

REPORT

ON

TOWN PLANNING, DACCA,

Bengal

BY

PROFESSOR P. GEDDES.



CALCUTTA :

BENGAL SECRETARIAT BOOK DEPOT.

1917.

74

Published at the Bengal Secretariat Book Depot,
Writers' Buildings, Calcutta.

OFFICIAL AGENTS.

In India—

MESSRS. THACKER, SPINK & Co., Calcutta and Simla.
MESSRS. NEWMAN & Co., Calcutta.
MESSRS. HIGGINBOTHAM & Co., Madras.
MESSRS. THACKER & Co., Ltd., Bombay.
MESSRS. A. J. COMBRIDGE & Co., Bombay.
THE SUPERINTENDENT, AMERICAN BAPTIST MISSION PRESS, Rangoon.
MESSRS. RADHABAI ATNARAM SAGOON, Bombay.
MESSRS. R. CAMBRAY & Co., Calcutta.
RAI SAHIB M. GULAB SINGH & SONS, Proprietors of the Mufid-i-am Press, Lahore, Punjab.
MESSRS. THOMPSON & Co., Madras.
MESSRS. S. MURTHY & Co., Madras.
MESSRS. GOPAL NARAYAN & Co., Bombay.
MESSRS. B. BANERJEE & Co., 2b, Cornwallis Street, Calcutta.
MESSRS. S. K. LAHURI & Co., Printers and Booksellers, College Street, Calcutta.
MESSRS. V. KALYANARAMA IYER & Co., Booksellers, etc., Madras.
MESSRS. D. B. TARAPOREVALA & SONS, Booksellers, Bombay.
MESSRS. G. A. NATESAN & Co., Madras.
THE INDIAN SCHOOL SUPPLY DEPOT, 809, Bow Bazar, Calcutta.
MR. SUNDER PANDURANG, Bombay.
MESSRS. A. M. AND J. FERGUSON, Ceylon.
MESSRS. TEMPLE & Co., Madras.
BABU S. C. TALUKDAR, Proprietor, Students & Co., Cooch Behar.
MESSRS. RANCHANDRA GOVIND AND SONS, Booksellers and Publishers, Kalbadevi, Bombay.
MESSRS. BUTTERWORTH & Co. (INDIA), LD., Calcutta.
THE WELDON LIBRARY, 18-5, Chowringhee Road, Calcutta.
RAI M. C. SARKAR BAHADUR AND SONS, 75-1-1, Harrison Road, Calcutta.
THE PROPRIETOR OF THE NEWAL KISHORE PRESS, Lucknow.
THE STANDARD LITERATURE COMPANY, LD., 13-1, Old Court House Street, Calcutta.
MR. G. N. HALDER, Calcutta.
MESSRS. A. H. WHEELER & Co., Allahabad, Calcutta and Bombay.
M. R. BY E. M. GOPALAKRISHNA KONE, Madras.
MESSRS. RAMA KRISHNA & SONS, Lahore.
THE MANAGER, "HITAYADA" Nagpur.

In Great Britain—

MESSRS. A. CONSTABLE & Co., 10, Orange Street, Leicester Square, London, W.C.
MESSRS. GRINDLAY & Co., 54, Parliament Street, London, S. W.
MESSRS. KEGAN, PAUL, TRENCH, TRUBNER & Co., 68-74, Carter Lane, London, E.C.; Oriental Department, 25, Museum Street, London, W. C.
MR. B. QUARITCH, 11, Grafton Street, New Bond Street, London, W.
MESSRS. W. THACKER & Co., 2, Creed Lane, Ludgate Hill, London, E.C.
MESSRS. P. S. KING & SON, 2 & 4, Great Smith Street, Westminster, London, S. W.
MESSRS. H. S. KING & Co., 65, Cornhill, London, E.C.
MR. B. H. BLACKWELL, 50-51, Broad Street, Oxford.
MESSRS. DEIGHTON BELL & Co., LTD., Trinity Street, Cambridge.
MESSRS. LEZAC & Co., 46, Great Russell Street, London, W.C.
MESSRS. OLIVER AND BOYD, Tweeddale Court, Edinburgh.
MESSRS. E. PONSONBY, LIMITED, 116, Grafton Street, Dublin.
MR. T. FISHER UNWIN, LIMITED, 1, Adelphi Terrace, London, W.C.
MESSRS. WILLIAM WESLEY & SON, 28, Essex Street, Strand, London.

On the Continent—

MR. ERNEST LEROUX, Rue Bonaparte, Paris, France.
MR. MARTINUS NIJHOFF, The Hague, Holland.

TABLE OF CONTENTS.

	PAGE.
CHAPTER I.	
1. Geography and Town origins	1
2. Khals and their influence on town origins and plans	1
3. Social aspect of Dacca	3
CHAPTER II.	
1. Further survey of old Dacca	3
2. Need of City Survey	3
CHAPTER III.	
STUDY OF QUARTERS IN DETAIL—	
1. Wari	5
2. Thana W. C. Area	5
3. Main Street	5
4. Esplanade	6
5. Sakhari Bazar Improvements	6
CHAPTER IV.	
IMPROVEMENT OF QUARTERS—	
1. Eastwards	8
2. Northward and Westward	9
3. Riverside possibilities.	9
4. Chowk area	9
5. Improved Road System	10
CHAPTER V.	
1. Possible further housing extensions in new Suburbs and Central areas	11
(a) Medical Hostel and Training College grounds	13
(b) Training College	13
CHAPTER VI.	
OPEN SPACES—	
1. Town's gardens	14
2. River Front	14
3. River and Island	14
4. Further Esplanade garden	14
5. Burial grounds	14
6. Tanks	14
7. Khals as Water Park	15
CHAPTER VII.	
1. Revival of industries towards City prosperity	15
CHAPTER VIII.	
1. The khals and their possibilities	18
CHAPTER IX.	
1. Cleansing and Sanitation.	19

PATRICK GEDDES,

CALCUTTA, 1917

REPORT

ON

TOWN PLANNING, DACCA.

CHAPTER I.

[A—Geography and Town origins. B—Social aspects.]

A.—**Geography and town origins.**—Though for the study of Dacca maps better than in many towns fortunately exist, both on the scale of 16-inches to the mile and on smaller ones, these are old and at many points out of date and consequently misleading. One is at once tantalized and encouraged by the sight of the original sheets of the new map just completed by the Settlement Office, which, it is to be hoped, will shortly be printed. With this a real city survey becomes possible, with the revisal and development of the present report, and treatment of the town's problems with the necessary accuracy and detail.¹ Meantime, all suggestions upon the accompanying map must be considered as under correction. First may be outlined the writer's general impressions of Dacca, both geographical and social.

The admirable geographical situation, both in general and in particular, regional and local, is readily appreciated, and need not again be described. Nor yet its deterioration also—on the great scale by the silting of the river and the consequent change of trade routes, etc., and on the minor one by the corresponding deterioration of the khals, and of the older quarters of the city along with them as well as from other causes.

An inquiry may here be made of possible suggestiveness. At the British Association meeting in Liverpool in 1896 there was exhibited a working model of the Mersey Basin and its sand-banks. In this the sand-banks were actually shown in process of being modelled by the waters in their various states of tide and flood—and this with startling faithfulness to the chart exhibited above the model. If this can be done for the Mersey, may not a similar, though larger, model be constructed, even for the Bengal river system and for experimental study of its variations? Would not this throw fresh light on all the problems of regional geography, and be invaluable not only to students, but to practical investigators of its requirements, engineering, agricultural, sanitarian, etc. I submit that an inquiry into the possibilities of constructing this model is at any rate worth making, and that its construction might interest, *e.g.*, on the one hand the Calcutta Museum (and the scientific departments of the University), and on the other the Public Works, the Sanitary and Agricultural Departments. Minor models to various scales, as of Dacca and its khals, or of the river area as far as Narayanganj inclusive, would doubtless at first be easier of accomplishment, and these would have their immediate local uses.

Khals and their influence on town origins and plans—The "khals" of Dacca, with their many minor tributary nullahs, pools, ditches and slopes, (now largely lanes) are an obvious and extreme example of the influence of natural drainage in determining the original lay-out of Indian towns. The settlers' cottages were most conveniently placed as near the stream as its flood level might allow. With growth of population, new and higher levels would be occupied, with narrow cow-paths and cart-tracks between, and with still narrower lanes at right angles to these, leading down between the houses to the water. With increase of population the minor streamways have

¹ Here I may recall the admirable co-operation between educational bodies and Ordnance Survey at home, and to plead for a similar cheap edition of this map for the use of colleges and schools.

their ends and courses raised by the accumulation of rubbish, which is thus so readily disposed of. Lanes thus arise, and necessarily with sharp turnings where the flood level is reached. This new turning parallel to the stream is kept inconveniently narrow by the need of skirting the property above and avoiding its encroachments. Its width tends to increase by the further accumulation of rubbish; soon new huts arise upon this, and so on. As, from the first, sanitation is deteriorating unnoticed, the present evils gradually appear, and become habitual. The high personal cleanliness of the Indian population and of their home interiors becomes thus associated with public untidiness.

The development of pools into tanks is also obvious with growth of population, and especially of this Indian one, whose customs and social discipline were formulated by sacred legislation far earlier than the appreciation of the value of manures, much less of the need of urban sanitation. This has been an extreme disadvantage to India as compared with the practices and religious sanctions of successful agricultural peoples, as notably the Chinese or the Romans, whose spiritual rulers wisely recognised a god of manuring. For lack of this element of culture the sanitary evils arise, which are so familiar in India and so strikingly illustrated in Dacca, indeed intensified, as its visitors so strongly realise. Yet the clear understanding of the simple origin of village rows, and in time of city lanes and even labyrinths, upon the contour-levels of the nullah or khal, and on its curving bankways, and not haphazard would protect the European visitor, and the educated Indian also, from criticisms of sanitary defects too unsympathetic to be useful.

The watershed between adjacent water courses and their settlements gives one of the most primitive of boundary lines. It also comes to afford a pathway, and that of greatly increased directness and comparative freedom from wet. Within a village or town, or connecting an adjacent village-group there thus arises the "high street," and between villages the "ridgeway," so familiar in European cities as well. Trader and horseman, ruler and priest alike prefer to follow the ridgeway. Main lines of communication are thus laid down to the nearest market, to the distant city, and for pilgrimage or even for migration. The Ridgeway commands the villages, and the High Street (upon which the travelling and governing classes naturally prefer to lodge) controls the lanes. Upon this High Street naturally arises also the Bazar.

Thus this evolution of communications aids and advances the ever-growing distinctions of caste and power between the peasant of the village, the humble craftsman of the town, and the trading, military and cultured classes. The further regularization of the ridgeway for purposes of military march and domination (which is in fact the invention of town planning in straight lines) has been pointed out by Aristotle; and it was peculiarly exemplified by the Romans, as again by Napoleon.

But the ridgeway may soon come to a stream. The Ford thus acquires its significance; and the Ford-village, in which a characteristic type of city development is latent from the first. To give the ford at once less depth and a safe and solid bottom, the causeway is invented. This is already something of a Dam-way. Farther down stream the Bridge-way may arise; and from simple beginnings the Bridge-village (and Bridge-town) develops in its turn.

For such studies of town-development Dacca, as even its rough maps show, affords a fascinating field; and the preparation of a Relief Model of the city of Dacca (say, by the Geographical Department of the University) will disclose its history far more intimately than can its records and traditions. Nor is the interest of this line of research merely geographic: the engineer and sanitarian need it above all. Indeed without this geographic survey of cities (and the complementary social survey also) they cannot escape from their present stage of well-intentioned experiments, each costly and inadequate when all is done. The Town Planning Movement is on this side a revolt of the peasant and the gardener, as on the other of the citizen, and these united by the geographer, from their domination by the engineer. Only when the mechanical energies of the Engineer are brought into line with all other aspects of the city, and these reunited in the service of life, can he change from blundering giant into helpful Hercules; and then with sanitarian labours indeed, and with economy and well-being together, health and beauty as well.

Does this criticism appear lacking in definiteness? More precisely then, it results from any comparative study of town plans (and is thus a main feature of the Cities and Town Planning Exhibition) that it demonstrates for city after city, and alike in Europe and in India, that from the thousands and millions, the lakhs and crores, there or here expended on city engineering, drainage and other efforts of sanitation, far better results could have been (and are now being) achieved, wherever town-study and town-planning are first duly taken into consideration.

B.—Social aspect of Dacca.—Enough has been said to suggest the need of a geographic study of Dacca. What of a corresponding introduction to the appreciation of its social and economic situation from which we enter upon the more detailed survey of the town?

Dacca presents all the signs of impoverishment which are characteristic of cities in Europe once Metropolitan. In the course of history one governing class after another has been superseded by the next. In each case their subordinates and dependants have fallen into unemployment; and the poverty and squalor always common in such cities as this, are thus intensified. The old luxury industries are dying out, and new ones do not come into replace them; since both upper and lower classes, both patrician and menial, have lost aptitude and interest in industry. The decay and deterioration of such towns are thus of old standing; and they are persistent and cumulative. Recent events can but more or less have intensified them. The agricultural depression, which is also associated with such deterioration, interacts with urban depression; mental depression thus sets in; and a vicious circle arises, that apathy in which so many cities lie, and which maintains all the evils from which they suffer and thus aids them to increase. The vigorous and promising endeavour of Government, to repair the recent loss of the governing centre by fostering the University one, is here, however, an element of hopefulness, though by itself far from sufficient.

CHAPTER II.

Further Survey of old Dacca.

Though the visitor is usually invited first to see new Dacca, his real study of the city must naturally begin with its geographic and historic centre, that lying within the great natural moat afforded by the Dolai Khal. The extension westward beyond this would be the first New Town, in its village origins doubtless Hindu, but dominated by the vast Bara Katra, and Chota Katra, but now all overtaken by age and decay. The monuments of the Hindu past are gone, and those of the Muhammadan period are few and ill preserved. But the fine old Bara Katra gateway-tower is now being attended to, and in the right way, by needful repair, without "the fatal pretence of restoration." To the surviving Muhammadan buildings here and throughout the city and suburbs, to the many fine tombs (as also to the few temples and sacred places of Hindu culture) more effect may be given, even in a very few years, by the careful tree-planting which is happily in progress in skilled hands in the European quarter, and to the north-west on the outskirts of the present town. Turning to the large Dhakeswari Bari temple enclosure (Dacca *shari*) and the larger Muhammadan centre afforded by Shah Saheb's house, etc., we see that each forms an appropriate nucleus of its respective faith, and that they suggest themselves, from the first glance, as the appropriate centres of future garden-suburb extensions accordingly.

Need of City Survey.—Adequate town planning should be preceded by a City Survey similar to those exhibited and insisted on in the recent Cities and Town Planning Exhibition at Calcutta, and which it is its best service to be initiating among Indian cities. The sheets of such a survey, as completed, should be hung on the walls of the Council Chamber, of the offices of the Municipal Secretary and Engineer, the Public Health Officer, the Medical School and Hospital. A duplicate should be provided for (a) the Commissioner.

the Collector, etc., and (b) for the Municipal Department of the Central Government. Of such survey plans the following are specially desirable :—

- I.—*General Topography*—Showing Roads, Streets and Lanes; variations in levels; Khals with their Ramifications, Tanks, Swamps, etc.
- II.—(A) Areas occupied by *Government* (e.g., offices, courts, jails, police barracks and schools).
(B) Areas occupied by the *Municipality* (e.g., offices, markets, conservancy depôts, etc.).
(C) Areas occupied by *Education* buildings and Mission premises, etc.
- III.—(A) Characteristic *Moslem and Hindu* quarters with their respective Mosques and Temples :
with intermediate :—
(B) *Mixed* populations :
(C) Low castes (Mehters, etc.).
- IV.—(A) *Occupations*—Grain trade and other food supplies, markets :—
(B) Traditional occupations (shellworkers, weavers, labourers, etc.).
(C) Modern industries (jute, hides, etc.).
- V.—*Well-being and Overcrowding* of wards and minor quarters.
- VI.—(A) *Degrees of Sanitation* (or insanitation) determined by A above (pollution of wells, cattle-keeping, etc.).
(B) Conservancy (e.g., privies accessible and inaccessible).
(C) Unhealthy industries.
- VII.—*Water-supply*.—Central and throughout the city.
- VIII.—*Drainage*—A Actual—B Proposed (including successive alternatives).
- IX.—*Death-rates*, with analysis of these, each on its own map, e.g. (a) infant mortality, (b) tuberculosis, (c) dirt diseases (enteric, etc.), (d) malaria, (e) plague (if any), etc.
- X.—*Police*, with indication of offences.
- XI.—*Open spaces*: Boulevards, playgrounds and gardens, parks, etc., waste land.
- XII.—*Average local values*, from low to high.

Nor do the requirements of such a survey end here. Dacca has peculiarly natural divisions, to which the wards should be corrected where too artificial. As a broad suggestion of this, I have indicated on the accompanying sketch map these divisions as—

- (a) W. C. and E. C.—within the Dolai Khal and separated by
- (b) N.—northward between Bridge and Railway station,
- (c) N.-E.—Wari and its neighbourhood north of Norandia Khal,
- (d) E.—beyond Dolai Khal and Sarabasganj and south of Noranda Khal,
- (e) S.-E.—Faridabad quarter, Dhalker Nagar and road to Narayanganj.
- (f) W.—quarter beyond Dolai Khal Bridge centring round Chowk.
- (g) N.-W.—quarter north of W. C. and W. up to jail,
- (h) N.-N.-W.—quarter of Dacca Shari and Shah Saheb down to Lalbagh and river.
- (i) W. W. village extensions beyond.

These tolerably natural divisions should each become the subject of close and full survey, even house by house, upon their large scale plans. The amount of labour is after all not too great; it arouses interest as it proceeds, and this will be found to deepen as its results appear. Hence each line of city survey will go further year by year; until, for instance, the Health Officer has his card catalogue record of houses, kept as clearly as the "*Casier Sanitaire*" of his colleague in Paris, may, even by and by more fully. Every patient in a hospital has nowadays his temperature chart, so before long every house in every city will be having its sanitary level similarly graphically inscribed, and the reading of this "hygeometer" will increasingly affect the value of the dwelling and even the status of

its inhabitants in the opinion of their neighbours. By and by it will be demanded by purchaser or mortgagee, as naturally as he now assures himself of the title.

Long before this domestic stage is fully reached, indeed almost from the outset of the survey, these local maps and their general and comparative hygiene may be made the basis of local improvements, and next of healthy rivalry in these. The prevalent apathy, of which in each city the town-planner hears (and sees) so much, is in this way successfully stirred, at least enough to arouse and invigorate a small minority; and this, in town-planning as in other social matters may be sufficient to popularise and to carry out whatever they resolutely enough *will*.

Is it feared that such localised survey and improvements may obscure the main interests of the town? On the contrary, the main interests thereby more and more appear. Thus, the accesses to Railway stations, to Markets, Schools, Courts, etc., to khals, to river, and so on, become better realised, as the branching systems upon which the parts depend, like leaves upon their stem. Similarly as regards hygiene, and so on. In a word the Civic Survey harmonises local with general improvement, and thus arouses and strengthens civic spirit. Throughout the cities of America especially this is being accomplished already; and it is beginning well nigh everywhere.

CHAPTER III.

Study of Quarters in detail.

A.—**Wari.**—My short acquaintance with Dacca makes choice of examples difficult and uncertain. Still, speaking under correction, and here even more than usual, I may venture on one or two, *e. g.*, Wari in north-east. Wari is a spacious and admirable bungalow suburb, largely inhabited by retired officials, by families attracted to Dacca for its educational facilities, etc. Its planning and organisation are due to an effective Collector of that past generation whose intimacy with their towns was more prolonged than is nowadays possible, and which thus sometimes found effective outlet in city improvements, and even as in this case in good town-planning. This excellent suburb at once proves the demand for houses of the bungalow type and the possibility of planning them in Dacca. In this prosperous and educated community local sentiment may here peculiarly suggest improvements desired, and also extend its survey throughout the north-east quarter. This is partly filling up with wealthy houses, partly with houses of the old village type.

Next comes its relation to the North quarter, with its main station thoroughfare, yet also with its too insanitary average, its deteriorated and filthy places, which are a danger to their neighbourhoods. Access through this to the main north and south thoroughfare of the town, and also by some more direct new route to the station is desirable. Not even the most prosperous suburb can remain isolated from its neighbours.

B.—**Thana W. C. area.**—As an opposite extreme take the W. C. quarter centring round thana. Here as so often in old towns, palace and bazar, crowded housing and positive slum are all juxtaposed, with colleges, hospitals and other institutions surrounding them. Here is a city in itself, and with problems not only enough to need all the citizenship it can at present command, but all it can evoke as well.

How can this citizenship be aroused? In many ways, more than space here can enumerate, but for which "experimental soundings" may safely be undertaken. For the present, however, we may content ourselves with the proposals sketched on plan for street-improvements. These are of the ordinary kind, save that they will be seen to be more economical than are such schemes generally.

(a) **Main Street.**—The long Main Street from east and west is much crowded and too narrow for its traffic, but no widening scheme can be suggested; the city cannot afford it. Desirable though a tramway along this

line might be, the space for even a single line cannot be spared, still less the occasional doubling needed for passing. However, the future seems decidedly for the motor-bus, of which the extraordinary improvement of recent years is not ended.

For traffic generally, and still more for this addition to it, improvements more substantial than are generally realised may be made as opportunity arises. Without entering upon a policy of alignments, which proceeds but slowly and at great expense, and too often with serious reduction of the already crowded area and living space of the property concerned, it may suffice to seize opportunities, as properties of low value can be obtained, and make substantial widenings which, though but for a short length, furnish sidings, in which vehicles can pass easily.

(b) **Esplanade.**—This very conservative treatment of this old main street is the more practicable since it is at no point far from the possible River Esplanade. Of this the beginnings already exist. A substantial legacy from a late distinguished citizen for its extension is said to be now or presently available; and there is no reason why this public-spirited generosity should not be followed. Here, too, is an example of the town-planning method. Enough for the present if this scheme be drawn out, broadly estimated, and its alignment clearly defined by the municipality. Further encroachments, such as are already in evidence at several points, could and should then be prevented; and the scheme can be proceeded with gently, as funds allow. Other donors would come forward; bathing ghâts, etc., would be given; and a new city front, at once useful and beautiful, healthful, recreative and religious alike, would gradually arise. The reaction of renewing city pride on citizenship generally would also make itself increasingly felt. At present, when the Hospital plans are being drafted, and I believe, minor ones also, there is evidently no time to be lost.

(c) **Sakhari Bazar Improvements.**—Congestion here amounts to well over 2,500 people along the 350 yards of the short Sakhari Bazar alone, occupied by the shell-workers; and adjacent lanes are little better. I am assured, as usual in such cases, that this congestion is the people's own fault, that they will live in this way and in no other; and that consequently they have only themselves to blame for their dirt, their ill-health and all the rest. Why should they thus remain, obstinately or apathetically immune to the example, influence and the labours of the adjacent neighbourhood with its institutions—all that is best in Dacca? On no town-plan in the world can I recall a better example of the grouping of institutions, governmental and municipal, educational and religious; and all, to the best of my knowledge and sincere belief, bent, with unblemished devotion, upon their respective dispensing of justice, goodness and truth. How natural then, that administrator and vakil, city councillor and official, educationalist and missionary, mournfully admitting their unsuccess in dealing with these evils beside them, should shake experienced heads over any sanguine new-comer's suggestions of improvements. How can the adjacent squalor, the filth and foetor of overcrowding, with all its attendant evils, which have not only resisted their endeavours, but grown even worse instead of better within their memory, be helped by a passing visitor, with his talk about town-planning?

Still, as fair-minded men, they give their guest his turn to explain what his town-study and map-reading may show to him. We look then at town and town-plan together. This old Bazar was once the main Ridgeway and High Street of Dacca (though now superseded partly by the wider street to the south). Its course may be traced between the Law Courts and the Old Dacca College, formerly the Honourable East India Company Factory. It thence runs north of the present Municipal garden (curving shortly south-east of the church) and passes the Madrassa. Thence it continues between the Municipal buildings and those of the Catholic Mission; and only then, after a break of 500 yards (considerably more than the whole surviving length of the Sakhari Bazar) it reappears for the remainder of its eastward course, as the thoroughfare of the old town.

See first this Bazar Street in its old days, as main thoroughfare, and at once of country and town; crowded with custom, alike from outlying villages, from the town, and from the neighbouring palace. What more natural,

proper, and convenient to all concerned, than that the Great Trading Company should acquire central premises, with access to River and North road? And that these should expand into the sufficient, but after all moderate, compound of what next became Dacca College.

But thus began a new order of things. In course of this, Courts, Government and Municipal Offices, Colleges, Schools and Missions have gradually taken up their present extensive and orderly central area, of some 18 or 20 acres in all, and to all eyes the very best of Dacca. Excellent compounds, yet none (save perhaps that of the Law Courts) can be called excessive. What occupant, what planner even, however economical, will say these other spaces are too great?

Yet see how the old Bazar Street was cut into two increasingly isolated halves, each inevitably retiring into itself. The luxury trades, which had been its main-stay, could not but concentrate in the western (and unfortunately shorter) half towards the palace), and die away from its eastern portion. High rentals and narrowing accommodation for increasing population have thus gone on together. The old industries succumb to modern conditions—the shell-workers toil on as best they may, but with what time or energy for improvement of their environment? And with what help? What save a century of increasingly crushing pressure upon their poor neighbourhood—from the new and prosperously growing institutions beside them? With the kind intentions of the old story, has not each been an additional mother elephant to sit upon these humble little nests? The case is a typical one; it occurs more or less everywhere; it characterises old Edinburgh as well as old Dacca. But when do we of the prosperous classes realise this? It is largely as an act of expiation that I for one have become a town-planner; and as direct observation, and literacy in plan-reading, reappear from their customary submergence by speech and print, so increasingly will others, Europeans and Indians alike. For from the makers of the prehistoric ridgeway to our modern "relief of congestion," who has adequately recognised this long and ever-intensifying compression of the people?—or understood their depression as in no small measure affected by this process and cause—of always building as pleases ourselves, but not yet planning for them? It is as this is realised that the town-planning movement begins.

Without any desire, much less any absurd proposal, of removing bazar people to garden suburbs, our fairly comprehensive peregrinations of the city show that some expansion of its area is necessary, even to abate the present compression of the central bazar area. Any substantial expansion of a town's boundaries, with a relaxation of pressure upon its existing area, tends to expansion throughout, and comes to have its effect upon the crowded centres and even upon their bazars. In a town as in a fluid, any variation of pressure soon makes itself felt from centre to circumference, imperfect though the fluidity may be.

First, however, a study of what can be done in the present locality, with improvement of traffic, yet minimum reduction of dwellings, and economy accordingly. For this large population a main improvement would be:—

- (1) That of providing easy access to the new Municipal Market, which I am informed is decided on for the north side of the Dolai Khal about $\frac{1}{3}$ rd of a mile away. To widen the present Northward Street of Pannitola would be prohibitively expensive; hence the line suggested upon the plan is that shown five or six hundred yards eastwards; but perhaps a fresh cut, between the two (through Shutarnagar) might be more economical. This suggestion, however (like every other here made), requires further study in detail, and this must await the forthcoming new plan of the settlement office. In any case, we should thus have a useful street, connecting existing Bazar Streets and new Markets, and attractive to shopkeepers, etc., accordingly, as well as for houses. Local congestion will thus be diminished.

- (2) Part of the traffic upon the main thoroughfare west of Thana may be usefully diverted by the new thoroughfare shown on the left as we approach Thana, opening up the crowded neighbourhood of Panitola, and affording the needed accesses to improve its peculiarly backward sanitation, here notorious.
- (3) A little further east we come to the old tank of the neighbourhood, now being filled up with rubbish. To press forward the completion of this, and to take in the adjacent vacant space immediately south of the tank, and make the whole into a municipal playground and garden, is the scheme explained to me by the Secretary and Engineer. I unreservedly approve; and suggest the additional openings on plan. These will be seen to be of advantage alike for popular access and for general town communications.
- (4) As further business space for the Sakhari shellworkers, etc., in fact as a new bazar, it would be of advantage (unless too costly) to widen Kamerai's Lane to the southward, not as a street for vehicles, but as a pedestrian bazar, and this of such irregular shape as economy of clearance may determine.

But even all this is not enough for this congested neighbourhood.

- (5) When Jagannath College is removed to the University quarter its buildings may be required as a school; but—undesirable as it is to encroach on such premises or to curtail their playgrounds—I would ask—is it not possible, with reasonable remaining space, and fair compensation, to give off ground enough for the construction of one or more habitable lanes (widened or new as the case may be) from the north, the south, or the west of the College compound?

So far these suggestions for this quarter for the present, though these are obviously far from sufficient. An intimate survey of each locality, such as those to east and west of the old Palace area, would doubtless yield ample scope for the method of "conservative surgery" explained in my "Reports on Madras Cities;" but for even a beginning of this line of work time has not been sufficient during my visit.

CHAPTER IV.

Improvement of Quarters; eastwards, northwards and southwards, Chowk, Jail and improved Road system.

A.—Improvement Eastwards.—Of Wari and north-east quarter the most has been said that my short visit admits of, the more since its labyrinth of khals makes study difficult. In the east quarter (south of Narandia Khal) the extension is in progress and a larger Sarafatganj is growing up. The south-east quarter (ranging from Dhalkar Nagar to the River) is already in progress of industrial development; witness the timber yards, etc., and especially the large area already occupied by the jute industry.

No principle of town planning is more distinct, and no progress more important for industrial efficiency and economy and for sanitation and well-being alike, than that of the clear laying out in the most suitable situations of Industrial Areas. The location of these is determined primarily by convenience and economy of communications, *i.e.*, not simply of roads, but also of railways, with suitable sidings, and when possible also with access to canal and river. Here then in this south-east quarter, and apparently most easily and cheaply of all, we can have the whole of these; and such an area is therefore broadly indicated towards the extreme south-east of the plan. Of course the detailed layout, with its appropriate sidings, river and canal, access, etc., will require a special study. Enough here to suggest this.

Along with such an industrial area the necessity of convenient housing for labour also arises. Sites have accordingly to be found. No longer mingled with factory and warehouse, whether in planless and insanitary confusion, as in the earlier industrial age in Europe, nor yet misplanned as in the dreary and squalid "Byelaw Streets" and "Cooly Lines," which have been so extensively laid down by well-intentioned municipal or sanitary engineers before the recovery of town planning. Now and henceforward they are being carefully planned, in simple and pleasant Garden Villages. Thus we are at the beginning of recovering what was best in the old pre-industrial order, while introducing all that is best in its moralised and advancing phase.

Some workmen's dwellings might find space south-east of this industrial area; but this is far from the town. A far better site may be obtained, with room also for a small public garden and playground, near the east entrance of the Dolai Khal, and especially upon the ground belonging to Government, and now occupied by the Police School. May not this be removed, and with advantage, to the more appropriate educational atmosphere of the Police Cantonment, beyond the present extreme north-west of the city? A small police-station would naturally remain; but the greater part of these 20 acres might be rendered available, with obvious advantage to the housing of the city, and even with adequate return to Government, as the zamindar of this site.

B.—Improvements Northwards and Westwards.—The northern quarter has been already mentioned, but its congested and insanitary areas should of course be studied as soon as the adequate map is available.

C.—Riverside Possibilities.—The river is of course too broad and too variable to admit of a bridge and its transpontine suburb. The site, moreover, is mostly too low; and its narrow riverside ridge is already occupied by a small and straggling village.

The island seems already being cut away, and access would be difficult.

South of the water-works, the Lal Bagh, etc., lies a large area gradually being raised by the river, and with loops of khal akin to those of the city, but still in the active state. How far may it be possible to obtain fresh land from this, and, if so, how? A simple and not too expensive process would be to use the more outlying silt to raise the level of sites and gardens along the riverward slope of the western town, and thus add a new fringe to its area. This could be readily defined and maintained, in the first place by an appropriate line of planting upon the edge of this bank, and ultimately by the extension of the Esplanade Embankment (which is thus shown on plan as forking, with two unfinished ends, to indicate possible alternatives). The exact possibilities of the case can only be decided by an experienced River Engineer; but I should ask him also how far it may be possible to take in more land from the river, of course without injury or danger, either here or further down. To elicit such criticism as fully as may be, I pencil in a yet larger reclamation, and ask whether some rough and simple method, as of a stockade-dyke, strengthened by planting, may suffice, since more expensive building methods might cost more than the reclaimed land would be worth.

D.—Chowk area.—This western area, that west of Dolai Khal, centering around the Chowk, is also an intensively urban area, only second to that of Thana, with bad congestion and insanitation at too many points, and especially between the chowk and the river. But as regards the improvement of this area, I must in the main repeat what has been said above; notably, that this congestion, although of ancient origins, is also, and only too obviously maintained by the acute limitation of its area between Jail and River. To widen and demolish, though a too frequent fashion of improvement, would here be worse than useless to the inhabitants, unless fresh building space can be obtained. Here therefore I cast eyes of desire upon the Jail, whose many acres—some 34 or thereby, would readily afford space for a large housing extension. Such houses would naturally be of all dimensions, but hundreds in all, varying according to the scales of demand which might predominate. This acquisition of the Jail is again as justifiable as that of the Police School above proposed; but admittedly less remunerative to Government. I have not entered the precinct, and therefore have no idea how far the existing buildings might be adaptable, presumably some, but not others. But in any

case, who will deny that with the progress of criminology and penology, and above all of prison reform, the removal of all jails from cities to rural conditions and their more re-educative rural occupations, is approaching; and when this time comes the Government may realise upon this valuable property on reasonable terms to the citizens, yet not unsatisfactorily to its own exchequer.

It is the town-planner's duty, and not merely privilege, to think ahead. I therefore venture already to treat this Jail area upon the plan, as space for future development. Not indeed as regards dwelling space. That can only be determined by the class of demand at the time it becomes available; but the advantage to the city which would arise from its acquisition as regards general communications and improvement may best be set down on its plan at once, and not later. For here is the situation, the only large one, and the best possible, for a substantial improvement of communications and amenities together, and of designing something worthy of the historic and developing city, worthy of the regional metropolis it has always been, and of the university and residential city it is becoming. (See plan accordingly, with its proposed new thoroughfares, intersecting the present Jail area.)

E.—Improved Road System.—Dacca too much still practically retains its old village character, with only its one main thoroughfare near the river east and west, and one north and south between river and station. But upon this western half of the city larger improvements are practicable than at the centre and east. A widened and partly new east and west thoroughfare in this quarter is indicated accordingly. This is shown at its widest passing through the jail area, where it should some day become the fine central avenue or "Mall" of the city, say, 80 to 100 feet wide, and with a square for road convergence at either extremity. These are dotted in upon a generous scale, though perhaps needing diminution in execution. From this "Mall" we may run eastward to the existing road to meet the main station road between station and Dolai Khal Bridge. Thence, when necessary, we may cut further still to a small (dotted) easterly square, and even beyond this to join the road system of Wari. From this same square, if and when required, a new southward street may arise to enter the eastward road to the south of Wari. From this again it seems reasonable to provide for a thoroughfare through the irregular area lying between Wari and Nerandia, whether by widening or cutting remains to be considered, the course dotted being of course merely provisional and suggestive. But for so long and straggling a city it is desirable to provide at least one good thoroughfare east and west, and linking up with others also. This sketch is necessarily but a preliminary one towards the more detailed study which will be necessary. The essential thing is that this large area be not left, as at present, without adequate thoroughfare altogether. Some fresh access from this quarter to the old city is also desirable, and is here broadly dotted accordingly; though the expenditure needed for a new bridge may long delay this.

This easterly thoroughfare has taken us far from our point of departure in the western and north-western quarters, the chowk and jail areas. West of the Mall will be seen on plan a curious convergence, of no fewer than seven roads at present, and this is here suggested for enlargement into a square, from which the new main thoroughfare should run eastward to the Lal Bagh. A square is here again shown, to be regularised, if possible, though doubtless upon a smaller scale than that of the present preliminary diagram. The essential matter is that we here come upon a north and south road (which it is desirable to align before it becomes too valuable to be interfered with); for this road would then link up on the south with the main Bazar Street and the future River Esplanade, and also be continued and widened northward to the south of the Dacca Shari, where it can pass into the spacious thoroughfare already laid out in connection with the Government buildings for its proposed clerks' quarters.

From this point of meeting there runs also eastwards (south of the Bakshi Bazar and through the northern portion of the jail area) the last of these proposed new thoroughfares, and this is shown continued by widening or cutting, as circumstances may decide, as far as the Railway Station.

The general project here suggested will now be plain; that of the improvement, by reasonable modern planning, of the northern and western

portions of the city, which have not as yet acquired adequate urban thoroughfares at all. To provide for these, and with due directness and space, may at first sight appear too costly, but will come to be seen as only a reasonable foresight. The idea to minimise changes of existing quarters of the town, yet to provide future developments of really effective and attractive character. One cannot hope that the jail area can be acquired on conditions which will admit of its affording a park ; but the suggestion as on plan of several small squares with trees remains all the more desirable.

Even now at the extremity of these long thoroughfares, we are still more than a mile, say, rather two, from the west end of Dacca, which indeed straggles out in village fashion, I know not how far, beyond the present municipal limits. The Dacca Town Planning Committee should therefore go on, though I must pause, for delay to align means only increased difficulties of acquisition later.

CHAPTER V.

Possible further Housing extensions, in new Suburbs and Central areas.

At the close of this general survey of the city and its communications and of its main needs and possibilities, it will be seen that we have as yet found no free space for any new Garden Suburb ; for the jail cannot be hoped for at present. Is the city then doomed to stew indefinitely in its present narrow limits, with ever-increasing overcrowding accordingly, and all its attendant evils? In the ordinary growth of a European city expansion beyond the Railway would, of course, long ago have been in progress. But this was barred when the planning of the Government buildings was carried out. What space remains for this urgent necessity? One and one only ; namely, that designed and actually laid, with its main thoroughfare fully constructed, and its side streets levelled, all as shown upon plan of the Government Buildings scheme, now to be University, and appended to the general plan herewith.

This area is now not needed for clerks ; but it certainly is for citizens, both existing and new ones. A new suburb, with good houses for the most part, more or less like those of Wari, is plainly required ; and its construction would give a new start and life to this western quarter of the city, and more space in the old town, making its bettered housing, abated congestion, and other improvements, far more possible. Moreover, if new families are to come in, as naturally happens with every University town and provincial capital, where else can they go? What other place is there to attract them?

Another consideration already mentioned, but now emphatically repeated. Here, in a city strangely poor alike in mosques and in temples, we find a main centre of each faith, for the Muhammadans around Shah Saheb's House, for the Hindus at the Dhakeswari Temple. To lay out the appropriate suburb for each, to adjust this on one side to the old town, and on the other to the new, is thoroughly practicable ; and I am confident that municipal and other representatives of either faith will see this as desirable. The fitness of these schemes, adjacent with the University—which naturally not only respects each historic tradition, but seeks to continue each, and at its highest—will surely not be denied, even by those who, like the writer and his compatriots, are necessarily without part in either, but have respect for both.

To utilise this spacious building-site, already prepared, and needing little modification to suit this temple and mosque region, is obviously an easy and natural affair. One is in fact surprised that the beginning of these attractive suburbs was not arranged as soon as the Government Buildings were left vacant.

Here, however, it appears that the University has come in ; and that its governing body and architect, doing the best for themselves in the ordinary way, and thus unmindful of the City, have proposed to allocate this large area

in part to the future Engineering College, and the rest to the University playing fields.

Viewed in this restricted way they may doubtless be making the most of their attainable space and of its amenities. Indeed any town planner would recognise improvement of the layout of the roads, etc., of the new University scheme over their actual layout at present, which is wasteful, yet inelective.

As throughout the greater part of my life more actively interested and occupied with University improvements than with civic ones, I should be the last of planners to wish to limit the development of this University, and this upon the exceptionally generous scale which its vast acreage (I am told most of the original 1,000) not only permits, but invites.

Yet I have no option, since here called in as responsible to the larger interest of the whole city, but to deprecate this proposed appropriation of this needed suburb; in fact to describe it as the very gravest of possible injuries to the city, and that increasingly in the future. An injury of course, not wilful; but plainly unconsidered, and none the less disastrous, precluding all the needed expansion, both upon this area and beyond it as time goes on. I have been asked, by those who wish this playing-field, if housing sites cannot be found within the present city area; and the answer is, certainly no: not to any sufficient extent. Cannot the city then expand sufficiently to north and east? Even if the 34 acres of the Jail at this side of the town and the 20 of the Police School at the other were promised (as I plead they should be), their acreage would be quite insufficient for any term of years. But the Jail cannot at once be removed; hence this space is required. It will not only fill up within the activities of this rising generation, but will need continued extension beyond.

Since the University and the European quarter generally alike lie to the north and east of the railway line, this whole proposed extension can never interfere with their free and full development. Witness the spacious lines of their present plan improved for the University. For here is a University starting with an acreage amounting, even when deductions are made, to more than Oxford or Cambridge put together can reckon, and certainly far more than would contain all the other universities of the British Isles. Can it seriously be maintained by any member of this or of any university that it should yet further extend this space—and that its playing fields can find no site within the hundreds of acres at the disposal of the University, but must recross the railway into what was actually planned and even is lying already laid out, as an extension of housing—and that it should appropriate this, the only possible suburb for the continued extension of the city, and thus strangulate it for all time coming?

I can but repeat my surprise that the Municipality should not at once upon the removal of the Government from Dacca, have taken steps to secure this suburban area, or at least the option of it; or failing them that some responsible body of citizens should not have come forward in the common interest. Of the recent discouragement, now happily abating, there can be no more melancholy instance.

At any rate it seems plain that under no circumstance should a new university begin its career by taking advantage of such municipal discouragement or neglect. Of the causes of separation between "Town and Gown," which injure Universities and their cities too commonly everywhere, I have never seen one so serious as this would be, nor so full of evil augury to both.

A kindred criticism applies to the suggested location of the Engineering College, also upon this inappropriate suburban site. I have above pointed out the peculiar value of the neighbourhood for Moslem and Hindu Garden Suburbs of the best class, and I trust that this may be admitted. For the sake of the Engineering profession itself also. It is everywhere too much separated from the liberal arts and sciences, and will only gain by a closer proximity to the rest of the University Departments and Colleges, as these in practical outlook by close touch with them. Even in construction this isolation is wasteful, in upkeep as well. Thus in the matter of the University

drainage scheme this location will involve not only a greater length of works, but an extra pumping station for itself alone, with a great extra capital outlay and upkeep accordingly. All these extra expenses are so many deductions from the educational budget, which is never, for any growing University, a sufficient one.

I trust it may be unnecessary to extend this plea, but am prepared to do so, if required. The arguments are not exhausted.

Medical Hostels and Training College Grounds.—The Medical School, as in all cities, must of course be beside its Hospital. But both will suffer, and this continuously and increasingly, from their remoteness from the University; while the two contracted failings which every University develops of boyish (and later) thoughtlessness of social conditions, of civic needs, and of abstract meditation and discussion in regions too far removed from these concrete things—these failings are left to increase.

But now that the Hospital is recognised as in need of rebuilding, can it not take up a larger and better site than its present one, northward nearer the University? Where better than on the vast site north of Shah Saheb's House, and just beyond the proposed suburban extension? Or further west of this, and nearer still to the University, but still west of the Railway line? Consider the vast area on which lies the present Conservancy station. On any scheme of sanitation (whether of the various drainage schemes successively submitted to the City, or that fresh conservancy scheme which will be submitted later) this will be removed. Why should not the Medical School occupy this area? and the Hospital be housed immediately to the south of this? The objection to this, of comparative remoteness from the present situation, and from the houses of the patients, has of course a certain cogency; but with the improvement of communications (which must reasonably come to be provided, and such as is provisionally sketched out on the accompanying plan) the new hospital would be only a little further away, in time especially, from most parts of Dacca than it is at present.

The advantages of removal in my judgment outweigh the disadvantages, and this still more when the value to the housing area of this compressed and overcrowded city is considered. The dozen acres of the present hospital area, with the two or three of the Medical Hostel are obviously worth a large sum for housing purposes; and this price would substantially aid the new hospital buildings.

Training College.—I trust I am safe in assuming that the Training College is to exchange its present situation northward of the Hospital for one nearer the University. Supposing now that the Medical School and Hospital be unfortunately retained where they are, may not at least the proposed Medical Hostel take up the area and buildings of the Training College? This site would have greater quietness and proximity to the Hospital, while its presently required area would be of more use to the city. Especially is this the case in view of the approaching market scheme, and of the business and housing developments which will naturally accompany it, as also of the small public garden, which is so desirable at this point in the centre of a large population who have at present no such outlet.

Moreover and above all, the hospital will need by and by fresh extension, and the Medical School new space also for its ever-extending departments. But on the present site extension will be impossible, at any rate without costly purchases of adjacent property, with new and further compression of the neighbourhood beyond its present congested and patient-furnishing conditions.

On every ground then, of education and of the public health, I entreat the Educational, Medical and Municipal authorities concerned to consider the expediency of removing the Hospital and Medical School to some such more suitable and more spacious locality as those suggested above. The present is the time for consideration. Soon it must be too late. To rebuild upon the present sites is to continue the disease-producing congestion of the town, and to limit the hospital from any future growth, save by continuing the old process of congesting the neighbourhood yet further.

CHAPTER VI.

Open spaces.

Gardens, Esplanade, Park, Playing Fields, Tanks and Khals.—Towns gardens.—Before making any fresh proposal let me congratulate the Municipality and its Engineer on several beginnings of these by filling up waste places, as notably west of the Law Courts at Panitola, and also at Khagritola and Barnidia. To finish these and get them into use is, however, urgently desirable.

River Front.—The very best of all the open places of Dacca is of course its River front. Its needed Esplanade has already been discussed at pages 6 and 9. In the detailed design of the Esplanade, corners and vacant spaces would be utilised for trees and for shaded seats. Here and there along its course, small but pleasant patches of gardens are possible, which would be much appreciated by the citizens and attract them to the Esplanade, in mornings and evenings alike.

River and Island.—Though the past generation has been devoted to land sports (till rowing, even on Thames or Isis, is mostly but a survival from a more active past), there are many reasons for expecting a return of boating and sailing, even on the older scale and beyond it, not to speak of motor boats as well.

With boating, too (or even without this, by mere arrangement with one of the ferries) the Island might afford a playing-field a pleasant park and promenade as well; and all with little expense. A little judicious planting on this Island would also enhance the beauty of the whole river landscape, and in the most satisfactory yet simple way. A photograph of it at present, and a copy retouched by insertion of palms, etc., will vividly illustrate this.

Further Esplanade Gardens.—At each of the two entrances of the Dolai Khal something may be done, perhaps also on the west side in consultation with the authorities and architect of the Hospital, though of course on quite a small scale. Not until we go further westwards, to south of the Lal Bagh is anything of park nature practicable. Here, however, the Esplanade might lead into a small public garden, and thus lead into a playing-field, available at any rate in the dry season.

At the East opening of the Dolai Khal a real and pleasing park seems possible, or, say, a small garden on the west side of the khal opening, and on the east side a playing-field with trees, in fact a portion of the present Police School grounds very much as they are.

Burial ground.—The improvement of the various Muhammadan burial-grounds by tree-planting might readily, and with great advantage, be undertaken by the Moslem community; as also the planting and grouping of trees round the many fine tombs which are so common in and around Dacca. Here the Government Arboriculturist would doubtless give friendly advice; and the young trees for these and other purposes of public amenity might be grown on easy terms in a reserved portion of the town's gardens. That mosques and temples should each and all be the adornments of their city is the best of rivalry.

Tanks.—Where formal tanks occur attention should be given to their improvement. The existing Hagi Tank only needs a little planting to make it perfect, and in the fine Tank of the Lal Bagh we have a similar case. In the finest of contrasts to the free and naturalistic aspect of the khals each tank or group of tanks, such as the three lying near each other between the east side of the northward khal and the main station road, should be made the most of. These three tanks, for instance, are now mostly surrounded by *busti* hovels of more or less dilapidated and insanitary character. Without clearances or even partial eviction (which in any and every case must be deprecated unless and until new and adequate location is provided) a scheme might readily be sketched out which would be of common advantage to proprietors and to householders, and of health and beauty to the town, of diminution of rates accordingly.

This sketch (or, still better, model) would show the tanks with roads, lanes and paths rectified, plantations attended to, and cottages fittingly rebuilt ; in the old simple materials of course, but with proper height of plinth, adequacy of space, height and ventilation ; in short at once with recovery of the old rural standards of good workmanship with the acceptance of the needs of the town. With a little skilled and kindly guidance these *bustis* might thus in a very few years be transformed into a model village, and one of the good instead of bad points of Dacca.

Khals as Water Park.—As the visitor follows along the course of the khals, of which he has heard only tales of neglect and pollution, he is surprised by the fine water and park landscapes which open before him and change with every point of view. With all this picturesqueness in their two-thirds dry condition, their beauty when water is abundant must be very real indeed. From each of the bridges fine views are obtained ; but the future improvement of the city will largely lie in developing roads of (varying) suitable breadth along at least one side. This might easily be done, for instance, along the north boundary of the old town—the south side of the Dolai Khal accordingly. From the main bridge (towards railway station) such a road, running both east and west, and made gradually as means allow, with some planting to display (and sometimes conceal) the opposite side, would involve no unreasonable expense, and be at once of beauty and use to far more than the neighbouring population. It would gradually extend eastwards to the Narindia Khal ; and why not southwards to the Suspension Bridge ? Similarly westwards from the main North Bridge. A quarter of a mile beyond this, where the North Khal goes off and begins its branchings, a veritable labyrinth of wood and water landscapes might be arranged, which would make this quarter not only the cynosure of Dacca, but one of the most interesting and picturesque of those water and tank-parks which are the glory of India. It is not a question of any great expense, but merely of that appreciative and constructive collaboration in which the painter's eye goes with the planter's hand.

Similarly northward along the branches of the khal. Even from the worst possible view-point, that of the repugnant conservancy area, these possibilities may be seen awaiting the easiest utilisation.

In summary then, it is only common truth to say that among the many cities I have now studied in India, I have found only one or two others which might be as easily, simply and inexpensively provided with a park system ; and this upon an extent and with an effect not only rivalling that of great cities, but surpassing most of them. True, the temples, ghâts and other monumental adornments, which beautify such areas in other cities, are not here present ; but the landscapes are the main thing ; and the rest would be provided by that incipient renewal of religion upon the modern plane of which the current awakening of civic feeling, with its desire for improvement, its zeal towards public health and sanitation, are everywhere becoming such conspicuous beginnings.

The advantage of such an extensive creation of landscape beauty to any city should be obvious, but to one of university aims and residential attractiveness doubly so. I am, of course, well aware that neither Hindu, Muhammadan nor European at present take much interest in such questions of public amenity ; but the traditions and the literatures of all three show fully that any present inferiority is not innate, but acquired. China and Japan have no monopoly either of artistic appreciation or of gardening and planting skill.

CHAPTER VII.

Revival of Industries towards City prosperity.

Though Governments may give grants, these are not so much "found money" as they seem ; since a Government is but a taxation bank, and its city grant is a transference from rural and regional incomes. Nor can the advocates of Government-started or conducted industries find many examples

of their success in this line from any country. The main hope surely lies in accepting the existing organisation of industries as individual (or joint-stock) in their management, but in civilising these a stage farther, *i.e.*, towards civic and regional prosperity as well. The true industrialist has constantly something of this wider view.

What then are the existing industries, and how can their condition be improved? That is a question extending far beyond the present one of town improvement, yet it must be asked here if not answered, as affording the main resources for the city improvements desired. Shell-working, fine muslin, perfumes, and such other luxury industries as may survive in Dacca, may all gain by a judicious enquiry into them; but I do not of course venture suggestions here. As little as regards jute, hides and other industries of modern type, these must be approached by way of the general economic activity of Bengal, and not merely that of Dacca. The localisation of these industries has, however, already been indicated, as one of the desiderata of city improvement and efficiency, as per plan herewith.

Taking the citizens of Dacca as we find them, and have to plan for them, they are plainly characterised by a large persistence of rural economy. The direct production of food thus bulks far more largely than in a city of modern type, and it is necessary and advantageous to accept this. Why then subdivide holdings, and build until cow and garden alike disappear? By all means let the *goalas* take their cattle to suburban dairies, and develop these up to the modern standards, as of Denmark and Ireland; but for the household cow and calf, the domestic garden, there remain, and should remain, a steady and increasing demand in the future. The wretched deterioration of gardening here, as in most other Indian cities, is obvious. Yet its occasional survival is sufficient to justify full hopes of its speedy renewal. Indians have readily accepted a re-education in many respects from European instruction and example, witness, alike policeman and postman, official and soldier, student and graduate, professor and pleader: why then may not the gardener in his turn give a similar impulse? In Europe and America the primary school has more and more commonly its garden: and as from the so-called primary education of "the three R.'s", we advance to the vital and primal education of the three H.'s (Heart, Hand and Head), gardening begins to come into its own again, and its tree of life is being found also to bear the fruits of knowledge.

To provide gardens for schools is the newer town-planning expression of this regeneration of our present too unsuccessful instruction-methods, and of the needed reaction, from increasing the numbers of non-productive consumers, to the opposite programme, with social well-being and happiness replacing the present growth of discontent accordingly.

Where in India would one desire to choose the town in which such a revival of horticulture might best be attempted? After looking at some forty cities, and always with this question in my mind, I answer unhesitatingly—Where better than in Dacca?—and this as regards population and place alike.

As regards population, village conditions and traditions survive throughout the greater part of Dacca, so that gardening space, however wasted, plainly exists. Moreover, the large proportion of persons of aristocratic, land-owning, governing, administrative and educational outlook, and their more or less impoverished dependants and menials, may far more readily be turned towards horticulture as a minor and accessory means of improving their prosperity and dietary, and abating their money expenditure, than towards mechanical and commercial pursuits.

As regards place, what conditions can be more hopeful? To a Chinaman, with his sound and fundamental rural economy and that rural sanitation which is so essential and basal a part of this, the famous Dirt of Dacca would afford fertility-mines, ample and profound, which he would rapidly turn to fruit and gold. As a beginning towards this admirable impulse—to my mind that one of all missions most urgently needed in India—the appointment of a Chinese Jamadar of Mehters, with prime duty that of making his own garden flourish into the wonder of the district, would be of the utmost usefulness before long. I am, of course, well aware of all the difficulties of introducing Chinese sanitation into India; but none the less confident that before long substantial beginnings of this will be made. Indeed such beginnings are

everywhere around us already. The sewage farm is a standard example, the manufacture of poudrette another. At Ahmedabad, where the difficulties cannot have been less than they now are at Dacca, the use of this valuable manure by the neighbouring cultivators is becoming more frequent every year.

In Dacca, too, where the Melter difficulty, present more or less in all Indian cities, is peculiarly acute and pressing, the introduction of Chinese methods would be peculiarly helpful.

There is moreover this more general argument that the direction of sanitation is steadily passing from the engineer to the bacteriologist, and this again only as a part of that general revolution in science now in rapid progress, the change from a *mechanocentric* view and treatment of nature and her processes, to a more and more fully *biocentric* one. I venture confidently to express the conviction that not only Indian "prejudices," of old-world sanitation gone wrong, but also current British practices, and primarily those of applying the customary costly sewerage methods of our overcrowded cities to Eastern ones, will alike be superseded by more organic methods; nearly recalling the old-world ones, yet controlled by a completer biology and bacteriology, a fuller knowledge and more skilful treatment of soils—in short, a better horticulture and agriculture.

I return, however, to my general problem—that of town-planning, considered as the enquiry into all the material and associated advances towards the increase of civic efficiency, health and wealth together. For this, and in a city still so largely semi-rural in character, no advance is more obviously desirable than the increased and consequently cheapened supply of food for man and beast, of fruits and vegetables therefore for the people, and of fodder for their cattle, alike of draught and milk. To turn the minds of the governing and directive classes—European and Indian alike—in this direction is for more important than for instance is the increase of hospitals—which are so largely rendered necessary by these and other deficient conditions of healthy life, in fact by the lack of adequate homes, with something of garden wherever possible.

And similarly as regards the increase of sanitary appliances of western type and costliness. In a city which I have been lately investigating and with far more weeks than I have had days in Dacca, no improvement has been shown me with greater (and in a way more legitimate) professional pride by its distinguished city engineer, than his introduction of flush-latrines into its poorer quarters, and these of the highest efficiency and minimum offensiveness accordingly. But the cost was incidentally revealed me as Rs. 260 per seat—a good deal more than twice the average value of the homes around. By supplying larger latrines, I think, with 100 seats, the expense may, it is hoped, be reduced to Rs. 150. But all this is surely too much. What would the British tax-payer think, if American engineers insisted on supplying him with correspondingly costly contrivances, each exceeding the value of his home altogether?

Given any occupation, specialised as is this of the sanitary engineer, away from all other considerations of town-planning, and with the prospect and tradition of Government grants to supplement his constant exhaustion of the city's available budget, the perfection of such appliances and methods naturally becomes his only duty and care; and by the efficiency which he thus often (though far from invariably) obtains, he has silenced municipal and popular dissatisfaction (henceforth mere "prejudices") and fully gained to his cause the medical and sanitary authorities; and with their powerful aid, the Government and its exchequer. The criticism of the town-planner, himself, as a rule not professionally trained in sanitary or other engineering, is thus readily overlooked or put aside. Yet none the less it must and will persist; and though often for a time rejected, it will return, and before long to stay.

For, in the first place, the town-planning point of view is that of effecting an improvement of general prosperity, of city efficiency and well-being; and thus it tends to place before Governments and municipal authorities its far more connected and comprehensive scheme of city survey (one which, in passing, it may be mentioned would largely reduce the expense and increase

the efficiency of the drainage surveys now so common in Indian cities). From this survey as it extends, the town-planner is able to prepare a general report on city requirements, and these of all kinds, constructive as well as remedial.

We are thus led to the large question with which the past origins and the possible improvement of Dacca are so intimately connected, that of its Khals, and their possibilities, economic and other.

CHAPTER VIII.

The Khals and their possibilities.

No more quaint and vivid illustration of the view-point possible to the expert engineer, with his constructive energies and his limitless drafts upon municipal and public exchequers, could be imagined than that which the Report begins of a previous engineering scheme for the improvement and sanitation of Dacca, one only of a few years back, in fact 1909. Here it is gravely explained that the $12\frac{1}{2}$ miles of khals might now be filled up, and with estimates given as follows:—

	Rs.
Cost of filling up (at Rs. 20 per 1,000 cubic feet) ...	7,50,000
Land area obtained (50 acres at Rs. 3,000) ...	1,50,000

Although, to do the writer justice, this scheme is not recommended, no really constructive alternative treatment is offered; but this must surely before long become prominent. In connection with the large scheme of sewerage of the present Government engineer, I understand that the canalisation of a portion of the Dolai Khal is recommended, and I cordially welcome this and look forward to its fuller extension.

Let any European or travelled Indian who has seen anything of the canal systems of Holland and Belgium look with open mind upon this splendid old Dolai Khal, with its further ramifications through the city northwards, east and west. He will not simply think with astonishment of their filling up, but of the vast loss and waste involved by their present condition, and of the manifold forms of prosperity which their cleansing and deepening would normally tend to restore.

This cleansing and deepening, even in many places by the seven feet which would be ample to restore communication with the river, is not simply an outlay to be estimated by the engineer as a dead expense for labour and renewal. It is the working of fertility-mines, the obtaining of silt enough to enrich or renew every garden in Dacca and to make innumerable new ones besides. It is the supply of the best and incomparably cheapest of communications, superseding to no small extent the burden and the bullock cart, and opening up a new (yet ancient) boat-traffic of all kinds. That this even now is not extinct is evidenced by the tolls; still Rs. 4,000 a year, and surely capable of steady and substantial increase, which would largely pay interest, as well as up-keep. The main return would, however, be in the increased efficiency and economy of the industries and commerce, of the marketing and food-supplies, of the town.

The decadence of the khals is of course connected with (in fact essentially explained by) the long concentration of governing minds and of commercial leadership upon the larger communications of Dacca with Narayanganj, etc. But this should no longer prevent consideration of that substantial aid to, and revival of minor industries and commerce, domestic marketing, etc., which all were quietly ruined or depressed by the deterioration of the khals, and which should now be correspondingly recuperated.

The improvement of the town's Markets, of vegetables, grain, etc., is under consideration. I therefore suggest on plan the construction of small Canal Ports at convenient points. These, it seems to me, are at the east end of the Dolai Khal, another at the main new Market, and a third as close as may

be to the Railway station. Such things are not customary in England? No; partly because we have never learned the wisdom of the Netherlands in this matter, and have allowed even our beginnings in this direction to be deliberately destroyed by illegitimate interferences from jealous railway companies. But this ignorance and indifference need not continue; nor is this jealousy here to be feared.

Another direction in which the khals may be made profitable is in terms of another of the economic arts in which Bengal has too much been lapsing, and in which Britain (since the Protestant Reformation with its destruction of fish-ponds) remains deficient,—that of *Pisciculture*. In Bengal as in Europe there are again beginnings of improvement. Without claiming competence in detail, my enquiries at Dacca and in Calcutta justify my making a plea for the serious consideration of this resource, as a substantial accessory to the other methods of making the improvement of the khals really profitable to the city.

It is probable that the relative immunity of Dacca from malaria is associated with this ample water-supply, and in this connection the important observations and reasonings of Dr. Bentley's recent Monograph will be of interest here. The very impurity of the khals is not without its advantages also; for the water, though not uncongenial to some hardy species of *Culex*, has too much "body" for the dangerous *Anopheles*. But our purification is not likely to go so far as to introduce him.

Returning once more to the horticultural possibilities afforded by the silt and banks of the khals, let me recall the contrast between the utter squalor of the mehter's surroundings in the conservancy compound, or the neglect of the large field immediately westward, and the admirable little cabbage garden on the opposite side. This is a type of what should range for many of the 25 miles of khal-banks of Dacca; and, with only a fraction of the encouragement and impulse at present devoted to less productive undertakings, it might soon again do so.

Yet this outlook and landscape is not a purely utilitarian one. On the contrary, here is a Park system of the rarest extent and beauty, a water-park unparalleled elsewhere, and on which, after the reasonable improvement for which we are pleading, a new recreative life would arise; and this for University and City alike.

CHAPTER IX.

Cleansing and Sanitation.

It is now time to enter upon the Augean problem of the filth of Dacca and why not in the old Herculean way? As we see, the needed water is available; why not make use of it?

First, however, it is necessary briefly to recall the deplorable system brought about during recent years, than which probably nothing at once so costly and so ineffective has before been realised, among all the defeats of sanitary engineering. Particulars need not here be repeated, but the conservancy system and its (in every sense) ruinous railway deserve both photographic and statistical commemoration before they disappear; and they seem not unlikely to do this, long before the proposed new sewerage system can be provided.

So execrable is the present system, that one feels the cogency of the appeal of leading citizens, that anything whatever which replaces this, however costly, must be for the better, and thus should not be interfered with. And it is only after prolonged hesitation and repeated reconsideration that one takes the responsibility, as I now do, of expressing the most deeply unfavourable impression and expectation of the present sewage scheme, and of venturing to submit, even now, despite its provisional or complete approval by municipal and central authorities, that the whole matter be reconsidered afresh.

The essential figures I am given are as follows :—

Privies ordinarily accessible	3,427
„ on khals	3,208
„ inaccessible	1,315
Well-privies	1,715
	Total ... 16,265

The new sewerage system is to take so many years to execute, say seven, and will have cost not less than its estimate, of 30 lakhs. Only a small number of houses will put in modern connections of baths and water-closets, say, 1,000 to 1,500, and at a total outlay to them of a good few lakhs more.

A reduced staff of mehters will do the work of bringing their burdens to the dump-holes distributed throughout the city (and inevitably reducing property values round them); but this unsavoury work must still be done. Is it worth while then introducing a European system when it cannot be worked in the European way for more than a tenth of the population? Can this community—or (since State-aided) can Bengal Finance consider this good finance? Even for the University, with its separate drainage scheme, compelled as it is to range over the area and distances of another good-sized town—and estimated at 2 lakhs accordingly, really afford this? Would any and every European University treasurer not ask and, ask again,—how many better and more urgent things, more really vital and educational and healthful, could not I do with this vast sum of money?

Returning, however, to the City, with its separate purse and separate grants, let me ask consideration, and even experiment, for the simple beginnings of a possible partial, if not complete, alternative which will in any case cost little, and I believe—even in the interregnum between the present and increasing breakdown of the sanitary railway and the coming of the new system may accomplish much. Without asking the complete deepening or renewal of the khals, let the portion already and independently suggested by the Government Engineer be executed. Place now upon this canal, which will have near access to a considerable number of the privies along the khals, a couple of those (cheaply and easily built) ferro-concrete barges which have been coming into use in Lombardy of late years, and compare their cubic content, their cheapness of working, with the content of the tiny trucks of the railway, and the costliness of their working. The barge would be inoffensive, since covered over by a light but impermeable deck, and filled and emptied by a hand or motor pump. The attachment of a light motor to the barge is again an easy and inexpensive matter, and the whole can be worked by two men—the mechanic and steersman at the stern, and the mehter at the prow. The latter with a flexible hose-pipe with wide nozzle, can readily reach many of the privies, and more by a step or two on shore; and the pump will do the rest, with great liberation from filthy toil to the man. When the barge has absorbed its train-load or more, it can make for its depôt—where, more or less in the direction already selected for the filter-beds of the sewerage scheme, or near or beyond its outfall, it can be discharged, again by pumping, to the small poudrette work, or to the experimental field.

Instead of the mehters waiting for the future dump-holes, they may meantime also go down the existing lanes to the khals and discharge their burden into the barge.

I submit that the above suggestion will be found worth a trial; and I believe it may lead to further developments, greatly reducing, if not rendering unnecessary, the vast extent and cost of the proposed sewerage scheme.

So far the present report: yet its essential conclusion would be missed if it did not suggest a comparison of the proposed outlays upon these

sewerage schemes, by City and University respectively, with the possible alternative expenditures in other directions of more productive character, of the vast sums at present claimed for these. For it should not be forgotten that all that has been suggested above for the amelioration and improvement of Dacca could be done with far less money than is here absorbed for a single sewage scheme. In the financial tightness which the war must involve for years to come, Dacca cannot hope for further generousities from an anxiously husbanded exchequer.

Yet this after all is but the minor argument. The major one is that we should place ourselves more and more fully at the constructive point of view—that of the general amelioration of the city, of its economic and domestic prosperity upon older lines, and not sacrifice these, as sacrificed they tend to be, upon the altar of a nineteenth century sanitation which it is for the twentieth to supersede, by methods in some respects simpler and more primitive, in others more advanced.

It only remains to express my obligations to the representatives and officials of the municipality, and in particular to Mr. Chatterji and Dr. Bhindewalla, my guides (and friendly critics at times also), during our peregrination of the city. This was greatly aided by the use of a motor kindly lent by a prominent member of the municipality.

P. GEDDES.



TOWN OF DAGGA
AND
SURROUNDINGS

Scale 6" = 1 Mile



GOVERNMENT AND MUNICIPAL
WATER
SACRED SITES
JOINT AND WELLS