BM.RAC 4880/4, Vol XXX (3rd series)
H.V. Lanchester (pp 293-308)
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I will pass on to the very vital question of the future of architecture in India. In recent years a very small proportion of the larger buildings reach a high standard, and many are far below mediocrity. To such an extent is this the case that those who appreciate architecture for its own sake generally advocate the restoration of the mistri to his position as designer. Now I have indicated the difficulties of adopting such a course, but at the same time I feel it is disastrous that advantage is not taken of the existence of a body of men possessing in such high measure genuinely artistic perception. The trouble has been that those responsible for building have been incapable of appreciating the essentials of architecture and have framed their methods in such a way as to exclude the collaboration of the mistri. It is true a vernacular treatment is often adopted, but this is done in such a way as to foredoom the design to failure by defining everything on hard and fast lines and insisting on these being adhered to by the workmen.

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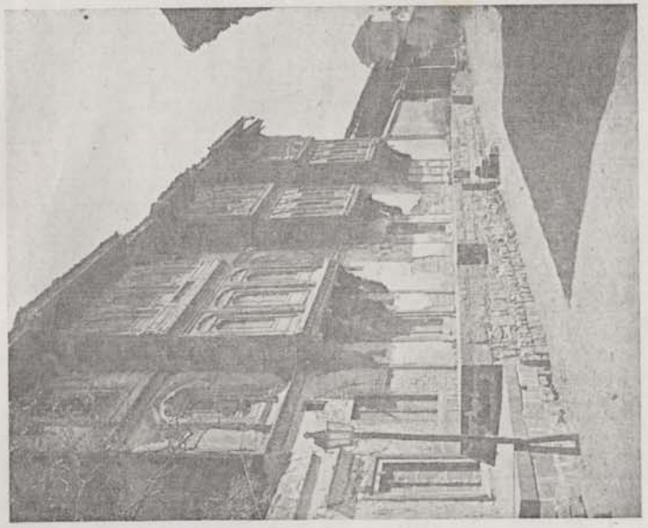

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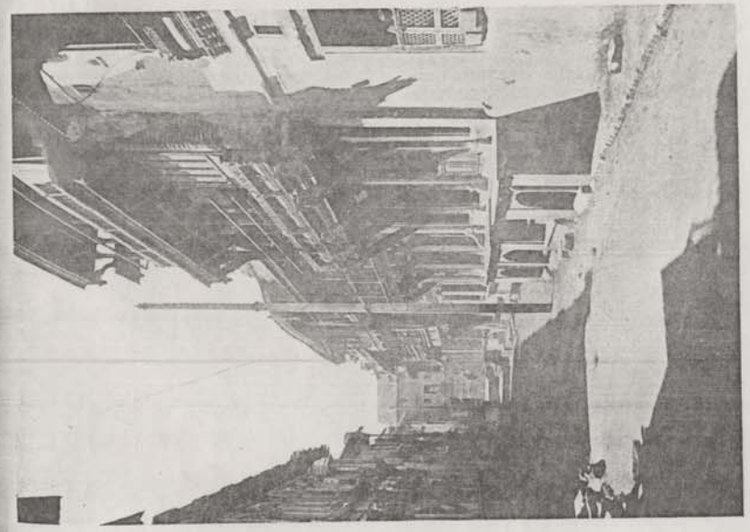

Domestic Architecture. A Street in Baroda

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BM. RAC 4880/4. Vol XXX (3rd series)
[BM 7814.h.31 H.V. Lanchester F.R.I.B.A., M.T.P.I., based on (Lectures, Madras, 1916) Town Planning in Madras: A Review of its conditions and requirements of City Improvement and Development in the Madras Presidency, London 1918, 44 115 + Plans]

THE ILLUMINATING ENGINEERING SOCIETY.

On Tuesday, 27 March, Mr. P. J. Waldram will open a discussion before the Illuminating Engineering Society on "Window Design and the Measurement and Pre-determination of Daylight Illumination." The meeting will be held at the Royal Society of Arts (18 John Street, Adelphi), at 8 p.m. Members of the Institute are cordially invited to be present. Advance copies of the paper can be obtained by applying to the Hon. Secretary of the Society, at 32 Victoria Street, S.W.1.

Members' Column

Members, Licentiates, and Students may insert announcements and make known their requirements in this column without charge. Communications must be addressed to the Editor, and be accompanied by the full name and address. Where anonymity is desired, box numbers will be given and answers forwarded.

LONDON OFFICE ACCOMMODATION.

CONSULTING ENGINEER, M.Inst.C.E., can offer good private office, with part use of drawing office and clerical assistance. Quiet situation near Temple Station.—Apply Box 2323, c/o Secretary R.I.B.A., 9 Conduit Street, W.1.

OFFICE WANTED.

ASSOCIATE is desirous of meeting another with a view to sharing an office.—Apply Box 555, c/o Secretary R.I.B.A., 9 Conduit Street, W.1.

APPOINTMENTS WANTED.

LICENTIATE R.I.B.A. desires re-engagement as Quantity Surveyor in architect's or public office; 30 years' thorough, sound and practical experience in London and provincial methods; supervising works in progress and settling up at completion; first-class references.—Apply Box 928, c/o Secretary R.I.B.A., 9 Conduit Street, W.1.

A.R.I.B.A., 10 years' varied experience, seeks position as Assistant in London office; good draughtsman; working drawings, details, perspectives; excellent testimonials; moderate salary to commence.—Apply Box 431, c/o Secretary R.I.B.A., 9 Conduit Street, W.1.

ASSOCIATE, old Public School boy, ex-service man, 30 years old, with sound experience in private and public offices, requires position as Assistant in the provinces.—Box No. 8323, c/o The Secretary, R.I.B.A., 9 Conduit Street, W.1.

A LICENTIATE requires a seat in an architect's office with part or whole time assistance, as required. Prospects of introducing work. Terms on application.—Apply Box 478, c/o Secretary R.I.B.A., 9 Conduit Street, W.1.

ASSOCIATE R.I.B.A., with 12 years' experience in good New York City offices, including Cass Gilbert, Trowbridge and Ackerman, J. Armstrong Stenhouse, Fredk. Sterner, finds it desirable, for family reasons, to return to England, and would be glad to hear of any suitable proposition. Previously in practice in London. Now and for past two years engaged as designer with one of the best known younger New York men. For further information apply Box 1513, c/o Secretary R.I.B.A., 9, Conduit Street, W.1.

Minutes X

SESSION 1922–1923.

At a Special General Meeting, held on Monday, 5 March 1923, at 8 p.m.—Mr. Paul Waterhouse, President, in the chair. The attendance book was signed by 10 Fellows (including 3 members of the Council), 11 Associates, 1 Hon. Fellow, 2 Hon. Associates, 2 Licentiates.

The Minutes of the Special General Meeting held on Monday, 29 January 1923, having been published in the JOURNAL, were taken as read and signed as correct.

The President announced the object of the meeting, viz., to elect the Royal Gold Medallist for the current year.

On the motion of the President it was RESOLVED by acclamation that, subject to His Majesty's gracious sanction, the Royal Gold Medal for the promotion of Architecture be presented this year to Sir John James Burnet, A.R.A., R.S.A., Hon.LL.D., in recognition of the merit of his work as an architect.

The Special General Meeting then terminated.

At the Ninth General Meeting (Business) of the Session 1922–1923, held on Monday, 5 March 1923, immediately after the Special General Meeting above recorded, and similarly constituted, the Minutes of the Meeting held on 19 February 1923, having been published in the JOURNAL, were taken as read and signed as correct.

The Hon. Secretary announced the decease of the following member :—

Lt.-Col. Arthur William Brewill, D.S.O. [*F.*], of Nottingham, who was elected a Fellow in 1892.

It was RESOLVED that the regrets of the Institute for the loss of this member be recorded on the Minutes of the Meeting and that a message of condolence and sympathy be conveyed to his relatives.

The following candidates were elected to membership by show of hands under Bye-Law 10 :—

AS FELLOWS (4).

KENYON : ARTHUR WILLIAM [*A.* 1907].
ROBERTSON : ANDREW [*A.* 1893]. Glasgow.
SOISSONS : LOUIS EMANNUEL JEAN GUY DE SAVOIE CARIGNAN DE, O.B.E., S.A.D.G. [*A.* 1918].
WORNUM : GEORGE GREY [*A.* 1921].

AS ASSOCIATES (9).

DIXON : CHARLES GUY [Special War Examination], Vereeniging, Transvaal, S. Africa.
HASWELL : PERCY BENSON, B.Arch. (Liverpool) [Passed five years' course at Liverpool University School of Architecture—Exempted from Final Examination after passing Examination in Professional Practice], Chester.
KNOTT : ALFRED STOCKEN [Special War Examination].
NEWHAM : WILLIAM BENJAMIN TURNER [Special Examination], Johannesburg, S. Africa.
OWEN : GEOFFREY LEYLAND [Special War Examination], Hull.
SILK : GUY WHITEHALL [Special War Examination].
STOCKS : CLIFFORD WILLIAM BURNETT [Special War Examination], East London, S. Africa.
TAIT : ALFRED ALEXANDER [Special War Examination], Grahamstown, S. Africa.
WILLIAMS : ALBERT ERNEST [Special Examination], Gisborne, New Zealand.

The President stated that the meeting was now open for discussion of Mr. S. Hurst Seager's Paper on "The Lighting of Picture Galleries and Museums," which appeared in the R.I.B.A. JOURNAL for 13 January. A large number of visitors having entered, Mr. Hurst Seager showed and explained a number of slides illustrating his paper. A vote of thanks to Mr. Seager was moved by Mr. Wm. Woodward [*F.*], seconded by Sir Charles Holmes, Director of the National Gallery, supported by the Earl of Crawford and Balcarres [*Hon. Fellow*], Sir Richard Paget [*Hon. Associate*], Mr. A. Dunbar Smith [*F.*], Mr. Arthur Bolton [*F.*], Mr. Arthur Keen [*F.*], Hon. Secretary, and carried by acclamation.

Mr. Seager briefly responded.

The Hon. Secretary having announced the dates of future meetings the proceedings closed, and the meeting terminated at 10.5 p.m.

Arrangements have been made for the supply of the R.I.B.A. JOURNAL (post free) to members of the Allied Societies who are not members of the R.I.B.A. at a specially reduced subscription of 12*s.* a year. Those who wish to take advantage of this arrangement are requested to send their names to the Secretary of the R.I.B.A., 9 Conduit Street, W.1.

IAN MACALISTER,
Secretary R.I.B.A.

BRITISH MUSEUM 13 MAR 23

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THE ROCK-CUT TEMPLES AT ELLORA (8TH TO 10TH CENTURY)

Architecture and Architects in India

BY H. V. LANCHESTER [*F.*].

[*Read before the Royal Institute of British Architects, Monday, 19 February 1923, The President (Mr. Paul Waterhouse, M.A.) in the Chair.*]

THE architect at home can put himself in possession of quite a comprehensive knowledge of the history of Indian architecture. The works of Fergusson, Vincent-Smith, E. Havell, and others, not to speak of the publications of the Indian Archæological Department, would enable anyone interested to form a fair idea of the complex influences under which this art has expressed itself.

Fergusson deserves every credit for making a conscientious effort to classify Indian architecture, but he suffers from the inevitable limitations of the layman in dealing with an art such as ours, and, while his work has been improved upon by Vincent-Smith and others, there is still much to be done in tracing the developments of the art of building in India on a logical basis. Havell in his books has effected much to bring about a better appreciation of the Indian as architect, but unfortunately has been too much obsessed by a desire to prove that the Indian was artistically dominant in all cases, and again, owing to the fact that he is not a practising architect, he is rather vague on the qualities that define the character of a building, often attaching an undue importance to minor expedients and missing the broader issues. We ought, however, to be grateful to him for pointing out how our methods are rapidly destroying every chance that remains of architecture continuing as a living art in India. Havell is undoubtedly correct in his contention that the traditional art of the country still exists, and that, though it has lost a little in vitality during the last two centuries, it still possesses enough to be worth cultivating by every means available. Unfortunately, our Government has been too out of touch with the arts to realise that architecture is the soul of building, and that it was worth while making

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some sacrifices to save it. The main difficulty has been that the arts in India are indissolubly linked up with mediæval methods of production, the building being the result of the co-operation of the craftsmen concerned in it, while control must be of the loosest practicable kind and the character of the work subject to suggestion and revision from start to finish. With the right man in charge, fine buildings in the vernacular style could have been thus produced, and, though the cost would not have been capable of exact determination beforehand, experience has shown me that it would not necessarily have been greater than by the methods we employ, which have produced little that has other than a purely utilitarian value.

Our error has been that of imagining that the matter of paramount importance in building is that everything should be on paper beforehand in the form of drawings and estimates. Now this fallacy is quite excusable in Europe, where the last vestiges of mediæval practice disappeared over 100 years ago and where the best talent available is trained to work on these lines. Hitherto in India there has been practically no architectural ability capable of working on European methods, while there is a large body of artists who can work on mediæval lines. We have made the mistake of saying that we do not care what the results are, provided the methods have been businesslike, and what we picture as businesslike methods have, in the hands of the only men available, brought building down to the crudest level and have eliminated all those who possess the capacity for better things. As showing the poverty of brain capacity available, "type designs" for various classes of buildings are issued by Government which, whatever the original intention may have been, are slavishly copied regardless of site, local conditions and material available. By far the best craftsmanship and the only architecture showing real development in any of the vernacular styles I found in works away from official centres and the influence of Government control I made inquiries as to the cost of such work and found it less than we should have paid for the same thing, not reckoning our overhead charges, which range from 22 to 28 per cent. to cover drawings, estimates and supervision. Our obsessions are, therefore, not only destructive artistically but cannot even claim the only merit that would excuse them, that of being cheap.

Apologists have argued, "Oh! but how otherwise can you stop corrupt practices and peculation." As a matter of fact, we stop neither, because no contractor takes up official building except with a view to make as much as he can out of it. It offers him no other interest, whereas the mistries collaborating on a vernacular building are keen on their work and are content with what we should regard as less than a living wage. In some districts I found that no mistri, even one in charge of very great works, received more than R40 per month.

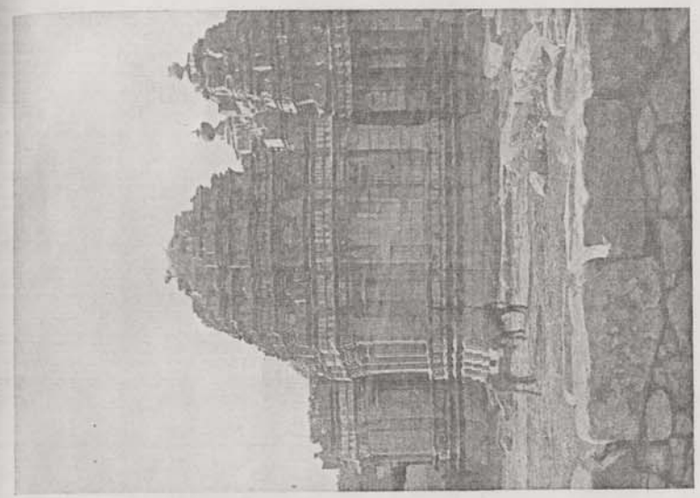
Another drawback to our method is that we have reduced constructive expedients to their crudest forms. Instead of the vault, dome and arch, with thrust distribution and such expedients, we provide nothing but square boxes covered with steel joists and jack arches, which saves thought and planning.

If anyone were sufficiently interested in getting fine work, it would be quite possible to keep within a definite cost limit and yet give sufficient latitude to secure the activities of high-class mistries, who have learnt the art of design on their own buildings and who produce something far superior to the men who are trained, as far as they are trained, on European lines.

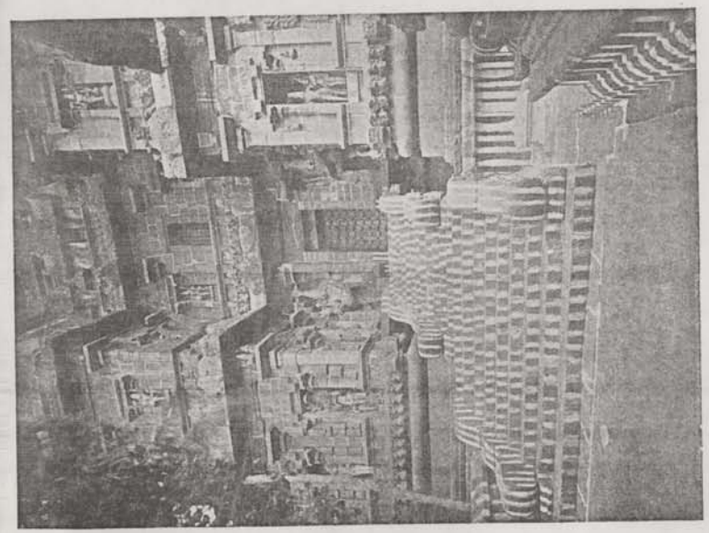
At the same time, we are not to assume that the mistri is impeccable. The Indian has always been very eclectic in his art, and seeing the chaotic condition of modern building in India he is apt to seize hold of the bad as well as the good and to fail by embodying inappropriate elements in his conceptions. This is where a gently restraining hand is of value, not going so far as to suppress fertility in idea, but rather merely to guide in the selection of motifs.

I have tried thus briefly to sketch the existing state of the building arts in India, and will leave this to pass on to a cursory review of the architecture in general. The two main influences that have dictated architectural forms are timber construction (including bamboo) and the rock-cut chambers and temples. We must date the former as earlier than the latter, as even in the rock-cut work there are many indications of wooden construction and the earliest stonework is handled on similar lines. At the same time, we must bear in mind that Indian quarries produce very long stones, in some cases up to 40 feet, of quite small scantlings. These can easily be split off by heat, and therefore it is quite simple to use stone in the form of framed structures. This facility, from the architect's point of view, has been a source of weakness rather than strength, but

BRITISH MUSEUM



TEMPLE OF PANCHALINGA DEVA, ABOUT 1100 A.D.



THE TEMPLE OF TANGORE—TYPICAL WORK OF THE TENTH AND ELEVENTH CENTURIES

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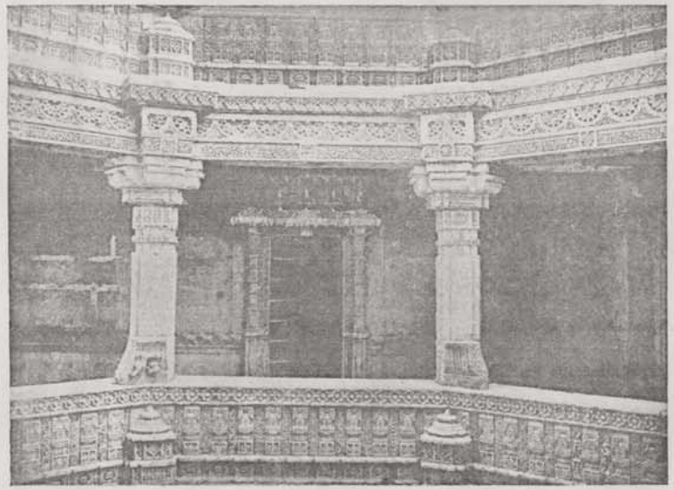
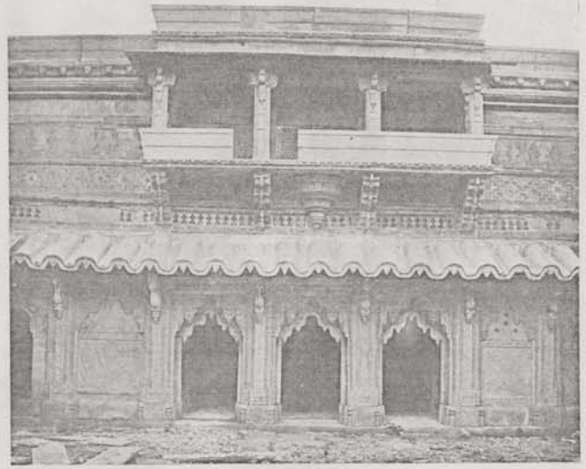
View from South-West of the Shrine Wall and Sikhara of the Temple of Doddbusappa at Dambal



Bai Harir's Well, Ahmedabad, 1501 A.D.



Palace of Raja Mansigh, Gwalior—Early Sixteenth Century

A Street in Lashkar, Gwalior—Nineteenth Century

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NINETEENTH CENTURY STONE-BUILT HOUSES, LASHKAR, GWALIOR

DOMESTIC ARCHITECTURE. A STREET IN BARODA

the genuine feeling for composition shown in Indian buildings goes a long way towards disguising minor illogicalities of structure.

The rock-cut work initiated a vigorous and strongly characterised type of design very definitely retaining the effect of stratification, which enabled most complex treatment of decoration to be employed without loss of strength and stability in the general effect.

The arch took a place in Indian architecture late in its development; how far it was an indigenous development and how far imported is still a matter of argument. While the question is clearly capable of settlement, the scope for investigation is too wide to be dealt with at the moment. Without discussing this further, I may express my agreement with those who claim that the arch has been embodied in a style which, whatever its origins, is now homogeneous and definitely Indian, a style possessing many qualities of grace and proportion, even if it appeals to us to a less extent than the older and more virile developments.

To our taste most Indian buildings are over-enriched, but I would point out that those enrichments all have a meaning to the Indian mind, and that they are not barbaric but proportioned and distributed on a strictly architectonic basis. I think you will agree that no style shows a higher standard of skill than the Hindu architecture up to the seventeenth century in the distribution of masses, the proportions of solids and voids, and the surface treatment with a view to contrasting the plain and enriched. When foreign styles were introduced, and the traditional work underwent modification in the attempt to assimilate these, there have naturally, at times, been failures in technique, but these are certainly no more evident than those we find when, say, the Classic revival impinged on the Gothic tradition in the sixteenth century in Europe. In fact, the architectural development remained much more consistently continuous than with us, and has continued up to the present day not, it must be admitted, without numerous lapses owing to a too eager desire to incorporate every new element, but still exhibiting vitality and imaginative power.

It is this imaginative aptitude, which, inadequately restrained by an appreciation of the logical basis of expression in architecture, is responsible for the wild efforts that tend to throw discredit on the soundness of present-day Indian art, but to my mind much of this madness seems less distasteful than the banalities we have perpetrated in endeavouring to erect buildings based either on an inappropriate style or an imperfect sympathy with the local tradition.

In passing before you a sketch review of the progress of Indian architecture during the last 1,000 years or so, the impression will be confused unless some general idea can be found as a basis. Now, if it is not stretched too far, I see a certain parallel between it and European developments during the same period, placing southern India in the position of northern Europe and Persia in place of Rome, with this striking reversal that the vernacular architecture was trabeated and the immigrant one arcuated. The first for a long time developed itself independently of external influence. Then the Saracenic gradually spread southward, taking time for assimilation, much as the Renaissance driving its way northward in Europe was for a long time coloured by the methods of the Gothic tradition. At Ahmedabad we see a conflict of the same type as in our Jacobean work, but here the earlier traditions have held their own to the greater extent and have never been so fully driven out as our Gothic ones were by those of the Renaissance, and ultimately the two styles reached much more nearly to a complete fusion than was the case with us, though less so than in other places.

A few illustrations will at this stage enable me to indicate my meaning more clearly.

I am including none in the style recognised as Indo-Saracenic, as in my view this has run its course, and no attempt should be made to revive it except in cases where a lack of harmony with the surroundings would result from the adoption of any other treatment.

My first illustrations show the general trend of Hindu architecture during the period I mention.

Following these, I give a few illustrating the traditions in the more characteristic Hindu temples, those of the south. Then a few of the palaces, and, finally, some examples of street architecture of the last century, which was very distinctive in its character and which, though generally employing wood, affords useful suggestions as to the appropriate type of design for such buildings at the present time.

You will naturally ask how it is now possible to reconcile all the conflicting demands of the present very complex state of Indian polity. We have these demands ranging over every degree, from such as

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we get at home to those on strictly traditional lines, as in the religious architecture of the temples. In between the extremes we find a series, comprising buildings for official, educational, manufacturing and commercial purposes, all of which come nearest to the European ideals, subject to the variations demanded by climate; then residential buildings which run through the whole gamut according to the habit of life of those demanding them. At the other extreme are the religious structures, both Hindu and Moslem, where the traditional methods must remain paramount.

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I will pass on to the very vital question of the future of architecture in India. In recent years a very small proportion of the larger buildings reach a high standard, and many are far below mediocrity. To such an extent is this the case that those who appreciate architecture for its own sake generally advocate the restoration of the mistri to his position as designer. Now I have indicated the difficulties of adopting such a course, but at the same time I feel it is disastrous that advantage is not taken of the existence of a body of men possessing in such high measure genuinely artistic perception. The trouble has been that those responsible for building have been incapable of appreciating the essentials of architecture and have framed their methods in such a way as to exclude the collaboration of the mistri. It is true a vernacular treatment is often adopted, but this is done in such a way as to foredoom the design to failure by defining everything on hard and fast lines and insisting on these being adhered to by the workmen.

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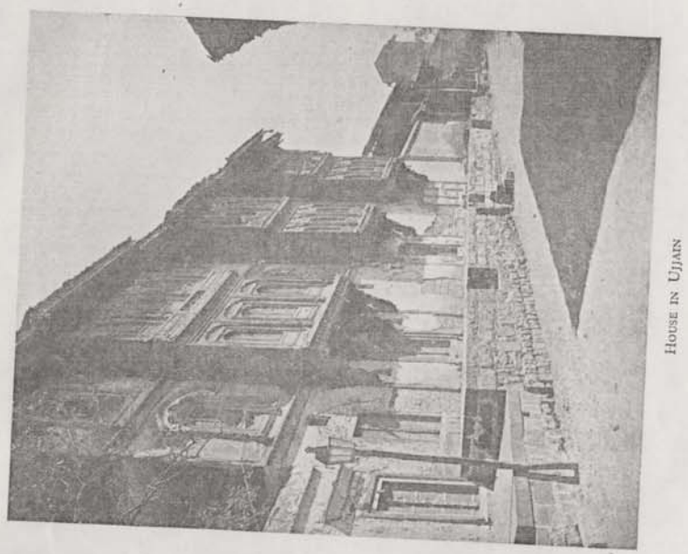

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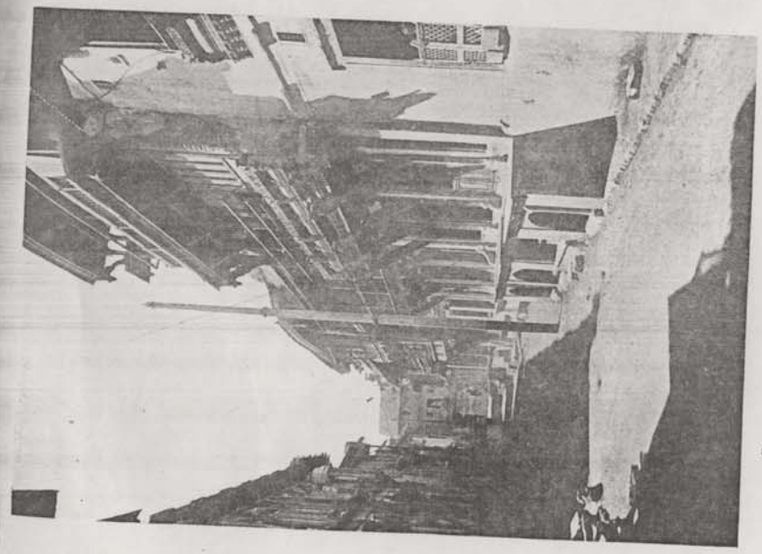

Domestic Architecture. A Street in Baroda

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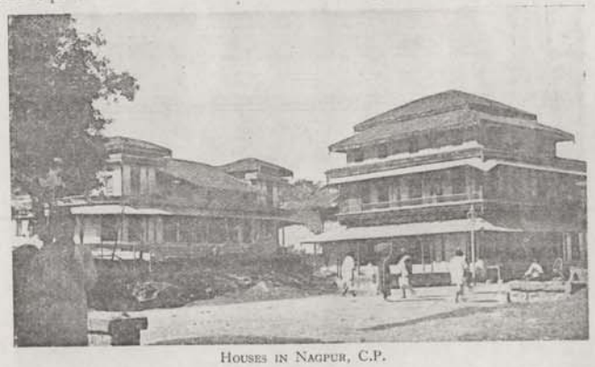
traditions in this respect, where it is always something of an effort to bring the sister arts into due relationship. The time seems to be approaching when the architect will have a chance of establishing himself in India, as there is a strong feeling against the continuance of departmental control of works in place of such as could be effected by private agency. This feeling is partly due to a justifiable dissatisfaction with the results of departmental efforts and partly to the aspirations of the nationalist party, who believe that the Indian is prejudiced by official methods. Personally, I rather doubt if the Indian will find any immediate monetary gain by the abolition of official methods, as he himself contributes the bulk of the staff and has always been accustomed to this type of organisation, but in the long run I think it is unquestionable that the substitution of individual effort for an official routine will be to the advantage of both the European and the Indian in bringing to the front those who are best qualified and spurring them on to do their best instead of smothering initiative under a mass of unintelligent regulations. You will, however, gather from what I have said, that in my view the architect for India should have a distinctive training, and that if this Institute is taking steps to offer membership to those who pursue their studies in India, the qualifications should be considered in the light of Indian conditions. As a hard and fast examination has now been to a large extent abandoned, this will be less difficult than it would have been a few years back. Up to the present no architectural school in India has been able to bring its syllabus up to the requirements of the R.I.B.A. for the partial exemption in the final tests offered in such a case. That of Bombay comes the nearest to this standard, and but for the lukewarm attitude of the Bombay Government towards it, this school might soon be able to claim such a position. At present the demands of its head have been refused by Government on the grounds of economy.

If Bombay and other schools could develop up to the R.I.B.A. standard this would enable Indians to qualify more satisfactorily than by a visit to England, which tends to distract and confuse their architectural ideals.

There remains the problem of those of our men at home who feel drawn towards the East. At present, such architects as go to India are usually chosen too late in their professional career to adapt themselves easily to new conditions. It would be better if they went out, at latest, as soon as qualified, and while at a stage when they would be receptive towards the technique of Indian design. Not, of course, with the idea of immediate practice, but to join an architect, or an office for a while. This would have the additional advantage that those who found the climate or conditions unsuited to them would be able to return without injury to the continuity of their career.

I have tried to be as brief as possible in setting forth the state of our art in India at the present time, and if in so doing I have failed to present a definite picture to your minds, I shall welcome any questions or criticisms directed to aspects that may have been inadequately dealt with, and shall be pleased to do what I can in reply to explain my meaning with more clarity.



HOUSES IN NAGPUR, C.P.

Discussion

MR. H. D. SEARLES-WOOD, VICE-PRESIDENT, IN THE CHAIR.

Mr. JAMES RANSOME [*F.*]: I wonder, ladies and gentlemen, if you have enjoyed Mr. Lanchester's lecture as much as I have. To me it means a great deal, because he has brought back memories of when I was in India 17 years ago, and the questions he has raised are problems with which I was faced when I first went there.

I do not know that I have arrived at entirely the same conclusions as he has, and I think it is difficult for a European really to understand the architecture of the East; we start from such entirely different points of view. Ours is, and has been, the art of decorating useful and necessary structural forms. Hindu architecture, I think, was more the art of trying to imitate forms which were made first of all in some other material. The first Hindu work we get is in their rock-cut Temples, based on their old wood, bamboo and mud structures, which have long since disappeared. From these they began to work in stone, but in the mass; that is to say, they worked their way into a solid chunk of stone and made a building of it; and they worked backwards. When they came to put their stone together they made forms which are to us distinctly unpleasing. I do not think I know a Hindu building in India which I can say has pleased me as regards form. They then started to decorate these forms, and they decorated more and more until their buildings became a mass of decoration. When we look at these closely, we see what past masters of decoration they were. Their works are wonderful in beauty of sculpture, in which quality I doubt if they have been surpassed; you may feel that from the pictures you have seen. And then came the Moguls. They were builders, and they came amongst a nation of artists who understood how to beautify buildings. To me, the best of the Hindu-Saracenic is as beautiful as any architecture which has ever been produced; a blend of the work of a nation of builders who built structurally with the work of the nation of artists they employed. I say the Moguls built structurally, and they did; they could build magnificently. But they never went so far as we did in trying to beautify their structural forms. The Moguls seem to me to have been rather ashamed of their structural work. If they had to buttress up a building to support a magnificent dome, they hid their buttresses. If they employed an arch they put it into a frame concealing its voussoirs which please the Western eye. And the need they felt for decoration demonstrates that they were missing something. Seen in the distance, these Mogul buildings are fine, massive and impressive, but I do not think they are such good architecture as ours, in which we see each structural part performing its own work. I think the Moguls felt this a little themselves, otherwise I do not think they would have inlaid and covered their buildings with decoration as they did, though the result is very beautiful. We have been satisfied with less ornament, and some of our buildings are beautiful in their simplicity. That cannot be said of any Hindu work and only of but few examples of the Saracenic.

I fear the views I have expressed may have clashed with Mr. Lanchester's, but this subject is one in which I am intensely interested, and I am sure everyone here will join with me in thanking him for his extremely interesting paper.

Mr. HERBERT BAKER [*F.*]: I am very glad to follow my old friend Mr. Ransome, and to second the vote of thanks to Mr. Lanchester for his excellent lecture, which, I think, was full of knowledge, experience and insight concerning Indian architecture, as well as full of suggestion. I wondered at the limitation of his period to a thousand years, which is not very long in Indian history; it excludes what one might call the classic period in Indian art, the Buddhist Asoka period. As he no doubt knows, it has not those qualities of illogicality which he referred to in Hindu and Mogul art. It is real stone architecture, and at Sanchi it stands in all its perfection; and its sculpture rivals Romanesque and Byzantine sculpture. Mr. Lanchester began his record at about the time of the destruction of art in India; his period of a thousand years is just before the invasion of the Mohammedans from the hills. We know from Indian history that the universal custom of the invaders was to destroy the buildings and massacre the inhabitants; and if there were good craftsmen remaining after the slaughter they were carried off as slaves to Afghanistan and Turkestan. As a result the carving—I am speaking of the north of India, I do not know the south—seems to have been done by the less skilled craftsmen working to rote. Then came the blight of the Mohammedan prohibition of the carving of natural objects, and we find forms reproduced the original meaning of which has become lost. Mr. Lanchester has truly put his finger on the essence and origin of much Indian architecture—the rock-cut temples; and you have to appreciate that in order to understand a Hindu temple. The Orders, if we may so speak of them, are horizontal ones, and often represent the tradition of varying soft and hard strata in the caves. And there is the dominant fact he mentions that the sandstone in the north-west of India splits in horizontal layers. This had an immense influence on the northern architecture. One often wonders what would have happened if the quartzite of Delhi had been a little softer. They might have developed buildings there true to the arched forms; there are some excellent examples at Delhi built up in true stone con-

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struction in arches and domes, which show the origin of the stalactite pendentives of a very primitive form.

Mr. Lanchester touched on the controversial question of the mistri, which is the Portuguese word for "magister," or master-craftsman, and as to how far they can be left in charge or in sole command of buildings. I think they could be so left in the case of simpler buildings of Indian character; but in that of larger and more highly organised buildings, such as are necessary for administrative and industrial development to-day, their primitive and charming methods are hardly suited. The Indian craftsman is generally a farmer, and he has a delightful and amiable habit, when it rains, of going off to his farm. And he is very bad in giving estimates. So you can imagine the harassed minister answering the rain of parliamentary questions and demands for returns of estimates and retrenchments commissioners hunting the mistri to his farm.

Mr. Lanchester mentioned the skill shown by Indians in building vaults and domes, and that is true; they are built with such skill and ease that this form of construction comes out cheaper than any other. But when you come to a highly organised and complicated building, covering large spaces and big spans, and with many storeys, the spaces taken up by abutments and the weight on the foundation become a serious matter; and thus it is impossible to carry out these methods of construction in larger buildings which are not of a monumental character.

We are building in Delhi—probably Mr. Lanchester is doing the same in his own work in India—domes and vaults, without centres, to a small span, and as they can use up the brickbats the work is done very cheaply. That was a help to us in Delhi during and just after the war, because we could not get steel.

Mr. Lanchester also refers to the arts and crafts, and quite rightly deplores the absence of sculpture and decoration in modern buildings. That is true and unfortunate, and that is where the Indian craftsman excels. There is a big stone yard in Delhi which employs 2,000 masons, and I was told that whereas not more than 1 per cent. or 2 per cent. of those masons could cut a true cube accurately, yet a large proportion could carve well. This shows where their genius lies.

We are trying to revive the art of tile-making: you know the beautiful colouring of the old tiles. We had tests made of old and new samples at South Kensington, and we found that the difference between them was that the new ones were made of pure material, whereas in the old ones impure materials had been used, and it was this impurity which produced the beautiful colours. The Government of the Punjab took an interest in the matter, and sent down and found an old family in Mooltan who had been making these tiles for generations, and persuaded them to come up to Lahore, built a kiln and provided all accessories and materials for them, and set them to work. But in a few days they disappeared into the desert whence they came because, as they said, their secret was being copied! Some of you may remember that when certain architects were appointed to New Delhi a petition was got up by distinguished people in England petitioning Parliament that master-craftsmen instead of architects should be employed. The Government of the day sympathised with the idea so far as the crafts were concerned, and arranged that a School of Crafts should be established at Delhi to carry out the craft work in the new buildings. Unfortunately, the war came, and then the post-war stringency; and since then something worse still, in the form of a Retrenchment Committee!

In regard to the question of the future, which Mr. Lanchester very rightly raised, the future of architecture in India depends very much on the political situation, and that depends a good deal on finding a meeting ground of the ideals between East and West. It cannot be wholly West, nor, I think, wholly East. As we look forward to some happy marriage between the two ideals in politics, so must we also in the matter of architecture. I think there should be an opportunity for English architects who will work on the basis of the more elemental, simpler forms and principles of their art in architecture and the crafts, and learn how to graft on to them the best features of Indian architecture adaptable to the climate and sentiment of India: there are many. They must learn to exhibit restraint, which is not too common in Indian art. If architects go out there they should go young, when they are malleable in mind and constitution. They must have very good health to withstand the climate, and the vitality and spirit to carry them through the enfeebling effects of the six months of hot weather. In addition, they must have in themselves something of the missionary spirit and the sense and the spirit of public service, if they hope to create a renaissance of Indian art.

Professor BERESFORD PITE [*F.*]: This is a very important subject to the Royal Institute of British Architects. It is important that we should, on behalf of Great Britain, extend our sympathy and our knowledge and our work to cover that part of the demands of the British Empire which is represented by India. I think it is an opportunity for pleading for some special consideration for those members of our body who are practising in India, and for the extension of some union between ourselves here at home and those who are members of our body there, with many other practitioners of architecture, not only English but Indian, in India itself. Of course, it is obvious that what is true of the British Empire in India is equally true of the British Empire in Africa, and in Canada, and in Australia. If we can but enlarge our architectural conception to the breadth of the British Empire, I venture to think our ideas of architectural education and qualifica-

tion will have to be extended too; the sooner they are, the better. It is not very long ago that the Australian Commonwealth Government issued an appeal to architects to consider the problems connected with the creation of an entirely new capital city and a new architecture at Canberra. But as the Inchcape "Axe" has fallen on Mr. Baker's hopes for a craft movement to furnish the great buildings with live details in India, so the war fell with devastating effect on the dreams of architecture for a new capital city for the Commonwealth.

But the problem is not only a problem of the British Empire in the new, but also with the ancient world in India, and it is one of great philosophic interest; it is a problem that demands the most careful attention and thought. One is a little amazed—if not shocked—to find the personal standard of individual taste and sense of proportion and fitness in which we have educated ourselves in this little corner of the West applied to the historic architecture of India. I can sympathise with Mr. Lanchester's outlook, but I was amazed at his drawing attention to the fact that the Hindus had any idea of the value of sculptured ornament at the base in order to give an effect of simple breadth on the next course, then revert to methodical concentration, and weave the appropriate fittings at the top. Those ideas are limited, and they did not trouble us until forty years ago. Mr. Baker threw some cold light on it when he suggested there was a certain logic in the fact that where a stratum of stone was malleable it was carved, and where it was not malleable it was not carved, and when the stratum repeated itself you got the ornament. That is the logic of geology, which we can well understand, rather than a singular and wonderful harmony of artistic intuition in Indian and in European architecture, which I do not think exixts. I should like to understand a Chinese joke, what it is that makes a Chinaman laugh, and in a like manner what is the spirit of art which an Indian idealist expects and desires to express. The subject cannot be dealt with from the point of view of our local standards, nor on the ground of our individual tastes. Some wider ground must be sought before we can understand Indian art in itself, or our relation to it. For that reason I urge it is part of our duty to consider the educational apparatus and equipment that we possess in England for the exercise of architecture in India. Probably a special Committee of this Institute could take up the whole subject, in conjunction with a number of sympathetic experts in Indian life and work. I might mention, incidentally, that the University of Cambridge, in connection with the Architecture Schedules which were settled before the war, arranged an Examination in Indian Architecture, in order that Indian students in Cambridge who were studying architecture in the University could be examined in the architecture of their own country. And there has been already one candidate there who was going to live in India, and who sat in the examination, and passed. The giving of educational direction in that matter is a great work, and it will have to be done before we can represent the needs of architecture in that part of the British Empire, India.

Turning to another aspect of the subject, it is very interesting and pleasant to have such a lecture as we have had to-night, and to be shown the picturesque and important views, though I confess I think Mr. Lanchester's selection has been a little too loose, if I may be permitted the term; his rough classification did not go far enough back. Mr. Baker, I think, has already pointed that out. I should have had it linked up with the West, with the time of Alexander and his Indian expedition, and that fascinating subject which links up at once our studies at home with the reflection and the action of Greek art with the sculptured art of Northern India, as well as the other very important link which exists at the other end; the relation of Chinese art with the art of Northern India. Fergusson's remark on the extravagant wealth of ornament in Southern India was that we are face to face with a population abundant in numbers, amply provided with food, and with nothing else to do but to cover with intricate decorations the mountainous erections in their temple courts. That is interesting because it touches the economical aspect both of buildings and of ornament. And the great architecture of Akbar and the Mogul period and that of Amenabad are phases of the subject which, as Mr. Ransome pointed out, are important phases in which we get life and vigour in construction, combined with the traditional ornament of India.

I have much pleasure in supporting the resolution of thanks to Mr. Lanchester for his lecture.

Sir LIONEL JACOB, K.C.S.I.: I have been greatly interested in Mr. Lanchester's Paper, and the moral of it is—as it comes to me—that in the opinion of the lecturer there are many Indian master builders in India who have only to be called into requisition to save the present and future position of architecture in the country. It is on that particular point that I propose to speak.

Mr. Ransome has mentioned the two distinct types of indigenous architecture in India—the Hindu and the Indo-Saracenic; and as Mr. Lanchester considers that the latter should not be revived, it is with the former that we are mainly concerned. Hindu architecture is either structural or excavated; and when the Hindus began to build in masonry they never seemed able to forget that they were not building in wood; and, further, having discovered their marvellous skill in sculpture, as evidenced by their rock-cut temples, it seemed to be their desire to build acres and acres of masonry in order that they might exhibit their sculptural skill upon it. I agree with Mr. Ransome that it is in these directions that their architecture fails. But even

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so, the question is whether there are any master builders still in existence.

In that connection it is interesting to recall that about ninety years ago the Asiatic Society approached a man, Ram Baz, a native of Madras, with a view to an essay on the old art of Indian building which it was supposed was dead. Ram Baz was not an architect, but he was a Sanscrit scholar and an intelligent man in many ways. He endeavoured for his purpose to find Indian builders to whom the old oral traditions had been passed down, and he failed. But still there were the old Sanscrit treatises on architecture, sculpture and the kindred arts, collectively called the *Silpa-Sástra*, *Silpa* meaning manual art and *Sástra* science, which Ram Baz proceeded to translate. In the matter of dimensions, the treatment can only be described as fantastical. The smallest dimension is that of the atom, the little speck seen in the reflected light of a sunbeam. Eight of these atoms go to a grain of fine dust, and eight grains to the point of a fine hair. The text then describes the many qualifications of architects. To be competent the architect had to be a man of unblemished moral character, generous, truthful, sincere, and free from envy, malice and all uncharitableness. I like to think, Mr. Chairman, that all the Fellows and Associates of this great Institute possess that moral rectitude, but I nevertheless think that if you had to define the qualifications of a competent architect you would use other words. Then the treatise went on to say that the shape of the site was important—it must not be circular, nor semicircular, nor like the back of an elephant, the tail of a fish, nor the face of a cow. The ploughing of the site was also important—the site had to be ploughed many times, the plough had to be of a certain form and of a certain wood, and the colour of the oxen was important, and their eyes should in shape be that of the petal of a lotus. Then, after descriptions of the sacrificial methods of the priesthood, we come to matters of design, base, pedestal and entablature, and might reasonably hope for something more definite and tangible. But the text is almost unintelligible. Ram Baz was forced to admit that much of it came to him like the darkest oracles, and that much of it was written as if it were deliberately intended to confuse. For practical purposes, it cannot therefore be said that the old writings possess any value.

Now let me go back for a moment to the Moguls. There had been many previous Mohammedan invasions of India, but in the sixteenth century the Moguls came and established an Empire. Babar was the first Mogul Emperor, and he was a splendid fellow, a gallant fighter, fond of art, fond of all the good things of life, and in his memoirs he says that he found no architecture in India. The statement makes us pause to think, and if we think we can probably gather what Babar had in mind. He was doubtless familiar with Hindu sculptural art, but architecture, as the Moguls deemed it, was another affair. To Mohammedans graven images were anathema, they thought of mass and line and composition in a way that the Hindus never did, they did not disregard ornamentation, but instead of sculpture they used colour and inlay. Still the beauty of the Mogul buildings lies rather in general symmetry and rhythmic relation of part to part than in jewelled inlay. It has been said of the Taj that if plastered with whitewash, obscuring the glories of its material, it would remain a thing of beauty and a joy for ever; but eliminate the wonderful sculpture of many fine old Hindu temples, and there would be nothing left but the external and unlovely form. Babar did not build himself—he was too busy, but his grandson, Akbar, built Fatehpur Sikri, and Akbar's grandson, Shah Jahan, built, among other beautiful buildings, the Taj Mahal of Agra, which is the masterpiece of Indo-Saracenic art in India. The Taj was completed about the time that Shah Jahan was succeeded by Aurangzeb, 1658, and from that date there was a very sharp decline in all Indian art.

We have a common saying that "no one is ever missed," that when a man dies there is another, just as good, to take his place. But like many other sayings, it is only half a truth. The Greeks, who taught the world so much, were, among other things, the founders of mathematics. About two thousand years ago there were Euclid, Apollonius who wrote on conic sections, Eratosthenes who calculated the diameter of our earth with approximate accuracy, Hipparchus who made the first star map, Archimedes the equal of our Newton, and others. They were almost contemporaries, and they passed away, and thus for about a thousand years mathematics was dead. Architecture, like other sciences, has its oscillations of the pendulum between progress and retrogression, and in 1658 there came the decline from which Indian art has never recovered.

What, then, are we to do? We cannot recall the Indian master builder any more than if this Institute ceased to be we could recall in England the men who built our glorious old cathedrals and the Henry VII Chapel at Westminster to take the place of our modern architects. We live in a utilitarian age, and we cannot reproduce the old art at a fraction of the cost, nor have we the time. Mr. Lanchester has made some severe comments on buildings in India, and the criticism is just; but if there are cheap and ugly box-like buildings, we have to remember that there is another aspect to the case. If the British had acted like the Moguls, they would have built great cathedrals and other monuments to their glory at the cost of the blood and tears of a conquered people; but they worshipped in cheap, barn-like churches, they lived in cheap houses, and worked in cheap offices, and for the benefit of the people they spent money in other ways. I believe that I am correct in saying that the Taj and the great Ganges canal cost

about the same. The Taj is a beautiful building, but after all it is only the tomb of a Mogul queen; and it is not a very large building—its base is a square with 186-feet sides, and its height from plinth to pinnacle of dome is about 200 feet. The Ganges canal represents an immense irrigation system: the main line taking off from the Ganges river carries about six times the volume of water passing in the Thames at Teddington, the canal channels in aggregate are over 3,000 miles in length, they convey water over a vast tract of arid country; the work saves the country from the appalling horrors of famine, it brings comfort to thousands and thousands of humble homes, and lies in the direction of a greater civilisation than the old world had ever dreamed. India is now suffering under serious financial stress, the Inchcape Committee is devising means of retrenchment, the country requires more canals, more railways, more roads; and in that position, though Mr. Lanchester is of opinion that we attach too much importance to paper designs and estimates, we cannot disregard them. We have heard a good deal to-night about the Indian mistri, and it would be strange if, after thirty-six years of India, I were not familiar with the mistri, whether blacksmith, carpenter or mason. He is an excellent craftsman, but I have never met a mistri master builder, and it is not to him that we should look for the salvation of architecture in the future.

I venture to think that Mr. Ransome, the first Consulting Architect to the Government of India, was right when early in his tenure of office he came to the conclusion that the hope of the future lay in the evolution of an Anglo-Indian style in the hands of qualified architects. He himself worked in that direction, employing both Hindu and Saracenic details through the medium of suggestion. His successor, Mr. John Begg, went even further, and adapted the Indo-Saracenic style of Bijapur to modern requirements. Many other architects have been thinking on the same lines, and at the moment we have the eminent architects Sir Edwin Lutyens and Mr. Herbert Baker constructing the great buildings of New Delhi in a style which is suggestive of both East and West. It is true that, in the present state of affairs in India, the Indian builder may come to the front soon enough, but it is not my intention to enter into politics, nor do I wish to be unduly pessimistic about the future. I should like to think that the reformed Government will prove a success, and inasmuch as it is a Government of British and Indians working together in united endeavour, I cannot help thinking that our architects are right in aiming at the evolution of an Anglo-Indian style which will give the association of East and West appropriate and adequate expression.

Captain G. S. C. SWINTON: I came to listen; I had no idea I should be called upon to speak, especially as I am not an architect. But I have had the advantage of being in India, and it was a great advantage to me, with only a knowledge of architecture such as is possessed by the man in the street, to see the buildings there. I think there is one thing that people who have not been to India and only know the buildings from pictures do not realise, and that is the intensity of the shadows; much is in that way hidden. The shadows look as if they had been cut with a knife. We do not see here the effect of overhanging eaves. Neither do we realise the intense desire to escape from the hot sun into the shadows. What struck me about the architecture now being evolved out there by the art, partially, of Mr. Baker and Sir Edwin Lutyens, is the effect they are producing by overhanging masses of black. This gives a magnificent result. We were shown one photograph of a great building standing on a rock, with much decoration on top, and a cliff-like wall below; to me that effect is magnificent. That is the kind of thing, I think, that we shall get in the new buildings in Delhi.

I have learned something to-night from Mr. Lanchester's lecture. I was in India thirty years ago; I also went on the Delhi Commission twice, and learned what I could about architecture, and I have done my best to follow up architecture since. I hope something will be done in India to evolve a form of architecture which will have the advantages of both East and West; I think we can hope for it, and I believe it is coming along. Mr. Lanchester, Sir Edwin Lutyens, Mr. Baker and Professor Geddes are, among them, teaching the Indians something which, I hope, will be to the advantage not only of India, but also of the whole of the British Empire.

Mr. H. V. LANCHESTER (in reply): I wish I could merely say a word of thanks, and have done with it; but some things have been said to-night that require, in one of my pugnacious temperament, some answer.

The first point is as to why I did not deal with the earlier periods of Indian architecture. I was not attempting to give a history of Indian architecture—such a thing would have been out of the question. I was trying to present some illustrations, more or less in chronological order, of the types of Hindu architecture which, I thought, bore on the problems of the present time. In order adequately to illustrate Indian architecture I should have had to show not a mere dozen and a half of slides, but twenty dozen.

Professor Beresford Pite said I was still looking at India with the eyes of a European. Well, I am afraid I can hardly avoid that; but I did not think I was doing it so definitely as the Professor suggested. I imagined I was appreciating in Indian architecture points which are good in all architecture, and also having some regard to the influences under which it has evolved.

With regard to the influence of Alexander and the Greeks on Indian architecture, I confess I think that is a "wash-out." (Professor Pite: I was referring to

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sculpture.) Then perhaps we are agreed. The only pseudo-Greek work which got into India was inferior to the work done elsewhere by Hindus.

I excluded Mogul architecture from my paper, because I regard it as immigrant, not as a legitimate exposition of Indian architecture. Subsequently it cut out a definite ring fence of its own.

With regard to Sir Lionel Jacob, I am rather more at variance with him. Ram Baz was a lazy man who sat at home and would not take the trouble to go 400 miles to find a mistri. But the master mistri was not the workman mistri. Master mistries exist; I showed you a photograph of one. I have seen 200 or 300 workmen working under a mistri, who is solely responsible for the design and the carrying out of the work, and there was no European within a dozen miles of the place. So he is not a fiction, but a fact.

Criticism has been made of the Hindu composition and proportion. With regard to what I consider essentials of architecture, in spite of the charm and beauty of the Mogul buildings, I think the Hindu sense of proportion and composition, and light and shade, and the distribution of ornament was far superior to any Mogul work which has been built in India, and I think I could prove my case.

I am against any idea of what has been called Anglo-Indian architecture; I think that would be heading straight for disaster. There is sufficient tradition in India to work on. I am not now speaking of the Gujerati tradition. You can take the fine things of the south of India, and even the architecture which has been influenced by the Mogul work in the north, as a definite tradition to work on, and I should like to see the architects of India working along Indian tradition, except in the case of the seaport towns, which are Europeanised already.

And I was practically accused of wanting to spend on fine architecture money which ought to be used for such works ast he Ganges canal system. I do not want to take money away from any such schemes. I maintain that our methods are dearer, and not cheaper, than the traditional ones.

I thank you very much for having listened to me.

The following letter has been received from Mr. E. B. Havell (the author of "Ancient and Mediæval Architecture," "Indian Architecture," etc.):—

I am very sorry I shall not be in England on the date of Mr. Lanchester's lecture.

If I could have taken part in the discussion I should have tried to emphasise a point which I am sure Mr. Lanchester will bring out in his lecture—that architectural work in India has an extraordinary interest on account of the existence of an hereditary building craft with a great historic tradition behind it, and so much alive that even at the present day native builders without European supervision occasionally put up buildings which compare favourably with fine architecture of Mogul times. I would mention particularly a mosque now under construction at Bhopal which, so far as it is completed, is better architecture than Shah Jahan's great mosque at Delhi.

The existence of such a living building tradition gives the European architect opportunities and advantages which he does not enjoy in Europe. It also imposes upon him, especially if he should be in Government service, a special obligation, for it cannot he disputed that such a vital craft tradition is an invaluable artistic and economic asset which India cannot afford to neglect or depreciate. In this respect the Indian Public Works administration has not served India so well as it might have done, architecturally, economically and socially. But lately Mr. Begg, as Consulting Architect to the Government of India, has worked hard to bring about the effective collaboration between the European architect and the Indian builder which has been wanting in the past.

That such collaboration would promote a healthy growth of the art of building both in India and in Europe, and help to solve some of India's economic and social problems, I have not the slightest doubt. The argument often brought forward that the European must impose his own architectural views and methods upon India, and continue to live in a state of splendid isolation in order to maintain his position there, can hardly be taken seriously by anyone who understands Indian conditions.

PUBLIC LECTURE

Architecture: A Necessity—or a Luxury? *

BY H. S. GOODHART-RENDEL.

The title of this lecture asks a question: Is architecture a necessity or a luxury? It is rather a silly question perhaps, since any answer to it must depend upon what you call a necessity and what you call a luxury, and I do not suppose that any two people agree absolutely about that. It also depends upon what you call architecture—and architecture is a word which is used to mean a great many different things. I chose the title, however, because it seemed to me to suggest, better than any other I could think of, the nature of the ideas which I wish to put before you to-day.

In fact, if I may be allowed to assume certain perhaps rather arbitrary meanings for the words architecture, necessity and luxury, then my title will do very well. The meaning which I shall assign to the word architecture is so essential in my theory of the place of architecture in life, that I shall wait to define it until I come to speak of that theory. Before doing that I must define my meanings for the other two words and clear them out of the way.

By "necessity," then, I shall mean an indispensable thing. By "Is architecture a necessity?" I shall therefore mean "Is architecture a thing which cannot be done without?" There is also another less common meaning of the word "necessity," a meaning which in dictionaries is marked "rare." The word is sometimes used for that which cannot be avoided, in the same sense as that in which we speak of the "necessary consequence" of this or that. To say that the necessary consequence of too much champagne is a nasty headache next morning does not mean that we could not do without the headache; it means that we are going to get it. I want to take advantage of this secondary meaning of the word "necessity" and add to my question, "Is architecture a thing which cannot be done without?" the subsidiary question, "Is architecture a thing we are going to get whether we can do without it or not?"

By "luxury" I shall mean a thing which is desirable but not indispensable. By "Is architecture a luxury?" I shall therefore mean "Is architecture a thing which can be done without, but which it is natural to want to have?"

The answer to these questions, as I have already said, must depend upon what you call architecture. And architecture is not an easy thing to define. As with so many things, it is much easier to say what it is not than to say what it is. In the search for truth, however, often the easiest road commands the longest views; difficulties are apt to obstruct our vision. Let us therefore enter upon our quest by eliminating some of the false definitions which otherwise might tempt us from our course.

In the first place, then, architecture is not a mere mitigation of the brutalities of building. Its function is not that of clothing and adorning that which would be ugly unadorned. Mr. Bernard Shaw, I think, once said that some people regard Art as "a costly ring in the nose of Nature." This is an extremely accurate simile of a common mental attitude. Many people think of Nature as the sort of animal that one would expect to wear a ring in its nose. This nose-ring of Art will frustrate its most disagreeable propensities, and may, if one wills, be made a handsome thing in itself. When it was first proposed to bridge Ludgate Hill with the railway viaduct which now blocks out the view of St. Paul's, the company proposing it was compelled to promise that the viaduct should be "architectural." This promise it was held to have kept by the liberal application of scrolls and shields to the design already prepared by its engineer. The result is not successful. Without its ornaments the bridge would have been ugly, with them its ugliness remains unchanged. The ornaments in themselves are certainly not very beautiful, but that is neither here nor there. The addition of ornament will often, I think, convert comely building into architecture, but with uncomely building no ornament will fuse and no amalgam result. Perhaps the only absolute rule with which all works of art must comply is that of consistency—no work of art can be at war with itself. If the structural design of a building flout the spectator, the attempt of ornament to capture his fancy can but add to the insult offered him. Whatever architecture may be, it is not the jam round the rhubarb.

It is a hackneyed quotation from Sir Henry Wotton that "Well-building hath three Conditions; Commoditie, Firmenes and Delight." Essays upon the nature of architecture are apt to open with these words, followed by a statement that architecture and Wotton's word "well-building" are two names for the same thing. With this statement I do not agree. I can imagine no room much less fit for the purpose of holding a large number of books than the Radcliffe Library at Oxford, yet nobody would say that that majestic rotunda was not a work of architecture. The arcades of the Alhambra at Granada have been falling about ever since they were first rushed up, yet they are one of the architectural glories of Europe. Wotton would have considered, rightly, that neither the Radcliffe Library nor the Alhambra was an example of well-building; the Radcliffe Library has not "commoditie," and the Alhambra has not "firmenes"; but we cannot be so foolish as to deny their claims to be architectural objects. These claims are based upon their possession of

* A public lecture delivered at the R.I.B.A. on 15 March 1923.

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C. Krishna Murthy: SAIVA: Art and Architecture in South India
Sundeep Delhi 1985

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K K. Pillay: Suchindram Temple
V.N. Hari Rao: Srirangam Temple
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PLATE III.

TEMPLE OF KANARUC.

The name of Black Pagoda, usually applied by Europeans to this temple, is certainly not derived from the general colour of the building, nor from that of the stone of which it is built, which is the usual light but warm-coloured sandstone of the country. It appears rather to be a translation of the epithet kala, or black, which the natives generally apply to all deserted or desecrated religious edifices, whether Hindu or Mahometan.

The legends of the place would lead us to suppose that the spot where this temple is built had long been held sacred, in consequence of Samba, a son of Khrishna, one of the heroes of the Mahabharat, having been here cured of leprosy by the sun, to whom this temple is dedicated; and to whose honour Samba did then, if the legend may be trusted, erect a temple or stele, No trace, however, of any earlier edifice now exists, the present one having been, in all its parts, erected by Raja Narsingh Deo, who ascended the Gajapati throne A.D.1236, and built, or finished this temple, 1241. There must, however, have been some strong devotional motive to have induced the king to erect such a building in the midst of the wide plain of sand and morass in which it is situated, and far away from any city, or almost any habitable spot; for though, no doubt, a town sprung up around it during the four centuries in which it stood entire, the place has now returned to its original solitude, and a few straggling huts of a wretched village are all that remain of the once famous town of Kanaruc.

It is easy to see that the cause of its desertion was the fall of the great tower, or vimana; and as the revenues of the temple were probably insufficient for its re-erection, the priests took the hint, and removed from their unhealthy solitude to more comfortable quarters at puri, where they joined apparently in the worship of Jugganath: an event which took place, as nearly as can be ascertained, about two hundred years ago. According to the custom of the East, a variety of miraculous legends have been invented to account for this fall of the temple, and its consequent desertion,from among which a European naturally gleans those in which earthquakes and lightning play the most conspicuous parts. From an examination of the ruins themselves, however, I am inclined to think that the failure of the marshy foundation that supported so enormous a mass was by far the most probable cause. Had the place been subject to earthquakes, the tottering fragment of the tower that still remains could scarcely have stood for two centuries, and lightning could scarcely have shattered so enormous a Pyramidal mass, and was much more likely to have been attracted by the ironroofed porch than by the tower, which probably had no iron in its composition, while the appearance of the ruin is exactly that which would result from a subsidence of the foundation.

The temple itself is of the same form as all the Orissan temples, and nearly of the same dimensions as the great ones of Bobaneswar and puri: it surpasses, however, both these in lavish richness of detail; so much so, indeed, that perhaps I do not exaggerate when I say that it is, for its size, the most richly ornamented building--externally at least --in the whole world. Of the great tower, only a fragment--one angle,--remains, rising to the height of about 140 to 150 feet; but from this ruin, comparing it with buildings of a similar age

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and style, though of smaller dimensions, at Bobaneswar, it is easy to see what it has been, and it would be no very difficult task to make a restored drawing of the whole, if it were thought worth while. The fragment of the tower is seen on the left of the Plate, where the singularity of its appearance is much diminished by the effect of perspective, and its broadest side being presented to the spectator; but when seen from the sea, or from a distance on the other side, its effect is both singular and inexplicable.

The principal remaining part of the edifice is, therefore, the mantapa, or ante-chamber to the sanctuary; as usual, a square of about sixty feet, from angle to angle. This length is divided vertically into three equal portions, ~~the centre~~ (p. 28)

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the centre one of which projects about half its width or ten feet in front of the others, and on three sides contains the doorways leading into the temple, the fourth being occupied by the doorway leading from the porch into the sanctuary. The height of the wall is about half its width, or thirty feet, divided horizontally into four compartments, the upper one of which is composed of a frieze or cornice of the most extraordinary beauty and richness, of which, I am sorry to say, the drawing affords but a very inadequate idea. The two next are devoted to sculpture and architectural scrolls, &c., and divided from each other by a band similar to the cornice above. The fourth, which is below the level of the floor of the temple, is plainer, and serves as a basement to the whole.

The roof, which in height is about equal to the width of the temple, or sixty feet, is likewise divided into four compartments, the two lowest of which are composed of six projecting cornices, separated by a deeply recessed compartment containing sculpture as large as life; while all the faces of these twelve cornices are covered by bassi-relievi of processions, hunting and battle seenes, and ~~xx~~ representations of all the occupations and amusements of life. The immense variety of illustrations of Hindu manners contained in it may be imagined when we think that, with a height of from one foot to eighteen inches, this frieze extends to nearly three thousand feet in length, and contains, probably, at least twice that number of figures.

The upper of the three compartments has only five cornices, and none of their faces are sculptured. The whole is crowned by the lotus-shaped dominical ornament, as is universally the case, but which is here of a singularly elegant form. Were such a roof as this placed over a colonnade or on a wall much cut up with openings, it would, no doubt, be overpoweringly heavy; but placed as it is on a solid wall, with only one opening on each face, and that so deeply recessed, I scarcely know one so singularly appropriate and elegant; and the play of light and shade from its bold and varied projections and intervening shadows give it a brilliant and sparkling effect that, I confess, I have almost never seen equalled.

The walls of the building are about ten feet in thickness, and the depth of the doorways is consequently twenty feet; and their lintels are supported by large iron beams, of about a foot section, laid across from side to side. The interior apartment is a square of about fory feet, the walls of which are now perfectly plain; but, if we may trust Abul Fazl's description, they were at one time painted; but of this no trace now remains.

The roof is formed after the usual bracket fashion of the Hindus, each course projecting beyond the other so as to give the appearance of inverted stairs; the angles of each, however, are here rounded off, which considerably improves the effect. At about half the height, where its dimensions narrow to about twenty feet, a false roof has been thrown across, the remains of which now lie heaped up as they fell on the floor of the apartment: among them may still be remarked several beams of wrought iron,

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about twenty-one feet in length and eight inches' section, and a great many blocks of stone, fifteen and sixteen feet long (and they were probably broken in their fall), and of a section of six feet by two or three. When in situ it is by no means improbable that they extended the whole length across; for I have seen, in Upper Kndia, wider roofs formed in the same inartificial manner by the arch-hating Hindus.

Taken altogether, this building may, as far as my experience goes, be considered as one of the very best specimens of Indian architecture as an exterior; though in Upper India there are interiors infinitely finer. There is altogether so much consonance in the parts and appropriateness in the details, that the effect of the whole is particularly charming. In speaking, however, thus in its praise, I must be understood to limit that to its effect as an artistic architectural composition; for the sculpture that covers the walls--not the roof--is generally bad in design and execution, and of an obscenity of expression which it is impossible to describe, and which it would be difficult for even a very depraved European imagination to conceive. It is, however, so completely subordinate to the architecture, that this defect is not perceived in contemplating the building at such a distance as enables one to grasp it as a whole.

The three gateways of the enclosure remain ornamented with monstrous mythological compositions, one of which appears on the right of the Plate, representing a griffin destroying an elephant; but the wall of the enclosure, which extended about 250 or 300 yards each way, has been entirely removed, it is said, by the Mahrattas. Latterly some of the finest sculptures, from the doorways of the building itself, have been removed by the Kurdah Raja to decorate a temple he is building in his own fort; and the temple itself had a narrow escape from being employed to build a lighthouse on False Point. It was, however, found that the river afforded an easier communication to the ruins of the fort and palace of Barabatti, which was therefore pulled down for this laudable purpose; and the road to Puri, the nearest European station, is so bad that it has hitherto escaped being employed to build a gaol or repair the station bridges. But as there can be little doubt that the active intelligence of the present rulers of India will soon find some useful purpose to which to apply so splendid a quarry, I can only regret that the burning sun and dashing rain of the month of June on the shores of the bay prevented me from doing more than I was able to accomplish for the illustration of so splendid a building.

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MANASARA
AN ENCYCLOPAEDIA OF HINDU ARCHITECTURE
Vol 7 (OUP, 1946) 4684 P.K. ACHARYA, I.E.S.

GOSHṬHA-PAÑJARA (*see* PAÑJARA)—The niche or recess in the wall which generally contains a statue, and sometimes serves as a decoration.

GOSHṬHI-(KA)—A committee, trustees, the managing committee of a building, a club-house.

Members of Pañch or committee entrusted with the management of religious endowments. Prof. Bühler.—(*Ep. Ind.*, Vol. I, p. 190, note 50; 'trustee,' Dr. Hultzch, *Ind. Ant.*, Vol. XI, p. 338, last line of the text.)

Cf. Gosaṭhika-bhūtena idaṁ stambhaṁ ghaṭitam ।

(Deogaḍh Pillar Inscrip. of Bhojadeve of Kanauj, no. A, line 9, *Ep. Ind.*, Vol. IV, p. 310, 829, note 5.)

The managing committee of a building:

Gariṣhṭha-guṇa-goshṭhyadaḥ samudadīdharad-dhīra-dhīru-dāram
atisuṁdavaṁ prathama-tīrthankṛin-maṁdiram ॥

(Bijapur Iriscrip. of Dhavala of Hastikundi, v. 34, *Ep. Ind.*, Vol. X, p. 22.)

GEYA—A class of buildings.

(*Kamikāgama*, XLV, 58*a*–59, *see* under MĀLIKĀ.)

GRĀMA (*cf.* NAGARA)—A village, slightly different from towns and cities in size mostly.

(1) 'The primitive sense of this word, which occurs frequently from the *Ṛig-Veda*[1] onwards, appears to have been village. The Vedic Indians must have dwelt in villages, which were scattered over the country, some close together,[2] some far apart and were connected by roads.[3] The village is regularly contrasted with the forest (araṇya), and its animals and plants with those that lived or grew wild in the woods.[4] The villages contained cattle, horses, and other domestic animals, as well as men.[5] Grain was also stored in them.[6] In the evening the cattle regularly returned thither from the forest.[7] The villages were probably

[1] I, 44, 10; 114, 1, ii, 12, 7 (perhaps to be taken as in 10); x, 146, 1, 149, 4, etc., *A-V.*, IV, 36, 7, 8, V. 17, 4, VI, 40, 2, etc., *Vājasaneyi-Saṁhitā*, III, 45, XX, 17, etc.

[2] *Śatapatha-Brāhmaṇa*, XIII, 2, 4, 2, *Aitareya Brāhmaṇa*, III, 44.

[3] *Chhāndogya-Upanishad*, VIII, 6, 2.

[4] Animals: *R-V.*, X, 90, 8, *A-V.*, II, 34, 4, III, 10, 6, 31, 3, *Taittrīya-Saṁhitā*, VII, 2, 2, 1, *Kāṭhaka-Saṁhitā*, VII, 7, XIII, 1, *Vājasaneyi-Saṁhitā*, IX, 32, *Pañchaviṁśa-Brāhmaṇa*, XVI, 1, 9, *Śatapatha-Brāhmaṇa*, III, 8, 4, 16, etc. Plants: *Tittiriya-Saṁhitā*, V. 2, 5, 5, VII, 3, 4, 1, etc.

[5] *A-V.*, IV, 22, 2, VIII, 7, 11, etc.

[6] *Bṛihadāraṇyaka-Upanishad*, VI, 3, 13 (Kāṇva, 22, Mādhyamdina).

[7] *R-V.*, X, 149, 4, *Maitrāyaṇī-Saṁhitā*, IV. 1, 1.

open, though perhaps a fort (pur) might on occasion be built inside.[1] Presumaby they consisted of detached houses with enclosures, but no details are to be found in Vedic literature. Large villages (mahāgramaḥ) were known.'[2]

(Professors Macdonell and Keith, *Vedic Index*, Vol. I. pp. 244–245.)

(2) *Kāmikāgama* (XX, 4, the definition):

Viprair athānyair varṇair vā bhogyo grāma udāhṛitaḥ ॥

The situation of the village-gods and temples (*ibid.*, XXVI, 1–41).
The general arrangement (*ibid.*, XXVIII, 1–21).
Further details of the same (*ibid.*, IX, 1–9 and XXX, 1–22).

Cf. Jāty-otkarsha-vaśenaiva sthānaṁ yuktyā prakalpayet ।
Utkṛishṭānāṁ samīpe syān nikṛishṭānāṁ tu dūrataḥ ॥

(*Ibid.*, XXX, 9.)

(3) *Brahmāṇḍa-Purāṇa* (Part I, 2nd anushaṁga-pāda, Chap. VII, vv. 105, 111; *see also* v 94):

Kheṭānāṁ cha purāṇāṁ cha grāmāṇāṁ chaiva sarvaśaḥ ।
Tri-vidhānāṁ cha durgāṇāṁ parvatodaka-dhanvinām ॥
Nagarād yojanaṁ kheṭaṁ kheṭād gramo'rddha-yojanam ।
Dvi-krośaḥ parama-sīmā kshetra-sīmā chatur-dhanuḥ ॥

(4) *Kauṭilīya-Artha-śāstra* (Chap. XXII, p. 45, 46):

Śūdra-karshaka-prāyaṁ kula-śatāvaraṁ pañcha-śata-kulaparaṁ grāmaṁ krośa-dvi-krośa-sīmānam anyonya-rakshaṁ niveśayet ।
Nadī-śaila-vana-ghṛishṭi-darī-setubandha-śālmalī-śamī-kshīra-vṛikshān anteshu sīmnāṁ sthāpayet ।
Ashṭa-śata-grāmyā madhye sthānīyaṁ chatuś-śata-grāmyā droṇamukhaṁ dvī-śata-grāmyā khārvaṭikaṁ daśa-grāmī-saṁgraheṇa saṁgrahaṇaṁ sthāpayet ।

'Villages consisting each of not less than a hundred families and of not more than 500 families of agricultural people of Śudra caste, with boundaries extending as far as a krośa (2,250 yards.) or two, and capable of protecting each other shall be formed. Boundaries shall be denoted by a river, a mountain, forests, bulbous plants, caves, artificial buildings (? setubandha=bridge) or by trees such as śālmalī śamī and milky trees.'

'There shall be set up a sthānīya (fortress of that name) in the centre of eight hundred villages, a droṇa-mukha in the centre of

[1] As now-a-days, *see* Zimmer, Altindisches Leben, 144, citing Hugel, Kashmir, 2, 45.

[2] *Jaiminiya-Upanishad-Brāhmaṇa*, III, 13, 4.

(5000 pages) Vol I A Dictionary of Hindu Architecture (1927)
II Indian Architecture according to Manasara Silpasastra (1927)
III Manasara Sanskrit Text with critical Notes (1933)
IV Architecture of Manasara - Translation in English (1934)
V Architecture of Manasara - Plates I-CXXXVI (Architecture), CXXXVI-CLVII (Sculpture) (1934)
VI Hindu Architecture in India and Abroad (1946) VII An Encyclopaedia ... (1946).

Foreword (IX) A few more chapters are have to be required to complete the work. The new volume will have to deal with the conclusions and valuable plans and drawings of the architecture — and engineering, sculpture and paintings surveys, extracts, colour tints and contours with the text.

Extract Structures referred to in the under-sixth-third.

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four hundred villages, and a samgrahaṇa in the midst of a collection of ten villages.'

(5) *Yājñavalka-Saṁhitā* (II, 167, etc.) :

Dhanuḥ-śataṁ pariṇāho grāma-kshetrāntaraṁ bhavet ।
Dve śate kharvaṭasya syān nagarasya chatuḥ-śatam ॥

(6) *Manu-Saṁhitā* (VIII, 237, etc.) :

Dhanuḥ-śataṁ parihāro grāmasya syāt samantataḥ ।
Śamyāpātās trayo vāpi tri-guṇo nagarasya tu ॥

(7) *Mahābhārata* (XXII, 69, 35) :

Ghoshāṁ nyaseta mārgeshu grāmān uṭhāpayed api ।
Praveśayech cha tān sarvān śākhā-nagareshv-api ॥

Ibid, 2, 5, 81 :

Kechid nagara-gupty-arthaṁ grāmā nagaravat kṛitāḥ ।

(8) *Mānasāra*, Chap. IX (named Grāma), 1–538 :

According to shape the villages are divided into eight classes, namely, Daṇḍaka, Sarvatobhadra, Nandyāvarta, Padmaka, Svāstika, Prastara, Kārmuka, and Chatur-mukha (lines 2–4). (For the plans represented by these eight names, *see* Rām Rāz, *Ess. Arch. of Hind.*, Plates XLIII to XLVI, and the writer's illustrations.) The measurement, the ground plans, the offerings to the presiding deity, the internal arrangement, the laying out of the houses, and the ceremonial opening of new buildings are described in order (lines 5–8) :

Prathamaṁ grāma-mānaṁ cha dvitīyaṁ padaṁ vinyaset ।
Tṛitīyaṁ tad-baliṁ datvā chaturthaṁ grāma(ṁ) vinyaset ।
Pañchamaṁ gṛiha-vinyāsaṁ tatra garbhaṁ vinikshipet ।
Shaṭkaṁ gṛiha-praveśaṁ cha tan-mānam adhunochyate ॥

The general plan (lines 95–503) :

Each village is surrounded by a wall made of brick or stone, strong and high enough to prevent leaping over (lines 143, etc.). Beyond this wall there is a ditch broad and deep enough to cause a great obstruction in the event of an attack on the village (lines 143, etc.). There are generally four main gates at the middle of the four sides and as many at the four corners (lines 109–110, 144, etc.). Inside the wall there is a large street around the village. This street is generally used for circumambulation on some special occasion, daily round of the police, open-air drive and similar matters of public concern. Two other large streets are those which run from one gate to another in the middle of the wall on each side. 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 sub-divided into many blocks by streets which are always straight from one end to the other of a main block. The

ground-floor of the houses on the main streets are used as shops. The surrounding street has footpaths and houses only on one side. These houses are mainly public buildings, such as schools, colleges, libraries, guest-houses, etc. All other streets generally have residential buildings on both sides. The houses high or low are always uniform in make (line 500, *see also* line 501). Congestion is carefully avoided. The drains or jala-dvāra (*lit.* water-passage) 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 be conveniently reached by a large number of inhabitants. The temples of public worship as well as the public commons, gardens and parks are similarly located. The people of the same caste or profession are generally housed in the same quarter.

(9) The following conclusions drawn by Mr. E. B. Havell will correctly elucidate some of the points referred to above (*Ancient and Medieval Architecture of India*, pp. 9, 13, 12) :

'The experience of many generations had proved that they (plans of villages) were the best for purposes of defence, and gave the most healthy, pleasant and practical layout for an Indian village or town. The easterly axis of the plan ensured that the principal streets were purified by the rays of the sun sweeping through them from morning till evening: while the intersection of main streets by shorter ones running north and south provided a perfect circulation of air and the utmost benefit of the cool breezes.'

'The *Mānasāra* recognizes forty different classes of villages and towns according to the extent of the lands owned by them : commencing with a village-unit which was 500 daṇḍas, or 4,000 feet square, so that the extent of the largest cities would be 20,000 daṇḍas or about 30 English miles square. Of this area about one-third was devoted to building space, and the rest to the agricultural lands owned by the community. . . . In the description of Ayodhyā given in the *Rāmāyaṇa* (*see* under NAGARA), the proportion between its breadth and length is as one is to four. Pāṭalīputra was about 9 miles in length and 1½ miles in breadth. Hindu Gaur was also a long rectangle, one of the long sides generally faced a lake or river, an arrangement which provided bathing facilities for all the inhabitants and obviated the necessity of building defensive works all round.'

'The *Mānasāra* gives the maximum width of the main village-streets as 5 daṇḍas (a daṇḍa, rod or pole=8 feet). The others varied in width from 1 to 5 daṇḍas. The size of a single cottage was reckoned as being 24 feet by 16 feet to 40 feet by 32 feet. They were generally grouped together by fours, so as to form an inner square or quadrangle. The magic of the square depends on the fact that it afforded the best protection for the cattle of the joint household when they were driven in from pastures every evening.'

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(10) 'Of stone-built walls, such as ancient Indian fortified village or town possessed, there is an extant example older than the sixth century B. C. in the hill-fortress of Giribraja, near the modern Rajgir, said to have been planned by a master-builder called Mahā-govinda.'—(Rhys Davids, *Buddhist India*, p. 37.)

(11) Grāma-nagara-kheḍa-karvvaḍa-maḍamba-droṇa-mukha-paṭṭanaṁ galimdam aneka-māṭa-kūṭa-prāsāda-devāyatanāni galiḍampppuva-agrahāra pattanamgalimdam atisayav-appa. . . . ।

'(At Teridala, a merchant-town situated in the centre and the first in importance among the twelve (towns) in the glorious Kundi Three Thousand, adorned, with)—villages, towns, hamlets, sea-girt towns, and chief cities, with elegant mansions, palaces and temples, and with shining agrahāra-towns in the country of Kuntala. . . .'

(Old Kanarese Inscrip. at Terdal, line 58, *Ind. Ant.*, Vol. XIV, pp. 19, 25.)

(12) 'With myriads of people, practices of virtue, agreeable occupations, streams of the (nine) sentiments, pleasure-gardens, separated lovers, splendid tanks, full lotus beds, gilded boats for spring festivals, ghaṭikā-sthānas (religious centres), the supports of dharmma and mines of enjoyment, moats which were as if the sea being overcome had returned here on account of the collection of gems, groups of the lotus faces of beautiful women fair as the moon—(Grāma-nagara-kheḍa-kharvvaṇa-maḍamba-droṇa-mukha-pura-pattana-rājadhānī)—on whatever side one looked, in these nine forms did the Kuntala-deśa shine.' (It should be noticed, that the passage within brackets is almost identical with the corresponding passage in quotation no. 11 above.)

(*Ep. Carnat.*, Vol. VII, Shikarpur Taluq, no. 197, Transl., p. 124, para. 1, last seven lines; Roman Text, p. 214, line 27 f.)

GRĀMA-GARBHA (*see* under GARBHA-NYĀSA)—The foundation of a village.

GRĀMA-MĀRGA—The village-road (*see* details under GRĀMA).

Viṁśad-dhanur grāma-mārgaḥ simā-mārgo daśaiva tu ।

(*Brahmāṇḍa-Purāṇa*, Part I, 2nd anushaṁga-pāda, Chap. VII, v. 112.)

See further details under GRĀMA and NAGARA.

GRĀMA-LAKSHAṆA—The description of the village.

(*M.*, IX; *see* under GRĀMA.)

GRĀMA-VINYĀSA (*see* GRĀMA)—The arrangement of laying-out of the village.

GRĀHA—A crocodile, a shark, an architectural and sculptural ornament.

A kind of mukha-bhadra or front porch, hall, or tabernacle.

(*M.*, XVIII, 302, etc.)

An ornament of the arch:

Grāha-kinnara-saṁyuktam ।
Grāha-kinnara-bhūshitam ।
Grāha-puchchhādi-sarveshāṁ svarṇa-ratnena bandhayet ।
Grāhāntaṁ sarva-ratnaiś cha puritaṁ śreṇi-saṁyutam ।

(*M.*, XLVI, 53, 56, 57, 60.)

GRĀHA-KUṆḌALA—The crocodile-shaped ear-ring for an image.

Cf. Grāha-kuṇḍala-bhūshaṇam ।—(*M.*, LIV, 8.)
Anyathā sarva-śaktīnāṁ grāha-kuṇḍala-bhūshiṇīm ।—(*M.*, LIV, 168.)

GRĪVA (*see* KAṆṬHA)—The neck, the dado; as a member of the pillar it comprises vedikā (altar), grīva (dado proper), and bhūshaṇa (ornament).—(*M.*, XV, 105-107)

GRĪVA-BHŪSHAṆA—The ornament of the neck, a part of the pillar. It comprises uttara (fillet), vājana (fillet), gala (dado), and vājana (fillet).—(*M.*, XV, 111-113.)

GRAIVEYAKA—A necklace for an image.

Sapta-suvarṇṇa-nishka-kalitaṁ graiveyakaṁ kāntimat—'charming necklace made of seven nishkas of gold.'—(Four Inscrip. at Śrīkurmam, no. D, line 6, *Ep. Ind.*, Vol. V, p. 37.)

GH

GHAṬA—A pot, jar, pitcher, same as kumbha of the column (*see* STAMBHA), the torus (*see* Gwilt, *Encycl.* fig. 870), a type of building, a carving on the door.

Cf. Stambhaṁ vibhajya navadhā vahanaṁ bhāgo ghaṭo'sya bhāgo'nyaḥ ।

(*Bṛihat-Saṁhitā*, LIII, 29.)

Dr. Kern's rendering by 'base' seems rather doubtful.—(*J.R.A.S.*, N.S., Vol. VI, p. 285.)

(1) A type of building which is shaped like a water jar (kalaśa) and is 8 cubits wide.—(*Bṛihat-Saṁhitā*, LVI, 26, *J.R.A.S.*, N.S., Vol. VI, p. 319, *see* under PRĀSĀDA.)

A jar-shaped carving (on the doorframe):

Śeshaṁ maṅgalya-vihagaiḥ śrī-vṛiksha-svastika-ghaṭaiḥ ।
Mithunaiḥ patra-vallibhiḥ pramathaiś chopaśobhayet ॥

(*Ibid.*, LVI, 15.)

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DHĀTU (*cf.* TRIDHĀTUSARANA)—Storey. (*R.-V.*, IV, 200.)

DHĀTU-GARBHA—Buddhist dagoba, same as chaitya and as stūpa, the relic receptacle or inner shrine, and is 'strictly applicable only to the dome of the stūpa, sometimes called the *aṇḍa* or egg.' These monuments were 'not merely relics in the literal sense, but memorials in an extended acceptation, and were classified as corporeal remains; objects belonging to the teacher, as his staff, bowl, robe holy spots, etc., and any memorial, text of a sacred book, cenotaph of a teacher, etc.'

DHĀNYA-STAMBHA—A kind of pillar.

(*M.*, XLVII, 14; *see* under STAMBHA.)

DHĀMAN—A dwelling house.

(*R.-V.*, I, 144, 1; II, 3, 2; III, 55, 10; VIII, 61, 4; X, 13, 1; *A.-V.*, IV, 25, 7; VII, 68, 1; XII, 52; *Vāj. Sam.*, IV, 34; *Taitt. Sam.*, II, 7, 2.)

DHĀRAṆA—A type of building, a pillar, a roof, a tree.

A class of the seven-storeyed buildings.

(*M.*, XXV, 26; *see* under PRĀSĀDA.)

A synonym of pillar (*M.*, XV, 6) and of roof (*M.*, XVI, 52).

A kind of tree of which pillars are constructed (*M.*, XV, 348-350).

DHĀRĀ-KUMBHA—A moulding of the base.

(*M.*, XIV, 46; *see* the lists of mouldings, under ADHISHṬHĀNA.)

DHĀRĀ-NĪLA—A blue stream of water, the line of sacred water descending from the phallus.

In connexion with the phallus:

Garbha-geha-sthale dhārā-nīla-madhye samaṁ bhavet।

(*M.*, LII, 173.)

DHĀRĀ-LIṄGA—A kind of phallus with fluting at the top portion.

(*M.*, LII, 135; LIII, 48; *see* details under LIṄGA.)

DHVAJA-STAMBHA (*see* STAMBHA)—Flagstaffs, free-pillars erected generally by the worshippers of Śiva, a pillar or pilaster decorated with banner or flag (dhvaja) at the top.

N

NAKULA—The cage of the mungoose (*M.*, L, 245; *see* under BHŪSHAṆA).

NAKHA—The nail, its measurement, etc., when belonging to an image.

(*M.*, LIX, LXV. etc., 21.)

NAKSHATRA-MALA—The garland of stars, an ornament.

(*M.*, L, 297; *see* under BHŪSHAṆA.)

NAGARA(-RĪ) (*cf.* GRĀMA)—Probably from Naga, *lit.* immovable or rock, implying permanence and strength with reference to stone-walls, etc. The *purs* were mere fort while *pura* as in Tripura and Mahāpura was something much bigger (*Tait. Sam.*, VI, 2, 3, 4; *Kāth. Sam.*, XXIV, 10; *Sat. Brā.* VI, 3, 3, 35; *Ait. Brā.*, II, 11; *Mait. Sam.*, III, 8, 1). Thus *pur* might have been the prototype of *pura*, the developed city, and nagara the full-fledged capital city.

(1) Definition:

Janaiḥ parivṛitaṁ dravya-kraya-vikrayakādibhiḥ।
Aneka-jāti-saṁyuktaṁ karmakāraiḥ samanvitam॥
Sarva-devatā-saṁyuktaṁ nagaraṁ chābhidhīyate॥

(*Kāmikāgama*, XX, 5-6.)

(2) Dhaṇu-śataṁ parihāro grāmasya syāt samantataḥ।
Samyāpātās trayo vāpi tri-guṇo nagarasya tu॥

(*Manu-Saṁhitā*, VIII, 237.)

(3) Dhaṇuḥ-śataṁ parihāro grāma-kshetrāntaraṁ bhavet।
Dve śate kharvaṭasya syān nagarasya chatuḥ śatam॥

(*Yājñavalka*, II, 167.)

(4) Nagarādi-vāstuṁ cha vakshye rājyādi-vṛiddhaye।
Yojanaṁ yojanārddhaṁ vā tad-arthaṁ sthānam āśrayet॥
Abhyarchya vāstu-nagaraṁ prākārādyaṁ tu kārayet।
Īśādi-triṁśat-padake pūrva-dvāraṁ cha sūryake॥
Gandharvābhyāṁ dakshiṇe syād vāruṇye paśchime tathā।
Saumya-dvāraṁ saumya-pade kārya haṭyās tu vistarāḥ॥

(*Agni-Purāṇa*, Chap. CVI, v. 1-3.)

Then follows the location of the people of different castes and professions in various quarters (*ibid.*, v. 6-17).

(5) Chhinna-karṇa-vikarṇaṁ cha vyajanākṛiti-saṁsthitam॥
Vṛittaṁ vajraṁ cha dīrghaṁ cha nagaraṁ na praśasyate॥

(*Brahmāṇḍa-Purāṇa*, Part I 2nd Anushṅaga-pāda, Chap. VII, vv. 107, 108; *see also* vv. 94, 110, 111.)

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(6) *Kauṭilīya-Artha-śastra* (Chap. XXII, p. 46, footnote) :
Nagaraṁ rāja-dhānī ।

(*Rāyapasenī-sūtra-vyākhyāne*, p. 206.)

Nagrāṇi kara-varjitāni nigama-vaṇijāṁ sthānāni ।

(*Praśna-vyākaraṇa-sūtra-vyākhyāne*, p. 306.)

(7) *Mānasara* (Chap. x, named Nagara) :

The dimension of the smallest town unit is 100×200×4 cubits ; the largest town-unit is 7200×14400×4 cubits (lines 3–33). A town may be laid out from east to west or north to south according to the position it occupies (line 102). There should be one to twelve large streets in a town (lines 110-111). It should be built near a sea, river or mountain (lines 73, 51), and should have facilities for trade and commerce (lines 48, 74) with the foreigners (line 63). It should have defensive walls, ditches and forts (line 47) like a village. There should be gate-houses (gopura, line 46), gates, drains, parks, commons, shops, exchanges, temples, guest houses, colleges (line 48 f.) etc., on a bigger scale than in a village.

Towns are divided into eight classess, namely, Rāja-dhānī, Nagara, Pura, Nagarī, Kheṭa, Kharvaṭa, Kubjaka, and Pattana (lines 36–38).

The general description of towns given above is applicable more or less to all of these classes.

For purposes of defence, the capital towns commanding strategic points are well fortified and divided into the following classes : Śibira, Vāhini-mukha, Sthānīya, Droṇaka, Saṁvidda, Kolaka, Nigama, and Skandhāvāra (lines 38–41, 85–86). The forts for purely military purposes are called giri-durga, vana-durga, salila-durga, paṇka-durga, ratha-durga, deva-durga and miśra-durga (lines 86–87, lines 88–90 90–107 ; *see* under DURGA).

(8) 'On the banks of the Sarayū is a large country called Kośala gay and happy and abounding with cattle, corn and wealth. In that country was a famous city called Ayodhyā, built formerly by Manu, the lord of men. A great city twelve yojanas (108 miles) in length and nine yojanas (81 miles) in breadth, the houses of which stood in triple and long extended rows. It was rich and perpetually adorned with new improvements, the streets and lanes were admirably disposed, and the principal streets well watered. It was filled with merchants of various descriptions, and adorned with abundance of jewels ; difficult of access, filled with spacious houses, beautified with gardens,

and groves of mango trees, surrounded by a deep and impassable moat, and completely furnished with arms; was ornamented with stately gates and porticoes and constantly guarded by archers. As Maghavan protects Amarāvatī, so did the magnanimous Daśaratha, the enlarger of his dominions, protects Ayodhyā, fortified by gates, firmly barred, adorned with areas disposed in regular order, and abounding with a variety of musical instruments and war-like weapons ; and with artifices of every kind. Prosperous, of unequalled splendour it was constantly crowded with charioteers and messengers, furnished with śataghnis (*lit.* an instrument capable of destroying a hundred at once, that is, a cannon) and parighas (a kind of club), adorned with banners and high-arched porticoes, constantly filled with dancing girls and musicians, crowded with elephants, horses and chariots, with merchants and ambassadors from various countries, frequented by the chariots of the gods, and adorned with the greatest magnificence. It was decorated with various kinds of jewels, filled with wealth, and amply supplied with provisions, beautified with temples and sacred chariots (large cars), adorned with gardens and bathing tanks and spacious buildings and full of inhabitants. It abounded with learned sages, in honour equal to the immortals ; it was embellished with magnificent palaces, the domes of which resemble the tops of mountains, and surrounded with the chariots of the gods like the Amarāvatī of Indra, it resembled a mine of jewels or the residence of Lakshmī (the goddess of prosperity) ; the walls were variegated with divers sorts of gems like the division of a chess-board, and it was filled with healthful and happy inhabitants ; the houses formed one continued row, of equal height, resounding with the delightful music of the tabor, the flute and the harp.'

'The city, echoing with the twang of the bow, and sacred sound of the Veda was constantly filled with convivial assemblies and societies of happy men. It abounded with food of the most excellent kinds ; the inhabitants were constantly fed with the śālī rice ; it was perfumed with incense, chaplets of flowers, and articles for sacrifice, by their odour cheering the heart.'

'It was guarded by heroes in strength equal to the quarter-masters and versed in all śāstras ; by warriors, who protect it, as the nāgas guard Bhogavatī. As the Great Indra protects his capital, so was this city, resembling that of the gods, protected by King Daśaratha, the chief of the Ikshvākus. This city was inhabited by the twiceborn who maintained the constant sacrificial fire, (men) deeply read in the *Veda* and its six *Aṅgas*, endowed with excellent qualities, profusely generous,

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full of truth, zeal, and compassion, equal to the great sages, and having their minds and appetites in complete subjection.'—(*Rāmāyaṇa*, I, 5, 5–17.)

'Lankā, filled with mad elephants, ever rejoiceth. She is great, thronging with cars and inhabited by Rākshasas. Her doors are firmly established and furnished with massy bolts. And she hath four wide and giant gates. (At those gates) are powerful and large arms, stones and engines, whereby a hostile host approaching is opposed. At the entrance are arrayed and set in order by bands of heroic Rākshasas, hundreds of sharp iron śatagnis (firearms, guns). She hath a mighty impassable golden wall, having its side emblazoned in the centre with costly stones, coral, lapises and pearls. Round about is a moat, exceedingly dreadful, with cool water, eminently grand, fathomless, containing ferocious aquatic animals, and inhabited by fishes. At the gates are four broad bridges, furnished with machines and many rows of grand structures. On the approach of the hostile forces, their attack is repulsed by these machines, and they are thrown into the ditch. One amongst these bridges is immovable, strong and fast established; adorned with golden pillars and daises . . . And dreadful and resembling a celestial citadel, Lankā cannot be ascended by means of any support. She hath fortresses composed of streams (*cf.* JALA-DURGA), those of hills, and artificial ones of four kinds. And way there is none even for barks, and all sides destitude of division. And that citadel is built on the mountain's brow; and resembling the metropolis of the immortals, the exceedingly invincible Lankā is filled with horses and elephants. And a moat and śataghnis and various engines adorn the city of Lankā, belonging to the wicked Rāvaṇa . . . his abode consists of woods, hills, moat, gateways, walls, and dwellings.'—(*Ibid.*, VI, Laṅkākāṇḍa, 3rd Sarga.)

(9) The *Mahābhārata* has 'short but comprehensive account of the city of Dvārakā (I, 111, 15), Indra-prastha (I, 207, 30 f.), the floating city (III, 173, 3), Mithilā (III, 207, 7), Rāvaṇa's Lankā (III, 283, 3 and 284, 4, 30), the sky-town (VIII, 33, 19), and the ideal town (XV, 5, 16). In the *Rāmāyaṇa* we find nearly the same descriptions as those in this later part of the Epic (*Mbh.*).'

(10) 'We may examine the general plan of a Hindu city . . . it had high, perhaps concentric, walls about it, in which were watch-towers. Massive gates, strong doors[1] protected chiefly by a wide bridge moat, the latter filled with crocodiles and armed with palings, guarded

[1] XV, 16, 3: the king left Hastināpur by a high gate.

the walls. The store-house was built near the rampart. The city was laid out in several squares.[1] The streets were lighted with torches.[2] The traders and the king's court made this town their residence. The farmers lived in the country, each district guarded if not by a tower modelled on the great city, at least by a fort of some kind. Out of such fort grew the town. Round the town as round the village, was the 'common land to some distance' (later converted into public gardens, as we see in the *Mudrārākshasa*).

'In the city 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, dancing-halls, liquor-saloons, gambling halls, courts of justice, and the booths of small traders with goldsmiths, shops, and the work-places of other artisans. The arsenal appears to have been not far from the king's apartments. Pleasure parks abounded. The royal palace appears always to have had its dancing-hall attached. The city-gates ranged in number from four to eleven, and were guarded by squads of men and single wardens.[3] Door-keepers guarded the courts of the palace as well as the city gates.'[4]—(Hopkins, *J.A.O.S.*, 13, pp. 175, 176.)

(11) 'It will probably be a revelation to modern architects to know how scientifically the problems of town-planning are treated in these ancient India's architectural treatises. Beneath a geat deal of mysticism which may be scoffed at as pure superstition, there is a foundation of sound common sense and scientific knowledge which should appeal to the mind of the European expert.'

'The most advanced science of Europe has not yet improved upon the principles of the planning of the garden cities of India based upon the Indian village-plan as a unit.'

[1] The *Mbh.* recommends six squares, but I find only four mentioned in the *Rāmāyaṇa*, II, 48, 19.

Mbh., XV, 5, 16: Puraṁ Sapta-padaṁ sarvato-diśam (town of seven walls, but Hopkins does not think that there were walls)

[2] *Rāmāyaṇa*, VI, 112, 42: Sikta-rathyāntarāpaṇa.

Mbh., I, 221, 36: Indraprastha is described as sammrishṭāsikta-panthā.

[3] *Kāṭhaka-Upanishad*, V, 1, speaks of a town with eleven gates as a possibility (the body is like a town with eleven gates.) Nine gates are given to a town by Varāha, p. 52, 5: Nava dvāraṁ . . . ekastambhaṁ chatushpatham. Laṅkā has four bridged gates (eight in all and eight walls) (*R.*, VI, 93, 7). Four gates are implied in the 6th act of Mṛichchhakaṭika where the men are told to go to the four quarters to the gates.

[4] These courts have mosaic pavements of gold. (*R.*, VI, 37, 27, 58, *Mbh.*, I, 185, 20; II, 33 and 34.)

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'The Indo-Aryan villages took the layout of the garden-plot as the basis of its organization. But more probably the village scheme was originally the plan of the military camp of the Aryan tribes when they first established themselves in the valley of the Indus.'—(Havel *A Study of Indian Civilization*, pp. 7–8, 18.)

(12) The principles of Indian town-planning have some striking similarity to those of early European cities. It would be interesting to compare the *Mānasāra* with *Vitruvius*:

'In setting out the walls of a city the choices of a healthy situation is of the first importance. It should be on high ground neither subject to fogs nor rains; its aspects should be neither violently hot nor intensely cold, but temperate in both respects . . .

'A city on the sea-side, exposed to the south or west, will be insalubrious.'—(*Vitruvius*, Book I, Chap. IV.)

'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 towers of the city. These foundations should be carried down to a solid bottom (*cf. Mānasāra* under GARBHA-NYĀSA) 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. From the exterior face of the wall, towers must be projected, from which an approaching enemy may be annoyed by weapons, from the ambrasures of those towers, right and left. An easy approach to the walls must be provided against; indeed they should be surrounded by uneven ground, and the roads leading to the gates be winding and turn to the left from the gates. By this arrangement the right side of the attacking troops, which are not covered by their shields, will be open to the weapons of the besieged.'

'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. . . .'

'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 not 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, they 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 in the spot: such as square stones, flint, rubble stones, burnt or unburnt bricks.'—(*Vitruvius*, Book I, Chap. V.)

'The lanes and streets (of which no details are given) of the city being 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 Hetrurian 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 the Vulcan be away from the city, which would consequently freed from the danger of fire; the divinity presiding over that element bring drawn away by the rites and sacrifices performing in his temple.

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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 should 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. Appropriate situations must also be chosen for the temple and places of sacrifice to the other divinities.'—(*Vitruvius*, Book I, Chap. VII.)

(13) Vijitya viśvaṁ vijayābhidhanāṁ viśvottarāṁ yo nagariṁ vyadhatta ।
Yā hema-kuṭaṁ nija-sāla-bāhu-latā-chhaleneva parishvajantī ॥
Yat-prākāra-śikhāvali-parilasat-kiñjalka-puñjāchitaṁ yach chhākā-pura-jāla-nachitaṁ sad-danti-bhṛiṅgānvitam ।
Sphāyad yat-parikhā-jala-prati-phalad yat-prānta-pṛithvī-dhara-chchhāyā-nālam idaṁ purābjam naiśaṁ lakshmyā sahālambate ॥

'Having conquered all the world, he (Bukka-Rāja) built a splendid city called the City of Victory (Vijayanagarī). Its four walls were like arms stretching out to embrace Hema-kuṭa. The points of the battlements like its filaments, the suburbs like its blossom, the elephants like bees, the hills reflected in the water of the moat like stems,—the whole city resembled the lotus on which Lakshmī is ever seated.'—(*Ep. Carnat.*, Vol., v, Part 1, Channarayapatna Taluq, no. 256; Roman Text, p. 521, lines 1–6; Transl., p. 732, para. 2, line 4.)

(14) Grāma-nagara-kheda-karvvada-madaṁba-droṇa-mukha-pattanaṁ galiṁdam aneka-māṭa-kuṭa-prāsāda-devāyatanaṁgalidam oppuva-agrahāra-paṭṭa-naṁgaliṁdam atiśayav-apya.

[At Tridāla, a merchant-town situated in the centre and the first in importance among the twelve (towns) in the glorious Kundi Three-Thousand, adorned with] 'villages, towns, hamlets, villages surrounded by hills, groups of villages, sea-girt towns, and chief cities, with elegant mansions, palaces and temples, and with shining agrahāra towns in the country of Kuntala.'—(Old Kanarese Inscrip. at Terdal, line 58, *Ind. Ant.*, Vol. XIV, pp 19, 25.)

(15) 'With myriads of people, practices of virtue, agreeable occupations, streams of the (nine) sentiments, pleasure gardens, separated lovers, splendid tanks, full lotus beds, gilded boats for spring festivals,

ghaṭikā-sthānas (religious centres), the supports of dharmma and mines of enjoyment, moats which were as if the sea being overcome had returned here on account of the collection of gems, groups of the lotus faces of beautiful women fair as the moon (grāma-nagara-kheda kharvvaṇa-madamba-droṇa-mukha-pura-pattana-rāja-dhānī) on whatever side one looked, in these nine forms did the Kuṇṭala-deśa shine.'

(It should be noticed that the passages within brackets is almost indentical with the corresponding passage in quotation no. 14 above.—*Ep. Carnat.*, Vol. VII, Shikārpur Taluq, no. 197; Transl., p. 124, para. 1, last seven lines; Roman Text, p. 214, line 27 f.)

(16) 'Visiting' the grāmas, nagaras, khedas, kharvvaḍas, maḍambas, paṭṭanas, droṇa-mukhas and saṁvāhanas,—the cities of the elephants at the cardinal points.'—(*Ep. Carnat.*, Vol. VII, Shikārpur Taluq, no. 118; Transl., p. 86, last para., line 14.)

(17) 'Thus entitled in many ways to honour, residents of Ayyavole Challunki and many other chief grāmas, nagaras, khedas, kharvvaḍas maḍambas, droṇa-mukhas, puras, and pattanas, of Lāla Gauḷa, Bangāla Kāśmira, and other countries at the points of the compass.'—(*Ibid*, no. 119, Transl., p. 90, para. 6.)

NANDANA (*cf.* NANDA-VṚITTA)—A storeyed building, a pavilion.

A type of building which has six storeys and sixteen cupolas (aṇḍa), and is 32 cubits wide:

(1) *Bṛihat-Saṁhitā* (LVI, 22, *J.R.A.S.*, N. S., Vol. VI, p. 319; *see* under PRĀSĀDA).

(2) *Matsya-Purāṇa* (Chap. CCLXIX, v. 29, 33, 48, 53; *see* under PRĀSĀDA).

(3) *Bhavishya-Purāṇa* (Chap. CXXX, v. 29; *see* under PRĀSĀDA).

A type of quadrangular building:

(4) *Garuḍa-Purāṇa* (Chap. XLVII, v. 242–5; *see* under PRĀSĀDA).

(5) A pavilion with thirty pillars (*Matsya-Purana*, Chap. CCLXXIII, v. 12; *see* under MAṆḌAPA, and compare *Suprabhedāgama*, under NANDA-VṚITTA).

NANDA-VṚITTA—An open pavilion, gracefully built with sixteen columns.

(*Suprabhedāgama*, XXXI, 101; *see* under MAṆḌAPA.)

NANDI-MAṆḌAPA (*see* under MAṆḌAPA)—A pavilion.

See Pallava Architecture.

(*Arch. Surv.*, New Imp. Serirs, Vol. XXXIV, plate LXIX, fig. 4.)

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APPENDIX II

A LIST OF HISTORICAL ARCHITECTS WITH SHORT NOTES ON THEIR WORKS [1]

A

ACHYUTA—An architect of A.D. 882–917.

'A man of Kāmboja descent, the son of Rāma, whose famous name is Achyuta, was here the overseer, he who is an image of Dhanvatri, an incarnation of the quintessence of learning, a friend of the virtuous, and a bee on the lotus of the heart of his master.'

'As Dhanvatari,' adds Dr. Bühler, 'is the Indian Asklepios, the statement that Achyuta was his image, may mean that he was a Vaidya by caste, or that he was a doctor as well as architect.'

(Pehoa Praśasti of the reign of Mahendrapala, v. 23, *Ep., Ind.*, Vol. I, p. 250, footnote 40.)

According to *Vitruvius* (Book I, chap. I, Transl., by Gwilt, pp. 3, 4) the architect 'should be a good writer, a skilful draughtsman, 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 of each other of heavenly bodies.' But these do not include medicine.

ANAKOJA—Son of the brazier Mārāla, of A.D. 1395.

Mindoja of Patana made, together with his brother Kaloja, a pillar, (kambha) of bell-metal (weight specified) for a lamp.

(*Ep. Carnat.*, Vol. V, part I, Belur Taluq, no. 61, Transl., p. 61, Roman text, p.135.)

Ā

ĀSALA—An architect (A.D. 1215, V. S. 1272) who constructed the step-well.

(Manglana Stone Inscrip., line 13, *Ind. Ant.*, Vol. XLI, pp. 11; 86, line 9.)

[1] This list does not include the mere Stone Masons or Engravers of Inscriptions, nor those architects who are mentioned in treatises like the Purāṇas, Epics, Kāvyas, etc., which are less historical than the Epigraphical records.

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ĀHUKA—An architect who built the Śiva temple (A. D. 804).

(The first Praśasti of Baijnath, v. 35, *Ep. Ind.*, Vol. I, p. 107.)

I

IDAMORAKA (INDRAMAYŪRA)-ĀCHĀRYA—Sthapati or architect, the guru of the sculptor Ṇaṭaka (Nartaka) who made the image of the cobra on the slab on which the inscription is incised.

(Banawasi Prakrit Inscrip., line 2 f., *Ind. Ant.*, Vol. XIV, p. 334, notes 20, 23.)

IMDARĀKA—Sūtradhāra or the carpenter who assisted the chief architect Pāhiṇi, the builder of the Maṇḍapa, Akshasama, and Damā of the temple of Bhīmeśvara built with stones and bricks.

(The Chahamanas of Marwar, no. XIII, Sāṇḍerāv Stone Inscrip. of Kelhanadeva, line 2 f., *Ep. Ind.*, Vol. XI, p. 48.)

O

OḌEYAPPA—An architect (A.D. 1386).

'This pillar (dīpamāle kambha) was made by Āchāri Ponna-pille's son Oḍeyappa.'

(*Ep. Carnat.*, Vol. IX, Devanhalli Taluq, no. 40, Transl., p. 78.)

K

KALLAYYA—An architect, son of Kalloja of Bānūr, by whom 'the work of the (bhoga-)maṇṭapa and the writing of this Śāsana were done.' (A.D. 1521.)

(*Ep. Carnat.*, Vol. VI, Kadur Taluq, no. 91, Transl., p. 16.)

KAMAU—The architect (śilpī), son of Visadru, who built 'the fifth octagonal pillar' on the face of which the inscription is recorded.

(*Sharqi Arch. of Jaunpur*, Inscrip., no. XXVII *Arch. Surv.*, New Imp. Series, Vol. I, p. 51.)

KĀMA-DEVA—Of Śilāpaṭṭa-vaṁśa (Śilāwaṭ caste, masons), an architect, appointed by a Muhammadan ruler Jallāla as one of the three architects to build a gomaṭha, a garden, and a step-well in the town of Baṭihaḍim.

(Batihagarh Stone Inscrip., v. 12, *Ep. Ind.*, Vol. XII, p. 46.)

KĀLI-DĀSI—A sculptor (A.D. 1140).

'For Pratāpa-Hosaḷa-Narasiṁha-Deva's sculptor Kedāroja, the sculptor Kālidāsi, champion over the proud, a thunderbolt to the rock (giri), titled (i.e., very eminent) sculptor, made the makaratoraṇa (or carved head-piece for the lintel).'

(*Ep. Carnat.*, Vol. V, part I, Supplement, Belur Taluq, no. 239, Transl., p.275.)

See also reference under BALLAṆṆA.

KĀLAKOJA—Son of the brazier Mārāla-Mindoja of Pataṇa, made together with his brother Anakoja a pillar (kambha) of bell-metal (weight specified) for a lamp (A.D. 1395).

(*Ibid.*, Belur Taluq, no. 61, Transl., p. 59, Roman text, p. 135.)

KEÑCHA-MALLIVAṆṆA—The sculptor of the image no. 32, Belur temple (A.D. 1120).

(*Ibid.*, Belur Taluq, no. 47, Roman text, p. 125, Transl., p.55.)

KETĀNA—A sculptor (*see* under BALLAṆṆA.)

KEDAROJA—A sculptor (*see* under BALLAṆṆA).

KEDĀROJA—A sculptor of Hoysala Narasimha Deva (A.D. 1140).

(*Ibid.*, Supplement, Belur Taluq, no. 239, Transl., p. 275.)

KUMĀRAM-ĀCHĀRI—The sculptor of the image no. 12, Belur temple (A.D. 1120).

(*Ibid.*, Belur Taluq, no. 40, Roman text, p. 124, Transl., p. 55.)

G

GAṄGĀCHĀRI—An architect (A.D. 966).

'The work of this temple was done by Gaṅgāchāri.'

(*Ibid.*, Vol. IX, Magadi Taluq, no. 75, Roman text, p. 74, Transl., p. 60.)

GAṆṬEMADANA-BASAVANA—An architect (A.D. 1539).

'Those who did the work (Devāmbudhi tank): Gaṇṭemadana-Basavana made the pillars, Komāraiya the ornamental work, the stone-Veḍḍa Chenne-Royi built the stones of the embankment.'

(*Ibid.*, Vol. XII, Tumkur Taluq, no. 24, Transl., p. 8, para. 2.)

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(ŚRĪ)GUNDAN—An architect, who built the temple of the (present) god Virūpāksha, originally of Lokeśvara, as mentioned in the inscription for Loka-mahādevī, the Queen-consort of the Western Chalukya king Vikramāditya, the second.

He is called 'Sūtradhārī' (one who supports the cause is the sūtradhāra or carpenter, and the sūtradhārī is the guru or priest of the carpenter). He is again called the Tribhuvanāchārya and also the Sarva-siddhi-Āchārya. He is stated to be the 'creator of many cities and houses; perfect and refined in conversation; houses, palaces, vehicles, seats, couches, his jewelled crown and crest-jewel.'

(Sanskrit and Old Canarese Inscrip., no. 99, also nos. 100, 101, and 115, *Ind. Ant.*, Vol. x, pp. 164, 163, 165, 166, 170–171.)

CH

CHAṆḌI-ŚIVA—The architect of the Harsha temple, 'the famed son of Vīrabhadra, omniscient, like Viśvakarman, in the art (or science) of building houses (Vāstuvidyā) . . . He built this delightful house of Śaṁkara with its chapels (maṇḍapa), the beautiful porch (toraṇa) which contains all the gods, like a portion of heaven made by the Creator himself.'

'In his account of the ruins of this temple, Mr. Dean speaks of a doorway relieved by an architrave of the most elaborate sculpture, divided into twelve compartments, in each of which a group from the Hindu Pantheon occupies a place.'

(Harsha Stone Inscrip., vv. 43, 44. *Ep. Ind.*, Vol. II, pp. 123, 124, 128, note 72.)

Chahadadevapala's son's grandson—Architect of the Qutb Minar.

(An historical memoir on Qutb, by J. A. Page, p. 43, Inscription no. 28.)

CHĀVANA—A son of Dāsoja, sculptor of the images, nos. 6, 11, 27, Belur temple (A.D. 1120).

(*Ep. Carnat.*, Vol. v, part 1, Belur Taluq, nos. 35, 39, 45, Roman text, pp. 124, 125, Transl., p. 55.)

CHIKA-HAMPA—The sculptor of the image no. 3, Belur temple (A.D. 1120).

(*Ibid.*, no. 33, Roman text, p. 123, Transl., p. 55.)

(ŚRĪ)-CHEṄGAMMA—A sculptor who 'made this image' (pratimā).

(Sanskrit and Old Canarese Inscrip., no. CIX, *Ind. Ant.*, Vol. x, p. 168, c. 1.)

CHOLAJANA—The sculptor of the image no. 17, Belur temple (A.D. 1120).

(*Ep. Carnat.*, Vol. v, part 1, Belur Taluq, no. 42, Roman text, p. 124, Transl., p. 55.)

CHOUGA—A sculptor (*see* under BALLAṆṆA).

CHAUDEVA—A sculptor (*see* under MALLITAMMA).

CHH

CHHICHCHHA—An architect who built the temple of Pramathanātha, is called the Vijñāna-viśva-karttṛi-dharmadhāra-Sutradhāra (A.D. 1116).

(Khajuraho Inscrip., no. IV, v. 60, *Ep. Ind.*, Vol. I, p. 146.)

J

JAKANĀCHĀRYA—The architect of the temple at Halibid and Somanathpura.

Cf. 'Jakanāchārya is the reputed architect of this magnificent building (Kait Iśvara temple), but he is also credited with having built all the temples, similar in style, throughout the district . . . A man of the same name is said to have built the temples at Madurā. Jakanāchārya was a prince who, having accidentally killed a Brāhmaṇ, employed twenty years of life, with the hope of washing away this great sin, in rebuilding temples between Kāśi and Rāmeśvara (Cape Comorin)—so says tradition.'

(*Ind. Ant.*, Vol. I, p. 44, c. 2, para. 2.)

JAṄGAMAYA—An architect (A.D. 1538).

'Chennema-Nāyaka-aya had the Yelayūr gate built with proper pillars by the hand of Muta-Nāyaka's disciple Jaṅgamaya.'

(*Ep. Carnat.*, Vol. XII, Kumgal Taluq, no. 20, Transl., p. 35.)

JĀHAḌA—The mason (Śilāvaṭa) who worked and shaped the stones for the step-well built by the architect Āsala (A.D. 1215).

(Manglana Stone Inscrip., lines 13–14, *Ind. Ant.*, Vol. XLI, pp. 88, 86, lines 9–10.)

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ṬH

ṬHOḌHUKA—The son of Sammana, was one of the architects who fashioned the very lofty temple of Śiva with the chisel, as well as the Maṇḍapa (A.D. 804).

(The first Praśasti of Baijnath, vv. 36, 37, *Ep. Ind.*, Vol. I, pp. 107, 111.)

Ṇ

ṆAṬAKA (NARTAKA)—An architect and sculptor, who made the cobra (nāga) on the slab on which the inscription is incised, a pupil of Āchārya (Sthapati) Idamoraka (Indramayūra).

(Banawasi Prakrit Inscrip., line 2 f., *Ind. Ant.*, Vol. XIV, p. 334, notes 20, 23.)

ṆAṆṆAKA—A son of Krishṇa, most qualified architect of the temple of Śiva (Malava era 795, A.D. 738).

(Inscription from the Mahadeva temple, vv. 29, 30, 16[illegible], *Ind. Ant.*, Vol. XIII, pp. 165, 163.)

T

TUṚAVĀŚĀRI-KALIYUGA-MEYYAN—An architect (A.D. 1331).

'Another grant, by the same man, of lands (specified) to Tuṛavāśāri-Kaliyuga-meyyan, who built the temple.'

(*Ep. Carnat.*, Vol. [illegible], Hoskote Taluq, no. 96, Transl., p. 99.)

TH

THĀLŪ—An architect of the temple, an account of which is given in the Behal inscription of Singhana (A.D. 1222–23).

(*Ep. Ind.*, Vol. III, pp. 111, 113.)

D

DĀSOJA—Of Balligrāma, sculptor of the images nos. 5, 7, 9 of the Belur temple (A.D. 1120).

(*Ep. Carnat.*, Vol. V, part I, Belur Taluq, nos. 24, 36, 37, Roman text, p. 124, Transl., p. 55.)

DIVĀKARA—The master architect of the famous Vishṇu temple, *Angar Vat*, constructed by King Parama Vishṇuloka of Camboj.

DEMOJA—An architect who 'made the frame of the eastern door' of the structure referred to in the inscription (A.D. 1240).

(*Ibid.*, Supplement, Belur Taluq, no. 241, Transl., p. 275.)

DEVANĀGA—'Crest-jewel of sculptors, built the temple of Śiva.'

(Ratnapura Inscrip. of Prithvīdeva, v. 29, *Ep. Ind.*, Vol. [illegible], pp. 49, 5[illegible])

DEVĀDITYA—'The son of Āhlādana (who became) the firm (? professional, permanent, *sthira*) architect of the Vaidyeśa, is famous among the first rank of masons.'

(Inscrip. from Dabhoi, vv. 111, 112, *Ep. Ind.*, Vol. I, pp. 31, 24.)

DEVOJA—A sculptor (*see* under BALLAṆṆA).

DHARMA-VANANA—Architect of the Qutb Minar.

(An historical memoir on Qutb, by J. A. Page, p. 43, Inscription no. 29.)

N

NAÑJAYA—A sculptor (*see* under MALLITAMMA).

NANA-SALHA—Architect of the Qutb Minar.

(An historical memoir on Qutb, by J. A. Page, p. 43, Inscription no. 28.)

NARA-ŚOBHA—An architect (of A.D. seventh or eighth century).

Jambu-dvīpāntare kaśchit vāstu-prāsāda-tadgataḥ ।
Nara-śobha-samo vidvān na bhūto na bhavishyati ॥

'There has not been, and there shall not be, in Jambu-dvīpa (India) any wise man, proficient in (the art of) building houses and temples, equal to Nara-śobha.'

(Sanskrit and Old Canarese Inscrip., no. LXI, *Ind. Ant.*, Vol. IX, p. 74.)

NAṀDIKA—An architect.

Cf. 'Veyikā (Naṁ)dikena kataṁ—the rail (the gift of . . . Koṭi) was made by Naṁdika.

(Karle Cave Inscrip., no. 18, *Ep. Ind.*, Vol. VII, p. 64.)

NĀGĪ-DEVA—A sculptor.

Cf. 'This Śāsana of King Harihar was engraved by his orders by the carpenter Śāsanāchārya Nāgīdeva, the sculptor.'

(*Ep. Carnat.*, Vol. VIII, part I, Tīrthahalli Taluq, no. 201, Transl., p. 208, last para.)

NĀGOJA—of Gadugu, the sculptor of the image no. 37 of the Belur temple (A.D. 1120).

(*Ibid.*, Vol. V, part I, Belur Taluq, no. 51, Roman text, p. 125, Transl., p. 55.)

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NĀYAKA—The high-minded son of Āsika, who is at the head of the masons, came from Suśarman's town, was one of the architects who 'fashioned the very lofty temple of Śiva, with the chisel, as well as the Maṇḍapa' (A.D. 804).

(The first Praśasti of Baijnath, vv. 36, 37 *Ep. Ind.*, Vol. I, pp. 107, 111.)

P

PAṬUMAN—Carpenter (Sūtradhāra), son of Vīsaihva, probably the builder of the gate where 'on a stone near the first niche on the south side' the inscription is found.

(*Sharqi Arch. of Jaunpur*, Inscrip. no. XIII, *Arch. Surv.*, New Imp. Series, Vol. I, p. 39.)

PADARI-MALLOJA—The sculptor of the image no. 21 of the Belur temple (A.D. 1120)..

(*Ep. Carnat.*, Vol. V, part I, Belur Taluq, no. 43, Roman text, p. 125, Transl., p. 55.)

PADU-MAṆṆA—A sculptor (*see* under MALLITAMMA).

PADUMAYA—A sculptor (*see* under MALLITAMMA).

PADUMAVI—An architect (Sūtradhāra), son of Sai-Sutradhāra, who constructed the door, 'of the right jamb' on which the inscription is written (A.D. 1407).

(*Sharqi Arch. of Jaunpur*, Inscrip., no. XV, *Arch. Surv.*, New Imp. Series, Vol. I, p. 40.)

PĀKA—An architect.

'Hail! The house of the temple of (the god) Śrī-Vijayeśvara. Pāka (was) the fashioner of the ornamentation (alaṁkāra-nirmmāṇa-kāra) of these two pillars of Mātibhedamma.'

(Sanskrit and Old Canarese Inscrip., no. CXII, *Ind. Ant.*, Vol. X, p. 170, c. 1.)

PĀHIṆI—Son of the Sūtradhāra Mahaḍūa and his wife Jasadevī, the architect who constructed the Maṇḍapa, Akshāsāma, and Ḍamā of the temple of Bhīmeśvara with stones and bricks.

He was assisted by the Sūtradhāra Mahidarā and Iṁdarāka.

(The Chahamanas of Marwar, no. XIII, Sāṇḍerav Stone Inscrip. of Kelhanadeva, line 2, *Ep. Ind.*, Vol. XI, p. 48.)

PĪTHE—'The architect who knows the rules of Viśvakarman (the architect of the gods, also means one who knows how to execute every kind of work), planned, designed and executed all the buildings, the temple of Śiva together with that cloister (maṭha) with wonderful floors (bhūmika), the hall of study (vyākhyāna-śālā), and laid out that long line of gardens in two rows (adjoining) Śambhu's temple' (A.D. 1155–56).

(Bheraghat Inscrip. of Alhanadevi, vv. 36, 27, 18, *Ep. Ind.*, Vol. II, pp. 13, 17, 9.)

PAISSAṆANARA-BĪRA—The sculptor of the image no. 16, of the Belur temple (A.D. 1120).

(*Ep. Carnat.*, Vol. V, part I, Belur Taluq, no. 41, Roman text, p. 124, Transl., p. 35.)

B

BAMAYA—A sculptor (*see* under MALLITAMMA).

BALUGA—A sculptor (*see* under MALLITAMMA).

BALEYA—A sculptor (*see* under MALLITAMMA).

BALLAṆṆA—The inscription (Belur Taluq, no. 98, Roman text, p. 165, Transl., p. 71) informs us that a shrine of the goddess Nimbajā was set up in the temple in 1261. The sculptors who executed the marvellous statues and figures on the outer walls of this temple especially on the western side, have not given their names, except here and there, the following are the only ones :—Ballaṇṇa, Bochana, Chauga, Devoja, Harisha of Oḍeyagiri, Harisha of Tanagundur, Kālidāsi, Kedāroja, Ketāna, Mābalaki, Māchaṇṇa, Maṇibālaki, Masa, son of Kanimoja, and Revoja.

(*Ep. Carnat.*, Vol. V, part I, Introduction, p. XXXVIII.)

BIKKAHAPPĀ—The sculptor of the image no. 36, of the Belur temple (A.D. 1120).

(*Ibid.*, Belur Taluq, no. 50, Roman text, p. 125, Transl., p. 55.)

BĪRANAVA—The sculptor of the image no. 22, of the Belur temple (A.D. 1120).

(*Ibid.*, no. 44, Roman text, p. 125, Transl., p. 55.)

BOCHANA—A sculptor (*see* under BALLAṆṆA).

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BH

BHŪTA-PĀLA—An architect.

Cf. This 'rock-mansion (śelagṛhara), the most excellent one in Jambudvīpa, has been completed by the seṭṭhi Bhūtapāla from Vaijayanti.'

(Karle Cave Inscrip., no. 1, *Ep. Ind.*, Vol. VII, pp. 48, 49.)

BHOJŪKA—Of Śilāpaṭṭa-vaṁśa (Śilawaṭ caste, who are masons and found in the neighbourhood of Damoh), a Sutradhāra (carpenter) appointed by a Muhammadan ruler Jallāla as one of the three architects to build a Gomaṭha, a garden, and a step-well in the town of Haṭihaḍim.

(Batihagarh Stone Inscrip., v. 12, *Ep. Ind.*, Vol. XII, p. 46.)

M

MAṆI-BALAKI—A sculptor (*see* under BALLAṆṆA).

MADANA—'A scion of (the race of) Viśvakarman (? of the Brāhmaṇa caste, *vipra*), the builder of the wall of (glorious) Vaidyeśa, of the extensive temple, of the gates, of the wings, of the foundations.'

(Inscrip. from Dabhoi, vv. 111, 112, *Ep. Ind.*, Vol. I, pp. 31, 24.)

MANA—An architect, son of Vijala and grandson of Viśāla; he is stated to have built, being assisted by his followers, the famous temple of Śiva together with many palatial buildings having prominent towers (A.D. 1428–29).

Aneka-prāsādaiḥ parivṛitamati prāṁśu-kalaśaṁ giriśa-prāsādaṁ vyarachayad anūnair anucharaiḥ ।

Mānākhyo vikhyātaḥ sakala-guṇavān Vijala-sutaḥ sutaḥ śilpī jāto guṇa-gaṇa-yuto Viśala iti ॥

Vijalasya sutaḥ śilpī Maṇākhyaḥ sūtra-dhārakaḥ ।

(Chitragadh Inscrip. of Mokala of Mewad, second part, vv. 2, 3, *Ep. Ind.*, Vol. II, p. 421.)

MANYUKA—An architect who built the Śiva temple (A.D. 804).

(The first Praśasti of Baijnath, v. 35, *Ep. Ind.*, Vol. I, p. 107.)

MAYINA—The sculptor of the image no. 31, of the Belur temple (A.D. 1120).

(*Ep. Carnat.*, Vol. V, part 1, Belur Taluq, no. 46, Roman text, p. 125, Transl., p. 55.)

MALAYĀ—A sculptor (*see* under MALLITAMMA).

MALI—A sculptor (*see* under MALLITAMMA).

MALLI-TAMMA—An architect (A.D. 1196).

'A newly discovered inscription on a rock at Śrāvaṇa-Belgola, mentions a sculptor named Bidigoja, with the honorary prefix Śrīmart, somewhere about A.D. 900 (Mysore Archaeological Report, 1908–9, p. 15, para. 60); and two other records at the same place, of the date unspecified, mention Chandrāditya and Nāga-varma as having carved Jinas, animals, and other figures for the Jains' (*ibid.*, Report, 1912–3, p. 32).

'The earliest records of the Hoysala sculptors seem to be those on the Amṛiteśvara temple at Amṛitāpura, built in A.D. 1196. The 15 signatures comprise Mallitamma or Malitama, and Mali, each four times; and Padumaṇṇa, Baluga, Majaya, Subujaga, Padumaya and Muhaṇa, each once. The last named signs in Nāgāri character, an indication that he came from the north.'

'Report for 1913–1914, Plate II, contains illustrations of the work of seven sculptors: Masanitamma, Nañjaya, Chau-deya, Baleya, Lohita, Yalamasaya, and Bamaya, all from Somnāthpur.'

(V. A. Smith, Architecture and Sculpture in Mysore, *Ind. Ant.*, Vol. XLIV, p. 94, paras. 3, 4; p. 95, para. 1.)

MALLIYAṆA—The sculptor of the image no. 10, Belur temple (A.D. 1120).

(*Ep. Carnat.*, Vol. V, part 1, Belur Taluq, no. 38, Roman text, p. 124, Transl., p. 55.)

MALLOJA—An architect who built the central shrine (garbhagṛiha) of the temple described in the inscription (A.D. 1167).

(*Ibid.*, Vol. VII, Shimoga Taluq, no. 55, Transl., p. 21, line 3.)

MASA—A sculptor (*see* under BALLAṆṆA).

MASADA—The sculptor of the image no. 33, of the Belur temple (A.D. 1120).

(*Ibid.*, Vol. V, part 1, Belur Taluq, no. 48, Roman text, p. 125, Transl., p. 55.)

MASANI-TAMMA—A sculptor (*see* under MALLITAMMA).

MAHĪ-DHARA—An architect, son of the chief of artisans (Sūtradhāra).

(Bheraghat Inscrip. of Alhanadevi, v. 37, *Ep. Ind.*, Vol. II, pp. 13, 17.)

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MAHID(H)ARĀ—An architect (Sūtradhāra), who assisted Pāhiṇi, the chief architect of the Maṇḍapa, Akshasāma, and Ḍamā of the temple of Bhīmeśvara which was constructed with stones and bricks.

(The Chahamanas of Marwar, no. XIII, Sāṇḍerav Stone Inscrip. of Kelhanadeva, line 2, *Ep. Ind.*, Vol. XI, p. 48.)

MĀCHAṆṆA—A sculptor (*see* under BALLAṆṆA).

MĀCHOJA—A sculptor and architect (A.D. 1142).

'The sculptor Māchoja, the Āchārya of Kalukuṇi-nāḍ, the Viśvakarman of the Kali-yuga, built it' (Jinālaya).

(*Ep. Carnat.*, Vol. IV, Nāgamaṅgala Taluq, no. 95, Transl., p. 138, Roman text, p. 239.)

MĀBALAKI—A sculptor (*see* under BALLAṆṆA).

MĀMARIYAÑCHI-TAMMA—A son of the goldsmith Bandiyoja; 'he repaired and roofed a bīra-gal, which was made by Alibhanu-Āchāri (A.D. 1242).'

(*Ibid.*, Vol. III, Maṇḍya Taluq, no. 85, Transl., p. 43.)

MUDDOJA—A son of Tipaji, a stone mason, "who built these (described in the inscription) temples (A.D. 1408).'

(*Ibid.*, Vol. X, Garibidnur Taluq, no. 59, Transl., p. 226, last para.)

MULAṆA—A sculptor (*see* under MALLITAMMA).

MODHAKIN—(also called Podhakin)—An architect, son of Vara (of the seventh or eighth century).

(Further Pabhosa Inscrip. no. 1, *Ep. Ind.*, Vol. II, pp. 480–481.)

Y

YAYYA—(otherwise called Jajja)—An architect.

(Further Pabhosa Inscrip. no. 1, *Ep. Ind.*, Vol. II, pp. 480–481.)

YALAMASAYA—A sculptor (*see* under MALLITAMMA).

R

RĀGHAVA—An artizan (sculptor), son of artizan (sculptor) Vīṁjhadeva, who carved the Verawal image (Valabhi Saṁvat, 927).

(Verawal Image Inscrip., line 5, *Ep. Ind.*, Vol. III, pp. 303, 304.)

RĀMA-DEVA—Śilpin (artist), son of Rūpa-kāra (sculptor), the engraver of the famous Dhar praśasti (panegyric) of Arjuna-varman.

(Dhara Praśasti of Arjuna-varman, v. 76 *Ep. Ind.*, Vol. VIII, pp. 117, 98.)

REVADI-OVAJJA—Of the Sarvasiddhi Āchāryas, versed in the secrets of Kanarese stone masons, probably the builder of the Papanatha temple.

(Inscription on Papanath Temple.)

REVOJA—A sculptor (*see* under BALLAṆṆA).

L

LAKSHMĪ-DHARA—An architect (A.D. 1104).

(Nagpur Stone Inscrip., v. 56, *Ep. Ind.*, Vol. II, pp. 188, 194.)

LASE—The sculptor of the image no. 35, of the Belur temple (A.D. 1120).

(*Ep. Carnat.*, Vol. V, part 1, Belur Taluq, no. 49, Roman text, p. 125, Transl., p. 55.)

LOHITA—A sculptor (*see* under MALLITAMMA).

V

VĀMA-DEVA—'Famous for having built the temple of the Sun called Mula-sthāna.'

(Inscrip. from Dabhoi, vv. 111, 112, *Ep. Ind.*, Vol. I, pp. 31, 29.)

VIRAṆĀCHĀRYA(1)—A carpenter (*see* under STHAPATI) (A.D. 1558).

'This copper Śāsana was composed by Sabhāpati Svayambhu, and engraved by Viraṇa's son, the carpenter Viraṇāchārya.'

(*Ep. Carnat.*, Vol. IX, Channapatna Taluq, no. 186, Transl., p. 170, last para.)

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(ŚRĪ) VĪRAṆĀCHĀRYA(2)—The architect (tvashṭā), who engraved the copper plate.

(Krishṇapuram Plates of Sadāśivarāya, v. 107, *Ep. Ind.*, Vol. IX, p. 339, see more details of this architect under Sthapati.)

VIŚVAKARMMĀCHĀRYA(1)—An artist and painter (A.D. 776).

'By the abode of all arts, skilled in painting pictures (sarvva-kalādhāra-bhūta-chitra-kalābhijñena), was this Śāsana written?'

(*Ep. Carnat.*, Vol. IV, Nāgamaṅgala Taluq, no. 86, Transl., p. 136, last para., Roman text, p. 235, last two lines.)

VIŚVAKARMMĀCHĀRYA(2)—A painter (A.D. 749).

'Skilled in all arts including painting (sarvva-kalāntarpāti-chitra-kalābhijñena) wrote the Śāsana.'

(*Ibid.*, Vol. VI, Mudgere Taluq, no. 36, last para., Transl., p. 67, Roman text, p. 153.)

VIŚVA-NĀTHA—An architect (A.D. 1530).

'Born in the family of Viśvakarma, the architect of the three worlds, Viśvanātha, the son of Basavāchāriya, who was the son of Voḍeyappayya, considered to be the Jagad-guru, engraved it.'

(*Ibid.*, Vol. V, part 1, Channarayapatna Taluq, no. 187, Transl., p. 207.)

Ś

ŚĀMU—'This must be the name of some writer on architecture.'

Śāmu-dṛishṭim anusṛitya nirmitā—'constructed (the lofty temple of Śiva, by two architects, Nāyaka and Ṭhoḍhuka) in accordance with the opinion of Śāmu' (A.D. 804).

(The first praśasti of Baijnath, v. 37, *Ep. Ind.*, Vol. I, pp. 111, 107, footnote 72.)

ŚIVA-PĀLA—A mason, one of whose ancestor is a Sūtradhāra (carpenter, named Deuka) but another of the same family is Sthapati (architect, named Nāga).

(From this it would appear that both Sūtradhāra and Sthapati belong to the same caste and that these are professional titles and not caste-names.)

Cf. Āsichcha Nāga-sthapates tu Durggaḥ ।
Durggārkkato Deuka-sūtra-dhāraḥ ।
Asyāpi sūnuḥ Śiva-pāla-nāmā ।
Yenotkṛiteyaṁ suśubhā praśastiḥ ।

(Vasantgadh Inscrip. of Purnapala, v. 34, *Ep. Ind.*, Vol. IX, p. 15.)

ŚUBHA-DEVA—(A.D. 754)—Of Śāṇḍilya-gotra, sculptor or architect (rūpakāra), 'son's son of the sculptor Śiva-vardhamāna, son of the sculptor Śiva; or rather (bhūyaḥ) the Āchārya Jñāna-śiva, who is the disciple of the disciple's disciple at the feet of him, the venerable and worshipful Payo-bhakshin, who had the appellation of Śiva-śāsana, (and) who has come here (Paṭṭadakal, a village in the Bijāpur district, Bombay Presidency) from the Mṛigathaṇikā-hāra-vishaya on the north bank of the (river) Gangā—there has been set up in the (?) gateway (dvāra) of his own particular (? style of) shrine, this great stone pillar, which bears the mark of the seal of the trident,' and is octagonal at the upper part and square immediately below.

(Paṭṭadakal Inscrip. of Kirtivarman II, lines 15, 16, 17, *Ep. Ind.*, Vol. III, pp. 1, 3, 5, 7.)

(RĀṆAKA) ŚŪLA-PĀṆI—The crest-jewel of the guild of Vārendra artists (Vārendraka-śilpi-goshṭhī-chūḍā-maṇi), the son of Bṛihaspati, grandson of Manadāsa, and great-grandson of Dharma (end of the eleventh century).

(Deopara Inscrip. of Vijayasen, v. 36, *Ep. Ind.*, Vol. I, pp. 311, 315.)

S

SATYA-DEVA—A son of Pitāmaha, a merchant by birth, who was the Kārāpaka (persons appointed to look after the construction of the temple, Kielhorn, *Ind. Ant.*, Vol. XIX, p. 62, note 53), selected by the goshṭhi to see this work (the erection of the temple of the goddess Kshemāryā).

(Vasantagadh Inscrip. of Varmalata, vv. 9, 8, *Ep. Ind.*, Vol. IX, pp. 192, 189.)

SĀDEVA—An architect.

(Inscrip. from Dabhoi, vv. 111, 112, *Ep. Ind.*, Vol. I, pp. 31, 24.)

SĀMI(ṆA)—otherwise called Śyāmila, Svāmin-Vaḍhaki, (i.e., Vardhaki), carpenter or sculptor (Senart).

Sāminā . . . Vaḍhakinā . . . gharasa mugha kata—the opening (or door) was made by Sāmi, the Vardhakin.

(Karle Cave Inscrip. no. 6, *Ep. Ind.*, Vol. VII, p. 53.)

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SĀMILA—also called Śyamila—A carpenter.

'Son of Veṇuvāsa, a carpenter, a native of Dhenukākaṭa, made the doorway.'

(Karle Cave Inscrip. no. 6, *Arch. Surv.*, New Imp. Series, Vol. IV, p. 90.)

SĀMPULA—'The intelligent artisan,' engraver of the Ratnapura inscription of Pṛithvīdeva, the 'crest-jewel of sculptors,' built the temple of Śiva (A.D. 1189).

(Ratnapura Inscrip. of Prithvideva, vv. 28, 29, *Ep. Ind.*, Vol. I, pp. 49, 52.)

SIGGOJA—The sculptor, who made the sculpture mentioned in the inscription no. 525.

(*Ep. Carnat.*, Vol. VIII, part I, Sorab Taluq, no. 525, Roman text, p. 168, Transl., p. 86.)

SIṄGAṆAHEBĀRUVA—The architect, who built 'the stone gateway of Śānti-grāma, ornamented with the tiger-face' (A.D. 1573).

(*Ibid.*, Vol. V, part I, Hassan Taluq, no. 117, Transl., p. 34.)

SIṄGĀYA-BHAṬṬA—Rudraya's son, hydraulic engineer (jala-sūtrada), master of ten sciences (dasa-vidyā-chakravartti), made (in A.D. 1388), at the order of the Governor Bukka-Rāya, a channel of ten miles from Kallūdi to the Siravera tank. An interesting account of his accomplishments is given:

Jala-sūtra-svara-śāstre rasa-vaidye satya-bhāshāyām |
Rudraya-siṅgari bhavataḥ sadṛiśaḥ ko vā mahī-tale śūraḥ ||

'In the science of hydraulics, in divination or telling omens from sounds, in medical treatment with mercury (? perhaps alchemy), in speaking the truth,—Rudraya's (son) Siṅgari, what learned man is there in the world equal to you?'

(*Ibid.*, Vol. X, Goribidnur Taluq, no. 6, Transl., p. 212, Roman text, p. 259, Preface, p. 2.)

SIṄGĀLI-KARGI—The son of Kali, a paṇḍita from the Nava-grāma-draṅga (watch-station near mountain passes, *cf.* Translation, Rāja-Taraṅgiṇī, V. II, p. 291), the sthapati (architect of the tank specified).

(Shawar Museum Inscrip. of Vanhadaka, line 6, *Ep. Ind.*, Vol. X, p. 80.)

SUBUJAGA—A sculptor (*see* under MALLITAMMA).

SKANDA-SĀDHU—The son of Śrī-kaṇṭha, a descendant of a family of architects (sthapati-kula).

(Sholinghur Inscrip. of Parantaka I, line 21, *Ep. Ind.*, Vol. IV, pp. 224, 225.)

H

HARIDĀSA—An architect (Sūtradhāra), employed to repair the temple of Dakshiṇāditya (A.D. 1373).

(Gaya Inscrip. of Vikrama Samvat 1429, line 9, *Ind. Ant.*, Vol. XX, pp. 315, 313.

HARISHA(1)—(of Tāna Guṇḍur)—A sculptor (*see* under BALLAṆṆA).

HARISHA (2)—(of Oḍeyagiri)—A sculptor (*see* under BALLAṆṆA).

HAROJA—A sculptor (A.D. 1243).

'Haroja, son of Honnāchāryya, son of Boṭakāchāryya, the equal of Manu, Maya, and Viśvakarmma, beloved by all the people and farmers, set up an image of the sun.'

(*Ep. Carnat.*, Vol. IV, Nagamangala Taluq, no. 55, Transl., p. 127, Roman text, p. 219.)

HALĀ—Of Śilāpaṭṭa-vaṁśa (Silawaṭ caste, masons), an architect, appointed by a Muhammadan ruler Jallāla as one of the three architects to build a Gomaṭha, a garden, and a step-well in the town of Baṭihaḍim.

(Batihagarh Stone Inscrip., v. 12, *Ep. Ind.*, Vol. XII, p. 46.)

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[References to the quotations are given in full in all cases. No full list of works and authors is, therefore, appended. Certain series and a few authors more frequently referred to are mentioned below. The order is that of the English alphabet, as the names in the following list are all English.]

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Ancient Colonies in the Far East	By R. C. Mazumdar.
Ancient Khotan (Vols. I, II) ..	By Sir Aurel Stein.
Architectural Remains : Anuradhapur.	By Smitters.
Arch. Surv., New Imp. Series ..	*Archaeological Survey*, New Imperial Series.
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B. E. F. (Vols. I—XIV) ..	By M. Auroussean.
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Buddhist India	By Rhys Davids.
Buddhist Records	Translated by Bill.
Cambodge (Vols. I, II, III) ..	By E. Aymonier.
Champa (Vol. I.)	
C.I.I.	*Corpus Inscriptionum Indicarum*, Vol. III, 'Inscription of the Early Gupta Kings,' by Dr. Fleet. (*Corpus Inscriptionum Indicarum*, Vol. I, 'Inscriptions of Asoka,' by General Sir A. Cunningham, has not been referred to, neither M. Senart's editions of the same inscriptions in different volumes of the *Indian Antiquary*, as well as in his French volumes. The only reference to these inscriptions is given from Dr. Bühler's edition in the *Epigraphia Indica*; the difference in

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Abbreviated titles as referred to	*Authors and other particulars*
	reading, if any, among the editors has been noted by their names Cunningham, Senart, Bühler.)
C.I.I., F.G.I.	*Corpus Inscriptionum Indicarum*, 'Fleet's Gupta Inscriptions.'
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Cock	*Eene Oud-indische stad Volgens het Epos*, by Dr. J. K. de Cock, Gröningen, 1899.
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De Sutrantraasche Periode der Javansche Geschiedenis (1922).	By Krom.
Ep. Carnat.	*Epigraphia Carnatica*, by Lewis Rice.[1]
Ep. Ind.	*Epigraphia Indica.*

[1] The most arbitrary abbreviations of the names of the Taluqs, approximately 100 in the 12 volumes, have not been followed, first because it seems impossible, at least for me, to read, from his abbreviation, Ch., Channarayapattana (in the Introduction, and the table of contents, but indifferently spelt 'Channarayapatna' in the title at the top of each page), from Mj., Manjarabad, etc. (*see* Introduction, Vol. v, part I, p. 1); secondly, 100 such abbreviations will be too tedious for any patient reader to remember. These names have, therefore, been written hundreds of times in full.

Again there are as many as 12 kinds of paging sometimes in each part of each volume. Compare, for instance, Vol. III, 'Contents' after one folio of the fly-leaf, one of the names of the Taluqs, and one of a plate:

(1) Preface (page number is not given).	
(2) List of illustrations (page number is not given).	
(3) Introduction	1–36
(4) List of the Inscriptions classified in chronological order ..	1–IX
(5) Text of the Inscriptions in Roman characters ..	1–218
(6) Translations of the Inscriptions	1–117
Text of the Inscriptions:	
(7) In Kannada characters	1–381
(8) in Grantha and Tamil characters	1–32
(9) in Arabic and Persian characters	1–4
(10) Addenda et Corrigenda	1–2
(11) Alphabetical list of towns and villages where the inscriptions were found	1–4
(12) Index to Introduction	1–11

Abbreviated titles as referred to	*Authors and other particulars*
Etudes Iraniennes, tom II ..	By Darmesteter.
Fa-hien's Travels ..	By Legge.
F.G.I.	Dr. Fleet's *Gupta Inscriptions.*
Fergusson, *Hist. of Ind. and East. Arch.*	*History of Indian and Eastern Architecture*, by James Fergusson, D.C.L., F.R.S., M.R.A.S., 1891.
Gloss. Grecian Arch.	*A Glossary of Terms used in Grecian, Roman, Italian and Gothic Architecture*, Anonymous, London, 1838.
Gwilt, *Encycl.* (generally followed by the cardinal number of articles and occasionally by page).	*An Encyclopaedia of Architecture*, by Joseph Gwilt, F.S.A., F.R.A.S., 1867.
H.S.I.I.	*South Indian Inscriptions*, by Dr. Hultzsch.
History of Ancient Java (Vols. I, II)	By Lassen.
Hist. of Arch., Fletcher ..	*A History of Architecture*, by Fletcher, 1908.

This is not a solitary instance; compare also Vol. v, part I, which bears nine kinds of paging exclusive of the fly-leaf, names of Taluqs, and a plate; Vol. VII has ten kinds of paging.

There is yet another difficulty, perhaps the most irritating one, of consulting and referring to this extensive work comprising approximately 12,000 pages. Many of the readers for whose service this encyclopaedia is made are not expected to be familiar with the various South Indian scripts. It is for this reason, and also for sparing readers the trouble of confusing pagings, that I have referred to the Roman text only. But neither the Roman text nor the translation, even of the largest inscriptions covering sometimes 10 pages of 40 lines to a page (*cf.* Vol. v, part I, pp. 362, 364, 530, etc.), has been numbered by verses, lines, or paragraphs. Consequently, no one convenient method could be followed in referring to a particular passage in the Roman text and in the corresponding translation. I might have counted from the beginning of the inscription the lines in both the places (which I have actually done in referring to the smaller inscriptions), but that would not save trouble to readers, as they would themselves be required to count, say, 400 lines twice, once in the text and secondly in the translation. In such cases my references to a particular passage has been given thus: *Ep. Carnat.*, Vol. v, part I,—Channaraga-pattana Taluq no. . . . , Roman text or Translation, p. . . . , line . . . (of that particular page, and not from the beginning of the inscription), sometimes from the bottom upwards, stated distinctly in so many words (e.g. line 2 from bottom upwards, instead of saying line 43, i.e. from the top downwards); occasionally it appeared more convenient to say p. 43, para. 7, line 9, instead of counting all the lines from the top or bottom of the page.

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Java and Her Neighbours ..	By A. S. Walcott.
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J.A.S. Bom. Br. (followed by volume, page, etc., and N. S. added to indicate new series).	Bombay Branch, *Asiatic Society's Journal.*
J.A.O.S. (followed by part, page, etc.).	*The Journal of the American Oriental Society.*

[1] In the earlier volumes of this series, pages are divided, not invariably however, into two columns, which are abbreviated thus : *Ind. Ant.*, Vol. v (preceded by the name of the article or the inscription), p. 320, C. 1 or 2 (=column 1st or 2nd), para. 1 or 2 (where there is more than one), line, say, 7 (of the para., when it is followed by any, or simply lines to be counted from the top ; in cases where it appeared more convenient, it is stated thus : line 7 from bottom upwards). In the earlier volumes the footnotes are not marked by the numerical figures, 1, 2, 3 and so forth ; they are indicated by some inconvenient signs, e.g. *, †, ‡, etc. It was not possible to refer to these notes by any particular name. Some of the inscriptions published in this series have been given three different titles in three places of reference, namely, one in the table of contents, a different one as the heading of the inscription in the body of the volume, and a third one on the top of the pages wherein it is described. Compare, for example, the following :

(1) 'Two Praśastis of Nānāka, a court poet of Viśāladeva of Gujarata' (*Ind. Ant.*, Vol. XI, contents, at the end of the volume).

(2) 'Sanskrit Grants and Inscriptions of Gujrat Kings, nos. III and IV, Praśastis of Nānāka, a court poet of King Viśāladeva of Gujrat' (in the heading of the article, p. 98).

(3) Sanskrit Grants and Inscriptions (on the top of pages 99, 101, 103, 105, 107). I have generally referred to the last-named title, i.e. the one occurring on the top of the pages.

Abbreviated titles as referred to	*Authors and other particulars*
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