 111.

Kēśaryādi-prāśāda, buildings of Kēśari and other classes, 104.

Kēśava, a name of Vīṣṇu, temple of, 189.

Kēyūra, armlet worn on the upper-arm, 67.

Khāḍga, an octagonal type of building noticed in Garuda and Agni Purāṇas, 114, 115.

Khajurāho, the style of buildings at, 178, 179.

Khanana-vidhi, ploughing the soil of the site selected for a building, 96.

Khanjarāta, cage of, 70.

Khāṭa-śāṅkū, wooden stakes posted in different parts of the foundation of a building, 37.

Kharvaṭa, name of a class of towns, 40, 143.

Kheṭa, name of a class of towns, 40, 143.

Kila, axle-bolt, nail at the top of an object, 27, 60.

Kinkini-valayā, bracelet fixed with little bells, 67.

Kinnaras, description of the images of, 80.

Kirana-tantra, a treatise, the eight mouldings noticed in, 126, 127, 152; the five orders of columns described in, 150, 151.
| Kiriṭa, diadem, crown worn by minor gods and certain classes of kings, 65, 67. |
| Kishku-hasta, small cubit, equal to twenty-four āṅgulas, a measurement, 35. |
| Kochechham, cane-bottomed chair, as stated in Buddhist literature, 16. |
| Kodrava, paspalum scrobiculatum, one of the ten kinds of cereals used for the foundations of buildings, 43. |
| Kola-(ka), a kind of fort, 42, 143. |
| Kolleru, lake of, 184. |
| Kopa, a class of buildings noticed in Kāmikāgama, 118. |
| Kośala, in the valley of Mahānadi, conquered by Samudragupta, 184. |
| Kośāmbi, (see Kauśāmbi), city of, its architectural details, 9. |
| Kośṭha, a kind of walled town or fortress, 42. |
| Kośṭha-stambha, an order of columns, a pilaster, 45, 129. |
| Kośī, river of, 173. |
| Koṭṭur, hill forts of, 184. |
| Krishṇa-(lakṣaṇa), image of, 107; the pose of, 86. |
| Khaṇḍika, an idol for temporary worship, a class of phalli, 73. |
| Kehema, a class of buildings noticed in Kāmikāgama, 118. |
| Khepāna, projection, a moulding, 74, 127. |
| Khepānaṃbuja, name of a moulding, 128. |
| Kshudra-kampa, name of a moulding, 128. |
| Kshudra-nāśi, vestibule, a moulding, 52. |
| Kshudra-padma, small cyma, name of a moulding, 128. |
| Kubjākāra, hump-backed, image of Agastyā, 79. |
| Kubjaka, hump-backed, name of a class of towns, 143. |
| Kuḍmala, bud, the shape of the topmost part of the phallis, 74. |
| Kuḍya-stambha, pilaster, 45, 125. |
| Kuṅkuṭa, cock, cage of, 70. |
| Kukshi, navel, a part of the chariot, 60. |
| Kukshi-bandha, a class of bases, 128. |
| Kula-dhārapa, a type of pavilion for storing perfumes in, 54. |
| Kulāla, phasianus gallus, cage of, 70. |
| Kulattha, doliches uniflorus, a cereal used for the foundations of buildings, 43. |
| Kumāra, one of the eighteen professors of architecture noticed in Matsya-purāṇa, 164. |
| Kumāra Gupta, reign of, 192. |
| Kumāra-sambhāva, a jewelled ornament (mukti-kalāpa) noticed in, 67. |
| Kumbha, a class of nine-storeyed buildings, described in Matsya-purāṇa, 116; a moulding, 126, 127, 151. |
| Kumbha-bandha, a class of bases, 128. |
| Kumbha-karna, king of Medapātha, probably king Kumbha of Mewar, 103. |
| Kumbha-stambha, a column with jug-shaped capital, a type of columns, 45, 125, 126, 150, 151. |
Kumbha-tala-(lakshana), capitals of columns, name of a chapter in Antumad-bheda of Kāśyapa, 92.
Kumuda, torus or astragal, name of a moulding, 127.
Kumuda-bandha, a class of bases, 128.
Kuṇḍala, a kind of head-dress, used by certain female deities and queens, 65.
Kuṇḍala, ear-ring, 67.
Kuṇḍika, water-pot, an attribute of Brahman, 71.
Kuṇḍara, a type of buildings noticed in Bhavishya-purāṇa and Brihat-samhitā, 116, 117.
Kuṇḍaraksha, elephant’s eye, a particular kind of window, 53.
Kuṇḍariya, cage of, 70.
Kūpā, wells, architectural details of, 97.
Kūrma, one of the ten incarnations of Vishnu, temple of, 52.
Kushan, kings of, their relation with Samudra Gupta, 184.
Kūta-chakra, certain astronomical calculation made in connection with construction of buildings, 104.
Kūtādi-lakshanā, finials and other objects at the top of buildings, 93.

L
Laghu-śilpa-jyoti-sāra, an example of works ending in sāra, 2.
Lakṣaṁaṇa, image of, 118.
Lakṣmi, goddess of fortune, her image described in detail, 74, 75, 98.
Lalita-vistara, a treatise, peculiar style of Sanskrit in, 213.

Lamba-māna, measurement along the plumb-line, a kind of linear measurement, 77, 121.
Lāṅka, architectural description of, 17.
Likshā, nit, a unit of measurement, 35.
Lilāvatī, a work on astronomy, reference to important architectural matters from, 32, 172; author of, 165.
Limbas, defects of, 87.
Līṅga, phallus of Śiva, various classes and architectural details of, 72—74, 90.
Līṅga-lakshanoddhāra, unearthing of the phallus, 93.
Līṅga-purāṇa, references to architectural objects from, 21.
Līṅgodbhava-(lakṣaṇa), revelation of the phallus of Śiva, 94.
Lion, vehicle of the goddess Durgā, 83.
Loka-jña, one of the authorities on architecture mentioned in Mānasāra, 165.
Lūpā, an architectural object, details of, 47, 48.

M
Machine-room, as mentioned in Rigveda together with some architectural details, 6.
Madhūchchhishṭa-vidhāna, casting of an image in wax, different processes and their details, 86-87.
Madhya-deśa, the middle country, topography and twelve-storeyed buildings of, 173, 174, 175.
Madhya-kānta, a class of twelve-storeyed buildings, once prevalent in Madhya-deśa, 50, 113, 173, 198.

Madhya-nīhāra, also called Madhya-ma-hāra, the third or middle of the five courts into which the compound of an edifice is divided, 51, 154.

Madhya-rāṅga, the middle theatre, the enclosed quadrangular courtyard, 63-64.

Madurā, apparently southern variety of the name of Mathurā of North India, 180-181.

Madurā (kurura), city of, its architectural details as given in Buddhist literature, 9.

Magadha, its relation with Daśa-kumāra-charita and Mānasāra, 171, 177; topography and twelve-storeyed buildings of, 173, 175, 198; its relation with southern powers in Aśoka's time, 183.

Māgadha-kānta, a class of twelve-storeyed buildings, once prevalent in Magadha, 51, 113.

Mahābhārata, references to architectural objects from, 18-19, 51; description of the architect Maya's work in, 172.

Mahā-Govinda, an architect who built several cities and fortresses as noticed in Buddhist literature, 9.

Mahā-gopura, great gate house, of the fifth or last of five courts into which the compound of an edifice is divided, 52, 154.

Mahā-kāla, Śiva, temple at Ujjayini of, one of the best known phalli in India, 72.

Mahā-kānta, a class of eight-storeyed buildings, 50, 112.

Mahā-maryādā, the extreme boundary, the last or fifth court of a large compound, 51, 154.

Mahāmbuja, large cyma, a moulding, 128.

Mahā-nadi, the river of, the territorial boundary of the Northern style of architecture, 178; its valley was conquered by Samudra Gupta, 178.

Mahā-padma-(ka), a round type of building noticed in Agni and Garuda Purāṇas, 113, 114.

Mahāraja (or Adhirāja), one of the nine classes of kings, 57, 181; kingdoms, kingly qualities, strength, powers and other characteristics of 59, 182.

Mahā-sudasa-sutta, some architectural objects explained in, 13.

Mahā-tantra, an authority on which Mānasāra was based, 165.

Mahā-vagga, references to architectural matters from, 10, 11, 13, 15, 16.

Mahā-vrata, a class of phalli, 72.

Mahendra (or Narendra), one of the nine classes of kings, 57, 181; kingdoms, kingly qualities, strength, powers and other characteristics of, 59, 182.

Mahendra-giri, the hill forts of, conquered by Samudra Gupta, 184.
Māhendrī, Consort of Indra, one of the seven mothers, image of, 75.

Māheśvarī, Consort of Śiva, image of, 98.

Mahi-śakti), the earth-goddess, the image of, 74, 75, 76.

Mahotsava, a throne for great festivals, 62.

Majjanālaya, bath-room, 58.

Makara, crocodiles, their figures used as ornament for an arch, as well as for the ears, 63, 67, 78.

Makara-hūshaṇa, ear-pendant decorated with makaras, 67.

Makara-torana, arches marked with crocodiles, 78, 63.

Mālā, garland or necklace, 68.

Mālabar (or Keralā), the boundary of Drāvida country, 174.

Mālikā, a class of buildings, sub-divided into:
   Lāngala-mālikā,
   Manlika-mālikā and
   Padma-mālikā, etc., 25;
   a round type of building, otherwise called Manlika, 113.

Mālwa, apparently was known to Mānasāra, 171; Northern style of architecture in, 178; a fictitious king, Mānasāra, of, 197, 198.

Mālyaja, a type of pavilion (maṇḍupa), 53.

Māṇa, a kind of measurement, the length of an image from foot to top of the head, 76, 121.

Māṇa-bodha, an authority on architecture on which Mānasāra was based, 165.

Māṇa-kalpa, an authority on architecture on which Mānasāra was based, 165.

Mānaṅgula, a kind of finger measurement, a unit of measurement, 77 84, 122.

Māna-samgraha, system of measurement, name of a chapter in Agastya, 100.

Mānasāra, the subject matters of, 1; the other titles of, 1-2; ambiguous title, implying a treatise, an author, and a class of Professors of architecture, 2-3; mentioned in Daśa-kumāra-charita as a fictitious King of Malwa, 3-4, 170-171; seems to be implied in Agni-purāṇa, 4, 20, 169, and in some inscriptions, 4, 171; plan of Ayodhya correspond to the town-plan given in, 17, 18; compared with Kāmikāyana, chapter by chapter, 24-25 with Suprabhadṛāgama, 26; as in Rāmāyana and Uttarā-rāma-charita, the engineer, Nala, is recognized as an architect in, 32; division of compound in, 33; Summary of the contents of, 24-88; compared with Mayamata-chapter by chapter, 89-91; with Aṃśumad-bheda of Kāśyapa, 92-93; with Viśvakarma-kilpa, 96-99; with Agastya, 100-101; with Sanatkumāra, 102; with Maṇḍana's Śilpa-sāstra, 103-105; quoted in a compilation,
INDEX

108; oldest and complete extant record on architecture, its position among Śūlpā-sūtras, 109; various architectural divisions described in, 110-111; ninety-eight types of buildings classified under twelve-storeys, 111-113; its position among Purāṇas including Brīhat-śamhiti and Āyamas, 110, 119-120, 131-133, 162-169; details of measurements described in, 121-124; columns and mouldings described in, 125-129; three main styles of architecture recognized in, 130-131; compared with Vitruvius, 134-159; compared with Brīhat-śamhiti by chapter and verse, 161-162; the authorities on architecture recognized in, 165; its relation with Astronomical treatises in regard to orientation of buildings, 172-173; significance of its ten geographical divisions of twelve-storeyed buildings, 173, 175-176; and three geographical divisions of the styles of architecture, 176. Characteristic features of these styles, 176, 177-181; the geographical divisions indicate an empire, 181-183; nine divisions of royalty, 181; the extent of this empire, corresponding to the Gupta Empire, 183-185; prevailing religion at the time of, 185-190, identical with that prevailing in Gupta times, 190-191; state of all things jointly point to the Gupta times, 191-195; 197-198; examples of the ungrammatical Sanskrit used in, 199-210; similar language met with elsewhere, 211-213; history of the origin of such language, 213-214.

Maṇasāraka (? Maṇasāraka or Maṇaśāraka), according to (the rules laid down in) Maṇasāra, 16.

Maṇasarpa (? for Maṇasāra), an architect, 171.

Maṇa-sūrādi, on measuring strings, etc., name of a chapter in Amāta-madhyānaka of Kāśyapa, 93.

Maṇava-sāra, another title of the work Maṇasāra, 2.

Maṇa-vid, an authority on which Maṇusāra was based, 165.

Maṇeṣa-bandha, a type of bases, 128.

Maṇeṣa-bhadra, a type of pedestal, 128.

Maṇeṣa-kāṇṭa, a class of four-storeyed buildings, 50, 112.

Maṇḍaleśa, a class of kings, 57, 59; palaces, thrones, crown etc. of, 181; relative position of, 182.

Maṇḍana, architectural treatise of, 103, 104; historical importance of, 104-105.

Maṇḍara, a square type of buildings as noticed in Agni and Garuḍa Purāṇas, 113; a type of twelve-storeyed buildings as noticed in Mataya-purāṇa, 115; a type of ten-storeyed buildings as noticed
Manu, a puzzling name, 4; one of the
four heavenly architects, 35, 165;
one of the several authorities on
which Śanat-kumara's Vāstu-kāś-
tra was based, 102; and the archi-
tectural portions of Brihat-śaṁ-
hitā were taken from, 163, 165;
fourteen in number, 166; a
generic name, 167; surname, 171;
condition of the country at the
time of, 183.

Manu-śāra, references to archi-
tectural measure from, 122.

Manu-sūtra, a possible (correct)
reading for Mānasūra, 4.

Mānusha, a class of phalli, 73.

Mānya-khetā, Rāṣṭrakūṭas of, 191.

Mārāla, goose or duck, architectural
details of the cage for, 70.

Marcus Vitruvius Pollio, the full
name of the author of the treatise
known as Vitruvius, 158.

Mārkaṇḍeya-purāṇa, the time of, 194.

Mars, temples of, 146, 147.

Māsha, phaseolus radiatus, used as a
material for foundations of build-
ings, 43.

Masūraka, entablature in connection
with Madhyā-rānga, 64.

Mathurā, Fa-hien's reference to monas-
tries along the road to, 192; Jain
inscriptions from, 212; architectural
details of the ancient city of, 9.

Mātrāṅgula, a unit of measurement,
77, 122.

Matsya, one of the ten incarnations of
Vishnu, 52; king Virāṭa's capital,
174.
Matsya-purāṇa, architectural matters described in, 114—116, 121, 129; identical with Bhavishya-purāṇa, Brihat-samhita and Kāmikāgama in respect of certain matters, 22, 23, 115—118, 125, 126-127, 150, 152, 163; Śilpa-śāstra of Maṇḍana acknowledges the authority of, 103, 104; comparative study of, 110, 114—116, 119, 160, 164-165, 167, 168, 169, 170; details of twenty types of buildings given in, 115-116, 119; architectural and sculptural measures given in, 121—123; five orders and eight component mouldings described in, 125, 126-127, 150, 152; eighteen authorities on architecture recognized in, 164-165; age of, 194, 198.

Matsyākāra, eyes are stated to be shaped like fish, 84.

Mauli, a kind of head-dress, used by the love-goddess Rati, 65.

Maulika, a type of pavilion (maṇḍapa) of six faces, 54; a class of halls (śālā), 55.

Maushalaya, an authority on architecture, 107.

Maya-(Asura), recognized as an architect in Mahābhārata, 17-18, 166, 172; one of the four heavenly architects, as stated in Maṇasāra, 35, 165; the architectural treatises attributed to, 89—90; Viśvakarma's treatise based on, 97; Agastya's relation with, 101; Sanat-kumāra's treatise was based on, 102; recognized as an authority in Saṅgraha, 166, in Brihat-samhita, 163, 165 and in Matsya-purāṇa, 164, 165; seems to be a generic name, 167.

Maya-mata, treatises ascribed to Maya, 2, 89, 128; compared with Maṇasāra, 89—91; its relation with other treatises, 99; as mentioned in Saṅgraha, 106.

Measuring-string (rajju), its relation with other units of measurement, 35.

Megha-kānta, a class of ten-storeyed buildings, 50, 112.

Megha-varna, king of Ceylon, 191.

Mekhalā, belt, girvila, an ornament, 68.

Mercury, temple of, 146.

Meru, a type of building mentioned in Maṇḍana's treatise, 104; in Agni and Garuda Purāṇas, 113; in Matsya-purāṇa, 115; in Bhavishya-purāṇa, 116; in Brihat-samhita, 117; in Suprabhāsīgama, 118; in Kāmikāgama (as Meru-kāta), 118; in Maṇasāra (as Meru-kānta), 50, 111; further reference to, 168, 169.

Meruja, a type of pavilion used as a library-room, 54.

Meru-kānta, a class of three-storeyed buildings, 50, 111, 168, 169.

Meru-kāta, a class of buildings as mentioned in Kāmikāgama, 118.
Meru-tunga, a Jain author, 211.
Mewar, king of, 103.
Milanda-panha, possible identity with the Questions of Menander, 159.
Minerva, temple of, 141, 146, 147.
Mirabai, queen of Mewar, patron of Rāja-vallabha-Mandana, 103.
Miśra, a kind of pillars which are made of two materials, 116; a classification of buildings based on building-materials, 110, 118.
Miśra-durgā, mixed fort, 40, 148.
Miśraka-lakshapa, a chapter in Mandana's treatise, 103.
Miśra-kalasa, a chapter in Mandana's treatise, 104.
Miśra-kalpa, a kind of ornament, made of leaves, jewels, etc., to be used by gods, Chakra-vartin and other classes of kings, 67.
Miśrita (or Subhaṅkari), the Composite order of India, 153-125.
Mithila, city of, meagre architectural details from Buddhist literature, 9; from Mahâbhârata, 17; capital of Videha, 173.
Monasteries (matha), as described in a chapter of Kâmikâgama, 27; stated to have been visited by Fa-hien along the road from the Indus to Mathura, 192.
Monopetalal, a circular type of building, 147.
Mrich-chhakatika, a drama, architectural details from, 32-52.
Mriga, one of the deities to whom offerings are made in connection with building a house, 38.
Mriga-nâbhi-bidâla, musk cat, architectural details of the eave of, 70.
Mrinâla (mrinâlikâ), name of a moulding, looking like the stalk of a lotus, 127.
Mrît-saṃskara-lakshana), process of casting images in earth, 97, 100.
Mudga, phaselus mungo, one of the materials of which foundations of buildings are built, 43.
Mukha-bhadra, its meaning, 48, 49.
Mukta-prapânga, open quadrangular courtyard connected with a tank, its description, 63-64.
Mukulâ, a round type of building as mentioned in Garuḍa-purâṇa, 114.
Mukuṭa, a kind of head-dress, 65.
Mûla, the root, a lower member of the phallus, 78; a moulding, 127.
Mûla-bera, principal idol in a temple, 77.
Mûlikâ, a material used in casting an image, 86.
Mûrdheshṭaka, brick at the top, an ornament upon the dome, 93.
Mûrdhikâ, a moulding, 126, 151.
Mûrdhniṣṭaka, ornamental brick at the topmost parts of buildings, 26.
Mûrti-kânta, a class of five-storeyed buildings, 50, 112.
Mûshi-bandha, a moulding, 116, 127, 151.
Mushṭika, an octagonal type of building as mentioned in Garuḍa-purāṇa, 114.

Myron, a sculptor, 141.

N

Nabhāsyān-bhadraka, a type of chariots, 61.

Nāga-bandha, a type of window, 53.

Nāgarā, a class of towns, 40, 89, 93, 143.

Nāgarā, one of the three styles of architecture, others being Drāviḍa and Vesara, 24, 48, 110, 118, 119; 130, 131; characteristic features of, 176; a square type of chariots, 61; a type of phallus, 78; the territory covered by, 180; identification of the territory, 181, 182, 183; geographical division of, 198.

Nāgarā-khandha, a portion of Skanda-purāṇa, stated to have been named after the Nāgarā Brahmans, 180.

Nāgarā-nandana-pura, stated to have been the home-country of the Nāgarā-Brahmans, 180.

Nāgāśā, style of architecture at, 178, 179.

Nagnajit, an architect, mentioned in Brihat-samhitā, 131, 163, 165; in Matsya-purāṇa, 164, 165.

Nakshatra-māla, an ornament, a necklace of twenty-seven pearls, 68.

Nakula, mongoose, cage of, 70.

Nala, hero of the famous episode of Nala-Damayanti, references to lofty balcony described in this connection in the Epics, 18; son of the architect Viśvakarman and engineer of the bridge connecting India with Ceylon, 32; one of the thirty-two architects mentioned in Mānasāra, 165.

Nāla, drain, details of, 64, 92, 106.

Nālikā-garbha, rectangular halls, as stated in Buddhist literature 11.

Nalīnaka, a type of building, as mentioned in Suprabhāt-dāgama, 118.

Nandana, a square type of buildings, as mentioned in Garuḍa-purāṇa, 113; called Nandika in Agni-purāṇa, 113; a type of seven-storeyed building as mentioned in Matsya-purāṇa, 115; another type mentioned in Bhavishya-purāṇa, 116; and Brihat-samhitā, 117.

Nanda-vṛttta, a type of pavilions (manḍapa), 119.

Nandika, a square type of buildings as stated in Agni-purāṇa, (elsewhere called Nandana), 113.

Nandīsa, one of the eighteen architects mentioned in Matsya-purāṇa, 164.

Nandi-varddhana, a square type of buildings as mentioned in Agni and Garuḍa Purāṇas, 113; seven-storeyed as stated in Matsya-purāṇa, 115; another type as mentioned in Bhavishya-purāṇa, 116; and Brihat-samhitā, 117.

Nandyāvarta, a class of villages, 39, 148; a kind of wood joinery, 47; a class of six-storeyed buildings, 50, 112; a kind of windows, 53; a type of buildings, 118; a type of pavilions (manḍapa), 119.
Nārada, a neuter class of buildings, 118.

Nārada, an architect under whose supervision some chariots are stated to have been built, 20; one of the sources on which Mānasāra was based, 34, 165; an architectural treatise of, 107, 140; one of the eighteen Professors of architecture mentioned in Matsyapurāṇa, 164.

Nārada-purāṇa, references to architectural matters from, 21.

Narasimha-gupta-Balāditya, religion of, 192; political position of, 195.

Nārāyaṇa, architectural treatise of, 107; temple of, 189.

Narendra, one of the nine classes of kings, 57; qualities and court, etc., of, 59; palace, throne, crown, etc., of, 181; rank of, 182.

Narechchhatā, height of man in different ages, 98.

Nāsi, nose, a moulding, 127.

Nasik, style of architecture at, 179.

Nāsika, nose, wings of buildings, 98.

Nāṭaka, a moulding, 127.

Nāṭeswara, Śiva, image of, 100.

Nava-kamma, new work in constructing a Buddhist monastery, 11.

Nāya, one of the thirty-two authorities on architecture recognized in Mānasāra, 165.

Nayanamālana, chiselling of the eye of an image, 34, 88.

Nīda, nests, for domestic birds and animals, architectural details of, 68.

Nīgama, a kind of fort, 40, 143.

Nīla-kaṇṭha, peacock, cage of, 70.

Nīlā-parvata, otherwise called Nishadha, a class of buildings, as mentioned in Suprabhedāgama, 118.

Nīrna, drip, a part of the pedestal, 74; a moulding, 127.

Nirukta, references to architectural matters from, 33.

Nīshadha, a class of building, as mentioned in Suprabhedāgama, 118.

Nīshadaja, a kind of pavilion (maṇḍapa), 53.

Nīspāva-bija, bean, nose to be shaped like, 84.

Nītyārchan, throne for use in daily worship, 62.

Nītyotṣava, throne used for ordinary festivities, 62.

Nīvāṇa-bhadra, a class of chariots, 61.

Northern style, identification, territory and features of, 180-181.

Nṛtta-lakṣaṇa, image of dancing Śiva, 106.

Nṛtta-maṇḍapa, pavilion in front of a temple where religious music is performed, 119.

Nṛtta-mūrti-lakṣaṇa, image of Śiva in dancing pose, 97.

Nṛṣi-simha, temple of, 189.

Nūpura, anklet, an ornament, 6.

Nymphs of fountains, temples of, 147.

Offerings, to deities in connection with building a house, 38.

One-peaked building, as mentioned in Buddhist literature, 11.
Orders, Indian and European, 150.
Ornaments of the body, details of, 66-68.
Ovolo, a moulding, 127, 152.
Oxus, Samudragupta’s diplomatic relation with kings who ruled on the banks of, 184.

P
Pachanālaya, kitchen, 58.
Pāda, trunk of the ornamental tree, 64; column, 89.
Pāda-bandha, a kind of throne for a class of kings called Astra-grāhin, 63.
Pada-(devatā)-vinyasa, ground-plan, 89.
Pāda-jāla-bhūshaṇa, net-like ornament worn on the feet, 68.
Padma, a type of pavilions (mandapa) for storing flowers, 54; a moulding of the pedestal, 74; a round type of buildings mentioned in Agni and Garuda Purāṇas, 113, 114, three-storeyed as stated in Matsya-purāṇa, 116, another type as mentioned in Bhavishya-purāṇa and Bṛihat-samhītā, 116, 117; a moulding, 127, 152, 153.
Padma-bandha, a kind of throne, 62, 63; a type of base, 128.
Padmaka, a class of village, 39, 143; a type of pavilions used as temple-kitchens, 54.
Padmā-kampa, a moulding, 128.
Padmā-kānta, one of the five Indian orders of columns, 45, 125, 126, 150, 151; a class of six-storeyed buildings, 59, 112.

Padma-keśara, a kind of throne for gods and kings, 62; a type of base, 128.
Padmāsana, lotus seat, a kind of throne for gods, 62.
Pādukā, foot-wears, 97; a moulding, 127.
Palaces, with thousand pillars and gates as stated in Rig-veda, and Atharva-veda, 6; as described in Harsha-charita, 30; as given in Mānasāra, 77-85; the storeys of, 42.
Palakka, Samudragupta’s conquest of, 184.
Pālikā-stambha, a pillar edged like a measuring pot, a type of column, 45, 125, 126, 160, 151.
Pallāṅka, bedstead, as described in Buddhist literature, 15-16.
Pānechāla, a class of twelve-storeyed buildings, 50, 113, 188; topography of, 173-174; comparative size of the buildings of, 175.
Pāṇchina-janya, conch-shell, one of the attributes of Vishnu, 71.
Pāṇdyas, independent of Magadha at Aśoka’s time, 183.
Pāṇini, the famous Sanskrit grammarian, references to architectural matters from, 33; its position in literature, 133; certain rules of, 211.
Paṇjara, a class of seven-storeyed buildings, 50, 112; cages of various descriptions, 68, 69-70; a kind of couch, 36.
Paṇka-durqa, clay-fort, 40, 143.
INDEX

Pāpanāth, style of architecture at, 177.
Paramānu, atom, the lowest unit of measurement, 33.
Paramārtha, a Buddhist author, 192.
Parama-sādhika, one of the thirty-two ground-plans, 33, 56, 58.
Parārtha, for others, a type of phalli used for public worship, 73.
Pythisus, the architect of the temple of Minerva at Priene, 141.
Parāsariyaka, one of the thirty-two authorities on architecture mentioned in Mānasāra, 165.
Parāvata, turtle dove, egg of, 70.
Parināma, a kind of measurement, 77,
121.
Parimit, cross-beam, 6.
Parivāra-vidhi, attendant deities, their temples, etc., 93.
Pāriyātra, a type of pavilion (māṇḍapa), 53.
Parjanya, a plot in a ground-plan, a quarter, 189.
Pāreṣhuka, a kind of height, 41; a class of kings, 59, 181, 182.
Parvata, a type of building, as mentioned in Suprabhāṣyama, 118.
Paryāṅka, couch, six varieties of, 36,
61-62.
Pāśupata, Śiva, a class of phalli, 72,
94, 100, 107.
Pāṭali-putra, Patna, king Rājahāmsa of, 171.
Pātra-kalpa, one of the four classes of ornaments, with foliated decoration, 67.
Pātra-pāṭha, a kind of head-dress used by the Pāṭha-dhara class of kings, 65.
Pātra-torāṇa, foliated arch, 63.
Pāṭṭadakal, temple of Pāpanātha at, 177.
Pāṭṭa, turban, a kind of head-dress, of three kinds, foliated, jewelled and floral, 65; a moulding (fillet), 127.
Pāṭṭa—bodha, a type of bases, 128.
Pāṭṭa-bhāj, a class of kings, 59, 181, 182.
Pattana, a type of town, a big commercial port, 40, 143.
Pāṭṭa-dhara, a class of kings, 59, 181, 182.
Pāṭṭikā, a part of the pedestal, a moulding, 74.
Paulastya, an architectural treatise of, 107.
Pauṣṭika a kind of height 41, 55, 124; a type of two-storeyed building, 59, 111.
Pavan-bhadraka, a class of cars and chariots, 61.
Pedestal (upapitha), details of, 43-44, 74, 128.
Peripteral, a circular type of building, 147.
Peripteros, a type of building, 147.
Phalaka, a leaning board, 16.
Phalakā, a sort of screen for windows, 53; planks, 92; a moulding, 126, 127, 151.
Phalakāsana, a type of couch, 86.
Phallus, an emblem of god Śiva, 21,
25, 91, 98, 108; installation of, 26, 27; various classes and architectural details of, 72—74.
INDEX

Pillar (stambha), of the Vedic age, 6; of Buddhist age, 13; of Paurānic age, 19, 125—128, 150-151; of Agamic age, 25, 125-128, 150-151; different classes and measures, etc., as described in Mānasāra — 44-46; as also in other works, 125—128; comparative study of, 149—153.

Pishtapūra, capital of Kalinga, conquered by Samudragupta, 184.

Pitha, pedestals, 27, 90, 91; different measures and varieties of, 43-44, 128; of the phallus of Śiva, 74, 94.

Pithikā, cushioned chair, 16; pedestal, 97.

Pliny, his mention of Vitruvius, 134.

Plumb-lines, details of, 85.

Polycletus, a sculptor, 141.

Pompey, the theatre of, 160.

Potikā, a moulding, 126, 151.

Prabhajana-bhadra, a class of cars and chariots, 61.

Prabhava, a rectangular type of building as mentioned in Agni-parāṇa, 113.

Prabodhaka, one of the thirty-two authorities mentioned in Mānasāra, 165.

Prag-vāṃśa, an architectural object mentioned in Harsha-charita, 80.

Prāharāka, a class of kings, qualifications of, 59; details of their palaces, etc. 181, 182.

Prājapatyā-hasta, a cubit of twenty-four angulas (finger-breadth), 80.

Prakāra, rampart, 11; one of the five courts, 33, 49, 51, 90, 93, 154; of the Dravidian temples, 177, 197.

Prakāśāditya, a king of the Gupta dynasty, 195.

Pralamba-phalaka, an instrument to ascertain the plumb-lines for the purpose of sculptural measurement, 85.

Pralīnaka, a class of buildings, 118; a type of pillar, 125, 126, 150, 151.

Pramāṇa, measurement of breadth, 76; a kind of linear measurement, 121.

Prapāla, canal, drain; a part of the Pedestal of the phallus of Śiva, 73.

Prapā, alms-houses, 17; drinking-house, 80.

Prāsāda, one of the five classes of buildings as stated in Buddhist literature, 10-11; palace, 18; buildings in general, 92, 97, 111—118.

Prāsāda-Maṇḍapa-Vāstu-sāstra, a treatise on architecture, synopsis of, 103.

Prashtar, one of the thirty-two authorities mentioned in Mānasāra, 165.

Prastara, a class of villages, 39, 143; entablature, its different varieties, 46, 100, 149; 25, 89, 92; a moulding, 127.

Prathama (or jamāna), a moulding of the pedestal, the plinth, 74.
Prathamāsana, a throne fit for the first stage of coronation, 62.

Prathameshṭaka, the first brick, the laying of the foundation-stone, 43, 92.

Prati (also Pratika), a moulding, 127.

Prati-bandha, a moulding, 127.

Prati-bhadra, a type of pedestal, 44, 128.

Prati-krama, a type of bases, 128.

Pratima, a moulding, 127.

Pratimā, images in general, 90, 100, 101, 107.

Pratimit, prop, 6.

Prati-vājana, a moulding, 127.

Prati-vakra, a moulding, 127.

Prayāga, modern Allahabad, the boundary of Madhyadesa or middle country, 173.

triene, temple of Minerva at, 141.

Prishada-bhadra, a class of cars and chariots, 61.

Prithivi-dhara, an oval type of building as mentioned in Agni and Garuḍa Purāṇas, 113, 114.

Priya-dārśana, an order of columns, 125, 126, 150.

Projections (nītyāma), of pedestals, 44.

Pronaos, as described by Vitruvius, 155.

Proserpine, temple of, 147.

Prostylos, temples of a particular form, 147.

Pseudodipteros, temples of a particular form, 147.

Pulasti-pura, buildings at, 14.

Pum-linga, masculine type of buildings, 111, 118, 119.

Pudarika, a class of seven-storeyed buildings, 50, 112.

Pura, a class of towns, 143.

Puragupta, a Gupta king, 195.

Purāṇas, treatment of architectural matters in, 19—22, compared with Agamaś 23; mere compilations, 109; five orders of columns and their mouldings as described in, 125, 126, 127—129, 151; types of buildings as described in, 113—117, 119, 131; measurements mentioned in, 122—123; ages of, 161, 194; comparative study of, 163, 168; architectural authorities mentioned in, 164; provenance of, 175; pantheon recognised in, 191.

Purandara, an authority on architecture as stated in Purāṇas, 164.

Pura-stātra, a chain worn round the chest, an ornament, 68.

Purusha, a masculine type of building, 49.

Pushkala, a type of two-storeyed building, 50, 111.

Pushkara, a class of buildings as mentioned in Kāmikāgama, 118.

Puspha-bandha, a bunch of flowers, a particular form of window, 53.

Pushpaka, a rectangular class of buildings comprising nine types, mentioned in Agni and Garuḍa Purāṇas, 113, 114.
INDEX

Pushpa-mālya, flower-wreath, a kind of head-dress used by the Prāhāraka and the Astra-grāha classes of kings, 65.
Pushpa-manḍapa, flower-pavilion, 58.
Pushpa-patīya, a kind of head-dress used by the Paṭtabhāj class of kings, 65.
Pushpa-pushkala, a type of base, 128.
Pushpa-toraṇa, floral arch, 63.
Pushya mitra, reaction against Buddhism by, 193.
Pūtanā, a demoness, offerings in connection with house-building to, 38
Pyenostylos, a kind of temple, 147.

Q
Qualifications (of architects), as given in Mānasūra 35; compared with those given by Vitruvius, 138-141.
Quinarian measure, stated to have first introduced by Vitruvius, 134.

R
Raiva'a, one of the fourteen Manus to whose name several architectural treatises are ascribed, 366.
Rāja-grīha, city of, built by Bimbisāra, 9.
Rājadhāni, a class of towns, 40, 143.
Rāja-hamsa, king of Pātaliputra, 3, 4, 171, 197, 198.
Rāja-śekhara, a Jain author, 211.
Rāja-tarāṅgini, chronicle of Kashmir-rulers by Kalhana, references to architectural matters from, 30, 31, 73.
Rāja-vāhana, the chief of the ten princes of the Pata-kumāra-charita, 4, 171, 197.
Rāja-vallabha-Maṇḍana, an architectural treatise, its synopsis, 103-104; references to architectural measurement from, 122.
Rāja veśā, royal palaces, 90.
Rāju, ropes, a measure, 35.
Rajju-bandha-lakṣaṇa, binding of rope, 94.
Rājputāna, style of architecture in, 178.
Rākṣasī, a demoness, to whom offerings are given in connection with the building of a house, 38.
Rāma, hero of Rāmāyaṇa, 18; image of, 108; temple of, 189; his capital stated to have been built by Manu, 168.
Rāma-Lakṣmaṇa, image of Rāma and Lakṣmaṇa, 108.
Rāmāyaṇa, references to architectural matters from, 17, 122.
Rampart, its architectural details from Vitruvius, 145-146.
Rām Rāz, 13, 134.
Randhra (corrupt form of Andhra), a style of architecture, 130.
Rāṅga-mukha, a class of buildings mentioned in Kāmikāgama, 118.
Rāṣṭra-kūṭas, reign of, 185; period of, 190, 191.
Rathā-duḥli, a measure, equal to eight paramāṇus, 35.
Rathā-durga, chariot fort, 40, 143.
Rathā-lakṣaṇa, details of chariota, etc., 60-61.
Ratha-nirmāṇa, construction of chariots, 107.
Ratna (compounded with kampa, patta, and vapra), composite mouldings, 127.
Ratna-bandha, a type of bases, 128.
Ratna-kalpa, a kind of ornaments, made of flowers and jewels, and used by gods, and the Chakravartin, Adhirāja and Narendra classes of kings, 67.
Ratna-kampa, a moulding, 128.
Ratna-kānta, a class of six-storeyed buildings, 50, 112.
Ratnāngulyaka, jewelled finger-ring, 67.
Ratna-patta, a kind of jewelled head-dress used by the Pārshnika class of kings, 65; a moulding, 128.
Ratna-torana, jewelled arch, 63.
Ratna-vapra, a moulding, 128.
Rauchya-daiva-sāvarni, one of the fourteen Manus (to whose name several architectural treatises are ascribed), 166.
Raurava, a class of nine-storeyed building, 50, 112.
Repair (of broken images), as treated in Sukra-niti, 30.
Rīg veda, references to architectural matters from, 5, 6.
Rīkha-nāyaka, an oval type of building as mentioned in Agni-purāṇa, 113.
Roads and doors, (Vighi-dvārādī-māna), as described in Kāmikā-gama, 24.
Röd, (danda) a measure, 35.

Roga, disease, personified as a deity and worshipped in connection with the building of a house, 38.
Rohilkhand, identified with north Pāñchāla, 174.
Romaka-Siddhānta, a treatise based on a Roman astronomical work, 159.
Rooing, five kinds of, 13; other details of, 46.
Ropes (Sūtra-nirmāṇa), making of, 24.
Ruchaka (for Charuka in Kāmikā-gama), a type of building, 13; one of the five orders of columns, 125, 126, 150, 151.
Rudra, a deity, 126, 151; temples, etc., of, 187.
Rudra-jaya, a quarter, 189.
Rudra-kānta, one of the five orders of columns, a sixteen-sided pillar, 45, 125, 150; a class of four-storeyed building, 50, 112.
Rudra-sāvarni, one of the fourteen Manus (to whose name several architectural treatises are ascribed), 166.
Rūpa-Mandana, an architectural treatise, 103.
Ruskin, 18, 166.

S
Sabhā, assembly halls, as described in Mahābhārata, 18, 19.
Sabhāśṭaka, eight council-halls, 103.
Sadākṣa, a class of four-storeyed buildings, 50, 112.
Sadhaka-sāra-samhitā, one of the thirty-two authorities on architecture mentioned in Mānasāra, 165.
Sāgala, city of, 9.

Sages, images of the well-known seven rishis (Agastya, Kāśyapa, Bhṛigu, Vaśishtha, Bhārgava, Viśvāmitra, Bhāradvāj) are described, 79-80.

Śaiva, a class of phalli, 72.

Śaivism, its condition at the time of Mānasāra, 187, 188, 190.

Sakala-sthāpana-vidhi, installation of the images of Sakala (Iāvara and four other deities), 94.

Sāketa, city of, 9.

Śākiyas, the kinsmen of Buddha, who built the monumental dome about the same height as the dome of the St. Paul's, 15.

Śakra, one of the several architectural authorities mentioned in Sanatkumāra's Vāstu-kāstra, 102.

Śaktis, female energies personified, the leading female deities, their images described, 74—76, 71.

Śakuna-lakshana, auspicious signs in connection with the building of a house, 104.

Śālā-griha (or Śālā-mandira), a rectangular type of building as mentioned in Agni and Garuda Purāṇas, 113, 114.

Śālagrāma, the stone-god, image of, 21.

Śālā-(vidhāna), halls, a kind of building, various classes, and other details of, 54-55, 90.

Śālokya, a class of sages, description of their images, 80-81.

Śalya-(jñānam), some inauspicious things considered in connection with the building of a house, 97.

Śāma, a rectangular type of building as mentioned in Agni-purāṇa, 113.

Śama-bhaṅga, equipoise of images, 86.

Śama-karṇa, a class of phalli, 72.

Śamaya-vidhi, auspicious time for beginning the construction of a building, 96.

Śambhu-kānta, a class of eleven-storeyed buildings, 50, 112.

Śāṃchita, a classification of buildings, 24, 49, 111, 118, 119.

Śaṅgraha (also known as Śilpa-saṅgraha), a work on architecture, the synopsis of, 106—109.

Śāṃpya, a class of sages, their images described, 80.

Śāmkara, an object made of mixed materials, a kind of pillars made of more than three materials, 46; a class of building, 110, 118.

Śampūrṇa, a class of buildings, as mentioned in Kāmakāgama, 118.

Śamudga, or Śamudra, a class of buildings mentioned in Bhavishyapuṇāṇa and Brihat-saṃhitā, 116, 117.

Śamudragupta, reign of, 185, 193; period of, 190; an all-sided development at the time of, 193.

Śamudraka, a type of double-storeyed sixteen-sided buildings, as mentioned together with other details in Matsya-puṇāṇa, 116.

Śāṃviddha, a kind of fort, 49, 143.
Sanatkumāra, an author on architecture, 2; synopsis of his treatise, 102.

Sandhi-karma-(vidhāna), the joinery, various kinds and other details of, 47, 89.

Śāṅkha, a round type of building as mentioned in Agni and Garuḍa Purāṇas, 113, 114.

Śāṅku, a gnomon, finding out the cardinal points by means of a gnomon, its details, 37, 97.

Śaṅtika, a measure of height, 41, 55, 124.

Sapta-mātrī, seven mothers (Vārāhi, Kaumārī, Chāmuṇḍā, Bhairavi, Māhendrī, Vaishnavi, Brahmāṇī), their images, 75, 93.

Śāra, a class of buildings, as mentioned in Kāmikāgama, 118.

Śārasvatī, a treatise on architecture, its synopsis, 108.

Śārasvatī, goddess of learning, consort of Brahmā (?), 71; description of her image, 75.

Śārkarā, gravel, one of the nine materials of which idols are made, 70.

Sāro-rūṭha, a class of six-storeyed building, 50, 112.

Sārūpya, one of the four classes of sages, description of their images, 30, 81.

Sarva-kālyāṇa, a class of buildings, as mentioned in Kāmikāgama, 118.

Sarva-kāmika, a kind of measurement, also known as Dhanada, 41, 55, 124.

Sarvato-bhadra, one of the eight classes of village, 39, 143; a kind of joinery, 47; a type of window, 53; a class of halls (śāla), 55; a quadrangular type of building, 113, 114; another type of five-storeyed building, 115; another type, 118.

Śaṭapaṭha-Brāhmaṇa, references to aṅgula measure from, 122.

Satra, inn, as mentioned in Harsha-charita, 30.

Śatruṇjaya, the style of architecture at, 178, 179; language of inscriptions from, 211.

Sattamī, sofa, as mentioned in Buddhist literature, 16.

Satya-kānta, a class of eight-storeyed building, 50, 112.

Saugandhi, a kind of fragrant grass used as a material for foundations of buildings, 43.

Saukhya, a pavilion (maṇḍapa) on the banks of a sea or river, 54.

Saumukhya, an order of columns, 125, 126, 150, 151.

Saumya, a class of buildings, as mentioned in Kāmikāgama, 118.

Saumya-kānta, a class of gate-houses (gopura), 52.

Śaunaka, one of the eighteen professors of architecture mentioned in Mutsya-purāṇa, 164.

Saura, one of the thirty-two authorities on architecture mentioned in Mānasāra, 165.

Sura-kānta, a class of nine-storeyed buildings, 50, 112.
Sāvarṇī, one of the fourteen Manus (to whose name several architectural treatises are ascribed), 166.

Sāvaṭṭhi, city of, 9.

Sāvitri, consort of Bhrāmā, her image, 71; one of the chief female deities, description of her features, 74-75.

Śayana, a type of temple, 24, 111; another type, 49; recumbent posture of images, 86.

Śayanādhikāra, a chapter dealing with bed-streets, 90, 61-62.

Śayanālaya, bed-chamber, 58.

Śayana-vidāna, a chapter dealing with couches, 61-62.

Śayujya, a class of sages, their images described, 80-81.

Śayyā, beds, bed-streets, 96, 97.

Socratia (or trochoïos), a Graeco-Roman moulding, 127, 152.

Selection of site, (Bhūmi-saṁgraha), different tests, 36-37.

Serañhis, temple of, 146.

Seven Mothers, detailed description of their images, 76.

Seven-storeyed buildings, as described in Buddhist literature, 14; in Manasāra, 50, 112; in Mātayā-puṇā, etc., 115.

Shapes (of buildings), masculine, feminine, neuter, as described in Manasāra and Agamas, 24, 49, 111, 118; square, rectangular, round, oval, octagonal, and sixteen-sided as stated in Purāṇas, 113-116, 117, 118.

Shoḍaśa-bhūmi-vidhāna, description of sixteen storeyed buildings, 93.

Shoḍaśa-pratimā, sixteen images, 100.

Śibi(vi)ka, palanquin, a conveyance, 36; a rectangular type of building as mentioned in Agni and Garuḍa-Purāṇas, 113, 114.

Śibira, a kind of fort, 40, 143.

Sīha, a pavilion (maṇḍapa) used as an ordinary kitchen, 54.

Siddha, a class of two storeyed buildings, 50, 111.

Siddhānta-siromani, references to architectural matters from, 32, 122, 165, 172.

Siddhas, semi-divine beings, their images, 64.

Side-halls (or ante-chambers, Pañkha-sālā-vidhi), description of, 25.

Śikhara, steeples, 17, 18, 177, 178, 179, 180, 196; a class of gatehouses (gopura), 52; erection of, 89; description of, 92.

Śikhā (or danta), axle-hand of chariots, 60.

Śikhā (or chūdā-mani), crest-jewel, 67, 85.

Śilā-nyāsa, laying the foundation stone, 97.

Śilpa-dipaka, a treatise, references to architectural matters from, 140.

Śilpa-ratna, a treatise, references to architectural matters from, 123.

Śilpa-saṁgraha, a compilation on architecture, its synopsis, 106—109, 172.
Sīlpa-sāstra, used in the sense of Vāstu-sāstra (science of architecture), 1, 19, 20, 23, 24, 26, 27, 30, 32, 34, 133, 157, 158, 159, 178, 187, 193, 194, 195, 196, 199; title of a manuscript of Mānasārā, 2.

Sīlpa-sāstra of Māṇḍana, synopsis of, 103-104.

Sīlpa-sāstra-sāra, a treatise on architecture, 2.

Sīlpi-lākṣaṇa, qualifications of an architect, 35, 137-141.

Sīmha, a class of building, as mentioned in Garuḍa-purāṇa, 114; in Matsya-purāṇa, 115; in Bhavishya-purāṇa, 116; in Brīhat-saṁhitā, 117.

Sīmhasana, throne, different varieties and other details of, 62-63, 78, 98.

Sindhuka, a class of building, as mentioned in Kāmikāgama, 118.

Sīraś-chakra, a head-disc, ornamental nimbus put on by Vishnu, 71.

Sīrāstraka, a kind of head-dress used by the Pārśhuṇika class of kings, 65.

Śiro-vibhūṣaṇa, a head-ornament, 67.

Site, selection of, 24; ploughing of, 24.

Śīva, a type of pavilion (māṇḍapa) for unhusking corn in, 54; a member of the Triad, image described, 72; a class of building as mentioned in Kāmikāgama, 118; an order of columns, 126, 151; position of the deity in Mānasārā, 188, 189; position at the time of the Guptas, 191.

Śiva-bhāga, upper part of the phallus, 73.

Śiva-kānta, pentagonal pillar, 45; a column with five minor pillars, 46; an order of columns, 125, 150.

Śivānka, a class of phalli, 72.

Śivikā-garbha, square halls, as stated in Buddhist literature, 11.

Śivikā-veśma, a rectangular type of building, as mentioned in Agnī and Garuḍa Purāṇas, 113, 114.

Skanda, a deity, his image, 107, 108; an order of columns, 126, 151.

Skanda-gupta, possible connection with Skanda-purāṇa, 171; last emperor of the dynasty, 190, 195; religious faith of, 192.

Skanda-kānta, a type of hexagonal pillar, 45, 125, 150; a column combined with six minor pillars, 46; a class of gate-houses (gopura), 52.

Skanda-Purāṇa, references to architectural matters from, 19; associated with Skandagupta, 171, 180; age of, 194.

Skanda-tāra, a type of single-storeyed buildings with hexagonal spire and necks, 49, 111.

Skandavāra, a kind of fort, 40, 143.

Sāpāna-māṇḍapa, a kind of bathroom, 119.

Soil examination of, 24.

Soma, a deity, image of, 107.

Somākānda, the combined image of, 100.
Somanātha, one of the best known phalli in India, temple of, 72.

Sopāna, stairs, as described in Buddhist literature, 13; in classical literature, 32; in Mānasāra, 51.

Śphatīka, crystal, a material of which idols are made, 71.

Śphū (Gurjaraka, a class of twelve-storeyed buildings, 51, 113, 173, 174, 175.

Śreṇi-bandha, a type of base, 44, 128.

Śrī-bandha, a type of base, 44, 128; a kind of throne, 62.

Śrī-bhadra, a kind of throne fit for the Adhirāja and the Narendra classes of kings, 62; a type of Pedestal for the phallus, 74.

Śrī-bhoga, a class of seven-storeyed buildings, 50, 112; a type of base, 44, 128; a kind of gate-houses (gopura), 52.

Śrī-dhara, Vishnu, temple of, 189.

Śrī-jaya, an oval type of building as mentioned in Agni and Garudā Purāṇas, 113, 114.

Śrī-kauṭha, an octagonal type of building as mentioned in Agni-purāṇa, 113.

Śrī-kānta, classes of three and seven-storeyed buildings, 50, 111, 112; a type of base, 44, 128.

Śrī-kara, classes of one and two-storeyed buildings, 49, 50, 111; an order of columns, 125, 126, 150, 151.

Śrī-mukkha, a type of throne fit for the Mandalesha class of kings, 63.
Śukra-chārya, the author of the Śukraniti. 170.
Śukraniti, named after its author, 2; references to architectural matters from 29-30, 169-170.
Śūla-lakāhana, the pike for images, 94.
Śūla-māna, measurement of pikes (for images), 101, 107.
Śūla-pāṇi-lakāhana, image of Śiva, 94
Śulva-sūtras, references to architectural matters from 7-8, 122.
Sundara, a class of six-storeyed buildings, 50, 112.
Suprabhedāgama, synopsis of, 27-28; method of first casting of image, in, 87; comparative study of, 110, 119, 160; types of buildings described in, 118, 131, their details from, 121; angula measure as given in, 122; tāla measure in, 123; five orders of columns as given in, 125, 150, 151, their component mouldings, 126; bases as described in, 128.
Suprati-kānta, a class of nine-storeyed buildings, 50, 112.
Śūrya-siddhānta, a treatise, references to architectural matters from, 32, 172, 173.
Śūtra-dhāra, a class of architects, his qualifications, 137, 138; see Takshaka, 35.
Śūtradhāra-Maṇḍana, a treatise on architecture, its synopsis and historical importance, 103-105.
Śūtradhāra-pājā, offerings to architects in connection with building a house, 104.
Sūtra-grāhīnī, draftsman or designer, a class of architects, his genealogy and qualifications, 35, 137, 138, 165.

Suvarṇa-kāśchuka, golden cuirass or bodice, 68.

Suvarṇa-sūtra, gold chain worn round the breasts, 68.

Śvarga-kānta, a class of eight-storeyed buildings, 50, 112.

Śvāreśhīna, one of the fourteen Manus (to whose name several architectural treatises are ascribed), 166.

Śvasti-bandha, a class of single-storeyed buildings with octagonal finial, 49, 111.

Śvasti, a class of villages, 39, 143; a kind of joinery, 47; a class of two-storeyed building, 50, 111; an octagonal type of building, 113, 114; a type of window, 53; a class of hall (śālā), 55, 118; a class of phallic, 72.

Śvasti-kānta, a class of six-storeyed building, 50, 112.

Śvasti-khadga, an octagonal type of building as mentioned in Agni-purāṇa, 113.

Śvāyukha, a round type of building as mentioned in Agni-purāṇa, 113.

Śvāyamāhā, self-revealed, a class of phallic, 73.

Śvāyamāhuva, one of the fourteen Manus (to whose name several architectural treatises are ascribed), 166.

Systems of measurement, both architectural and sculptural, details of, 85-88, 81, 84, 89, 121-124.

Systyllos, a class of temples where the columns are not thickly set, 147.

Tadāga, tank, architectural details of, 97.

Taittiriya-samhitā, references to architectural matters from, 17.

Takshaka, a class of architects, genealogy and qualifications of, 35, 98, 165.

Tala, storey, 49, 50, 111, 112; a moulding, 126, 151.

Tāla, a unit of sculptural measure, equal to the length of the face or the distance between the fully stretched thumb and middle finger, 123, 78, compared with Grecian Tēleios, 157.

Tāla-māna, sculptural measures, 19, 26-27, 78, 84, 93, 123, 124.

Talon, moulding, 127, 152.

Tāmasa, one of the fourteen Manus (to whose name several architectural treatises are ascribed), 166.

Tamil, the territory of the language of, 174, 180, 185.

Tāmra-patru, copper-leaf, its use in connection with the casting of images, 86.

Tanjore, temple (vimāna) at, 82; the Nagore port at, 181.

Tapas-kānta, a class of eight-storeyed building, 50, 112.

Lāpti, river of, the southern boundary of the territory of the Indo-Aryan style of architecture, 178.
Tāra, measurement of breadth, 77.
Tāru-pālaya-vidhī, a special kind of building, 8.
Tāru-tantra-vidhī, certain rules regarding wood used in houses, 102.
Tāṇaṅka, a kind of ear-ornament, 67.
Tāṭikā, a moulding, 127, 154.
Telugu, territory of the Vepa style, 130, of the script of, 180; same
as Andhra country, 184.
Testing of soil, for the purpose of building, 36, 86, 142.
Tetrasylon, one of the five courts of Vitruvius, 154.
Testudinatum, one of the five courts of Vitruvius, 154.
Thambhā, posts or banister of stairs as stated in Buddhist literature,
13.
Theatre, its details as given in Mānasāra, 63.
Throne, its details as given in Mānasāra, 62-63.
Ties (of various sorts), used in constructing straw-houses at the
time of the Atharva-veda, 6.
Tila-puspa-pākrti, shaped like the sesame flower, ideal pose of images, 84.
Tirbuit, stands for a part of ancient Janaka country, possessing once a
type of twelve-storeyed building, 173.
Tīrthāṅkaras, Jain apostles, their images, 185.
Tītāri, francolin partridge, details of the cage of, 70.
Titus, time of his reign, when the Roman architect Vitruvius might have lived, 160.

Tod, author of the Annals of Rājas-
thān, 103.
Todas, huts of, 6.
Torana, arched-gateway, 18; details of arches, 63, 61, 92.
Torus, a moulding, 127, 152.

Town-planning, in the time of the Vedas, 8; of the Buddhist literature, 9; of the Epics, 17; of the Āgamas, 25; of the Artha-sūtra, 29; of the Mānasāra, 40, 143, 144, and other Śilpa-sūtras, 89, 93, 97; compared with the Roman systems, 143-147.

Trāmbakā, an instance of the popularity of Vaishnavism at the time of Mānasāra, 187.

Trayaṭa-tala-vidhāna, thirteen-storeyed buildings as mentioned in Amūnumadhabeda of Kāśyapa, 93.

Triad (Trimūrti), images of Brahmā, Viṣṇu and Śiva, 70-72; other
details of, 23, 188.

Tri-bhāṅga, having three flexions, a pose of images, 86.

Tri-bhūmi, three-storeyed buildings, 50, 90, 106, 111.

Tri-dhātu-saraṇaṁ, three-storeyed dwelling, as mentioned in Rīg-
veda, 8.

Tri-varīṅga, identified with Telugu country, the territory of the Vepa style of architecture and sculpture, 130, 178.

Tri-kānta, a column combined with three minor pillars, 46.
<table>
<thead>
<tr>
<th>Page</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>261</td>
<td>INDEX</td>
</tr>
</tbody>
</table>

Trinity, their comparative position in Áyomas and Purāṇas, 23.
Tri-pura-mūrti-lakṣaṇa, image of Śiva in the pose of killing the demon, Triputa, 94.
Tri-purāntaka, Śiva, his image, 100.
1 tri-purā, image of (Śiva), 1/8.
Tri-vishtapā, a class of octagonal buildings comprising nine types as stated in Agni and Garuda Purāṇas, 113, 114.
Tulā, balance, 68; a moulding, 126, 127, 151, 152.
Tumburu, a heavenly musician, his image used as a decorative device on arches, 63.
Tuṅga, a moulding, 127.
Tuscan, an order of columns, 125, 14th, 150, 151, 152, 154.
'1 vashtar, one of the four heavenly architects, 35, 165.
Tuscany, country of, 126.

U
Udaiyur, style of architecture at, 179.
Udara-bandha, girdle worn round the waist, 68.
Udaya-giri, cave temples at, 196.
Udbhūta, self-revealed, a class of phalli, 73.
Udyāna, garden, architectural details of, 97.
Ugra-dṛśa, of a terrific appearance, feature of the Garuda image, 82.
Ujjaini, city of, (in the Buddhist period), 9.
Uphāśa, an architectural device on stairs, 13.
Ummāna, a kind of linear measurement, 77, 121.

Upādhāra, a kind of support upon which the structure of the chariot rests, 60.
Upakānta, a class of six-storeyed buildings, 50, 112.
Upamāna, measurement of inter space, 77, 121.
Upamit, a kind of pillar, as mentioned in Vedic literature, 6.
Upāna, a moulding, the plinth, 128.
Upānaha, shoes, architectural details of, 97.
Upapāda, minor pillar, 46.
Upahitha, pedestal, its different varieties and other details, 43, 44, 89, 92, 101, 106, 107, 149; of the phallus, its details, 74.
Upāri-prañāda-tala, upper flat surface of a house, 14.
Upāsaka, devotee, details of his house in the Buddhist period, 11.
Upasamāchita, a classification of buildings, 118 (see Asamāchita, 49, 111).
Upatulā, a moulding, 127, 152.
Uraga-bandha, a type of bases, 128.
Urdhva-pada, a moulding of the pedestal of the phallus, 74.
Ushpēha, head gear, 28; the protuberance of the skull of Buddha image, 79.
Ushnisha, a round type of buildings, 114.
Uttambha, a rectangular type of building, 114.
Uttara, a moulding, 44, 126, 128, 151.
Uttararashtra, lower-lip, a moulding, 127, 152.
**V**

Vāhana, riding animals of gods, images of, 81, 82-83; a moulding, 127, 152.

Vāhini-mukha, a kind of fort, 40, 143.

(Vai)jayantika, a class of single-storied building with round spire, pinnacle and neck 49, 111.

Vaikhānasāgama, references to architectural matters from, 28, 123.

Vairā, an octagonal type of building, as mentioned in Garuda-purāṇa, 114.

Vairāja, a classification of the square type of buildings comprising nine varieties as mentioned in Āgni and Garuda Purāṇas, 113, 114.

Vaishnavi, one of the seven mothers, her image described, 75, 76.

Vaishnavism, its leading position at the time of Mānasāra, 185, 188, 190, 193.

Vaivasvata, one of the fourteen Manus (to whose name several architectural treatises are ascribed), 166.

Vājana, a moulding, fillet, 64, 74, 126, 128, 151.

Vajra, a class of phalli, 73; an octagonal type of building, as mentioned in Āgni-purāṇa, 113; an order of columns, 125, 126, 150, 151.

Vajra-bandha, a type of base, 128.

Vajra-kānta, a class of eleven-storied building, 50, 112.

Vajra lepa, cementing and white-washing, 22.

Vajra-pattā, a moulding, 128.

Vajra-svastika, an octagonal type of building as mentioned in Āgni-purāṇa, 113.

Vakra, an octagonal type of building, as mentioned in Garuda-purāṇa, 114.

Valabha (Valabhi), a moulding, 128.

Valabhi, a rectangular type of building, as mentioned in Āgni and Garuda Purāṇas, 113, 114; a moulding, 128.

Vālāgra, hair's end, a measure, 35.

Valaya, armlet, 67; a round type of building, as mentioned in Āgni and Garuda Purāṇas, 113, 114.

Vallabhī-chhāhanda, a type of five-storied building, as described in Matsya-purāṇa, 115.

Valli, a type of window, 53.

Vāma, a class of phalli, 72.

Vāmana, Vishnu, popularity of, 189.

Vāṃśa, bamboo cane, used for roofing in the time of Atharva-veda, 6.

Vāṃśa, territory of the Vāṃśa-kānta type of twelve-storied building, 50, 113; its topography, 173, 175, 198.

Vāṃśa-kānta, a class of twelve-storied building, 50, 113.

Vana-durga, mountain fort, 40, 143.

Vāna-mālā, garland of wild flowers, 68, 71.

Vāpī, cistern, its foundations, 42; tanks, 97.

Vaprā (Vaprāka), a moulding, 128.
Vāpa-bandha, a type of base, 44, 128.


Vārāhi, one of the seven mothers, her image, 75, 76.

Varāṭa (Virāṭa), a class of twelve-storeyed building, 50, 113.

Varddhani, a round type of building, as mentioned in *Agni-purāṇa*, 113.

Vardhaka (or Sarjiddha), a kind of fort, 40, 143.

Vardhaki, one of the four classes of architects, his special branch of study, genealogy and qualifications, 35, 147, 138, 165.

Vardhamāṇa, a class of halls (śālā), 15, 118; a type of phallus, 72.

Varna-lepana-medhya-lakṣaṇa, colouring, details of 94.


Vartuka, a class of building, its description as given in *Matsya-purāṇa*, 116.

Vasanta-sena, palace of, 52.

Vasishṭha, an authority on architecture, as mentioned in *Bṛihat-samhitā* 163, in *Matsya-purāṇa*, 161.

Vasishṭha-Saṃhitā, references to architectural matters from 140.

Vāstu, its definition, classification and other details, 86.

Vāstu-bodha, one of the thirty-two authorities on which Mānasāra was based, 165.

Vāstu-homa, sacrificial offerings to the presiding deity of the site of a building, 92.

Vāstu-lakṣaṇa, (see Vāstu), characteristics of architectural objects, 103.

Vāstu-maṇḍara, an architectural treatise, 103.

Vāstu-maṇḍara, an architectural treatise, 103.

Vāstu-maṇḍapa, a storehouse, 58.

Vāstu-pradīpa, a treatise, references to architectural matters from 140.

Vāstu-prakāra (see Vāstu), classification of architectural subjects, 89.

Vāstu-prakāra, (see Vāstu), definition and classification of architectural objects, 141.

Vikramorvaśī, a drama by Kālidāsa, references to architectural matters from 32.

Vāstu-purusha, the presiding deity of the site for a building, description of, 33, 96.

Vāstu-ratnāvali, a treatise, references to architectural matters from, 140.

Vāstu-sāra, an architectural treatise, 103.

Vāstu-sāstra, science of architecture, objects treated in, 1; its mythical origin, 34; treatises bearing the title of, 102, 103, 125-126, 140.

Vāstu-vidyā, a treatise, references to architectural matters from, 122, 178; name of a chapter of the *Bṛihat-samhitā*, 22, 161.
Vāstu-vidyāpati, one of the thirty-two authorities on which Mānasāra was based, 165.

Vāsu-deva, Viṣṇu, his image, as described in Agni-purāṇa, 21; one of the eighteen professors of architecture, as mentioned in Matsya-purāṇa, 164; popularity in the time of Mānasāra, 189.

Vāsu-bandhu, a preacher of Buddhism at the time of Narasimha-Gupta-Bālāditya, 192.

Vātāpi, early Chālukyas of, 191.

Vatsa, kings of, 173.

Vāyu-purāṇa, references to architectural matters from, 21; age of, 194.

Vedas, references to architectural matters from, 5–8; their knowledge necessary for architects, 35, 188; a type of pavilion (mandapa) for an assembly-hall, 54.

Vedānta-sāra, an example of treatises ending in sūra, like Mānasāra, 2.

Vedi-bhadra, a class of pedestal, 44, 128.

Vedi-(kā), altar, 87; platform, railing, 61, 92.

Vedika-chatusṭāya, four platforms, 103.

Vedi-kānta, a class of four-storeyed building, 50, 112.

Vengi, the territory between the Krishṇa and the Godāvari, conquered by Samudragupta, 184.

Venus, temple of, 164, 147.

Vesāli, city of, 9.

Vesara, a style of architecture and sculpture, 24, 48, 110, 118, 119, 130-131, 179, 198; characteristic features of, 178; a circular type of ears and chariots, 61; a class of phalli, 73; the territory of (the Telugu scripts), 180, 182, 183.

Vesman, residential buildings, 41.

Vidāri-(kā), a demoness, offerings made to, at the time of constructing a building, 38.

Videha, the territory of the Janaka type of twelve-storeyed building, 173.

Vidyā-dharas, semi-divine beings, their images, 64, 80.

Vighneša, a deity, temple of, 99.

Vihāras, Buddhist monasteries, one of five classes of buildings described in Buddhist literature, 10, 30.

Vijaya, a class of two-storeyed building, 50, 111; an octagonal type of building, 113, 114; another type, 118; types of pavilions (mandapa), 53, 54; a kind of throne, 62

Vijaya-rāja-deva, the language of the inscription of, 212.

Vikalpa or Saṁkalpa), a classification of buildings, 41, 48, 110, 118, 147; a class of phalli, 73; a type of doors, 155.

Vikramāditya, king of Ujjain and stated to be the patron of Kālidasā, Varāhamihira, etc., 22, 161.

Village, its plans and other details (see Grāma and Nāgara), 39, 144.
Vimāna, pavilion, 17, 18; buildings in general, 47-48; a square type of building, as mentioned in *Agni* and *Garuda Purāṇas*, 113; other types as mentioned in *Bhavishya-purāṇa*, and *Brihat-samhitā* 116, 117; Dravidian temples, 177.

Vimāna-chhaura, a class of eight-storeyed building, as described in *Matsya-purāṇa* and in *Brihat-samhitā*, 115, 117.

Vimāna-vatthu, a Buddhist treatise, references to architectural matters from, 9.

Vinākana, the eastern boundary of the territory of the *Madhya-kānṭha* type of twelve-storeyed buildings, 173.

Vinata, the mother of Garuda, 81.

Vināyaka-lakṣana, image of Ganeśa, 93.

Vinaya texts, Buddhist scriptures, references to architectural matters from, 11, 14.

Vindhyā, the range of mountain between North and South India, 173, 174, 180.

Vipula, dimensions (of buildings), 42.

Vipulākṛiti-ka, a class of six-storeyed building, 50, 112.

Vipulāṅka, a class of six-storeyed building, 50, 112.

Vīra, a kind of throne, 62.

Vīra-bhadra, image of, 108.

Vīra-kauṭha, a kind of column, 45; a moulding, 126, 151.

Vīrasana, a type of pavilion (*māndapa*), 119.

Vīrā, a class of twelve-storeyed building, 50, 113, 198; topography of the country of, 173, 174, 175.

Vīśāla, a rectangular type of building as mentioned in *Agni* and *Garuda Purāṇas*, 113, 114; another type as described in *Kāniṅkāgama*, 118; a type of pavilion (*māndapa*), as mentioned in *Suprabhedāgama*, 119; one of thirty-two authorities on which Mānasāra was based, 165; also perhaps the architectural portion of *Matsya-purāṇa*, 164.

Vīśālākṣha, one of the eighteen Professors of architecture mentioned in *Matsya-purāṇa*, 164.

Vīshērāchana, a kind of throne for special worship of a deity in, 62.

Vīṣṇu, description of the image of, 71; the deity of, 74; an order of columns, 125, 126, 150, 151; origin of the science of architecture ascribed to, 34, 165; popularity of his worship at the time of Mānasāra, 187-189; temple of, 191; in the time of the Guptas predelection for, 194-195.

Vīṣṇu-bhāga, middle-part of the phallus, 73.

Vīṣṇu-gupta the author of *Arthaśāstra*, 170.

Vīṣṇu-kānta, an order of octagonal columns, 45, 125-126, 150-151; a column combined with twelve
minor pillars, 46; a class of four-storeyed building, 50, 112; a type of gate-houses (gopura), 52
Vishnu-purana, age of, 14.
Vishnu-santhita, references to sculptural matters from, 87.
Vishva bodha, one of the thirty-two authorities on which Manasara was based, 165.
Vishvak, references to architectural matters from, 149.
Vishva-kanta, classes of five and nine-storeyed buildings, 50, 112.
Vishva-karman, one of the four heavenly architects from whom came the four classes of earthly architects, 35, 166; synopsis of the treatise of, 96—99; comparative study of, 101, 102, 163, 164, 165; further references to architectural matters from, 107.
Vishva-karma-prakasa, one of the several treatises ascribed to Vishva-karman, 94.
Vishva-karma-nilpa, a treatise on architecture, its synopsis, 96—99.
Vishva-karma-vastu-sastra, one of the several treatises ascribed to Vishva-karman, 96.
Vishva-karmotpatti, origin of Vishva-karman, 98.
Vishva-kasyapa, one of the thirty-two authorities on which Manasara was based, 165.
Vishvesa, one of the thirty-two authorities on which Manasara was based, 165.

Vishva-sara, a treatise, references to architectural matters from, 108; one of the thirty-two authorities on which Manasara was based, 165.
Vishvesvara, one of the best known phallic in India, his temple at Benares, 72.
Vitasti, span, a measure, 35.
Vitruvius, the family of which Vitruvius, the Roman architect, was born, 160.
Vitruvius, references to architectural matters from his treatise, 37, 172; origin of columns as given by, 126; his treatise compared with Manasara, 134—159, (references to several editions of his treatise, 134—136); similarity in number and titles of chapters, 137; in training of architects, 137—141; in preliminary chapters, 141—143; in town-planning, 143—147; in forms, species and foundations of buildings, 147—149; in columns, 149—153; in courts, 154—155; in doors, 155—156; in sculptural measures, 156—157; in language and title, 158—159; his identity and age, 160, 198.
Vivritva, a class of nine-storeyed building, 50, 112, 168, 169.
Vrishaipati, one of the eighteen professors of architecture mentioned in Matsya-purana, 161.
Vrihi, rice, one of the several materials of which foundations are made, 43.
<table>
<thead>
<tr>
<th>INDEX</th>
<th>267</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>V</strong></td>
<td></td>
</tr>
<tr>
<td>Watch-towers, provided for the surrounding walls, 40.</td>
<td></td>
</tr>
<tr>
<td>Water-channel (nāla), description of, 49.</td>
<td></td>
</tr>
<tr>
<td>Waterways (and drains), construction of, 25, 30, 40.</td>
<td></td>
</tr>
<tr>
<td>Wood-joinery, varieties and other details of, 47.</td>
<td></td>
</tr>
<tr>
<td><strong>Y</strong></td>
<td></td>
</tr>
<tr>
<td>Yajamāna, worshipper, the height of the image of a deity is determined according to the height of, 77–78, 121, 124.</td>
<td></td>
</tr>
<tr>
<td>Yajña-kānta, a class of five-storeyed building, 50, 112.</td>
<td></td>
</tr>
<tr>
<td>Yajñopavita, Brahmanical sacred thread, 98.</td>
<td></td>
</tr>
<tr>
<td>Yajur-veda, reference to architectural matters from, 15.</td>
<td></td>
</tr>
<tr>
<td>Yakshas, semi-divine beings, their images described, 61, 80.</td>
<td></td>
</tr>
<tr>
<td>Yama one of the several authorities on architecture, on whose works the architectural treatise of Sanat-kumāra was based, 102.</td>
<td></td>
</tr>
<tr>
<td>Yama-kānta, classes of five and eleven-storeyed building, 50, 112.</td>
<td></td>
</tr>
<tr>
<td>Yāna, conveyance, including udika, vandana, śibīka, ratha, 36, 60, 62, 90.</td>
<td></td>
</tr>
<tr>
<td>Yantra, machines, details of, 103, 137.</td>
<td></td>
</tr>
<tr>
<td>Yūkā, louse, unit of measurement, 35, 122.</td>
<td></td>
</tr>
</tbody>
</table>

- Vṛsha-samgrahana, collection of wood for building, 94.
- Vṛsha, a class of two-storeyed building, as described in Matsya-purāṇa, 115; other classes mentioned in Bhavishya-purāṇa, 116, in Brihat-samhitā, 117.
- Vṛishabha, bull, oval types of buildings mentioned in Agni and Garuda Purāṇas, 113, 114; description of the image of, 82.
- Vṛishabha-vāhana, bull, the riding animal, image of, 94, 100, 107.
- Vṛita, one of the thirty-two authorities on which Mānasāra was based, 165.
- Vṛitta round, types of building mentioned in Bhavishya-purāṇa and Brihat-samhitā, 117, 168, 169; an order of columns, 125, 126, 150, 151.
- Vṛitta-kumbha, a moulding of the Pedestal of the phallos, 74.
- Vṛitta-sphuṭita-(lakṣhasana), an architectural matter, as described in Amthumadikhetra of Kāśyapa, 92.
- Vulcan, temple of, 146.
- Vṛghra, tiger, architectural details of the cage of, 70.
- Vṛjana, fan, an article of furniture, 63.
- Vṛṣa, one of the several authorities on whose works the architectural treatise of Sanat-kumāra was based, 102.
Yantra-grīha, a bathing place for hot sitting baths, a room, 11.
Yādyākṣa, author of Narukta, references to architectural matters from, 33.
Yāṣa, barely corn, a unit of measurement, 35, 122.

Yoni-dvāra (also known as Pranāla), a moulding of the Pedestal of the phallus, 73.

Zend-Avesta, Ahura-Mazda of, 166, 172.
Ziggurats (of Chaldæa), details of, 14.