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**PLIMENTS OF**

**S. M. BAPNA,**

**HOME MINISTER,**

**HOLKAR STATE,**

**INDOR**

# Town Planning towards City Development.

A REPORT TO  
THE DURBAR OF INDORE.

BY

PATRICK GEDDES.

## PART I.

INDORE: HISTORIC DEVELOPMENT.

PUBLIC HEALTH.

REGIONAL INDUSTRIES AND NEW INDUSTRIAL TOWN.

WATER SUPPLIES, AND THEIR INCREASE.

RECENT DRAINAGE SCHEME CRITICISED.

SUBURBAN DEVELOPMENTS, HOUSING SCHEMES &c.

GARDEN DESIGNS, PARK SCHEMES, RIVER PURIFICATION.

IMPROVEMENT OF CITY QUARTERS THROUGHOUT.

OPEN-AIR SCHOOLS.

CLEANSING; AND DRAINAGE SCHEMES PROPOSED.

PLANS.

INDORE.

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## Introduction to Part I.

A City Report naturally opens with a Plan of the existing City as its frontispiece. It proposes its Improvements and Extension, with detailed Plans as far as may be. It then combines these, as clearly and fully as scale etc. make practicable, upon a concluding City Plan.

The first Plan shows the City as it is; the following ones as locally improving; and the last as improved and extended.

But this is too bare and crude an indication of any Report and Plans; and a fuller statement is necessary; and this the more since the plans are but a pale reduction of the large and fully coloured originals.

As the physician must make a diagnosis of the patient's case before prescribing treatment, so with the planner for the city. He looks closely into the city as it is, and enquires into how it has grown, and suffered. And as the physician associates the patient with his own cure, so must the planner appeal to the citizen. Hence the Indore reader should go round and look at the City for himself; and with its Plan for partial guide, he may check, and amplify, the diagnosis; and perhaps accelerate the treatment.

As the preliminary Survey and Interpretation proceeds, the City and its Quarters, and how they have developed and deteriorated, grow clearer; and the making of Improvements, the planning of Extensions, will be seen as no mere application of a standard remedy or arbitrary prescription. For our Improvements are primarily those of urgent local hygiene, and of conservative surgery; and our Extensions must be on these lines of growth on which the City presses, or which its surroundings best admit.

With this simple summary, given at the outset, the reader may first run through the pages, for what may interest him, and thus rapidly realise the City's past phases, its present conditions, and its incipient or needed developments. Let him at first freely skip over unfamiliar details; yet seize the general Historic approach and Outline, of Chapters I-III. The next Chapter, dealing with Public Health, discusses essentials. So too the next, ( V ) of Regional Industries, is fundamental to all economic developments, and hence to that of the the Planning of the New Industrial Town; as this in its turn, has wide bearings on others he may know. In Chapter VII—Water Supply—the paragraph-headings show the interest here as essentially local and technical; but those of Chapter VIII—Drainage—deal with matters controversial, and important to more than taxpayers, Municipal and other. Again, in the Chapters ( IX-XIII ) dealing with Suburbs, the general schemes of Planning and Housing, and of Sanitation, are the essentials; and these are sharply outlined.

Successful treatment must be general and constitutional: for though every disease has many outcomes to be relieved, health is a Unity. Hence the main concept, always before the mind, is the City itself: the City Past, Present and Possible: and thus as a vast and complex life, the tree of which we, and all our generation, are but a season's leaves; yet which have to continue its growth, and to bud for next season.

With such general view of the City clear at once in eye and mind, the reader will not then be alarmed by the multifarious details here set before him. True, without some study of plans ( and of place too as far as possible ) he will not follow every point of our initial historic survey, incomplete though this still may be. Nor will he always fully realise the proposed planning; for though the nascent Industrial Town, the New Suburbs, the Parks and Gardens, are I trust fairly clear on the plan and in the text, the minor labyrinths of City Quarters may still fatigue him. And while all plans are necessarily much reduced from the very large ( 82' to 1" ) plan prepared for the whole City, some are omitted, on grounds of time and economy, and bulk.

Thus the plans bringing together the two existing Water-Systems of the City, and those of the Drainage Scheme also criticised—in Chapters VII and VIII, (constructively and destructively respectively)—are not reproduced.

Through the long series of Chapters XIV-XXIII, given to Park and Garden Design in this peculiarly well-situated and promising City for them, the paragraph headings will guide the reader to whatever most appeals to his taste, be this naturalistic or formal, scenic or detailed, palatial or domestic, artistic or scientific, zoological, botanical or arboricultural. Chapter XXI (River Purification) is to my own mind the most important of this whole series.

In the Improvement of Civic Quarters, the essentials for Sia Ganj and its neighbourhood (XXIV & XXV) are the economic and the sanitary proposals. In Juni Indore (XXVI) are raised social, economic and town-planning questions too seldom so fully considered. The proposed local renewal of this original centre of Indore, and its restoration to a central position by new communications and suburbs, are also a main town-planning result.

The Chapters on School Planning (XXVII-XXX) as their headings will show, raise questions for more than administrators and teachers, in fact inevitably stir main controversies of education.

The remaining Chapters on City Quarters (XXXI-XXXVI) again raise and discuss large civic questions, and policies, e. g. as between the conservative treatment here adopted and the large City Improvement Scheme previously proposed.

Town Planning and its Improvements thus worked out for the whole City Area, the question of Drainage now comes up in its proper place, (Chapters XXXVIII-XL); and here the treatment differs from that previously criticised; and claims advantages and economies accordingly. Yet even before Drainage, Cleansing; (Chapter XXXVII), for here is the first step towards the purified River and City.

It is of the very essence of this whole Report that its many details are treated as interacting towards a single result—the Better City. With this kept clearly in view, all our dissociated specialisms, too long handled as Dis-specialisms—and thus sometimes even falling to Mis-specialisms—, will not only sum, but multiply, their usefulness, as Con-specialisms; and become Civic accordingly.

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---

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My private Assistants, Mr. S. C. Paul and Mr. A. C. Sinha, B. Sc., have worked throughout these past months with a continuous intensity I have never known rivalled in any office: and while the former has superintended the large scale and detailed Plans, and actively helped in their execution, the latter has been of especial service with regard to Drainage, and to Housing Plans.

Mr. Jamal-Ud-Din, City Surveyor, and Mr. Mukund Ram, Public Works Surveyor, have each been of much and willing help in their respective capacities throughout the work: and among the draughtsmen I must especially mention Mr. Nemawarkar and Mr. Khandekar. Nor must I forget thanks to the Stenographer Mr. G. G. Suwarnapathak ( whose services have been kindly spared by Dr. Hudlikar ), and to the skilful and careful Municipal Typist, Mr. W. B. Bhagwat.

Special acknowledgment is also due, for care and skill in dealing with a necessarily difficult M. S. to the State Press, and its vigilant Director, Mr. Chhotelal.

## PLANS.

**I. Outline Plan of the main City:**— Here the initial growths of Indore, as indicated in Chapters I-III, are emphasised; while irregular Mohallas are simply dotted. Not to overload with lettering, only the main localities mentioned are indicated, and these partly by numbers and list in margin. The 30 arrows along River-courses indicate existing Drain outlets to be removed.

**II. New Industrial Town:**— (Chapter VI), showing the Industrial Areas on the level plateau with Railway Sidings; also the Lay-out of Housing Area along main roads, along nulls and river-courses, and between River and Railway.

**III. Industrial and Smaller Suburban Housing:**— (Chapter VI & XI page 75 etc.). Here, for five typical acres, are indicated the respective proportions allocated to:—

- (a) Ordinary (20 ft.) Mohalla streets (shown in each case to North & West),
- (b) House-plots of different sizes, with number of Houses per acre,
- (c) Municipal Garden separating house-rows.

The details of b. & c. are as follows:—

Acre.	Size of House-plot.	Houses per acre.	Municipal Garden.
I	30×52	16	42×240
II	35×60	12	49×210
III	40×65	10	48×200
IV	50×70	8	38×200
V	60×80	6	38×180

The House-plots thus occupy 62 % of the five acres, the Roads 20 %, and the Gardens 18 per cent.

The majority of houses of the New Industrial Town are necessarily of the smaller size. In the Suburbs, as shown in Plan VI, larger plots preponderate, from 50×70 to 100×120, 150×250 or larger when required.

Below these Type-acres are Plans of Small Houses for acre I. It will be noted that the rooms are larger (12 × 15 or 12 × 13) than those of much recent artisan housing, of which the family air-space is too frequently reduced below the requirements of health. The possibilities of enlargement ( page 82 ) will also be noted.

The section and elevation of a portion of Mud-Wall, maintained and faced by the new " Wall-Tiles " lately invented by Mr. A. C. Sinha, will be seen to retain much of the economy of kacha building, (especially since local earth, of inferior building quality, may now be used). Yet when pointed with lime, they will have durability, and pukka aspect.

- IV. Plan for the Suburban areas east of Railway:—** and to Palasia etc. north of Residency.
- V. Zoological and Horticultural Gardens:—** (South of Chhattri Bagh, River, etc., and north of proposed New Club, and Sports Park.) Here the numbers and marginal References are in the order of the paragraphs of Chapters XVI-XXII, so far as the portion illustrated includes them.
- VI. River Region: Greater Indore:—** This outline corresponds to the description of Chapter XXI. It includes the main possible Extensions of Indore, through growth of Suburbs, and of Industrial Town.
- VII. A. Former Improvement Plan for the Main City. B. Present Improvement Plan:—** While the merits of the former scheme, and its relative economy, as such through-going schemes usually go, have been recognised in Chapter XXXII, the further economies of the present scheme will be manifest; and its detailed thoroughness for each Mohalla, and for communication lanes so far decongesting Bazars and other old thoroughfares, will appear on examination. ( Chapter XXXIII etc. ) New direct communication also are provided, so far as needs and resources justify; as notably the new Express Boulevard, met by that from old Palace Square, adapted from plan A.
- VIII. Drainage Schemes for Main City:—** On main plan are shown the Municipal Gardens, to be sullage-watered from existing or improved Surface Drains (Chapter XXXIX); as also the Main lines of Possible Underground Drainage, numbered as described in Chapter XL, for introduction in the respective Areas, if and when required.
- IX. Railway Station Neighbourhood, showing Proposed Improvements:—** East and West Station Places etc.
1. Improved Tukoganj Railway Crossing, with—
  2. Adjacent Oil Tanks to south of it removed.
  3. Small accessory Subway, for passengers, motors and light vehicles.
  4. New Dharmasala offered by Rai Bahadur Kalyanmal; and—
  5. New Serai, offered by Members of Bania Community.
  6. Improved East Station Place.
  7. New Serai opposite Sia Ganj, to be erected by Members of Bohra Community.
  8. Station Road widened to Avenue, leading to and from Underbridge, and New Express Boulevard to City, with—
  9. Municipal Garden north of Nasia Temple,
  10. Improved Road beneath Railway, and River Causeway raised as Bridge.
  11. New Road West of Railway line to Sia Ganj, and
  12. Corn-siding and Godowns to south of Sia Ganj.
  13. West Station Place, with new Buildings, from Sia Ganj to meet Topkhana Road at Tukoganj Crossing:

14. Proposed West Entrance to Railway Station, opposite Hospital Road.
15. Nulla Area south of Topkhana Road improved as Public Garden, with
16. Site for further Public Building ( General Post Office )?

Nos 1, 2, 3, 4, 5, 6, 12 and 14 require adjustment with Railway Board.

- X. Outline Plan of the Main City, embodying Improvements and Extensions within its Area:**— This includes the main Improvements and Extensions West of Railway, described especially in Chapters XIV, XXIV-XXVII, and XXXI-XXXV, and detailed in coloured plan on large scale (82½' to 1") prepared for Municipal use. The careful detail of "conservative surgery," house by house and lane by lane for each Mohalla—is on this reduced scale insufficiently shown; but new cuts, lanes and streets through old quarters are indicated by thick outlines, and new Extensions also. Municipal Gardens are indicated by the letter G; and Open Spaces, new and old together, are left blank. New Schools etc. are black.

For general idea of the whole scheme, plans I and X may be compared together. The essential conceptions of this Report will thus become clear:—

1. That of continuity with the past, with conservation of its best results, yet with—
2. Removal, or at least abatement, of its many evils. Further,
3. The active renewal of City Development in all its main aspects: industrial, hygienic, agricultural and horticultural, economic etc., on the material side; and on the other, educational and cultural, so that the esthetic and idealistic values and inspirations of the past reappear upon our modern spiral. The City will thus be seen as increasing its possibilities as an effective and worthy Metropolis, the active and educative centre of its City-State, and surrounding Region.



## Chapter I.

### Indore City, from its Early Beginnings.

#### A Preliminary Survey.

It is a great day for the student of a city, when, after the long and repeated peregrinations which are necessary, he begins to feel acquainted with the general and detailed aspect of the great town throughout its many quarters: But this is not yet knowing the City: its postmen, policemen and tonga-drivers may know all this and more fully. Real knowledge begins when we no longer merely know our way through all the changing and cinema-like aspect of the streets, but as we make out the history of the city's growth and development, and as we can follow these up from their beginnings.

In most cities, the centre and germ of origin is easily and soon discovered, as from cross-roads, from River-crossing at a Ford and later a Bridge, or from a Fair, a Palace, or a Fort, as the case may be, and with characteristic varieties of Bazar accordingly. Yet, despite considerable experience of such enquiries, it took me a good many days of exploring and puzzling in Indore before finding its historic nucleus.

#### Juni Indore.

As the name might of course have told me, this historic centre is Juni Indore. This is in itself a minor labyrinth, and of some intricacy; yet it soon yields to a study of town and plan together. First, and still central, we have the characteristic type of Brahmin Street which is so common throughout India, best developed in the South as the "Agraharam Street". Here, as wherever possible, it runs North and South, with its present temples at one end, and what remains of its Bathing Ghats at the other. A street runs on each side parallel to this, a little distance behind its houses, for humbler castes and secular uses: Here in fact is "the Three Streets Plan" so familiar to city students in the West, surviving plainly, for instance, in my own University City and Ecclesiastical Capital of St. Andrews, or again of the corresponding Abbey City of the old Canon-Gait, the Westminster of Edinburgh: in short a type decipherable in many cities, between these geographical extremes, of India and Scotland. The old main street now bears the distinctive name of Shanigali, from the Shani Temple at its head; but its Saturnine deity seems to indicate that this was not the original Temple, or at any rate not the main one. From the lower end of the street, the river now runs some 60 yards distant, but the curving road which crosses the foot of the Shanigali obviously indicates the old curve of the river, and its former concave cutting of this southern bank, which is involved by the sharp loop a little further upstream. The opposite bank was not then so far northward. Its cutting away—still in destructive progress—has been comparatively recent, since the building, by some Mohammedan overlord, of the present massive basalt fortification embankment, which now runs straight as the chord of the old river arc. But within this was once plainly a fine bathing-pool, and this would give not only the natural situation for the sacred Ghat, but also be the determinant of the position and direction of the old Brahmin street itself. May not the original Temple have been here also?

All descriptions throughout this Report should be followed on the City Plan, and checked, when possible, by actual peregrination. Here Plan I will be of service.

The riverside road naturally runs to the old Ford, a little up-stream eastward; and this is now replaced by the Hathipala Causeway. The Hathipala Road running north past the present Hospital, and the Putlighar Road beyond this, obviously continue the first North Road from the little town, while its fork at the top of Putlighar Road, on each side of Kachipura, remains as the old parting of the ways towards Ujjain and Dewas respectively. Returning now to the old townward side of the Ford, now Causeway, an eastward road runs to another Ford, at the opposite base of the northward river-loop, south of what is now Sia Ganj; and this is now also replaced by a Causeway, that now leading to the Electric Station and the Railway Under-bridge, and running into and through the present Residency Town.

Returning to our main point, that at foot of the Brahmin Street, the Riverside Road runs westward, and turns north into the low pasture-land of the Ghatio peninsula, while two or three narrow lanes climb or cross its height towards the larger Indore River.

Looking now at this whole geographical situation, we see how admirable the location it afforded for this peaceful little religious centre. For a cult so fundamentally riverine and pastoral as Brahminism no better situation could be desired; in which the bathing ritual of sunrise and sunset could be followed at their best, in which the economic need of pasture was assured by permanent rivers, and with these protecting the little religious town, which was thus in isolation from the great stream of secular affairs, and yet conveniently near the great road between Bombay and Agra.

But how did this little religious centre arise? Presumably, besides its natural advantages, as a stage, and an attractive resting-point, upon the route of yogis and pilgrims between the holy city of Ujjain and the doubly sacred river Narbudda.

The early unimportance of Indore in secular history—a point at first of perplexity in view of its military importance in recent centuries—is thus explained. And though political greatness and material wealth have been wanting in its earlier ages, it is much to find the origin of our city as a centre of the plain living and high thinking of holy men of old.

For here, as in every such city, the question arises—how far have we here only the dry bones of this venerable past? Or how far may these again live? It is thus encouraging to find, as we explore, a Gnan Mandir (Temple of Knowledge) a Reading-room with the germ of a Library, the start of a Discussion Society, and the project of a Ganesh-Ashrama, all active among the young Brahmins of Juni Indore.

Returning to the History of the Town we have still to find the seat of its temporal authority. This remains obvious in the vast Palace, or rather rambling growth of mansions, of the old Brahmin family of Rao, Zamindars of Indore since the Mohammedan age, and doubtless earlier, of which the head is to this day sometimes spoken of in his neighbourhood as the "Raja of Juni Indore". The wealth and influence of this family was not merely applied to domestic uses; for to the enlightened policy of one or more of its heads, we owe the suburb of Byasphala on the west and also the Raoji Bazar on the east, both established for new immigrations of Brahmins thus attracted to Juni Indore. In this way arose the present, and still compact, Brahmin town, with its menials forming their Mohallas at various sites around, as notably at Katkatpura and Kumawatpura, (also probably to the west and probably some little way N. W. and N. E. also).



It is interesting to note the clear-cut stratification of castes which the social section of such a town presents. Thus, starting from the central street of Shanigali, and proceeding eastward, we leave the old original Brahmins, we pass through the Raoji Bazar of old immigrant Brahmins, and thence come to the Bhat Mohalla, a group of bardic origins, claiming to be Brahmins of later date, but of less fully recognised caste-rank. A little further east again, we have the cultivators in Malipura, and east of these again the vegetable-sellers of the almost rural Murai Mohalla.

Only after all or most of this area was essentially settled, do we find indications of the coming of the Moslems. The positions of their Mosques in all three cases, (south-east, south-west and north) are outside the old town. As already mentioned, the original temples seem to have been destroyed, as old stones suggest, and as the domestic, not monumental, architecture of the present ones indicates; but otherwise the town has substantially kept (or has recovered?) its old character. The Mohammedan Rule was here of its more tolerant variety, even the stern Aurangzeb sending presents to its Zemindars, which are still family heirlooms. Its military defences however, became fairly considerable, doubtless as the Crescent waned, as is indicated by the large remaining rampart base, the black basalt wall running straight along the south bank of the river and pushing this northward. After this time would necessarily arise new Ghats, notably surviving, with their inconspicuous Temples, at the angle where the River turns north. Also probably upon the main river further west, as is indicated by the four or five Temples upon this shore. For though the present buildings are recent, they have probably arisen on sites hallowed by earlier use:

Since the Mohammedan time the basalt Rampart has been largely used as a quarry of building materials, and thus the full tracing of its course cannot here be gone into. Its architectural use, as base, by such a fine mansion as that north east of the Juni Indore River-Causeway is suggestive for future design. Thus, for instance, after admiring this view north-east,—architecturally one of the best in Indore—let the observer turn up-stream, and note how fine would be the effect of a new Temple placed upon the round bastion of the old Rampart, and built to command this Ford upon the main River, (now the Causeway to Ara Bazar). For here a white temple with graceful spire would be seen from far and near, and doubled by its reflection mirrored in the stream. Turning again northward, we note again on the right hand an old Mansion, itself as fine as a river-palace in Florence; and immediately north of this the buildings of the important Ganesh Temple. But we do not see its spire. This is too low to be seen over its domestic buildings and small Dharmshala. But these are in poor-repair and of little value; and should be rebuilt on the available site further north. Thus we should disengage this Temple, and bring it into view, not only from the Causeway but the opposite side of the river. Again on the round Bastion N. W. of causeway, an effective Temple site suggests itself.

In such simple ways may be gradually developed the beauty of these river landscapes, which are as yet seen from so few points save those of Bridges and Causeways, and too little appreciated, indeed often neglected. As the city awakens more and more fully to their beauty, and to the possibility of indefinitely increasing and enhancing them, their improvement will proceed; and this ever more thoroughly, until both banks of the whole course of these uniting rivers are worthily built or planted for their many miles; thus perfecting Indore, into one of the most beautiful cities of India, and one sacred accordingly.

Here then we have a high collective task, in which citizens, Municipality and State may all co-operate, towards what would thus be far more than a minor capital.

Yet all this is an anticipation of planning, for which we have not yet reached the stage. The possible improvement of Juni Indore will come up later. We must go on shortly to study what is now the main City, in its development and its deterioration; and thus best prepare to discern its possibilities, also quarter by quarter, mohalla by mohalla, indeed as street by street, lane by lane, house by house. For it is only in this way, after an intimate City Survey, and corresponding attempts towards City Interpretation, that we can safely begin to modify it. To fail in this thoroughness is a main cause of rash, and premature changes; and even in what may seem desirable and obvious improvements we risk doing harm as well as good, some times even more harm than good. More time is indeed required at first; but as we come to know a city more thoroughly, to understand it more clearly, than do generally, most of its inhabitants, then and only then can we safely deal with it in a comprehensive way; yet now also a way more conservative, and thus also more economical, than if we had started at once upon new projects, even those most attractive at first sight.

Hence before leaving Juni Indore, we make a further and more thorough exploration of it, both within and without; and now with help of the city's large scale plan, indeed correcting this as we proceed.

As an example of this further study, we may now note the three Nullas which unite south of Juni Indore. These may in the past have had a defensive value, and may thus account for the apparent non-existence of a Rampart in this quarter. Beyond the Nulla and between its component streams are settlements of Balais and Mangs; and these, and not merely the large Mohammedan Graveyard on their east, have mainly prevented, and still prevent, the southward expansion of Juni Indore. Similarly the Chamar Mohalla, on the main road south-east, has checked expansion in this direction; and the signs of old congestion in Juni Indore are thus largely explained. When we come to the planning, we shall obviously have to take note of this arrest of expansion, and deal with its factors accordingly.

So much for an example of the need of neglecting no details, whether of local topography, or of the humblest elements of the population. But again a general view, as we depart. This little old Juni Indore, with its religious community, first developing its ruling centre, and then becoming subordinated to it, thus needs a large comparison with historic western cities for its clear understanding. For this transformation—from spiritual initiative and centre to predominant temporal power and centre—is also in essence the very history of Westminster, the essential and historic capital of England, and now of the British Empire, claiming a precedence over the vast London itself. So, for a long time, would Juni Indore over Indore. The scale is different, but the principle is the same; one of the keys for opening up the history of cities.

## Chapter II.

### Preliminary Survey (*Continued.*)

#### Modern Indore.

The little old town of Juni Indore contains the essential development of the old Hindu and Mohammedan periods, and shows less of subsequent periods. What has since become the main city of Indore is obviously almost entirely the creation of the Holkar Dynasty, who naturally from the first outgrew Juni Indore, where to their credit it is to be noted that they have left its old local family in peace. For active rulers, with their strenuous participation in the politics and the wars of the eighteenth century, a new town was evidently required. Yet there were doubtless beginnings for this of earlier date; since every active river-town tends to develop more or less trade and settlement upon the opposite bank also, and as near it as the character of the shore may allow. In this case the left bank of the Indore River was low and subject to floods; hence even now its buildings stand a good way from the river, and leave a low, and still vacant, peninsula opposite Juni Indore. As low as flood level allowed however, arose Gautampura; and Reshimwala's Lane is perhaps the oldest street. I take this locality to be the old companion Bridge-End town. This again is a frequent type of town-development. Again comparing these two small and early towns with greater ones, since these were in their beginnings also as small, here is a Perth, a Basle, even a Buda-Pesth, now the dual Capital of Hungary, with its opposite cities clasping together the two sides of the great Danube river.

At the point where Gautampura looks west upon the river there have naturally arisen its old Ghats and Temples, of which that of Pandarinath is but the finest, and so presumably one of the later. Beyond this runs westward, into what would then be country, the old road of Machi Bazar. To Gautampura there also comes in from the south a road from the Ford (now Causeway) at the south-west end of the Harsiddhi river-loop peninsula, and coming from the fertile lands to southward, now largely occupied by the grounds and gardens of Lalbagh Palace. Returning towards the town we thus better understand the location of the old Mohalla of cultivators of Harsiddhi, and note the natural position of their Ghat, now so finely rebuilt opposite the monumental Chhatri Bagh. Returning to the main Road past Harsiddhi, a little further afield is the State Bungalow of Juna Moti, now the Land Record Office, but presumably the first country Palace, and thus the predecessor of the Lal Bagh, and the further palaces beyond it on either hand. Behind the Moti Bungalow is the Gadikhana, with its State oxen and elephants; and in front of this, on the opposite side of the road, the Zambur Khana, with its camels, and their associated Mohammedan population, with their two Mosques, small and greater. Further west, across the Nulla, we have a group of potters utilising its clay, and behind them a group of Mangs. Finally a little west of them, the Mahar Mohalla, and then a Mohammedan graveyard.

Here then we have another interesting growth, or rather accretion, one very heterogeneous, yet intelligible. First the complement and contrast of Market-Town and Bridge-End in Gautampura, with the agricultural village in Harsiddhi, the Country Palace, with its Hindu and Mohammedan settlements, and adjacent low-caste Hindu settlements also. Every such social stratification must be noted, if we are later to deal with it successfully. Far too often do would-be town-improvers

cut through such groupings without understanding them, even noticing them, much less providing for them. But thus the towns bleed.

Returning now to the central cross-roads of Gautampura, we may now proceed northward. Notice first here the considerable breadth of the street with its large open space: presumably this is the area and the cart-stand of an old Market. Further north, as the market-place ends (or rather begins), a road enters from the single Mohalla, of Kabutar Khana, which has found a high enough piece of ground on the river-bank.

North of this the street narrows into the long Ridgeway thoroughfare of the Ara Bazar; and here again we have the equivalent of the "High Street" of innumerable western towns and cities; and here as everywhere an old centre of active trade, and with residences of higher social position.

This brings us to what is now the Old Palace Square. Is this an old Market-Place? Or may it be the original situation of the first Holkar Palace? If not, where was this? For the present "Old Palace" is but of comparatively recent date; yet of course the original Palace may have been upon the present situation. At any rate this Palace Square has long served for military and processional uses, as waiting-place and meeting-place, and so far as minor market as well. The adjacent New Palace occupies the garden of the Old one, but seems also to extend beyond this on east and north.

For some considerable time after the development of the Ara Bazar, it must have remained the central and singly important street, of the first "New Indore" town. This was defended by the river on the south and east, and by the Palace on the north. The old Nulla roads, running down from the west and south of the Palace, and uniting into what is now the street of Nihalpura, would be originally its western boundary. It will be noted that the old roads and lanes surrounding this initial Ara Bazar town are all still in use. The easterly Road still separates the town from its river-side fields and gardens, and was originally a Nulla road, as its most recently reclaimed southern section still plainly shows. The detailed study of the various Mohallas of this area with their occupations and castes, and sometimes also their individual origins, will be found of interest; and even of importance and economy in the detailed improvement of these quarters, since helpful to their conservative surgical treatment, as may be required. Hence I would fain linger over my initiation under Dr. Deo's guidance, into the labyrinth of Gautampura, Reshimwala's Lane, Nandlalpura, Tajikunwar Mohalla, Hijada Bakhal, Salwi Bakhal, Kumbhar Bakhal, Kashi Rao Dada's Lane, Bakshi Gali, and Kabutar Khana, every one of which repays study, and this for town-planning, as well as town-history. Thus on the west side of Ara Bazar we have the large Koila Bakhal, early associated as the name implies with the charcoal, fuel and timber trades, which have now moved down into Machhi Bazar. Again on the west side Parashram Poshakhwala's Lane, Barwali Gali, Kango Bakhal, Omarhan Mohalla, have all occupied us, and with practical result, as the plans will show.

There are small Temples south-east of the old Palace, but the large Gopal Mandir very naturally occupies the large corner site, within the Nulla road coming down west of Palace. This Nulla road looks full of historic interest more so than Fezengali further west, for this is but of secondary origin. Some city-student, or resident in this quarter, which is already seriously transformed by the recent clearance from Palace Square to Machhi Bazar—should set about a fuller study of the old

town, before it is too late. For not only in every house, but in every lane and turning, there is a record worth deciphering; that of the actual human complex, both social and individual, of which history and its annals, genealogy and biography, traditional story and historic novel, are all but portions: for all these are interwoven with the local history of architecture, and with the development, deterioration and renewal of local town-planning as well.

One of the most notable contributions of Indian philosophy and ethics to the world's, is its insistence upon the general idea of Karma; while western science is ever elucidating new relations of cause and effect in detail. But as the specialist fails to generalise, so the philosopher does not adequately concretise his thought, and so make himself understood. But as philosopher and specialist are nowadays awakening as citizens, they will alike see in their city's labyrinth the intricacy and interaction of causes, and of effects as new causes, and how these are ever weaving onward, into further intricacy, the endless interaction of situations and personalities, into that supreme complex, at once resultant and re-determinant, which makes up the Karma of their city, and thus also of themselves.

### The Early Holkars' Indore.

We may now leave this old Ara Bazar town, of which the Palace would at first simply occupy the commanding and defensive position at the northern end—one parallel to that of Jamidar Palace in Juni Indore; and also frequent in the greater Castle-Cities. For next began a new development, no longer primarily economic and commercial, but royal and military in the first place, though of course becoming to a large extent commercial also. The frequent movement of troops, to and from east, west and north, necessitated the development of three long main roads accordingly. On the east, we have the present Krishnapura Bridge, (doubtless as usual originally a Ford and then presumably a Causeway) which continues into the eastward Tophkhana road. Since to defend a town we must hold the Bridge-Head, and as far as possible command the roads beyond, military defences would thus be pushed out on this side. Of these there are many survivals, both in place-names and in streets, and in regular outlines on the city plan, as notably from the City School to Sikh Mohalla; and beyond this, the Law Courts, Government Offices, the State Mills, the Hospital etc. are all built on old Military Lines. Conversely, or rather complementally, the irregular confusion of Kachhipura and Mewatipura, and behind these of Kumbhar Bakhhal, up to the Municipal Office, are all examples of that rebound from military order to planless confusion which characterises the villages of military accessories and camp-followers everywhere: (and which is at this time being expressed upon the greatest and most comprehensive scale in the state of Russian affairs). For military authority, which everywhere, in east and west alike, so formally controls its soldiers and their encampments, also constantly fails to regulate the life of their civilian dependents.

The straight northern road crossing Tophkhana, (and also called Tophkhana) is obviously, as its name implies, of artillery design, and to be commanded by the Battery on the town side of Juna Tophkhana. Behind this, with its roads still of regularity, we have the ex-military Kamathipura and Bhalikaripura. At opposite corners of this quarter there are still Palace-servants and messengers; and a little west of this again are the more recent Body-Guard Cavalry Lines of Lal Tabela, now bequeathed to the Municipal Sweepers.

The Bathing Ghats of the Ara Bazar town would naturally develop as the germ of the present Chatri Ghats beside the main Bridge. The original Burning

Ghat was evidently a little further down, at the end of Krishnapura, ( an old Brahmin quarter, which has long been the north-east of the town ), as its memorial shrines and purification-place alike still show; and opposite these is the entrance of the road to the present Burning Ghat, which has been removed a few hundred yards further down stream.

The main area north of the road between the Palace and the Krishnapura Bridge seems to have been of courtly mansions mingled with Brahmin dwellings. Several of the houses opposite what is now the New Palace, but formerly the Old Palace Garden, are singularly fine. North of these naturally arose the present Imli Bazar, at the opening of the main road, north by east. We must also notice, as at once a military road and a former boundary of the city, the westward road from Juna Topkhana; and it is here important to note that no further continuous east and west road has ever since arisen to north of this. For this is the obvious explanation of the comparative confusion, and the isolation, of the quarters for the mile north of this line. For in short while south of this Road we have an orderly city, north of it we have but a mixture of Military Lines with confused Mohallas, and with surviving gardens. But of all this comparative disorder, we shall see that much may be made.

Return now to the Old Palace, by the main road from the river-crossing of Krishnapura Bridge and passing between the Old Palace and its Garden, now New Palace, and straight westwards, towards Depalpur. Along this road first naturally arose the present Khajuri Bazar. Next however, as the city plan shows, there was effected a substantial and regular town-planning, nothing less than a large, and at the time spacious and well-designed, New Town. This is of the usual square Fort City type of the eighteenth century, though necessarily by its situation less regular than is that of Baroda and many other cities. The main determinant road is ofcourse that from the River and Palace to Depalpur. The areas between Khajuri Bazar and the parallel road to northward, ( those of Kumbhar Mohalla, Kachi Bakhhal, Juna Pitha, Dhul Dhoya Bakhhal, Kasera Bakhhal, etc. ), are all comparatively irregular, both in their streets and lanes, as is natural in such an old mixture of mansions with their attached mohallas. The housing of servants is always less orderly than of soldiers; and that of cattle than of horses. Fuel and timber too need much space. Hence an apparent confusion, though not inorganic; which the town-planner again is often tempted too readily to cut through, but not always to advantage.

South of Khajuri Bazar the planning becomes orderly. We have here what may conveniently describe as the Six Squares of the Fort City; and these now invite our study.

### **The Fort City, and its Six Squares.**

With rapidly increasing growth and wealth from military and fiscal centralisation, a new growth of trade, altogether surpassing that of the old Ara Bazar, was but natural. The still important Pipli Bazar, upon the road running southward from west front of the Palace, was probably the earliest to develop, perhaps even before the Khajuri Bazar. Next Big Sarafa would rise, and struggle for pre-eminence. The subordinate classes, menials and labourers of the two older streets would be already lodged behind; but now with the opening of Sarafa, and of Bajajkhana parallel to it, new humble dwellings were required, and placed behind its large houses; and thus the beginnings would early be made of the present interior congestion.

We pass now to the three squares further west (those of Sakkar Bazar, Bohra Bakhal, and Shanta Bazar), and successively enter their interiors. The northmost of these three exhibits the congestion of poverty, that of the Brahmin Water-carriers. The second, that of Bohra Bakhal, is the congestion of a prosperous, even wealthy community, now grown too numerous for their limited area. The southmost of these three Squares—that originally at the remote corner of the square Fort-City is still an open space to this day. Is not this a survival of the original design? one obviously at once as sanitary, and as pleasing as we can to-day desire, and more than we can generally afford? for here is space, for air, for exercise, for play. Its building-up has been only recently beginning. The great Well, and its small Temple, are the normal monuments of this space; and there is also the traditional owner's house. But the adjacent Stable and its garden-patch represent the beginning of that subdivision into minor holdings and dwellings which has taken place too fully within all the other five Squares.

Again, note how between the four southern Squares there are two large detached house-blocks, of Sarafa Khurd and Odepura. May not these large sites have been originally left open for temporary market-places, and then gradually settled upon, and transformed into private properties, as old market-places everywhere tend to be?

### Review of Indore Development.

What is now the general result of our preceding study, of Juni Indore, Ara Bazar Indore, and Fort Indore?

Has not our review and interpretation of this development, in its three main quarters, or rather successive towns, brought before us a succession of phases of rational and orderly extension, in which, at each period, the requirements of its own life have been adequately provided, and those of its past respected? Religion, Government, Commerce, and War, are here successively prominent, as so much in the history of cities everywhere; yet at all times the fundamental condition of health, i. e. the building of good houses, (and these as far as possible in the right orientation that of east and west) and with these the provision of gardens and open spaces and the construction of Ghats and Temples, and of Mosques, have all been duly attended to; while the stamp of good and antique craftsmanship, indeed of genuine architecture and worthy decorative accessories, is diffused throughout the whole.

Here then are vital results; and not simply for the understanding and respect of the past, and of our material heritage from it. What now of more recent developments, up to our modern age? In summary, must we not agree, from the survey of this old threefold town before us, (and as the reader's own patient and detailed exploration will justify,—indeed in any other old city)—(1) that its many good qualities of planning, and its features generally, date from its origin and development, that is, are of its life and growth and essence; and (2) that its present obvious dirt, congestion, disrepair, deterioration, and even too frequent delapidation—though these now may, and commonly do, impress us so conspicuously and so painfully, as even to obscure all fundamental merits till a patient survey recovers them—are each and all indeed very largely of our own modern time. But when this is seen and admitted, have we not to reconsider as too cheap, as even shallow and misleading, that pride of our own and recent "progress", that contempt for the past, which has so long predominated in western and western-educated criticism? It is now time to discern the genuine vitality of the past, and to appreciate anew the values enduring in its antique cities, as each a great and worthy heritage of the past.

From the prevalent lack of this comprehension, most if our nineteenth century cant, of "City Improvement", "Relief of Congestion", and so on, has been probably in aggregate the greatest of all the many tragedies to our cities in their history. And it is still the disgrace of most modern Town Planning, since Napoleon's and Baron Haussmann's ruthless destruction of historic Paris, that most "City Improvement Schemes", whether in the historic cities of Europe, or in India even today, are frankly destitute of this preliminary survey, comprehension and appreciation of the old quarters they have so lightly pierced through, as of the old buildings they have too recklessly and wastefully shattered. The great initial exploit of German Town Planning, Dr. Stubben's destruction of the historic and beautiful centre of Cologne, is but another conspicuous in Europe—but minor atrocities of this kind abound everywhere, even in India, and are still threatened, or sometimes in progress.

It will be found, as we pass from City Survey to City Report and Plan, that the treatment of congestion, the handling of sanitation and its problems, are not less but more thorough, for this preliminary inquiry, this respectful appreciation of the life and thought, the design and work of the past, and for the rightly conservative, and correspondingly economical attitude which this comprehension inspires and maintains.

#### Later Military Indore.

In no capital cities of my acquaintance, save perhaps Berlin, and Dublin,—and these of course for different reasons—is the area of Barracks and Military Ground proportionately so extensive as in Indore: and no more striking illustration can thus be given of the persistence in any city of its historic traditions, with their qualities and their defects. To its "Military Lines" are at once due the character, and the want of character, of the whole large area, lying north and west of the old Holkar Fort City which we have last been studying, and more extensive than it. The consequences of this cannot be too clearly realised. Each group of Military Lines is spacious, and the soldiers and their families are thus housed better than in most European Barracks, if not in all. The orientation of these lines is, in all cases, with houses facing south and north instead of east and west, as Indian houses should be. This is a thorough-going mistake; and it, of course, continues to act disastrously; witness any old military area like Malhar Ganj. For though this quarter and others have long ago passed into the possession of the civil population, these cannot now turn round their houses to the sunrise and breeze, and their streets to the shade and the comparative dust-freedom of Ara Bazar for instance. I can only account for this wrong lay-out by ascribing it to the European Officers, French or English, who were employed by the early Holkars, since this south and north position of houses is the right one for cold temperate northern Europe, with its low sun, its cold winters, its prevailing south-west wind, instead of the burning sun and the westerly breeze of the tropics. The lay-out of most streets of the large western quarter beyond the Six Squares, like the Itwari Bazar and the three Lodhipuras south of it, is again an unfortunate imitation of the European method. This whole area is in fact an early and conspicuous example of the mischiefs which are so easily involved by a too simple importation of European sanitary and planning methods into India. To adapt the practices and ideas of the temperate zone to the tropics, we must first critically understand both. Only then can we profit by translating and adapting the one to help the other.



A second consequence of military cantonments in a city, already mentioned, is that while the strictly military area can be regular, indeed is usually strictly and monotonously so, the surrounding buildings of the civilian population are neither adequately planned nor regulated by the military authority nor by the Municipal one. But such areas without order, readily pass into neglect and dirt, or into congestion and more dirt, and consequently encourage and suffer from an undue share of diseases, and with further depression and poverty accordingly. Thirdly, without any special imputation on Indore, it is common to all garrison towns that the expansion of the respectable civil population into Barracks neighbourhoods is uncongenial. Hence the congestion of the main City has been and is thus maintained; and here in Indore conspicuously so.

From the standpoint of the health and planning of every garrison-city therefore, the removal of Barracks to a suitable country site is thus of great advantage; since then, and only then, the arrested growth of the main City can be healthily resumed, and its suburban extension can be proceeded with. Thus moreover the Military Department can in some measure be compensated, at any rate materially aided, as regards the expense of the removal, by the sale of the land and buildings they vacate for civilian uses.

But it is not from the civic standpoint that such a removal has to be mainly considered. It is the military interest which has always the predominant voice. But as regards any such removal, and whenever it takes place—as notably years back in Dublin, or now more recently in the intensively military city of Edinburgh—experience speedily shows that the health, the character, and the training of the troops are all immensely improved by the change.

Still more will this be found to be the case, after the present War, and in Indore as elsewhere. For every returning officer, and even soldier, cannot but criticise the pre-War military arrangements prevailing in his own city. And this not only, as he might have done before, as mostly survivals, and from a period which the conditions of modern warfare have once and again recast. He has now a view of war, and of its needed training, which before these three or four years was unknown and unprovided for; and he will consequently urge upon all responsible the necessity of promptly adjusting military training to these new conditions. I may safely leave him to state these: but it is obvious that the very first will be in terms of military planning—that of the re-location of the entire military establishment, of any and every State and City, in some situation where real and modern military exercises can be performed; with their spademanhip acquired in actual trench-making and digging in, their movements acquired no longer merely on the level, but upon the heights and hollows of the modern defensive and offensive, and so on. And all this with enormously extended space—space needing for its survey the balloon and aeroplane, and with the very aerodrome larger than was the whole former drill-ground. We now see that during the long comparative peace, of most of the nineteenth century and after, War-Offices were every where but playing at soldiers,—Prussia ofcourse excepted, and more recently, her foremost pupil, Japan.

## Chapter III.

### Recent Indore.

But all the preceding may be reckoned as "ancient history"—a study attractive to but few. So what now of modern (*i. e.* recent)—Indore? The preceding chapters are still far from sufficiently explaining the actual detail of the city's streets and mohallas as we now find them. For this we should need to enquire, and this very thoroughly, as to the work done and the changes made during each generation, and in each reign of the Holkar dynasty; and especially consider for instance, such constructive work as that of the great Queen Ahilyabai, and of that recent, and also illustrious, ruler Tukoji Rao, by whom most of the many State Buildings throughout the City were erected, and to whom the present prosperity of the State and wealth of the City alike owe so much. Besides bringing all this constructive progress up to date, we should have to take note of the past and still gnawing tooth of time, with the resultant wide-spread ruin and disrepair. All the constructive and improving recent efforts of the late reign, of the regency, and of the present reign would also have to be noted, together with those of the Municipality, so active of recent years.

All this study would thus develop and come together, as one of those "City Surveys" which are now becoming recognised as fundamental to all sound City Planning and general improvement. Hence it would here be my duty to enlarge upon this head, and this for a crowded chapter; save that these "City and Regional Survey" methods are explained, in the papers of the growing Association for Regional Survey which is at length winning its footing among the cities of the west, in the kindred papers of the Sociological Society, and in various of my own reports on other cities. Best of all, I may refer to the "Report on Town Planning in Madras City" by Mr. H. V. Lanchester, F. R. I. B. A. as an eminently full and illuminating example of what such a thorough City Survey should be, and also to the plans of that Report, as convincingly showing not only how clearly and instructively the results of such a Survey may be presented, but also how much it guards and aids the Town Planning of the city thus surveyed and understood. The examples given by the recent International Competition for the Town Planning of Dublin will also here be found instructive, as not only the designs of the victor, Professor Abercrombie, show, but also those of other competitors, notably Mr. Ashbee.\* But the greatest of all examples as yet is that of the "Survey of Greater London," undertaken under the auspices of the Royal Institute of British Architects since the war. These Surveys are also in active progress, and in small cities as well as great, throughout the United Kingdom, and are before both the Reconstruction and the Education Ministries at present. Their application in Indore is therefore thoroughly practicable; and especially since here it is peculiarly encouraging to find a large, even an unusual, proportion of men competent in the various departments of Survey; so that every field, from the underlying geology and history to the latest conditions, as of economics and morals, of health and education, of industries, crafts and arts, can all be competently handled.

Hence although my own time here has not sufficed adequately to undertake, or even initiate, this needed Survey of Indore, I am confident that this can be competently undertaken and executed; and I urgently plead that it may be. There have ofcourse been many "consulting experts" here before myself, but none I

\* Town Planning Review 1916.

think who have endeavoured so fully to understand the city, to state its many problems, and to plan for these. But by the very comprehensiveness of the present endeavour, it all the more needs to be scrutinised at every spot, and criticised from every point of view. For only as any Town Planning Scheme in its essentials can survive such detailed study and criticism, and profit by them, can it prove itself to be an adequate City Design, and merit that detailed execution which it may then reward.

### Railway System.

Indore has been fortunate, as Cities go, in the location of its Railway. I do not ofcourse possess that regional experience, and that fullness of economic knowledge, which are needed to forecast and to evaluate future possible Railway developments. But I am clear that these need not materially, if at all, affect the City-plan, either actual or prospective; since all extensions can be kept parallel within the City area, and close to the existing line. It should thus amply suffice for all real needs of the future to leave, for this extension, a belt of land on each side of the present line kept free from building, (but conveniently occupied, till required, by gardens, or by rapid growing fuel trees, as soil and convenience may suggest). The large space of the present Railway Station Compound should also be sufficient for the future General Station for all lines. The Goods Siding is also spacious, but may be somewhat increased without difficulty. For the future industrial requirements of the Mill Area the needed Sidings will separately be discussed, and are shown on its Plan. Suburban Stations will conveniently arise as required, say for instance at Suklia, thus facilitating the extension of Naya Indore up to this northern point, and even beyond. A Station for the Palace Quarter, a little west from Manik Bagh, will also be convenient to Lal Bagh and other Palaces.

It has been suggested to me that the course of this railway, and doubtless by and by of others, through the fields separating Manik Bagh from the other Palaces, should be altered. But the study of the area, and with neighbouring Tanks, and City Water system &c. all in the way, does not encourage this. The expense of any possible different route would be too great, and the injury both to existing property and to future city development too serious. Moreover, the mere additional expense and loss of time in using this detour from the present direct route will be seen far to exceed any value of the change.

But the railway can easily be screened by trees planted along its course and thus concealed on its passage along this side of the vast Palace Park area. Moreover, railways may be before long electrified in India as elsewhere, and thus their present smoke will disappear, and their noise be greatly abated.

There does however, remain a danger, that if any new Railway be made, before Railway Engineers have come to any interest in Town-Planning—an advance of which I have as yet met no sign in India, and too few at home—it may ofcourse, as for most Indian, British, or American cities, be planned, or rather ruled and swept to and even through the town, in any direction, and irrespective of any damage, which may seem to promise either speed or profit to the Company, or, still more frequently which may spare the trouble, thought and care, in absence of planning skill, to its engineer. That this is not a harsh or an unconsidered statement, but a plain fact, both historic and actual, deeply inscribed—say rather hideously scarred—upon the plans of well-nigh every city, appears the more convincingly in a collection of them, such as that of the Cities and Town Planning Exhibition; and to this therefore may

be referred the Railway Director or Engineer who finds the above a hard saying. Still more may Municipal and State authorities profit by such comparison of plans, since these show the necessity of standing upon a vigorous City defensive. The otherwise incredible conjunction of civic waste and of railway bungle which City plans disclose, is too common, no doubt, in all countries, but is especially common, I grieve to say, in the English-speaking world and in India—witness as a wellknown case, the railway maze of Cawnpore.

I therefore must leave clearly on record the above clearly expressed affirmation, that to and with the present Railway Line and Station all future developments, from and to whatever direction, can readily be conformed, and therefore should be compelled to conform.

This does not ofcourse prevent the construction of such a loop and suburban line as may possibly be required some day, *e. g.* round from the present line north of Polo Ground to the west. But before permitting even any such moderate development, the proposals of the Railway Engineer should be carefully re-considered from the Municipal and Town-Planning points of view, and if need be modified and adjusted accordingly.

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## Chapter IV.

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### Public Health in the Industrial Age.

#### Introductory.

We all know the advantages of the Railway age, but we too much forget its disadvantages. Notably for instance the immigration and congestion which it has everywhere involved for the labourers which it attracts, and who in all cities accept a low standard of housing. Of this congestion and squalor the great and progressive cities of New York and Chicago have the superlative instances in history, but Bombay or Cawnpore are not very far behind; and that even Indore shows beginnings of the same conditions of overcrowding and its diseases, its Plague is conspicuous witness. Witness its one-roomed Chawls, both old and new; and even worse, the too frequent (and deadly) subdivision of rooms of the old standard, of about 12' x 10', into half of that space. Though the 'classical' and utilitarian economist have long prated of "Supply and Demand," and excused overcrowding by low money wages or the like, Sanitarians and awakening Municipal Councils could not but protest against such slums after their experience of the dirt-diseases which they produce, like typhus and enteric; of the air-sewage-disease of tuberculosis, which they produce, and also maintain; and next even of that most fearful of all the slum-diseases—plague—which such rat-homes at length ensure, and now continue year by year. Hence began a long period of sanitary reform, but this unfortunately characterised by mere slum-demolition instead of home-building; and these Indore shews many—indeed too many—instances. But all municipalities are now learning by experience what economists should long ago have told them, that when we destroy even a small proportion of any necessary of life, even with the best reasons and intentions, we tend to raise its price, and this in a far higher ratio. Thus largely it has come about that decent houses are wellnigh beyond the means of the people in every city; while each new

demolition, however sanitary or otherwise desirable in itself, thus adds to their previous ills. In short then, all this well-meant line of municipal action, so common throughout Europe and America during the past generation—and also among Indian municipalities within more recent years, the past half-generation especially—has been on the whole disastrous, as increasing the very overcrowding, and its consequent diseases, which it sought to remedy. I might point to various Indian towns, in which positive house-famine has been created, essentially by a benevolent Municipality, aided by subsidies from a no less well-intentioned Government. Things are not so bad in Indore; but even here, too much of the same past process is recognisable, and not without its results. The time is now ripe, here as everywhere, for the primary sanitarian measure—far too long delayed by secondary ones of every kind—that of Building new and better Houses, before we destroy the old ones.

### Occupation and Disease.

The connections between Housing and Occupation and Disease have also more clearly to be understood. There is nothing inherent in the occupation of the Cotton-worker, for instance, to create Plague. True, this does undoubtedly break out in such workers' Mohallas, and thence spreads, even to such an extent as to lead to their being threatened with expulsion from the city altogether; yet the real explanation lies not in the occupation, but in deficient housing of its workers. As soon as they, and others, can obtain good houses, with clean space around them, there will be no more plague. Failing these conditions, we cannot but have it; and we shall continue to have it, just so long as slums are permitted to endure, or as closely-built and one-roomed Chawls, however pukka, continue to be constructed. And to look at too many Indian cities, one might almost think that plague was planned for.

Rats cannot eat cotton; yet I am reminded that dead rats, at plague-time, are found in every Cotton-Mill. How is this? Obviously where hundreds and thousands of people spend a long day, they must bring food, and spill crumbs, and waste leavings; and by all this rats live and multiply. But the hygienic remedy is simple, and should soon commend itself to employers and employed. It consists simply in erecting a Dining Shelter on an open space in the compound, to which all who do not leave the Mill for meals may at once be attracted, or if need be, fairly compelled, to come with their food. To keep the floor swept, and this punctually after every repast, would ruin the rat-community, without exhausting the organising powers of the employer. Furthermore he should be asked, (or if necessary compelled by Municipal regulation) (1) to set up a pigeon-cote, so as to have any remaining crumbs eaten up forthwith; and (2) to keep cats, which would at night soon clear out any lingering rats altogether. Such regulations are of course doubly necessary for Flour-Mills, and Grain Trade generally. Employers may surely be asked to introduce such simple guarantees of public health without waiting for official pressure or compulsion, but as part of the kindly citizenship which their position invites and requires.

### Town Planning.

Town Planning is supposed by many to be a new and special branch of Engineering. By others of Sanitation. By others again of Building, or again of Architecture, of Gardening, or other Fine Arts. But these differing opinions show that Town-Planning—and let us now use its greater name of City-Design—is not a new specialism added to existing ones; but that it is the returning co-ordination of them all, towards civic well-being. It is the civic aspect and appli-

cation of the higher and more general level of public and personal thinking which has long been here and there arising. Such more general thinking is now beginning to dominate the unorganised thought of the past and passing generations of specialists, who have been so strong in details, but so weak in co-ordinating these. But such scientific philosophy lies in details taken together, as facts and factors of life; while the corresponding arts of life, and particularly therefore City Design, are co-ordinating them, towards "life more abundantly".

It is a prime task of the City Designer to find appropriate location, space and scope for the Architects; and this in all their capacities, all their specialisms of skill, as from Palace and Temple to Railway Station and Factory, and from huts to Mansions. Similarly he plans for the rural workers of the City; and for these from their simplest vegetable gardens to Fruit Gardens, Orange Groves, Mango Topes, and all the rest. Again he must plan from simplest playgrounds and air spaces, to pleasant and stately Parks, and to all the varied beauties of the Botanic Garden, the innumerable trees of the Arboretum, or even of the City's Forests, so important in various European countries.

There is here no separation between the detailed study of the town and its generalised survey and treatment. The fully efficient and economical development of communications requires at once a study of traffic and a knowledge of the town; and this not only street by street and lane by lane, but of the character of their houses also. It is with the design and the management of a city, as with those of a ship. The needful minute and thorough co-ordination of all details within the general design, and the corresponding needs of successful management are all considered together, and this in its building, as well as in its voyage. General thinking and direction are thus not opposed to specialised thinking, and to detailed work. Whenever thought works clear, these are seen to be complementary, and mutually indispensable.

### **The General Health Problems of Cities.**

Yet in the great art of Medicine, with its innumerable specialisms, and even in Sanitation and Public Health, with their no longer merely individual applications, their general and social purpose, this generalising spirit has not yet been sufficiently cultivated, much less adequately applied. Yet it is the urgent need of cities, even of this city, that it should be. How can some progress be made in this?

Diseases are many, and each involves its special inquiries. Thus the papers lately mentioned that the Medical School of Edinburgh has taken the initiative of setting up a special Chair of Tuberculosis, for the veteran leader of its modern treatment.

Yet while diseases are many, Health is one—the unity of sound mind in sound body. How is this unity to be obtained? Are we simply to go on, as mainly at present, providing as many remedies as there are diseases, and now drugging, now inoculating, each other against them all? Or may there not be some more general way?

Until lately no School of Art, or School of Architecture had introduced the Department of City Design; but now this is becoming generally understood as the dominant, because synthetic and directive one. But as yet, our Schools of Medicine are still practically destitute of the needful department for co-ordinating their specialisms. What is this? Surely one concerned with the study of Life in

Health. Thence could not but rapidly follow a better application of the Laws of Health, and these alike to prevention as well as to disease. For Health is no more mystery, or Utopia. As biologists know, and as the finer civilisations, both the simple and the complex, have at various times magnificently shown, Health is the resultant, the habit, of "the good life", that is of normal and full reaction with adequate environment. But such adaptation, which is, or has become, normal to flower and tree, to insect, bird and beast, is harder to attain for man; and this more and more as his social grouping has enlarged and complexified,—especially during the Industrial Age, from rural village to crowded city. Here the ants and bees, with their older and simpler civilisation and cities, have a better health standard than ours. Yet in our human cities examples are never wholly wanting of the highest human perfection of health, vigour and beauty, and these for both sexes, and for every phase of their life, from infancy to age. Let Medicine and Public Health then more fully study, more rationally explain, these fine types of health; and not merely struggle in detail, or even in mass, with the various lapses from health which at present so much more abound.

An important aid to this understanding, and both of health and disease, has long been possible in India, in course of its appalling and recurrent Famines; and the same is now becoming manifest in Europe, since prolonged war has been introducing the beginnings of Famine there. For while the predisposing cause of disease and death is one and the same, that of deficient food, the resultant diseases are wellnigh endless in their variety, since each suffering constitution is different, and each tends to give way at its weakest point. Indian Famine Medical returns, and similarly now those of the Public Health of European nations, and of the Central Powers especially, are thus scientific in their specialised aspects, but insufficient in their more general descriptive science. For these many diseases from which the starved are recorded as dying, though ofcourse in detail so distinct, are really but Famine-results, when all is said and done. It is not polite to say so; yet not honest not to say so: and between these alternatives science can have no choice.

Now similarly as regards the diseases of ordinary city-life. Imperfect aeration has not solely tuberculosis for its result, nor has imperfect nutrition merely digestive results. Both for instance have their mental results; in phthisis often up to joyous excitement and sanguine hope even in the dying, but in starvation often through depression to despair. Again, intestinal auto-intoxication is now known to be an important factor in various forms of insanity; while the correlation of the best intestinal germ-flora with mental clearness, bodily vigour and longevity, has had its world-wide popularisation (practically that of "Dai") by Metschnikoff of the Pasteur Institute.

The problem of increasingly assuring city health is thus in every way a growing one. Every specialist has been contributing his point, and the time for co-ordination is thus opening. Already in European cities, despite all their evils, which are neither few nor small, the death-rate has been pulled down, by the labours of sanitarians, from about the present Indian rate a couple of generation age, to one half of the present Indian rate, or even less. It is obviously time therefore for India and its sanitarians, and their Governments also, to be more effectively resolved on doing the same.

It will be answered, and so far with truth, that this is nothing new: for sanitarians have long been resolved upon this, and labouring with substantial

cation of the higher and more general level of public and personal thinking which has long been here and there arising. Such more general thinking is now beginning to dominate the unorganised thought of the past and passing generations of specialists, who have been so strong in details, but so weak in co-ordinating these. But such scientific philosophy lies in details taken together, as facts and factors of life; while the corresponding arts of life, and particularly therefore City Design, are co-ordinating them, towards "life more abundantly".

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thus essentially connected with the progress of the housing movement, as sanitarians have so often told an unwilling public. But housing and town-planning alike await upon the effective awakening of citizens with and through their rulers and leaders. For how few realise that "the Hygiene of Tuberculosis" means, above all, getting everybody a veranda fit to sleep on, and a chabutra to sit on?

### Plague, and its General Civic Lesson.

Next take Plague. This as elsewhere argued, is no mysterious dispensation of malignant powers, but the normal nemesis of the untidy slum, the product of the uncleanly victory of the rat over the house-wife. And this ofcourse not through her fault, but ours—our masculine inefficiency, as "house-bands" and home-makers; and thus not only as working citizens, as business men, but also as City rulers, State controllers. Why? Do not all of us too much "spend our toil on that which is not bread, and our labour on that which satisfieth not." For from child apprentice and workman to shop-keeper and bania, and from these to financier and millionaire, to city councillor and to chancellor, our age has been hypnotised by money, even more by the machine itself. Thus, and essentially thus it is, that we have lost sight of all real economics, as the real functioning of life, in real and energetic health, to real and material wealth. But the only real wealth lies in life-efficient environment of every kind. Real Wealth is therefore fundamentally of advancing environment, of homes and of gardens, and secondly with due increase of all that they should contain for the maintenance and development of their inhabitants. Every good house-builder, still more every Palace-builder in history, has ofcourse understood this; and business men do, when they retire: why then may not even economists again grasp this? The sane pursuit of Industry, and the vital purpose of wealth, are thus—however little Capital and Labour, Political Economy and Politics may still see it—towards the creation of the City Beautiful—that of evolving Families, in perfecting Homes.

But "this is Utopia!" Precisely so. Exactly as the Money-god, and his priesthood of nineteenth century economists have stood for the Utopia of money-wealth—or as the Machine-god and his priesthood, the engineers, have proclaimed their Utopia, of mechanical production above all things (and, to do them justice, have largely realised it),—so the returning God—common to all worthy religions, and in all one and the same, since of Life at its highest ideals, i. e. at once its most Eutopian, yet most clearly scientific, form—now claims our credence, and recalls us from our recent idols, of coins and of wheels, to the renewed worthship ("worship") of Life. With the Study of Life, there is now coming back among the effective thinkers of today, and who are preparing the action and education of tomorrow, a renewed "Philosophy" and even "Theology"; for in modern phrase, the one is the endeavour towards a more and more general and evolutionary understanding of Life, and the other the corresponding perfection of its ideals. Though these are not yet fulfilled or clear, the quests of them are in progress. Biology now does, in great and ever-increasing measure, understand life, as reaction with environment; and this as no mere abstract doctrine. For to create, and yearly to re-create, this environment, is the Eutopia of that most concrete of men, the peasant, and one which he steadily realises with each harvest, thereby maintaining at once his own life and ours. Thus renewal of environment, and of increasingly good reaction with it, is similarly the Eutopia of the town planner, whose City Design includes and orchestrates all other labours; those of the child between home and school garden, those of the great City in its industry and its arts, in its hygiene of homes and its reconstruction of universities, in its civic statemanship and its renewing temples and festivals.

But it is the misfortune of each new or renewed philosophy to seem difficult and abstract, distant and indefinite, in short "Utopian," to those whose minds are fixed by habit to any older view. Hence it is necessary to return to our initial theme of this chapter, that of concrete Hygiene and its needful Town-Planning; and to insist anew, and with the utmost possible sharpness and dogmatic emphasis, upon that broad and general view of City Diseases, in terms of the Depressed Life, which we have standardised instead of the Developed Life; and which our sanitarians, learned and specialised pathologists as they are, do not as yet broadly enough discern or explain, do not envisage, cannot yet handle.

### Health Significance of the Town Plan.

Endeavouring therefore to supply this needed clearness, let me boldly say, that the present Town-Plan of Indore, ( and ofcourse its fellow town-plans elsewhere, by various hands ) albeit as yet of so little interest to doctors and their patients, and to most municipalities and governments, or even their sanitarians,—is none the less a wholesale medical prescription, for the bodies of the citizens, and a scarcely less wholesale mental prescription as well.

Here in short, to put the idea yet more plainly, I stoutly advertise to the reader the Town-Plan as a marvelous specific, which dares to compete with the better-advertised specifics of his newspaper, and which invites his practical test by its claim to surpass—ofcourse given fair trial—the aggregate results of all other pills and potions whatever.

For since Tuberculosis, and even Plague, are but slum-diseases of our city's manufacture, and the evil Karma of its overcrowding of ill-nourished poverty, our Plan provides for the substantial abatement of all this, and the development of the opposite tendency. That is towards the dispersion of the Congested City; and into what should increasingly be no mere Plague Camps, but attractive, even alluring, Garden Homes, full of flowers and sunshine, shade and fruit, and with children bigger, stronger, healthier, happier, than were we their elders, and thus more educable, and better educated accordingly. For as we make them healthy and happy, they will also be good, and even amazingly clever. Dulness is of our manufacture, by various methods. Recall the fact which gave Madame Montessori her first fame—the discovery by an inspector of schools that by her methods she was recovering defective children into normal ones, instead of, as more or less in all ordinary schools, reducing normal children to levels more or less defective.

Returning to our disease-problems, those of a Rheumatic order are partly connected with damp floors, and partly with unsatisfactory nutrition, and these in degrees which pathologists have long been investigating. But as Town-Planners, we largely cut both these knots, one by arranging drier houses, on more adequate sites as well as plinths, and the other by better nutrition, from fruit and vegetable gardens.

Am I asked—How can your prescription, of the Town Plan, do this? Because besides increasingly superseding drug medicines by fresh air, pure water, and sunlight, it aims at a vastly greater production of Food. This Plan is to a great, indeed to an as yet unparalleled extent, that of a Garden City, one in which the waste matter, which is only impurity and dirt while out of place, finds its natural outlet in the soil, its natural transformation into renewed fertility accordingly.

### Examples from Diseases ( *Continued* ).

Malaria, still prevalent here as elsewhere, is similarly shown abated upon the Town Plan, with its tidy river banks, its filled-up puddles, its nullas bunded, and their banks terraced into gardens. Yet to satisfy the physician, and further to perfect his preventive as well as curative work, an ample Fever and Infectious Diseases Hospital will be seen on the Plan, south of the River, west of Juni Indore and east of Harsiddi, a situation at once centrally accessible and yet exceptionally isolated. There is thus no reason why malaria should not in a very few years be reduced to a comparatively rare disease.

Next as to Diseases of the Alimentary system, it cannot too often be reiterated that the much bettered dietary which is required by the poor, and the much simplified dietary which is required by the rich, are both supplied by that wholesale and domestic growing of Fruit and Vegetables, which this plan so conspicuously provides for. With such better and wholesomer nutrition, the diseases of Children, and even those peculiarly of Women also, may thus also be greatly reduced.

By execution of such a plan as the present, and (ofcourse with continued improvements as far as may be) the mainly prevalent diseases of town-life can thus, and indeed thus only, be adequately dealt with. I am often told of "prejudices"; and they do exist, and hinder greatly; though I do not in practice, find much difference between east and west, so that I cannot exactly say what cities I have found most provoking or hard to move. Yet though "religious prejudices"—say rather social traditions—are hard to alter, any real recalling to life of each ancient faith will help; for then it is plain that neither Manu for the Hindus, nor Tirthankars for the Jains, nor Zoroaster for the Parsis, nor Mohammed for his Faithful, ever failed to realise the need of purity of all the elements of air, water, earth, and fire, and of the human body and life in relation to these. So those who may still oppose, or more commonly by apathy obstruct, the present renewal, as "Public Health", of that cleanliness which is fundamental to all the religions, need but to be emancipated from the dead letter of their tradition, and aroused anew to its vital spirit.

### Further example; Neurasthenia, its origins and abatement.

Beyond even this matter of cleanliness, there is a deeper aspect of the problems of Public Health, and one which is as yet still less adequately and boldly grasped by Hygienists, though of late years they have been awakening to this.

Let us start with the admitted correlation of mind and body, in health and disease. We all observe and agree that the efficiency of the physician is commonly recognised as associated with his own vigour of personality, and his consequent power of renewing health by inspiring confidence and hope. Next note that the regional surveys of certain French hygienists of geographical interests and outlook have disclosed not only whole villages, but even districts, depressed by Neurasthenia. For this is not as most people still think, an exceptional nervous ailment. It is the expression and resultant of all kinds of bodily and mental depressions, all kinds of mal-nutritions and starvations, and these far exceeding what we have simply been treating above, with vegetables and fruits. For neurasthenia goes deeper. Shall we describe it as a starvation not merely of fruit or vegetables, but also of Flowers? Yes; and this largely even in the literal sense, as every dreary school-room or hospital-ward shows, when thus experimentally brightened. This slow depression, from starvation of body and soul together, in their varied inter-

action ( not excluding those on which Freud and Jung have insisted ) and in vicious and often perverting circles of body and mind, through individual and through society, may often seem wellnigh hopeless in the individual, as we analyse its intricate ramifications, and trace these into the evil Karma of the past. Still, this depression is also hopeful of treatment, in the bulk of the widely suffering community.

So continue now our example of flowers and schoolroom, into the urgently needful school-garden, and thus into its re-education of the home, with abatement of its dirt, and enhancement of its life accordingly. And as earnest of this, do we not see, in every poor street and slum in India, that the better or worse condition of the Hindu household, in its compound and its home, is very largely, even strikingly indexed by the presence, or absence, of the Tulsi plant? For this venerated symbol expresses not merely the conservative influence of religion, as, in some measure at least, antiseptic against modern evils, but also its dynamic power, of evoking and recreating the energies of life, towards meeting its situations day by day. In short then, the Tulsi-growing home is not only less deteriorated and neurasthenic than its neighbours, but shows reaction and rebound. Why hygienists, educationalists, and the rest of us, do not cultivate and diffuse this life-giving symbol seems as definite a case of apathy, if not prejudice, as the dullest populace, if not the most wooden bigotry, can show.

But why do I continue thus to harp upon this painful string of Neurasthenia? Because as a student and teacher of the laws of life and health these forty years past, in one great School of Medicine after another, I am more and more clearly persuaded that this prevalent depression and insidious deterioration of mind and body together, exists throughout modern societies far more generally than physicians usually discern, and is in fact almost general throughout the present phase of civilisation, and in East and West almost alike; though I am bound to confess I think that India at present exceeds all other peoples in this. Conversely, do not the cheerful Chinese in this respect probably lead in the Eastern world? and thus explain their large success in it?

It is this depression which affords the seed-bed and the beginnings for the innumerable special diseases, with their germs. But as this prevalent depression can be escaped from, the resisting power of communities against their various diseases and germs will be increased—I venture to say wellnigh immeasurably: and certainly beyond even the present legitimate and sanguine hopes of sanitarians.

This is not the place fully to justify the thesis, but I briefly express the result of the past months of intensive observation and study of place, work, and people in Indore, when I say that I spare the reader my lamentably low estimate of how few people, even in this comparatively healthy situation, this exceptionally fine and bracing climate, I have yet been able to observe, as really to all appearance free from all the symptoms and stigmata of Neurasthenia, incipient, if not even habitual. It is this world-wide depression of our time which explains that corresponding demand for medicines, stimulants, luxuries, by which the advertising columns of the press are so largely and remuneratively filled, and by which not merely quacks are maintained, but great part of the industrial activity of the world is perverted. This too explains the prevalent mental inertia, which not even the present world cataclysm as yet arouses to fresh and effective thinking in any country.

### Conditions of City Renewal.

The fundamental remedies are obvious to every City-planning Sanitarian, in that "return to nature" which every adequate plan involves, with pure air and water, and cleanliness in surroundings again rural; so that, in Ruskin's phrase, the field gains upon the street, no longer merely the street upon the field. So with the bettered dietary, and brightened environment which the change implies, from the crowded slum, or even respectable semi-slum, of the modern town, to the Garden Suburb. Yet stimulants are required, and of a higher order, to arouse internal health of a deeper psychological kind. Hence, beyond the Diwali cleansing, and even the recent vigorous State and Municipal aid to it, the further experiment of the Diwali Procession with its fuller appeals. These have been on one side sanitarian, on another civic and social; yet also, in terms of ancient symbolism, again expressing at once the difficulties and the hopes of life; its besetting evils, its possible victory over them. Thus science, which at first sight seems to destroy old faiths, is really coming to renew and fulfil them. Every discernment of the facts and possibilities of life is still as true to life as ever: so it only needs vital re-statement, and adaptation to present conditions, to be again dynamic, as of old. We thus "hitch our waggon to a star"; and it is by such distant points of direction that all our everyday roads and steps are really determined.

To justify this civic faith in detail would again exceed these limits. Enough here to have tried to outline the general truth, that for City Renewal, that is of place and people, people and place—both together, and interacting in progress—our civic ideal affords light, and this at once glowing and clear.

Idealism thus not does degenerate into "mere sentiment:" that is but neurasthenia. It develops a synthetic grasp of all the essential scientific factors of Life, and thus not merely or primarily as "individualistic", nor yet "socialistic" either, since both these are but the abstracts, and extremes, of past inadequate philosophies, and hence are lagging behind Civics, as the essential Social Science.

### General Conception of Practical Civics.

For this science is of City and of Citizens; and hence it develops into purpose, and into practical guidance, for their co-operation, their inter-action. Thus increasingly our ideas clarify, and at length take form as definite Plans. Definite city-plans, house-plans, industry-plans,—as per samples herewith upon Plans. These are of course always open to correction, and to further improvement. Each city, and each citizen-group in it, and for it, must thus also work out its own contribution, its own campaign, of evolving Citizenship as Service. And this on all the various sides of citizenship—say rather its various aspects. What are these? Industrial, yet Artistic; Organic, yet also Psychologic, and thus Educational also; Economic yet Ethic, and so truly Governmental, and thus, in the best sense, even Religious. For a religion is the best, the highest, the deepest, co-ordination of life, in thought and action, ideal and practice, which a community, in its age, can image and express, and thus so far attain. The Ideal City is one of the standard conceptions of past religions: why not also of reviving ones?

This proposition might be worked out further, and even with diagrammatic clearness. For "the Water of Life" may be intellectually cooled and clarified into crystallisation as definite, yet as protean, as that of common water as snow. Enough however, within these limits, if the general principle be at all clear, of the essential

unity of all the civic interests we have so long separated, as philanthropy from business, art from industry, education from health, ethics from economics. Yet all these absurd and passing separations are not to be put an end to by abstract philosophy, but in the clear planning, and corresponding action, of a bettering City Life, in each and all these ways.

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## Chapter V.

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### Regional Industries, Rural and Urban.

#### Rural Industries and their Economics.

Economically considered, a Town is above all the Market of its surrounding Country; that is, not only its locality but its Region. Even the modern industrial town, despite its habitual forgetting of the country, is thus but an enlargement of its ancient local fair, plus the concentration of its early and scattered workshops. This still comparatively small Indore can thus see, though the big Cawnpore or the colossal Chicago too readily forget, the immemorial peasant economy, and its wisdom. Grain and Cotton are its staples, and will no doubt long remain so; but adequately to understand these, in their civic outcomes especially, we need more than the too simple monetary and mechanical thinking of conventional business men, or even of their Schools of Commerce and Economics. For beyond this nineteenth century economics, restricted as it has been to money and market-place, to machine and workshop, we have now to recall the older economics of India, of Israel and of Hellas, or again in more recent times of old France and Scotland, countries whose economists have peculiarly founded and contributed to the more recent science. The better economists definitely go beyond the study of prices in the market-place, of wages in the workshop, and profits in the counting-house. They investigate beyond the mere money wages of the workers, the mere money profits of the capitalist, the "Real Wages" of each. Hence the ever-increasing attention to the "Family Budget"; that is the full environment which each household obtains, and with which the worker and his wife and family together interact, towards their maintenance, their deterioration, or their rise in the scale of well-being: and this well-being is viewed no longer as merely economic, sanitary, or even political, but as cultural also. In short, beyond the conventional studies of "Labour and Capital" with their individual money gains, their strifes, or even their better adjustment, we now also enquire into the social results of industries, the realities of wealth as weal, of ill wealth as illth. In all this we note their results, no longer in mere "statistics of wealth and of population" but in quality of city and city-life, in quality of family-life, and therefrom consequently of individual life also. Grain and Cotton are thus investigated no longer simply as mere "commodities" of their markets, as mere "raw material" or "products" of their respective fields or mills, but are now further discerned, as producing in the past, and as contributing to produce in the present, different and characteristic types of civilization, in their producers and in their consumers; with certain definite qualities, certain limitations also.

#### Representative Cereals-Wheat and Rice-in their Social Contrast.

Take as a simple example, the world's two foremost cereals, wheat and rice. These are different commodities for the market, with different prices and profits for

its merchants: but each also requires a deeper and more fully economic examination. This has indeed been given as regards their mechanical treatment, by the inventors and engineers, to whom we owe our present processes; and more lately, as regards quantity and quality of soils and tillage, seed and crops, by the scientific agriculturist. The physiologist too has lately worked out their values, and in a deeper sense than the conventional economist;—that of the “intrinsic values” which he was so boastfully contemptuous in denying; i. e. their respective nutrition values in maintaining the labourer, their real value therefore as a part of his family budget, his real wages, and thence to the maintenance of the nations, so anxious a matter at this time. But beyond all these contributions of the physical and natural sciences towards a real science of economics, we need a fuller sociological investigation of these respective cereals. That is of the different Types of Society which the culture of these cereals has been found to produce in their respective countries and localities, and to evoke in and from their respective populations. So now, in this higher and deeper analysis of wheat and rice respectively, we find these associated with different types of family, and with different types of institutions accordingly, different morals, and corresponding religious standards also. Of the wheat we see the outcome in the acute individualism of the forest-clearing and the plough in the West—the American and Canadian West for extreme examples. But for and from the rice-field, there develop the very converse set of institutions. Rice-culture above all others, with its family co-operation in the field, its further co-operation of village and beyond, for water and water-levels, has potently worked to produce the associated family life of India, the patriarchal family of China, with institutions and morals to correspond, and religions and philosophical outlooks also. To justify all this would require a volume, and one full of reference to many others. Enough here to insist upon the broadest result of principle,—since obviously of more significance than we commonly realise to the life of every City, to the guidance of every State—that of Occupation as evolving Social Organisation, and its appropriate Ideas and Ideals.

The distinctive character of the Peasant—say rather of Rice-peasant, of Wheat-peasant, and so on—are well known in their respective countries and beyond; and this vague popular knowledge, and varied occupational wisdom are now being developed into Social Science, by definite and geographical research; especially by the disciples of Le Play:—that is, by full inquiries into the ways of doing and ways of thinking, of corn-growers and their millers, of rice-growers and rice-millers, with their respective merchants and shop-keepers; and this may be carried on till we reach the respective cakes and their consumers as well: for largely, as the proverb goes—“Man is what he eats,” as well as what he does. (Payne’s “America” is also here illuminating.)

As further example it may here be gently recalled that the old world miller, both in east and west, is at once admired and criticised by his peasant customers. Their admiration of his physical strength, and of his skilful thumb, have been constantly qualified by feelings of disappointment, (though no doubt mainly inevitable) by the amazing shrinkage from the corn supplied him to the flour he returns. Correspondingly the corn-merchant, whether he merits it or no, may readily become deeply unpopular in every country, in famine times especially. Ofcourse this is not intended as a repetition of old attacks upon these occupations; it is simply recalling the facts that occupations of all kinds are subject to popular criticism in their social bearings; and that there is a direct (though too largely broken) continuity between these in their simplest and their highest aspects, as from the sower to the bread of life. But if so, it is not enough to modernise these

occupations, by the substitution of mechanical labour on the great scale for hand-labour on the small. The modern successors of these old occupations have also to achieve the success of social esteem; and this needs much more than simply mechanical advances upon the traditional processes. The past "Industrial Revolution" has failed to realise this; but the leaders of a better educational order are now beginning to do so in each of the leading countries of the West; and India, with its old and high moral traditions, will not long remain behind.

### **The Textile Industries in their Social significance.**

Turn now from the Cereals to the Textiles. What of Cotton in civilisation? What has been, and what now is its place? And how does this stand in comparison with other textiles, with Flax and Wool, with Jute, with Silk?

#### **Cotton in its Social and Civic aspects.**

First then, and mainly, Cotton. Its uses and advantages, its cheapness and convenience may all be taken as obvious; so what of its limitations? Why was it, for instance, that from the beginnings of its culture on the great scale in America, it became associated with the degradation of rural labour? Recall the forced labour, the condemnation of military prisoners and other captives to the Plantations. Recall too how intimately associated with cotton-growing became the development of African Slavery, with all its intensifying evils; evils only ended by the great American War of living memory, and indeed incompletely ended even now. Without suggesting that any such extreme evils are even threatened in India, does not this culture, however profitable to many, also show some signs of tendency to undue cheapening, and to the consequent depression of its associated humbler labours?

Again, how was it that Cotton came to lead in the industrial evolution of the West? And this in so many ways, *e. g.* as regards the invention of processes, as regards quantity of output, and magnitude of gains above all; since "it was not ten per cent, or even hundreds per cent, but thousands per cent, that made the fortunes of Lancashire."

Again, how has Cotton been so peculiarly productive as regards economic theory, and so influential in corresponding political action? Witness "the Manchester School", at once the mainstay of Free Trade, and the backbone of Liberal politics. Yet also how did cotton, in this same Lancashire, become so peculiarly associated with the depression of the labourer—of man, woman and child alike—to a degree unprecedented in industrial history? With this depression of the labourers and their family life, and of their health and life-expectation, correspondingly came that of home and village, of city and town. Popular intelligence and education were alike lowered, and general civilization and culture with them. Such are some of the evils from which Lancashire has so long suffered, and England with it; and from which indeed,—despite a century of Factory Acts and increasing legions of Factory Inspectors—it too much still suffers.

Now here may be painful questions, yet they are plainly a necessary one and especially here before the planning of the nascent Industrial Indore, which must primarily be another Cottonopolis. How far are these (or any of these) unfavourable conditions of labour, or analogous ones, tending to re-appear, as cotton-culture and cotton-manufacture extend in India? Is the condition of the latter industry, in Bombay for instance, all that can be desired? If not, what exactly is wrong?



Evils will be admitted; and if so, they need to be clearly faced and provided against, as regards place, work, and people, in detail. Else how may these evils be guarded against in India? And how far even transformed into better things? Now plainly is the time; at the outset of this great industry—this largely dominant modern industry—in this new centre for its gigantic infancy. What for instance here today—and what better tomorrow—of the hygienic conditions of labour? Of its atmosphere, its hours and so on? For men, women and for children? What of the housing of the workers? On what scales of health, of comfort, and of decency, *e. g.* as regards room space, and for separation of the sexes above all? Is Bombay as yet solving these problems? Or even adequately applying its active minds to solve them? Is it profiting by the past mistakes and disasters of Lancashire in its race for wealth? Or is its industrial evolution simply seeking as far as may be to recapitulate that of England? Or is it to abbreviate this experience, to avoid these evils? And how are we to manufacture cotton here in Indore, in competition with older cities, without these evils, and so more successfully? Labour here in India is still comparatively voiceless; so how far may it safely rely upon enlightened capital, and upon civic statemanship for its protection? And not merely for maintenance and protection; for where that is all that is aimed at by employer and by State, the evils of its deterioration have already begun. Only through definite and unceasing endeavours of progress, can mankind, in any occupation, with any kind of direction, escape from sliding back and downwards, when it begins to stand still.

On the whole must it not be confessed, that in India as in Europe, our mechanical organisation has outrun—and is still outrunning—our social and civic organisation? And hence must we not resolve—*i. e.* observe, inquire, reflect, design, endeavour—that the latter be now brought up to similar standards of efficiency? And if so, have we not here the key-note for our study and planning of this Naya Indore? For the planning of this new Cottonopolis of Central India, must we not introduce something of Eutopia as well? The past, (and too neurasthenic), generations of the nineteenth century constantly mistook Eutopian for “merely Utopian”. So let me recall as one of the most definite advances of public thought in England since and from the War, this perhaps shocking, but true and forcible phrase, now widely current. “We have for a long time despised Utopia, but now the Prussians have shown us that the choice is between Utopia, and Hell”.

### Other Textiles, and their Representative Towns.

It may aid the understanding of this preliminary economic questioning into the dangers and possibilities of the cotton manufacture and its associated activities—and not only in planning for it, but also towards working it, guiding it, regulating it—if we turn for a moment to other textiles. Some are of higher cost and value than cotton, notably linen and silk, while others are on a lower level, as notably jute. While book and chair economists have been wont to cloak their usually comprehensive ignorance of cotton, and of linen, jute and silk alike, under the facile general phrase of “textile industries”, and without consideration of their respective social results, the student of cities and their economy cannot do this. Thus the contrast of Linen towns, like Belfast and Dunfermline with the Jute town of Dundee is wide and tragic; one deeply wounding to my own pride of almost lifelong citizenship of the last named, and one discouraging alike to my frequent hopes and small personal endeavours. Why? Fully to elucidate the reasons of this contrast between these textile towns, would need a volume for each of these cities, and each larger than this present one. Enough here only to state the general fact—that in Belfast and Dunfermline, with their linen, the culture-condi-

tions and resultants are conspicuously more favourable; that is to say, in Dundee, with its staple of jute, seriously less so. Coming to Calcutta, we see the same evils growing and multiplying; and even that famous metropolis of one of the most gifted of Indian peoples, that capital of Commerce and Government, of Education and Culture, is becoming far more deeply involved within the coils of Jute—and this alike materially and intellectually, than either its citizens or its rulers have even begun to realise. If so, here is surely a field, and a call, for social inventions, rivalling and surpassing in their efficiency, all mechanical ones. The task of City Design is to collect, devise and apply such social advances.

Dunfermline and Dundee are but a short railway journey apart—that from Forth to Tay. But in the first city, the long history of linen, from the great monastic order, and the brilliant Court which combined in initiating it, is proud of its “linen, white and clean,” and this alike in the symbolic and the simple way. And although, under modern machine conditions, this is no longer an industry for queens and their maidens, it is still largely suitable, as of old, for “spinsters,” before their marriage. But how different is jute, how far from clean! How to raise this Industry, atleast as far as may be, towards the higher levels even of cotton in Lancashire, if not even those of linen in Belfast or Dunfermline, is thus again the main problem calling for social invention, in Dundee and in Calcutta. In brief then, the Jute Mill, and its workers, are still only emerging from general poverty and too frequent squalor; and one still at the lowest level which the textile trades can show. Cotton stands higher; and it behoves us to keep it ahead, however jute may advance. Linen has long been at a higher civilization-level than cotton; yet why should not cotton overtake this? Yet it is an ominous fact that in Dundee at least linen tends more to fall towards the jute-level than to raise this. “Gresham’s Law” (that bad money tends to drive out good) applies to more than money-values.

Wool industries have, throughout history, yielded greater civilization-values than even linen. Witness as an example of regret, now familiar everywhere, the Prussic destruction of what was the world’s finest civic building in history, cathedrals alone excepted,—the Cloth Halls of Ypres, built many centuries ago by the cloth-weavers of that provincial city, never more than of second magnitude.

### **Cotton in Indore.**

Here in Indore jute does not threaten us, nor do linen or wool offer their larger promise. To make the best of Cotton; that is here and now, this city’s problem and task. How is light to be found on this? What can western examples and warnings teach us? And what Eastern tradition and insight can we find? What are the ways and means of doing all this?

The planning of Naya Indore is thus a matter for far more than its present planner. It concerns the whole city; not simply “Capital and Labour,” but every capitalist, every labourer too. For only in the measure of their effective co-operation, and thus not merely towards dividends and wages, but towards general well-being, can any planning meet with real and enduring success. Wise and vigilant Municipal Government, and State Government also, must do their parts, but the main tasks will remain for that effective citizenship, which these can but seek to support, to encourage and inspire.

It is ofcourse not in the temperament of the town-planner,—necessarily a hopeful one—to prophecy evil. Yet it is his duty not only to guard against those

which careful planning may exclude, but to add warning as regards those which lie beyond his power. Then is it not an obvious fact that the now almost worldwide unrest of labour is a great factor, and an increasing one, in the present troublous times? And that even this peaceful Indore, since only a night's journey from active and fermenting cities, like Bombay and Poona, cannot hope permanently to remain untouched by industrial unrest? If so, is it not the problem not merely so to plan at the outset, but so to direct and lead, so to organise and administer thereafter, that these possible troubles may be minimised? If so, this city may afford a great example of the improving industrial city, and of that better-ordered industrial civilization, towards which we all hope we may attain with returning peace. In short then, the example of Indore may before long help Bombay, instead of being affected by her troubles.

### Summary as Regards Textile Towns.

As we leave these questions concerning the Textile Industries, we must clearly group them on that scale of values which is so clearly exemplified from their resultant Cities, and note their respective Civilization-levels so far as their industries determine them. Beginning with jute, we have thus Jute-Dundee and Jute-Calcutta; each with great uses and qualities of course, but with drawbacks also increasingly obvious. Next comes Cotton-Manchester and the surrounding Lancashire towns, with Cotton-Bombay now recapitulating their history, though we trust abbreviating this; so that what we have here especially to plead, is that this be now further abbreviated, and surpassed, here in Cotton-Indore. Linen-Dunfermline and Linen-Belfast with their finer industry, stand higher in civilization, I venture to say, than does Cotton-Lancashire. But the highest place among the textile towns, in modern times, is that of Silk-Lyons, with its weaver-artists. For here are workmen and masters comparable to those of Silk-Florence at the Renaissance, which it so notably led in Europe. With these, as travellers' records still show, we may compare the old Silk-weavers of India in their palmy days and their cities also: and doubtless those of the historic silk initiative of China as well.

In thus making this broad classification, and gradation of the textile industries, historic, regional, and actual, we do so to ask—whether in the opening future, and in this very town of Naya Indore now beginning, its increasing staple of Cotton, with the eminent Liberalism so deeply associated with it, may not now be brought forward to a higher place upon the social scale?

### Silk and its Possibilities in Indore.

The prime determinant of silk, is of course the needful climate and soil for the Mulberry; and these are proved to be favourable here. The silkworm thus not only flourishes, but unusually well, and in more crops than are usually possible, I am even told five per annum, to an average of two in most places. The next conditions are of capable rearers and workers. For these tasks no people is better adapted than the Indian, as past achievements show, as also do recent experiments, and folk-psychology perhaps most obviously of all.

The problem of now putting this great industry upon the great scale it deserves is thus also ripe for Indore. Hence the provision, in planning, for mulberry plantations must therefore here be considered; and with this the corresponding education of the population. I have already had some technical experience in this matter, from Mulberry-planting and Silk School-establishing many years ago in

Cyprus, where conditions prevail strikingly similar to those of Indore. Fortified by the best skill, not only of England, but of Armenia and France, we set up our little school, one therefore much like that in Indore. We also planned the development of silk-growing. But this not simply by appeal to the peasant, there as here too cautious,—and not without reason—readily to embark upon any experiment.

Thus arose the question:—May not a more strategic appeal for this essentially domestic industry, be made to the less conservative townfolk? And this through the women rather than the men? For silk is specially a woman's industry. Her instinct is above all that of tending life, while a man's labour and thought is too much limited by his tools, and their inert, or at least passive, material. In Cyprus the woman hatches the silkworms, like a bird its eggs, carrying the egg-box under her armpit; and as the eggs hatch, she gently lifts each little silkworm as it grasps the mulberry-leaf she offers, and puts it on her mat or tray. She gathers fresh leaves daily or oftener, and she and her children watch and tend them as no ordinary men would do, throughout their whole development.

But she has her limitations. Her thrift tends to make her start a new brood on a tray or mat preserved from the previous crop, and thus contaminated; so her brood may die, in part or in whole. Again she tends to grow more worms than her few available trees have leaves for; and thus her worms may be underfed, or even starved; as they approach maturity—another common source of loss, and of discouragement as well.

In these warm dry climates, with rapid evaporation, the leaves lose their contained moisture, and thus not only grow tough, but make the silk-worms suffer from thirst, their body-weight being also mostly water.

But for all such evils, there are now remedies. First of all Pasteur's bacteriological standard of cleanliness, which saved, and yearly saves, the whole silk-industry of France from ruin. Yet this standard is readily acquired, by every silk-growing household.

But town households, though containing a great number of women who might readily and profitably rear silk-worms, have no mulberry trees; and though some might be planted, there would not be enough to yield leaves for many rearers throughout a season. Yet this difficulty can also, and speedily, be got over. Let us establish extending mulberry-plantations on suitable land, partly say, in our future Municipal Gardens, but mainly on larger suitable fields elsewhere. Let our little "Mulberry and Silk Company" be from the first on co-operative lines, as well as in touch with the skilled example and direction of the existing Silk School. Let a sufficient but not excessive quantity of good "seed" (*i. e.* clean eggs) be provided at the outset of the season, with new clean mats or trays, and also with the needful, and daily increasing, supply of mulberry leaves. This involves daily supply, and this should be brought in tin canisters, each of which is practically a botanist's box, preserving the leaves from loss of their water by its damp close atmosphere. Next morning the empty box is taken away when the new one is brought. The successful rearing of the silkworms will thus be aided; and, if mishaps occur, the man who delivers the leaves can explain them; and even help to a better start forthwith, if the season be not too far advanced. Payment for all these services can be taken by the company, not in cash, which is always hard to find, and to part with, but in a share of the crop of Cocoons.

The winding of these can easily be arranged for. Some women will do this at home; but experience shows that this may be still better done in small workshops for the purpose. In any case this labour is lighter and more attractive to women than most. Export of silk at this stage is of course easy. But the silk-loom may also be re-established, the Indian silk-weaver restored. Woman may again come in with silk-embroidery. After the Turkish massacres in Bulgaria in 1876, a capable Englishwoman organised such labour for some of the destitute widows and orphan girls, and when I last saw her results, some 20 years later, no less than 1200 women were finding remunerative employment, and doing work at a really artistic level.

I see no reason therefore why the silk industry should not be made highly successful in Indore; especially since the scientific knowledge, and the active and skilled direction which are required are far more easily obtained now and here in India than they were there and then. Many Schopls are also active in this matter, as notably at Nasik.

A word now of the Civilization-Values thus involved. Silk-cleanliness promotes, indeed requires, house-cleanliness; and thus with the silkworm's health comes the health of household. The work is intelligently, skilfully, and morally educative; and in its further developments it is artistic also. And, since the world is always more willing to pay a good price for luxuries than for necessities, the remuneration of silk-workers tends to be higher than that of cotton-workers; and, as Lyons especially shows, the hand-loom for silk can survive.

Above all, the status of woman is notably increased, and in various ways—witness the cleaner and healthier household, and her personal earnings too. And why should she not again increasingly, as in old India, wear silk as well as jewels? Man must thus think more of her than ever.

### Summary.

In summary then, Cotton will of course become, and doubtless remain, by far the staple textile industry of Indore; and the organisation of this industry, from the present outset upon the best and highest possible levels, *i. e.* not only of Technical economy and efficiency, but also of Social Efficiency and Civic Progress, is thus a main task of collaboration for Capital and Labour, for Municipality and State, and one full of promise for Indore among the textile cities of India and of the world.

There is also a real and important opening, though it may at first seem economically but a minor one, for Silk, and this increasingly in the households of the main city, as well as in those of the surrounding villages, and doubtless also widely throughout the State. Moreover, this is far more than an economic opening, however substantial in the aggregate it may become. It is so full, so peculiarly full, of useful reactions upon domestic wellbeing and health, and therefore upon city betterment as a whole, that its consideration at this point, before entering upon city improvement in detail is justified.

## Chapter VI.

### Planning of Extension of Cotton Mill Area, as New Industrial Town ( Naya Indore ).

#### Disadvantage of Earlier Textile Towns.

It is the peculiar disaster, and also the present misfortune, of the industrial cities of Britain and the United States, that from the beginning of the Industrial Age in the eighteenth century to the Town Planning Act of 1910, no guidance, much less regulation, existed, ( nor in America yet adequately exists ), for the location of industries. Now however Britain, and America also, are following the lead of other countries, in definitely locating specific industries in appropriate quarters or environs of the city, and in making adjacent, but distinct and separate, provision for the housing of those connected with these industries. And both in such ways that, as industries and populations expand, their respective areas may expand together.

In this way the natural contours and features of the site, with its communications etc., are all made the best of, and with gains to industrial efficiency, as well as civic amenity—in short to wealth and health—which have already richly justified this new town-planning of industries and homes into order against the former muddle. Industries and their workers hitherto established in the City itself are thus being attracted to migrate to these newly planned industrial suburbs; and with the buildings and space thus left, and the moderated prices for them, the internal improvement of the city is also becoming possible, upon a scale previously unimaginable, and with correspondingly reduced cost also. Birmingham for instance has of late years been giving an eminent example in all this.

Though Germany much later entered the industrial struggle—indeed essentially since 1871—her Industrial City organisation was thus modernised almost from the first; and this with consequent advantages in her competition with our older and more backward towns, so poorly organised, as regards their industrial location, communications, and housing alike.

Returning now to India, we see that Bombay, Calcutta, Cawnpore, Madura and other leading industrial cities, have unfortunately all followed the planless confusion of the early English Industrial Age, and are each suffering from this accordingly.

#### Advantage of Indore.

Indore on the other hand, through entering late, now has the advantage of arresting its beginnings of this confusion and overcrowding, and of proceeding to an efficient and healthy planning of its Industrial Quarter. The location of the old State Mill was in its time on this principle, and so is still a harmless one; while the location which has been selected for the new Industrial Town, to the north-east of the present city, and between the Railway and the New Dewas Road is certainly the right one, and this in every way and for all concerned; so that no planner but would offer his congratulations upon this choice.

### **Further Location, and Planning.**

The northward windings of the River beyond its crossing by the railway, and those of its tributary, the Palasia Nulla, coming in from eastward, offer the proper situation for the lay-out of the dwellings of this nascent new town, and also adequate space for their extension as required. For close to the water, the ground is generally more or less sloping, and is often irregularly broken by erosion. It is thus illfitted for industrial use; but its variety leaves it highly adaptable, indeed all the more attractive, for the needed Garden Villages of this at once suburban and industrial Naya Indore. The level plateau area, between the Railway and the New Dewas Road, both south and north of the Palasia Nulla villages, is thus free for industrial use. The lay-out of its Mill and Factory sites, with Roads etc, has been begun some years ago, while the supply of Railway Sidings has also become urgent. Our present problem is thus to carry on the location and planning, which in a general way have been correctly begun.

### **Present Area, South of Palasia Nulla.**

Let us start then upon this area from the Railway-Crossing east of Central Jail, at the western end of New Dewas Road. This point is the townward apex of a triangle, which may extend fanwise along these lines northward, and this indefinitely, as the growth of industries may require. We must first review the present Lay-out. Looking north, we note first, beside the railway, a large Godown, and then beside the next Railway Crossing, a little further north from the City, the Flour Mill, which goes nearly up to the river-bank.

Starting again from the same apex, and looking due north, we have the large Hukum Chand Mills; and beyond this the Brush Factory, with vacant sites around. Starting once more from the same apex, but now following the New Dewas Road, we have first the vacant site, occupied only by the Dhuni, a small sacred enclosure and building, of growing renown and attractiveness to pilgrims. Next come two large adjoining Ginning Factories, and next the Malwa Mills. These stand on the south side of the Palasia Nulla; but on the opposite side they have another compound, of about double the preceding area, still largely unoccupied, save by a few workmen's Chawls at the extreme north, and godowns and coal-heaps at the southern end.

So far then the industrial development, upto date, of this Mill Area; save that we may note the rise of pukka, but mostly second-rate, dwellings along the south side of the Dewas Road, also the recent Municipal demolition of workers' katcha houses opposite the Malwa Mills, as not only insanitary, but plague-infected.

New applications for Sites are now pending, for which our ground must be laid out accordingly.

### **Defects of Present Lay-out of Industrial Compounds.**

But before entering upon this planning, it is necessary to point out that the present Lay-out of the existing areas, though right in a general way, is, in every case, wasteful as regards its detail. First, each and every area is far larger than its requirements in the present, and probably even in the expanding future. In European industries such vast compounds, mostly waste, are rarely to be seen. A partial explanation is that these big compounds were taken, not merely for industrial purposes, but also with that of housing the workers. But this is a violation of the

fundamental principle of good industrial town-planning—that of clear separation of works and dwellings, of work-place and folk-place. Arguments for this separation have been above indicated, also in preceding Chapters; and I trust that the accompanying Plan, with its working-town and its living-town clearly settled upon the respectively convenient situations provided by nature, will be found satisfactory in this matter.

Under these circumstances, it will be but fair to the mill-owners to resume from them such of their extra land as it is unsuitable to utilize for dwellings; and convenient also to all concerned if this space can be devoted to such industrial purposes as may arise. These may sometimes be of kindred or complemental nature.

Another unfortunate defect in the Lay-out of the present compounds is that they each and all lie *along* the adjacent roads for their length, instead of at right angles to them and along their breadth merely. For thus the existing road-length is practically made double what it need have been; and this, besides an initial waste, is a daily and permanent loss of time and strength, alike to the public who have to pass by, and to all in these compounds as well. At this time of new beginnings, it cannot be too clear that the expense of constructing and of maintaining roads may henceforth be diminished, and the permanent tax upon both the locality and the inmates of every area in unnecessary long and delayed journeys—which in the long run, is yet more serious—may be avoided by better planning.

This better planning is also needed inside the industrial compound as well as outside.

### **Defects of Internal Planning.**

For though the interior planning of each Mill compound is its private matter, and in strictness quite beyond my province, I may be pardoned, in the interest of others in the future, for pointing out the warnings which the existing Mills and Factories convey. For in all but a single case the buildings have too much been dropped down, without sufficient reference to the neighbouring roads, without clear provision for Railway sidings, and above all without due study and economy of the best use of their large area. Again, the large Tanks within the Mill compounds—though necessary to the industry, at any rate so long as worked by steam instead of electricity—are obviously a very serious deduction from the utilisable area; and this not simply by their own extent, plus that of the surrounding excavated earth, or by their wasteful shape [rectangular instead of circular] but by the long detours which they now permanently involve. The proposed Bunds upon the River and the Nulla may suffice for water-supplies to future industrial compounds; but if not, such Tanks might, and in future should be, made nearer the River-side in the present irregular ground lower than that usable for town and village purposes, and thus with economy of space and construction to the Factory, and added amenity to the town. Hence for future Mills this external location of Tanks should as far as possible be arranged for, in the interest of all parties. I therefore show such a tank on the Plan of Naya Indore, above the repaired Bund and its Bridge, for this may serve the New Mill Areas to the east of this.

### **Impure Effluents.**

Another detail of importance to this future town is that the present delivery of impure effluents into the River or Nulla from the Mills cannot be continued in the present cases, nor be permitted in future ones. The sufficient purification of



these effluents is not however a matter of any serious difficulty or expense, and particulars as to the best ways of doing this are at present being obtained from the Factory Inspection Department in London, and from Lancashire. It may indeed, like most recoveries of waste products, become of advantage. The good-feeling of the Mill-owners, especially in view of the present active measures for the purification of the whole Indore River above mentioned, may surely also be depended upon not to continue this nuisance, but to ensure the continuance of the purified river throughout their New Town also. Bathing Ghats and Fisheries will thus alike prosper, instead of being destroyed.

### **Planning of Buildings.**

Finally a word as to the planning of future Industrial Buildings, a matter in which economy may be made, and efficiency promoted. In Cotton Mills, the orderly, even strict, planning of the looms of the weaving-room seldom extends beyond this; but this principle should be carried further. Here the Brush Factory promises to be a model, by the thoughtful, and thus economical and practical, lay-out of its area.

Factory work-rooms tend to be built too low for this climate. Much increased height, with its resulting airspace and diminished heat, is found to pay whenever introduced, through the improved vigour and health of the workers; for these are found to give a better and larger output, and with less effort, than under the present only half-ventilated conditions.

One storey buildings are generally found to be more efficient, and cheaper in construction and working than are two or more storeyed; and here, with cheap land, the former may be especially recommended.

### **Lay-out of Buildings within Industrial Compounds.**

As already indicated, it is especially here that the existing industrial undertakings are open to criticism, and since each new plan sent me for criticism is also insufficiently considered, and therefore in various ways wasteful, it may be of some service if I venture strongly to point these out to intending incomers and their engineers and architects. Such a plan (1) usually begins with a quite unnecessarily large area for its purpose (even allowing for all probable extensions), such as no one would dream of in Europe or America, where land is of more value; and then (2) "to use this ground," lays out (or rather drops down) its buildings on centre and circumference alike, and thus at distances which can only be wholly wasteful of toil and time in the future, whether of porters or carters, clerks or messengers, assistant managers or principals. Thus even as much as a hundred yards of laden journey for man and beast may be wasted between a mill and its godown, and this ofcourse each way. Where raw materials are taken into at one end of a mill or factory, their store should surely be as close to this as may be, not as far; and similarly the godown for the finished product near its exit from the last process of its production. Sidings and coal heap may best determine boilers, and these the factory, as this the godowns, and all these the associated roads; while the economical planning of these may again help the location of the various buildings.

### **American "Efficiency Methods" &c. of Industrial Management.**

As to this, Indian employers seem generally uninformed; but that they are thus wasting labour, and its strength and time, and at points without number,

and all this with corresponding dead loss to wages bill, and reduction of output generally, is exasperatingly manifest in every industrial concern save two, which I have visited in Indore; and similarly throughout India.

Despite the manifold labours and enquiries of the Industrial Commission, and the wide discussions of the press and platform of needed industrial development throughout India these many years, I have not seen any clear indication that this needed field of Indian Progress has yet anywhere come to the point, although it is every bit as characteristic of American superiority, as can be the technical sciences of recent German superiority, or as cheapness now is of Japanese success.

To enter into the details of this is beyond my limits, but I am confident that useful information and suggestion can be obtained, *e. g.* from the Economic Research Department of the University of Allahabad, whose Director, Prof. Stanley Jevons, has paid attention to this subject.

### **Social Management.**

With this bettered industrial management in every works, there is also needed a corresponding advance in their social management. Thus every first-class American enterprise corresponding to these large industries actual and contemplated in Indore, has now, in addition to the Mechanical Engineer both alike employ, and to its Efficiency Engineer to look into all processes—its Social Engineer, whose duty it is to look after the health, comfort, and well-being and therefore with this the vital efficiency of its workers. For in America it is no longer considered a matter of “mere philanthropy,” but shown to be sound and profitable business, to have competent and kindly persons to look after all this, and in every detail—*e. g.* of comfortable Seats for working women, and men also, and of Elevators to save their time and strength from stair climbing, to the supply of Dining Shelters, Rest-Places, and even Recreation Halls: or again of Boys Clubs, or the organization of Holiday gatherings and festivals and healthy Recreation generally. Co-operative organisations are advised and aided, and wages may be helped to go farther; facilities for Gardening and other homely and educative interests are established, and improved Housing is of course aided, and thus in ways above and beyond the too frequent but unsatisfactory one-room standard.

But here again the same authority may be referred to. Enough within these limits to have emphasised that any good Industrial Planning, such as is our problem here for Naya Indore, is not merely of places, or even of folk-place as well as work-place; but also needs, for the successful use of the very best Places, the corresponding continued planning of efficiency as regards Work, and beyond that of social well-being for the People.

### **Future Planning of Industrial Area.**

What of future Planning? Our first problem is evidently to make the best of the area between the New Dewas Road, and south of the Palasia Nulla. I approve and accept the general lay-out by the Municipality of the existing main roads, those running north on each side of Hukum Chand Mills, that running east and west between these Mills and Brush Factory and thence to New Dewas Road by south-west of Malva Mills, (a section remaining to be constructed).

### **Railway Sidings.**

Given the General Lay-out, and its Roads, the prime question is next to provide Railway Sidings. The two great Mills have already applied to the Railway

for these. But the recent plans for these were not acceptable to these Mills nor to the Municipality; and this in view of the separate character of the sidings, and of the injury to existing compounds and roads, also of the need of now considering future requirements, first of the areas remaining to be taken up south of the Nulla, and next of those to be developed north of it.

To make separate Sidings for each Mill as required, as mostly still happens in India—witness the ruinous treatment of roads and streets in the Jute Towns near Calcutta—is but a survival of the muddle before the Town-Planning Age; and this everywhere results in inconvenience and waste to all the interests concerned, those of the public especially. Hence the advantages of a single united scheme of Sidings, designed from the first to supply all the main industrial compounds; and thus allocating to each only its fair proportion of the reduced total expense. The savings,—in land and roads, in total length of sidings and in gain of convenience and economy of time in working these—will all be apparent. Though the total length of the siding system is thus reduced, the individual distance may now in certain cases be somewhat increased, as happens to Malwa Mills. Yet this is associated with a substantial reduction of expense, since now the intervening areas will become chargeable with their equitable share of expense of construction and up-keep; while by and by those north of Malwa Mills will take their fair share of this also. The gain to all parties without exception is thus obvious.

#### Vacant Areas South of Nulla.

Now for the allocation in detail of these areas, still vacant. The Flour Mill desires extension upon the adjacent ground between it and Hukam Chand Mills, with a Siding also; and further more to erect three Bungalows, on the adjacent road facing south. Space for an Iron Foundry is also here required. All these demands may reasonably be granted; while reserving space for a new Road, with Housing space, towards the River.

North of this quarter, and west of Brush Factory, the large level area, back from the broken ground of the river slope, may readily afford space for two Mills; since each may have its Bungalows, and if desired, its Offices also, upon the adjacent public Streets of the town area, and with the Tank, if required, also outside and near the River. As one of these Mills proposes to work in harmony with the Hukam Chand Mills it should be given the southward space. But may not its proposed new Bleaching and Dyeing area be arranged for upon the large vacant north portion of the Hukam Chand Mills, upon which the recently proposed demand for Malwa Sidings need no longer be made?

When the present large deep Tank of the Hukam Chand Mills was being constructed, the earth excavated should have been thrown outside, upon the irregular vacant ground west of this; and municipal permission should now be given to do this, with advantage to both areas accordingly.

The area allotted to the Brush Factory is small, as previous compounds go; but hence doubtless partly its good planning, already noted. This leaves the equivalent of three or four such sites of about similar area between the two north and south roads; and these may now be allocated, in such portions as applications and needs may justify. Or one or two larger concerns may here be located.

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When the present large deep Tank of the Hukam Chand Mills was being constructed, the earth excavated should have been thrown outside, upon the irregular vacant ground west of this; and municipal permission should now be given to do this, with advantage to both areas accordingly.

The area allotted to the Brush Factory is small, as previous compounds go; but hence doubtless partly its good planning, already noted. This leaves the equivalent of three or four such sites of about similar area between the two north and south roads; and these may now be allocated, in such portions as applications and needs may justify. Or one or two larger concerns may here be located.

Pass now to the Malwa Mills. These also desire extension, and for industrial purposes. This may best be granted to south-west, by simply recovering the unused land of Sir Kashi Rao Dada, and allotting, from the large resulting triangular area of about 20 acres, a rectangle of as many as may be required. The smaller triangular portion which may presumably remain over from this Malwa extension may readily be utilised by some smaller industry, or in connection with the planning of the Dhuni area between this and the Dewas Road.

There now only remains to be considered the large area south of Nulla and west of Malwa Mills; and to this site I recommend the removal of the Municipal Cotton Godowns from their present site, south of Central Jail. The space is ample, even for future extension of this cotton-storing business, which is at once profitable to the Municipality and convenient to the whole cotton trade, since the area of storage required by Gins and Mills, and the expense of construction of private godowns, may alike be saved.

### **General Lay-out for Housing of Industrial Town.**

The general lay-out of the industrial area being now clear, we must next provide for the roads and streets, the Mohallas and dwellings of the habitable Town, which is already needed by its thousands of workers, and who are soon, we see, to be notably, increased. Towards making this Plan, the general course for its main roads next the River and Nulla have been marked out upon the ground along with the Chief Engineer, whose experience in road and bridge-design, and of river control, has here been cordially and helpfully given. My further planning has also been rendered possible by his contoured Survey along the River Banks, and of the irregular winding course of the Nulla, with its various Brick-fields.

It is fortunate that good brick-clay exists along the Nulla, and brick-workers also; but it is necessary that this manufacture be henceforth regulated, so that the brick-makers may be guided to work with the roads and levels of the developing town, and not against them. Furthermore, as the future Bund upon the River, some way south of the entrance of this Nulla, must necessarily raise its level, it is necessary to adjust this level to mutual advantage, so that the brick-makers are not unduly inconvenienced, and that the flooded area be not too large.

The repair of the broken Bund upon the river north west of Brush Factory, on which the needed Bridge should also soon be constructed, has been planned and estimated for by the State Engineer. We are also at one as to the (future and later) Bridge and Bund upon the River further down, a little above Suklia. It is worth realising that this will strikingly repeat, for Naya Indore, the beauty of the landscape looking northwards over the uniting rivers of Indore, from Krishnapura Bridge. Indeed something of the same effect will also arise at the junction of the Palasia Nulla with the River. Hence at the focus of each of these fine scenes, upon the peninsula between the uniting streams, a small Temple, with Public Garden, is suggested on Plan.

### **Further Extension of Mill Area North of Palasia Nulla.**

Since the area south of Palasia Nulla will now soon be fully occupied, further northward planning is necessary for the quickly coming years.

This is an easy matter; for there is less margin of broken ground to north of Nulla than south, and the plateau is open and level. Its development will

naturally follow the line of the best crossing of the Nulla for Railway Sidings and Road together; and this crossing is indicated on the plan a little west of the present Malwa Mill area. Leaving the moderate necessary Road and space for Workmen's Dwellings along the Nulla, this large Plateau may readily be developed, with its roads and sidings, as indicated upon the Plan. Its particular areas will ofcourse be adjusted in detail, according to the nature of the industries arising, and the accommodation which they respectively require; but the general principle will be clear, whatever modifications may arise upon its present measurements; viz. that of providing (1) a simple and wide net-work of avenued roads, as broad, regular and direct as need be, yet not quite so mechanically straight and dreary as to weary man and beast, as ruler-drawn roads do; and (2) a line of sidings, more or less midway between each pair of roads, so as to serve the industrial areas on each side of them.

### **Corresponding Housing Development.**

At a moderate distance northward to them (or perhaps one block nearer than is here indicated, rather than further away) there is indicated a second line of Avenue Road and dwellings, broadly parallel to that along the Nulla, and so again connecting the main Workers Town upon the River with that portion which will also be growing up along the Dewas Road and further east. The number of this working population cannot yet be foreseen, in absence of the industries themselves, but due space for their harmonious expansion is thus seen to be available. Enough then for the present, if the principle of Lay-out be clear, viz. that of utilizing the great and fortunate possibilities of this singularly fine situation for providing suitable Garden Villages, (not mere Chawl accommodation) for the workers, and keeping up the needful continuity between their Town-area along the River and that east of Dewas Road. In this way Municipal unity and supervision can be maintained; and a daily and permanent economy, both of time and fatigue, is assured; since houses will thus be obtainable, in every direction, within seldom more than half a mile of the centre of the Factory Area.

### **Industrial Area again, and its further possible Extension.**

North of this east and west Avenue with its blocks of dwellings (or if need be its chain of small mohallas—say indeed Garden Villages—the Industrial Area can again go on, upon the plateau beyond, in fact indefinitely. Of this further extension a first suggestion is given by sketching out the start of its (slightly increasing) series of parallel northward roads, with their intervening sidings as before. Such development however is necessarily somewhat remote. But we thus see that Indore is peculiarly fortunate, in being able to offer to industry such a convenient and indefinitely extending area, with all necessary facilities of roads and railway-sidings, and also with continuous extensions of the corresponding Town, of Garden Villages for its workers. And this in due isolation from the old City, yet practical continuity with it, by the easy accesses of the various roads and bridges, railway-crossing and under-bridges to it which are shown on Plan.

### **Planning of Garden Villages in Detail.**

This planning will be found intelligibly indicated upon the plan; but the explanation of its principle, and that of its Housing is given in the later chapter concerned with Garden Suburbs generally.

### Technical School.

With this, will naturally grow up use and demand for a good Technical School, and for this I mark a convenient location accordingly, on the Dhuni area, as at once nearest the city, and its general educational resources, and also at the point most conveniently reached from all parts of Naya Indore.

Into the detailed planning of this School, I need not however enter: enough if a word of its general relation to education generally, be added later, in the section of this Report dealing with the Higher Education Problems of Indore.

### Summary.

I repeat, then that however long the present plan may take to realise, and whatever modifications of it in detail may found desirable as it develops, the general principle will be clear—that of escaping from the very outset from the confusion of industrial England till lately, and of Indian Industrial Towns and cities hitherto, and of developing this Mill area at once more efficiently for Capital and more healthily and happily for Labour. For here should arise no more Chawls or other standardised slums, with all their many possibilities of deterioration. We are able to build a true and better Naya Indore, upon the same fine river situation as Indore itself; at once as a convenient, simple and economical manufacturing town and as a model Garden Suburb; and the result should thus be a worthy development of this growing Capital of Central India.

These Garden Villages may, and must gradually and even rapidly grow up as industries are developed, into the mohallas of a large, but I trust never seriously crowded, Industrial Town, and this in convenient proximity to the mother City and in direct and permanent municipal continuity of management and supervision as part of it, and of its social life as well, alike cultural and economic.

The details of Housing etc. will be discussed later, with that of other new suburbs, in later Chapters (IX-XIII).

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## Chapter VII.

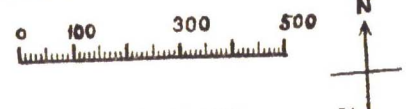
### Indore Water Supply.

Since the first necessity, alike of rural and urban location and existence, is Water, the water difficulties and problems of Indore have naturally claimed attention from the very outset of my visit. I was almost at once taken by the Municipal President and the State Engineer to visit the Bilavli and Limbodi Tanks.

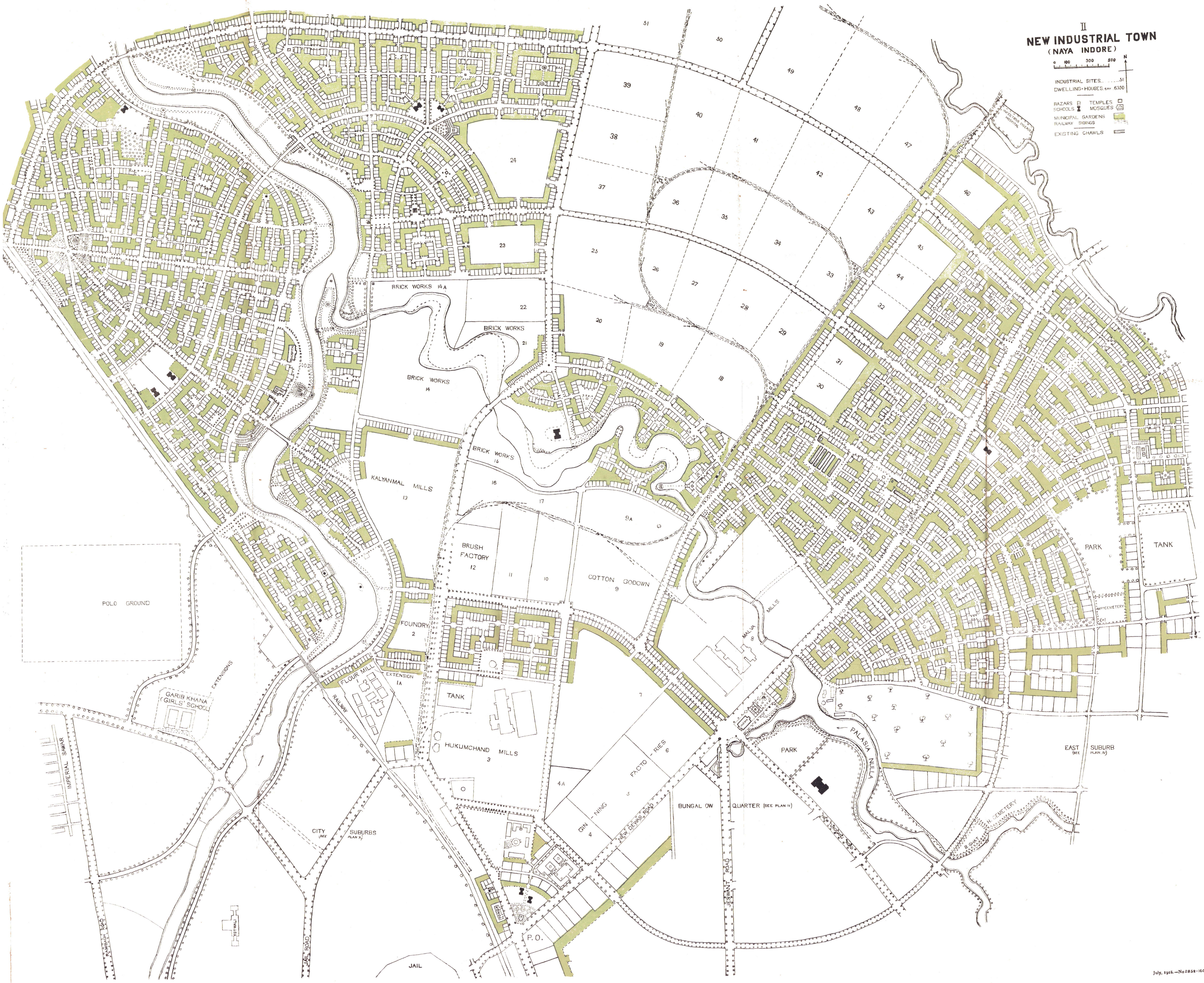
I thus obtained a clear and concordant statement and explanation of the present deficiency; and it also became evident that the two water systems—the older one of the Municipality and this later one of the Public Works Department—have never adequately been correlated, nor even clearly compared. I therefore arranged for the services of a draftsman from each department to set down their respective systems clearly upon separate copies of the city plan. After these were ready, a further prolonged and profitable discussion was held together, and arrangements were made for a fuller associated inspection of both Water Systems outside the city, and for the testing of the P. W. D. system within the city, which has been standing all these years unused.



II  
NEW INDUSTRIAL TOWN  
(NAYA INDORE)



- INDUSTRIAL SITES: ..... 51
- DWELLING-HOUSES: ..... 6350
- BAZARS: [Symbol]
- SCHOOLS: [Symbol]
- MUNICIPAL GARDENS: [Symbol]
- RAILWAY SIDINGS: [Symbol]
- EXISTING CHAWLS: [Symbol]
- TEMPLES: [Symbol]
- MOSQUES: [Symbol]



### Inspections.

For District Inspection a whole day excursion was devoted; and our party was strengthened by the Conservator of Forests and the State Geologist. We examined and discussed the water system at many points, with its various possibilities of improvement and increase, especially from Martandpala northwards, and by Bijalpur and Hukmahedi; thence onwards to and above Rao, and back again by Piplia Tank.

Two days later, after sunrise, we had the stand-post taps of the P. W. D. system opened through out the city; and this was followed by inspection together in the afternoon; Mr. Beant Singh and Mr. Welch accompanying us. The supply was abundant, and this although the Bilavli Sluice had not been opened, and the supply was therefore entirely from seepage below the Tank. Leakages were noted; and repairs ordered by the Chief Engineer. Two days later, our party again visited Bilavli Tank neighbourhood; with further study and discussion, both above and below.

### Plans of Bilavli Scheme.

So far then the facts of our inspections, which were ofcourse supplemented by study of the Plans, especially those of the P. W. D. system. But these, despite their number and detail, shew grave deficiency as regards their general planning and presentment of essentials; so that from these, even assuming their correctness, no clear mental image can be obtained, either of the general scheme or of its main execution. For as regards preparatory Survey, no general plan appears to exist; and all Contours are too roughly drawn. The Geology is quite inadequate. As regards Execution, there are no clear sections of the two great dams, which would, I am told, disclose the absence of puddling. Again there is no general plan of the Tank, to shew the positions and depths of immense Borrow-pits above and below the Bunds, and from which these were essentially constructed. Nor are adequate measurements recorded, of the various sources of the water supply to these Tanks, so that the calculations given do not carry conviction, but seem far too hypothetical; and so on. Above all, these Reservoirs are unnecessarily and extravagantly vast. It is also significant that the great majority of the Plans—upon which this gigantic expense, amounting, I am told, to something like twenty Lacs, was undertaken—are mostly all unsigned, with consequent evasion of responsibility for their practical failure: for, after all this labour and outlay, no extra water has been available. The water in this great Bilavli Tank stands no higher than did the water in the small preceding one it destroyed. Even the Town Stand-posts had never been opened until the other day; and these might have been equally supplied not only from this previous Tank, but from Martandpala quite near the city, and thus without the main expense at all.

The Geological Section cut by the channel from Limbodi to Bilavli Tank shows the extreme permeability of the "murum" or mouldered basalt below the soil. The current explanation is thus confirmed, that the failure of these great Bunds is not merely due to their own permeability through absence of puddling, but has arisen through this thoughtless removal of the old alluvial silt which formerly separated the water from this permeable murum. The whole undertaking seems thus like the tale of a potter, who in making a large water vessel, and anxious to enlarge, heighten and thicken its rim, took the needful clay out of its bottom.

### Possible Abatement of Loss from Reservoirs.

Hope is however felt and expressed that in course of time nature will repair the holes made by these Borrow-pits, from the settling of the Silt brought down by the river. The State Geologist—who has taken an active interest in this matter, and has made provisional sections—(sections very different, in their clearness, from those of the original plans)—further promises to make an examination of these Borrow-pits as fully as possible, when they are more largely laid bare towards the close of the current dry season. The general plan of those still submerged can easily, be obtained by soundings from a boat.

While also hoping for the best, I cannot believe that this natural filling up of these deep Borrow-pits can be other than a very slow process; since the bulk of the silt must be deposited at the opposite end of the Tank, near the entrance of the river. I may therefore ask consideration, from both the engineer and the geologist, of the question whether this filling up process might not be aided, by throwing into these pits even a moderate depth of earth and silt, skimmed from the surface of the present Tank area, which is left exposed and dry as an open field during the greater part of the year, or altogether.

No great depth of silt should ofcourse be taken anywhere for this purpose; and this from such spots as geological study, confirmed by boring, may show that the silt layer is deep enough to bear superficial thinning. Ofcourse this process, of filling up the Borrow-pits even for a few feet of their depth, and from cheaply constructed rafts, would involve labour and outlay; so that after consideration of the plan of the Borrow-pits, the estimates for such a partial treatment of them would have to be first considered. It is ofcourse desirable to redeem, and as soon as may be, something from this gigantic outlay and melancholy emptiness; but there is also much to be said for leaving these two unsuccessful Tanks, and confining ourselves to the simplest and most direct methods of improving the present Water Supply.

### Irrigation Tanks, and Maintenance of Water-Levels.

Yet before entering upon these detailed improvements, another geological consideration arises; and this is of importance to our immediate purpose, as also of agricultural and general bearing. For looking to the small rivers above Bilavli and Limbodi, we note that atleast three Bunds upon these rivers, each holding up some ten million gallons or so, were destroyed by the Engineers of the Bilavli scheme, in order to contribute their waters to fill these new Tanks. But this was plainly not only a mischief to the local agriculture by destruction of its irrigation supply, but a complete mistake for its own engineering purpose. It appears to have been founded on the crude popular view of a river, as merely a visible stream, with so much measurable water in its open pipe, as it were; and thus it entirely overlooked the larger and truer view of a river, as continuous with a vast Under-flow, and this again as continuous with the extensive saturation of the plateau around. A surface river thus only runs above the surface at all because it is flowing over the saturated area, below and on either hand; otherwise it would sink into the ground altogether. Hence the more of these visible rivers we can hold up by Bunds in the higher portions of their courses, the higher and wider will be the saturation of the surrounding country. And this with advantage not only to local trees, fields, gardens and wells, but with help also to keep up the unseen Water-level, and therefore that of the visible river with it. In this view I am confirmed by the Geologist, and, we may assume, by all geology. Hence this mistaken destruction must be cured, even

to recoup the Bilavli water with what was thus so foolishly thrown away, let alone to restore local irrigation again. One of these Bunds is in good condition; another is destroyed; and I have no particulars of the third. But the expenses of reconstruction or repairs of these cannot be very serious; and as no other rural enterprise pays better than Irrigation, we thus get the improved Water-supply into the bargain.

Some little way below the Bilavli Tank and above the beginning of that of Piplia, there is also a substantial old Bund, which seems worth estimating for possible repair, the more since besides this there exists a large and permanent Spring, which was of great service during the last water famine.

In the same way of course, all other Tanks above the city have their uses to the plateau around, and in saturating the strata below them. Similarly, the bunding up of the river throughout its course through the City has a more than esthetic and sanitary return, by its service in keeping up the water-level in the town's wells, and under its gardens, but must also be of service below the City, to the mill wells, and also to agriculture generally. Thus there appears what must increasingly become a State policy, and that for many other States beyond Indore—in fact an Indian, even an Asiatic policy, in great measure a World-policy.

A thoughtful colleague said to me lately—"the greatest war of the world may yet be for water". At any rate, both geologists and historians are increasingly insisting upon the Dessiccation of Asia, as a main factor of man's past history, and also of his present too general agricultural poverty. If so, the question of maintaining, even raising water-levels against the various agencies, human as well as natural, which are tending to lower them, becomes a main problem of that agricultural statesmanship, upon which the future, alike of Indore and of India, must always mainly depend.

### Possible New Reservoirs ?

Returning now to these great but unsuccessful Tanks, the question has been raised—though these two Tanks have been blundered in their construction, other and better constructed Tanks might still be made elsewhere, as notably upon the stream which flows past Bijalpur and enters the Indore River below Martandpala. An old Bund exists below Bijalpur, and another at Hukmakhedi, on the stream coming down from Rao. On the general principles above advocated, the renewal of these Bunds is of course desirable; and again the expense would not be great, and the return from irrigation immediate. But the Hukmakhedi stream is at present contaminated by the new and rapidly growing village of Rao. Some careful planning and drainage of this new suburb is in any case necessary, since it is at present actively repeating all the past sanitary mistakes and drainage evils of Indore City; indeed it is far worse, since being built too much on slum principles from the very outset.

The present Bijalpur Tank would also be contaminated by that large village; while the construction of the new Bund above this, with a pipe to Martandpala or to the town would be of considerable expense; and that of the necessarily deeper cut across the ridge separating this from Bilavli would be yet more serious.

### Proposed Bilavli Seepage Bund.

We are thus being steadily driven back upon simpler and less expensive measures. The first of these, and one which all our inspection party are agreed in approving, is that of a small Seepage Tank below Bilavli Dam. This would include and

submerge most of the existing Borrow-pits below the big Bilavli Dam. Its needed new low Bund would cross the entrance to the Piplia valley, for a distance of about two thousand feet and a height of about ten feet. This would not only contain a good deal of seepage water, but would aid the Bilavli Tank by diminishing the present pressure, and so force out less seepage with its diminished energy. By this new Bilavli Seepage Bund, the present Borrow-pits below the big Bund would be submerged and united, so their present contribution to the mosquito pest would also be put an end to.

### **Bilavli Village &c.**

Coming now to Bilavli village, at the N. W. of this Seepage Bund, its few occupied houses on the higher level may be prevented from contaminating the water supply by the supply of simple latrines, best placed within a garden at the farthest point from the water; and also by cleansing their present well; but houses near the water should be removed.

Continuing northwards towards Piplia Reservoir, we agree that the old Dam, besides the great Spring, should at any rate be estimated for repair, and the Spring itself put in order, so as more efficiently to contribute its water to the general supply.

Descending towards the Piplia Tank, we noticed a camp of gravel-diggers far too close to the water-supply, and its removal further west was ordered. But this is obviously a recurrent danger; hence future gravel-digging should be regularly looked after by a trustworthy water-inspector on his regular rounds.

### **Piplia Reservoir and Neighbourhood.**

On the west Bund of Piplia one is surprised by the wastefully broad channel cut by the engineers of the Bilavli scheme to keep down the level of Piplia Tank:— it is hard to see why; the more since this huge gap has annually to be built up again with sandbags. Is it not desirable to restore the old Bund at this point, and to add a more moderate and easily workable outlet, if here required at all?

That an extensive waste of water takes place on this west side of Piplia Tank, is increasingly obvious as we descend northwards along its Bund, from the increasingly exuberant vegetation, with palm-trees, and at length a positively marshy character. This marshy area widens and straggles down all the way to the Mhow Road, where its main channel enters the reservoir of Martandpala under the Bridge. It thus becomes evident that the clearing and deepening of this long neglected area would yield additional and substantial increase of reservoir accommodation at moderate cost.

Turning north-eastward along the Bund of Piplia, we note again an extensive marshy expanse, of mud and rushes. This is no doubt mainly due to seepage from Piplia; yet is it not possible that some of the deeper seepage from Bilavli is also springing out here? In any case this may be worth clearing and moderate deepening, with the addition of a small external seepage Bund? Yet the main advantage of this, as we shall see, may be obtained by improvements lower down. Meantime channels should be cut through this marsh to drain its waters to the main channel a little way below. Such channels may also be cheaply cut, and with advantage, along the course of seepage between Bilavli and Piplia tanks, since some further economy of water now being lost, between evaporation and sinkage, may thus be inexpensively realised.

A ramble through Piplia Village ofcourse shows minor sources of contamination, and permanent risk as well. The former should at once be dealt with, since little expense is required. But the ultimate removal of this village seems inevitable. Happily a good and suitable site is available a little way eastward, and conveniently on the west and north sides of the small old agricultural Tank at a safe distance among the fields: this would need only a connection to the main road not far off.

### **Martandpala Reservoir.**

Returning to the Mhow Road Bridge, the improvement of Martandpala has now to be considered. From our associated inspection, we agreed that the heightening, by three feet, of its well-built masonry Bund at the north end is easily and inexpensively practicable; thus substantially increasing its storage capacity, and further holding up water between the Bridge and the Piplia Tank itself, and so also forming, to that extent, an additional Seepage Bund for Piplia Tank, similar to that projected by the Chief Engineer below Bilavli.

This raising of Martandpala Bund by 3 ft. admits of laying a large pipe (from the ample stock lying in P. W. D. Store) to join the main pipe from Bilavli, which passes here at the very moderate distance of about 850 feet. This operation is again simple and inexpensive, and will be of obvious value and economy in maintaining the stability of both the Municipal and the P. W. D. Water Systems.

It has been suggested that the existing open Municipal Channel from Martandpala townwards, may then be dispensed with, since this is obviously liable to contamination, while the P. W. D. pipe is not: and since this can easily be connected with the Municipal pipe further down at some suitable point, *e. g.* at Chattri Bagh, or close to the junction of the Piplia and Sherpur pipes; indeed both.

Yet since this may be taking a risk of accident, however small, this open channel should not be altogether abandoned, but kept permanently clean, open and in good repair, in reserve.

### **Order of Improvements Recommended.**

After this long discussion, and these many detailed recommendations, the reader will fairly ask "Which of these is most urgent and best worth proceeding with"? We are unanimous in agreeing that the first matter is the above-indicated improvement of Martandpala. This may involve some improvement of the waterway under Mhow Road Bridge, and this matter is therefore also being considered by the State Engineer.

The clearance and further increase of storage accommodation upto Piplia obviously goes with this. After this may naturally come the cleansing and improving of Piplia Tank, again no costly matter, and the cutting of shallow Seepage Nullas, upto and beyond the big Spring, to Bilavli Village, above which the small Seepage Dam may also with advantage be constructed.

### **City Water-Improvements.**

So far all will be clean and clear, and notably inexpensive. And since the P. W. D. pipes and standposts are now repaired and in good running order, the City will have a full opportunity of judging by experience how far its water-supply is for the present sufficient. Many further improvements are also possible with the present

supply. Thus existing consumers can be given a larger allowance, and for longer hours, for their domestic uses.

Additional Stand-posts can be erected at suitable places, and in considerable number; also Public Baths and Washing-Places. Domestic connections can also largely be supplied.

Provision can be made for the daily Flushing of Drains from stand-posts at the higher levels. Indeed may we not sometimes utilize these flushing waters in the first place as public Fountains, which would add a new beauty to Indore, and be a perpetual joy to the children, as also fill drinking-troughs for cattle and horses?

Through the town supply may now for years be abundant, at any rate in comparison with the past, all possible economies should none the less be exercised. Thus wasteful enterprises, like Flush-Latrines and Pail Depots especially, should be guarded against. The enormous daily supply of Municipal water to the State Mill, which involves most of the capacity of its local pipe, to the great disadvantage of the public who have the first claim upon it, should be withdrawn; and this the more easily since this Mill has an ample and adequate Well of its own, and needs only a moderate outlay for pumping, like other Mills.

### Wells.

Since all these Mill Wells are ample and excellent, I strongly recommend a survey of the existing Wells throughout the city, of which some are productive, and others may again be made so by cleaning. It must here be remembered that the further raising of the river, which will be effected along with the development of the industrial town of Naya Indore, will further tend to keep up water-levels in the wells towards the city. Hence these valuable old sources may always remain in reserve in case of either accident or scarcity in the public supplies.

A good many wells are still being more or less regularly worked for gardens; but others are not. But since a light Steam Pump, with its coil of hose, can easily be fixed, on a cart, or other vehicle, it can be cheaply taken from well to well. I recommend experiment with such a pump, as a Municipal service, to be kept constantly travelling round the city, utilizing water from the wells (and when more convenient also from the river), for street-watering, drain-flushing, municipal gardens etc., thus notably saving, for domestic uses, the water supplies from the pipe systems of the Municipality and the P. W. D. I also see no reason why this itinerant municipal pump should not be hired out, and at a charge kept as moderate as possible, to private owners of wells, for their own gardens. That such periodic hiring and use of the municipal pump would soon become popular, is a hope justified by the great economy of such mechanical pumping over the present costly employment of bullocks and men at present more or less specialised for garden irrigation purposes. And from the point of view of a possible scarcity of water in dry years, or through accidents, these reserve wells are thus kept clean.

### Further Water Resources.

But dry seasons come from time to time, and even in succession; and thus the anxiety of Water Engineers for great and full Storage Reservoirs must not be lost sight of. Yet the costly failure of the present Reservoirs has given Indore more than sufficient experience to give it caution before embarking upon new ones; and I must confess that the reading of the Reports of the various eminent Water-Engineers

who have in previous years suggested additional Reservoir schemes and the like, has left me cold.

To such engineers it must seem timid; yet as already indicated, I should obstinately proceed by doing first, and gradually, all the smaller, simpler, more economical operations, already enumerated. I would also have hopes (and even ultimately for them) in all operations which would raise the water-level throughout the northern district, and also be useful for irrigation etc., as by repairing all the small old broken Bunds already mentioned, before undertaking any new large ones. I would also fain prolong my survey into the uplands and hills, in which the Indore water-yielding streams take their rise, and would seek to go into their possible planting, or improvement of their existing forests with their Conservator, and consider also with him how far the simple process of "Colmatage," which is now being so largely employed by foresters in southern France and other Mediterranean countries, may here be applied, or extended if already in operation. For this is not merely a gain to local forests, but an increased saturation of the hills themselves, as the best of water reservoirs. For though above-ground reservoirs are useful, even necessary, the great reservoir is and must always be Nature's subterranean one, and this is protected and increased by keeping up the water-level, above, in, and around the city to be watered. And as this level is raised, the existing success of the great Mill Wells may be expected to give an increasingly encouraging example throughout the whole new Industrial Town.

### Summary.

In summary then, I am clearly convinced that no further great water enterprises are required for the present, nor even for the needs of an increasing population for a good many years to come. For not only has the great increase been realized, of now bringing the P. W. D. system as it stands into actual service to the public at its many standposts throughout the city; but these are capable of being considerably multiplied at other places, while its pipes may also be extended to the various new or extending Suburbs around the city, and even to the new Industrial Town itself. But for all this increased use, some increased Storage is very desirable; indeed in view of possible dry years succeeding the recent wet ones, this may be considered urgent. This increased storage should first be given by raising Martandpala Dam, with such improvement to Mhow Road Bridge as may be necessary. With this comes the large further reservoir accommodation available south of the Bridge, and thus extending Martandpala upto Piplia Bund and with all this area raised three feet above its present level.

Minor associated improvements upto Bilavli Tank have also been indicated, and the proposed new Seepage Bund below this is also well worth estimating for, and executing when funds allow, after the completion of the Martandpala improvement, with its correspondingly diminished pressure upon Piplia Bund with abated seepage. The cleaning, and thus moderate enlargement, of the area of Piplia is also desirable, and safer than the raising of its present level. The utilization of the good Spring midway between Piplia and Bilavli—the leading of seepage by shallow Nulla Channels, into the main stream—and also the construction of the proposed Bilavli Seepage Dam—these will each and all give considerable, and fairly calculable, addition to the present supply.

Yet the further Geological study of the Limbodi and Bilavli Tanks, and particularly the location of their disastrous internal Borrow-pits, by soundings, should also be carried out towards the end of the present season; and my sugges-



tion for the possible filling in of a few feet of the permeable bottoms of these borrow-pits, by silt thrown in from rafts, may at any rate be considered.

Once more too I must plead the great importance of keeping up the Water-plane throughout the whole water-area, and this by repairing for their old Irrigation purposes the various broken Bunds throughout the entire district. The renewal of the broken Bund near the middle of the new Industrial Town, as also that further down, under the needed Bridge beside Suklia, will also aid in keeping up the water-plane, even in the upper water-collecting district south of the city. The accessory contribution of the Sherpur Tank and water-system may also be looked into and slightly improved in yield. All these are no doubt minor improvements, and give little scope for the constructive talents and corresponding ambitions of water-engineers: but it will be time enough however for these renewed activities, when the city threatens to outgrow the water supplies thus increased by the various and minor, but cumulative, measures above recommended. So as not to impede them when they come to be needed, it is desirable, as soon as may be, to look into the planning and sanitation of the new and growing Rao, which cannot but otherwise increase the contamination and other difficulties to be got over by any large engineering scheme in this direction.

#### Final Note.

Finally, if and when an increase of water supply comes to be required, the provision of this by large new Wells should also be enquired into, since the Mills are showing how great and permanent such sources may be, and also how comparatively inexpensive.

Again, the possible construction of "Tunnel Wells", like those of the Residency Town, and of the excellent and inexpensive water-works of Ujjain, (both of which I have taken opportunities of visiting), should also be considered, before undertaking more expensive methods, such as the construction of any further large Reservoirs above the city. The natural filtration of the water of such Tunnel Wells, with its relative purity, since atleast partly drawn from the underflow, and not entirely from the river, and also their freedom of loss by evaporation, are advantages to be considered. Their effective and economical construction may also probably by that time have been advanced upon.

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## Chapter VIII.

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### Report on Recently Proposed Drainage Scheme for Indore.

#### Introductory.

The civilisation of India has been strong as regards Personal Hygiene; and this for all or almost all classes, and from birth to death. Witness the birth-room set down in the standard planning of the Shastras, and still common in old houses. Witness the elaborate regulations for bathing, and for the washing of garments: witness finally the funeral pyre. Our British habit of cold bathing is recent, and has been largely aided by the habits and demands of returned Anglo-Indians; while our Cremation Societies yet more distinctly acknowledge Indian example. As regards the disposal of the daily evacuations of the body however, India seems at

first sight to remain largely at the primitive stage common to all peoples: yet even in this matter manners and religion have acted; and enjoined modest disappearance into jungle or along field edges. But while the Law of Moses, in this respect more advanced, commanded the covering up of the daily product by earth, Indian custom leaves this to the natural agencies of air and sun, and thus also to insects and wind in dry weather, and to running water in the rainy season: so that when population increases, there is also much contamination of drinking water, and of air and food by dust, and of the latter by flies. Hence in all these ways a large and ever increasing proportion of the appalling disease-rates and death-rates of Indian cities is thus explained; but is also seen to be greatly reduceable with better Hygiene.

Some other circumstances, each doubly unfortunate, have historically conspired with this un-Hygienic state of things. All castes have practically acquired the repugnance of the spiritual and temporal aristocracies in shrinking from contaminating contacts, and have deputed these to untouchables, specialised as Sweepers, but left without adequate training or direction, and hence given to dispose of their daily burdens in too careless ways. And though attempts are made in every Indian town and city to improve matters, I do not know or hear of any in which the sweepers have been organised with success comparable to that of the other humbler officials and servants of the city. Yet the sweepers are obviously at many points acquiring the class-consciousness of the worldwide Labour Movement. They have at certain places already had their strikes, and with the success which is almost ensured by their peculiarly strong control of domestic comfort and even health. Thus unless civic thought, and even its best statemanship, be directed to these problems, there are obvious risks ahead of every city in the nearing future. Yet in these days, when the condition of "the depressed classes" is increasingly coming before the public mind, there can surely be no better beginnings than those which can be made in every city, by an attentive study, not only of the cleansing problem, but of the labour problems it involves; and, beyond even these, of the social and the human problems as yet too little considered, either by hygienist or economist.

Instead however of undertaking these difficult problems, it would obviously be simpler if we could cut their knot away, as is so largely done in European cities, by the thorough introduction of a Drainage and Water-closet system, thus replacing latrines and sweepers together. This course has naturally commended itself to the educated and prosperous Indian public; and all the more since actively supported by Medical men and Health Officers, and urged by Governments, sometimes aided by them also. Hence the numerous and ever-increasing Drainage Schemes of the Indian Municipalities; with the absence of any definite opposition, save that, on grounds of expense a Municipality may hesitate before acceptance. As regards active technical criticism of existing Drainage Methods in general, or of any city scheme in particular, I have not as yet met any case in India. And as habituated through life in Europe to all modern drainage and its conveniences, and without caring for their cost, it is only within very recent years that I have ventured to enter into the study, much less the criticism, of any drainage scheme, the more since fully conscious of my own deficiency of technical experience and skill in such matters.

### **Drainage Schemes in Indian Cities.**

Yet in recent years I have been once and again compelled to study the Drainage, actual or projected in cities, for whose planning and improvement I have been called in. And though approaching these with a prepossession in their favour, and with full expectation of efficiency and economy, perfected by technical

skill of engineers and hygienists acting together, I have been increasingly astonished, indeed positively dismayed, to find these imposing and costly schemes each turning out to be in the main a new and striking instance, sometimes even a flaming one, of the famous saying of an old statesman in one of Europe's greatest crises before the present one—"See, my son, with how little wisdom the world is governed!" Yet the circumstances of life have made me respectful of the knowledge, the skill, and the achievements of Engineers, both Civil and Mechanical; for after seeing the construction of undertakings still unsurpassed, like the Forth and Tay Bridges, like the Glasgow extended Water-Supply, or again Sewage Purification Works like those on Clyde and Thames, a mere town-planner must feel as a pigmy working among the feet of giants. Again as for the past forty years a teacher in one great School of Medicine after another, one does not readily attack his life-long colleagues in their Departments of Public Health, much less venture rashly to criticise their general acceptance of and co-operation with schemes of City Drainage, prepared as these are to the satisfaction of the neighbouring Faculty of Engineering, also with its formidable body of expert colleagues.

The importation into Indian cities of European Drainage methods has thus at first, and long, appeared to me as natural and necessary a process as the introduction of Railways, or the making of modern Bridges and Roads; while I have also been confirmed in this docile and unquestioning acceptance by the ample and experienced literature of Indian Hygiene. Works like Major Clemesha's "Sewage Disposal in the Tropics" or like "Sanitation in India," by Drs. Turner and Goldsmith of Bombay, —those admirably strenuous sanitarians whose labours have so notably reduced the death-rate of that city—at first naturally seemed to me convincing, if not final upon the subject.

In adapting the Cities and Town Planning Exhibition towards Indian uses, I therefore obtained as many City Drainage Plans as possible; and I exhibited these for some time with unquestioning faith, as examples for other cities in this respect still backward. In short, in every way, I used to accept the Drainage schemes existing or in progress, as outside my scope, just as with Docks or Railways, and these even in the great majority of cities for which I have had to plan. The difficulty, and even reluctance, with which I have gradually been forced, through various unavoidable studies and criticisms of particular Drainage Schemes, into the position of criticism which I must here adopt as regards the present scheme for Indore, on which I have here to report, will thus be realised.

### **Criticism of Drainage without Town Planning.**

I may best explain myself to the reader, whether he be of technical knowledge or none, by recapitulating for him the steps of my gradual disillusionment. My first surprise was to find that my own limitations, of knowledge and experience as regards Drainage and other engineering matters, are even surpassed by that of their experts as regards Town Planning. For I have always understood the purpose, the scope, and the general principles of their work; but they usually nothing of mine. The position which engineers in India still generally maintain, and even impose, is thus well illustrated by a letter before me—one typical of the all but general level of civic thought, and town planning knowledge, among governing authorities and Municipal bodies—from a distinguished civil servant, in charge of one of the most historic and beautiful Cities of India, and in which he had done me the honour of consulting me with regard to its greatest monument. In this he regretfully explains that "as both Water and Drainage schemes are in contempla-

tion, our City must deny itself the luxury of Town Planning." This absence of comprehension that Water and Drainage are parts of a Town's Planning is however, as my own confession above shows, too largely to be blamed upon town-planners themselves. Yet had my correspondent reflected that Town-Planning is concerned by no means fundamentally with the care of monuments, but with the improvement and increase of Communications, with the Sanitation of congested or otherwise unsatisfactory areas, with Laying-out new Extensions, and so on, it would have become evident that such Planning should precede and facilitate Water Supply and Drainage—and this in many ways, from the resultant shortening of pipes and drains, with correspondingly reduced expense, to that foresight and provision of future Suburbs, for which water and drainage will have to be extended. But not conversely: Engineering should not precede Town-planning. For when the water mains and the drains are laid down, as at present, by engineers who simply accept the present confusion of streets and lanes, the present congestion of areas, they are sinking a great proportion of the capital outlays entrusted to them upon roundabout ways; and which it then becomes doubly difficult, and costly, to replan with shorter ones. In a word then, where Town Planning is done before Water and Drainage, great economies are possible; and conversely, where these, as is still usual, are done before Planning, then loss, waste, and difficulties of all kinds arise; and still more are prepared for. Sometimes ofcourse an engineer does realise this; and then rushes into town planning; but too often by the simple expedient of drawing straight thoroughfares through the town plan, and then sawing them through it regardless of cost and consequences.

### City Drainage Plans.

My next disillusionment arose from the study of those general Drainage Plans which I had collected, and in particular of those of cities by which I have been consulted. For while their technical details, as of drain-sections, man-holes, latrines etc., are shown with a clearness which leaves nothing to be desired, this cannot be said of the general City Drainage Plan, upon which the whole scheme has ofcourse to be understood. In my experience of plan-collecting and plan-reading (now twice over of the largest collection in existence,) these Drainage plans are the most obscure and difficultly intelligible of any. For an instance of this, I need not go beyond the present Drainage Plans for Indore (for which I am told the sum of Rs. 85000 has been paid). As above stated in general, so here in particular, I find no fault with the clearness of any, save the main one, the General Drainage Plan of Indore, on which the understanding of the whole scheme depends. But, with all my experience of plan-reading, I have failed at all to grasp this plan, until after having it re-drawn, and by an engineer personally conversant with the scheme in detail, upon the ordinary City Plan, which though of small scale, ( $330' = 1''$ ) is much larger than this all-important one. I therefore believe that there is no person in Indore, or even in India, or out of it, who will clearly understand that Plan, so as to be prepared to discuss it, without also taking the same trouble, *i. e.* of having prepared such a new, enlarged, ordinarily legible, edition of it. I do not ofcourse say that such plans are prepared with the intention of mystifying Municipal and other authorities concerned; but in practice, they do so. What I say, and with other such drainage plans before me, is,—that I have never yet met any Municipal or other governing person, who could even seriously attempt to master the understanding of the scheme proposed to him upon any such plan as this.

That this is not a trifling criticism will be understood from the fact that it is essentially in this one plan that the Design of the whole scheme is expressed; and hence

upon this entirely depends its understanding by the Municipality and their advisors; and therefore of its aggregate of Estimates accordingly. Yet it is upon this very plan of Indore Drainage that I am now criticising, that, but for Mr. Lancheater's vigorous intervention a few years ago, there would have been signed a Contract said to amount to 35 Lacs or thereby. Secondly upon this same plan, the new Estimates now before me for report, amounting to over 15 Lacs, are also essentially based. The conclusion to which this, and other experiences beyond Indore, is thus forcing me, is, that Cities and States enter into these great Drainage schemes without clearly or sufficiently understanding what their scheme is; and consequently with quite inadequate criticism, either of the Drainage Design or of its Estimates accordingly.

But now that this proposed Drainage plan has been translated into clearness upon the Town-plan, we can proceed to discuss both Design and Estimates in some detail.

### **Indore Drainage Plan.**

I shall here ofcourse assume the levels of the town to have been correctly taken, the course and depths of sewers to have been carefully considered, and with the slopes necessary for sufficient flow; and also that the execution of the scheme will be efficient in all its technical details.

On the strength of all this technical accuracy, and efficiency, the engineer is accustomed to claim and get his way with his clients, who are and must be in all these matters practically in his hands, and who therefore commonly in India, (and indeed all the world over) accept such estimates, and sign the Contracts accordingly, without scrutinising them, indeed even without really comprehending them. From this state of things there seems no escape, since neither citizens nor their rulers are prepared to grapple with the details of engineering. Yet any reasonable man can understand the fundamentals. Let us therefore look together into these.

As regards the course of the proposed Drainage, its main outlines may readily be followed from their beginnings, and through the three main Interceptors, to the long northward Main Drain of Outlet. And though the present scheme provides only for the city west of the Railway, provision for communication with future surrounding quarters is duly made. Ofcourse this involves corresponding capital outlay for larger sewers and main drain than are at present required, but in any such scheme such anticipatory outlays are inevitable.

### **Drainage of Sia Ganj; and from the Residency Town ?**

Let us now study the branches and visit the areas which they serve. Beginning with Sia Ganj, questions at once arise. Is its drain to accept the sewage of the Residency Town ? If so what arrangement has been made with its Municipal Authority ? For in this case the drain must be larger, if not deeper, and hence much more costly accordingly, and this increase, with its corresponding differences in upkeep, is thus fairly chargeable to the Residency. At present its entire drainage is discharged into its River, thus polluting that of the town, and ruining from the outset the hope of Indore City of purified Rivers. Yet without this, what need of all this expense ? Why not let the Drains run into the Rivers as they do at present ?

The Residency may ofcourse say, and perhaps still in this country defend legally, surely not quite generously—That is Indore's affair ! Such license of pollution, by any town, of the river and city below it, has too long also existed in England, but

is now put an end to, so that any town can interdict another, even 20 miles up stream, from polluting its river. With the rapid advance of civic regulation in India, which is only temporarily interrupted by the War, decisive legislation, ending all such nuisances, may soon be expected in India. Towards this advance, Inter-governmental accord, such as is necessary in the present case, should give an example, and an impetus, to such legislation, and this in the right spirit. Hence this matter needs to be amicably gone into forthwith, and ofcourse before this beginning of the Indore Drainage Scheme can be undertaken.

### Possible Treatment of Residency Drainage.

I have not had time to study the drainage of the Residency in any detail; nor ofcourse have I any standing in its matters; but I may submit that an arrangement might be come to, on the principle of admitting the Residency storm-water to the river as at present, but having Residency sewage kept out of the river and properly treated, whether by septic tanks or other methods, so as to relieve Indore City from its present dilemma, i. e. of either providing a substantially larger drain, to accept this drainage, or of continuing to endure a continuous pollution of its rivers after it has at no small cost amended its own faults in this respect.

Yet there may be a much simpler solution. After a visit with Mr. Hakumat Rai to the outfall of this Sewage into the river, at the Bund a little below the Residency Bridge, it appears to us clear that an easier and most economical and useful way, and for all concerned, would be for the Residency to construct a Tank at this point for the reception of its Sewage, and to pump this through a pipe across the river to irrigate a field area acquired on the opposite side, which would thus become a productive Garden.

### Danger of Deep Drainage to Foundations, etc.

Before leaving Sia Ganj, it should also be noted that a minor, but not unimportant caution is given in the estimates, viz. "that the State will employ competent Inspectors to inspect the shoring of all excavations, and that if they are satisfied that the work is done properly, we would be relieved of all the responsibilities in case of sinkage of any buildings adjacent to the drain lines".

Sia Ganj is unusually wide; but, in the far narrower streets of the old city, deep excavation is full of danger to foundations not always massive enough for the yielding soil on which most of Indore is built. I thus do not envy either the engineer his responsibility for the shoring of the sites of these deep drain excavations, nor the inspector of his work. Even apart from the enormously increased expense of deep drains, every endeavour should be made towards diminishing the proposed depth, at Sia Ganj and elsewhere. For such accidents are quite familiar to engineers, and even where all precautions are taken, cracks may still appear.

Another economic consideration, commonly ignored between the two contracting parties, but of disastrous incidence upon the citizens, is the extra time required for deep excavation. It is no trifling matter of loss, to Sia Ganj, for instance, to obstruct its traffic for the twelve months or more which may easily be consumed in making this proposed drain, deep and large enough to carry the whole sewage of the Residency. Similarly in the old city, the still greater obstruction of its narrow business thoroughfares during these operations should not be forgotten, since all this must practically add lacs of loss to the total burden of the community in this matter.

### Drainage Scheme of North-West Quarter of city.

Pass now to another section of this Scheme, that of Juna Risala and Gafur Khan's Chhaoni. Here is a large existing pukka storm-water drain running down hill northwards into the deep Nulla which is the present North-west boundary of the city. Some natural surprise cannot but be felt by laymen in engineering when they learn from the former plan (1) that all this storm-water, running into this steepest Nulla of the whole city, and that remotest from dwellings, was in the former (35 lacs) scheme to be turned backwards into the main city system; and even now (2) that in this reduced (15 lacs) scheme, the ordinary drainage, at present accompanying this, is similarly to be turned back into the Northern Interceptor. I confess not to be attracted by such a costly achievement, in the turning of water uphill; ofcourse by deepening the reversed current, until the former end of the drain, at the Nulla, becomes its beginning, and the new end of this drain underlies, by many feet, its former beginning. The reader will find it well worth while to walk along the course of this existing pukka drain—from its beginning to its present end down the Nulla, and endeavour to visualise for himself the whole proposed situation—with the storm-water still running downhill in the natural way, but the drainage led back in the reverse direction, and thereafter through some two miles of additional pipes and drains, (ofcourse duly deepened and enlarged to receive this) all the way to the outlet—which would moreover now have to be beyond new Industrial Indore, (and ofcourse with its additional outlays).

Returning however to the foot of the Nulla, one sees that extensive sites for future extensions of the city exist northward and westward beyond this point, and further down hill; and these I had planned so far accordingly, and before looking into these drainage plans at all. So when these suburbs come to be drained, connection uphill with this proposed scheme will not be possible; and any drains for these must therefore be taken along the valley of the Nulla; of which the upper drain thus need not have been reversed at all.

Hence the most ordinary foresight indicates that this portion of the scheme should be abandoned. But if so, the whole valley of this Nulla may and should be drained separately from those portions of the city which are in the parallel valley of the main river and on its slope. Moreover this Pilia Nulla drains at present much the larger portion of the city lying west of the main River, indeed nearly three fourths of it.

Next too, one comes to see that it might be easier and cheaper to drain the remaining quarter of this main part of the city towards this Nulla, instead of turning this down the valley of the Indore River, as less cutting, and this not so deep, would be required.

But the dual scheme, of draining each valley by itself, seems obviously simpler, and more economical in construction, as notably by now no longer requiring dangerous and costly deepening, much as at Sia Ganj.

I am however reproved for thus breaking up the fine unity of the present scheme, since this would leave the drainage of the East side of the River to be separately dealt with.

In every science we seek intellectual unity. In every art and in every craft man seeks artistic unity; but after all, each of these two distinct city valleys is

itself a unity; and that of water quietly running down hill in each, and this as far above the proposed depths as possible, will also satisfy ordinary minds; and perhaps that of the Municipal Treasurer as well.

### Consideration of Estimates.

Turn now from such discussion of the General Scheme ( though this examination might be interestingly continued ) to that of its proposed Execution, as indicated by the detailed Estimates. Such details at first sight can also hardly but appear too technical for the layman; and hence again municipal and governing authorities so commonly resign themselves to their wholesale acceptance, and without criticism, even of the ordinarily intelligible details. This factor is permanently helpful in explaining public estimates generally, (as why the present War, for instance, is costing the British Empire its full eight million pounds a day,—a subject now at length becoming looked into).

### Cost of Excavation.

But when we sum up courage to face such estimates, they soon become broadly intelligible. We may not be familiar with "Flap-valves," or "Peet's valves," nor be able to judge of the expense of iron pipes or stone-ware ones, but for all such minor items our Municipal Engineer can keep us safe. More important in this section of the estimates is the cost of excavation and re-filling, including shoring. Note then how, in the main sewer, where only 8 ft. deep, these cost Rs. 5 per 100 cubic feet, but where 15 to 18 ft. deep Rs. 12, and where 30-33 ft. Rs. 22. Similarly for the Southern Interceptor, which ranges from 15 to 18 ft. at Rs. 12 per 100 cft. to 33-36 ft. at Rs. 24. Again for the Northern Interceptor, with its similar necessary increase of cost with depth. Hence the economy of diminished depth of the scheme, as has been above suggested for the two localities above, apart from the saving of time of construction and the diminished risk to foundations. Again, when we look into the cost of pipes, we see how rapidly this increases with their diameter; and hence how the above-suggested divided scheme of drainage, of each of the two natural valleys by itself, would in these respects again effect economy. For by the use of these, these northern and southern interceptors which for unity's sake, are cut so deep through the intervening ridge, would not be needed at all.

We may now turn to sample the scheme in its details.

### Urinals, Latrines and Pail Depots.

As cities go, Indore is already not so badly provided with Urinals and Latrines, each of moderate size and expense. Municipal Latrines hitherto average Rs. 35 per single seat, Rs. 60 per double seat, and so on decreasingly, while double Urinals formerly cost the city Rs. 55 each, but are now constructed more permanently in stone, yet at an even lower figure. It is interesting therefore in this estimates to find that two-seated Urinals are now to cost Rs. 451 As. 4, and four-seated ones Rs. 556 As. 4, and that of these a total of 29 are to be provided, at a cost of Rs. 12,603.

Much more marvellous however, in its monumental generosity, is the scheme for new Latrines. For all small ones, like those at present in use in Indore and other ordinary places, are now ignored; and the new fashion is to be introduced. Thus along the main sewer alone we are to have two ten-seated Flush-Latrines at Rs. 483 As 4 per seat, i. e. Rs. 4,834 apiece. Next a sixteen-seated Latrine, costing Rs. 9,907; two twenty-four seated Latrines costing 12,713 each; next one thirty-six



seated Latrine costing Rs. 16907; and finally a forty-eight seated Latrine, merely costing Rs. 21,064. In summary then, no less than seven gigantic latrines are to adorn the course of this main sewer, with a total seating capacity of 168, and a total cost of Rs. 82,972.

Coming now to the Southern Interceptor this has similarly its own set of new great Latrines; and now twelve, of which no less than seven are twenty-four seated; so that the seating capacity of this part of the scheme is 274, and its total expense is to be Rs. 1,44,610.

The Northern Interceptor has ten Latrines, seated for 226, and to cost Rs. 1,19,184.

Here again, have we not an inspiring spectacle of magnitude and unity? How hopeful the future of this well disciplined population, in regiments (168 + 274 + 226 =) 668 strong; all parading in parallel rows, by tens and twelves, by sixteens, by twenty-fours, and forty-eights, then all simultaneously seating within these stately temples of sanitation. What enlightened Municipality, like that of Indore, could hesitate to accept so sanitary a programme. Who would be deterred by an outlay under a mere 3½ lacs, (Rs. 346,766) for thus extending its modest old fashioned institutions, though hitherto considered nearly sufficient? After this, the proposed Rs. 12,603, for extra Urinals, will be seen to be a mere bagatelle, making the 3½ lacs more complete.

The facts that each of these 668 seats is to cost Rs. 519—more than the average dwellings of those using them are worth,—and that it is constructed to use more water daily than can be allotted to ordinary homes, are here not considered.

But even in this Utopia of Sanitary Engineering, only the poorer classes, and not all of these, will go to the public latrines; and hence the domestic sweepers are mostly still necessary as before. For there is admittedly no prospect, in our time at least, of water-closets, since their expense is obviously prohibitive to any save the most prosperous classes, who are but a small percentage of the community, say one-fifth at most. What then is to be done with the sweepers' cart-loads and burdens? But modern sanitation here again rises to the occasion. The fragrant altars known as "Pail Depots" are to be provided; and in quantity:—four along the main sewer, ten on the southern, and four on the northern Interceptor—eighteen in all. As from personal experience of these in other cities, I can testify that each is capable of smelling as strongly as does the present or other Municipal Trenching-ground, the future fragrance of sanitated Indore must be admitted as adequately provided for. For such advantages, an additional Rs. 24,453 are evidently not to be grudged.

Yet it is here interesting to note, that in some cities, as notably Amritsar, after these Flush-Latrines and Pail-depots have been duly erected by their experts, and paid for by the Municipality, their use is interdicted by the Health Officer—that of the Flush Latrines on account of their waste of water beyond ordinary supplies, and that of the Pail-depots on account of the fetid nuisance their use creates in their neighbourhood, not to speak of other sanitary disadvantages over even those of the old Trenching-grounds.

#### " Sweepers' Huts "

It is interesting to note, that despite all this ample provision of temples, altars and subterranean catacombs for the present sanitarian deities, the humble

claims of Housing of the People are not entirely forgotten; but on the contrary, a generous example is given. Twenty-six of what are here called "Sweepers' Huts" ( but are obviously residences for the officiating Pujaris of the Pail Depots ) are to be provided, at an expense of Rs. 1575 each; Total Rs. 40,950. But how shall we afford to rehouse the remaining sweepers, say even 300 families? Let alone the 6 or 8000 average working households of Indore—at present in houses of much lower value,—at this rate, or anything like it ?

### Flushing Tanks.

For a final sample of the economies possible upon these Estimates, take the proposed Flushing Tanks, of which these are to be 16 in all, at a total expense of Rs. 14,900. Are these necessary at all? The existing P. W. D. stand-posts at the higher points, or almost anywhere, have simply to be turned on, to flush the neighbouring drains as fully as need be, and without this extra expense at all.

### Surface Drains.

The letter explanatory of the Estimates points out, " as many surface drains have been made recently, we have not included these in our estimate"—( meaning presumably, the surface drains still required ). "The Estimates also do not include the Khati Mahal Branch Sewer, which is shewn in the drawings crossing the river above Krishnapura Bridge. This Branch will probably be taken into Juni Indore Branch Sewer later."

By the first of these two citations, the Municipality is candidly reminded that the City has still a good deal of expense before it for the Surface Drains, which are necessary ( and of course for any and every scheme ); and these need accordingly to be planned out for their entire length, and atleast broadly estimated and provided for as a regular item of municipal expenditure for years to come. As regards the second point, the approximate expense of this omitted sewer should also be taken note of, the more since similar additions at various points would be required, as the scheme developed.

### Septic Tanks.

From the Summary of the Estimates it appears that the Septic Tank System with which the scheme is designed to close, involves the substantial outlay of Rs. 1,45,000. Moreover as the area, required for any such large Septic Tanks is necessarily considerable, their location would now have to be removed below the new Industrial Town; and thus probably as far away as Suklia; indeed below this, not above.

Septic Tanks are now-a-days much advertised in India, and atleast two small examples already exist in Indore. Are these practically efficient? And are they economical, either in construction or in use? The result of my visits, inquiries and observations on each of these points, here as elsewhere, is in no respect an entirely encouraging one, whether as regards their detailed design and working here, or even their theory in general. I confess to regard such Tanks,—although often locally useful, especially where expense is no objection,—as still too much the test-tube experiments of a recent phase of Bacteriology, enlarged and rendered permanent, quite beyond their real merits; and further as adding a very large additional expense to Drainage schemes, which here at any rate may be readily avoided, as I shall show in a later chapter.

### Estimates.

As a final detail, yet of capital importance, it must be remembered that it is clearly and frankly explained that "this Estimate is approximate only and not binding;" and that "all rates are subject to Market fluctuations due to the present War, and matters beyond our control and may be cancelled without notice". Under present circumstances such stipulations are reasonable, indeed inevitable; but they also prepare for unforeseeable increase, and this more or less in all departments of the work.

### Main Sewer.

A serious factor of increased outlay is that connected with the extension of the Main Sewer. In the former scheme this opened on the River a little North-East of the Railway Bridge just beyond the Flour Mill, while in the present scheme it runs some 2000 feet further to the Palasia Nulla "to a point near the new Brush Factory, where for the time being the effluent of the tanks may be discharged into the river". But yet further extension is rightly foreseen, (though not yet estimated for), since the levels "have been worked out to allow the line to go two miles further on beyond Palasia Nulla at a future date, as it is proposed to extend the city in this direction". So far well; but the great additional expense of this further Main Sewer extension, as well of the enlargement of Septic Tank scheme and Estimates necessitated by the increase of population, must also be reckoned before the acceptance of any portion of this scheme is allowed to commit the City to the rest.

Enough however of such criticisms of the present scheme, alike in some of its general features and in its magnificently prodigal extravagances of detail, not to complain of its inevitably increased cost through war conditions.

Yet apart from this last, which applies to undertakings of every kind, the reader may well wonder and ask—If this 15 Lacs scheme be so costly in its details, what must have been those of the former 35 Lacs scheme, especially as these were estimated years before the war, when labour was cheaper, and materials proportionally much more so than at present? "The primary answer of course is that the former scheme also dealt with the storm-water of the city, and brought for instance that for the North-West Nulla back up-hill, as well as the sullage. But when we compare the two estimates in their four main items we see that their difference, in round numbers, is only five lacs, and not twenty as one would expect. As regards the remaining 15 lacs of the 35 Lacs outlay proposed by the former scheme, I have not yet the materials for explanation before going to press.

### A Sanitary Engineer's Criticism of the Preceding Scheme.

Now despite and after all criticisms, I am well aware that it will be answered, and so far truly, that I am not a Sanitary or Drainage Engineer; and that I thus fail to appreciate this design in all its merits.

But it has so happened that I have lately had the visit and assistance here of a trained specialist in this matter of Drainage and City Sanitation—Mr. A. C. Sinha, who is not only a graduate from one of the most distinguished centres of this subject, the Engineering School of the University of Manchester, but has subsequently had experience in the employment of that Municipality, and also in that of various leading sanitary engineering undertakings in the Lancashire industrial area which with its dense population, exceeding even that of Greater London, has correspondingly vast and thoroughgoing drainage systems in all its crowded towns.

I have therefore asked Mr. Sinha to make an independent study of the Drainage Plans; and his summary of his Report is as follows:—

“In this scheme the defects that appear at first sight are too many bends and blind-alleys; both necessitating unnecessary length of pipes and lavish distribution of Flush-tanks.

The Contour Map is one of the most important drawings of every such scheme, without which it is impossible adequately to design, or even to follow the plan intelligently. But this does not appear among the set of plans. However a plan showing Levels of roads, has been lent by the Municipality. This brings out some of the needed details of the essential fact,—that Indore City lies in two main valleys (1) that of the uniting Rivers, and (2) of Pilia Khal, along the North-West boundary of the City.

The Old and New Palaces stand on the highest area of the rise between these slopes; *i. e.* on the summit of the ridge between them. The area west of the Palaces, that north of Big Sarafa and that north of Pinjara Bakhhal (south of the Excise Office), also all to the west of Chhattri Bagh,—making up something like three-fourths of the area of the City west of the Indore River—thus naturally drains North-West towards Pilia Khal, which moreover runs at a lower level, and largely between lower banks than the Indore river; and with large open sites, suitable for Purification Tanks or for Irrigation Gardens.

These facts should suggest to any designer to find a suitable outfall for the drains of this natural area, or even more, somewhere upon the Pilia Khal, with reduction in length of drains, diminution of their size, and abolition of deep cuttings throughout the whole area.

Returning to the present Scheme as we find it, too many of its drains are taken against gradient, thus involving deep cutting, even to 27 and 30 ft. at places. The deep trenches for the laying of pipes, will have to be made broad; this will again involve careful shoring to hold up the sides of the trenches, for the safety of the existing houses; and all this will add greatly to the cost of excavation and pipe-laying. Even with such care, I am convinced that such deep excavation, at any rate through the less broad streets of the city, will impair foundations, and even threaten disaster.

Above all the defective general Lay-out of the Main Sewers, and their frequently great depth, will make the future connections of the necessary Street-Drains, not yet planned, both longer and more expensive than they should have been.

The long line along Rambagh Road is ill chosen; and so is that along the Jail Road. The Drain along Rambagh Road is against the gradient and the road is not populous, Imli Bazar would have been doubly preferable, with its crowded Mohallas on both sides, and its good slope towards Pilia.

The bends, as in Chhipa Bakhhal, are too many to allow an easy flow; so here the absence of a flush tank is noticeable. Yet two flush tanks are proposed within 100 ft. from each other in the North-West corner of the Hospital. The junction of the three drains west of Saddar Bazar is very badly designed; and many other defects might be pointed out.

The Sewers especially, are too big since these are not meant to carry the whole Storm water. For Indore rainfall, (an average of about 30 ins during the year), the existing surface drains are quite sufficient. The Egg-shape in section, despite certain merits, should have been avoided, on account of the difficulties and additional cost of construction, (say a third more than ordinary Circular sections). The addition, and high cost, of the Patent Invert Blocks, which are necessary below egg-section drains should also discourage their use; whereas concrete is sufficient under Circular ones.

The number of Latrines is extravagant, and also the number of seats in them, I have never seen such large ones even in great Cities”.

### Possible Alternative Drainage Scheme.

I have next asked Mr. Sinha's collaboration, with his training and experience, in enquiring into and sketching out the possibilities of a fresh and independent scheme of Drainage for Indore;—a scheme to be of the usual type, but this time with due regard to the local geography; and specially therefore of the courses and slopes of the two main valleys concerned, and the natural modelling of the area to be drained. Assuming ofcourse the levels to have been correctly taken, and noting the resultant slopes upon a tracing of the town-plan, we have naturally realised more than ever the fact above noted by each of us (pages 54 and 59) that it is the Pilia Nulla, N. W. of the town, which at present drains most of it, and which should continue to do so; with reduced, shallower, and therefore less costly excavation accordingly, since now fully utilising the prevailing northward slope of the area as a whole, instead of largely cutting deep against it. We should naturally be inclined to drain and treat each valley separately, and thus without the costly deep-lying connections through the higher ground between them; and we are clear as to the practicability of this course; and its many economies. Yet Mr. Sinha's study of the levels, more thorough than mine, has strikingly brought out the further possibility, that of unifying the whole drainage of the City, if such unity be still desired,—not only leading into our Pilia Nulla Main Drain, beyond its natural tributary drains, (that of Juni Indore, and of the river-bank Mohallas opposite this,) but also, if need be, the drainage from the East side of the river—Siaganj, Tukoganj, etc. and conducting this westwards through the City. And now with only one main cut through the intervening ridge, instead of two interceptors of the former scheme; and, since this is now sent in the opposite and better direction, going only to a depth of 15 to 18 ft. at the very most, and for a very short distance, instead of the extreme depths of these interceptors running to 27 and 30 ft., and consequently with correspondingly long approaches, at less depths, but still great and costly. This fresh design is thus far less deep throughout, in fact in great part at the very minimum depth required for the safety of pipes running along and across roadways. These may be kept as high as 3ft. below the surface, instead of the 8ft. minimum of the existing ones. The economy from all these may be realised in a general way; and we regret that time has not allowed the preparation of the approximately contrasted plans & estimates for the same area, with their substantial economies. But even from our present outlines of these alternatives to the present schemes, we feel convinced that, with time and draughtsmanship, these might be worked out in all requisite details, and at moderate expense, so as to survive criticism.

In view however of further considerations of the cost of Drainage Schemes in general—not even excepting such improved ones—we still deem it necessary here to consider the farther difficulties which are in the way of any such scheme for Indore.

### Increased Expenditures inevitable beyond Estimates.

By this time the reader may well be weary of all this destructive criticism, and anxious to see something done; and that as soon as may be, to mitigate the manifest dirt, insanitation and river pollution of the city. So he may naturally ask—"Granting certain economies from these criticisms, cannot at any rate some main elements of the present scheme be proceeded with? But here I must answer with a further and more direct Criticism, and reply—You have not even now really counted the cost of the whole scheme; not this (1) even for the existing City much less for (2) that large increase of it which is involved by the present Town

Planning, or any modifications of it. And as no one will deny the necessity of these two forecasts, these areas must be clearly realised.

First the existing large Tuko Ganj area, east of Railway from Residency to Malwa Mills, and thus including an area larger than that of the central city west of the river. Next, the nascent Industrial Town. Also the present planning of additional Suburbs and Extensions as detailed in coming chapters, and shown on Plan, both to north and south of the existing scheme. These would all be sewered with corresponding further outlays, and for an area again greater than the present one, as well require the modification of the existing Drainage Plan, even were this in itself perfect.

It is obviously necessary to have these large additional areas atleast roughly estimated for, before any committal to the present scheme, which is thus but for a mere fraction of the whole area of Greater Indore. Taking the present area sewered at about one and a half square mile, the total area yet to be provided for, in the city and existing suburbs, is nearly as much again. To this must be added the new Industrial Town, and the new Suburbs now planned, for which must be allowed not less than four square miles more. And though the sewerage of such new areas would be of simpler design, with less of bends and windings, the total expense for this fourfold area would be very considerable. Moreover, since the population in these new areas will be much less crowded than in the city, this expense would be incurred for a proportionally much smaller population.

It is beyond my province at present to estimate for all this; but it is plainly an expenditure of enormous magnitude.

#### **Additional Expense of Water-Closets and Connections.**

I have already spoken, and strongly, of the vagueness and insufficient understanding of Drainage Plans and Estimates by authorities undertaking them which is so common throughout India. Schemes seem often entered into more from the feeling that anything is worth trying which promises relief from the many defective and even disgusting elements of the present situation, than from any clear comprehension of what exactly is to be obtained from the large expenditures thus so lightly undertaken. But there is also a natural and growing desire for the introduction of the modern conveniences of the western cities, and in particular for the domestic Baths and W. C's which are so much more attractive than their Indian equivalents, and which moreover rid the house both of water-carrier and sweeper.

There easily goes along with this growing public demand, an indifference to its expense: and ofcourse the supply of these conveniences is not a Municipal matter; but one for each householder, atleast house-owner: and, outside the greater and more westernised cities, these two are practically the same in India.

But before introducing Baths and W. C's, we require Water-connection in our street or road, and also a branch of the Drainage system. But these ordinary conditions of a western city are not yet in sight of realisation in Indore, even were the whole drainage scheme, as yet estimated for, completed to-morrow. For its drains traverse only comparatively few miles, say 16 of the total vast mileage of the streets and roads of the present city, even leaving out Mohallas where no such conveniences would be taken. Similarly even the two Water-systems united traverse only 18 miles of streets, while drain-courses and water-supply do not by any means

always coexist. Under these circumstances there are at present proportionally few houses large and valuable enough even to think of the necessary double connections, with their associated conveniences.

The sanitarian and engineer are ofcourse prepared to make all the requisite municipal extensions of both systems, and to give house-connections throughout, as in a European town. Certainly; but at what additional expense to the Municipality, and thus to the tax-payer? And within what term of years? With what degree of new Excavation, impeding traffic in the narrow bazars, and each for many months; and with what additional risks to their often poor and always uncertain foundations?

### Cost of Modern Conveniences.

But let us even imagine that an ever-generous State, from its assumed limitless resources, were to intervene, with a grant (taken from possibly more productive expenditure) of all the  $x$  lacs thus required for these enormous increases of water pipes and of drains, it will still remain for the householders to make their own connections and pay for their own Baths and W. C.'s. A domestic Water-connection may be roughly averaged to cost at not less than Rs. 50 to 60 per tap, and this ofcourse on the ground floor. The bath would seldom be the pukka stoneware European one, costing from Rs. 150 upwards, and and even metal ones do not yet seem to be manufactured in India. Even the most economical W. C. cannot be put in for less than Rs. 150 at the best, and probably more. The minimum outlay for one water-tap and one W. C., without Bath, would thus be atleast Rs. 200. Taking then this lowest figure, to give the scheme its fullest possible chance, we have to ask—How many houses in Indore are likely to face this moderate outlay? There are about 10,000 houses in the present Indore City area, apart from new Suburbs or Industrial Town. Say at the most 2,000 likely to be thus provided at this expense? This means an outlay of Rs.  $200 \times 2,000$ , *i. e.* Rs. 4,00,000. This large sum devoted to the plumbers' craft will be ofcourse withdrawn from the previous channels of expenditure, and is large enough to be felt by these: still, we may let that pass. The essential fact remains that the 8,000 houses which do not take in W. C.'s require the sweepers &c., much as before, and are very little benefited by our Drainage Scheme or its extensions. Yet its vast set of expenses has substantially been laid upon the tax-payers of the City, (or in case of grants, from improvements more productive to the rural community and others) predominantly in the interest of the increased domestic comfort of the one well-to-do citizen out of every five. Here in fact we have one of the main factors, perhaps the main factor, which explains Drainage schemes at all, though we do not forget their other uses.

Under these circumstances, I do not see how, in ordinary civic fairness, we of the prosperous fifth, can ask for these comforts at all, since they can only be obtained at such heavy burdens upon the community. Have we not therefore to face the disappointment of giving them up as impracticable? At any rate until we can afford to transform and layout a new city, with its streets and houses completely equipped from the first, as in Europe. Or atleast until we can afford Septic Tanks for wealthy areas, or some substitute for them (as is proposed later)?

So it must now be asked—Will our new Suburbs, or our new Industrial Town, be able to afford, just like a European one, all the Municipal burden of drains for their new streets, and the domestic outlays for the modern sanitation of their new homes?

### Resources of Indian Cities.

Next comes a yet wider consideration, too commonly omitted from that of Sanitary undertakings and Public Works in India, yet none the less indispensable to any full and fair presentment of the question:—namely this, that the average and the total wealth of this, or any other Indian, city, is proportionally very small, in comparison with that of a British City of the same magnitude; while the total area to be drained, despite congested Bazars, is usually proportionately much greater, since European houses are commonly of more storeys.

I leave to economists to settle the exact estimate of this ratio of Indian City-wealth and Taxation-resources as compared with those of Western cities, but whether this be one twentieth or one fortieth, as various calculations bring out, the difference is obviously a serious one. It has further to be noted that though labour is reckoned cheaper in India, the aggregate expense of executing a Drainage Scheme is certainly at no point so much less as might be hoped on this ground; and ofcourse it is in some respects far greater, as where imports are required.

Yet here in India one constantly meets members of the educated public, otherwise skilled and intelligent, whose conceptions of city economies and possible expenditure are too simple; so that they confuse the existence of a wealthy class, and of a few conspicuously rich men, say in Indore, as "Wealthy Indore". Others, here in India, as also too commonly in Europe, imagine that they have but to call on "The State," to tap limitless resources; so that It can make up all possible deficiencies by generous grants from its practically boundless exchequer, or drafts upon its yet more limitless credit. But these are dreams indefensible in every day economic daylight. For high taxation is an obvious burden on existing Industries as well as on house-holders, and so an active barrier against the increase of both; and still more against the immigration of either. Secondly since a Government Exchequer is nothing beyond a Taxation Bank, ( and this the hardest beset of all Banks ), its further "Grants" can only be derived from rural taxation, with corresponding starvation of rural development accordingly. Yet surely this is among the most needed of all State endeavours throughout India, at once so predominantly agricultural and so tragically poor.

As a vivid instance of the real contrast of wealth, it may be mentioned that the single city of Glasgow, not so larger as Calcutta, lately subscribed, in a week or so, to one of the recent War Loans, the full £ 100,000,000 still being collected in India for the same purpose.

### Needed Alternative Scheme.

After all these criticisms of the proposed Drainage Scheme, the reader may well be impatiently asking—What alternative do you propose? But since, as was pointed out at the outset that the Planning of a town must be considered and broadly settled before the provision of its Drainage, we must return to our Town Planning of Indore. As this becomes worked out practically and clearly, it will be shown that a corresponding Drainage System of simpler and more economical type can be realized along with it; and this I venture even to promise with economy and advantage, and these alike exceeding what the reader, accustomed by this time to large figures, may at present hope.



### Town Planning before Drainage.

Beyond all this long but inevitable discussion of this Drainage scheme in its various features and aspects, and of the cost of these, the Town-planner may now begin to ask—What of City improvements of all other kinds, from Communications to Garden Suburbs and Housing? And what chance will there be within any reasonable time for the citizens of all or any of these, if Lacs 15 for the initial scheme, plus Lacs  $x$  for its developments and extensions, plus even only Lacs 4 for domestic conveniences, without baths, but plus other lacs for suburbs have first to be provided from the aggregate of public and private purses?

Recall the proposition on pages 50 & 51, that a Town Planning Scheme should precede a Drainage Scheme, and not conversely. As evidence of this, the coming Chapters and their plans will show that every street, every mohalla, every lane and house even, has now been studied on the spot: and thus hundreds of improvements in detail have been worked out for the whole populous area covered by the present Drainage Scheme, as well as for much more than this area of suburban districts around. Provision has thus been made for attracting a very appreciable proportion of city house-holders to the thousands of new sites planned outside the present Drainage area, both industrial and suburban; while the proposed removal of dilapidated and insanitary houses, and of others necessitated by the improvements of communications, from new lanes to new streets, roads, avenues and boulevards, as also for the provision of open spaces and gardens, of schools and playgrounds, will also compel the removal of a good many of the central population to new sites again outside that Drainage area. And thus the many-seated Latrines would so far lose their custom.

Again the situations selected for these must naturally be conveniently accessible, yet as far as possible isolated from existing dwellings. It is this which has involved their location so largely upon existing open spaces, like the Temple squares, the Well areas &c. of Indian towns; and thus in fact, the wholesale desecration of places formerly held sacred, and the occupation of all the best spots which a planner would otherwise most easily and inexpensively devote to new open spaces, to squares, or other dignified public use. A large proportion of the improvements which have been worked out in detail on the present plans throughout Indore would thus have been rendered impossible, had this scheme been executed on that principle of "Drainage before Town Planning", which has been as yet mainly followed throughout Indian Cities; and to which, as we have seen, even distinguished Municipal authorities still so disastrously adhere.

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## Chapter IX.

### Suburbs of Indore: Plague Camps, Garden Villages, and Industrial Housing with appropriate Sanitation.

#### Plague Camps and their Possibilities.

Even after repeated visits to these Plague Camps, I find it difficult to sum up their varied aspects. For here is the landscape beauty of the country, yet too much mingled with slum-like details. Seen at their best, here are the pleasant conditions of family life in the country, with social regroupings and friendly encounters, with return to rural simplicity and health, and practical immunity from the most dreaded of diseases. But all is too much alloyed with discomforts; as of overcrowding in small-roomed space, often with insufficient protection from wind, and from wet towards the close of the rainy season. The rural beauty of the situation is more or less spoiled for each cottage by its neighbours, so that the most dilapidated of Mohallas in town is more pleasant to look upon than are those ramshackle encampments. Yet experience, not only of Indore and other cities in the past half-generation but that of history in general, shows that plague is not easily got rid of; so that the present precautionary exodus from the city may long have to be continued—until a far more adequate level of sanitation has been organised; as in this report we consider—and propose—how to do.

Under these circumstances the improvement of these Plague Camps must be considered from more than the present temporary point of view; and this alike by the City and the State as well as by house-holders personally. Happily however, it is evident that each of these Camps is a Garden Suburb in the making: so that with better planning, and with a little better construction, the present huts may be made the beginnings and centres of future permanent country village homes. It is in fact to the dispersive influence of plague that we owe the conspicuously large and well-built suburb of Tukoganj; and it is thence obvious that the development of such suburban homes should now become general amongst the wealthy and well-to-do classes, so that Indore may soon become surrounded by their villas and bungalows. But all classes need equally to escape from plague; and under its pressure even the poor are increasingly finding the ways and means of doing so.

#### French Working Class Garden Suburbs.

Thus readily, and within a comparatively short time, there may be extended to large areas outside Indore, and by means of these Plague Camps essentially, the conditions which are so admirable a feature of French manufacturing and commercial towns. In England, America or Germany, it is as yet only the prosperous who have country homes as well as town ones; but in France, though money incomes and wages are not higher, the working men have increasingly their country cottages. These "bastides" may be seen extending for miles around Marseilles or Nimes; and each with its little garden, and even patch of vineyard; and from this country-home the father and the school-children walk or bicycle to town day by day. Thanks to the abundant, suitable, and cheap land around the City, the same conditions, for even very moderate incomes, are obviously practicable around Indore, and are even now arising in its Plague Camps. Hence this popular exodus only needs encouragement and guidance to produce Garden Suburbs second to none.

### Advantages of Country Homes.

How then can this desirable growth be cultivated? Though some good pasture-land may be needed, and neighbouring cultivated fields also be taken in, these new suburbs are also largely arising on the comparatively waste land, as the driest and best fitted for dwellings. The areas at present allotted [ 60' x 60' ] need little enlargement to encourage planting and gardening; and for these the domestic sullage water is available, and with advantage to home and general sanitation. Underlying all this is the fact that people are invigorated by change of residence. When both houses are reasonably good, however simple, more work and wealth can therefore be produced; hence every city community should be very largely able to earn and maintain such substantial well-being as the double home provides. Assuming the Municipality to do its part in local planning, in attention to roads, water, sanitation, police protection etc., there is thus no fear of the more effectively working citizens being unable to afford to do their part.

To put this idea yet more clearly, it is not simply the prosperous who can afford a town and country house. Those who utilise the value of such health-giving change become more efficient, and prosperous enough accordingly to maintain this best of luxuries; since this in peculiarly high degree repays its cost, from the bodily and mental vigour which are promoted by the alternation of rural and urban life.

Counting plague-huts therefore as the beginnings of such country homes, the construction of many hundreds, if not even thousands of houses for the Indore Garden Suburbs has thus actually begun. Still, there remains in Indore a very large class of people who cannot afford even the Rs. 100 or so which are necessary for a decent hut, and who therefore remain in the City; and these are doubly exposed to plague, from their own rats and those from the closed houses of their more prosperous neighbours. These rats moreover are themselves depressed by diminished nutrition, and so must be more liable to the disease. To meet this great difficulty, the recent redoubling of the sanitary precautions associated with the Diwali Festival is obviously but a sample of the activity required steadily throughout a long period.

### Present Military Quarters.

Here then is the occasion for strengthening the appeal which must soon be quite independently made to the State by the War and After-War situation, to remove its whole military Establishment to a new and suitable Camp outside Indore. And here also is the inducement—in the aggregate a not insignificant one—of abating the expense of this great and costly, but inevitable change, by realising some cash value, or at any rate a rental for a good few years to come, from the many houses of the present Military Lines.

### House Famine and Plague.

Previous Military migrations have indeed always thus been utilised; thus the sweepers of Lal Tabela occupy old cavalry quarters; and other examples might be given. With repair, (no doubt with some demolition) the majority of these houses might be made habitable for a number of years; and the present serious house-famine among the poorer classes would thus be abated. It is in fact to this house famine and over-crowding, and this not only in single rooms of ordinary size, but too often in subdivided ones, (12' x 6' or even 10' x 5') and thus

wholly unsuitable for healthy habitation, that the Plague is due. It is by no means a "mysterious dispensation of providence". It is the definite consequence of the over-crowding of our cities. This is partly due to the growth of their populations, partly to immigration; but also, and too largely, to those demolitions without rebuilding, which have been the frequent, and unfortunate, policy of wellnigh all Municipalities during the past generation, and often much more than in Indore.

### **Land Tenure.**

To develop our rough and temporary Plague Camps into proper Garden Suburbs, a first condition is ofcourse that of permanent tenure on moderate groundrent: and this should be arranged accordingly. The State and City, as wise landlords, cannot but see their advantage in granting land on the easiest possible terms; so as to attract numbers and develop large areas, from whose prosperity the necessary taxes may before long be realised.

The congested and plague-stricken city is thus seen to possess within itself the possibilities of its own cure, and even of its reinvigorated growth and progress.

### **Community Groupings.**

It is pointed out to me by Dr. Deo—here as everywhere alert to the situation—that various communities and caste-groups desire to establish their own suburban groupings; and this has been considered and kept in view throughout the present varied scheme of Suburb-planning, which will be seen to suggest and invite new groupings, as well as provide for existing ones. I have indeed already encouraging enquiries of this kind, as notably from the Bohra community, and also others.

### **Planning of New Suburbs in Detail.**

How is this planning to be most effective? However we may leave the City, the plague may follow us. Its reappearance seems already being assured by such planless over-crowding of new plague-huts as is to be seen in progress in Rao. In Indore this is happily guarded against by the regulation plan, with spaces 60' x 60'. The largest example of this orderly type of Camp is that in the S. E., on Bhanwar Kuwa Road, west of the Zemindar's Tank, and the next largest is on the east, at Palasia. These, and the others, are all extended in the Plans, and with improvement, as Garden Suburbs, explained in chapters following.

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## **Chapter X.**

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### **Housing of Cotton Workers.**

#### **Urgency, yet difficulties.**

Amid all this Suburb-planning, there must come up, and more and more urgently, the question of planning for the future Mill Area. For how are the Cotton-Operatives, already from their poor housing so subject to plague, and this whether in the City or in the Mill Suburb, to be protected; and this if possible permanently? This question deeply affects the whole future of the cotton-manufac-

ture in Indore, indeed in India. For this, like all our complicated modern industries, is already liable to derangement, and at many points; that of public health assuredly not least.

### **Arguments for and against Housing by Employers.**

Since in Indore, like various other Cities, the origin and spread of plague is largely traceable to the workers of this industry, the idea of housing them as far as possible quite outside the existing city naturally suggests itself. And as they have no time and little skill to build their own houses, it seems reasonable to ask their employers to provide houses for them. Hence the Chawls arising within the Cotton Mill Compounds of Bombay, and the beginnings of the same system in Mill Compounds here. But when we examine these Chawls, whether in Bombay or Indore, we find their construction—despite good intentions and efforts—is still insanitary in detail; because too crowded in plan, and too inadequate in space and in number of rooms—generally only one, instead of the decent house-minimum of two. They are thus unsatisfactory in house-planning; and still more so as regards town-planning, the general lay-out being too much that of close-ruled paper. But this aggregate of defects, especially as the population it provides for increases, and as the space it covers enlarges, will be found not only to add up its defects, but to multiply these; and thus in short, to ensure that very ill-health to-morrow, which it seeks to guard against today. This is not, of course, saying anything against the good, and even generous, intentions of the employers. But Cotton-manufacture is a business requiring all a man's time and attention; and Housing and Town Planning are quite another. Moreover here is more than housing and town-planning. For it does not suffice merely even to plan and build the best possible suburbs and houses, and then to leave people in them. The Municipality must daily take care of them, and with all the vigilance of a modern city at its best; and this in every one of its departments—cleaning, lighting, police and the rest, health-supervision therefore above all.

The employer who is asked to house his operatives, numbering thousands, within his compound, is thus practically also being called on to perform not only the functions of town-planner and architect, but also little short of the functions of a Municipal President. But this is obviously as impracticable as it would be to expect even our active Municipal President to run a cotton-business,—say the State Mill or another—in his leisure time!

There are yet other objections. The Cotton Industry naturally aims at high dividends, and generally in its history has realised them. But the Housing industry never does, and never can. Hence in asking employers to house their workers, we are seeking to divert capital from familiar and remunerative channels, to not only unfamiliar but relatively unremunerative ones; and this is a policy which is naturally uncongenial to directors and share-holders alike. True, in some cases, firms or individuals of generosity might rise to the occasion, but this can only be on grounds beyond everyday business ones. The imposition upon the employers of a positive regulation for the housing of their workers, though a policy often suggested, is also that of a new and heavy tax upon their capital, and especially that of new and young firms, and hence to their great disadvantage as compared with established ones.

### **The Workers' point of view.**

So much for the Employers' point of view and interests. What now of the workers themselves? With their long day's work, it is convenient, even necessary,

that they be housed near the Mill. But not within its compound; and this for many reasons. They require some change of scene, some social life, and this even for their next day's full efficiency to their employer; not to speak of their needs as men, their rights as citizens. But if these mean anything, they involve living within an ordered and pleasant city; and this as free citizens; owning their own homes as far as may be, and not holding these merely during their service of any one particular employer. It is of the essence of free contract between the employed and the employers of any trade that each be free to choose the other. Hence to fix the employees to any one employer, by the comparative permanence which his housing of them implies, is as definite and as unwarranted limitation upon them as would be a limitation to employers, to employ only workers from, say any one particular neighbourhood or party, or any one caste or faith.

### **The Housing Difficulty—What Solutions ?**

The solution of this great housing difficulty is thus not so easy as it looks. We see that the employers, taken as a whole cannot paternally house their workers, and on the whole should not do so. Neither the State nor the City can be expected to house them either. Yet the workers cannot house themselves. Here in fact we have a perfect instance of the paralysis of our traditional political economy; and also no little explanation of the squalid overcrowding and confusion which are too obvious in cotton towns, in Lancashire and in India alike.

In Lancashire the housing has mainly been supplied by the speculative builders; but this class of enterprise is as yet, and on the whole happily, unknown in Indore. As a feature of the civic and town-planning movement in England, Co-operative organisations have begun to arise among the workers, but less among the cotton-workers than those of more skilled and educated Industries. Indian mill-hands are obviously still less ripe for this; yet surely some of them ?

What then is to be done ? It is hard to suggest, where there are no examples as yet adequately to guide us. Yet one suggestion may be made. Why not the co-operation of all the interests involved ? That of the Employers and the Workers, of the City and the State together; and each at their best—that is, their improving best. The worker desires and requires a home: but his standard is at present too low, his powers are too weak, to obtain this of adequately healthy and human standard; and it is for the City and the State, in their respective capacities, to ensure this, and to regulate it: and this even in the employers' interest as well as in the workers'. For a good home is essential to good work; and with the occupation of such a home comes the willingness to pay a fair rent for it. It is even the best possible incentive to the desire of possessing it. In India as in Europe this is the best form of thrift a working family can practise; and this especially where the principles of "Co-operative Tenants" are adopted and applied, as they reasonably may be.

We constantly hear of the chronic indebtedness of the Indian worker; but is not this largely due to the want of such an incentive to steady economy as the desire and pride of a good home tend to supply ? And though the worker has no capital towards building, his wages enable him, at any rate should enable him, to pay rent, and even to rent-purchase within a reasonable term of years.

### **Sites and Planning.**

The State can here fortunately provide abundant land on easy terms. That is a first great point; but the difficulty remains of finding the building capital.

How can this be simplified? First by simplifying the building itself, to a reasonable minimum to start with, yet with incentive to improvement.

A young couple may thus begin with one room; but the recent style of building, of pukka one-roomed chawls, has the great disadvantage of fixing this standard for good and all; and thus it standardizes squalor and overcrowding instead of progress. But why not establish a method of progress, and standardize that? With good will, and co-operation, success is attainable. Let us start then with a site atleast large enough for the gradual erection of the decent minimum standard Indian home, of two rooms, not merely one; and with veranda and chabutra in front, and cookroom, veranda and yard behind.

Later we shall see our way to improve upon this; but upon this minimum family standard of two rooms as above, it is urgently desirable that Workers and Employers, City and State, should all agree. For since this minimum is essential to health and to decency, and thus to civilised life and its maintenance, anything less is prejudicial to the interests of all concerned; and—we venture to say without hesitation—even to the continuance of good cotton dividends themselves.

### **State Aid and Guidance.**

For the needed thousands of houses, we cannot often hope to start with capital more than to admit of an initial single room and veranda especially in pukka. We must even be content in a good many cases with kucha; and this has the advantage of more cheaply and easily ensuring the adequate floor-space and air-space which are prime essentials of health. Moreover in kucha construction, labour can often, atleast partly be given by the worker himself. Let the State also grant all the material help it can, as by large and favourable wood-contracts from its forests, and by encouraging tile-making as well as brick-making, towards the provision of good plinths and roofs, if not also walls, from the first.

A State moreover, although it is without these magical powers of providing practically unlimited capital with which so many of the public now-a-days seem to credit it, is something more than the hardpressed Taxation Bank which its ordinary accounts show. It has also the credit powers of a Financiers' Bank, and these upon the greatest and securest scale. It can offer security to its depositors, great and small alike. Thus it may fairly invite deposits of capital towards housing on all sides, including, as far as may be, from employers. These will thus be assured of faithful administration; and they will be relieved of risks and anxieties by the co-operation of City Superintendence as well. Both State and City have already the confidence of the public; and the worker's small investments, even in labour at the outset, and in rent-purchase instalments later, will be as faithfully credited to him as is the large cash investment to the employer. Further, both State and City are themselves enriched and strengthened by every increase of material property within their limits, and by every tax-payer whose prosperity and permanence they can assist. In short Co-operation means good business all round; and in Housing peculiarly so.

### **Progress and Difficulties.**

We may thus see our new Industrial Town beginning to develop; though from the most modest beginnings, generally of one room and veranda. We see it enlarging, after economies, towards two-roomed comfort, and even more, and sometimes changing from kucha to pukka. In cities where such methods are

adopted, I have observed that the second room is often built pukka from the first, and then later the first room and veranda may be rebuilt pukka also.

The objection of course arises that cotton-workers are very unsettled in their abodes; even that many more or less migratory. True: but it is the interest of the employers, and of the City alike, to make them less and less so. Nothing makes people unsettled more than a bad house. But nothing fixes people like a good house; for the housewife anchors herself in it, and her family and husband accordingly. Moreover, as already pointed out, the principle of "Co-operative Tenants Limited" can here be applied; especially where freedom to remove is required. Moreover when this freedom to remove is given, the restless desire to remove is largely abated, and may even die away. That is human nature.

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## Chapter XI.

### Suburb Planning in Detail.

#### The Problem.

The two questions before us—(1) of housing the cotton-workers, in their appropriately located Suburbs, convenient to the Mill, yet not inside them; and (2) that of housing the ordinary citizens, no longer in mere Plague Camps, but henceforward in permanent Garden Suburbs—are thus essentially similar ones; and this even as regards financial co-operation, as well as healthy housing and adequate suburb development. It is only the amounts and proportions of this co-operation that differ, not the principle: only the scale of housing, not the health standards. In short it is only the magnitudes, not the methods, that vary.

It is time therefore to come to our planning, and first especially from the City's point of view. How is this to face such a great and two-fold expansion as those of City Suburbs and Mill Suburb together? A great length of additional roads is inevitable, though careful planning will economise these. All other city services must be extended; and sanitation with them. Now Garden Villages, as not only their programme, but their record shows, have less than half the existing urban death-rates, and even less than half the usual disease-rates; but for this good sanitation is necessary; and this must surpass that of the conventional urban kind. Here it may again be asked, if the recently proposed Drainage Scheme for the present small, and still comparatively suburbless, Indore, is estimated to cost 15 Lacs, what will it not cost to sewer our many additional miles of new Suburban and Mill Area roads? Water too must be provided. Such threatened burdens on the State, or on city taxation, or of indebtedness—indeed too easily of all together—are not an attractive prospect, either for the Municipality or the rate-payers, for the State or for the new Industries which light taxation at present helps to attract.

#### Need of Better Planning.

But here, as in so many other cases, the difficulties in which the Municipalities find themselves are largely due to the backward planning of their Engineers and Sanitarians. For these are still throughout India acting on the traditions of early Victorian English towns, and failing to move on into the methods of the Town Planning Movement which in England has begun effectively to transform them.



Our difficulties are soluble by help of this better planning, which seizes and handles all these urban problems from the standpoint of life, and not merely from those of the mechanics and inorganic chemistry of our grandfathers. Thus, from the still predominant engineering point of view, garbage, sullage and ordure are but so many bulky varieties of solid or liquid filth; and their removal is only thought of in terms of their collection in quantities; and these either by workers specialised to dirty and degraded tasks, as sweepers, trenching-ground labourers etc., or by the costly mechanical methods of drainage schemes, with their proportionally yet more costly accessories, like septic tanks, flush-latrines costing per seat as much as a new kacha house need do, and so on. The engineering and sanitary principles which the best conventional text-books, like Turner's "Sanitation in India", summarise, are simply those of in the first place performing the difficult task of collecting all these varieties of filth into gigantic accumulated quantities, and then of attempting, with more or less success, the even more extraordinary engineering feat of getting rid of these accumulations again.

The ordinary Indian village, which from the Western (and Western-educated) view-point "knows nothing whatever about sanitation", is indeed quite innocent of this double elaboration. Its sullage, its garbage, its ordure are all directly returned to nature, no doubt often too slowly and incompletely, and in somewhat rough and ready ways, and thus objectionably; but in any case with economy compared with urban methods, and in the best cases with more efficiency and usefulness as well.

### **Contrast of Methods of Sanitation and Planning**

At the outset of our Village and Suburb Planning, it is thus necessary to be quite clear as to the method we are to follow; and this will depend upon the standpoint we accept. That of the recent and still preponderant school of sanitarians is, as we must again insist, directly handed down from the mechanical progress of the eighteenth and middle nineteenth century, and their correspondingly mechanical thought. And, despite influence from bacteriology, it remains otherwise as yet almost unaffected by biology proper, with its characteristic doctrines—those of life as in active adaptation to environment, and of its evolution in terms of the progressive control of this. Sanitarians do not deny that the plants of tropical fields and gardens cannot be treated identically with temperate ones. They know that tropical animals, whether wild in forest, or tamed in agriculture or in home, or kept in zoological garden, must similarly each be treated accordingly to its own nature, and not necessarily according to those of our animals in the temperate west. But where most European Sanitarians go wrong, is in failing to apply this simple principle to the people of other climates, other environments, other conditions. Hence, and hence only, it is that they tell us that the Indian people, or "at least 90% of them know nothing whatever of sanitation;" for they mean by this term recent western industrial town byelaw sanitation,—the only sanitation they have studied and considered, and so the only kind they are willing or able to recognise. Now the point at which I join issue with my learned colleagues of the Faculties of Medicine, Public Health and Engineering, is two-fold. Partly as a biologist, and one basing his studies not merely on the mechanism of the laboratory, but primarily upon direct observation of life in nature, and upon experiments in the main successful; viz. in the cultivation of plant-life, both in the botanic and the domestic garden; of animal life in the home and the zoological garden; and similarly of human life, in the home and school, and in the village, the town, the suburb. In each and all of these, vital and cultural methods are found and observed to

succeed, where mechanical and engineering methods, without these, fail. In short, though "Standard" and "Sanitary" Plans fail, and deservedly fail, a Garden Village Plan succeeds; and hence it is that throughout the British Isles the former are now legally abolished, (by the Town Planning Act of 1910), and replaced by the latter. The (in India still) supposed "economical" and "utilitarian" methods of the engineers and sanitarians are now in England known and shewn to have been uneconomic and futilitarian; while the supposed "sentimental," "artistic" and "unpractical" methods of the Town Planning Movement are found to be economical and efficient; and these not only in health-preservation, in life, but in wealth-production accordingly.

So much for the biological difference between the civic method and viewpoint here advocated and the preceding one; but they raise another difference as well—that of anthropology. While the Western (and engineer-educated) sanitarian as complacently applies his English and Victorian manufacturing town experience to Indian sanitary problems, as do his educational or missionary fellow-students for their corresponding instructional and denominational traditions, this complacent assurance is impossible to the planner who is anything of a geographer and anthropologist. For he sees the people of different climates and environments as adapted through past ages to these. Thus he comes to their ways, their habits, their customs, their institutions, their laws, their morals, their manners, with the ordinary naturalistic attitude of observant and interpretative interest, and not that of superiority. He thus seeks first to learn, to understand, to appreciate, before he attempts to criticise, much less to teach or to transform. The hasty criticism, which so frequently appears in the judgments by one people of the manners and customs of another,—that of "manners none and customs disgusting"—is thus not thought of; and the true maxim of anthropology appears, that of Tylor's saying, "the more one comes to know of any people, however strange or simple, the more one respects them, the more one even comes to love them."

The Western agriculturist in India has learnt this, and respects the peasant accordingly; so he is now-a-days finding out how to love him effectively, as with better seed for instance, bettered ploughs, and in other ways.

So now as regards Sanitation. Instead of mere disgust at the simple Indian methods of sanitation, with the villagers communing with nature after the manner of the ancients along their field-edges every morning, and simply throwing their rubbish, garbage, and sullage-water out of doors, he sees in these rough, natural and simple proceedings, more or less untidy though they be, the essentials of a direct and common-sense utilisation of the properties of soil, the powers of sun.

So he does not sing "Home, sweet Home," and insist upon collecting all this filth into quantities, whether in sewers or otherwise. He thus does not need to import for this purpose the largely irrelevant experience and the unduly elaborate apparatus of the drainage and other devices which may still be for a long time more or less inevitable in European town agglomerations. He more simply considers how these observed properties of earth, both the absorptive and the transformative, may be more effectively utilised, in dealing with these waste matters, so that the marvellous powers of the tropical sun may more effectually transform them into useful and profitable growth. Thus, instead of the nineteenth century European city panacea—of "Everything to the Sewer!" he sees that the right maxim for India is the traditional rural one, of "Everything to the Soil!"

#### Manure.

Associating himself then with the most tidy peasant he can find, and still more with the most careful gardener,—(and both are still in evidence, even though

India and Indore are no longer what they were, and may again soon be)—his problem, and his plan are those of getting this waste matter, which while out of its place is and remains mere filth, into its right place, as manure. For it is an old definition, yet too little remembered, that “dirt is merely a name for matter out of place.” But it is one of the main historic disasters of India, as compared with more successful agricultural peoples, say the Chinese and the Romans for choice, that religion here was formulated and crystallised before the discovery, or at least realisation by the educated and governing classes, of the importance of manure: whereas these other peoples successfully idealised and consecrated the manuring process, and thus diffused and established it, to their infinite advantage accordingly. But we happily now see this very change in progress in the recent and rapidly advancing agricultural communities of the irrigated Punjab, for here the phrase—“Manure a second god”—is now widely current. This vigorous phrase (also an old Roman one) is still strange in other parts of India; but as it spreads, Indian agriculture will grow rich accordingly, and all Indian life grow richer with it.

### **Separation of Dwellings.**

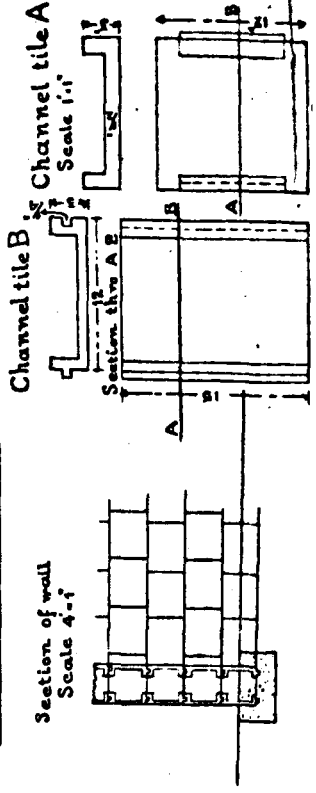
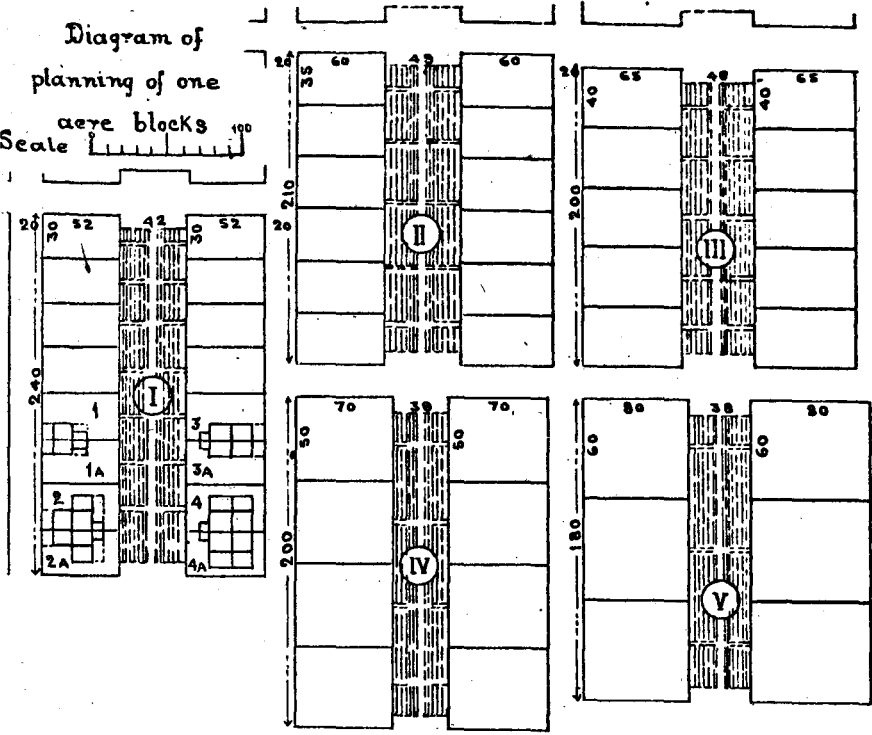
At last then we are ready to lay down our definite plan. Let us start from our minimum decent and healthy standard house, of two rooms, with the man's veranda and chabutra on the one side and the woman's cook-room and court-yard on the other. Now for every reason the Indian villager prefers his house to be isolated from all others; and sanitarians will agree that he is right. But this amounts now to admitting that 90 per cent of the people do know something about sanitation after all, and something well worth while. Whether he does this as the Bhils do in the country, or as the sweepers or the untouchables do in their town mohallas, as the rich man in his bungalow, or as the millionaire or the Maharaja does in his palace, will depend upon his means: but the principle is always the same. It is this general Indian example which the European rightly imitates (and often even exaggerates,) in the isolated bungalows, the spacious compounds and wide avenues of his Civil Station. We are therefore all agreed, that from simplest temporary Plague Camps to the most developed Garden villages, it is not only desirable, but actually desired, that each house be isolated from its neighbours, or at least be semi-detached.

### **Sweepers as Gardeners.**

Yet as the road arises, and develops from kucha track to level and orderly highway, it next becomes village street, and by and by passes into the crowded bazar. With this increase of population the amount of rubbish necessarily also increases, and this beyond the powers of the limited patches of uncultivated soil on which it accumulates: it also gathers in places insufficiently reached by the sun. Thus has long ago arisen among the prosperous, the educated and the governing classes of India a too urban attitude, which has peculiarly confirmed the attitude of conquerors to conquered; since it has depressed a great part of these, as a permanently lower and outcaste class, to the loathsome and despised occupation of the sweeper, instead of raising him into that of the Chinese gardener. The social problem of “elevating the depressed classes”, of which we now-a-days hear so much, and see so little, is thus readily soluble for the sweepers, at any rate; and this upon the lines of their own occupation, and not simply that of the verbalistic “education” of the West. For when we leave our houses in the insanitary street, all served by sweepers, and that too imperfectly, we can readily settle into a sanitary suburb served by gardeners. All that we need to do to raise this depressed class, and our own sanitation and prosperity along with them, is to enlarge, to manure and cultivate the intervening space between our dwellings, in place of making a mere sanitary lane of this.

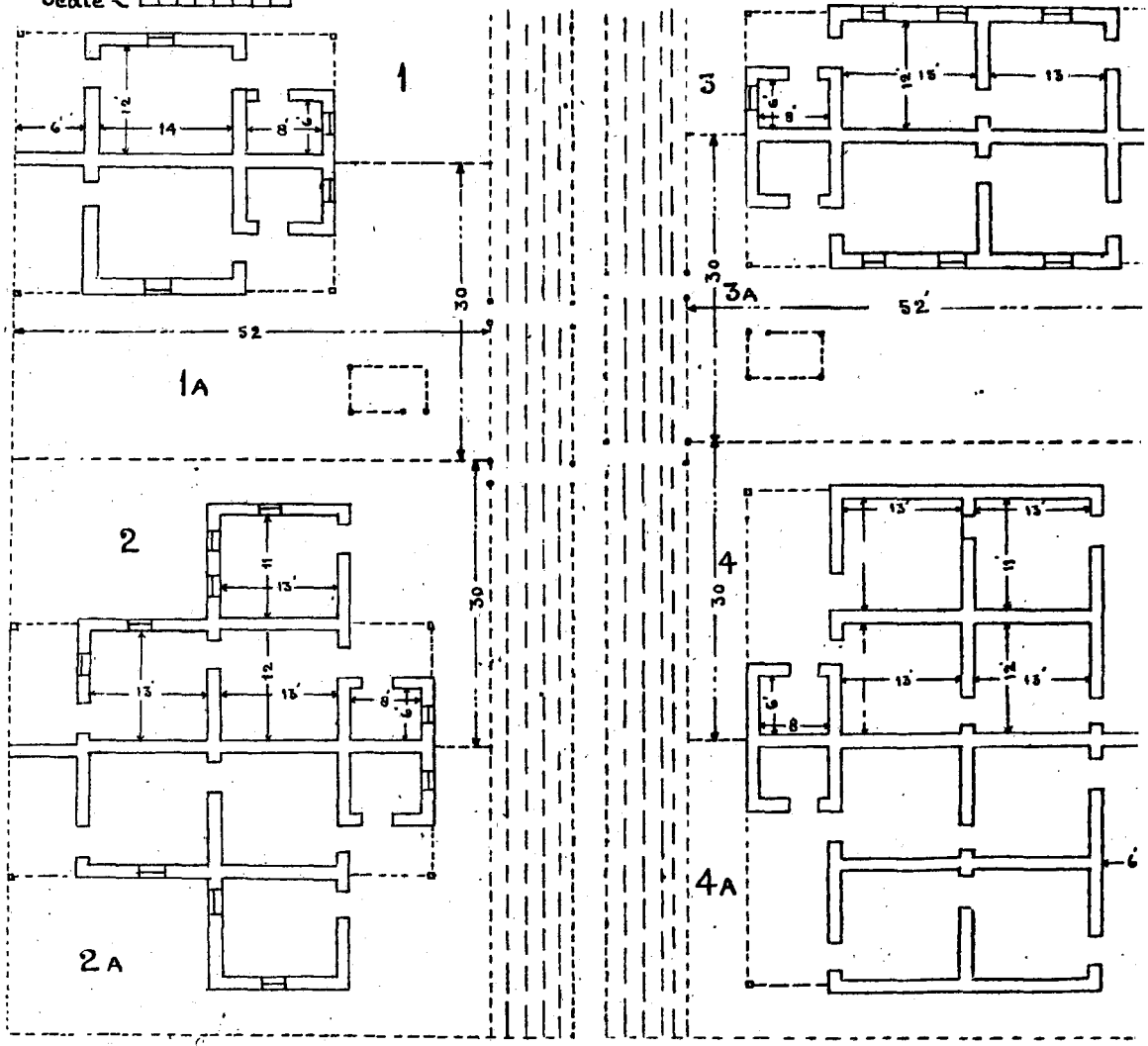
**PLAN III.**

Diagram of planning of one aere blocks  
Scale 1" = 100'



Planning of small houses 16 to aere

Scale 1" = 16'



This garden area will now absorb all and more than we can give it, and of every form of manurial matter; sullage, garbage and ordure alike.

I am well aware that to city-dwellers in India,—accustomed to shrink with disgust from the abundant dirt of their surroundings, and with loathing even more legitimate from the current methods, whether Indian or European, of dealing with these—there must be at first a feeling of distrust of the present proposal, if not positively a confusion of it with the obscene horrors of the trenching-ground. But in this the daily filth of tens of thousands is collected into a single field, and is there day by day unloaded into an area of soil sufficient only at once to absorb and transform inodorously a mere fraction of what it gets. Whereas the present proposal is developed from the Indian village field-edge, with its incomparably more moderate supply of manure to area and extent; moreover from this as improved upon, by its daily deposits being made into the short and shallow furrows of a small moveable latrine, cheaply and simply built of bamboos and palm-matting or the like, and with these furrows covered in morning and evening, without any collection or handling at all.

### Gardens on Plan.

We can now set our Gardens down upon our suburban village plan, and of course to scale. The reader is therefore asked to look at these new types of "Standard Plans" and "Sanitary Plans" in one; and to note that each expresses the lay-out of a single acre. These diagrams also show an allowance for roads exceeding what is required in practice, as the actual suburb plans will show.

The reader will also see that even with these gardens, the number of houses per acre may still be as great as that which is desirable for any town population, and yet that it contains gardens (and additional private open spaces) upon a scale nowhere realised for corresponding houses in cities, and hitherto only equalled by well-to-do suburban and country populations. For in such an acre of small houses 15' x 50' and with City Garden 50 ft. x 240 ft, we have still no less than 16 houses; and thus say 80 persons per acre. But Garden City Planners now aim at only 50.

If our isolated house be twice as large, (30' x 50') and thus four-roomed, we have now 10 per acre. If it be 45' x 50' we have 8 per acre. If 50' x 70' we have 4 per acre, plus City garden. Where the houses are small, and without separate latrines, then moveable field-latrines, on the cheap and effective model above referred to, (and which we have here as elsewhere already constructed and in use) must be provided in the garden ground; and these in the proportion required, for population and urgency. For men who have to go to their work early, and who therefore tend to crowd at the same hour, a latrine of four seats, or better two latrines, each of two seats, will be sufficient; and at the opposite end of the garden one latrine with three seats for females, to whom time is less pressing. And it needs little calculation to show that so far from overloading the ground with manure, it will take many months of perambulation of these latrines to have the garden even lightly manured all over.

### Needed Management.

I am naturally asked how are our sweepers, now becoming gardeners also, to be taken care of, and kept in order? Just as all other men and things municipal are kept in order, by regular work, and regular superintendence for the purpose. Each and every new public service requires its public servants, with direction and inspection of these. The city engineer and the sanitary officer are usually both unaccustomed to active gardening, so would naturally feel alarmed if either of them were

asked to try this job, and to train the sweeper increasingly into a gardener; and to make these gardens a success we ofcourse need a new officer to manage them, in this case a skilled and successful gardener. Just as all the various existing departments of every Municipality have each their own staff of workers and their superintendent, so naturally there is required a skilled Superintendent for our sweeper-malis. Such gardeners are I know, rare in India at present, yet they exist. Just as a skilled engineer is needed, and indeed has been already appointed, to carry out the improved communications etc. of the present Plan and Report, so I repeat, a skilled gardener is required for giving the present proposal a fair trial. I am glad to be authorised by Mr. Coventry, the experienced Agricultural Adviser of this and other States, to say that he is willing to help in securing such an expert, and in at first guiding his operations.

Much may ofcourse be done towards making this trial a success by giving its labourers [& why not also the superintendent ?] some pecuniary interest in the productiveness of each garden area.

As the gardens grow, and their fruits and vegetables become appreciated, in their quantity, quality and cheapness, house-holders here and there will desire, and that increasingly, to garden for themselves. By all means let them be induced to do so; first by letting them take up the small portion between two houses, and next a portion of the larger garden behind, leaving this only the necessary foot-path.

Again any block or mohalla may desire to take over from the Municipality the care and the product of its own gardens. In this way the movement may more rapidly spread throughout this City. And why not to others ?

### A Distinctive Type of Planning.

For it is to be noted, that here, in this plan and method, we have on one side but the simplest development of ancient and familiar methods, yet on the other a substantially new type and standard of Suburb-Planning. Moreover it is one in which town and country conditions are peculiarly united and combined, with much of the advantages and economy of both, and with fewer than hitherto of the disadvantages of either. For here may be a sufficiently close population for a normal and healthy town, and with all the town's essential conveniences in proximity. Yet here are also the essential advantages of a rural life, with its verdant and fruitful garden environment, its open air and health, its surrounding trees in beauty and growth. Even its kindly creatures: for in the space between adjacent houses, the Hindu will often keep his cow, the Mohammedan his goat and fowls.

The reader may fairly say—I do not see all this beauty upon the plan! Ofcourse not; this is a mere diagram; that of the proposed transformation of the old "Standard Plan" with its regular and parallel streets, and its sanitary lane alternating with these; and now with the simple change that the space for the sanitary lane is now widened, and transformed into a long garden. But in practice, and as the actual plans for the different Garden Suburbs of Indore will show at a glance, great variety arises. Variety of orientation is indeed as carefully as possible avoided; and thus these plans acquire on paper a certain monotony of general aspect, with their houses arranged east and west as fully as possible. But experience of Indian climates and cities has thoroughly convinced me of the immense advantage of this east and west position of houses over the more or less north and south one which is suitable in Europe, and this alike for making the most of sunrise and sunset, for avoiding as far

as may be the mid-day sunshine, and for ventilation of each house by the dominant westerly wind.

Variety further arises as each suburb or village plan is worked out in detail, since all existing natural and architectural features worth preserving have to be respected and utilised, such as good trees, existing homes and wells, temples and tombs, etc., as also open views of country or river. In these new suburbs the contours are of course being surveyed and planned for; and these give fresh variety, especially along River and Nulla banks etc.

The plans and surveys on which I have had to work are not always complete or accurate, especially as regards contours, trees etc. Hence in execution of the plans the existing surveys are being corrected, upto date, yet the superintending architect must himself go over the ground with this corrected plan, and with mine also, and thus check and improve details; and, I trust, in the spirit at once rural and urban, practical and artistic, which is of their essence and endeavour.

#### **Example from Proposed Garden Village South of Jail.**

Take for a convenient example of this needed understanding and care in execution of these Plans, with amendments and improvements wherever possible, my proposed plan of the area at present occupied by the Municipal Cotton Depot, south of the Central Jail. Here is a fine site, still largely open, (to be fully re-opened if and when the present Cotton Sheds are removed to their new location in the Mill Area.) It contains fine fruit-trees, a pomegranate orchard, and a very fine and productive old well, for the future gardens of this new quarter. But such features are at present imperfectly unsurveyed; and so, though I have broadly located these features with a view to preserve and utilise them, some changes may be needed when the survey is complete. Some trees must inevitably be sacrificed; but my successor will, I doubt not be careful, and successful, in saving all, or nearly all, the best of these, whether for the private compounds, or for the municipal gardens between. Similarly for all the large suburban areas which have been planned, South East of Juni Indore, and elsewhere, though here our plans have been more complete.

#### **Essentials of Health and Well-being for all Classes.**

Returning now to the more general reader, he will, I trust, see on all these New Suburb Plans, and in the Mill Area also, how the bungalows of the well-to-do, and the smallest houses for working people, though necessarily differing in size and in amount of private ground and adjacent municipal garden, all substantially agree in their conditions of health, and even of amenity; since all alike have some isolation from other houses, and alike open at their backs upon garden and fruit-trees; while the fronts have easy access to all the boulevards and open spaces which the plan has found room for, without sacrificing its necessary economy. Again when he reads this plan in townward fashion i. e. from the garden bungalows upon the main road frontages to the smallest homes upon narrower and closer roads, he will see that the element of compression, which is always more or less inevitable in cities, is here prevented from going too far. The too frequent city engineering assumption that roads "ventilate," "supply perfation," and so on, is also corrected. The air ocean rolls free; but along roads we have of course the worst air, since the dusty air, not the pure. Hence all the bungalows will stand back from this dust, while the small houses are kept more upon their smaller and more or less sheltered roads, and consequently are in good air also.

Let these Plans once more be read in the opposite direction, from their relatively close-built streets to the open bungalows. The intermediate houses have necessarily often small compounds; but there is no necessary limit in principle.

Furthermore, this proposed method of planning, of Municipal gardens behind and along with house-sites, will next be found to admit of adaptation even to many City Mohallas, as notably Nayapura, and to others as they can be thinned. But it is of course primarily adapted to rural suburbs, rich and poor; or, better still, to those mixed in character. It may also be introduced into country villages, since of fundamentally agricultural character; and therefore, before long, of appeal also.

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## Chapter XII.

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### Sanitary Problems Continued.

#### Sewage on the Land ?

I am sometimes asked—and with a note of remonstrance which expresses a feeling of distrust plainly tinged with disgust, if I “really propose to put crude sewage—sullage, urine, even night-soil—direct upon the land, into the cultivated fields, and even into fruit and vegetable gardens?” The feeling of disgust which prompts this question is easily explained by the undeniably disgusting state of things too widely manifest throughout India; and this too often around the rural village, and common in the poorer town-mohallas, inhabited as these are by a population of largely peasant origin, who have long ago brought into town with them their careless rural ways, and even deteriorated below these, as part of the general and neurasthenic deterioration which peasant-folk undergo in their slum life in our modern towns; and this everywhere, in east or west alike—in Glasgow or in Bombay, in Dublin or in Calcutta, and in most towns between.

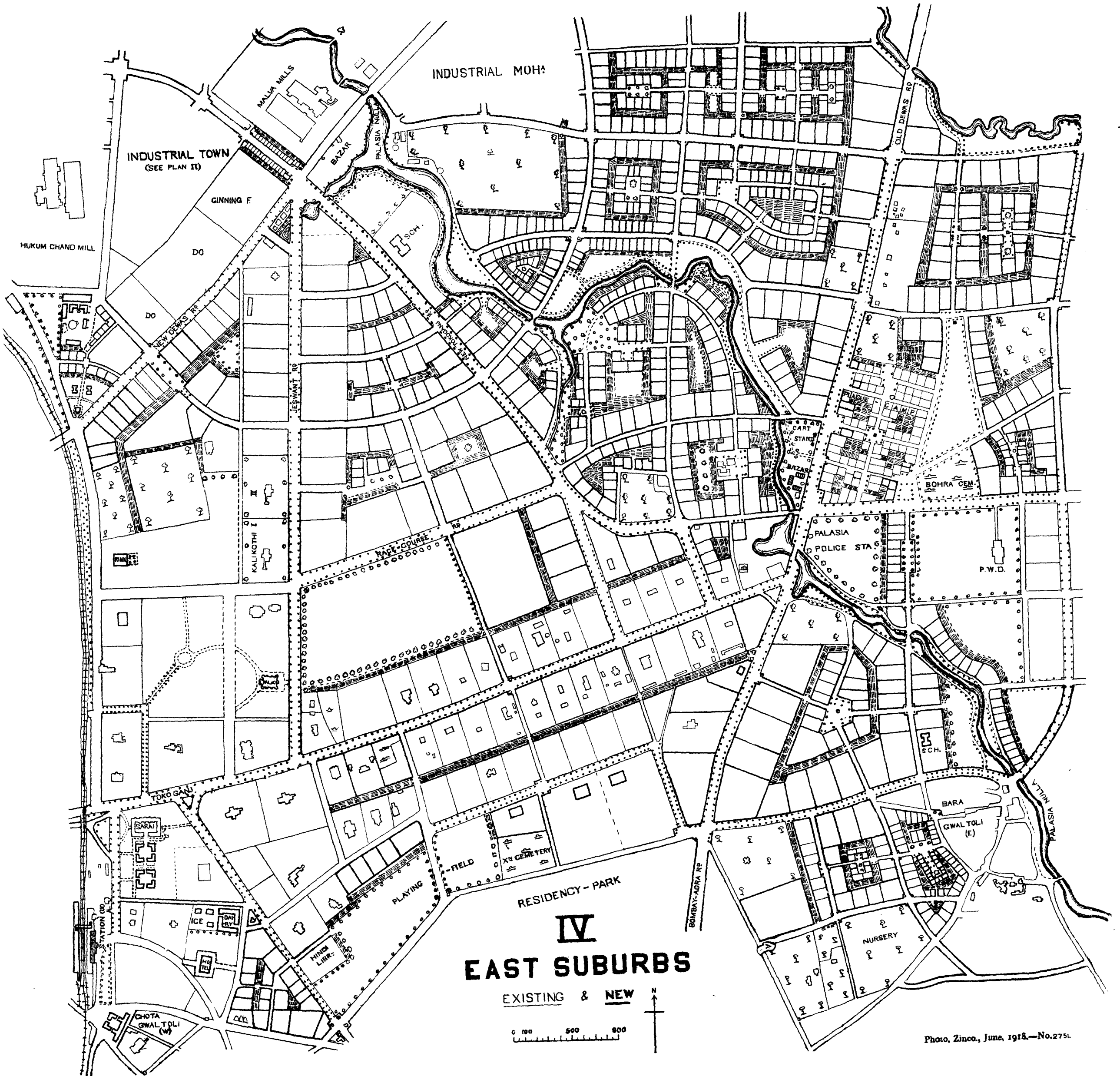
#### The Disabilities of Refinement.

Meanwhile, the educated and the governing classes, and these again alike in east and west, and from the most old-world scholars and religious to the governing authorities and officials—have all been more and more refined away from their childish and boyish contacts with Mother-earth and natural things, from which their exquisitely kept, but unskilled, inactive, and thus more or less neurasthenic hands have long, and perhaps finally, indisposed them.

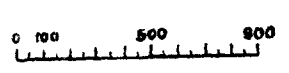
#### Developments in Sanitation.

Yet the dirt of the cities must be dealt with; and to this the Sanitary Engineers and the City Medical Officers have applied themselves, especially for the last two generations in Europe and for the past one in India, with the result of such a Drainage system as we have above criticised in Chapter VIII; though also with various other simpler and less costly methods, such as trenching-grounds afford, or sometimes incinerators supply. But these rougher and simpler methods are more or less disgusting, especially when worked, as they have to be, by sweepers, carters and others, who too much combine the careless indifference of the rural village with that of the urban mohalla. All this work moreover is commonly carried out in situations unpleasantly near the town, and upon quite insufficient areas as well;





**IV**  
**EAST SUBURBS**  
 EXISTING & NEW



hence it is not to be wondered that the Drainage Engineer should be more and more prevailing over them, with his remedy of "Everything to the Sewer." But, as we have seen, these methods are expensive, and as I have above shewn, are extravagant in details, as well as in general. Costly even for European cities, in view of the extraordinarily smaller taxable wealthy resources, they are in Indian cities disastrously costly: yet what is to be done? Answer is offered in the preceding Chapter.

Meanwhile there has been growing up the great and fruitful science of Bacteriology; and some of its various experts have been applying themselves to Sewage problems, and with interesting scientific results, making the processes of putrefaction increasingly clear. From their laboratory experiments, taken in connection with their better understanding of the common cesspools of the past and present, have arisen all the varieties of Septic Tanks now competing in the sanitarian market. Under suitable conditions, *e. g.* of good construction and careful working, upon a regular quality of sewage supply, [conditions all too rarely realised together] these are found to work, and to be free from nuisance; although it cannot be denied that their expense proportionately involves much the same criticism as that passed above upon western drainage systems applied to Indian towns.

#### Further yet simpler Developments.

Meantime however, there has been growing up another line of investigation. This starts neither from the laboratory nor from the Sanitary or Engineering Offices of Municipalities, but from the very few scientific men who are not primarily of the physical, mechanical, and chemical education, which has been throughout the nineteenth century, and still, is mainly predominant; in fact arrogating to itself in its own belief,—and consequently in popular estimation, and in educational institutions which express this—the great name of "science" to itself almost alone, and leaving the sciences of living nature all but unconsidered. Most of the cultivators of these natural sciences, it is true, are still mostly either in the simplest naturalist phase of collecting animals and plants, or else in the museum or laboratory phases of preserving or dissecting these—witness Hooker or Huxley: yet here and there also appears among the naturalists—headed by Darwin—a thinking peasant or gardener. Now these are interested, like the simple peasant, in living plants and animals, and in these in relation to each other and to the soil which bears them. So they have been developing this simple peasant outlook into definite science. Of these thinking peasant folk, Pasteur—a French peasant with a microscopic eye for dirt, and a Chumar with a deeper understanding of tan-stuffs—is as yet the great chief; but his foremost disciple Lister has also established his particular application of rural ways, such as that old-fashioned tarring of the sheep's sore which has, since him, been called antiseptic surgery.

The scientific study of Soil as something deeply and thoroughly vital and not merely inorganic, is still recent and far from complete; and this therefore as regards the problem of manure, above all of Sewage-Disposal. For where there are as yet so few thinking peasants, it is natural there should be still fewer thinking sweepers.

But as an example of these I may recall Dr. Vivian Poore, a generation ago Professor of Public Health in University College, London, with his "Rural Hygiene"—a book based essentially upon his own experiments on sullage and ordure disposal in his own garden. In my own young days of bacteriological investigation in that College, I confess to having shared the frequent estimate of these views as

"old-fashioned," (and before reading them). But after many years, and through kindred experiments, I have come to the clear conviction that he was right; and that his principle of "All to the Soil" is a far better one than that of "All to the Sewer," and this especially for India,—though here also of course there are difficulties not to be shirked in applying this principle even in suburbs, and still more amidst the present over-crowding of urban populations.

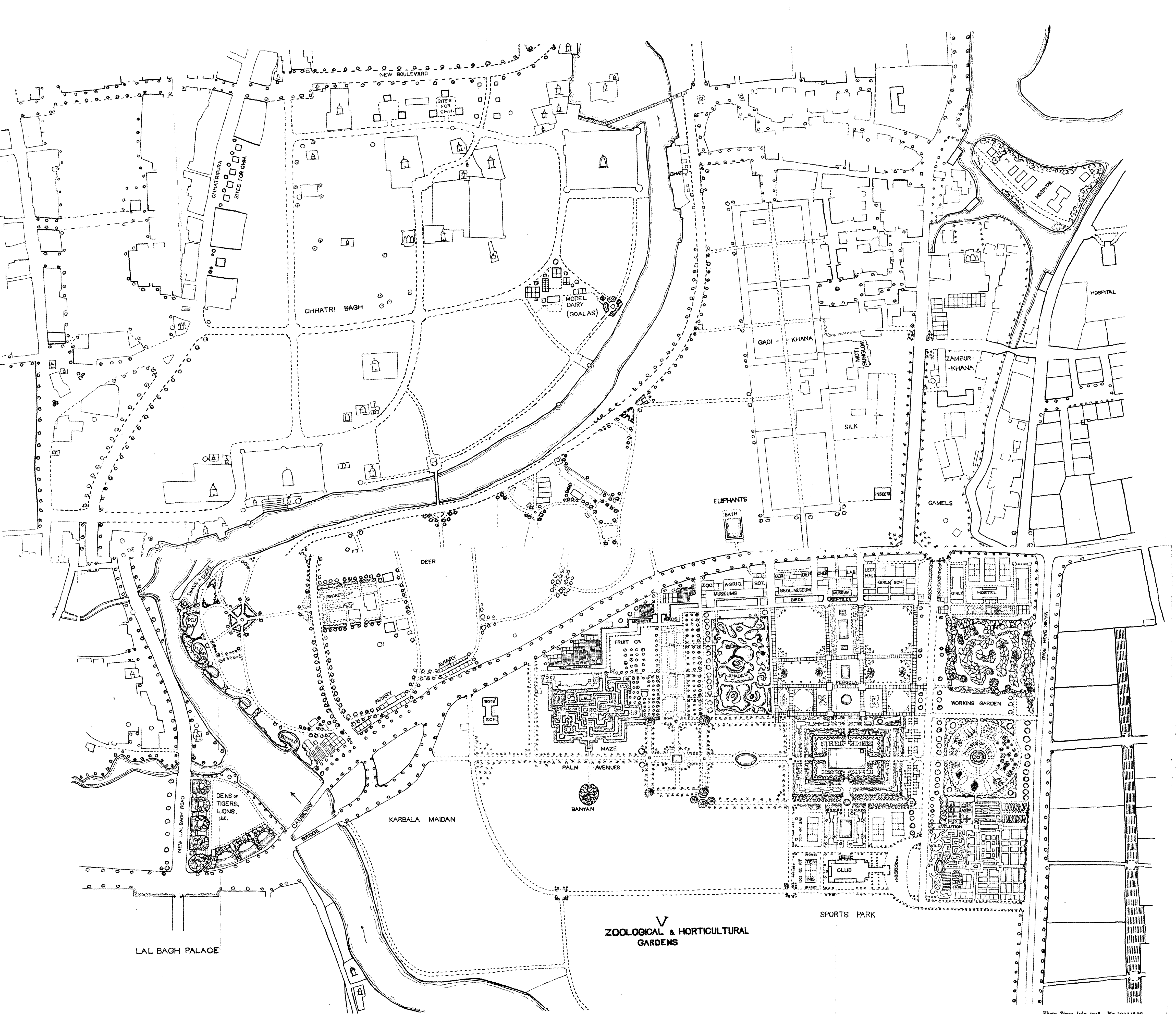
### Summary.

I believe both these difficulties are here largely solved first, definitely for the new Suburbs of Indore, and next with an increasing measure of practical application to the old City itself, as the respective Plans will show. But if these schemes be sound in plan and principle, and are next found, after fair trial to be anything like as economical and workable in practice, and in result as fruitful (in every sense) as I now venture to claim, my long destructive criticism of the present Drainage Scheme will have been unnecessary, since the proposed "City Gardens Scheme" will naturally prevail in its place. Not only the general reader, but the professed Drainage Engineer, are now invited to scrutinise my following proposals, and their accompanying plans, and to deal with me as faithfully as I have done, in Chapter VIII, for the Sewerage scheme given me for report. For the Drainage of Indore new Suburbs we have made our constructive proposals, in Chapter XI, intended (1) at any rate so far to replace extension of that Drainage Scheme, and (2) even this, as far as may be, in Indore City also.

The contrast is thus clear, between the viewpoint and method of the Sanitary Engineering and those of Sanitary Horticulture: and though the sanitarians of the present, or at any rate of the recent past, are mostly at the former point of view, I appeal to them again to consider their more rural predecessors like that one cited on last page, and also us who seek to be their successors, since we have returned to our rustic mind.

Yet the scepticism and distrust of the Engineer, which the reader too may more or less share, needs explanation; and here is at any rate part of this. The skilled working Engineers of India, of all kinds, may now number quarter of a million or more, and among these are thousands of educated men, who not only understand the customary Drainage Schemes in a general way, but could state the arguments for them; indeed their workmen, accustomed to plans as they largely are, could often more or less do the same. Whereas, though the rustics of India number well over two hundred millions, there are but few at present who would readily decipher these plans; and even amongst us few hundred educated rustics, there are still too few in India who could take up my present brief, and fight it as I am here doing. The public thus at present naturally follow the vast educated majority of engineers, especially since most official sanitarians—including I fear all or nearly all the senior ones—remain with the engineers. Majorities however do not permanently count in any art or science; for its experimenters are always few; yet their reasoning and experiments gradually convince and bring over the majority, as its finds patience to consider them.

The difference between the engineering and the rural attitude and policy in this matter,—that between "all to the Sewer" and "all to the Soil!"—is in fact parallel to that which was effected in the past generation for agriculture and physiology by the rise of the rural and organically-minded Pasteur, against the long dominant authority of Baron Liebig, with his too strictly inorganic view and treatment of



**ZOOLOGICAL & HORTICULTURAL GARDENS**

## Chapter XVI.

### Chhatri Bagh, as Sacred Park of Indore.

#### General Aspect.

After such high example as that referred to at the close of Chapter XIV we may now pass to the Chhatri Bagh, that great and Sacred Park, of which Ahilyabai's monument will always be one of the most honoured features. Here again the old work, great or small, is better than the new; witness alike the little shrines by or in the river, or the great Royal Tomb enclosures at east and south. For though it is an admirable custom which has permitted citizens to erect Temples within this park, the spaces allotted to these have been unnecessarily large, and the architectural supervision has been insufficient; so that the resultant effect, though the older and earlier buildings are more or less good, is in the main common-place; and worse, confused and untidy.

#### Improvements and Extensions.

Improvement on these Temple buildings and their gardens is however easy, and should be stimulated. And in future, grants of sites for new Chhatri should be given no longer hap-hazard, but only in situations where their architecture will improve the beauty of the park, and so be better shown as well.

As an example of the advantage which will result from choosing suitable locations for such monuments, let us take the site immediately south of the great old Bawadi well beside the N. W. Entrance Gate. Replacing the present detestable barbed wire by renewing its low parapet of stone, we have in this fine well a striking wall and water fore-court for a Chhatri, and this would also be well seen along the whole length of the main Park Avenue.

The line of houses, along with the backs of their often large compounds, projecting into the westside of the park, are largely dilapidated and unsightly. Some have already been removed; and none should be rebuilt; on the contrary they should be gradually cleared away as occasions arise. For the Park will thus obtain their sites, and not a few fine old trees, under which may gradually be erected a long and monumental line of future Chhatri, well seen alike from the Park, and from the adjacent Street. This street will thus become one of the finest and most characteristic avenues of the City, as the houses upon its westside will now front these Chhatri, and will look between them into the Park beyond. The improvement of these houses will thus be encouragingly assured, and the resulting effect may thus be made a fine one from every point of view.

#### "Park-way" System of Park Extension.

There are already one or two breaks among the houses of this westside of their future Avenue; and, as the plan shows, I propose another, if not two. For now we may pass onwards into the large open space, of 3 acres, south of Silawatpura, and lying parallel to the Chhatri Bagh and thus, with views opened from and to the Chhatri Bagh and its street Avenue, we practically double the apparent extent of the Park and its beauty, by removing its present too limited aspect. West of this minor Park space again lies a smaller but still considerable open space, that of the Sunday Cattle-market; and when we again, by a small amount of clearance, open into this,

little Arcade, centred too, as it may be, upon the rebuilt Temple or its porch, will be in every way an improvement to this garden scheme, and not a blemish on it, as without planning it might readily become.

### **Garden West of New Palace.**

The whole of the proposed treatment may be understood upon the plan at a glance, as composed essentially of two crossing Cypress Avenues, and of bright flower-beds, relieved by quiet green spaces of lawn.

The larger of the two main lawn-spaces—that West of the new Palace—has long been unsightly, through the increasing ruin of the fine State Building which forms its southern boundary. To repair (or if necessary remove) this, is urgently desirable: and I recommend—whether for public use or private occupancy—the erection upon its site, (or beyond its present gable, if repaired) of a new building, with veranda and balconies facing northward upon the lawn; for this slight diminution of garden area will be well compensated by the improved architectural effect of substituting a pleasing house-front for what would otherwise end with a blank gable.

The central path dividing this lawn-space may be bordered with bright flower-beds; and this leads into a small Mohalla court; which only needs to have its houses and Shivalas whitewashed and coloured to make an admirable picture.

### **West, South-West, North and East of Old Palace.**

The north and south Road west of the Old Palace is shown widened back a little, to the line given by that of the New Palace, as it can then also be planted with Cypress; and, though the little Temple on east side of this Road will project, the thoroughfare is improved. This long Cypress Avenue perspective is again continued southward, along the side of the Gopal Mandir; and the same trees are also indicated along the southside of the New Palace, as far as the extra breadth of this Main Road conveniently allows.

In the Old Palace Square should be planted a small group of three Cypresses in each corner of the stone enclosure.

### **Old Palace Avenue Southwards.**

Southward from this square opens the long Avenue suggested four years ago by Mr. Lanchester, and since cleared, with slight modification westwards; so now ready for building, and then planting, from end to end; and here once more I recommend Cypress. For in this way the Old Palace, as historic centre of the City, will be fitly framed; and as the trees grow it will be nobly approached from south and north alike. The adaptation of these new Avenues to use by Processions will also be far more effective than if planted with ordinary trees.

In planting all these Cypresses, let me repeat that the greatest care must be taken to prepare large pits, and to have these not filled up again around the young trees with the building rubbish taken out, but with the richly manurial soil which the town can afford in almost limitless quantity. With such preliminary care, (as also of the young plants themselves on their way from their nursery to their permanent home, to prevent drying of the roots) these noblest of trees will grow rapidly, and should go on improving, even for centuries.

## Chapter XV.

### Central Palace Gardens and Avenues.

#### Vacant Spaces Available, and Proposed Treatment.

The old Palace has no longer any garden, beyond the surviving strip on which it looks down on the west; while the New Palace, which was built in the former garden, has necessarily only a high-walled private one. But there are clearances in the Palace neighbourhood, made in former years and still lying vacant; so we may now utilise them as Gardens, at once giving a fuller dignity to the Palace Quarter, yet at the same time open to the public, as Palace Gardens in so many Capitals become.

The available space is of irregular outline and interrupted by Temples, unfortunately only with street frontages, and these of no great architectural merit, and now with bare and unsightly gable-walls and backs. Those on the westside of the road running northward from the Palaces cannot easily be altered; so I would here suggest either (1) granting them a small building-site along their southward gables, or simpler and better, (2) to encourage them to erect a chabutra, and veranda, with ladies' balcony above, to cover these blank walls.

The small private Temple north of New Palace on eastside is however a mere unsightly ruin; it should be acquired; and its domestic building removed, and the site and compound thrown into the future Garden. A new Temple would of course be erected, and this appropriately with a small spire, since this will form an admirable feature for the Garden, seen from every approach.

Looking now east and west, the available space along the northside of the road, ranges from the Bohra Mosque north of New Palace to the fine Jumma Masjid, a couple of hundred yards to the west of this. How is some unity to be given to all these irregular areas, lying cross-wise upon their Roads, and with the dignity appropriate to Palace surroundings as well? For both purposes there is no resource of planting and gardening comparable to Cypress trees. The two Mosques may each have an appropriate group of Palms; and these will contrast effectively with the Cypresses.

The Bohra community desire a portion of this garden for their Mosque more especially; and if this be once put in order as part of the common design, and with no undue exclusion of the public, why should not this request be granted? Indeed why should not each neighbouring Temple also become especially interested in the neighbouring portion of the garden, and grow there its sacred flowers? The Municipal Gardener may thus become relieved of this whole area accordingly, and the Treasurer of its budget also, or at least in great part.

#### Vegetable Market.

A local and Municipal requirement has also to be met in this neighbourhood—the supply of a small Vegetable-Market, with a dozen stalls or so. This can be provided in the north-east corner; for here behind the stalls, and hidden by the garden shrubberies, there runs a convenient cart-road. A buyers' veranda will give the little Market its needed shade, and pleasing aspect as well. In fact this

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Now, instead of simply clearing by Municipal authority, certain areas of the Bohra Mohalla to give its remaining houses more air-space atleast without, but still more unhealthy over-crowding within, as the past fashion of improvement too much has been—why not plan a Bohra Garden Village beside their fine Park, with houses suitable for richer and for poorer members? The congestion of the Mohalla would thus be naturally abated, and any desirable clearance for an open space would then be more easily, more cheaply, and more satisfactorily realised. Hence the present plan, with its smaller Bohra dwellings on the north of the park, and the larger ones in the present vacant space of Ukhaji's Garden south of the new Normal School, and someway north of Lal Tabela.

This Bohra Park is also shown with its Lay-out improved, but with careful retention of all its present purposes, and even of its essential lines: but now with its paths planted as avenues, and its waste margins with shrubberies or flowers. All the new Bohra dwellings will communicate directly with this Park, so that during the day, when the men are all away at business, this can be used as a Zenana Park, in which the ladies can walk and sit, with their children at play. But this should practically put an end to the tuberculosis which is the perpetually recurring tragedy of Zenana life, and should abate most other diseases as well, the children's ailments especially.

#### **Appeal to other Communities; Rich and Poor.**

Now when the Bohras, as notably business men, and faithful householders, are willing to consider such a plan as this, why not other communities as well? Of all the architectural achievements of the Indian past, none are proportionally more numerous, and none more elaborately magnificent, than are the Temples (and often also the mansions) of the Jains; and of these Indore possesses examples, both of past and present. Why not now therefore a new Jain Mohalla? and on a scale worthy of these continued traditions?

Why not for any and every other community? As well as thus beginning with the richer communities, let us also see what can be done with the very poorest and humblest. We had thus lately trees planted throughout the Sweepers Mohalla of West Nayapura, and with an immediate and encouraging stimulus to their Diwali house-cleaning and improvement accordingly. Similarly the Sweepers of Laltabela have welcomed a simple planning of their great Court-yard to better advantage.

The response of many, and more or less of all, Mohallas to the appeal made before Dewali, has also been encouraging to all concerned, since showing that people have not only appreciated the work of the Municipal cleaning squads, but have largely done their own parts also. The improvement even of the most crowded and untidy quarters, is thus by no means the discouraging, hopeless, or "Utopian" matter, which it appears to those who with all their experience of life in their own class, have not yet a practical knowledge of doing such work along with the people. It is, on the contrary, essentially as definite and practicable a task, as is the ordinary Municipal cleansing on one side, the ordinary house-cleaning and washing on the other. For the most ambitious of sanitarians is but a good housewife upon a larger scale. And surely of all places in India, none can seriously doubt this here, where the life-work cannot be forgotten of Queen Ahilyabai:—with her court-yard and shrine and Tulsi plant, extending not only throughout her city and her dominions, but thence into great Temples at the four extreme Holy Places of India, at the corners of this vast sub-continent.

proceed, yet of kindred charm and attractiveness. Here in fact is an ideal centre for the needed Public Park of this quarter of the City. I am informed that residents in this neighbourhood are willing to aid in this improvement, as by laying out the open ground west of the Tank and building Ghats, planting trees etc.; and I therefore strongly recommend that they be heartily encouraged.

Down stream and further north, we come to the broken Bund north of the State Motor house; and when we study this quarter, we are impressed with the necessity of repairing this Bund, for above this are spacious old loops of the Nulla now dry, but which would soon be filled again. Beside the Nulla thus bunded up into extent and beauty like that of the Residency River, we should thus have a larger and a smaller Tank and Fish-pond; and the whole, with due planting, and path-making, would result in a larger Park, leading up to the small Temple Park we have just left.

The views along this combined Park area would thus be comparable to those upon the main Indore River system itself. Moreover to this fine landscape Park the needed level Playing-Field can easily be added.

I do not remember any Park Area which could be made to yield so much beauty and use, with so little expenditure as the present one. If this park be now developed, it will aid the development of the town in this direction. Suburbs may here be planned, and sites reserved for minor schools; perhaps even a third High School, for this population and its demand, may before many years arise.

#### **Sacred Parks viewed More Generally.**

Look backwards now along the long road by which we have come; past Palace, Bridge, and Railway Station, through Tukoganj, to Palasia with its little park. Are we not encouraged now to treat these two terminal Parks more speciously and fully? And also with something of the spirit of the past? At such centres of old religion, with their architectural and landscape beauty, their provision alike for bodily and inward renewal, we have a good example of the old way of founding towns and extending suburbs, around centres in which the needs of health and of idealism meet and mingle, combined in life and crystalized in beauty.

I am accustomed ofcourse to be told by almost every one—"that was all very well in the past, but the day of such things is now gone for ever." But this is merely my interlocutor's grand way of saying that he has been losing the habit of thinking of these things. Whereas all who can still think of such matters know, that like other processes of the universe, and of the mind, they are as practical and practicable now as ever.

#### **Bohra Park and Garden Village.**

Take for instance a simple example, and from one of the most everyday and business-like of communities, that of the Bohras. Beyond their prosperous and mostly well-built, but overcrowded, and therefore unhealthy Mohalla, they inherit, from their religious past, a fine Park, of double the area of their Mohalla. Of this the northern margin is their cemetery; their Meeting-house occupies the centre; their worthy old spiritual Leader's garden-home is in the south-west; and the rest—most of the area—is divided between imperfect cultivation and neglect.

absence of any conspicuously good architecture, and yet not too much conceal this when it arises,—in short to meet all these conditions—there is no tree like the Cypress. In a very few years too, if it be carefully planted—in large pits, not re-filled with the street rubbish, but with richest and best manured soil—this square of Cypresses will have an effect; and this will go on improving indefinitely.

With all this there may reasonably be an impulse to interior improvement for the surrounding Temples, especially those on the south. Of one of these the space is fairly large, and the other very extensive. And as in this matter of improving Temple Gardens I have had considerable experience, I shall be gratified if my suggestion of Krishna's Kadam trees be accepted for his Temple court-yards; as also if any other use can be made of my services for these or other Temple Gardens.

### Old Town Planning.

Now proceeding westward, we have on either hand a wide north and south thoroughfare, and very soon again another parallel to it, along the west-side of Malharganj. The space enclosed between these two parallel thoroughfares was until comparatively lately open. Here is a good example of the provision of open spaces by old city planners for recreative and market uses. These we moderns build up, leaving only more or less narrowed streets, which we then blame the past for! Looking back now to the middle of the Squares of the old Fort City (at Sarafa Khurd and Odepura) we see that the long blocks of buildings north and south of the open Square of Bazazkhana seem of this nature; and our originally surmise of these as originally open spaces is thus strengthened.

Had all these four long open spaces been preserved by tree-planting, how much more open and healthy, spacious and dignified, would their neighbourhoods have remained. But even in the great Square we have just left, we see the recent modern indifference to the preservation of open spaces in the encroachment upon it of the large Dispensary Compound, and even in the projection of the Police Garden; while turning to the familiar map of the town, it is with difficulty that one makes out here any Square at all, though this has nearly double the area of the Old Palace Square.

### Hasdasji Temple, and Western Temple Park.

Continue again upon our Main Road westwards. This acquires a suburban character as we leave the regular, and obviously once military, lines of Malharganj. Kasera Bakhal and Kadahin Lines have each space for some planting. Beyond these we come through open fields, suitable for extensions as indicated on plans; and we note too the pleasant effect, and the shady result of the border of tamarinds planted so close as to form at once an almost continuous hedge and yet an avenue. We are now approaching the Nulla; and its proximity has already been admirably utilised; for a fine group of Temple buildings surrounds well-built and beautiful Ghats. Behind these, a great garden-enclosure, with a fine turreted and battlemented wall runs round within the large loop of the Nulla, and joins the large central Hasdasji Temple. On the north side of the road the Nulla is bunded to form a fairly spacious Tank.

Though all this old magnificence shews some neglect and disrepair, improvement is easy and inexpensive; and this would result in a fine Temple Park, of course, on a far smaller scale than the great Chhatri Bagh to which we must shortly

### **Avenue Trees; Shelter; and Fuel Trees.**

A word needs here to be said of the poverty of Avenues in Indore, and also of the comparatively poor effect of some of those lately planted: indeed sometimes, as on the roads north of Tukoganj, their practical failure. Largely to re-plant these, with new and wind-resisting trees (preferably therefore Tamarinds or Mangoes)—alternating with the present ones, *e. g.* along the road upto Malva Mills and that along the Railway, would now be the simplest and best way out of the difficulty. But all such work should be done by the Horticultural Department, and not left to Public Works or their Contractors: one might too often as well entrust road-makers with the care of babies, for a young tree's roots are even more thirsty and tender.

Trees should not again be chosen which bend or slope before the west wind, as here so largely. As a shelter-belt, as screen of the unsightly Railway lines, as an added amenity to these avenues, and also as a Fuel plantation, of which even the thinnings would in comparatively few years begin to repay the City, the strips of land at present waste along these Railway margins should be planted with rapidly growing fuel trees, of which I take it no one is better than the common "Babul" acacia. It will be noted on plan that I also suggest such a long 50ft belt of fuel plantation on each side of the Railway line within the City boundaries, and even northward, with the expansion of the Industrial Town. Even some such sixty acres or so of fuel is not to be despised; but I suggest this as the beginning of a larger policy of fuel-planting upon all available waste lands also. It may ofcourse be answered that by far the main supply must always come from the State Forests; and that is ofcourse true: but it is none the less real value for a city to have even comparatively small fuel plantations of its own: since not merely of use, beauty and return as compared with what is too often mere waste; but as a reserve against artificial raising of prices, from temptation to which even fuel-contractors are said not always to be immune.

### **Gardening and Planting from the Palaces Westwards; Malharganj Square.**

We now return once more to town by Krishnapura Bridge, and continue past the Palaces, Old and New, by Khajuri Bazar and onwards, so as to realise the full extent, of about three miles, and the axial value, of this whole east and west thoroughfare of Indore from one side to the other.

There is no scope for gardening along this portion, and rarely space for a tree, until we come to the large square between Yeswantganj and Malharganj. Here in the centre is a notably attractive Ganpati Temple, with a very fine old Well beside, and a massive old basalt platform. South of this is the large Dispensary Building; but the two Northern quarters of this Square are vacant, save for the well-grown little garden of the Police Office on the west side. Here a varied yet simple lay-out is possible. For a Temple, a bright little flower-garden is always welcome, and for women and children a quiet and shady Space, with room for little ones to play! Why not this around the Dispensary? For boys a more open ground; and this they have already in one or both of the northern quarters of the square: while for the unity and dignity of the whole square, a regular bordering with trees. What trees? The ordinary ones, Neem, Tamarind, etc. are already frequent in Indore: and here we need something more distinctive. To give this large Square its needed unity of monumental aspect around its central Temple Spire, and to make up for the

Personally however, in view of the enormous cost, unsightliness and inconveniences which are all inevitable to either scheme, I should be content, atleast until traffic greatly increases, with a small Over-Bridge with stairs, for foot-passengers, such as that in use in Railway Stations.

When the gates are closed, Motors and other vehicles at present find it convenient, and time-saving, to run south past the Station to the Sia Ganj crossing. But this may be closed too. My main remedy however is not a new Bridge at either place: but the farther run, down to the existing Nasia Under-Bridge.

For as shown on plan, and described in a later chapter, the New Boulevard on which we here enter will be found to provide the needed New Express-Route between the Station and the City, as also to Lal Bagh and the western suburbs, so largely relieving the present pressure on the Topkhana route, and even gradually reducing it, from its present supremacy, to subordinate importance.

### **Railway Crossing.**

With all these improvements the mean aspect of the present Railway Crossing will be realised; and I therefore propose that this be slightly widened throughout its course to Tukoganj, by a foot-path of 10 feet on each side, beyond the present road-gates. These may then suffice as regards breadth, though it will be desirable to renew them, when a little more fully worn out, with others of a better, but still simple design. A low and panelled wall should then be built on each side of the Road-Crossing up to the gates. With trees on each side of this wall and along the margin of the Railway Compounds, and with corresponding tree-planting along the roads parallel to the Railway to North and South, the present scene of ugliness will be transformed; and the Crossing will be no longer a blot between the two fine thoroughfares on each side.

### **Tukoganj and Palace Park.**

An improvement of Tukoganj, costing little and increasing its attractiveness, would be the introduction of clumps of shrubbery at due intervals behind its avenue trees. Seats may also be introduced at intervals. Some improvement of the new Palace Park is also desirable, especially the planting of the borders of its Playing-field to northward; and with a little shrubbery planting, and gardening, for the two Guest-houses which overlook this, and of which the large compounds are still mostly bare, without a shade-tree, a cooling fruit, or a welcoming rose.

### **Palasia Park.**

At the eastern end of Tukoganj, where it meets the Dewas road, and crosses the Palasia Nulla, we already have a beautiful and attractive spot. Thanks to the bunding of this stream, and to the fine trees around it, and with the moderate extension and improvement shown on Plan, we may here have a very pleasant Public Garden, indeed a little Park.

This will especially interest the inhabitants of the Palasia Plague Camp, which is already in transformation into a Garden Village; and this has been carried farther, as mentioned in Chapter IX, and shown in detail on Plan, lodged with Municipality, but not here reproduced.

Royal Chhatri on the Western bank. We shall have thus three monumental groups, and between these three Bridges, all communicating by promenades, and with Ghats at intervals, so making up a many-sided river-landscape, which should rank in pictorial beauty among the too few River-City perfections of India, or of the world.

### Topkhana.

Returning once more to the main Bridge, and now proceeding eastwards along Topkhana, we see that Bolia's Chhatri and Garden are shut off from the small Municipal Garden opposite the City School by a high wall. But when this is lowered, as it may easily be, the improvement of this Monument and its surroundings will be conspicuous; and when the needed gilded pinnacle is added to the dome it will be complete. If necessary, there is room on the east of the garden to replace the slums removed from the southside by better dwellings.

When possible, the front of the old City School Building should be set back, a few feet behind that on the west. This would admit of a second storey, which might be of simpler architectural treatment than its neighbour, and so give contrast; and also give room for planting two or four Cypress trees at its angles, to harmonise with the Cypresses in the garden opposite. These dark green Cypress spires will contrast with the prevalent red of the great monument beside them, and are also the best of contrasts to the neighbouring levels of the river-landscape.

Proceeding eastward along Topkhana, we follow the regular pavements newly laid down, with their broad borders of earth left free for planting shrubbery among the irregular trees along the roadway to the Station. How shall we treat these borders? They must not be fenced in, for this would spoil their effect; yet cattle may some times do a little damage, and passing goats also. Masses of bright colour are here essentially wanted; but flowers are too small and too transient, as well as needing constant care. I propose therefore, as at once the least expensive and most effective main treatment, that of planting long bands of bright and varied *Acalypha*, in its many varieties, and separated at intervals by smaller clumps of the bright green *Duranta*, with its pleasing flowers or berries. The splendid Mexican "Christmas Flower" (*Poinsettia*) will also give magnificence during winter months. All these plants have the advantage of free and vigorous growth, and are moreover unpalatable to animals.

### Topkhana Public Garden (and Possible Under-Bridge).

This bright roadway, with its pleasant views into the existing gardens of the Public Buildings on the one hand and of the Hospital on the other, will thus be increasingly one of the most cheerful of the city's promenades: and when we reach the large open space some little way east of Hospital &c, and opposite King Edward Hall, we have here an opportunity for a Public Garden. Its irregular trees are at once an advantage and a difficulty, also its deep Nulla depression: but of these as the plan will show I have made what I can; yet not forgetting the possible transformation of the Nulla, if and when an additional roadway may here have to be constructed under the Railway lines, to avoid the loss of time at the Railway Crossing, which will become more serious with the increased traffic of future years.

It is not improbable however that an Over-Bridge may be found the less costly and inconvenient by the Railway and State Engineers, to whom this discussion must be referred.

monumental; so that two of my remaining garden tasks in India this season are to complete a design for the extension of the garden of the greatest Royal Tomb of Lucknow, and also a Report on the improvement of the Gardens &c. of the Taj Mahal. I have hence gone with peculiar interest, even ardour, into the attempt here in Indore to prepare designs worthy of execution, in appropriate utilisation of the many opportunities of this city, and towards enhancement of its beauties of situation.

And when we have seen together the possibilities of increased beauty and dignity for the City, of increased pleasure accordingly for the citizens, and these at every level from prince to people, we may thereafter be ready to consider the gardening possibilities of the Mohallas, without further fears of too utilitarian treatment.

### **Improvements of Gardens &c. from Krishnapura Bridge northwards.**

Let us start then from the scenic centre of the whole City, Krishnapura Bridge. Taking the fine up-stream view as our standard, it is obvious that the down-stream view needs improvement. This can be simply begun by planting a few varied flowering trees in suitable positions, pictorially selected from the Bridge; first along the west bank, and then also the east one, especially when the new Riverside Boulevard shewn on Plan is made. This Boulevard leads from the Bridge, past the old Tombs, and then to the large Municipal Office compound with its existing garden; while the better planning and enhanced dignity of this civic centre and its adjacent fields, (though largely for housing, to be noted when we come later through the Mohallas) has been gone into with the Municipal President, and noted on plan.

North of this Municipal area we have the fine large new High School domain, with its School Garden in front and around, its Playgrounds behind; and also what I strongly plead may become its School Farm, with Boys' Gardens, and small Type Botanic Garden, on the west.

Along the edge of this large School Compound our new Riverside Boulevard gently winds its way for three quarters of a mile, down to the Kharkharia Bridge, and thence beyond. It continues upto and under the Railway Bridge, and so into Naya Indore; and with shade-trees, groups of ornamental trees, and clumps of flowering shrubbery, in due positions, all the way.

### **Bolia's Chhattri and Neighbourhood.**

Returning now to Krishnapura Bridge, let us thence look, eastward to Bolia's Chhattri, with its dome towering above its trees. The untidiness which disfigures the fine gateway, both without and within, can be easily cleared up; while the proposed replanning of the adjacent squalid and unhealthy housing, and the slight cutting of the Road corner to improve the river view accordingly, will be found to justify the moderate expenditure required for this, both by improving the river view from both sides and bringing into sight the future Bridge, which is needed for the important Theatre, Library and Museum group, upon the south point of the Peninsula overlooking the junction of the rivers, to which I shall come in detail in the later chapters concerned with educational developments. But from this high terrace, with its fine and central view-point, it is once becomes evident that by clearing the slums from the south front of Bolia's Chhattri and the Garden, this fine monument will then at once admirably harmonise and contrast with the



## Chapter XIV.

### Garden Designs for Indore City, and their Bearings.

#### City Gardens and Parks: Improvements.

We have now planned (Chapters, IX-XIII) our various Suburban Extensions around the City, as henceforth Garden Villages proper; and with City Gardens as well *i. e.* with their bungalows and even street-rows of smaller houses communicating at their backs with Fruit and Vegetable Gardens, and these large enough immediately to absorb, and thus inoffensively and usefully to utilize, all, and more than all, the sullage water and waste matter which the surrounding households can furnish.

By the proper levelling of these gardens any excess of rainfall will be passed off into the storm-water drains along the neighbouring road-sides. And since skilled direction can be assured for these gardens, and their cultivation and cultivators organised accordingly, the proposed scheme is thus as defensible against engineering and sanitarian criticisms and urban objections generally, as can be Horticulture anywhere; indeed we may reasonably hope before long even more so.

It is thus reasonable to consider how far such gardens may be introduced into the existing city; and these in the first place upon its low-lying and unbuilt areas, such as the former flood margins, south and west of Ara Bazar, and south of Siaganj and Ranipura. These fields with their considerable area, (about 8 Acres and 5 Acres respectively) are known to every one in Indore; and, as we proceed with City Improvements through quarter after quarter, we find many other open and practicable areas, though smaller ones.

#### Change of Order of These Chapters.

Yet so humble are the associations of gardening in most minds, and of course still more of all operations connected with the cleansing of homes and towns, that in fairness to such schemes of useful City Gardens as I have to propose, I must ask the reader first to consider with me the possibilities of City Gardens and Parks in Indore, quite apart from those of utilitarian gardening, which are offered by minor spaces throughout the City for the more homely gardening of vegetables and fruits.

For since, despite all my arguments, I still fear some of my readers may be unconvinced, and this from various reasons of feelings and associations which no mere argument can touch, I therefore turn to a fresh line of approach to Gardening. I hence ask the reader—instead of first coming with me through the Mohallas of Indore—the poorest and most dilapidated, the most neurasthenic and malarious, the most tuberculous or plague-stricken, to consider how these may be improved, and brightened in homes and health together, and largely through this homely gardening I advocate—to give me a fresh opportunity of justifying gardens and gardening, by actively beginning in the very different, and more generally congenial, way of gardening for beauty, and not for ordinary uses. It is indeed to this latter branch of Garden Design that I have through life mainly belonged, and practised in, as a planner and maker of gardens—for beauty as the highest of uses—and in designing these upto their higher levels, private or collegiate, public and

And though this is also as yet intended for the well-to-do, it appears to me that this or any similar organisation might develop a branch also for the housing of the poorer classes whose case we have just been considering. For just as an Agricultural Co-operative Society or Bank makes advances towards stock or tillage, so surely a Housing Company can make analogous advances towards housing, the more since in the resultant home it has the best of urban securities. In this respect I am encouraged by Pandit Mukand Ram, who has given me some indications of the ideas and aims of a possible new Housing Association, to deal with the difficult problem of Housing for the People, and this upon a large scale, and in a public-spirited way.

### Noteworthy Recent Examples.

Here too, the first steadily, and now brilliantly, successful and ever-growing example of the Irish Agricultural Organisation Society, initiated and headed by Sir Horace Plunkett, may be suggestive, since this is at once aided and audited by the State, and yet possesses a substantial independence in its central organisation, which it uses in organising Co-operative Associations, with dairies etc. throughout the Villages of Ireland. Here then is an experimental proof of the effective Co-operation of the State with the people, through its most effective leading citizens; and though this is not yet to any extent a housing endeavour, its example is certainly encouraging to these. The English example of Co-operative Tenants, Ltd. which arose, like the great English Co-operative Societies themselves, from a small working class group, but is now, like them, on the largest levels of business enterprise, will also be found suggestive in Indian cities; and other examples may be given if desired, or found by any one actively interested.

### Final Reminder.

I am everywhere accustomed to find Indore and other people thinking that the essential matter to be assured in all this new housing is the improvement of materials and construction--from mud to brick, mud to mortar, in short from kucha to pukka; so that industrialists and their engineers, investors and public authorities now-a-days all shrink from housing in the simple old style of the Indian people, and are practically westernised. But as here advocate for the condition and well-being of the people, and for their health therefore above all, I have to remind all concerned (1) that the essential need of a house and family is *room* and (2) that the essential improvement of a house for its family is *more room*. For this reason, and in view of financial difficulties of housing, I therefore strongly plead for consideration of the type of construction indicated on page 84, as the best we can at present afford in the mass of cases, and especially in the New Industrial Town, and as a far better return for outlay than a necessarily smaller house made pukka throughout.

### Compensation.

Compensation should be no longer that of a mere valuation, too often of what can but at best but yield some old materials. This compensation is of course in the first place that of the new site. But on this we have to help him to build at least the first beginning of this dwelling.

### Construction in Progress.

The first room is for a single couple, and two rooms if there be children. Towards this purpose we should in the meantime have constructed upon the site a high enough plinth. In view of the great expense of foundations and of pukka construction and paving, we must often be content with both plinth and floor of earth; but may not this be rendered drier by putting down upon it, just below the floor-level, a damp-proof course, and this not simply below the future walls, but right over the whole floor. Large sheets of stout matting can be cheaply obtained in quantity; and if dipped in hot tar, they will form a very fairly durable damp-proof Tarpaulin, unpalatable to rats. Upon this layer the two or three inches of earthen finish to the floor can be laid down, or of course more pukka material when possible.

The plinth can be strengthened at its outer sides with piers of brick; on which may be built a square pillar of brick, with alternate half-bricks left projecting along each of the two adjacent future walls. When the door-posts are also fixed, we can then build up the four walls with mud; and thus our kucha house is quite a pukka kind of kucha one, since more dry, and more durable, than those of ordinary pattern. The verandah-posts and roof-timbers of the old house may often be used again, at any rate the best of them, and similarly the old tiles. Moreover the supply of new building materials so far as required—timber, bricks and tiles—can all be substantially facilitated by the State Forests, and the Brick-fields of the neighbourhood; and with the advantage of wholesale prices, contracts and cartage, through our Housing Organisation, instead of the high retail prices which each single poor house-holder would have to pay.

### Housing Organisations and Societies.

What then should be the exact nature of this Housing Organization? Is it to be established and managed entirely by the State? Or by the Municipality in co-operation with this? Or may it not also, and with advantage, obtain the services of active business-like and public-spirited citizens? I plead for this, since alike the history of Indian Village Panchayats, and the growing success of Co-operative Societies and Banks are showing that the Indian community is far from destitute of the needful organising and directing capacities. These moreover rapidly appear with call, and develop with opportunity, for their exercise.

In this connection I feel encouraged by the various beginnings, or at least projects, of Co-operative Housing already arising in Indore. Thus I may cite the suggestive Pamphlet by Mr. Mehta, lately issued by Mr. Kibe, and with contributions by Mr. Gufle and others. This project seems confined to the Housing of Officials or others of assured position and regular income, and so on a higher scale of housing and security than that of the less prosperous working households which we have at present mainly to consider, since these make up the bulk of the town. Mr. S. G. Apte has also favoured me with a draft of another proposed Co-operative Housing Scheme, which appears to me clearly planned, and promising accordingly.

paid to him in cash, as has been the case in Indore hitherto, for this generally means that the money goes to pay off debts, or is spent rapidly and profusely, like a legacy or a windfall. At any rate it does not adequately go to the construction of a new home, for which, moreover, at the present cost of building, the compensation-money he receives is generally quite insufficient. But if so, how can we blame him when he applies this money otherwise? He thus inevitably slides back into some slum dwelling as bad as before; or worse than ever, because probably smaller than that from which we evicted him; or, still worse, into a single small chawl room, or even a sub-divided one (12×6 or 10×5); in which conditions, of inevitably foul air and huddled confusion, all the main diseases are provided for, from tuberculosis to plague, and in which at any rate the increasingly neurasthenic housewife cannot but lose heart. But with the mainspring of the household and family thus broken, the husband and children fall with her, and the evolution of the Slum is thus complete.

### **A Reconstructive Policy, applicable even to the Slum.**

Yet instead of blaming the people for this, we have to blame ourselves; and therefore to reverse our policy accordingly, and set out anew, from slum towards Garden Village. Again here then comes the need of the helping hand, without which people so far fallen into poverty and its depression cannot possibly be expected to rise. The custom of giving a man only the amount of "a fair valuation" of his poor deteriorated dwelling is really no more just than would be our requisition of his single set of garments, and giving him for these only their money value as rags or little better, and thus insufficient money wherewith to buy even the simplest new clothing at all. It is the quite contrary method which is followed with the military recruit; for though on his enlistment we do indeed insist on his abandoning his old garments for a uniform of our design, this is a new uniform, much more costly than the clothes he leaves off, and far more efficient; and this doubly and more, indeed in manifold ways—in health and comfort, in durability, in aspect, in social status and fellowship of comrades, and thus in self-respect accordingly. For how would the soldier drill, much less fight, if instead of raising his status by the uniform, we degraded him to practical nudity, as with the householder of our illustration? Has not the time therefore fully come for now applying this lesson, which has been made so conspicuous for the Soldier by the War, to the improvement of the Civilian population? Is it not only the narrowest and blindest of economists who will object that we cannot afford to do this—as if any industrial community can really afford to have its labourers in their present more or less wretched condition of housing, and even of nutrition, with corresponding feebleness of economic production, as compared with that great, even astounding, rise of daily and yearly productive capacity which always and everywhere results from putting labour into adequate physiological condition. Even the most thoughtless of masters knows that his horse works better when his hay is well supplemented with grain, and that it does not pay him to reduce hay to straw, and with stabling unhealthy. Let us help him to see that the same principle holds good, and even more conspicuously, with men. Else how is it that the unparalleled cheapening of motor cars by Mr. Ford has been effected? Mainly through his bold experiment of paying by far the highest wages in the history of the world. These high wages largely go into better housing.

Though the principle of "high wages for high return" is now being widely grasped and applied throughout America,—and this as one of her main preparations for her ever more rapid rise towards the economic domination of the world—I am not pressing for any sudden or extreme adoption of it here. Enough if the principle be understood, and its beginning made, as in the small but growing home of our plan.

in of the Garden Village movement and spirit to exorcise the thoughtless and even callous spirit of the former Bye-Law and "Standard Plans," which in India still so much delay that very housing and sanitarian progress which they were meant to advance.

But our two-roomed home need not end here. The Indian people, with their family traditions, require the family house; and thus they are too readily blamed for the overcrowding which hence too commonly arises. For the prosperous and governing classes, whether western or western-educated, only too easily blame the people for things inevitable in their present town-conditions and poor housing circumstances; whereas it should be for us to improve these conditions, and at least mitigate these unfortunate circumstances. This is here done by providing from the first the needed space—parallel to the house, and separating it from its neighbour—for extensions of the home, if and when required. Until this time comes, this area (say 15' x 50') can be either cultivated along with the adjacent City Garden, and the rest cultivated by the house-holder, and with an additional small fruit tree; or used in part for the storing of fuel, or for the cow. When more rooms are required, one after another can be built, and thus at length our diagram shews a four-roomed house. In exceptional cases, as the family grows, and as income increases with its new workers, the house may even become a two-storeyed one of six rooms, or even eight.

We have thus a further advance upon the old Standard Plan, which I trust puts the problem of gradual housing improvement more clearly than heretofore, and also more practically; since now fully in line with the gradual expansion of the householder's needs and means. It may ofcourse be objected that an eight or six roomed house will rarely be attained, and indeed seldom enough one of four, or even three roomed size. Still, sometimes; and in any case is it not well worth while to set before each couple every legitimate possibility of a successful career as house-holders—that of gradually raising themselves, and still more their families, and their heirs, into more and more prosperous conditions, with an increasingly substantial material share, and social status, in their neighbourhood and town? And with the most substantial and enduring of legacies to leave after them, instead of the too frequent money debt which depresses so many lives and ruins so many families.

### Indebtedness, and its Abatement.

The grievous and apparently increasing indebtedness of the Indian labourer and even skilled workman seems never yet adequately to have been faced, much less dealt with by any City or State, though I have met at least one admirable private endeavour—that of the "Servants of India" Association in Bombay; and I understand this matter is also being actively handled by Co-operative Societies and Banks in various places throughout India. But here, through the improvement of housing, is a substantial means of aid in such debt-reducing endeavours. For it is only we of the educated classes who habitually think abstractly enough to handle clearly the questions of money in any large sums; whereas the people think more simply and of concrete things, and with less foresight; and thus more readily fall into debt, especially in view of their frequently urgent needs, or at any rate wants, such as for wedding ceremonies and other costly occasions, as notably deaths in the family. The same limitation of education also makes the labourer submit more readily to the excessive rates of interest so commonly exacted from him. Now to help him out of these difficulties, we may take the occasion of his migration to his new site: but to do this we must create the necessary Organization. In the first place his money compensation for the old house he gives up to our improvements should no longer be

these subjects. And a generation of thinking peasants is coming: we biologists are but its scouts and pioneers.

Further, as I grant credit to my opponents, the conventional Sanitarians and Engineers, the necessary organising powers, not only to carry out their plans, but also to maintain their drains and purification works, so I expect from them a corresponding recognition that the Horticulturist also knows his business, and need not despair of finding competent men, not only to make Gardens, but to maintain them, and these whether Municipal or private. Since however India and Indore are alike at present poorer in skilled Gardeners than in Engineers, I am glad to be reassured through personal inquiries, of the practicability of finding for Indore all this skilled superintendence which it can desire, and this on reasonable terms. Thus besides Mr. Coventry's good offices and general advice, Mr. Tembe is already taking in hand the Experimental Garden of the Hospital, and Dr. Deo is seeing to the start of that north of Nasia Temple.

I am also further re-assured by kindred experts in the United Provinces and elsewhere. The needed Revival of Gardening in Indore may also thus be advanced; and with many advantages, as notably to the "Real Wages" of the community, and its health and well-being accordingly.

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## Chapter XIII.

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### Constructive Problems.

#### Diagram Plans, Acres Variously Laid Out, and Homes Variously Growing.

The reader is therefore asked to look once more into my diagrammatic Plans of Suburban Acres, variously laid out for houses and compounds of different sizes, and especially into that for the smallest plots, (15 × 50) and now to read this Plan from below upwards. He will thus note with the first house consists of only single room with one veranda, as the minimum, and suitable for a labouring couple without a family.

But in the next house above this one on this plan a second room is added, with a small cook-room outside—a most desirable addition for domestic comfort and even for health, since keeping smoke out of the rooms, and also accustoming the housewife to a healthy life of "open air treatment," while the children will also more readily play in the open court beside her. There too she may also have her Tulsi plant in its conspicuous space of honour. There is room also for a small fruit-tree—a Guava, an Orange, a Plum or the like, though not quite for a Mango. Or why not a patch of Plantains or one or two Papayas; and even a patch of Gold-flowers, of which she can take a handful to the Temple, or string a garland on great occasions.

In the little home like this—whether of simple mud or finest brick matters comparatively little—a decent and civilized life, even a refined and cultivated life, can be carried on. A house-mother, even though coming lately from slum conditions, soon rises to the occasion, and seeks to be second to none of her neighbours. All this is of course but one of the very oldest common-places of human life; yet it has been too much forgotten in the Housing Movement until lately, with the coming

our Park System is yet further extended. Here then is an application of the "Park-way" method; and the advantages of beauty and extent of views gained by thus uniting even small parks; into what makes up a considerable Park System, will thus be clear. Moreover, south of the Cattle-market, and facing the south west end of the Sacred Park, the large compound will be kept permanently open of the New High School, which will thus at once profit by these enlargements of the Park System, and in turn extend its open views. For this school I also recommend extension of its present ground, and as far back as the new suburban avenue shown running north and south behind it. Indeed, if and when Hostels and Masters' Houses are required, these may best be located upon the new avenue itself, so as not to encroach upon this main School Compound, which will still be found none too large for its future requirements, as of workshops, gardens etc.

### Chhatri Bagh Improvement in Detail.

We return now to the interior of the Chhatri Bagh. As above noted, both the Park and its Buildings with their gardens require improvement; but in what spirit? To the European, accustomed to Parks as essentially pleasure-grounds, play grounds, the matter seems simple—primarily of improving irregularities of level, of removing the few worthless trees, and planting some new ones at the right places; as for instance one here to compose with a building at its best, or there another to conceal its poorer aspect. Such improvements are needed and easy: but all will fall short, unless they be conducted with due respect to the memorial and the religious spirit and purpose of the various buildings. For thus the new trees should be selected with reference to their historic association and religious symbolism; *e. g.* the Bael and Kadam put beside the Shiva and the Krishna Temples respectively appropriate for them. Again the roads are not simple walks and drives, as in ordinary Parks, but have also processional purposes and use.

### The Two Main Chhatri.

I sometimes hear criticisms of the two great high-walled battlemented enclosures of royal cenotaphs, as too fortress-like; and with the suggestion that these walls should be removed, in whole or in part, to show the fine monuments within. And the Chhatri above the Bathing Ghats beside Krishnapura Bridge are pointed to, as an example of the pleasing effect which these monuments would present, if disengaged from their walls. But with this view I strongly differ; and for every reason. First, because we of one generation have no rights of meddling with and altering the monuments of our forefathers; secondly, because it is thoroughly appropriate that the founders of a warlike dynasty should sleep within these symbolic fortress-walls; and thirdly, for the artistic reason that while we do not now-a-days build these, but prefer, and so far rightly, to leave monuments disengaged of any walls partly concealing them, these walls also have their dignity and beauty, and give a unity and distinctiveness of effect to these monuments; while the city is far richer through maintaining this present difference in style and general aspect among its main monuments, than by having them all in either fashion.

Moreover with their monuments, these two great enclosures show their architectural unity and even magnificence, when seen as they were intended to be, from a proper distance. Any one who looks at the western one from the opposite side of the river, say from the Ghats, or at the southern one from the fields opposite, (or best of all from the old field road, shown as widened to lead towards this from near the Causeway and Bridge outside of Lal Bagh) will see

that the removal of these walls, however speciously argued for, would be a disastrous architectural blunder, quite apart from its moral vandalism.

It will be noticed that the Plan provides a new south-westward drive towards the Lal Bagh Bridge and Palace, along the edge of the river, opposite the Park, so showing both these monuments more fully than at present. Also that a new Foot-path is laid out along the Park-edge itself, thus also following the river. In many ways, then, new Park effects are obtained, in which wood, water, and architecture are combined and grouped anew, along shady walks and open drives.

### **The Yogis' Camp.**

Immediately east of the South Chhatri enclosure is the camping-ground of the Yogis. This merely needs to be regularised and raised a little, at low points, for the sake of tidiness and protection from damp.

### **The Park Farm; and its Proposed Uses.**

North-east of this begins a small farm, of 7 or 8 acres. To this the public have at present no access. Its addition to the park is recommended, yet with its continued use, and even yield, as a farm; but now a model one, sacred therefore as well. For here is the appropriate place for keeping a little herd of the finest cows, with their bull worthy of Shiva, and recalling Nandi himself. With the cows, a small Model Dairy, yet this not of European type, but on the best traditional Indian lines, those of the Goalas of the city, but at their very best. Beside this Dairy therefore, should be a little Temple, for these Goalas especially, so that they should here be attracted, at once by a model and exemplary centre for their occupation, and an attractive meeting-place for them as a respectable caste, as well as an occupational guild.

For by this simple measure of civic appreciation, at once of their social and moral status, and with it morality, these tend to be raised to their highest; and thus maintained accordingly, and this in a far better way by any mere imitation of our unhappy Western method, of treating economics apart from morals, and both from religion,—and so merely trying to keep up the quality of our milk by Inspectors, and the character of our milkmen by fines and imprisonments. The old Indian method of consecrating occupation as Dharma is a far better one; and it is here for us of the west to come up to that, and not for India to come down to ours. By this simple grouping of Farm and Dairy, with Temple and Goalas' meeting-place, many ends will be served, and more people interested beyond the Goalas and their customers. For the Yogis will look on with meditative and moralising commentary; and the cattle-keepers from Gadikhana, the sellers and buyers from the neighbouring Cattle-market, and the boys too from the neighbouring High School, will all be interested in coming to see these fine cattle, and how cattle may be kept. Attention to improving breed will also be stimulated; and thus in every way this little farm will pay the State, not worse than heretofore, but far more fully. Here Mr. Coventry kindly promises his helpful advice.

The space is no doubt small; but extra grass is easily brought in, so that the present public right or permission of grazing upon the Park need not be interfered with. I even venture to hope that this proposed scheme, of cattle-keeping at its best in all respects, might come to be adapted to the new, (or rather enlarged) Temple Park above discussed (on page 91) at the western exit and entrance of the city on the Depalpur road at Hansdasji Temple. Indeed why not also at the



eastward, in the small corresponding park at Palasia, which we similarly noted as needing extension and improvement. (page 89).

### **Sacred Parks of City, and Dhuni.**

Here at any rate are three Parks, to south, west and east respectively, of which two have already an essentially sacred character, while the third, with its Bathing Ghat, is also in way of acquiring this. The northside of the city has as yet no such Park. Yet here there is a germ, and one far from inactive. It is to be found on the open land beyond the Jail Road Railway Crossing, and which forms the apex of the indefinitely extending triangular site of the New Industrial Town. This is the Dhuni; a spot of peculiar sanctity and even pilgrimage for the many followers of its eminent ascetic and teacher, and who have great hopes, and correspondingly ambitious plans for this neighbourhood. I was at first planning this whole area from the stand-point of the new Industrial Town alone; but I feel sufficiently moved by the ardour and the arguments urged by representatives of this new and active religious body, and also by the more general conception of this city's Park-planning, to advise leaving a certain amount of park area around the Dhuni accordingly. In any case, this will be a useful and pleasant open space; and as such, of value and beauty from the outset of the New Industrial Town, whether its projected embellishment with religious buildings be accomplished or not. And as in any case religion will not quarrel with education, I locate here the Technical School also.

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## **Chapter XVII.**

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### **Zoological Park.**

#### **Introduction.**

At first sight the formation of a Zoological Park may seem a proposal too ambitious and costly; but I do not suggest, still less advise, a great collection, like that of Mysore. I start simply from the fact that practically every Indian State and Capital, and certainly Indore, has in it already the makings of a menagerie; and this even a far greater and finer one, as regards some of the most conspicuous and impressive species, than the great Zoological Gardens of Europe. And though no Indian can quite realize what an event it is in the memory of every European when as a child he first saw the Elephant marching towards him, or the tall Camel striding by, still the Indian has his own deep associations with these great creatures, and these since the earliest childhood; and he also strongly feels their impressiveness. And that he continues through life to appreciate this is evidenced by the universal use of them on State occasions and in Festival Processions. And though the stud of Elephants, and that of Camels, are here smaller than in some State Capitals, each is still far larger than would be the aggregate of those of many European Gardens, as not only of London, Edinburgh and Dublin, but of Paris and Rome, Berlin and Vienna added to these as well. Moreover, from the experience of a few years back, of designing what has since been considered on the whole as yet the best of Zoological Parks and Gardens as regards the display of animal life—that of the Scottish Zoological Society at Edinburgh, I can testify how simply and comparatively inexpensively such collections may be arranged.

### Practical Beginnings Existing.

All that is lacking here is thus but a more effective display of this existing Zoological wealth: and, as the Plan shews, this can be done without even disturbing these animals from their present homes. All I ask is (1) to bring out the Elephants daily from their too common-place enclosure of manure and fodder-heaps, and to give them as much freedom as is consistent with safety upon their adjacent open compound, (2) to plant this more picturesquely, so as to give them something of their proper forest and jungle background; in short to disguise their captivity, and restore, as far as may be, their aspect in nature. A Bathing Ghat for the elephants upon the river would too much stir up its mud upon the human Ghat below; but a basin for them can be easily cut into the river-bank; moreover their old bathing-pool, a little south-west of their present enclosure, can be easily made serviceable; and all with good results to the animals themselves, as well as amusement to spectators.

### Further Developments.

This landscape of life can be further improved by the contrast of other forms of life. A few Monkeys can easily be encouraged among the trees; and Adjutants and other Storks, with their natural contrast in the graceful Cranes, might all stalk about this Elephant enclosure. On the river there can easily be Water-birds, and of many kinds—Ducks, Geese, and Swans to quaint Pelicans and splendid Flamingos. In the neighbouring fields there can easily be Sheep of various kinds, or if we throw two of these fields together into a little Park, then Deer and Antelopes, with their exquisite grace, contrasting anew with the massive bulk of the elephants. With one or two artificial mounds, we can display the Goats at their best; while again in neighbouring fields we can have for example varieties of Indian Cattle. And from their enclosure it will need but a light foot-bridge, itself a new ornament to the river, to take us over to the Sacred Park with its enclosure for the chosen herd, with their magnificent Bull.

### Possible Utilisation of West and East River Banks.

Still following the river upwards, to its turn towards the south, we see that we can here begin to fence in for this growing Zoological Garden the west bank of the river also, as far up as the New Palace Road, which will thus gain new interest, and practically make the Palace Park and Gardens continuous with the Zoo. In this Bank can be cut and built and moated the dens for the great Carnivores, the Tigers, Leopards, and Lions especially, thus as it were guarding the Palace Gates.

On both sides Water-birds can be encouraged. Below the Causeway, on the eastside, a bathing-pond can easily be cut for Buffalos; for these in the water make a picture as striking as can hippopotami, and one much more easily obtained. A small Fresh-Water Aquarium may also be erected on the same bank, and thus house tortoises and turtles, frogs and fishes of many kinds; and contain a educative little collection of water insect life, with a working demonstration of how mosquito larvæ may be kept down by fishes. Here in fact is a strategic point for our attack on Malaria.

### Birds of Prey etc.

Returning now towards the west front of the Elephant enclosure, by the shady path north of the public road from the Palace Bridge and causeway towards the town, we may place in this shade the cages of Nocturnal Birds, like the Owls, and on the sunnier side the Falcons and Eagles. And now turning towards the more domestic

enclosure of the elephants, one of the Mahomedans among their keepers may readily take pleasure in caring for a Collection of various kinds of Poultry.

### Camel Enclosure.

Continuing eastwards, after passing the Gadikhana, we see before us a little eastward the Jamburkhana, with its Camels. As the plan shows, the area south of this is mostly free from buildings. Here then is the Camels' Park, in which these animals can be displayed; and something of their proper desert setting and background can be given by planting and fencing in some thickets of thorny plants, and clumps of palms. Camels and Elephants; Deer and Antelopes; Cattle, Sheep and Goats; Monkeys; Birds of many kinds; here are already many of the main features of a Zoological Collection; yet the ground is not crowded, and the additional expense so far has not been great. The expensive animals are already here, and the cattle should more or less pay for themselves.

### Vegetable Garden and its Gardeners.

The east and middle fields of this Zoological Park area, west of Gadikhana, are however certainly required for all this; and their cultivators will therefore need to be removed elsewhere. But the little group of cultivators towards the west end near the small Temple, may readily be enriched, by taking over the daily manure and sweepings of the Gardens, and by returning all this in vegetables to feed its inmates. This method I was able to introduce from the outset of the Edinburgh Zoological Park; and it has since proved a complete sanitary and economic success, and even a valued additional feature of beauty and interest to the Gardens. Furthermore, with all its specially abundant daily supplies of manure, and regular storage of this, it is absolutely inoffensive in these respects, though fragrant in the right ways. This in fact is a perfect example at once of what I plead for introduction into the Suburbs and even Mohallas of Indore, and of the practical experience which has given me confidence in doing so.

These cultivators are doing such peculiarly excellent work—as in fact, so far as I have seen, as the Model Cultivators of Indore—that I plead for not disturbing, but for preserving them, in their present activity; and leaving and improving their homes around their Temple, as the best of examples of what simple human labour and life may be. Surrounded by happy creatures, both of labour and of nature, and with the river flowing by their well-kept garden-fields, they need nothing more, save the addition of more flowers and fruit, to show not only what the ancient Paradise was like, but to give promise of its renewal, as humanity again returns to sane cultivation of the tree of life, and not merely that of knowledge. Better almost than the Model Herd Farm of the sacred park opposite, let us here preserve this oasis of normal human life, in its strenuousness and its simplicity.

### Extension of Zoological Park South of Palace Road.

For more land then, let us now pass to the southside of the public road. The Karbala Maidan, by the river, needs no improvement beyond a few trees by its edge; but further on, within the cultivated land, with its many trees, we have excellent space for the completion of this Garden scheme; and in effective and contrasted ways, all readily to be understood from the plan. After the picturesque landscapes of the Sacred Park, the River, and the main Zoological Park we have just left, it is time to introduce here the contrast of a more regular and formal treatment, yet not without interest and variety. In the long range of formal (yet partly zigzag) walks

and enclosures south of the public road, we can place the smaller animals, and if need be also such of the great carnivores for whom one may not have space to excavate and build rocky dens of apparent freedom (upon the principle first introduced at Hamburg but better carried out at Edinburgh) upon the west bank of the river, below the New Palace Road.

A succession of Monkey-houses, with ampler gymnastic enclosures than usual, is here easily possible; but the main Zoological feature of this area is the succession of large wired-in Aviaries, each with space for flight. In one the Parrots and Cockatoos, the gorgeous Macaws and Lories; in the others such smaller and greater Birds of many kinds, as existing Indian experience shows may best live together.

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## Chapter XVIII.

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### Zoological Garden Completed, Pleasure Garden and Sports Park.

#### Pleasure Garden.

We may now pass into the associated Pleasure Garden. This is planned to be at once simple enough for broad effects, yet complex enough for varied interest; and even for some of that exploration, which should be among every garden's pleasures, and without which both Public and Palace Gardens so often alike lose interest to their possessors. But of these varied paths and routes the visitor will not soon weary.

Water, too, is freely though not profusely introduced; as passing gently through a succession of basins, arranged crosswise upon Plan, and varying in sizes and shapes, square and oblong, circular and elliptical; and also of different depths, for plant and animal inmates, and different surroundings. The four perspectives, North, South, East, West, meet in and radiate from the large central Tank of the Sunk Garden, around which run paths and beds, each enriched by the different selection and colour-arrangement of its flowers, and open to sunshine, yet separated by rows of shrubs to flower. Shade trees are also easy of access, as the plan will show.

The two Basins west of this Tank form centres for the Palm Garden, and its Avenues around their lawns; and from the westmost there runs north a road leading up to a Gateway by which we may cross the public road, and re-enter the main Zoological Park.

#### Completion of Zoological Garden.

Turning to the east near this Gateway, we may pass along the fronts of the three Aviaries. Thence we have a choice of paths for returning southwards, the central one with a chain of basins leading again to the Central Tank. While the ordinary basins may be best adorned with lotus and other water-flowers, and with gold-fish and the like, here in this series we may show water-Reptiles; as notably a grim family of Crocodiles, duly protected. A Snake-house is here also shown between the Aviaries on either hand.

### Pergola.

But the most attractive and ever-varying feature of this portion of the garden should be its collection of Climbing and Twining plants, growing upon archways over all the area north of the sunny central small Garden: in fact a varied Pergola, enclosing the three great lawns and the small ones, within its shady labyrinth of exuberant verdure and changeful magnificence of flowers. Here and there ofcourse one finds a Pergola with a few Climbers: there is a small but not well-designed one for instance at the Officers' Club in town: but nowhere in all India, north, south, east or west, have I found what should, and might so easily and inexpensively, be the most magnificent of all Indian Gardens—that long Pergola which should present a really good and well-grown collection of the hundreds of splendid Climbing plants, which are either native to India, or which, like the Bougainvillea so common on trees and in gardens everywhere, are practically or easily naturalised.

The expense of constructing a long Pergola, such as is here shown on plan, is not great; if we are contented with good bamboo stems to build it, or with the cheaper kinds of timber, ofcourse creosoted to keep off white ants. Even if executed more permanently, this Pergola would need but a single train-load of the long red stones from Rajputana, which are the finest material for this purpose which the world can show.

### Birds Again.

Along the open bays of one of these long double veranda-like paths of flower, we may hang some of our Gorgeous Parrots, Macaws and Lories, each upon his perch; while other Birds—like Cranes upon the lawns, and also bird-visitors to the flowers—would also make themselves at home.

And not simply here, but over this whole extent of Parks and Gardens I would encourage Peacocks, whose small scratchings and depredations are not worth considering in comparison with their splendid and ostentatious beauty, yet their gentle and tameable ways. In Alwar City lately I saw more Peacocks in a day than in all my life before, and this richness of effect can in a few years be developed here. From this centre indeed they would spread over the town; and as at Alwar they would soon be welcome pets of the people in every Mohalla. Their useful competition with the surely less desirable rat for grain and crumbs is also a not inappreciable health factor.

To encourage Pigeons and Doves also, and in their many kinds, both in this Park and Garden, and in the City beyond them, would be of kindred value; for it is very largely through Indore's too great lack of the daily vigilance of all these beautiful and friendly creatures, that it feeds instead so many rats, to maintain its returning Plague.

### Need of Shade, and Shade-House.

In contrast to all this brightness of foliage and of plumage, we now need more shade than a Pergola can give: hence what might be otherwise a mere extra lawn space,—that west of the Aviaries, and of the Fruit Garden, to which we shall come later—I propose to cover in as a Shade-House.

Among the many elements of the Indian Garden, even on the moderate private scale, none is more delightful or better fitted to the climate than the Shade

Garden. Given a fair supply of water, as here, this is easily cultivated. Its construction is a matter of very moderate expense, even for enclosing a considerable area; for all that is required is a light iron (or bamboo) frame-work, upon which roughly and cheaply woven shade-webs can be tied. But since such an erection has no architectural character, it should either be concealed among trees or by a Pergola; and here on the present plan something of both these methods is employed.

The ordinary Shade Garden, with its Palms and Ferns, brightened by a few Orchids, Arums and other flowers, such as we see on a fairly large scale at Lucknow and elsewhere, has however lately been completely surpassed at the Agri-Horticultural Gardens of Calcutta, whose talented director, Mr. Lankester, has produced a veritable work of art, unprecedented alike in beauty and variety, as well as in extent. It is with this splendid model that I would here enter into rivalry, though here on a smaller scale; and my sketch plan is thus but a first suggestion of such a varied labyrinth as is here required. For in such a Shade Garden we should forget that we are in an enclosure at all, and feel again like children exploring the enchanted gardens of old tales, as well as nature-lovers amazed before the protean wealth and beauty of this protected life. For here the dark Rain-forests with their flowers, the damp Jungles with their manifold verdure, are all condensed and selected into one of the most fascinating of all the many possibilities of the varied art of gardening, with its innumerable resources, its contrasted styles.

Now returning from this shady maze, the regularity of our Pergolas and paths, the sunny openness of Lawns and Flower-Gardens will all be more fully appreciated anew; and the value of the Shade Garden towards enhancing all the rest will likewise be realised.

### Fruit Garden.

As a large Fruit Garden is being laid out near Manik Bagh, its example—with that of the Lalbagh Garden with its fine Guava-Orchard and Orange-Grove etc, so well cultivated by Mr. Tembe, and also supported by the endeavours of experienced and enthusiastic private fruit-growers like Dr. Dwarka Nath—must surely soon result in giving Indore the place which its climate and soil permit of—indeed urge to—that of a centre of Fruit Gardening which need not fear the competition even of Nagpur or Bangalore. Nearer examples are also encouraging, even demonstrative, such as the Palace Fruit Garden at Ujjain.

Hence in the present Park and Garden area we need not suggest any large Fruit Garden, even were there room for this. Representative Fruit-trees will also find their place among their congeners in the Arboretum.

Yet among the examples of the many perfections of life which it is the high function of every great Garden to perfect yet further, and to display, a small type-selection of the finest Fruit-trees most suitable for cultivation in Indore is therefore here desirable. I speak under the correction of local experience; but I trust the site suggested, west of the Shade Garden, will be found a good one.

### Out-door Maze.

The old device of a Garden Maze, of paths in labyrinth, is here provided west of Fruit Garden, and in contrast to its simplicity. Flower-Beds, large and small, are also introduced. A Banyan Tree, to be trained into a Pillar-Hall, is also planted to southwards.

### Rock Garden.

From Maze, Fruit-Garden, Shade-House and Lawns, and by the Pergolas, we come at length to the Rock Garden. In the great gardens of Europe, as particularly at Kew and at Edinburgh, there is no feature more widely and generally appreciated than the Rock Garden; and this by all classes of garden-lovers, from their common beginning in the child. For here it is possible within moderate compass to assemble plants of many regions and kinds, not otherwise so well cultivable, and to display each in something of its characteristic surroundings and habitat, and consequently in its fullest beauty. Mounds and ridges of different and suitable soils, concealed under carefully arranged and striking Rock-work, may show, in their horizontal and vertical range, something of the characteristic floras of different regions. Considerable contrast of light and shade may be arranged upon the opposite sides of these miniature mountain-ranges and valleys; as also variations from wet and damp towards dryness, between their bases and pools and their ridges and peaks. A Rock Garden has thus, in these and other ways, an exceptional variety and attractiveness. I need not here attempt to enter into the details of such a Garden, or discuss the particular plants which could be grown; of course, here as everywhere, largely a matter for experiment. But with horticultural skill, good effects can be speedily and inexpensively realised.

This Rock Garden should contrast with the more abundant verdure and thick enclosure of the one we have just left; and also contrast with the exuberant vegetation of the Pergola. Hence the corner location shewn on plan; which is also an effective one near the entrance.

The Rock Garden may also be given a geological interest, and even a geographical one. Thus in a primary school in the smallest provincial town I have planned for in India, the teacher and scholars had built up with their own hands effective relief-models, of Asia on a small scale, and of India on a larger; they had coloured this, with varied greens for cultivated plains and forests, with yellows for wastes and deserts, and with blue rivers running down from convincingly white-washed Himalayan snows. Such a "Geography Garden" is everywhere of attraction and interest, and to the healthily childlike mind at all ages, upto old age itself. While such models of Asia (sometimes even of Eurasia and Africa, of the Americas too) are more and more frequently being constructed by Schools, and are found well worth their space, the main Rock-Garden, to which we now return, must needs be made, upon its larger scale, with local rocks. Yet besides these basalts, conglomerates, sandstones and the rest, the beautiful minerals so abundant throughout this region—quartz, chalcedony, agate, milk-opal and the rest—may here be strikingly displayed. And beside these characteristic rocks and minerals, plots of the corresponding variety of soils should also be arranged, and each with its appropriate plants as well. Here too is the best place for a plot on which to repeat and extend, under these local and semi-tropical conditions, Darwin's classical observations and experiments on the life, and agricultural labours and services, of earthworms.

For the preparation of such a Garden, the needed combination of geographic and local knowledge and educational enthusiasm, are all happily available in the State Geologist, Dr. Hudlikar; as the needful horticultural skill and taste in Mr. Tembe; by whose united interest this Garden might be made in every way a success, rewarding each.

### **New Club and Sports Park.**

The present scheme of gardens again leads us further beyond our present bounds. I am instructed to find a location for a New Club; and surely there cannot be one better than that suggested for it here, south of these Zoological and Horticultural Gardens, and with direct and convenient access from town; and with ample space for Tennis and kindred games.

To west of this I leave a large open space, indeed a small Park, upto the Karbala Maidan, and this large enough for Hockey-Matches, etc. From the south veranda of the Club-House we may also look out over the large Sports Park, for which I have also been instructed to find the most suitable location; and which may here so easily be made, with ample space between the Manik Bagh Road and the River. There is thus room for Cricket-pitches and Foot-ball grounds.

### **Arboretum and Type Botanic Garden.**

The best trees may mostly all be preserved, and it is also easily possible to border this Park with trees chosen and grouped by the Conservator of Forests as an interesting Arboretum, of which the uses, alike for experiment and for reference, will be obvious. Finally, with these trees along the border, we may introduce clumps of the shrubs and herbaceous plants of the leading Natural Orders of Indian plants, thus giving us a Type Botanic Garden as well; in fact that particular form of Index or Key Garden which has hitherto predominated, even too exclusively, in Botanic Gardens generally, and which ofcourse must always remain central to them; while to other keys, in various ways not less interpretative and educative, we shall return presently.

### **Boys' Corners.**

Returning for a moment to Sports, let me finally provide, in connection with this Sports Park, at its extreme north-west angle next the river, just back from the entrance, and south of Karbala Maidan, also on the river-loop further south, one of the "Boys' Corners" I shall plead for (P 106 and in a later Chapter), and which I trust may be granted: for they provide what for many boys is the greatest sport of all—that of playing at Life, and in a way which well prepares for it.

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## **Chapter XIX.**

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### **Further Gardens, Studios and Practical.**

#### **The Need of "Key Gardens".**

How shall we find clues to the understanding of all the variety of nature and life, so overwhelming in its perplexity? That is the great question ever before the naturalist; botanist and zoologist alike; and which the labours of generations, as from Linnæus to Darwin, have specially striven to answer, and which is now again before us here. The accumulating answer of Systematic Botany is outlined in our just proposed arrangement above, of "Natural Orders", beside and including the Arboretum trees, and their associated shrubs and herbs around. Darwin's answer is yet more vividly provided for in the Pergola, with its struggle of Climbers, and



its varied co-adaptation of Insects (and Birds) with Flowers. Other and yet more obvious Keys are needed; so again the Shade Garden and the Rock Garden respectively bring out the many adaptations of plants, to moisture and shade as one extreme, and to heat, dryness and light on the other.

### Garden of the Phases of Life.

Our next Key Garden is appropriately hidden, yet not at all inaccessibly, among the trees and shrubbery on the east of the large open Central Garden; and thus in contrast to it. In and around its central pool will grow the simplest Water-plants, and in the small places around its edge the submerged and water-loving flowering plants, themselves mostly of ancestral type, and generally more or less low degree. Around the circular lawn lies this Key Garden proper. Proceeding from the left to right in auspicious, because sun-wise order, we have first a ring of plots for germination of seedlings in their many varieties. Next, beyond this circle of seed-beds, we have examples of the characteristic forms of plant-life. Though really specialised, and peculiarly arrested, let us here show first, amid bare rocks and arid soil a group of extreme "Succulents"; the plants which no longer produce leaves, nor actively shoot upwards in growth, but remain more or less arrested, often only swelling in their brief period of growth. Of such plants, a choice of Cactuses will naturally be the main exhibit; but with these various arrested and more or less cactus-like forms of other orders.

In our next plot are the plants of less extreme arrest, and so of a simpler and more natural development, though limited also. Here are the Bud-plants, as we may call them; like the Cabbage, the Aloe and the Agave, and above all the Palms.

The next plot is naturally for forms of vigorous growth and upward shooting, and especially those which attain their perfection of growth through its continued vigour of infancy, its ever fresh sensitiveness as well. Here in fact is a selection and summary, towards those secrets of varied growth of the collection of Twiners and Climbers along the Pergola, which have so long and fruitfully occupied physiologists, from Darwin a generation ago and more, to Bose today.

But most plants hasten on to the development and steady economic efficiency of their Leaf-system; and this again takes very various forms, alike important in Nature and to Man. Here there are representative Grass-growth and Tree-growth, with gradations of herbs and shrubs between.

But though the fundamental and self-preserving life of the plant is in its leaf, its species-regarding life, and thus its own higher and intenser life, is in the Flower. Hence our main central division must illustrate Flowers; and, as far as may be within the space, arrange these so as to illustrate something of our evolutionary readings of them.

Yet here as everywhere, the scientific conception need not prevent artistic grouping and presentment. We need to have rich colour-groupings, and all gradations of growth, from low Annuals in front to tall Perennials behind, upto flowering shrubbery further back; and the gorgeous Gold Mohur, (Poinciana) among the trees behind.

After flowering, there of old came death; as still it does for annual plants, and correspondingly after breeding for most insects, and many other forms. But it is one of the great advances of life in most of its higher forms that reproduction is

no longer necessarily followed by death, but even increasingly by renewed vigour. Here then the place for the Evergreens, in selection of their many and noble Laurel-like forms; and thus contrasting with the generally more conspicuously Flowering types, and with the more simple and ordinary Leafy plants also.

Yet as there are Evergreens of gorgeous flower, like the Heaths and Rhododendros, which connect with the more ordinary Flowering plants, so there are others, like the Orange, the Mango and many more, magnificent and abundant in fruit. These then may lead us among the types of plant-life which have peculiarly specialised themselves towards Fruit; like the vine and apple of Temperate regions, as well as the familiar Tropical ones.

But more precious to man even than fruit, are the plants of seed; here then we need the main Cereals, in choice.

After thus completing the full cycle of existence, from seedling to seed anew, the plant no longer necessarily dies, nor yet grows on as before. It may adapt itself into a phase of comparative arrest, towards further survival. Hence the Deciduous plants, which predominate in northern lands with their cold winter, and which protect their buds for the next year; while especially in warmer lands, and in drought-winters, their growth may be more or less gradually arrested, so that Thorns and spines appear. Yet from this grim defence of wintry old age, we return upon our circle once more; for these forms have culminated in their evolution as it were backwards, into the stump-like Cactuses which can but swell, rather than vividly grow with the returning season, and so present a return towards these simplest stirrings of life, with which this Key series of the main phases of Life and Growth began.

### Garden of Evolution.

Yet the preceding Key Gardens are no more the only ones than is the customary Botanic Garden of the Natural Orders: each but opens its own door, and displays the varied life of nature from that point of view accordingly: a fresh view, and worth having, but not complete.

We still need in the next moderate space to northward an Evolution Garden; though this in the present state of science is hard to plan, even as a beginning towards what will be needed as our knowledge advances. But examples of Darwin's Flowers as related to Insects or to Wind, may here be shown. His Insectivorous Plants, his (and Bose's) Moving Plants also.

Above all, as Darwin especially showed, the student of evolution must enquire into the mysteries of Variation. So here we must first show and observe plants apparently indefinitely varying, like the protean Acalyphas, as if Natural Selection were the one essential factor of new species-making, as Darwin believed he had proven, and as many still maintain. Other interesting physiological groups may here be placed; Insectivorous Plants, Sensitive Flowers, a "Floral Clock" &c., and with the whole as emerging from a margin of Wild Garden.

Next, beside these, the varying Evening Primroses ( *Oenothera* ) of DeVries, and kindred plants, to illustrate and test his recent "Theory of Mutation".

To these Garden-plots, again following Linnaeus, our first great master of Botany, in one of his many garden-devices, I would add plots like his for illustration of the variations of sexes in plants; long familiar ofcourse in the male and female

date trees, but ranging to the curious elaborations of sex-differences which so fascinated Darwin. And next, as long a student of sex-problems, I would naturally wish to add a further plot expressing later readings than his, as of the interaction of sex with growth; and even of the interpretation of variations, as by no means indefinite, but as result of the rhythm and interplay of growth and reproduction throughout the phases of life; thus ever giving us on one side new and more splendid flowers, on the other more exuberant weeds; and yet each capable of oscillating towards the opposite type, with new forms once more,

Finally—that is, as far as contemporary knowledge and research as yet go—we should here make place to illustrate the main discoveries of Mendel and his many active and productive disciples; who are now busy, not only enriching our gardens, but transforming the corn-fields of the world, from Canada to Bengal; and with these, cotton plants, sugar-canes, and soon all other staple plants as well. For they thus will before long be recognised by the public, as already by men of science, as among the most important of all possible workers in the agricultural renewal of India. And that their movement need not lack capable participation in Indore Mr. Zanane can doubtless testify.

#### **Garden Uses and Applications.**

In this way in fact, our varied Garden, apparently so remote from the business life and industrial cares of Indore, and definitely designed as a great pleasure-garden, attractive alike for prince and people in their leisure hours, has in it a hundred possibilities of economic productivity also, enough for a volume. That to improve grain and cotton, this city's two staples, as Mendelian botanists are doing, is practical, will not be denied. Nor yet to show how Oranges may be grown here as good as those of Nagpur (so, let me repeat, the best in the world), so that Indore should by and by be exporting them, and other fruits, and by the train-load, to thirsty Bombay, and perhaps even to the cities its wide sea-faring reaches.

But what for instance of other mysteries, like those of plant-sex—these surely are but academic? Not simply do these open the secrets of life's beauty, but of life's continuance, life's renewal, life's invigoration towards fuller individual existence, and to its future evolution as well. And if these readings be not at first seen as practical—(though teeming with present and future applications, in every preceding phrase)—take as a single example the simple date-tree couple, which by and by should tower over the entrance of our little Garden of the Sexes. Upon the careful fertilisation of one by the other, the main life, health and wealth of every Oasis, from Morocco to Mesopotamia and beyond, essentially depends; and with these even the trade of cities, say of Basra, for familiar instance to Bombay, and yet more throughout the Western world. But India, behind in this, as in too many other fundamentals of agriculture, does not value its date-trees, and so neglects them. Suppose however this neglect turn out to be a main explanation, as it well may be, of their present insignificant value? This subject seems at any rate so well worth investigating, that were I younger, and with the permanent abode my wandering profession makes impossible, I would enter upon it with the highest hopes, ofcourse in collaboration with Mendelian and other selectors.

Take one instance more, and from a different one of our many gardens—this time the proposed Arboretum, round the Sports Park. Said to me lately in Ujjain one of the most active and progressive agricultural teachers in India—"Of the enormous, indeed excessive, number of cattle in India, the most do not really pay: probably as many as 95 per cent of them are below any proper agricultural and

productive standard." "And can all this backwardness be speedily brought up?" I naturally asked. "Certainly, when people once become awake to it, and willing" —was the ready answer.

Now while this better breeding, and this popular awakening, are going on in the busy stock-raising world, and in the Chhatri Bagh, we gardeners and tree-planters may be helping them in ours; as by increasing the pasture-values and doubling the food-stuffs for these improving cattle, and further improving their strength at plough, their yield of milk. All sorts of experimental ways invite us —from cultivating earth-worms, and soil-germs, and what not, to more obvious cultures, *e. g.* of lucernes and their kind. Again, with an expenditure of six annas, of which four for postage to Europe and back, one may get seeds of the Carobtree, the "locust bean" of Cyprus and the Mediterranean, (*Ceratonia siliqua*), not I think as yet grown in these parts. If the seedings do well, as soil and climate suggest, we have next but to bring a small consignment of grafts, or a living grafted tree or two in pots, to begin the culture of what is one of the most valuable cattle-feeding fruits of the world, and hence the most characteristic ingredient of the cattle-foods so much and justly advertised in England. A great soil-improver as well, worth planting even for its roots' sake, and its leaf-crop, as well as for shade; as is done with a kindred tree in Indian tea-gardens.

And so I might multiply illustrations indefinitely. Enough here to maintain, that though my proposed Corn-siding and its new Godowns at Sia Ganj (Chapter XXIII) are unavoidably ugly enough to be recognised as obviously useful by every modern eye, or similarly the kindred Factory planning for the New Industrial Town (Chapter VI), these Horticultural Gardens, with all their apparently purely scientific refinements, and the Zoological ones too, are in essence not less useful, and might even in a few years be made as definitely wealth-producing, if not even more. For the Gardener's Art but veils her innumerable utilities and possibilities beneath her changeful green vesture, embroidered with flowers. These utilities are none the less there, active and latent;—as the Motor chassis underlies and carries its brightly-finished and softly cushioned Car. In short then I claim for these Garden Schemes a fair and cordial recognition, even from the strictest utilitarians among the business men and economic professors of Indore. Our Evolution Garden thus turns out to be more than for peeps into nature's evolution, attractive though that be. It is also full of definite perspectives towards civic evolution, and even economic progress. Thus rural development ever advances urban progress; indeed more than conversely, let townsmen say what they will.

### Herb Garden:

Yet there were evolutionists before our day: and they made their own readings of plant-life; they even discovered, amid its mazes, adaptations to human needs beyond those of the preceding fairly wide-seeming review. Prominent among these were the plants of healing: and thus a wide and varied pharmacopœia has come down to us from antiquity, and is still largely in use through India. And though personally through life a teacher in Western Medical Schools, and ignorant of Eastern ones, I cannot refuse space for a Herb Garden in which as many as may be of the plants in use and esteem among any or all schools may be cultivated, and studied by all who desire. There may again be progress from this.

With this too, should go a smaller plot, of interest to housewives and cooks especially, yet also to us men as their faithful and regular clients, the Garden of Pot-

Herbs, of which Indian Cookery, more than any other in the world, makes such varied and skilful use.

### Sacred Garden.

Yet the Indian woman, again more than her sisters in other lands, sets values on plants and flowers beyond their homely uses, or even their decorative ones. For by her, beyond her favourite Tulsi plant, has been handed down a variety, elsewhere unparalleled, of plants consecrated to the varied occasions of life, and to all its presiding ideals. Her simple and beautiful rituals are thus above all of appropriately chosen flower-offerings: and to maintain for her the full repertory and choice of these is surely one of the duties least to be forgotten by any worthy to be among her gardeners. Hence, beside the Temples of the cultivators whom I have praised and pled for above (page 101), I should lay out this Sacred Garden; and also, near this, a little Nursery enclosure, from which the many Temple Gardens of the Chattri Bagh can be kept fully provided, and other Temples as well. This little Nursery would also be of interest to its visitors, as well as a reserve for the Government Department responsible for upkeep of Temples.

### Wild Garden.

As there were evolutionists before us, so there are others yet to come. For their evocation too, since we feel the need of completer and deeper readings of life than even those to which we seem attaining, some space for this reminder, and its ever-renewing questionings, is needed. And despite all that may yet be learned from existing or imagined types of orderly Gardens, such as those outlined above, and shown on plan, the great source of inspiration to the discoverer must ever be in that "Return to Nature" which has so often been the cry of past generations before our own, and must ever again be. To preserve a true "Nature Reservation", a "Nature Park" in every natural region, is thus a duty which rulers and Governments are more and more widely realising and giving effect to throughout the world. Yet most remains to do; and this largely even in India, despite some eminent examples, as in Mysore. To preserve some characteristic region of wild nature in this State has doubtless already been attended to: but to have some such reserve, even on a small area, as near as may be to this City as it increases towards its educational, intellectual and cultural future, is a real need for all these growing interests. As a beginning and permanent reminder of these needs atleast, let us find a corner somewhere, beside these gardens, to run wild year after year as it will. Not that this can ever or at least within any ordinary time, become really wild; but it will none the less be suggestive to the naturalist. I place it therefore as margin for the Evolution Garden.

The practical man may not improbably feel some disapproval of this, as but a nursery for weed pests; and so far truly; yet for everything worth having we must pay some price, and take some risks.

Does he contemptuously doubt if this be at all in any way worth having? The possibility of some new Darwin, stirred to discovery by such a jungle-patch, may not appeal; but this practical answer may:—After coal becomes too dear, and petrol ditto, what are we to have to burn, but spirit? So how shall we best and most cheaply get this? Not by fermenting this or that small proportional product of our cultivated plants, as mostly at present; but by fermenting plants in bulk; and these therefore the bulkiest and quickest grown, the coarsest and cheapest. But these are weeds. Weed-farming for spirit, for sugar probably also, and much else, is thus one

of the coming staples of world-agriculture, however strangely inverted. Why then hesitate to be learning something of weeds meantime?

### Working Garden.

For every Garden, much work must be done behind the scenes. Not only, as for other crafts, have tools and implements to be stored at night, and an office for business and supervision provided; the gardener needs much more. His seed and bulb stores, his working and potting sheds must all be under cover. Not only small seed-beds and in variety, but reserve plant beds are required: thus *Chrysanthemums* alone need a large space for themselves. Manures, sand leaf-mould and the like, all need storing-spaces, and so on. Moreover this whole area must be at once convenient to the Garden, and to the public Roads, for cartage, while this whole space must also inconspicuous in its location, indeed screened from view from roads and garden alike. The location selected immediately north of the Key Garden and south of the Rock Garden appears to me the best one for the greater part of this Garden's work. However in view of the extent of the present garden scheme I must also allot, as is easy in this case, another, but smaller Working Garden, in the middle of the Zoological Park, north of the main public road from Lal Bagh and reached by crossing west of Shade Garden and Fruit Garden. For this work-place is also needed for the Zoological Garden on the opposite (North) side of the Road.

### Dwellings for Gardeners.

It is common to place these immediately beside the Working Garden. But this is not so practical as it looks, since it is one of the fundamental conditions of efficient human labour to have daily and nightly rest, and this in different and if possible contrasted surroundings, from those of the labour of the day. Just as the business-man or official leaves his Office behind him, or the worker his Factory, and as both may rightly prefer houses in the country, so should the gardener leave his Garden, and come, if not into the movement of human life, at least nearer to it. Hence the location of the Gardeners' dwellings in the new mohalla a little from the N. E. corner. Their townward location, aspect and treatment is thus explained; for gardeners cannot be expected to garden for themselves in leisure hours.

### Lecture Room.

Since our Zoological and Botanic Garden, although primarily of general recreative and artistic appeal to all sections of the public, are also of high educational value, and a new and great asset to education on all its levels—primary, secondary and higher alike—it is evident that regular school visits may be expected, and must be provided for almost daily, as well as frequent College visits also. Of course the main lecture-room is in the open air everywhere, and before each point of interest, while even general ideas may be better imparted under the shade of a tree than in a special building: still the rainy season makes a shelter necessary, and evening audiences have also to be under cover; this too is required for many demonstrations, microscopic and other, and for diagrams, lantern and the like.

The proper location is obviously on the main road and midway between the zoological and horticultural gardens. Hence the position shown at the corner of the proposed Girls' School (Chapter XXI) (to which, and on festival occasions, it may also serve as a Hall). Already the Cinemas show nature-pictures, rich in geographical and other scientific interest: it will therefore be well to plan this Lecture Room so as to be readily darkened, and otherwise adapted for this increasingly educational as well as popular purpose.

### Silk Garden.

Though we come to this at the last, it has been long in possession of its present site, south of the State Bungalow. This site will be somewhat enlarged by the adjacent Road-improvements shewn on plan; and some more mulberry trees can be planted accordingly, and the Silk-sheds enlarged also if need be. On this added ground I shew a small Insect-House, a feature of great and increasing interest in the London Zoo and others. For here can be shewn much of the wonderful life of insects—of Silk Moths no doubt in the first rank. But to this we may also easily add the rearing of Butterflies, of which indeed whole crops may be set free in the Pergola to haunt and glorify this, and brighten all the flower garden around. The ways of Bees and of Ants may also be exhibited, and something also of insects injurious to agriculture and forestry. A small room for a collection, working tables with dissecting lens, and a microscope or two may here also with advantage be provided for students.

Returning to the public Insect-House, a reading-table, with a few interesting books, and works of reference on entomology would here be of value. Even to read a page of a writer like Fabre may open a new window into this wonderful world of life.

### Suggested small Bacteriological Laboratory.

Returning to Silk and the silk-worm, these have yet other interests and possibilities, and for Indore City as well as for the State, but these have been indicated (pages 29–31). But as successful silk-growing is helped by Bacteriology, this affords a convenient place as well as a closing one for its brief consideration. For of all the recent advances of the sciences none is becoming of more wide and varied application throughout the range of life and labour, rural and urban alike, and this throughout the health and diseases of man and animals; and it even affords a good beginning for the study of those of plants as well. The thoroughness of silk-worm control, established by Pasteur, has extended into many industries, both of rural and urban type. It is increasingly dominant in the Hospital, and thence it is spreading towards the home. The personal cleanliness introduced first into Surgery by Pasteur's foremost disciple, Lister, is thus repeating, upon our modern spiral, more than all the precautions of Brahmin tradition and other highly specialised rules of life and even of castes and rituals; the comprehensive incorporation of all classes of the population, through the village and throughout the city, is already in many schools in rapid progress; and other developments are approaching, towards which sanitarians have long been looking forward; and further applications, already in use in armies, will be adapted after the War. Indeed even now the establishment of a Ministry of Health is being prepared, not only in London and in Paris, but more or less in all Western Countries, and soon therefore here in India and its States as well. For since enteric and other germ diseases are now almost abolished in the armies, much more may and must they be in villages and cities. The recent losses by the War have moreover helped not only the governing classes, but will soon bring the public generally, to realize the useless absurdity of human waste in leaving the average life-expectation of India at twenty-three years, when it stands at over forty years in England; and of that average also, when that in a Garden Village at once rises to fifty years, and that of New Zealand is about sixty. Yet as we each care for the preservation of our own lives, and of lives dear to us, we cannot surely much longer remain so generally deaf and blind to that wholesale preservation of life upon which our individual lives inseparably depend, and in which all that is most vital in politics—and of whatever school—must obviously agree.

The establishment of a small but effective Bacteriological Laboratory in this neighbourhood, and conveniently as an extension of the Silk-School, is thus obviously desirable: for this could conveniently render service, not only to silk and milk, and to agriculture and horticulture in other ways, but also be conveniently near the new Fever Hospital suggested on plan to north-eastwards; and ofcourse to the Public Health Département of the City. Popular lectures should also be given from time to time in the lecture-room not far distant.

### **School of Horticulture, and Forestry.**

Without here proposing to establish any new Institution, or to erect new buildings, beyond the above mentioned moderate-sized Lecture-room common to many subjects, it will be manifest that here in such a Garden we have a centre of stimulus to Horticulture generally; and this indeed in its widest and most ancient sense, including all that men can grow—from the simplest crops of Agriculture to the enduring trees of Forestry. For this whole Garden Scheme will be misunderstood, unless the essential idea underlying all its varied contents and treatment be clearly realized. It is neither that of the Garden of Labour nor yet of common-place Pleasure;—the one growing necessaries of life, and the other luxuries, but both of more or less ordinary quality. It is the endeavour here to present the rural arts, to bring together into a single associated scheme the varied Forms of Life and the ways of cultivating and displaying them, so as to express and shew forth their varied perfections. So we may stimulate atonce the everyday peasant and the market-gardener, just as we have sought to do for the Goalas by help of the chosen Herd and model Indian Dairy of the Chhatribagh. From a visit to this Garden, not only may farmers and malis go home refreshed and stirred to better work at higher standard, but the citizen will also be stimulated to improve his garden, and this not only in style of lay-out and care of up-keep, but also with greater variety, better stock and seed.

To disengage this manifold interest of the forms of life from the details of its presentment, we need yet some further summary, yet fuller and more vital, than can be given in print or in lecture-room. Hence the small, but significant, further addition of "Key Gardens" such as those above described.

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## **Chapter XX.**

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### **Palace Gardens and Park.**

#### **Palace Gardening.**

The Sports Park, Arboretum, and Zoological Garden all come up to the Palace Grounds; which are thus in turn practically extended far northwards. Indeed not only with their avenues now continued to the Park of ancestral Chhatri or to the old Country Palace—(the "State Bungalow" east of Gadikhana)—but by the new River Boulevard and new Cypress Avenue upto the Old and New Palaces at the City's centre; and even beyond this, through the new Gardens northward again. Indeed by the improvement, into Avenues, of each of the roads onward from the neighbourhood of these Gardens, we may reach the East and West Boulevard south of the Polo Ground. But this may again be viewed as near the centre of the Northern Park System, which may connect by Parkways in all directions as the



city grows, and especially lead up to and through the long river Boulevard of the coming Industrial Naya Indore, and thence to Suklia; and thence, in time, round to Palasia and the Residency Town, and so by Holkar College to the Palace Park again.

Moreover from Suklia, the Pilia Nulla may be increasingly bunded back, so as to equal at many points the Residency River; and its Banks, as we have already seen may be emparked and boulevarded, all the way up to Sherpur Village and Tank, and so again upto the Palace Park accordingly.

Here then are the beginnings and the possibilities of a Park and Garden System such as few Capitals can show, or even hope to create; with its many miles of varied avenues and landscapes. The long road west of Lal Bagh grounds runs straight northward past the Fort, and east of this as the Banganga Road; there has too long been no other; and this has limited the growth of the City. On Plan however it will be seen that we make good this deficiency at a moderate distance westwards; and this by a new road from the Lal Bagh Star of Roads, and by the lengthening of shorter parallel ones. A new Boulevard may also run west towards Sherpur, and the long Pilia Nulla Park, and as the element here needed of the Ring Boulevard and Parkway system of the City, which may be gradually developed as it expands.

The Palace Park System and that of the extending City, are thus brought into harmony and unity, increasing with the years, and this even spreading beyond the preceding wide and ambitious survey. For as the new Industrial Town continues its northward growth, it may reach and populate along the nullas north of that of Palasia, which it is now ready to cross. When this happens, as it may readily do within the generation now opening, these nullas will be bunded into breadth and beauty in their turn. And as the raising of the water-levels proceeds, the old villages here and further down will grow in prosperity and beauty as well. There are thus no assignable limits to the extension and improvements of Indore.

### **Palace Gardens.**

Returning now to the Palace, the interior maintenance and design of Lal Bagh Palace Garden, and of the others beyond, is already in other hands, and each skilled in its own school and style, and so with no need for my intervention. Outside their limits however, I may say a word or two, which therefore will not be intrusive.

### **Suggested Japanese Garden.**

For one thing, let me ask attention to the old Basalt Quarries west of Lal-Bagh, which are now lying as a waste of disordered holes, with mosquito pools without number. It has been thus, and not unnaturally, proposed to fill these up, and level the ground; yet this I venture strongly to deprecate. For here, though in the rough, the main work has been done for the preparation of a Japanese Garden of great magnitude and endless variety. All that is now needed to complete this preliminary work is to excavate a little more here and there, so as to raise some of the rubbish mounds and heights further; while for sanitation and beauty alike the pools need only to be graded and shaped a little, and cut into connection as a single group, or more simply as several, but in any case so that the gradual retreat of the water by evaporation and seepage through the dry season does not leave small

mosquito puddles, but keeps in one continuous body of water, and so easily accessible at every point, and along all its edges, to the necessary mosquito-police—fish and ducks. To complete this groundwork of the Japanese Garden needs next however the Japanese Gardener himself. In his general and detailed design, his choice and convention of placing of the rocks and stones, his selection and disposition of plants, he cannot be imitated, much less rivaled, by any non-Japanese designer, be he Indian or European. Hence every attempt hitherto to make such a garden, without the Japanese tradition and soul, has been, and must be a failure. But there need be no great difficulty or expense in finding and bringing such a gardener from Japan; clearly providing ofcourse that this be not such a paper-educated young gentleman as a Japanese College might now-a-days supply, but a genuine Mistri, one trained and skilled through the labour and art of Tokyo's or Osaka's princely gardens.

### **Criticism of Proposed Diversion of the River.**

So much by way of a possible added feature convenient to the Lal Bagh Gardens. Now a word of defence of the existing Grounds and Gardens from any excessive sanitarian recommendations, such as that of diverting the River from the eastern Palace-Front; since on this, both the location and the main beauty of the Palace depends. Such proposals are too much a product of the recent sanitary panic which has so destructively raged up and down India, demolishing even some of the finest Temple Tanks upon its course. Sir Ronald Ross's discovery of the mosquito as carrier of Malaria, and the American success at Panama Canal are alike excellent; but they furnish no grounds for any such destruction of nature or art. With clean-kept stream and banks, and with fish and ducks, mosquitos are kept down. Moreover, the palace is not much inhabited in the malarious season of Indore; and if the river be taken away, its charm will be so destroyed, so as to risk its hardly being inhabited at all. Finally, were such diversion of the river necessary on the grounds of health, it would next be but logical to make the same attempt to remove the Indore Rivers, and similarly for River-cities everywhere.

### **Manik Bagh.**

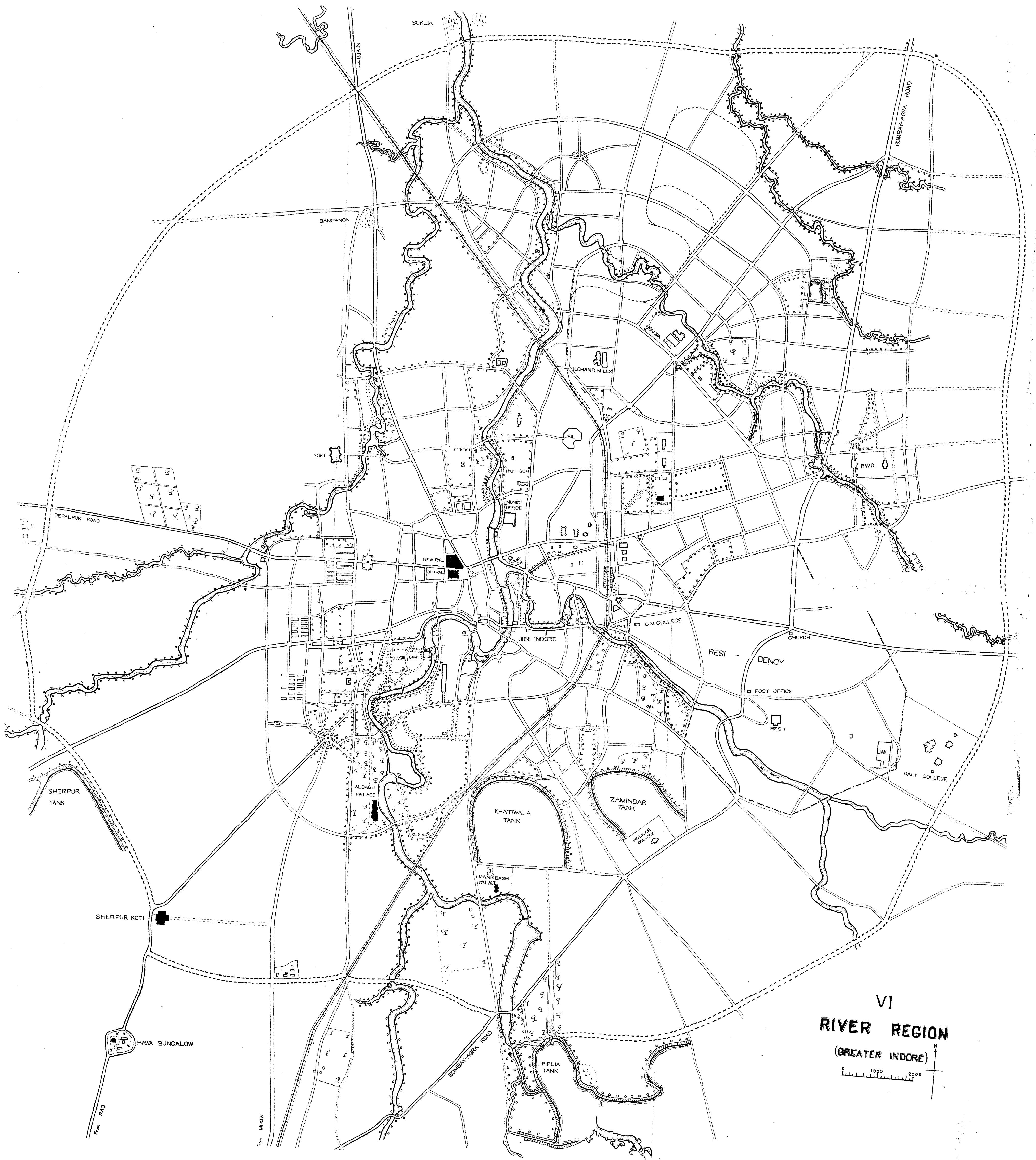
Passing to Manik Bagh, of which again the site has been rightly selected for the beauty of its neighbourhood to the river, its water-landscape looking over Martandpala Reservoir may and will be improved, if and when the recommendations for raising this, as an improvement of the Water-Supply ( page 45 ) are carried out. But the bund in front of the Palace divides the landscape; and its northward half is poor. This can easily be improved by barring the arches of the adjacent Road Bridge, so as to hold up water between this and the Bund.

### **Kaisar Bagh &c.**

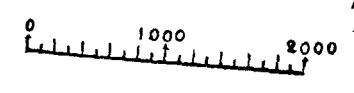
The new Fruit Garden near Kaisar Bagh must be specially welcomed; and the Old Garden itself, with its fine Temple, Well and Banyan tree, its old Central Well and its Palace Mound might all again be inexpensively renewed into a scheme of beauty. And other points might be mentioned around each of the remaining Palaces.

### **Desirability of Unified Palace Park Scheme.**

But as each of these Palaces has been a separate creation, it still lacks unity with its neighbours, and lies as a separate object in its own Park, without these



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Parks having as yet become one. The need of a comprehensive scheme, for uniting all the Palaces and their Parks into a single Great Park, by an effectively designed and judiciously planted scheme of Avenues, is thus obvious. The ultimate unity of such a Palace Scheme with the present City Scheme is thus fully possible. But to venture upon this is beyond my present instructions; and I should moreover be open to the reminder that the time for this is not ripe, and that the City needs development of its health and wealth, and the Region increased fertility, before attempting any such elaboration of park-making and gardening upon a great scale, as this might readily develop into.

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## Chapter XXI.

### Indore River System.

#### Further City Amenities.

It is no small gain to the health, pleasure and general attractiveness of any city to provide it with pleasing suburbs and attractive walks and drives; and I trust, boating facilities also. And since the main beauty and glory of Indore is already in its river landscapes, the substantial extension—indeed more than doubling—of these which will be given by these improvements and extensions, as to Naya Indore, will be increasingly appreciated in the future, and especially as the bunding of the River and its purification in Indore are proceeded with. The repair of the existing Bund at Naya Indore is a comparatively simple matter, but the construction of the Bridge, at or near Sukliā, is a matter of more expense, not yet urgent. The purification of the river in the existing City, as we shall see, when we come to Drainage (after Town Planning), may be effected before long; and that of the New Town will be protected henceforward.\*

For the beautification of the Indore River and its tributaries along their whole length, from their entrance into the old City to its exit from the New Town at its extreme north—say at Sukliā, or even beyond,—the present plan will be seen to afford the necessary general guidance, along the whole extent of these many water-courses. Yet the resultant artistic effect cannot be assured by the present Plan. It has to depend upon the degree of taste and skill of those responsible for its detailed execution throughout the opening years. To aid them in this, they will find it of service to continue, and keep upon their office-walls for reference, the present beginnings of a collection of photographs of the river, and of its various Nullas, throughout the whole of the extending city. It cannot too often be recalled how fortunate is Indore in having already so many points of conspicuous beauty in the old city. Such are the view from the Krishnapura Bridge, those of the great monuments of the Chhatri Bagh, or again, midway between these, the views north and east from the river-causeway of Junī Indore. The present Plan provides for the further improvement of these fine landscapes, and their increase by more. Yet again I repeat that success will depend upon their execution in detail. As

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\* As regards the purification of Indore and its Rivers together, it must reasonably be hoped that the Residency will do its part. For it cannot be content with its present Drainage system, which though in itself relatively in advance of that of Indore, is yet so deeply discouraging to it, by discharging into the River. Before such Indore improvements can become effective, this nuisance must be dealt with. Hence attention to this problem may reasonably be asked for by the Municipality, and its request supported by the State (see page 53).

regards planting river-banks, for the landscape-effects which may so readily be made to give their changeful beauty to this long mileage of rivers, and so may develop them into what should be one of the very finest River Park Systems of Indian Cities, and indeed among the world's, we are fortunate in having examples of tasteful and skillful treatment upon the Residency River, where Mr. Bosanquet's loving labours of past years are already rewarded by conspicuously beautiful results.

Here therefore may be suggested the collaboration of the (existing or future) Horticultural Society and Photographic Society of Indore. In their periodic Exhibitions, and also their regular Meetings, they may thus take an active part in raising and maintaining the standard of civic beauty. Municipal and private improvements will thus advance together and enhance one another. Thus the City Beautiful will develop year by year; and not only as a joy to itself but increasingly also a stimulating leadership to other River Cities of India; and an encouraging example to its smaller Nulla Towns.

### **Indian ( and other ) Rivers as Sacred.**

For greater even than the vast Palace Park, greater even than the City as a whole, is the River, to which both alike owe their origin. It is the comprehension of this fundamental and central River-factor of human environments which is intellectualised as "regional geography and history" in Europe. Yet this has long been yet more profoundly apprehended, and therefore more deeply emotionalized, in every region of India, in its ancient conception of the River as Sacred. The notion of Mother Ganga, Mother Nerbudda, and their sisters, as veritable deities, at once cosmic and human, is thus no old-world myth nor lingering superstition; and those who think so are but suffering from the shallownesses of recent Western and Indian misinstruction and misunderstanding of nature, miscalled "education, literary and scientific." For this reverence for the rivers, and with them for lakes and tanks, for springs and wells, is deep in the history of Mesopotamia and of Egypt, and indeed in the essential culture-history and tradition of the West, from Palestine to Ireland, essentially as in India.

And though contemporary text-books and gazetteers have lost this spirit, and with it the life of their would-be geographical teaching, the real geographical thinkers of the past generation, whom such text-books of course ignore—like Reclus, Metchnikoff, and Le Play,—have largely retained, and even revived, this comprehension of the significance of rivers; while upon this basis the renaissance of geography, and of geographical education, are now beginning. Witness as but a single example, the Regional Surveys promoted by the Regional Association, and also arising independently,

This geographical movement is now a notable element in the reorganization of education after the War; and it will before long be an active factor in reconstruction, and even in that restoration of human understanding and good-will, which will be so necessary for any real establishment of peace, deeper than that of paper treaties.

### **The Indore River Union.**

The ordinary map of Indore City, that of its immediate province of Malwa, as well as that of Indore State and its neighbours of Central India, all bring out this importance of their respective River-systems. But since our realisation of this is more or less dulled by habit, it is worth while to consider a map of intermediate

scale, that of the River-system of the Greater Indore City, which is obtained by hanging together the existing City Plan with those of the surrounding villages on the same scale, ( kindly furnished by the Land Records Office ).

For only when this largest local map is hung, do we fully appreciate Indore; since these maps are no longer now merely of municipal and technical detail, of topography, of property, of taxation and administration; but now unite into a presentment of the City in its immediate Region; and this from its earliest religious and agricultural beginnings, throughout its military and commercial past, and on into its extending and industrial future, as centred upon its rivers. Amid our modern developments of roads and railways, our concentration upon machines, we have for the time largely lost sight of the rivers; and this well-nigh everywhere, from London to Indore; but thought is again emancipating itself, from this and other limitations of our age of mechanical progress, and entering upon a new period, of deeper re-interpretation of nature and life, in terms of vital process. Hence a more truly modern science and philosophy of evolution, alike organic and social—and with mechanical “ progress ” put in its place, as of the inorganic tools of this—is returning to the old-world conceptions of nature and religion, to renew these upon its ascending spiral. The meteorological and geological conditions of rivers, and their conditioning of the vegetable, animal and human life upon their banks, is thus becoming more fully understood than of old, and again felt not less deeply. Again we see the Rivers in their panoramic beauty and sublimity, and in their social significance. And the dependence of all forms of life, together with our own, upon these uniting waters, is becoming realised, as not only the widest conception of physiology and economics, but also as of psychological and emotional significance, for each and all. Hence the modern geographical thinkers named above are as it were the modern incarnations of the old river-loving Brahmins and pilgrims of the earliest beginnings of Indore.

### Recovery of Significance of Rivers.

This general view of the river is only difficult to recover today, because we have been taught to think of water in its various minor aspects alone; and these separately and prosaically stated, as from “ H<sub>2</sub>O ” to “ Drainage Basin ” or “ Stream and Tributaries ”, and so on. Yet towards the close of a long life mainly occupied with attempts at putting all such conceptions together, with the restoration of the separate sciences into that larger and more living geography which gave them birth, and which has been ever laboured for—alike from earliest to latest explorers, and by students of nature and man in their co-relation—one cannot but recognise that the old religious view of rivers is no mere past mythology. It is a sublime anticipation—at once artistic, poetic and spiritual—of that synthetic and evolutionary cosmography, in which all the sciences, physical, natural, and social, are approaching their reunion in the river of time. And with this their higher utilisation by man, in the stream of evolution; not only again to water his fields and drive his dynamos, but with his vital immersion in these waters, to renew his health of body, his life of spirit.

### Practical Outcome of this Renewal.

What then is the practical outcome of such a view? That of the sciences as returning into Geography, and of the arts as reuniting into Geotechnics—Rural Development and City Design together. Hence even now, amid the culmination, and self-destruction, of the mechanical age in the War, there is opening a new period

of evolution, alike in thought and practice; and in this we begin to recover the outlooks and insights of ancient Indian religion, even of world-religions. Simply and practically stated, the modern Town-planner and the old-world Pilgrim, as they meet here by the Rivers of Indore, though apparently separated wide as the poles, by the breadth of scientific progress and the elaboration of its applications, are really at one; and are even well-nigh ready to come together. So, beside this river, they may come to understand each other's complementary approaches, and even to co-operate in the renewal of the City, in its health and in its beauty, in its idealism and its material weal.

For after all these long discussions of Water and Drainage Systems, above shown to be so defective, (essentially through their narrow mechanical modernism) and onwards through studies of Railway and Industrial development, of Housing and the rest, and always with proposals practical and economical—as also after similar grappling with problems of the main Diseases of the organic life, and of the correlated Depression which conventional life and education produce in the mental life, and again with proposals economic and practical—I come at length to propose a further Water Scheme, which, however unconventional at first sight, may yet be found one of the most economic and practical of all.

It is this. If and when the cleansing and repair of this City is more fully set in operation, when the housing of the people similarly is adequately begun, and when the purification of the river from its present deplorable defilement and promiscuous pollution is also in progress—as notably through the introduction of earth-purification by gardening—let all this be at once expressed and aided, popularly celebrated, and thus accelerated, by a simple adaptation of Indian custom; the revival of its greatest social and religious gathering still fully surviving, on the Ganges especially; as so notably in the approaching Mela at Prayag (Allahabad).

Soon after the beginning of the present study of Indore, the conviction became irresistible that for the arousal of the people from their too neurasthenic submission to plague, their fatalistic acceptance of it, there are needed methods altogether beyond the present cold and conventional ones of sanitarians. To vitalise these, there is required the revival of the best traditional methods of popular appeal—artistic, symbolic, mythic, and thus religious; hence in all these ways emotional, and thus practical. For it is now the commonplace of scientific psychology—though still unrealised by conventional education, and hence disused by the educated and governing classes—that to carry any idea into action, there is needed the corresponding arousal and uplift of emotion, without which no thought, however true, can rise into effective deed. Hence the recent Diwali Procession, which despite all previous fears, and subsequent criticisms, has been found so far to justify itself; and I trust its principle yet more.

I am thus not a little grateful to the State for its acceptance and execution of this suggestion; and still more for the encouraging disposition, already expressed, that it may be worth while to repeat and develop this beginning for next Diwali. And since gratitude thus, as proverbially, looks for favours to come, I am emboldened to a further and kindred proposal. Of old when Juni Indore was young, its settled Brahmins, its passing yogis and pilgrims, must have held many a Mela together beside these uniting rivers, then sacredly pure. So again with this purification of the river, is not the time coming round for a new Mela, and of kindred character? It is not yet long, as Indian history goes, since the greatest and saintliest of all the queens of this dynasty sent out from her small but noble capital

of Maheswar one of the most magnificent impulses, alike of thought and action, in the records of India, expressed in her building of Temples at its four extreme Holy Cities. Let these Cities and their kindred ones, then, be invited to send worthy representatives here to this Mela. In the preparation, the execution, and the after-effects of such a festival, Indore cannot but be encouraged to a yet more full and thorough repair, renewal and development of material structure and life, than even all proposed in these pages; because in this way also associated with that spiritual and moral arousal, which a western guest, however hopeful, can but dimly dream; but which is none the less realisable by the spirit of India, by the impulse to Indore of such representatives of the ideals of their countrymen, by the reaction too of Indore upon these temporary fellow-citizens. The "ShardaSammelan" publicly inaugurated here on Saraswati's day (15 February 1918) was plainly an earnest of the reunion of thought and education together, and of citizenship with them. But this Mela would be of wider appeal, and hence intenser efficiency, in advancing the needed renewal of Indore more full and completely, since thus in its outward and inward life together.

And when Indore's guests, after giving her their encouragement, return to their own cities, will they not ask themselves—Why should our own city be thus so ruinous and dirty in many of its quarters, so largely ill-housed, so much diseased, with its river so polluted? With such thought-streams beginning, the India-wide impulse of Indore would be again renewing. For if this clearing-up be as yet the fullest of any city of India, if not indeed of the world, it cannot fail of suggestiveness, nor soon of effective rivalry.

And though Indore is not as yet recognised as one of the Sacred Cities, would it thus not virtually be entering their order? And this even with true leadership? Ujjain, Hardwar, Allahabad, even Benares, foremost among them all, would thus be stirred to renew their river purity, and to enhance their monumental beauty; and other river cities, alike the more sacred and the more secular, from Nasik to Cawnpur, from Madura to Bezwada, would before long follow. The present defilements of the Ganges, though now conspicuous well-nigh from source to sea, would soon be actively criticised; and thus at ever-increasing points would be dealt with.

In the respect of rivers and their purity, all the historic religions agree; as do all their rituals in the basal elements of cleanliness, and sanitation. It is time thus at once to renew the ancient spirit, and to ennoble the modern one; and both movements need such definite designs and occasions to unite them.

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## Chapter XXII.

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### Proposed Educational and Scientific Buildings.

#### Available Sites on Lal Bagh Boulevard.

It will be noticed on the plan of these Gardens, that instead of these beginning with the Boulevard passing Gadikhana to Lal Bagh Bridge and Causeway, I keep back, from 140 feet at the east end, to 60 feet at the west. Why this? Because it is of the essential pleasure of a garden, and this in east or west alike, that it be a "*Hortus inclusus*"—a garden enclosed, from roads and streets and everyday surroundings. For it is of the very essence of its recreative value that these be for the time



forgotten, and that the garden appear, and be for the time, a fresh and new environment for its visitor's mind and body. Hence garden hedges or walls are no mere defence of property or of purda, but, are the very making of a garden.

But bare garden walls, such as are here afforded by the backs of the proposed Aviaries, Monkey-houses etc., are not pleasing from outside. It is better for this boulevard that they be kept back from it. It is also a substantial economy in garden construction, since valuable sites are thus preserved along the whole line for other uses; and we thus avoid what would otherwise be an unnecessary waste of frontages, and correspondingly useless sinking of capital.

These sites might thus readily afford a line of dwellings, conveniently of small bungalows and cottages, (from 140' x 110' to 60' x 40') and these would, I doubt not, readily be taken up, as homes combining suburban detachment with unusually close proximity to the City, and amidst pleasant surroundings.

### Proposed Girls' High School.

But it is better to take a larger view of the possibilities of this site, as peculiarly suitable for future educational and scientific developments. The extreme east block of this site was at first planned for the gardeners' dwellings, but on the next and equally broad one I suggest a Girls' High School, for which these surroundings should be peculiarly educative and attractive. This involves the closing off from the public, as purda enclosure during school hours; the open garden-lawn and pergola to southward. The Aviary here at first planned, I therefore locate further west, with its space given to this School, for subdivision for its various living pets and animal educators, primarily of course the cow. For though from the recent, but now discredited, darkening of education by "the 3 Rs" too much alone, (reading, writing and arithmetic) with the corresponding eclipse, now closing, of "the 3H's" (heart, hand, and head) the main truth of educational history and wise practice has been for the time lost sight of. What is this? Is it not that while Christians—not merely nominally or professing, but good or "Christian Christians" are nowadays, by the social psychologists, fundamentally and literally described as "sheep-educated" and lamb-educated", and true Moslems similarly as "camel-educated", good Hindus are historically and actually "cow-educated". And as these are again becoming seen as prime civilisation-values in past educations, there arises a new hope, faith and purpose of renewing education from its current instructional aberrations, and renewing it upon these ancient moral and practical bases. And this especially since persons who have learned to deal with those animals—with the fundamental feeling which they have inspired since the childhood of humanity, and can and do again inspire in every child not deprived of them—are again being seen as peculiarly educated, and educable, in the true fulness of education—moral, practical, and thus intellectual as well. And this even towards synthetic co-ordination and tactful administration—witness the achievements of shepherds and cowherds, in the history alike of East and West, and of camel-drivers for Islam.

It is of course too true that between our paper-instruction on the one hand, and the depressed condition of the rural classes on the other, we have nowadays difficulty in seeing the need of this return of education to these humanising fundamentals, the more since in our urban lives there are generally various practical difficulties in re-establishing them. But the environment of this proposed Girls' High School will offer all facilities in this respect; and this the more since its school excursions readily admit of crossing the Zoological Garden and the River to the Cow-field and

Dairy of the Chhatri Bagh, and to the corresponding Buffalo Compound also not far away. For Mistresses' Houses, and Hostel, the adjacent site to the east is also available.

Again, horticulture, anthropologists tell us, was originally of woman's invention; and was one of her greatest initiatives in civilizing our species from its barbaric hunting and fruit-gathering origins; and this art is again being successfully recovered by woman in the West, and with an efficiency already comparable to that with which she has recovered nursing, and is also recovering teaching. I do not indeed know as yet of any Indian woman-gardeners; but as for more than a generation in contact with the rise and progress of gardening as a profession for women in the West, I can testify that not only their qualities of taste and feeling, but their domestic aptitudes, of complex co-ordination of varied details, are peculiarly justifying them, as capable of taking effective command of gardens and of their men-labourers, as also of designing and initiating new ones.

I plead then, for serious and sympathetic consideration of this proposal for a Girls' School in this position, and with these advantages of vital environment and activity. My confidence is founded on long experience and experiment, of both of which I can give fuller detail if desired.

Indore is indeed fortunate in possessing, in its present admirably progressive Girls' School at Garib Khana, an example of the beginnings of this successful return of girls and their teachers to gardening; while it is also worth noting that the best and indeed almost only book descriptive of Indian Gardens, is that of an English woman-gardener, Mrs. Villiers Stuart, (*Moghal Gardening*, A. & C. Black, London 1914).

Contemporary Indian discussions of the education of women still too commonly proceed as if the woman's problem were simply her initiation, by way of the "3 R's," into the present verbalistic and numerical empaperment of man. But there has also been among progressive educationists proper, and both in America and Europe, ever since Pestalozzi's classic presentment, "*How Gertrude Teaches her Children*," a movement towards renewing the initial, vital and inspiring role of woman as educator. The work of William James, of Stanley Hall and of John Dewey, as the leading educational thinkers of America, of Edward Holmes as its leading English critic, with many others, and now of teachers like Madame Montessori and Miss Macmillan—each herself a new "Gertrude"—are only the conspicuous evidences of this. The coming in more and more fully of women into Schools, and even as teachers for boys, has thus also long been in progress in America; and that this must also come to pass in England, and on the Continent, is one of the inevitable by-products of the War. That this will have also soon become a factor of Indian education I cannot but believe, since the openness of India to Western progress is surely not confined to adopting our mechanical and monetary interests alone.

### Proposed Boys' School.

Now leaving this movement to justify itself in the future, I return to Boys' Schools, and as at present limited to men teachers only; and I submit these Gardens as possessing besides the ordinary advantages of location which schools require, and at no inconvenient distance from town, the additional advantages of the same living and beautiful environment as that above proposed for girls. Hence, at the west end of this Garden and Boulevard, next to the Karbala Maidan, I suggest on plan the

location of a Primary School for Boys. Indeed why not of the Junior School which may arise in connection with the New High School which is now being erected by the public generosity of Mr. Kalyan Mal, only some 250 yards away from this spot, and with convenient access to it ?

The location of these two Schools, for girls and boys respectively, is thus no mere minor detail of the present scheme; still less it is in any way a danger or an injury to these gardens. It is on the contrary the reasoned presentment of the very best use which can be made of these gardens for the rising generation; and this not only on the primary or even the secondary level, but also in the interest of the coming reform of higher education, from its present too strictly mechanical, physical, chemical and generally analytic, limitations, towards their renewal by the organic sciences. For the central concept, of all forms of education worth the name, is that of "Life more abundantly."

For School Gardens I shall speak in connection with the proposed new School-buildings, in a later Chapter, when we come to the improvement of the City, Mohalla by Mohalla; while for "Boys Corners" I have already spoken. (page 106).

### Scientific Buildings.

This Girls' School even with its Boarding House adjacent, occupies but a fraction of the long frontage before us. How then best employ the remainder? A plan is sent me for a large and imposing building to house the State Departments of Applied Chemistry and Geology; an imposing edifice, 108' by 63', of three storeys, with pedimented wings and central dome, to cost nominally a full lac, and now-a-days obviously a good deal more. Now applying to this plan the simple common sense of reading architectural elevations, the dome, as section and elevation show, is too low to be visible to the spectator from either the front or the sides, but alone from the back, where there may not be any place to see it. Applying next the plain common sense of planning for use, we find the costly detached Octagon Tower on which this dome is placed, is mainly occupied as a small lecture-room, and this loftier than its breadth, and thus acoustically impossible, and worse than useless for its purpose. Above this, the large and costly room of the second floor, though shown with windows all round, is intended to be used as a photographic dark-room after all; and thus of unparalleled magnitude and wastefulness for its purpose. Above this, the dome itself turns out merely to be an ornamental lid for a water-cistern. This combination, of minimum usefulness with maximum cost, is but a typical instance of the waste which has gone on throughout the past half-century and more, in the planning of public buildings in India and Europe; but this example stands in the first class in extravagance and bad adaptation to its purposes. Mr. King has shown me a tasteful sketch towards reforming this building on architectural lines, of course suppressing the futile dome altogether; but this, as he points out, without sufficiently clear instructions, either as to proposed site or exact working requirements. The suggestion has been made that this building might find place at Holkar College; but this is inconveniently remote from the city, and thus unsuitable for contact with Government offices, the public, and visitors to town. Moreover, the present constitution and working of University Colleges is seldom sufficiently in touch with the research attitude needed in such Institutes; and though this it is hoped, may be altered, the inconvenient situation will remain. [Indeed as the future growth of the suburbs takes place in this direction, will it not be found expedient to hand over the present buildings of Holkar College to the Boys' High School or Women's School and College for that quarter? and to bring up Holkar College to town, rebuilding it, for then

more advanced requirements, upon a site nearer the educational quarter of the city, and thus more in touch with its growing intellectual life? Hence for this or kindred use, I reserve, from suburb-planning, the large field north of the new Normal School, and at present used for haystack purposes; as this is the largest and most conveniently situated site now remaining for future educational developments.]

Returning now to consider the needed replanning of these scientific buildings, and starting with the commonsense and economy of their requirements, it is plain first of all, that if these are to be successful, they must have room to grow. Next that the growth of Chemical and of Geological departments must naturally go on independently of each other; and hence that they cannot be satisfactorily lodged as storeys of the same building, though they may economise by proximity. The work of each, moreover, will be most conveniently done on the ground-floor: and here in Indore, where land is cheap and abundant, but foundations for lofty and heavy buildings have to be peculiarly deep and dear, this separateness is doubly desirable. It is again a condition of such plans as that above criticised, that much space has to be spent upon entrance-hall, staircase and verandas: in fact, in the plan I condemn nearly half the area of the building: whereas, if the proposed site on this boulevard with its northward situation be found acceptable, no verandas are necessary, while north light is best for scientific purposes, as well as for coolness. Again instead of building with an architectural front on three, or even four sides, only one front will here be visible from the road. With one-storey buildings no water-tower will be necessary: while of course the only science which can use a dome is astronomy, and that is not in question here. For both chemist and geologist some back-yard space is desirable, even necessary; and this is not provided in either of the preceding plans, but is here available. Again, if Geology is to come into its full usefulness, it must do so by teaching not only students, but the public; and for this purpose as well as its own scientific requirements, a Museum is indispensable. Similarly Industrial Chemistry increasingly requires a small Museum also.

But both subjects will be inadequate, and necessarily fail of their wide application and purpose, unless in touch with Agriculture; and this also profits greatly by the popular teaching and scientific clearness of an Agricultural Museum, as has been so conspicuously proved to the world by the admirably educative and popular, as well as scientific, Hungarian Agricultural Museum of Buda-Pesth. With this the Agricultural Department may be housed, and also the Bacteriological Laboratory already referred to (page 113), although at first they may also be housed by the Chemist.

But Agriculture has more than geological, chemical, and engineering aspects. It is above all concerned with the plant and animal world; and its Museum Gallery, while opening at one end to the former departments, equally needs to open at the other towards the Museum of Natural History, with its Botanical and Zoological departments. Finally every adequate Natural History Museum leads up to Man, in his place in nature, and thus culminates in an Anthropological collection.

The gradual future development of these Science Museums is thus plain and practicable. It is undeniably large; but none the less necessary for every capital and university city. On this plan however it will be seen that this site admits of gradual growth and progressive extension, while the type of building required for scientific and educational usefulness is independent of all the costly external adornment on which architects so cheerfully waste the scanty budget of science. The Museums here planned are thus wellnigh as simple as are the adjacent Aviaries im-

mediately to southwards of them; for each is but a long shed, left open for the birds one case, and covered in for the scientists on the other; while in each case the public will walk straight along, observing in one case the living spectacle, and in the other the specimens before them, without thinking of, or needing, any architectural adornments at all. Architectural ornament here in fact is for all these purposes as useless as for a cook-house; for which working and storing-place, air, light and cleanliness are the essentials. Yet the general effect and perspective of these buildings will be pleasing.

But with this economy and simplicity, the great outlays commonly associated with Museums disappear, and the reasonable developments of an adequate Museum Series thus becomes practicable—i. e. gradually realisable—even for smaller cities than Indore.

At first then a single museum-shed will suffice, divided by light and temporary partitions; within which chemist and geologist, agriculturist and naturalist can each begin his collection in independence, yet friendly rivalry. After a very few years they will note more space. Then a new shed, or Gallery, as we may now call it—can be constructed further west, into which the naturalist and agriculturist can remove, leaving the whole previous space to be divided between chemist and geologist, as their respective need of space may require. In later years, when collections have again grown, one or even both further galleries can be erected; so that at length we shall have a long range of continuous museum galleries, in which Applied Chemistry, Geology, Agriculture and Natural History can all reach as full development as can be reasonably desired, without ofcourse attempting the full elaboration only possible in the largest Indian capitals. Even the couple of removals, here suggested for each phase of growth and extension, are without the usual trouble and expense; for they will consist of little more than the pushing of tables and cases along an extending corridor.

Ofcourse for each department, as it grows, a corresponding increase of rooms, laboratories and stores, is required; and these, on present plan, are broadly provided for. Moreover it will be seen that the needful spaces are cubed at a fraction—certainly less than one-half—of the expense required for the far less suitable building of the original plan criticised at the outset. And while the whole site is not required, the existing trees will simply remain, and cultivation below them will go on.

The advantage of this location of these scientific buildings as regards the surrounding gardens, and central among all the educational institutions of the City—primary, secondary and higher alike—will be appreciated increasingly as science penetrates them; and similarly the advantage of this situation for all administrative convenience, alike of government offices and municipality, as well as for the increasing intellectual life of the City as a whole. Here in fact, with these gardens, are notable beginnings towards that coming University of Central India in Indore, which we have to examine into later.

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## Chapter XXIII.

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### Indore Garden Schemes as a Whole.

All the preceding various schemes of Gardening need to be reviewed not only as separate examples of the manifold resources of this protean Art, but also in their manifold contrasts, as well as in their variety. They must also be seen as in harmony with the buildings which surround them; with their uses, and their architecture as well; and as completing this, sometimes even surpassing it; for as Bacon put it—the greatest writer on gardens at the greatest period of garden-making, both in West and East,—“Men build stately before they garden finely, as if Gardening were the greater perfection”. Thus the central Palaces of the city, the Old and the New together, are for the first time given their full dignity and status, as the point alike of start and of convergence of their Cypress Avenues and Gardens. The monumental Chhatri Bagh, where the old Rulers of these Palaces now abide in memory, may now simply be purged of its decay and disorder, and fitly adorned with the trees and flowers which old and venerable traditions have consecrated and made beloved of gods and men. Yet this Park, with its many gardens of ancient religion, is not complete without that admirable expression of the partnership, at once material and more, between man and his oxen, and of woman and child with their gentle cow, which is not only one of the glories of Hinduism, but one of its best lessons to the wide world, in this respect everywhere less developed. For, as a wise and humorous pedagogue put it to me the other day.—“While one of our Churches sets out for Paradise in its reserved first-class compartment, and another in its balloon, and the Mahomedan mounts his prophet's camel to seek the oasis beyond life, the Hindu quietly lays his hand on his cow's tail. He ploughs on behind his oxen, and quietly milks the gentle and sacred cow, and so finds paradise here already.” Only with caressing words does a cow anywhere yield her fullest to the milker; but here in India there has been most of love and understanding between them both. From this chosen and rightly tended Herd then, as at once the beginning and the culmination of any truly Indian Zoological Garden, we cross the River to the other domesticated animals, the Elephant and Camel, which have been also in their way domesticators for man. For in this age of machines, no main truth of the history of Civilization more needs recall and emphasis, than that human progress, has been, and will again be, more deeply in terms of man's relations with animal and plant life, than even with his tools and his machines, of which the best of all are as accessories of this. But while the animals of the peasant have thus the foremost significance, those of the hunter, especially as he evolves into naturalist, have also their place.

And as for the Goals' enclosure of the Sacred Park; I ask the Zoological place of honour, so for the Horticultural Gardens the first place is surely that of the Vegetable Gardeners of the opposite bank towards the west, so admirably tilling their common domesticated plants, as the corresponding simple and elemental correlation of labour and life. Yet from these simplest, and oldest, yet best of gardens, we pass, as with the Animal Garden, to our varied collection and displays of Plant life and beauty. Our Palm avenues, Fruit garden, and varied pleasantries of pools and lawns, of walks and seats, of shade and sun, express the same organic unity and variety. Again the Key Gardens, with their phases of life, and its forms in growths and seasons, in their variety of characteristic forms and ways of life, all help to express such light as we have upon the long evolution of life upon the world.

Yet once more, as the prime and best use of Farming is to make, maintain, and develop good Farmers and good Village, so also with our Gardens here, which cannot be fully successful—even in their own beauty and their pleasures to their visitors—beyond the level of the Gardeners themselves. Hence—too little though this is commonly realized or remembered—the level at which we can plan, and others build, and the gardeners themselves maintain and develop, their own little Mohalla will be no small measure of the initial success of this garden scheme, and of its permanence.

In all true gardening, as in every other art, the artist's labour is also his play; yet simple play has also its place. Hence the Club with its Tennis-courts; and also the Sports Park beyond, for vigorous youth; and the Boys' Corners behind all.

### Woman's Share in Gardens.

But in all such schemes of public beauty and pleasure in India, the domesticated—surely a little over-domesticated—woman, is too little provided for. In this Garden scheme, should not there be *Parada Days* every week, or perhaps certain *Parada Hours* every day?

Enquirer into the Origins of Civilisation tell us that the first gardener was woman, and that the little patches of growth arising from dropped seeds around her cavern or hut were cultivated by her, and then hedged in from beasts and robbers, and guarded for her, by the young men. Their active initiative and strength then led them to extend her garden farther, and to clear new patches for it, until they thus developed fields, and so were started in agriculture proper. Thereafter through civilisation her influence has gone on; for within the garden, the material wants of life and its ideal needs are ever meeting and harmonising, as in her own nature, and its home-making accordingly. And while in the present scheme, the Zoological Park may most appeal to the boy in every man, these varied Gardens should have their interest and place for woman, who is also in every girl already. Hence the proposed *Girls' School*, which may complement that at the north end of the City.

### Return to the City.

For the various buildings for the needed and coming development of the Sciences, pure and applied together, with their laboratories and museums, chemical, geological, and biological, (Chapter XXII) I need not again plead.

Nor yet need I recall our most general conception of the City's future, as em-parked, boulevarded and gardened for beauty; and this throughout its whole breadth and length, from the united Park of Palaces and those of Water-Reservoirs onwards down stream, to the Industrial Town and beyond, with all the many miles of uniting River and Nulla banks, from *Sherpur*, *Bilavli* and *Palasia*, to *Suklia Bridge*. (Ch. XXI.)

We may return therefore to the City, for its improvement in detail, quarter by quarter, and thus begin a new section of this volume. In course of this we shall come to the *City Gardens*, of utility and public health, by which I propose to abate, in fact essentially to supersede, the engineering extravagance, and the horticultural waste, of the conventional type of *Drainage System*, which in a preceding chapter (VIII) I have destructively criticised. But after all these Chapters devoted to Gardens designed towards palatial dignity, to civic beauty, and to scientific and educational uses, I shall, I trust, no longer be feared as introducing into any neighbourhood the horrors which have become too widely associated with the very name of *Sanitation*.

## Chapter XXIV.

### Improvement of Indore City Quarters:

#### I. Siaganj and its Corn Trade.

While our preliminary Study of Indore (Chapters I-III) necessarily traced the city from its beginning in Juni Indore and thence historically onwards into the modern City, the discussion on which we have now to enter, of the improvement of the present City, quarter by quarter, may most conveniently begin with one of its most important economic and commercial ones, that of Siaganj. And this is also convenient, because it has at present a very distinct isolation on all sides, and will thus specially serve to make clear methods of planning, which may afterwards be applied in various other quarters less distinct from each other.

#### Siaganj Area.

Siaganj proper lies midway between the large Hospital Compound on the north, and the northward loop of the Residency river on its south. But for the present purpose, the area considered is taken from the Electric Station beside the Railway Under-bridge and the adjacent River Causeway, to the Normal School east of Hospital. And with this may conveniently also be included Chuna Bhatti, the street continuing Siaganj westwards, as also the large Mohalla of Ranipura, to its south, and the corresponding but smaller Ranipura (Chumar Mohalla) on the north. The area thus includes the Hathipala Road, down to Hathipala Causeway, and the low-lying open land west and south of Ranipura. No area in the town has thus clearer geographical boundaries on all four sides.

In North Ranipura we have mainly Chumars, a few of them tanners, but mostly shoemakers. In the larger South Ranipura, they are mostly Cotton Mill workers, employed at the State Mill, or at the Mills of Industrial Naya Indore a mile or more northward; but a good many are also Hamals, porters and labourers employed in the mostly bulky corn and iron trade of Siaganj. The main street between these, continuing Siaganj westwards, is mainly a food-bazar, in contrast therefore to Siaganj itself.

#### Siaganj Corn-Trade and its present Expansions.

For here, owing to its important economic privilege, of relative immunity from taxation, there has been localised and attracted the Wholesale Corn-trade of Indore and its district, and with this an increasing proportion of the Export corn-trade of adjacent States. The Iron-trade has also centred here; and the busy smiths of Loharpatti are thus also a group whose expansion may be reasonably expected with the opening years.

The privilege which founded the commercial prosperity of Siaganj was intended strictly for wholesale trade, while preserving the retail corn-trade in the City, at Malharganj especially. But in fact it has come about that the Malharganj retailers have still a good many wholesale corn-merchants among them, though these naturally more or less largely do business in Siaganj. Conversely the Siaganj traders are also more and more becoming retailers; and thus they enjoy, through their freedom from taxation, either an extra profit, or a possibility of so far under-



selling the corresponding, but fully-taxed, shops of the town. Thus dissatisfaction inevitably arises in the town, while the fiscal authority loses on all this retailing in Siaganj, and has even some reason to complain of what practically becomes smuggling between them.

Beside these elements of commercial and fiscal confusion, there is also too much material confusion. Siaganj was, till very lately, the one fine wide road and boulevard of all Indore; but now, though still comparatively broad, it has been narrowed on both sides, and totally marred in its appearance, by the erection on both sides of a row of small sheds and godowns, mostly of corrugated iron. These unsightly erections however are necessary, on account of the urgent need of the growing trade, which has to be carried on in quite unsuitable buildings, originally more or less planned as dwelling-houses, with ordinary small shops in front, and which are now quite inadequate for the large volume of their daily transactions, and still more unsuited to the large strain upon them which is made by every harvest. The permission given by the Municipality for these encroachments on its thoroughfare was thus a necessary one; but it has been protected from conveying any permanent rights, with the intention of resuming the previous breadth of the thoroughfare, or at least most of it, as soon as re-planning, with the necessary rebuilding, can provide better premises for the Siaganj traders, with suitable godowns for them, but now behind their buildings, instead of in front of them upon the public road.

Towards abating this congestion of trade, the square of Hamalpura on the northside of Siaganj is at present being rebuilt, as a new block with large shops on all four sides, and dwelling houses above, and with new wide streets to east and west. The original plan even proposed a middle street of shops between these two; but this would lead to excessive congestion of the whole scheme, with consequent bad effect on business accommodation, and on the health of the families living above the shops: hence I have recommended the omission of this portion of the scheme. Better godowns can thus be provided behind the shops; and an internal garden square left behind them, or an open space with a few trees, for the health and enjoyment of this already sufficiently dense population. Here then in advanced progress is a beginning of the needed re-organization of the quarter. Of the re-building of Siaganj itself, and this to the height of four storeys, (an altitude which need not be continued, if the proposals for improvement in this chapter are adopted), an example is just being completed. And I understand that quite a number of further applications are in preparation, and coming before the Municipal Committee. But as each new building will obviously contain a large and attractive shop, the question of settlement of the fiscal difficulties already mentioned is obviously desirable, as this must more or less delay improvements till it is settled by the proper authorities.

### **Residency Corn-market.**

The question of the Corn-trade is further complicated by the competition of the Corn-market of the Residency. For here has grown up a commercial state of matters not originally contemplated or foreseen either by the Indore Government or the Imperial one; and, it now appears, with loss and hardship to the former. Indeed was it not to survive against the competition of this, and to keep some of Indore's Corn-Trade for itself, that this privilege of fiscal exemption had to be given to Siaganj?

With every goodwill to the entirely friendly Embassy of our eminent and faithful Allies the French, Londoners would naturally feel it a hardship if that

should develop an active and seriously competitive market within the area of its Residency, extra-territorial and sacredly inviolable as this is. And though such a matter might conceivably have arisen in the same way, as a natural growth, quite unnoticed by either of the Governments concerned, it would be felt as a growing cause of difficulty; and therefore would be amicably arranged, no doubt in some gradual way, and with due provision for all the interests concerned.

### The Problem of Planning.

Returning now to present conditions, we see that with no less than three Corn-markets (for we must not forget Malharganj) all keeping each other in unstable equilibrium, planning is not easy. Yet their present planning and general conditions makes them all more for less liable to plague, that main and obstinate curse of Indore; for the staff of life and the literal staff of plague ("*Bacillus pestis*", its fatal germ) are hard to separate in India. In every way therefore the problem is largely a planning one. For Municipal regulation, State taxation, and even Diplomatic arrangement, will all require their resultant to be materially expressed in the planning and working of this main centre of the corn-trade of Indore.

Beginning then with what may be the least difficult to accomplish, will not the whole of the Indore Wholesale Corn-trade become centered in Siaganj, at any rate if this can be improved and extended enough for its accommodation? The present waste of time and energies which goes on between this and Malharganj on the opposite side of the City, not to speak of the wear and crowding of the streets between, would thus be abated. How this may best be done without undue hardship to Malharganj, and even with improvement both of accommodation, and of public health in that area, may be left till we come to discuss its quarter. Returning then to Siaganj, its position, as the best of centres for this growing trade, will be seen on Plan to be aided by various improvements of communications, and these not only in its immediate neighbourhood, but also from the West, South-west, South, and South-east of the City, and even in some measure from Northwards as well. Thus the cartage of corn from all directions will be shortened and improved, and the present congestion of some of the main thoroughfares of the old city diminished.

### Cart-stand and Corn-market.

For this great and bulky seasonal traffic, there is at present no adequate accommodation; and the carts awaiting purchasers of their loads thus congest Siaganj and the Hospital Avenue north of this, and spread north and south on the roads parallel to the Railway. These carts plainly need centralising into some large space off the thoroughfares they at present block. Where is this space to be found? On first impression the large Ginhing Factory compound north of Hospital Avenue (opposite the Station and east of Women's Hospital) seems suitable, and especially as this is soon to be vacated through the removal of that business northward to the new Industrial Town. But this area is rather far away from the main business which tends to centre on the southside of Siaganj. Here fortunately a considerable area is available for Corn-market purposes, and this of substantially larger area than that just considered, at any rate if and when it can be enlarged. For this the possibility lies in the addition of the extensive Compound belonging to the State, and at present occupied only by a Distillery store and its few godowns. For this distillery another not less convenient site can easily be found when necessary. Moreover this whole neighbourhood can thus readily be improved—not without expense, but still

an expense which the increasing Corn-trade would reward. Hence this whole area is shown re-planned, as the only one which admits of the provision of an adequately extensive series of corn Godowns, and these along both sides of the needed new Railway Siding. Nothing short of a replanning such as this will really provide for this growing trade; but with this Indore should more and more become the leading Corn-Exchange and Export centre for Central India. For the needed Plague-precautions I shall plead later.

### Iron Trade.

For the Iron trade the siding may be extended, if and when necessary, into Loharpatti. The Smiths' large compound is however shown on plan as slightly narrowed, to admit of improved Housing, when rebuilding becomes possible. A little open space is provided at the expense of several houses further west, behind the houses of Hathipala Road, which will thus obtain space for rebuilding. For small house-holders thus gradually removed by these improvements, accommodation is shown around the large Compound, soon to be vacated, east of Women's Hospital. To some extent re-housing is also possible along the east bank of the river south of Siaganj; while, as we shall see presently, with access to the adjacent Peninsula a new housing area is opened for all classes.

Return however to the west end of Siaganj. Its suddenly narrowed continuation westward is now shown on plan as widened—and by moderate demolitions—into a spacious square, into which Hathipala Road, Hospital Avenue and Theatre Road all conveniently open. Ten new shops are shown on the south-west, and four on the north-east, which will largely help to pay for this much needed improvement. The small, but busy, Vegetable Market, at present merely encamped on the north-side of Siaganj, is shown provided with a moderate, but I trust sufficient, Market-building on Hospital Avenue, but visible from the Square. In order not too seriously to narrow this Avenue, a small concession of ground is needed from the large Hospital Compound, which is at this end quite vacant. This will also afford the requisite space for the Tonga Stand which is obviously needed in this neighbourhood.

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## Chapter XXV.

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### City quarters Continued.

#### II. West and North of Siaganj, Chuna Bhati &c., West of Siaganj.

We may now again set out westward from this new Square. The improvement and slight widening, at least as shown on plan towards the north-west, is desirable, and this not only in the interests of amenity and better communication, but also especially as a due provision for the continuous growth of Siaganj, and as the needed measure for preventing the renewal, a few years hence, of its present congestion.

To provide for the future re-building more ground must be provided for the houses on each side of this growingly important thoroughfare; and hence a few more small houses, mostly kacha, have to be removed as occasion may require. To provide for the small food shops, while at the same time making some room for larger business, a small Shop Square is recessed on each side of the street. And

with the widened opening which the south one of these gives into South Ranipura, near its northern mosque, its street may gradually also come to have food shops for this populous mohalla.

### South Ranipura.

This large Mohalla of Ranipura is in comparatively good condition; and with considerable open space between its fairly regular rows, especially as we proceed southward. Thus only some tree-planting is required, as shown on Plan, to give a very considerable degree of amenity and pleasantness, alike for rest and play. A few obstructively situated houses are removed, but these are compensated for, by new sites on the west of the village.

For the needed School of this village, the large site next the River on the south is provided. This building, with the two monumental old Chhatris a little northward, will thus furnish the principal features of an attractive view of Ranipura from the new Rampart Boulevard. Opposite is a seat overlooking the River, and a walk is led along its bank, from Hathipala to the Garden. The present bare and conspicuous Latrines, on the large open space between the mohalla and the River, will be removed west, to the Garden edge. For the bulk of drainage etc. of the village, and indeed for that from a larger area, there is open and cultivable space to west and south-west, on the low ground towards the river. Into this Garden may be conducted a sufficient amount of sullage-water, from surface-drains actual or to be constructed.

### North Ranipura.

A few houses are suggested for removal, but about as many new sites are provided in the north of this Mohalla. Separating it from the Theatre and its Garden, runs the large open Nulla. To abolish the present stagnant mosquito-breeding-pool, a sluice should be fixed at its Outlet on the river, and kept close throughout the dry season. The picturesquely sloped banks can then easily be planted with flowering shrubs, while a Path, with seats, on the village side will make this a pleasant place of resort, alike for old and young. Mr. Tembe, who is already in charge of the Theatre Garden, is also willing to plant the banks; and they will thus form a picturesque outlook for the Theatre-Garden, which has at present no view on this side.

### Hospital Nulla Garden.

Throughout its whole course of 300 yards through the Hospital Compound and for another hundred yards beyond this, up to the large open space at the east end of Topkhana, towards the Railway Crossing, this Nulla is in an unsightly and malarious condition. Hence its improvement has been often considered by the Hospital authorities; and even its filling up suggested by some. But this would be not only a costly, but an impracticable endeavour, since it is needed to bring down most of the storm-water east of the Railway. A simpler treatment is therefore required. This can be inexpensive and productively given by slightly widening it at the top, and shallowing it at the bottom, and then terracing it on each side as a Vegetable and Fruit Garden. Thus many advantage will follow: first the removal of the present mosquito pools and squalid untidiness, with the utilization of all the sullage and drainage waters which run in from the Men's and Women's Hospital buildings on each side, and also from the houses and flour-mill further up; while if these supplies sometimes run short there are no less than six or seven wells available, all near this Nulla.

So far for water. To fortify the sullage and drainage manuring of the long lines of Plantains and Papayas, whose splendid foliage and exuberant fruit should thus fill up and beautify this as present barren and unsightly Nulla, the present Hospital Latrines along its banks are also available; since these only need their product to be plunged and mixed in earth by their sweeper, to raise these crops to a fully Chinese level of abundance.

Here then is the very way, and the best possible spot, for a thorough and searching experimental test of this principle of Outlet Gardens, which has been above advocated, and planned for in the Garden Suburbs and the Industrial Town. For here it is under the skilled and vigilant eyes—and noses—of the Medical Staffs of both Hospitals, and also of the large public who visit them; and above all, under the supervision of their eminent Director, Dr. Bhandarkar, who appropriately, and fortunately for this experiment, is also Medical Officer of Health for the City, and the Health Adviser for the State. If then this experiment justify itself to him, there need be no further fears or hesitations in adopting it extensively throughout Indore City, and on suitable sites in its Mohallas, as indicated upon their respective Plans.

As regards the question of the necessary skilled initiative and superintendence of this garden, I am again fortunate, even beyond my initial hopes, for this testing of this drainage scheme. For here Mr. Tembe again most kindly consents to make the necessary beginnings, and all concerned may therefore rest assured that he will not leave their continuance to any incompetent hand.

#### **Small Public Garden, near Railway Crossing.**

So now having got this long Nulla planned into order, from the River, first between Ranipura and the Theatre garden, and next through this long Vegetable garden, we may now, with a good conscience, finish it as it runs through the vacant public space, by laying this out as a Public Garden, completing the fine Topkhana Road, and improving it as a promenade by giving it this additional attraction for public leisure, in the evenings especially. By extending the platform of its fine old Well we may cheaply have a Band-stand, from which the admirable music already given in the Public Hall opposite may sometimes reach a wider public. Yet with all this public gardening on either end, I venture to predict that the greatest exuberance and even beauty will be that of the homely and healthy vegetable garden of the Nulla. Moreover, along its edges Mr. Tembe proposes to plant rows of his fine variety of oranges, and outside these again roses, so that our experimental garden will thus be fair to see, and fragrant also; and this in the right way—the one its critics, who suffer from unpleasant association of ideas with this type of gardening, as yet fail to foresee, but I trust will soon be the first to appreciate.

Moreover, with oranges and flowers abundant in every Hospital-ward, for thirsty lips and eyes, the coming and going of patients from all parts of the City will soon make the propaganda of such gardens. And I trust of these for Schools as well. I am pleased to learn that the Normal School building, soon to be vacated for its new building, is to become an Elementary School, convenient to this whole Garden area.

## Chapter XXVI.

### City Quarters Continued:

#### III. Improvement of Juni Indore.

##### Historic Decay and Recent Example of this.

Here for the sake of dignity and interest of this ancestral Indore, let me first recall the Historic Survey with which we started ( Chapter I ). Yet here, as in all old-world towns and cities, history too much seems ended. It is indeed manifest everywhere, but in its static aspect; that of seeing things fixed as they now stand, but as no longer in movement, and too much leaving active life and change to the busy modern world outside and beyond. Thus, though much of the past holds firm, much is also in decline or decay, or even in ruins; and little is built to replace these. What survives is maintained by inheritance; yet this at the mercy of modern circumstances.

Witness for conspicuous examples of this, the extensive ruin of the old Mohamedan Mohalla which occupies the middle of the northward Peninsula between the Rivers; and further the total ruin and disappearance of the smaller Hindu Mohalla which formerly occupied the point of the Peninsula beyond the Mohamedan quarter; but of which only the Temple group of buildings now remains.

How did the ruin of these two Mohallas come about? Essentially by the building of the River-Bund, quarter of a mile down-stream, beside the Municipal Office garden. To this first-rate improvement, the whole central City owes its present river beauty and landscapes, all the way upto the Causeway Bunds on each river, at Hathipala and Harsidhi respectively. The City naturally saw and felt the benefit of this, and appreciated the improvement accordingly. Except the working inhabitants of this Peninsula. For they formerly easily forded both streams, especially from and to their northward Nulla road opposite the Hospital Nulla, and thus towards Siaganj or Krishnapura Bridge on either hand, or northward. This central position was highly convenient for working people, who do not mind wet feet, and it was protected by the river mud which others do not care to cross. But when the Bund raised and deepened the Rivers, neither they nor their carts could get across. Their central position suddenly became a remote one, for now they had to get round all the way by Hathipala or Juni Indore Causeway, and this without a proper cart-road through their peninsula. The Hindu bullock-owners and carters at its point were thus quietly ruined here; and so departed; leaving their houses to collapse: while in the middle Mohalla of the peninsula only those Mohammedans have lingered on who have been able to endure the handicap against them made by this improvement.

Now in this case the bullock-carters, who formerly forded the stream, ofcourse perfectly understood the injury which they had suffered, through this otherwise first-rate and irreproachable piece of town-planning improvement; and so they may have been vocal enough to obtain some compensation for the disaster thus inflicted on them; since this was so obvious. But, generally speaking, the people do not thus clearly understand what happens to them through our improvements, any more than do we who inflict them; and this ofcourse applies to much more than town-planning. But there arises in them a vague and unformulated resentment, and with this a correspondingly deep and thorough distrust of improvements generally. This is especially felt by the women, and so transmitted to the children. This in turn appears

to us, the educated, progressive and improving classes, as "blind conservatism," and "deep-rooted prejudice:" and these are our conventional explanations to each other of the passive resistance which we so frequently encounter in course of our cheerful and well-meant infliction of further improvements: and so on generally.

### Moral for Town-Planners and their Public.

Yet the above instance is only the simplest and most obvious of examples of the unforeseen—the mostly permanently unseen—consequences and reactions of Town Planning Improvements, more or less everywhere, and often more rather than less:—*i. e.* not, as in this case, benefiting the majority to the disadvantage of a minority, but too often conversely, for the benefit of a minority alone, or almost alone. Witness the above instance (pages 61-62) of the impetus which is everywhere given to even the most wasteful of Drainage Schemes by the natural desire of the well-to-do for western conveniences; and of such there are now-a-days many kinds. But the question is a still more general one, as is becoming manifest in many cities.

### City Life in its Inter-relations.

Modern Administration, even in its advanced western forms, had acquired its present division of labour, with its aim of efficiency in each department, irrespective of effects on others, long before the evolutionists of nature and society had at all reached comprehension of these—as not machines, of which the parts are separately constructed, and may be so far separately kept in order or altered—but as a "Web of Life" intricately inter-dependent throughout, and this in many ways—tens, hundreds, probably thousands of ways—of which we only as yet discern the most obvious. Thus in the kindred sciences of plants and animals, though the boys noticed the butterfly on the flower, they grew up and learned at college, the one to dry the flowers as a botanist, the other to pin the butterflies in drawers as an entomologist. So distinct henceforth were these studies, that it was one of the most memorable achievements of Darwin, as returning child, to discover that flower and butterfly are one life-system which have evolved together; and which thus carry on the beauty of our gardens, and largely their usefulness as well. And from this simple inter-relation Darwin went on to demonstrate the deep dependence of agriculture upon the humble earthworm, and so on to more intricate and unexpected relations, like that of cats and clover crops.

Now the study of Social Science was once supposed—and in its University centres, say the London School of Economics, the Oxford School of Politics, the Cambridge School of History, and so on, is still supposed—to be essentially based and viewed in this or that particular department, economic, political or historical; while from these again the Medicine of Edinburgh, the Engineering of Glasgow, the Technical eminence of Manchester, the Agriculture of Dublin, or the Town-Planning of Liverpool are all again supposed to be distinct, as also from each other.

Yet on the contrary, the re-union of all these studies is at hand. The social sciences have of late years been approaching a thorough renewal and re-union; and this from the re-interpretation of Rural life and occupations, and of their mingled evolution and deterioration as City-life. In the City then, in the Town, and in the Village perhaps most plainly of all, the above-named and apparently isolated studies are but of so many life-threads and life-aspects. Towards such enquiry and interpretation for this City, the present volume, with its successive, yet associated, treatment of many of these aspects, is thus an endeavour towards understanding its web of life; and similarly its plans towards weaving this onwards.

### **Application of the Preceding, to Recent Town-Planning Scheme.**

Now, with this conception in mind, let us return to our Town Planning, —though even in the most apparently abstract discussions of these Chapters we have never left it.

Among the Schemes and Plans given me for Report by far the ablest and best is that of the recent Town-Planning Scheme for Indore, by the most skilled and sympathetic member of the New Delhi Planning Commission. In the early days of my study of Indore, corresponding to those of his whole visit and more, I was much tempted to follow in his extensive provision of new thoroughfares throughout the City. For if such thoroughfares be really wanted, really necessary for the city's activities and developments, their routes are not ill chosen, but well, and even economically. Thus instead of the disastrous and wasteful practice of widening business streets, still too commonly practised in India, we shall see more fully later that he cuts new ones through the least valuable and most congested Mohallas; and these improved communications seem at once practical and sanitary, and full of possibilities for seemly architectural execution as well. Yet in such necessarily partial Town-Planning, of new thoroughfares alone, and these within the crowded city, there was no time to investigate the results of the proposed changes upon the life, work, prosperity and general conditions of the people affected by these improvements, and still less for provision for their re-housing and re-establishment elsewhere. But the more I learn of cities and their life, the more I am compelled to recognise that more than bullock-carters may be ruined by our improvements, even the best. But as the motorist stops to help when he has run over a man, however he may have been in the way— why not also the town-planner, and city improver? Still better, let us go cautiously.

Of this scheme, as we shall see shortly, a single section is cleared, that for the avenue from Old Palace Square southwards, to wards the river. I accept and appreciate this, as at once of communicational value and architectural possibility of effect worthy of its eminent designer. Yet fuller study of the City, and of its incipient Extensions, both into the new Industrial Town and into the Suburbs, has fully convinced me (1) that this extensive and costly system of proposed new thoroughfares cut through the Central City can now in the main be dispensed with; and these for various reasons, which will become apparent as we proceed—and further (2) that the essential necessities of improved communications can be more simply and more economically met in other ways, and these not less direct in distance, nor of less speed in time. And (3) though with less change upon existing architectural aspects and perspectives, with even more again of beauty to the city, as a solution of the needed Through Communication, by way of Juni Indore. For in the apparently out of the way Juni Indore there lies the best solution of the problem of through communication between west and east of the city; and this with improvement for those of its central area as well.

### **Express Boulevard by way of Juni Indore.**

For communications, our modern ones especially, the problem is not merely of shortening distances, but of saving time; and nothing so much wastes time, and this even to the exasperation of the most leisurely bullock-driver, as do the Level Crossings of railways; yet Over-Bridges are too expensive, and laborious as well. Hence the great value of Under-crossings, when we can make or find them.



Yet the suggested (and already considered, page 88) deeply sunk Undercrossing to replace the present Level Crossing between Topkhana and Tukoganj, by way of the present Nulla, is obviously not to be recommended, save as a last resource, for the more crowded future; and this need not necessarily become so crowded. For here I propose—as an alternative way of lightening and expediting this east and west traffic—that of making a new first-class Communication Route between the City and the Railway Station, the new Suburbs, and the Residency Town by way of the existing Under-bridge near the Nasia Temple and Dharmsala, towards the Electrical Generating Station, and thence over the Causeway to Juni Indore. For with this Road slightly improved, and the River Causeway a little raised and widened, we have already a straight road to Hathipala Causeway Crossing. Instead of turning south through Juni Indore to get round its labyrinth to the City, as at present, let us now continue this as a new Road—in fact a short River Boulevard along the old Mohammedan River Rampart, north of Juni Indore. Following the angle of this Rampart, where the river turns north we may renew the old path beside the river, along the eastside of the Peninsula, and also improve the road to a central point near the end of the Peninsula, which brings us to the future group of Theatre, Library and Museum, which, as we shall see in a later chapter, has been already and rightly selected for these purposes by the highest authority. From this centre we have at hand a projected future Bridge over each river; which will thus more than restore this point to its old central position. See Plan.

#### **New Through Boulevard continued to Ara Bazar.**

So far well; but we must now return to our needed route, the main problem with which we set out, that of rapid and direct communication with the main City; so we return to the angle of the Rampart, and thence continue our new westward Boulevard nearly straight, cutting it through the ridge of the peninsula, south of Ganesh Temple, and north of the old mansion overlooking the river, which we previously admired (page 3). Here a new Bridge is needed, with a cut on the City side, but at first through a field only. A first hope is naturally to continue this new road route through the street of Gautampura, to its meeting with Ara Bazar. But as this is too narrow, and as its widening would be too costly, it is both better and cheaper to let this old street alone, and to make a fresh cut a little further north—although inevitably at the expense of several houses—to come out upon the open space behind the new Temple. Of this I am hence reluctantly compelled to ask the removal of the small garden, between its outer railing and its inner essential one, which I hope may be granted and forgiven, in view of the utility and beauty of this new thoroughfare. To this the Temple will give and receive, a vista. And also, this loss of the garden may be balanced by the more than equivalent improvements at many Temples elsewhere.

Thus here we have reached the foot of Ara Bazar, opposite the entrance of Machibazar; and this entrance is being improved and widened in connection with the erection of the new School at its northern corner. How this Boulevard is then continued westward, through the Chhatri Bagh, to link up with other improvements to assist further development on that side of the City, and also to furnish an express route to the Lal Bagh Palace, is plain on Plan; and we shall see as we come to these.

#### **Housing Requirements, and New Suburbs of Juni Indore.**

Return for the present to Juni Indore by its new Bridge, and now note along its course the new sites which this Boulevard admits of on its west and south, overlooking the Residency river; for these may now be attractive to people inhabiting the

crowded City. But these sites are few—25 or 30 at most—and as the need is great, effective demand for far more than these may soon be developed; and indeed is obviously beginning. For even that the much less crowded and confined traders of Siaganj are now awakening to the advantage of new homes in fresher air, and with freshening outlooks, is evidenced by the fact that the small Peninsula of the river-loop east of Hathipala has already all its sites applied for by denizens of that area, indeed by a single group of these. The further extension of this small suburb southwards, between old Juni Indore and the Railway, is thus being already justified, even for Siaganj itself; so that further Suburb-planning, with the whole city to look to and draw from, is plainly justified. Hence the large suburban development shown on plan, of what we may call New Juni Indore, upto the Railway and as far as Bhorkuwa Road crossing. All this may readily be taken up—why not even within a year or two—and this the more easily since the ordinary way from the City, by the Juni Indore Causeway and thence south-eastwards, to the Railway-Crossing, and beyond this towards the Residency, is sufficient for ordinary purposes. Yet, as the plan shows, this main Road is supplemented by widening the road made some years ago for the Slaughterhouse.

Beyond their Railway crossings, the two main south eastward roads, towards Chitavad and Bhorkuwa respectively, are conveniently situated for that large development, from small Plague Camps to extensive Garden Suburbs, already described in Chapter IX. Finally from all these Juni Indore suburbs the Plan shows ample communications with the larger Bungalow Suburb between Bhorkuwa and Manikbagh roads, facing the Horticultural Gardens, New Club and Sports Park, described in Chapter XVIII. We thus see old Juni Indore with all this large suburban development around it, as a larger Juni Indore. Yet noting the equal convenience of these suburbs to the City, to the Railway, to Holkar College, to the Residency Town and to the country, this large area may also be looked at by Siaganj people as a great and varied extension of Siaganj, and also by the main City as South Indore. Hence, from such convenience of communications in all directions, and its general amenity, of new homes with old trees, and new avenues and gardens, this new quarter may increasingly consider itself the most attractive portion of the City.

One drawback at first will be its distance from High Schools; but just as Primary Schools are being provided, so a new High School will be in time required; and this I plan accordingly in a central position for all these new extensions, north of their proposed small Park (north of the eastern of the two large Tanks), of which the north end may be reserved as the School Playground and School-Garden.

This situation, midway between Bhorkuwa and Chitawad Roads, is easily reached from old Juni Indore also by these roads, and also from its new suburb north of Railway by an existing undercrossing.

### **The Renewal of Juni Indore.**

It is interesting to see Juni Indore, the originally well-chosen beginning of the present city, thus again renewing its development towards the opening future, and in convenient reach of existing educational resources like the College, and the new Schools, and also the projected ones—High School, Park and Garden System, and Library-Museum-Theatre group. We also noted (page 2) already beginning in Juni Indore itself, the development of growing links between its best traditions and its opening outlooks; and so may hope for public support and use for its Gnan Mandir, Ganesh Ashram, and kindred endeavours.

On similar lines it is interesting to note that the existing Silk School, and our proposed New Hospital, with their proposed Bacteriological Laboratory between them, are just on the western confines of old Juni Indore; and here may be viewed as renewals of its Brahmin traditions of physical purity and preservation of health, upon the modern scientific plane. Even the renewed use of the Rivers is being provided for by their purification as now planned for, and with the planning of additional Bathing Ghats. So too the proposed adjacent location of Boat-houses beside the island is but a modern contribution to this reviving appreciation of the rivers.

### Drainage Scheme in Juni Indore.

Now, after Chapters on the Gardens, in which the life of plants and animals, in nature and in domestication, is sought to be expressed at its fullest, and even with its ancient sacredness renewed—and after this long-laboured endeavour first to understand and appreciate this old Brahmin town, as truly a little City, and next practically to plan out its improvement and its renewal as a leading development of Indore—I return to the humble problem of its Drainage; and thus, as always, after Town-planning instead of before it. How far then may I now be successful in obtaining a full and open-minded reception of the Garden Drainage scheme, with which I desire to reduce, and to replace, as far as may be possible the too costly type of Drainage scheme, such as that analysed in Chapter VIII.

And as the first of these Town Drainage Gardens has been definitely chosen so as to be directly under the eyes and noses of the Hospital Physicians, and especially its Director's, as also the Public Health Authority for Indore, so this second one, for Juni Indore, similarly invites and challenges the corresponding vigilance of the neighbouring Brahmin community. The present scheme—which is essentially but a renewal of the very oldest sanitation and economy of civilized men—will thus have the benefit of the fullest possible criticism, from its beginnings upto its working development continuously thereafter.

And as both these Drainage Gardens are outside the main City, yet within easy reach and inspection of this, there need be no one, from the simplest sweeper to the highest governing authorities, who may not thus have a clear opportunity of judging the working of these gardens and their products, and of forming his own opinion accordingly of their merits, as compared with those of conventional Drainage systems; and these from every stand-point, as well as the economic one, of capital, expenditure, and return.

Some expense must ofcourse be undertaken. Some moderate fraction of the ordinary drainage estimates, like those analysed, must be provided for the necessary preparation of the ground, by levelling, grading etc., and similarly by the making of necessary drains; though for the most part the present surface ones, improved a little, may for a time suffice. Let us even grant that at the start of tillage and planting, mistakes may here and there at first be made. Thus when we begin to run in the sullage water to our plants, the exact quantities which this particular soil can take up, and at what exact intervals, can only be determined by experiment; and similarly with the selection and culture of the crops most suitable. Again, though the scheme will have skilled and picked direction and supervision, (page 81) the Garden Superintendent has to train his labourers and his sweepers, to develop these as fast as may be to the level of skilled gardeners. All this requires some time—though far less than that needed for digging sewers through the streets of Indore, and largely ten times deeper; still, in absence of this practical

comparison, we may be sharply criticised, and doubtless sometimes even deserve it. Yet on the whole, as we hope in the main efficiently to work, so we may reasonably hope to be fairly if strictly judged. An open drain may still smell, though if regularly flushed less than at present; or again, the humble operation of earthing the sweepers' daily contribution to the soil, though promptly effected in the most retired portion of the garden, cannot yet be made completely imperceptible to any who may visit this point while he is at this work. So while maintaining and repeating the above invitation, and even challenge to all comers, we must also ask such proposed and literally public inspectors— alike in fairness to themselves and to the experiment, as well as in more trained strictness towards it— to be meantime preparing themselves, by exercising their own eyes and noses forthwith in observation of such matters at present, on Indore and in their own neighbourhoods, as well as in India generally! In short of its present sanitary condition, of sweepers, appliances and their working; and also to utilize the opportunities which a visit to any city of conventional drainage may give, and this from Bombay to Lucknow or Calcutta. Each will then realise the present difficulties of Indore; and while he finds the task of its sanitation is not an easy one he need covet— and also that it is by no means neglected by its present staff, who are working under great difficulties— he will also come to see that there is room for improvement, and for the fresh endeavour here proposed.

#### **Planning of Garden and subsequent Minor Gardens.**

The general outlines, extent and Layout of this main Juni Indore Garden are indicated on Plan; as also are the various Minor Gardens, which are indicated for gradual establishment, after the main Garden has justified itself, in quarters less conveniently or cheaply drained to this.

#### **Acknowledgements.**

In this whole intimate planning of Juni Indore I have been admirably assisted by Mr. S. C. Paul; and each of the suggested alterations or removals which it involves—mostly kacha or ruins,—with provision of sites for re-building on sites suitable and convenient to the sufferers, has been submitted to, and gone over on the spot with the Municipal President. As regards the Lay-out of the main Garden my first rough plan has had the benefit of detailed criticism and suggestive improvement on the spot by Mr. Coventry, as Agricultural Adviser; and Mr. Khushal Chand, who has also profited by this demonstration on the field, has worked this plan out a stage further. It has next been handed to Mr. A. P. Sinha, who is preparing it in detail for the future Municipal Garden Superintendent.

#### **Economic Aspects of the Garden Scheme.**

Next beyond all this technical care to ensure success, as regards drainage, and thereafter product, there will arise the commercial question of disposing of the fruits and other products. If cost of production at first makes selling price as high as ordinary present ones, no great disturbance of the present trade will arise. But if, as is possible, indeed reasonably to be expected, prices tend to be lowered, then a corresponding shock may be given to the present traders. This may be mitigated by auctioning the fruit, with export to Bombay as a resource in reserve.

Such cheapening may also effect the returns of the few fruit and vegetable growers who at present supply the Indore markets; but the advantage to the community will before long be appreciated, since here prices are peculiarly high—even

startlingly high to visitors to Indore, except perhaps any from northern cities in semi-desertic conditions. Yet I take it to be a fact, that here in Indore,—with its cheap land, good soil, and admirable climate, and its already considerable supplies of water ( which, as we have already seen [ Chapter VII ] is readily increasable ) —the supply of fruit and vegetables may readily be made among the most abundant, most excellent and cheap in India; and thus with health, as well as economy, to the community.

### **Social Aspect of the Garden Scheme.**

Yet beyond even these advances, let me end with Juni Indore as I began, as concerned, from its earliest origins, with considerations beyond economic or even sanitary ones. With all the real respect to Brahmin tradition which I trust my treatment of Juni Indore shows, there is no Brahmin but now admits that the historic and present attitude of his caste, and its examples to others, to those who are now known as “the depressed classes,” has been atleast insufficient in its consideration for them. And since this is now admitted, endeavours are rife towards raising their condition; yet beyond primary schools, or demolished slums, no definite remedies have yet been offered. Yet is not the present Garden Drainage Scheme at any rate a part of the needed solution, that of raising these humblest of labours?—by developing these together into what is in all countries the healthiest of environments; and also, for all who successfully try it, the happiest of occupations also, that of the Garden.

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## **Chapter XXVII.**

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### **City quarters Continued.**

#### **IV. River Sites opposite Juni Indore.**

##### **River Bank Area and its Possibilities.**

Having now finished with Juni Indore, we cross towards Ara Bazar, just as on our initial Historic Survey (page 2). But now it is the geological history, rather than the human, which may first attract us. For here before us on the left hand, within the river-loop, is the low-lying Peninsula of five acres, and on the right, a corresponding field of nearly two acres more. North of this is the small Mohalla of Kabutar Khana upon its mound. But beyond this is again a low-lying acre of shore with field and gardens, until we come to the open area of similar character occupied by the Old Theatre, the Public Garden, and the great Chhatri next Krishna-pura Bridge.

All this area, save the last, is free of buildings; and has been kept open throughout the history of Indore by the annual floods to which the river was of-course subject before the formation of the Piplia and Bilavli Reservoirs, and the bunding of the river at intervals above and through the town. But since this danger no longer exists, buildings might now spread downwards upon these old vacant or cultivated areas, the more since these could be readily and cheaply raised from the abundant rubbish of the City, and have indeed long been in process of this.

### Proposed Hospital.

The first suggestion for the utilisation of this Peninsula has been that of an Infectious Diseases Hospital, since here at once conveniently central to the City area, yet naturally isolated from it by the river on the east and west, and easily separated also on the north by distance, and also, if necessary, by walling.

But for this Hospital so large a site is not required: and from its level and low situation we may also look to it as a future City Garden, to absorb and transform the drainage of its neighbourhood. A sufficiently large Hospital site is to be found, exactly opposite. This is the smaller Peninsula, south of the river, and isolated from its neighbourhood, of Harsidhi and Jamburkhana, by the wide and uniting Nullas which enter here. By slight and quite inexpensive cutting, it is possible to widen this little bay of the uniting Nullas, and even to complete this isolation by a short new cut on the west across the neck of the peninsula, thus making it permanently an island. On this island infections can be even more completely kept away from the main City than on the opposite larger Peninsula geographically continuous with it; yet also from the adjacent Mohallas. Moreover, on the high mainland to east of this is an excellent field at present unbuilt. Here I suggest and plan out—ofcourse in a preliminary way—the wards of a small Fever Hospital and convalescent Home, and thus provide for relieving the main Hospital of the City from infectious diseases, as is now done in all other medically progressing cities. One or more wards should be reserved for children, especially in view of the beginning of universal primary education in Indore, and of the present planning of the School-Houses, with the usual indoor school-rooms. This is a form of construction from which I must here dissent.

### Offered Criticism of School Planning.

And as I am asked to assist with the location of the needed schools throughout the city, and have in a good many cases already done so, I feel impelled, even at the risk of seeming intrusive, to criticise also their form of planning, and this somewhat fully; since this is of the customary nature; though better than most of its type, one generally accepted. Moreover it is but natural for a planner, whose work is so largely for the rising generation, and whose most direct and immediate problem is that of immediate service to the public health, to speak out plainly where both interests are involved; and this so peculiarly as in the present case. Furthermore, as responsible for thought and care in planning towards every practicable and reasonable economy to the public purse, such criticism, if approved, will be found substantially helpful towards this. And as what appears to me an excellent site for a future school in the quarter, is that which confronts us, on the slight eminence overlooking the road from Juni Indore, I here ask a halt, as regards other planning matters further on in Ara Bazar, to deliver myself on this one, of Planning Schools.

## Chapter XXVIII.

### The Needed Re-planning of Schools; as Open-Air Schools.

#### Arguments for Open-air Schools.

Briefly stated, my dissent from customary School Planning is at once of the simplest and the most thoroughgoing kind. School Buildings are present composed of Class-Rooms, to which more or less of verandah is added, to supply passages between these Class Rooms. But the type of school for which I plead, and hope to justify, at least for trial before the continued construction and definite adoption of the more familiar, unhealthy and therefore obsolescent type, is the Open-Air School; and this not simply on grounds of economy,—though this over the City and State would be immense—but on grounds of Public Health; and of Educational Results perhaps above all.

Open-air classes, or at most Veranda classes, are to be seen in admirable and healthy working at Sir Rabindranath Tagore's School at Bolpur, and also in successful use under Miss Macmillan in London, our British Montessori, and they were also successfully introduced in Dublin, under the auspices of Lady Aberdeen, consort of the late Viceroy of Ireland. Even in the more windy and chilly climate of Edinburgh, such a school has been provided by its School Board for its delicate and invalid children, who thereupon naturally improve or recover, just as the healthy children are depressed, towards their widely prevalent and alarming ill-health, by their indoor School-rooms. What has thus been done so successfully for the consumptive and invalid children to-day, we must of course do for the whole of the children tomorrow, thus definitely transforming the whole planning of our schools in Europe towards that simplicity which was characteristic of old-world India. But India is now, with the advance of education, actively repeating in School-planning, as in other matters, those educational errors which have essentially stamped their character upon the English, Scottish, and Irish Education Offices through the generation since 1870, and are still too largely surviving. Yet now, since the War, all this is in process of renewal, which the After-War Reconstruction will certainly continue, and this as a main feature in the programme of each and every renewed educational authority.

In the requirements of education and its hygiene, though body and brain are of course peculiarly associated, they have been customarily taken separately; and even under different authorities, pedagogic and medical: so that the usual elaboration of administration and regulation has arisen, which the awakening public can no longer fail to criticise, and even the various departments of administration itself, isolated though these readily become, into sub-castes, mutually jealous of their respective resources and powers.

But when to this great organisation of educational routine, we apply, not necessarily even the detailed criticisms of the physician, the psychologist, and the planner, but the mother-wit and common sense of an independent woman-teacher, like Miss Macmillan, of London Open-air School fame, she sees at a glance that lessons, just like play, should be in fresh air, and not in the costly and carefully constructed germ-box called the class-room, even though its atmosphere, so largely mingled of the dust-fog and air-sewage continuously added to by forty or sixty restless little beings, be mitigated by all the beautiful, but seldom really efficient, calculations of

architects and contrivances of ventilating engineers. That this is not in any way an over-statement, is but rather a considered and temperate under-statement, is evidenced by the fact that an investigation, made by the Public Health authority of the Scottish Local Government Board, of Schools of the Scottish Education Department in Edinburgh and Aberdeen—certainly two of the healthiest cities, and of strongest population, in the British Islands or in the western world—brought out this nationally startling result—that no less than about 75 % of the children in ordinary attendance, as healthy, were really more or less diseased; and this to the extent of requiring medical attendance; though neither parents nor teachers were realising the necessity of it, since, as is so usual, confusing depression with “good behaviour”.

But by this striking disclosure, the movement towards medical inspection and treatment of children was actively stimulated, and has since been in progress, until even the school dentist—at present so much needed in the west—is now coming into regular attendance. Yet as usual,—amid that accepted culture of specialisms, taken apart from their unison in life, which characterises the encyclopedic and sub-Germanic education of the latter nineteenth century, which is only now ending in world-catastrophe,—the great step of general hygiene needed to abate the present pressure of child-patients on all these specialists is not yet officially recognised—that of taking the children out of their fine and costly “Standard Class-rooms,” into the fresh and open air, yet sufficient shelter, of wide verandas. Still in Edinburgh I have seen a school building being re-modelled, and for invalid children, by knocking out school-room walls, as completely as are those of houses to make modern shop windows; but here with the advantage that instead of having glass windows, the school-rooms are now largely verandas, wide open like the shops of an Indian bazar, and with such light and moveable screens as may be necessary to exclude sun and wind and wet; but no longer the life-giving air. The Edinburgh “Hospital for Incurables” has also its day-room of this type, with extraordinary longevity resulting. And thus, as every one knows, the tuberculous recover.

It is not pleasant always to be finding faults. But a town-planner—whose responsibilities are like those of an auditor, and an inspector of measures, a medical officer of health, and half a dozen more critical duties rolled into one—is correspondingly all the more compelled strictly to do this, and not to withhold criticism which he is convinced is called for. So in this matter—while he of all men most shares the ambitions of the architect, and thus tends to rejoice with and congratulate him at first sight on the many and splendid edifices which have been everywhere arising throughout the world of education, and now in India hardly less than in Europe—it is time for him no longer to shrink from the criticism that such great educational edifices, despite all their magnitude and other care for ventilation, are still inadequate in this respect; and so are unhealthy even for the body in general, and still more so for the mind. For what is education? If merely, or mainly, the administrative compulsion and testing of memorising—primary, secondary, or higher as the case may be—then the present indoor class-rooms for memorising, and indoor offices for administering, are undeniably effective for their purposes, and explain their persistent survival. For memorising up to pass marks of 50% or so, is evidently the average that can be got from children in such indoor environments, and correspondingly from teachers and officials who have been prepared in and selected from these.

But now suppose ourselves thinking of Education, no longer simply as do too many of the “practical” teachers and “efficient” administrators of today; but



recalling old-fashioned real educators of the past, sitting under the trees with their scholars around them anywhere in old India, or walking up and down together in their shady Academe, and so developing the literally "peripatetic" philosophy of the more restless West.

Under these circumstances these old-fashioned educationists, Panini or Vyasa, Buddha or Shankaracharya, and in the same way Socrates, Plato, and Aristotle, never thought it necessary to erect even teaching buildings, still less administrative ones. Yet after all one can not quite agree with the older Indian critic, who mourns the days of the open-air school under the tree, for he agrees with conventional authorities in thinking these simple old-world ways are all past and done with. But in the midst of the fairly intensive work of preparing these plans and this report, I have taken a holiday, including a visit to Bolpur, with its classes bright and active in the open air, and its youngsters out of doors, beginning with their meditation at sunrise. I was also at the opening of the new Research Institute founded at Calcutta to continue, develop and extend the discoveries of the eminent physicist-physiologist of whom India is justly proud, since one of the freshest and most penetrating minds in science anywhere. Now this great Institute—behind its large hall required to shelter delicate experiments and evening audiences, and the smaller shelters needed for apparatus and books—centres none the less essentially in a garden with a small group of trees, and a platform beside a pool; where the master by turns observes his plants, and tells us what they have told him.

After all this is not so surprising to me; for my first master in natural history, Huxley, though in the main a laboratory and museum anatomist, had a great veranda balcony to air our otherwise too enclosed thinking-house. While my next teacher, his friend and rival Lacaze, though again immured in term-time in Paris, had two great Zoological Stations, one on the coast of Brittany and the other on the Mediterranean, where he took us for vacations, to the most active and educative open-air and open-sea schooling we had any of us had in our lives; so that we old pupils, now mostly professors of natural science not only throughout France, but from Britain to Russia, and from Scandinavia to Roumania and Greece, look back to these times with him as among the main intellectual and practical awakenings of our scientific and researching lives; and we have all realised, with justly bitter regret, the time we wasted as the good conventional students of less vital and open-air teachers. So again for a summer season spent mainly in eager converse with Haeckel over his main book and my own toughest Britannica article "Morphology"; and, hence, as needing our freshest wits, conducted in long rambles in the open air, in rests on the hill top, or after a swim together in the river. So again, in large measure for a winter period with Weismann, and to some extent at another of the productive centres of German natural science, the Zoological Station of Naples. Many other examples might be given: and in my own last term's teaching, despite comparatively inclement situation and season, my students had forty-odd of my fifty lectures in the garden, and this apart from our usual score of country excursions as well. So year after year they pass their examinations more easily than most, being thus aerated enough to profit their daily work in the laboratory, though this inevitably grows somewhat school-like, even with its open windows.

Now in all these ways we naturalists are but following our greatest master, Darwin, whose world-transforming thought was awakened and developed by one of the most eminent careers of truancy on record, at Shrewsbury, Edinburgh, and Cambridge, then matured by the four years of his immortal "Naturalist's Voyage," and further developed into old age, through continued open-air life, of observation and meditation in the fields and in his garden.

But it may be said—this may be all very well for naturalists, but it does not suit urban life. But perhaps that is largely what is wrong with urban life?—and at the bottom of its neurasthenia, which I have in Chapter IV discussed as mother of diseases, such as tuberculosis and the rest. For to this I now relate the conventional indoor town education, as largely, very largely, contributory to neurasthenia. For in no other circumstances, save those of depressed vitality, of minds as well as bodies, through living and thinking in closed rooms, could the prevalent education, of the three R's—reading, writing and arithmetic, to the virtual exclusion of the three H's—heart, hand and head—have been established; nor much less can it be maintained.

By their return to nature, naturalists have been discovering much of life in its evolution; and discerning something of what conditions advance that evolution, and what conditions retard, arrest, or reverse it. Here is the explanation of this present insistence on fresh air in general, and on open-air schools and colleges; with this comprehensive accusation of ordinary schools and colleges as wrongly planned and constructed, and needing accordingly to be altered; or, when not yet built, to be replanned from this simple and inexpensive point of view. Indeed so great may be the economy thus effected, that the pressure of After-War conditions may do more for the rising generation, and for its vital education as well, than can all our observations or reasoned arguments.

#### **Needed Re-planning accordingly.**

All this means nothing short of a simplified Re-planning of School-buildings, indeed in principle of educational buildings of most kinds. Keeping here, however, to the first and simpler matter of School-planning, it is evident that this will greatly simplify the anxieties of Educational Budgets, and of State Budgets so far also, before the enormous capital outlay with which they are confronted on the present principles of School-planning, and in view of the rapidly approaching diffusion of schooling not only throughout the Mohallas of this and that city, but the villages of the whole land. Here in fact is a possible economy, considerable for the city of Indore, great for the whole State, and enormous for India, supposing a simplified style of planning to be adopted.

Despite a certain shock and disappointment to Education Departments and their architects, as also to teachers adapted through their own schooling, training and professional life, to the existing style of school buildings, so palatial without and so depressing within, the extremely simplified buildings, and spacious open-air verandas, to which I am thus seeking to bring them may be increasingly considered. First surely on grounds of reduced expense, but also by the authorities of Public Health, who are growing weary of the school epidemics which more or less everywhere arise, and which are explained by the present co-operative pooling, within the school-rooms, of all the various disease-germs which different children are constantly bringing, and which find their appropriate soil in unstable young constitutions continuously depressed by their present indoor atmosphere and surroundings generally. As such schools get a trial, their teachers are increasingly and rapidly converted to the open air system, and this alike by the brighter and better way in which the children learn, the more rapid way accordingly, and also the diminished fatigue and worry which their present driving of dull teams involves, and also by their own personal increase of vigour and happiness under this return to normal conditions.

With such evidence before them, the educational authorities will soon be convinced; and will not only adopt the open-air type of school in the near future, but

consider the alterations necessary and practicable to open and aerate existing buildings of conventional type.

The difficulty here of course, as with all changes, is to get a beginning, a fair trial. But what time and place is more appropriate, even urgent, for such a trial, than a City and State which is just at the outset of its General Education Scheme? May I hope then for a trial here in Indore, of even a couple of schools, or still better three or four? and for girls as well as boys? I ask in fact to collaborate for a day or two with the school architect in the preparation of plans thus modified, by reducing them within, and extending them without.

Here in Indore already, we have a first-rate example of this right sort of classroom, in a veranda of the Girls School at Garibkhana, lately extended by its open-minded and economical head-master, and also by the Geography Shed in the centre of the same quadrangle. So there is nothing new in my proposals.

#### **Open-air Difficulties as Advantages.**

It is of course objected to open air schools that fresh air feels cold to those insufficiently accustomed to it, that wind disturbs papers, that rain may at times blow in, and so on. But the large Plans of this Report, with the hundreds of minor ones from which they are combined, have all been prepared upon the veranda of the Guest-house, much narrower than would be open school-rooms, and less protected from wind, rain, and sun. But flat stones as paperweights defy the winds; and rain-screens and shade-curtains are also easily hung and fixed as need be, without excluding the life-giving air. All concerned have soon adapted themselves to all these minor inconveniences of open air, and worked better accordingly; while as regards the co-ordination of the multifarious detail of the present report, such grasp and clearness as it may be found to possess have not a little depended on this continuous open-air treatment for its writer. He even suggests as the extenuating circumstance of the many defective schemes he has had to criticise, and often severely, in these pages, their being produced in the half-used-up air of offices. That under such circumstances they may have appeared passable, and even satisfactory, in other offices, while the present plans and proposals may at various points appear "utopian", is also thus explained in terms of aeration and daylight, as acceptance of and appreciation of rain, wind, and sun, as no mere discomforts, but as conditions of life; and these from water-supplies or drainage, to fertility and beauty of gardens, and beyond these again to Education, and this alike for activity and for thought. So if this report be read in the conditions in which it has been written, it will be seen that these simple and natural conditions of life are the bases of its many Eutopias; and of its many economies also.

## Chapter XXIX.

### School Planning Continued: Education for Life.

#### The School Garden.

But while I would thus substantially economise as regards the main school buildings, I ask for improvements now coming in widely throughout the educational world, though not yet incorporated into educational policy in India. These are especially the School Garden and the School Workshop; and hence a word of each.

The School Garden needs some additional ground, for no one would rob the children of the open run of their Playground. Yet since the present standard playground, through west and east alike, is obviously still only the barrack drill-ground—for which it was historically intended and planned to prepare, by the Prussian founders of compulsory education more than hundred years ago—it needs now to be humanised, by a border of trees, shrubbery and flowers; and these should also surround the main building and twine upon its veranda posts.

Does the fear exist anywhere in India that children would spoil such a garden? I am glad to say, from more than thirty years experience of school-garden-making,—and this for Boys' Schools in the very roughest quarters of manufacturing towns, as well as for the most refined young ladies of the upper classes—that I have seen no appreciable difference in the practically perfect keeping of all such gardens alike. Their care needs but to be entrusted to the pupils themselves,—of course with due encouragement from teachers themselves interested,—and even though at first a master may be incredulous, or as I have even found him, positively hostile, he soon becomes the most friendly and even enthusiastic ally I could wish. I can easily justify all this from experience, and by reference to every other school-garden-maker I have known in the three kingdoms, or even in typically rough and neglected manufacturing towns in the Unistates. But now I venture here to appeal, as to a quarter I have investigated only to a very slight extent, that of Magistrates and Police acquainted with Juvenile offences, if such there be in Indore. For I venture to predict that it will experimentally be found here as elsewhere, that the School Garden,—especially when complemented by the keeping of such Animal-pets as may be locally practicable, and also by the School Workshop,—that we have in these main elements needed by educational and social hygiene for eliminating juvenile and adolescent criminality—hence soon the main percentage of adult criminality—to a very great degree, which will render possible a vast economy in Police and Courts.

#### The School Workshop.

So now a word of the Workshop. I am only too familiar with school workshops, and even those of great "Technical Schools," in which the processes of carpentry, metal work and the like, are not carried out to any constructive result—even such as from the method of Sloyd, long so popular and in some respects excellent, but over-elaborated and insufficiently practical—but have been logically parsed, and administratively tabulated, into their various operations; as of measuring, sawing, planing, dovetailing and so on, for wood; or again of filing, cutting, fitting, polishing and what not, for metal; and these exercises then practised by the pupil until he is perfect in each operation, and to the satisfaction of the Inspector, to whom these master-pieces of detail are periodically exhibited, with favourable report and school grant

accordingly; yet pupils sickened of handicraft for life. For I have also this further experience, that the pupil having in this course made nothing, (save shavings and filings) is thereby depressed; indeed too often permanently weakened for, and even disgusted with, handiwork altogether. Instead of continuing the finished craftsmanship which his (literal) "burnt-offerings to the Inspector" promised, he is finished for good and all as a craftsman; and so looks henceforward to clerkship, shopkeeping, or any other still more handless occupation that he can find—often politics, and ofcourse more or less unrestful, to the surprise of the wellmeaning educators, who none the less schooled him into this rebound.

But on the other hand happily I can also refer to Workshops, and these increasingly common, where the boys now make real things that they themselves want to use, like kites and toys; or things that they can take home with pride, like boxes and trays, stools or tables, and these for use and beauty together, and not mere useless "ornaments." Thus in an orphanage school near my own summer home in Scotland, though the boys have still, by administrative authority, to produce their useless burnt-offerings, this has become an easy matter, since real work prevails throughout the year till a week or two before the inspector's visit. Work even artistic, upto inlaying and carving, and these of a creditable kind, though ofcourse far behind what an old Indian Mistri could teach of these arts in a school here. Better still in certain ways, these boys themselves, with only their mistri to guide them, and no other skilled assistance, have built their large new range of workshops, from their foundations. And their head-master assures me, and I believe him, that it would pay the school authorities and the Government, though they were burned and rebuilt every year; so great was the general all-round improvement of the boys, in all other directions of school work, and above all in the strengthening of character, the increase of intelligence and good will, which such new and great responsibility calls forth, with legitimate pleasure and pride in its recognized success.

### **The Boy Scout Movement.**

But carpentry and metal are themselves now largely specialised 'arts; and an education both deeper and simpler is needed by boyhood, as the growing success of the Boy Scout Movement testifies. Its organiser Baden Powell is in fact the first great educationalist the English-speaking world has yet produced, to compare with the continental names which otherwise fill the history of western education since Rousseau. Yet his educational scheme has both its success and its limitations, alike largely due to the military as well as naturalistic and practical training of its founder.

### **The Recapitulation of Primitive Occupations.**

The next progress has thus been chiefly made in the Unistates, as "the recapitulation of simple occupations,"—as far ofcourse as the particular situation of the school, and its excursions and campings-out may allow. Not merely then the education of the primeval hunter, though with that every boy loves to begin; but also as possible that of the shepherd and the cattleman, the peasant and the gardener, the weaver too, and the potter, the metal workers, and so on; and often, above all, the house-builder and furnisher and Boy Scouts are coming to this.

### **Proposed Boys' Corners.**

Hence to give the boys of a town a rough corner of a Park, beside the water if possible, where they can renew for themselves the various types of

dwellings of mankind:—a cavern in the river bank or other dug-out shelter, and tents and shelters, and wigwams, where they can solidly build a log-hut, and, above all here, where they can recapitulate the types of simple Indian dwellings around them—and therefore conveniently illustrate in the plague-huts of Indore, at every level, from roughly overlapping branches to well-plastered bamboo lattice-work, or even to a good little kacha house, in which the boyish delight of handling quantities of mud can be enjoyed to the full.

A dignified educational authority, of great personal culture, administrative ability, and governing experience, to whom I made the above proposal for his City Park, half a generation ago, dismissed it with the contemptuous promise to “give the schools each a shilling manual of anthropology,” since that in his view would do all and more than my untidy incursion upon his park could offer.

Not discouraged however, I gave my own small Home School opportunities of this kind, and with results which I publish as part of another volume; but which in any case the records of Universities, of recent geographical research, and next of the War, as of the Western Allies' Air Services, have all independently shown; and from which other results, even in art, literature and citizenship, are coming. Hence the “Boys' Corners” I have marked out two little reservations for, at corners of the Sports Park, by the river south of the Karbala Maidan. For next this the boys will be stirred up to making Tazias, while at the other they may begin yet more practical outcomes, as in building huts; and through these be of service while boys, and later as young men, towards helping with their own family's part in the construction of their Garden Suburb; and so be prepared to hold their own in a more practical generation than the present too merely clerical education has made the present one. Such a Boys' Corner is thus also needed further down the river, from the beginning of the new Industrial Town; alike as the very best of Matriculation preparation for its needed Technical School near by, and again for the constructive endeavours of helping with their family homes in the New Industrial Town; and so later of efficient craftsmanship and foremanship in its Industries; perhaps even, in due course, captaincy in them.

Such educational beginnings might soon be increasingly demanded by the schools, and justified to the country. Why not next provide a place for boys in or near the Zoo, as after all the most interesting and active of constructive, and not normally destructive, young animals! and similarly another place, on the field-edge of the Residency River, near the future Library, Museum and Theatre group, so that from their reading there they may extend their possibilities. Each of these places no doubt will need its scout-master, and should have its untidy aspects screened by clumps of shrubbery.

### Girl's Play-Houses.

And what, meantime, of the girls? Despite all alleged elements of convention or of backwardness, many of their teachers are among the most progressive and alert of all. And that the same principle, of recapitulation and anticipation of occupations, is deep in the instincts of every girl, is obvious in her play with dolls and at house-keeping, with its many arts and crafts, which are now often being admirably developed. So even for open air, why should not the boys now and then clear out of the camps they have constructed, and leave them to their sisters, as Toy Houses for them upon the greater scale? The kindred movement of Girl-Guides is also forming centres in India.

### Vital Education and Public Health together.

The preceding pages are thus no real delay of entrance upon the improvement of the main City, still less as a digression from its purpose, if they have brought before the reader the conception of Education and Public Health together, and of these as again being brought back, by Town-planning, towards that comprehension and use, of "Air, Water and Places," which is the master-key of Greek medicine, whose teaching underlies that of the schools of the West, and of India largely also. Beside our Primary School planned on these principles, we place the Workshop, ofcourse also in fresh air. Around these, the Play-ground and School-Garden; and all these again overlooking one of the proposed City Gardens. Here then is a School of Health, and this not merely in its conventional sense, as comparative freedom from obvious diseases; but in which real Health—as active vitality, in its spontaneity and productivity, and consequent vigour, intelligence and joy of life—may be more prevalent than commonly, and all this educatively increasing, into life and habit, day by day.

### Why Levelling of Sites?

But this site of our proposed school looking towards Juni Indore is not even level. It is an old Mohalla mound, with ups and downs; so school custom and office bye-laws would set the engineer to work (with more public waste accordingly) to level it, and so make it less suitable for children, who above all things love to climb up and run down. But they will fall! Yes, and get up again, to repeat their endeavour more successfully; for thus children understand and carry on their own education: it is we their elders who commonly forget, and who have gone on forgetting, until all forms of arrested progress are established, as in the present abnormal schools, and correspondingly in so-called Normal ones. But now-a-days, we few older children, who remember how life taught us, and who have gone on experimenting and living through climbing up and falling down, and struggling up once more; and are thus creating rural and civic reconstruction and development, and reorganising knowledge and education with these, are correspondingly recovering something of truly normal schools. And it is encouraging that we now begin to get a hearing in Normal Schools in the ordinary sense; for these are now fermenting towards bursting their old bottles; and with encouragement from awakening educators at every level, from village teachers like her who aroused our late Chief Inspector for England, Mr. Holmes, from his official slumbers, to the present English Minister of Education, with whom vital education is having its first real chance of organization upon the administrative plane, because now increasingly that of the nation roused from torpor, into tragic awakening, by its daily fuller participation in the War.

So instead of levelling our hillocks, beyond that required for the school-house, let us leave them alone, or let the boys shape some slopes into the school's Open-air Class-rooms, and Theatres.

### Why Removal of Houses?

But there are several kacha houses upon this site; and so upon all received principles of school planning, we are expected to acquire and clear them away, for our play-ground and garden. Yet is such clearance really necessary? Only to comply with custom. But how is this custom to be explained? Simply from the historic origin of our present type of school playground; from the Prussian barrack-yard which it was first designed to prepare for, in which the young recruits cannot

be drilled until the space is clear of material obstacles. But it is also in keeping with the prevalent theory and practice of education, as a weaning from the concrete world, both of childhood and of the people, and as an initiation into the abstract world, verbal and numerical especially, of paper-educated persons, and with their subsequent concrete activity henceforth restrained from "Manual labour", *i. e.* from art and life—save through the art of writing; and this not as of old, when one had something to write, but of the verbal and numerical matters of commerce and administration, in their present inadequate forms.

For this is above all an exaggerated and mismanaged insistence on reading, writing and arithmetic, to the disuse and depression of heart, hand, and head. This is mistaken from the point of view of each and all the sciences, and not simply of the concretely-minded physicists or naturalists. For the development of the highly abstract powers of the mathematician, from child-arithmetic and geometry to multi-dimensional space, are now shown by psychologists to be organically dependent upon the cultivation of a good muscular sense; and similarly the high abstractions of the logician are now traced by philosopher and pedagogue—Bergson and Stanley Hall alike—to their origins in the handling of implements, from those of the stone-age onwards, and even up to the modern "logical machine." The much-advertised and widely successful "Pelman System" seems first of all a freshening of the senses.

### The Education of Life.

Returning now to these Houses, for the education of life what could children desire better both for work and play?—from the simplest hiding and chasing round them, to playing at houses, and this soon in developed and civilized forms. Each empty house removed is thus so far a loss to education, not a gain. So let us keep such houses, wherever we can.

But again, need all these houses always be emptied of their inhabitants? Might these not sometimes be an educational gain if they remained? If it be for life that the children are being prepared for, why drive away these illustrations of human life before their eyes? They are often short of exemplary, it may be replied; though perhaps not so much so as educationists suppose. But when they are, why not sometimes retain this exemplary life—*i. e.* with good healthy children, decent parents, and kindly old grandparents—and may not we teachers also learn something from the ways of each of these phases of life? For the three R's admittedly little; but for the three H's much. For with our pupils we should not merely have constructive practice and technical training, with resultant sounder theory, in repairing and sometimes transforming vacated dwellings for their various new purposes. We should also progress in our moral and social education, through every possible friendly helpfulness, and co-operation with any household surviving our inclusion of them into our school. In short the school proper is now reappearing, after its long eclipse, as a centre, at once luminous and growth-helping, for the improving Mohalla, and of preparation of its children towards fuller adolescent and adult activity in the city itself. In short it is becoming a Real School, preparing for real life, beyond all the present abstractions of it on paper.

Bettered houses, the old ones as well as the new; the present filthy and unsightly waste land with its rubbish heaps, reclaimed into fertile gardens, hedged with fragrant jasmine and bordered with roses, and all this as sample and summary of bettered country and bettered town, overlooked by our simplified Open-Air School-House, of healthy, helpful, therefore happy children. That, I submit, is the re-



representative School, and germ of Mohalla, to place at the gate of the City as we come to it from Juni Indore; and also the sort of Primary School which will lead towards the more developed educational group we have presently to plan within sight of this: that of Library-Museum-Theatre and more, as Power-House for energising Citizenship and its Education together.

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## Chapter XXX.

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### Housing Difficulties again.

#### School-Building and House-clearing.

Is my reader saying:—Very pretty perhaps, but not practical: we must still go on planning our schools in the ordinary way. But let us see if that be practical or no. I am provided with the file of new Primary School plans; also of the two High Schools and the Normal College. The last three buildings especially are on the large modern Indian and European scale, and so each requires a considerable area of ground. These areas, though not extravagantly allotted, are necessarily on open fields; and here in each case I recommend and note on the City plan not any diminution, but extension of these; for the Workshops and Gardens which are already needed, and in regard to which all concerned with education in the opening future would rightly blame this plan, if it did now provide for these, before closing them in, by planning their neighbourhoods for other uses. But in these three cases, no existing houses are removed, either by the school architect's allowances of ground, or by my proposed increases of them.

But in respect of removing houses, the situation is a strikingly different one as regards the Primary Schools, of which the first six or seven are now being erected in smaller and more populous areas. Of the seven plans before me, one removed only one house. One shows the removal of eleven houses for its building and playground, three others each account for twelve; while the sixth disposes of eighteen, and the seventh abolishes forty. Total upto date; for 7 schools 106 houses threatened; say 105. Now the architect is simply carrying out the orders of his Department, which has selected those locations as convenient for its purposes; and which is thus working out, like every other specialised Government Department, in every State and country, its own particular part, under the rules of the modern administrative game *i. e.* within the limits of its Budget, and of its part in the strict division of labour: and hence without official cognisance of matters municipal and civic, of public health and public weal, let alone of domestic. But, after, all, is it not just these domestic and civic matters, of health and weal, that Education Departments, and other Departments too, exist to serve?

These seven Primary Schools are but the first instalment of the many needed for the young population of Indore City; say about thirty in all. Taking the threatened destruction of houses per school at its present average rate of 17 apiece, we have a total destruction of 510 houses to look forward to. Taking it only at the frequent number of twelve, we shall lose 360 houses in all. Can Indore, or any city of kindred conditions of housing, really afford such a demolition, amounting to over 5 % or even 3 % of its total of 10, 000 dwellings, and a much larger proportion of the poorer ones, which are ofcourse those sacrificed?

The theory of State Departments everywhere at present is, that—since its funds are from the State Budget and not the local one—it is not responsible to the City in which it operates, much less to the Mohalla. Hence in so far as it thinks in terms of civic economics at all, it may and does regard itself as bringing money to the City, by spending it in the given locality. Let me recall however, from economic experience, the reminder of how the fish or fruit trade in England, by destroying fruit or fish, can maintain, or actively raise prices, which are based on the comparative rarity of these goods ordinarily prevailing. Next how the Municipal authorities of Cities everywhere across the world—between Edinburgh and Madura, and from Boston to San Francisco—have long been carrying out improvements towards “relief of congestion” and its diseases, by demolition of their slums; but this without sufficient compensatory construction. Thus, unconsciously, they have created, or at least seriously increased, house-famines, with intensification of all those evils of raised rents, and raised prices accordingly, of which some cities are now notoriously in bitter outcry, and many in increasing discontent. That these evils were created without foresight, and with the best intentions, is of course agreed; but this does not mitigate the actual disaster; and it even further weakens the shaken public faith in the wisdom of their governing classes. Now the Education Departments of the West have long been active in clearing areas for their schools; that is, they have, of course with complete moral innocence, but thus unmitigated energy, contributed to intensify these house-famines. And now that universal popular education is coming in sight throughout India, and has actively begun in progressive States like this, the same intensification of present housing difficulties and evils is no less beginning, as per example of the seven school-plans before us.

Now I quite realise and admit that it is Town-planners who have been the worst of all offenders in this house-famine-making, from the supreme illustration of Napoleon III's treatment of old Paris onwards; but a good many of us are now awake to these evils of modern house-famines and their consequences, which have been, and are being produced in course of all these separate endeavours towards realising this and that partial good, as of removed slums, modern communications, open spaces, schools and playgrounds, and the rest, each and all so excellent in itself, yet collectively so injurious hitherto to the housing of the people, and their health and well-being accordingly.

But it may be said, and truly—these New Plans for Old Indore also remove houses. They do; and not less than would the Education Department—indeed more. But also now for the needs of Railways, Commerce and Industries; for through Lanes and Roads, Streets and Boulevards; for Open Spaces, Parks, and Gardens; for Water, Drainage and Sanitation; in short, for a Renewed City. And for all demolished houses, a choice of new ones, and in six times greater number of sites.

One cannot make an omelet without breaking eggs; but as a frugal cook, even a tidy cook, I break as few as I can; in fact, less than any one else in this occupation. Still, these plans, even without the active co-operation from the Education Department above noted, and of too many others, would undoubtedly press on the house-famine and increase all the very evils I desire to abate; unless they were accompanied, as in this, and every preceding City I have reported on, with the express caution that all these demolitions should be postponed, not merely as at present, until compensation is adjusted, or even new sites allotted, but until new houses upon the given sites are actually erected, and ready for occupation by those whom such present plans evict. Had this principle been earlier realised, and practically followed, the widespread public suffering, discontent and passive resistance in many cities would not have arisen, but have been replaced by the hopeful, even enthusiastic, temper

of Garden Cities and Garden Villages, so manifest wherever they have been successfully initiated upon any adequate scale.

But the educationist, with his mind above all things arithmetical, may reply—What after all are my twelve or fifteen houses per school to the houses of Indore? A little more one per thousand or so! How can that percentage matter? Without wasting time on this fallacious presentment, let us leave the arithmetic room for the workshop. There let him experimentally fit his finger comfortably into the grasp of a graduated screw, and then proceed to turn it for himself, by gradations small enough to represent only his small successive clearances, school by school. For in this way he will find a perfect illustration of the progressive pressure to which he has been and is contributing. For will not the first gentle pressure soon advance to discomfort, and this to pain, and thence, more and more rapidly, to suffering even unendurable? Suppose some equally well-meaning and active colleague now begins his further experiment, by similar gentle gradation from this point, what will become of the poor little finger? Would this illustration even need so far to be continued for the improvement of its too simple arithmetic?

Yet after all schools must be built, and space provided for them; and so removals will sometimes have to be made. Yet in the case of two of the schools above-mentioned, I have been in time to find an adjacent open field-site, and so spare the houses threatened, and for other schools to diminish the number taken; and in all cases my suggestions have been received with goodwill. With fuller collaboration therefore, I am confident that satisfactory and economical locations can be arranged. Indeed in course of the general planning of the city quarters and the new suburbs, a large proportion of the needed school sites will now be found ready, and little additional clearance will be needed for the others. But I must still entreat the Education Department to clear itself from such criticism as that which this present section opens, (1) by the utmost possible care in location and planning, so as to avoid all but inevitable evictions and destruction of dwellings; and (2) by using its influence towards having compensation for any and all houses removed, as still inevitable, paid not in cash, but in kind; that is in fresh houses, and these found or built before compulsory removal.

### Homes and Legal Protection for them.

I now turn from Education and its Administration to the Legislative and Legal authorities. Some years ago, I was surprised by an invitation from the editors of a leading International Journal, devoted to Comparative Legislation, to write for them a paper on Cities. I replied that there must be some mistake, as I was merely a planner, and neither occupied with municipal law, nor of experience of its administration. The answer was more surprising; since to this effect, as nearly as I can remember:—“There is no mistake. We know you are not a lawyer: if you were, we should not have asked you. Tell us all you can of schemes and dreams for cities, and leave us to find the law for them.” To my shame, I have to confess that with a student’s timidity, self-criticism, and sense of incompleteness, I have not yet risen to this generous opportunity: but here at least is an instalment of what I hope yet to reply in response to it. I plead then, from the law, for an extension of its protection of the public, considered not simply as “Individuals,” but as City and Citizens.

The Law has long protected life, property and the family; but not as yet sufficiently the Home, in which all three—property, family and its life—are concentrated and synthetized.

As war shows, men give up all these—property, family, and life—for the public cause: and so also in peace they may have to give up their home for public reasons. But municipal and other public methods hitherto of taking homes have been and still are too arbitrary; and are as yet too generally unsuccessful in adequately providing new homes.

But the wealth of a city, its essential and ultimate property, little though modern economists have recognised it, is above all in its homes. So with its bodily and mental health, and corresponding productivity of both kinds. Its families, too little though some educationists actively realise this, are also in homes. Yet after all, if this problem be thus clearly stated, as, in short the supply of good houses to be kept ahead of the destruction of bad ones, or for civic purposes inconveniently situated ones, I do not despair of the legal intellect—in so many ways the keenest in the world, and especially as this above all others so constantly develops towards legislation,—seeing that such regulation is needed. It is a development of justice, rooted in historic policy; and it is urgently needed for this to-day. And in every particular; from the most material ones, of productivity and wealth, for the public and personal health on which these depend, and also on the life of the community; and even for the ultimate expressions of all this, in religion and education, in thought and art.

My petition is thus for an enactment which would be a veritable charter for the Home—that no man be evicted from his dwelling, for any public purpose, until a new one has been found by or for him; and this, as far as may be, not less, but more suitable for the needs and purposes of his and his family's life.

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## Chapter XXXI.

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### City Quarters Continued. Ara Bazar.

Returning now to more customary, though not more real, town planning, we enter the old "High Street" of Ara Bazar.

This is a type of the old streets which the first generation of would-be city-improvers have most freely destroyed, but of which we now recognize the merits—as notably its northward direction, shady and cool for more of the day than is otherwise possible, yet with houses sunned on each side, and with its dust less blown about by the prevailing west winds. Its narrowness is just what is needed for trade; since the nearer the traders of each side of a street can bring their goods to the eyes of passers-by, the more cumulative stimulus to them to become purchasers: and this is a great reason for the crowding of similar traders into particular streets or sections of them, as thus mutually profitable.

### Widening and Betterment: Their Public Dangers.

But in some schools of economics, their teachers, who neither buy nor sell in such narrow streets, explain the advantages of street-widening, and of seemingly equitable methods of recovery of the cost of such improvements, from the betterment which they suppose these sure to create. Their students thence enter public administrations, and rise in these to responsibilities; thus I lately found one drafting a Town Planning Bill in which this principle, of taxation of betterment, was for him of supreme importance; and since absorbed in this theoretic measure, and convinced

of its thoroughgoing applicability, he was too busy to look at town-plans in my collection, or even to come for a short walk through Bazar streets. But in either way I would have shown him that the streets of best business, and highest rental and value accordingly, are the narrower streets, not the broader; and thus that municipal improvement, in his hopeful way, might too easily depress business values, and next tax the sufferers for the permanent losses thus inflicted on them. The "obstinate native prejudices" of our English shopkeeping, trading and mercantile classes, and their particular horror of "theory", like kindred prejudices in India, may thus be more deeply founded in experience than we sometimes realise. The recent and growing dissatisfaction in Bombay and Calcutta, with the high rents and prices which their city improvements cannot but increase, has of course wider causes than these; but the recent action of the Bombay Government in enquiring into all these difficulties will surely help to clear up the dangers of town-planning, yet distinguish its responsibilities from economic pressure due to the war; interacting though these inevitably are, as the history of Paris peculiarly shows.

#### **Better Communications to be separately obtained.**

Better communications are of course in special demand since motor cars came in. But Bazar streets are not for motorists; and their furious honking is here, in the strictest old sense of the word, impertinent, since not pertaining to that kind of place, work or people. But they must get through? No; they must go round another way when possible, and with advantage, alike to time, safety and temper to all concerned. The Bazar street is for shopping, and needs protection for this: alike for rapid vehicles, and likewise for bulky slow ones, other than in the direct service of the Bazar, separate and distinct communications are required—streets, roads or avenues, as the case may be. As good illustration of this as need be is already afforded by the old road running down from Krishnapura Bridge, towards Juni Indore Causeway, midway between Ara Bazar and the river, and parallel to these. Again on the other side, running from old Palace Square, and thus opening quite near Ara Bazar, there is now cleared the space for Mr. Lanchoester's Avenue (shown as completed on Plan) and also giving a clear run to the motorist without interruption to, or disadvantage from, a single shop on the way. Next parallel to this, further west, is the old residential street of Nihalpura, and parallel to it that of Fezangali; while beyond this again, we have the Pipli Bazar as the western rival of Ara Bazar, east of the Palace.

#### **A Defence of Ara Bazar.**

These main parallel north and south thoroughfares, duly connected, as they already are, at their north and south ends, and with intervening lanes between, make up an example of very good planning. This needs little further improvement. With its good old Bazar street, its old communication thoroughfare on the east, now to be supplemented on the west by the new one, and with its dwellings with their quiet side streets and lanes, little disturbed by the dust and noise of communications, and protected from the compression and congestion so incidental to active trade—there are many towns worse off than is Ara Bazar.

#### **Ara Bazar Through Communication, East and West.**

Here, again as in Juni Indore, we have practically an old town compact in itself, and little changed in principle, even by the recent cutting of the new Communication Boulevard north and south, parallel to its Main Street; and with traditions and quiet prosperity of its own, through doubtless not without struggle. Its shopp-

ing prosperity should however now improve, with that of Juni Indore, and the development of Suburbs beyond it. But now what will be the effect of the transverse thoroughfare which one is so tempted to open through it, as Mr Lanchester has indicated from the proposed Bridge (on which we are quite at one) from the north end of the Peninsula to the new boulevard, and thence to Pipli Bazar? But a straight cut would be costly, and the disturbance to old Mohallas may be detrimental to them, by expelling a number of their inhabitants, for whom sufficient new sites in the neighbourhood are not available. We thus inflict loss of time and other inconvenience upon the people who at present employ those whom we should have to remove. Again, might not the trade of Ara Bazar be injured, by drawing off its customers to the numerous Bazar streets to westwards?

But people from the west will also wish to cross this Ara Bazar town from the line of Bazaz Khana to the new Bridge, which leads past the proposed new Theatre, Library etc, and by the other Bridge, towards Topkhana and Siaganj. Yet transverse lanes are not lacking, and with little detour; while vehicles from Bara Sarafa, and Palace Square roads generally, can come down to the Bridge by Bakshi Gali, as at present, especially if this be widened a few feet, as rebuilding permits. Again from this Bridge one may pass 100 yards southwards along Nandlalpura road, and thence across into Ara Bazar, with much less expensive cutting, and through what may readily be planted as a pleasant bit of long square or short boulevard. From this again we get across into the new Avenue. From this an access to Nihalpura, and across to Lakshman Bazar, involves more expensive widening and cutting. I mark out on plan provision for this, which I trust will be found sufficient.

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## Chapter XXXII.

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### Central City Improvements.

#### Criticism of Preceding Town Scheme.

Nowhere are the changes proposed by my predecessor's plan so serious, as in the quarter south of Old Palace and Gopal Mandir. For here is suggested a convergence of streets into a large Circular Place, and with proposed establishment of a New Municipal Office; but to put so necessarily large and ever-growing edifice as a modern Municipal office upon an island site is unsuitable in view of future growth. Moreover with the extension of the City, the present situation, especially when locally improved, and with bettered existing accesses, and a new one from the river boulevard northward from the Bridge, will be more central for its purpose of overlooking the entire city, and this especially in view of the new Industrial Town, than if it were removed into the old City. Hence I leave this quarter, with the various small improvements indicated on its plan.

But from this proposed New Municipal Office there naturally followed a new wide thoroughfare westwards, cutting midway through the Kunjada Bakhhal, across the Bombay Bazar, through Udepura and its interior Square, into the Narsing Bazar, and thence into Mukeripura; but if this new Civic Centre be abandoned, this new thoroughfare will be not necessary.

Similarly as regards the square between Bazazkhana and Big Sarafa. A new thoroughfare is again cut westward through the middle of this, splitting Nagarchi Bakhal and its immediately western neighbour Mohalla of Dhangali, through long and valuable houses of Sarafa Khurd, and right, through Bohra Bazar, to Sitlamata Bazar.

But are these thoroughfares, however tempting for express traffic, really required? I do not see this; each of the old north and south Bazar streets cut through is not economically improved; and the displaced occupants might rather compete for shops in the old familiar street (so raising prices to the public) rather than venture upon building in the new ones. These might thus lie too long undeveloped, yet with the grave inconvenience of having displaced many householders whose work and interest lie strictly in these neighbourhoods. Nor can we expect a growth of Indore sufficient to justify new long shopping streets. The expansion of new Suburbs and of the Industrial Town must inevitably compete with these, for at such distances they will naturally develop their own minor Bazars.

The fact is that we Town-planners have usually not time to master the social, commercial, residential and working-class conditions of the quarters which we have to replan, and we thus tend to be over-influenced towards the better through communications we readily see, and with insufficient means of foreseeing the consequences to the quarters we thus cut through. But the more I study cities, and especially in India, the more I am convinced that this process, despite its attractiveness to the western and western-educated eye, even when skilfully done, as in the plan I am criticising, is dangerous to the interests of an Old Bazar City, and of its working inhabitants alike.

This criticism and dissent is the more necessary because my colleague's plan also starts from the new Bridge of west Harsidhi (in making which we both concur), and thence cuts a new and attractive northward Communication Thoroughfare all the way across Bazaz Khana, Big Sarafa, Khajuribazar, and so on northward, till it meets Imlibazar at a distance of about three quarters of a mile. Fine squares are cleared along the course of this new road from within the heart of its old central Mohallas; so that, if and when all these could be handsomely built, the resulting effect would certainly be a fine one, and through communication between Harsidhi and the south, and the largely Mohamedan quarters and Polo Ground etc. on the north, would be facilitated. But is there any urgent need or real demand for this new thoroughfare? I have not discovered it; and though as economically planned as can be, its still serious expense would only justify such a cut if it connected important and busy districts with the Central City, and these with them. But these districts are among the less populous, and in my judgment they will long remain so, even with or without the planning of gardens and parks, and of some suburban improvements in the north, as shown upon my present plan.

The principle which has guided Mr. Lanchester in designing these new thoroughfares—that of avoiding the costly and destructive process of widening old thoroughfares, by cutting through the far less costly interior areas between, is of course to be approved and followed as far as possible, wherever such communications are really necessary; but here I am not convinced of this. I must rather submit to learn from the Police, who are accustomed to “relieve congestion” in a thoroughfare by moving the people on, without thinking either of widening it or of making a new one for them. For if we succeed in the next few years in moving a substan-

tial proportion of the population of Central Indore to the neighbouring Suburbs and to the new Industrial Town we have been planning, the present congestion of the old Bazar will be reduced quite as much as it can desire, or even afford, without new thoroughfares at all.

Another serious consideration is involved. Since destruction of existing buildings precedes the construction of new ones, a great disturbance of existing values arises; and this rapidly produces an excessive rise of shop-rents, and of house-rents to the poor also, with more than corresponding rise of prices, while the latter do not easily get wages raised to meet these:— hence, in the main, harder times to the mass of the community, with the enrichment of a minority at their expense. This might more or less introduce into Indore the conditions now so increasingly complained of in Bombay and Calcutta, and not without connection with their large city improvements.

Despite the proposed introduction of various circular Places, which seem more in the style of Paris than adapted to the East, I know of no European architect more appreciative of Indian Architecture, or more desirous of seeing it fitly continued than Mr. Lanchester; and his report and sketches alike show this; so that his proposed new streets and squares would be built appropriately, if he had the designing or direction of them. But in practice, would not the rebuilding be of the present too common kind in Indian Cities?— that of a mostly inferior semi-European style, with new shops of corresponding meretricious character—thus for the present generation tending to throw old streets and shops out of fashion, and out of custom, to their grievous detriment, and that of the city as a whole. In their turn these buildings would fall into deserved disesteem with the coming generation; yet be too costly for it easily to improve, much less totally rebuild.

#### **Alternative Treatment Here Proposed.**

For every reason then I essentially leave this old Bazar City as it stands, and without cutting any large new thoroughfares. Yet this is no mere policy of dull conservatism, of letting things alone as they are. There is a further alternative:— that of antiseptis and conservative surgery— in plainer terms, cleaning up, and clearing up. These kindred improvements have here been gone into in the fullest possible thoroughness of detail, not only throughout these Six Squares, but everywhere throughout the City, to the remotest and the smallest Mohallas, and always lane by lane, and even house by house. In this way the old life of the Mohallas and Bazars is substantially left to go on, upon their present lines, without any serious changes; hence very rarely with any disturbance to shop-keepers, and then generally with about as many or more shops added in the neighbourhood as are taken away. Again few pukka dwellings are sacrificed to our improvements, and even comparatively few kucha ones. These are compensated within the same areas as far as possible, though of course not entirely; but compensatory sites have been sought and planned as near as possible. The sanitation of every Mohalla has been carefully gone into, and Open Spaces and Gardens are planned wherever possible, without costly clearances. By our small removals, straightenings, openings, and replannings in detail, a network of clean and decent lanes, of small streets, and open places, and even gardens, is thus formed, which is often pleasant, and I venture to say sometimes beautiful. But this is restoring the old village life of these Mohallas to all and more that it aimed at in its best days, before the comparatively recent onset of overcrowding, and more or less slum conditions, in which they at present lie. Furthermore, with a little study of each Mohalla on the plans,



the reader will see that these cleared up networks, of fairly direct lanes and streets, will serve more and more as short cuts to, from, and even between, the main Bazars; so that the present congestion of these, by passengers, and especially by those not there to purchase, but merely to get through, will be appreciably, even substantially, abated.

Moreover, by providing the new express Boulevard along the River, south of Muchhi Bazar, and also of the old Bazar Town, its present over-crowding of shops will be abated; for shops will arise along Muchhi Bazar, as a new shopping street, parallel to the through Boulevard, which will be practically without shops at all. For the present timber yards, we can find better accommodation in Harsiddhi, as soon as its new Bridge can be built, and as its Foundry removes to its more suitable and economic location in the new Industrial Town.

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## Chapter XXXIII.

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### City Quarters Continued. The Six Squares.

#### Introductory.

As already mentioned, I shrink from following my eminent predecessor in town-planning for Indore, in cutting his new thoroughfares east and west through the four southern Squares, and also north and south through the eastern ones; and this despite their undeniable attractiveness, both as direct communications, and as offering fine opportunities for architecture, both along their street courses and in their new public places. Yet I do not propose to leave these old Squares just as they are; but I ask the reader,—and even my friend and colleague, whose skilled criticism I have in my turn to face—to accompany me through these, Square by Square.

Let us proceed then towards what in their description ( page 9 ) we already noted as the simplest, that of Odepura, which preserves its interior square area, behind its four street fronts, as an open space, and which we have already interpreted as retaining the original condition of each and all these squares.

#### Bazazkhana.

Yet before entering this, let us pause in the public place at the intersections of the thoroughfares of these four southern squares, that of Bazazkhana, and first ask again, as town-students, whether this may not be the surviving open centre of a long market-place between the two eastern Squares and the two western ones? Indeed is it not possible that the solid blocks of building which run east and west, may also be of more modern date—so that a great cross-shaped open market, and military muster-place, may originally have separated the four squares. This may easily have been built up by the pressing demands of business and population within the growing military and trading city; for it is a common process in the history of cities that the traders of a wide market-place gradually acquire permanent possession of their market stands, and then build shops upon them, and at length dwelling-houses above.

Thus in Aberdeen its old "Broad Street" is mostly narrow, because it has been built up in this way along the length of an old market-place; and in my collec-

tion of plans there are many instances of the same process between there and here. Moreover, as it happens, this process is actually even now active here, for the remaining centre of this Bazazkhana Square, and of this almost myself a reluctant instrument. For this active and popular centre of the Bazar town has been kept open—or rather, as I suggest, has survived—from an originally greater one, not merely as the intersection of traffic, as the stand for public vehicles etc. but by the necessary persistence from old time of vegetable-sellers needed by the daily wants of the large surrounding population. For these vegetable-sellers, long roughly encamped in their simple peasant fashion in the middle of the Square, a pavement platform has been provided, on which they sit in the open, at best with roughly extemporised shade. But the need of more good shops for the leading and prosperous cloth-trade of this neighbourhood is a pressing one; so the cloth merchants ask the removal of this vegetable-market, and the grant of this central site for the erection of new shops for them. After searching out a practicable place, not too far away, for a new and better Vegetable Market, I pass on the designing of this central block of cloth-shops to my assistants. They rightly take counsel with the cloth merchants, and produce a plan to their advisers' satisfaction. But this spreads out upon a larger site than that of the vegetable-sellers' platform, and thus practically builds up the square, leaving nothing of it save the four surrounding streets,—and this completely, because their approved plan is two storeys high, like the buildings around, thus making an end of this open city centre for good and all.

So I cut this plan down; with its pavement very little larger than at present, and keep it of one storey, so as to preserve something of the old feeling of the open Square; and I propose, above this, only a public clock upon the necessary low tower, with a small spire above, to be something of an architectural centre and landmark; while the public usefulness of this four-faced clock will help to prevent any future proposal to build a storey higher, and thus obliterate the square completely. Yet on revisiting the Square I regret this, and advise only the Clock Tower, with a tree on each side, and no shops at all. What then of the Cloth-Merchants? May we not develop shops for them, by improving that part of Bohra Bakhal at present occupied by old metal dealers, etc.? For these a new Market, with suitable shops better than their present ones, is suggested in the interior of the present Brahmin Water-carriers' Mohalla, if and when this can be cleared for this purpose.

### Vegetable Market in Odepura Square.

Now the only surviving open space available for the vegetable-dealers is a little S. W., inside the adjacent Square of Odepura; but we must find an entry to this from its present neighbourhood, which is of course indispensable, since the existing entrance of this interior square is too far down Odepura Street. Hence we have to sacrifice two small houses in Santabazar, as shown in plan. This new opening, with the Vegetable Market regularly designed, is indicated accordingly. But since, too easily, "out of sight is out of mind," I should turn on one of the house-painters most skilled in the production of those bright and lively paintings which so commonly embellish old-fashioned house-fronts in Indore, to adorn the long gables of this new entrance with the utmost exuberance of display of all the good things which the Market has to offer; and these not mere sign-paintings of vegetables and fruits, but a lively presentment, such as the old Egyptian artists loved to make, of the growing of them, the gathering of them, the selling, and the consuming of them. Thus vividly advertised, the old customers will easily find the Market in its new site, which would otherwise be too secluded to maintain its present prosperity.

### Interior of Odepura Square, Completed.

Next how to lay out the remainder of the square? The old Well and Temple of course remain, as elements of beauty, which future shrines may further enhance.

Near the new Girls' School on the west side, entering from Narsing Bazar, I propose to acquire the unbuilt site at present occupied by a wood-yard, (for which I find a fresh site further west); and open this as a passage to and from this Square, thus forming a convenient access from the well-to-do westward streets to the new Market.

For the Girls' School one of its promoters lately generously proposed to purchase this whole open area as playground and garden; and I therefore regret to disappoint him by this different lay-out, primarily for public uses—those of the market in its north-east quarter but also preserving the present kite-flying and other active games in its southern half. But girls too need play, and in the open air; so I mark out for this school a garden and play-ground occupying a good portion of the north-western quarter. This space is unfortunately too small to admit of a tennis-court for the girls; and for this the existing stable and dwelling immediately to northward should also be acquired. In the plan of this garden I show a long and broad veranda for the open-air classrooms already planned for in Chapter XXVIII, and of which a good example is already provided by the excellent Girls' School north of the City, beyond the river. Unfortunately for this area there must be a purda wall: but I ask this to be not more than seven feet at the utmost, as it can then be screened by shrubberies and trees outside as well as inside; and this encroachment upon the open square will thus be no longer unsightly.

Not merely girls need open air, but also the women and children within the houses which enclose this square. So to them I allot, on north and south especially, a narrow strip of trees and shrubbery, as a small Purda garden, each for its row of houses. Behind all such too enclosed and therefore unhealthy houses, this improvement should be introduced wherever possible, as a reasonable concession of a proportion of open space, from boys and men, to what are not less urgently needed feminine and juvenile uses at present impossible. For the Mosque also I lay out a long Chabutra-space. Yet after all, the kite-flying will still have practically its whole present length of run.

So much then for this Square, with its many new uses—commercial, educational and domestic,—yet with its present Boys' Play-ground preserved. I even get an east and west thoroughfare; and though I recommend preserving this for foot-passengers, by leaving the present well and steps at the new west entrance, these can be removed, when necessary, giving a clear road for vehicles. In either way then, here is a small, yet appreciable contribution towards diminishing congestion in the adjacent thoroughfares: so that I may fairly claim that the present scheme will be found on the whole more useful, as well as more economical, than that of the wide new thoroughfare projected through this by the previous scheme.

### Bohra Bakhai.

Here is a contrast from the preceding open square, an example of interior congestion. How is this to be improved? It is mainly a congestion from long continued growth and prosperity; for even the poor houses of its south-west quarter are occupied by servants and employees belonging to this well-to-do community. The present plan shows the utmost possible open space which is obtainable without undue

outlay. But as the congestion of this community is abated, by the migration of part of their number, both wealthier and poorer, to their new houses, south and west of the Bohra Park and Cemetery as described at page 93, more houses may become vacant. In that case, the least valuable of those adjacent to the proposed open space should also be removed, to enlarge the still small interior open space and public garden. The needed Bohra School may thus find place and play-grounds.

### **Shakkar Bazar Square: Brahmin Water Carriers.**

The interior of this small square is again a single property, though presumably once of common access to all its surrounding houses. Here we have again congestion, but now of the very opposite kind to that of the Bohras' Square—that of poverty; and this squeezed not simply into one-roomed houses, but too often half-roomed (5' or 6'x10' or 12'). People here are all Brahmin Water-carriers, doubly restricted therefore, by high caste and humble specialism; and what is to become of them in the future—with their occupation already injured, their small earnings already brought down in a month or so from 25 to 33 per cent, and doubtless soon yet further, by our otherwise excellent public improvement, of opening the P. W. D. water-posts, and the further necessity of increasing these where required. No doubt some families may keep on employing these old and familiar servants; but this can only be for a time, and promises no continued occupation for the younger men. Recall the story above (page 135) of the carters ruined by the bunding of the river below them, but they could at any rate go and cart elsewhere; but where else can these Brahmins carry water? I am compelled to leave this puzzle to those who know Indore, and India, better than I. But I may here improve the occasion by telling a relevant story. An eminent Chinese Mandarin, of western interests and sympathies, hospitably entertained an European Engineer, who came to him with proposals for improving the traffic of the great Yang-tse River, along the portion of its course on which its immense traffic of ships and barges is taken upstream against the strong current, by the hard and poorly paid labour of coolies, dragging them by ropes from the tow-path. The engineer demonstrated the immense economy and profit to be obtained by tug-steamers; and when the Mandarin shook his head, he tried him with the alternative of tug-engines, led on rails along the existing tow-path. The Mandarin was still silent; but when the surprised engineer pressed him for his objections, he answered "My young friend, I have eight thousand men here in my province, who at present maintain their families and themselves by this labour: do you really wish to turn them all into robbers?" To do that engineer justice, he went away a wiser man, and tells the story. For here is the common sense of what so many western and western-educated people call 'obstinate eastern prejudices,' and its moral is plain; not necessarily to leave old things alone; but to provide new and better work, like new and better homes, before destroying the old. Of course no people in the world are less likely to turn into robbers than these water-carriers; yet in general application this is one of the main explanations of the modern development of crime, along with mechanical progress. In India nowadays at least, people generally starve quietly (vigorous hill-tribes excepted); but the economic results of the introduction of improved modern methods, processes and products, in direful and wide-spread increase of poverty, is even now insufficiently realised, despite the enormous object-lesson given by the ruin of handloom weavers throughout India, just like that of their fellows in Europe in a previous generation. It is another of the many disappointing deficiencies of the present Indian Industrial Commission that it has not yet faced this problem: but I submit, with this present small example before us, and as type of more serious ones coming on, that it is desirable that the Municipality and State together apply their

best thought to this whole class of problems, by the creation of an Employment-Bureau, headed by the ablest and kindest young Indian economist they can find,—a man accustomed to observation, open to suggestion, fertile in resource, not afraid of experiments, and able to inspire and encourage people in them. And with whom better could he begin than with these Water-carriers, who have so peculiar a claim for help, since improvements, however otherwise desirable and necessary to the public, are none the less ruining them. What of employment in the City's water-service and water-works? What of cow-keeping? What of gardening—say for the Temples at least to begin with, and perhaps ordinary gardening later?

### Planning Alternatives.

For this Square I offer no less than three alternative plans. One is for the rebuilding of the area with houses of the decent minimum two-roomed standard, and these on two storeys to accommodate this large population: But people so poor, and henceforth increasingly unemployed, can neither build such houses, nor rent them. So, if and when work can be found for them elsewhere, let dwellings be provided elsewhere also, as for instance on the new sites south of the State Stables. Secondly the whole square may then be left open as a play-ground or garden, save for the supply of strips along the backs of houses for the purda women of the houses of the streets around. Thirdly, the demand for new cloth-shops etc. suggests the supply of these in Bohra Bazar, with removal of the old metal shops to a new Bazar of small shops in this square. I am reluctantly compelled to recommend this alternative under present circumstances; and show it on Plan accordingly.

### Dhobies.

An analogous case of unemployment to that of the water-carriers may also arise with the Dhobies; for their traditional method of washing clothes is now at any time liable to be upset by the introduction of the modern steam laundry. I have been already pressed by a progressive citizen to plan one; and, though I took the part of the mandarin in the story above, pending the finding of new employment for the eighty per cent or so of the Dhobi population thus superseded, we alike failed of any constructive solution for them; and so leave this as a social conundrum, which I trust may worry the reader into solving it—after which he will easily find a choice of locations available upon these plans.

### Morsali Street and Neighbourhood.

East of the square we have just been discussing, the oblong block lying between this and the Old Palace, and with Khajuri Bazar and Bara Sarafa on north and south, is really divided into two squares by Morsali Street connecting these streets, and this indeed so distinctly that we might almost speak of Seven Squares instead of Six. From the aspect of the plan I surmise that the smaller square east of Morsali Street may originally have been open, and thus continuous with the large cross-shaped market-place of my previous hypothesis; and possibly first intended and used as a Military place, then occupied by Temples, of which there are four, and finally built up even more closely are than any of the rest.

Some little demolition of inferior buildings, with incorporation of the open portion of the Police Office compound, gives us however the moderate air-space necessary for the sanitation of this crowded area; and if and when any house opening into this becomes ruinous or vacant, its area should be cleared, not rebuilt.

### N.E. Square, S. of Khajuri Bazar.

Proceeding eastwards to this Square, this is much built up by large houses, so that the only way of getting the open space so desirable for local health is by sacrificing the State building, which however is disused, and thus will not be missed. This, with other minor changes shown on plan, admits of a fair amount of open space with irregular but not unpleasing passages across the whole area from south-east to north-west. If and when the large interior dwelling-house with garden can be obtained, its whole area should be added to the open space, and not rebuilt.

### Dhangali and Nagarchi Bakhali,

We may now proceed southward to the oblong square between Bara Sarafa and Bazarkhana, enclosing the mohallas of Dhangali and Nagarchi Bakhali. Here again our changes are moderate, but useful. The small compound with Temple has been already made tidy, in course of the recent Dewali beginning of the necessary cleaning up of the old City. East of this, and between the main blocks of Dhangali on north and south, we get a widened lane, with good large garden, divided only by the Panchayat house and the adjacent small Temple. We thus come into the north and south street dividing the two Mohallas; and this suggests removing a house in each of these two Bazar streets, and thus connecting them, by a new north and south thoroughfare, which will so far lighten congestion and accelerate traffic.

Nagarchi Bakhali is shown treated like its neighbour, and with a large interior garden and some open playing space.

### Kanjra Bakhali.

The last of these squares, that of Kanjra Bakhali, has been a difficult puzzle; but I trust the plan shows solution at once healthy and economical, with its old village aspects and life improved, yet with more convenient through communications, especially towards the west; and with its small open space enlarged, improved and planted, and a fair-sized Garden. Yet our few demolitions will be seen largely compensated by new sites.

So much for the Six Squares; which though left little improved as regards their main thoroughfares, will be seen as not only cleansed and sanitated, but even with considerable aggregate de-congestion of traffic. For this is provided by the improvement in directness and simplicity, and hence attractiveness, of their old network of lanes, which are now brought more into touch with the main thoroughfares.

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## Chapter XXXIV.

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### City Quarters Continued: Mohallas North of the Six Squares.

#### Manik Chowk.

Let us start again from the west gateway of the New Palace, and pass westward, through the small public garden, already described (page 95) into the Mohalla behind this, with its picturesque little Temples, now shown up against the background of trees proposed on plan. From this Mohalla garden, a north and south-westward lane leads into a fresh labyrinth. That on the north is largely fallen into ruin; but is shown on plan with five good new sites facing north to

the public garden of our previous scheme ( pages 94-95 ) and with view also of the Jumma Masjid further west.

### **Koshti Bakhai.**

This area west of the preceding one, is improved by a large opening from the Khajuri Bazar, utilizing the large site fortunately at present open. This provides for an air-space for the residents of Khajuri Bazar; ( who may however, if absolutely necessary, have a few small one-storey shops, without dwellings, erected on each side of its entrance). This new bit of road, with its open and tree-planted space behind, is also an outlet for the Mohalla, which will be seen to have another, into the Juna Kasera Bakhai.

### **Juna Kasera Bakhai.**

This area communicates with another irregular open space, and this by lanes with the garden thoroughfare opposite Jumma Masjid.

This whole quarter,—practically one—will thus readily be made a healthy and pleasant group of Mohallas; with their village life undisturbed by the main thoroughfares, and yet with ample access to and from these. The expense, as usual, will be small in comparison with the resultant improvement of property-values throughout this area; hence the Municipality will find this expense more than compensated by the increased health and prosperity of its citizens.

### **Juna Pitha &c.**

Similar treatment is shown for Juna Pitha; though here the large areas required by the Wood-merchants, who so largely occupy this area,—and also by the Potters who are scattered among them—does not admit of making any such large garden and open space as may at first sight of the plan seem possible. Still something is done in both respects; and the whole area is substantially cleared up, opened up, and thereby cleaned up accordingly.

For the costly thoroughfare of Ahilyapura little or no change is suggested.

Starting once more from the New Palace, and now looking through the areas north and west from the successive area of public gardens, public offices, Jumma Masjid and new School to north of this, all will unite and contrast to make a pleasant quarter. West of this in the somewhat crowded Kasera Bakhai, and to Dhulhoya Bakhai further west, the small improvements of our conservative surgery are again shown on plan, and with the usual results.

Similarly north of this area and west of Imli Bazar, the large area of Gafur Khan's Bazar and Chhaoni to north of this are similarly treated; and so on through Jinsi, and also up through Malhar Paltan: but it is unnecessary to describe these in detail, as the plans will be found sufficient.

Similarly for the large corresponding areas east of New Palace, and indeed of the whole length of Imli Bazar. Thus an area, not only as great as that of the Six Squares, but with the addition of the whole area south of Old Palace, and east of this to the river,—in short about equal to the whole Ara Bazar town added to the Six Squares—is thus shown as simply sanitated and improved. I trust therefore that here, if anywhere, the adoption of the simple improvements shown on plan may be speedily proceeded with, and accomplished throughout.

## Chapter XXXV.

### Northward Suburbs.

Let us start with the old road from Juni Indore by the ford near the point of its Peninsula, just east of the union of the Rivers. It is first called Topkhana; and then, after its crossing the main Topkhana Road, between Bridge and Railway, known as Nandlal Road, and finally as the Jail Road, running between the Central Jail and the Police Head Quarters. Here is the main centre of a large quarter. Note its forking, to roads one leading respectively to the River and Bridge south of the Girls' School, and thence westward; and the other running N. E. to the Railway Crossing. I leave the Plague Camp near this much as it stands; since it is practically full; and the houses have here a certain permanence, and may develop as a Suburb. But this fork includes an excellent building area, especially upon its high ground to northwards overlooking the river further north; and even the south portion, which from this looks so low, has easy drainage to the river. Still this may conveniently in great part become a garden, in connection with the houses on the edge of the higher ground. Yet these too require their own Municipal Garden; and it will be seen that the resultant plan for this area is very different from that of the new Cotton Town adjacent, beyond the Railway. And similarly for each Suburb according to its situation, and its particular local features and advantages, such as contour, situation on road, access to river etc. The plan for each and every suburb will thus become more intelligible when studied in this way. Thus the reader may protect himself, alike from too easy acceptance and from too easy criticism; thus may arise suggestions towards improvement, which I ask my successor to consider.

### Jail Neighbourhood.

Now for further planning along this road. In view of that ultimate, if not early, removal of the Central Jail to rural surroundings, (for which there are now and increasingly precedents, as the art of criminal reform emerges from its errors in the past,) we venture to plan a Garden Suburb over the ground at present cultivated for the Jail; and this the more boldly since the Jail has still large spaces of ground within, which might readily be made yet more productive than is this area. If an example of success in this direction is wanted, I may cite the admirable Jail Garden at Allahabad, and also those at Nagpur and elsewhere in the Central Provinces, each fortunate in a Superintendent skilled in garden-management, and thus experimentally convinced alike of its economic value to the Jail, and its improvement of the prisoners, in health and character alike.

Again south of the Jail, the ground of the Cotton Depot is also planned for, in view of its desirable removal to the new Mill Area (see page 77 ).

### New City High School.

Once more on the aggressive, (for a Town Planner is nothing unless an active invader) I ask for the present Police Buildings and Compound. For after the military removal already predicted (page 11 ) the Police may conveniently inherit and utilise the Fort, which is no further from the Old Palace. But for Police Compound and Buildings there can be no better use than as extension, hostels etc. for the City High School to south.



The Boulevard Drive by the riverside past the Municipal Office, to Krishna-pura Bridge, has been already mentioned (page 87). By this Boulevard, the boys and the staff of the Old City High School will also easily and quickly reach the New one, and its playgrounds, etc.

A great School such as this is, and under its able rectorship will yet more become, can fully utilise all this area for its various needs, and yet preserve it as one of the open spaces so desirable in every growing city.

### **Parkways.**

Thus will be obtained the general aspect of a Public Park beside the long Boulevard next the River; and since the beginning of this is at the east end of Krishnapura Bridge, and thus easily accessible from the crowded old city, it may increasingly tempt out of doors its at present too sedentary and over-domesticated citizens, and bring them for this pleasant walk along the riverside, to which they will next learn to bring their families for outing as well, with gain to happiness and health accordingly. Despite the beauty of the Indore River-landscapes, there are as yet hardly any walks along them; and it is thus a gain from these plans which will be increasingly appreciated, that they propose increasing these, from a present total of 1180 yards, to 7000 yards, say 4 miles; and this not counting the same treatment of the River-banks on both sides through the New Industrial Town, and so ultimately to Suklia—an immediate addition of 2 miles and ultimately of 4 miles, making up 10 in all. Similarly too along the long Pilia Nulla on the North-west, say  $3\frac{1}{2}$ ; the Palasia Nulla from Palasia, 6 or so; say another 9 miles; in all, over nineteen miles, indeed by and by twenty and more. See Chap. XXI.

This would no doubt seem excessive for present needs: but it is only intended for gradual execution, as the city grows. It is one of the conspicuous merits of recent American Town-planning thus to plan for these inexpensive Parkways along their streams for the growing future. This policy has already fully justified itself; and in many ways, from the healthy outlet thus provided for youth, and even for elders by making the environs thus familiar and attractive, and so aiding the expansion of the town, along streams thus kept pure.

### **Small Mohallas, and Topkhana,**

Returning once more by the Jail Road, as it enters the town at the south-east corner of the New High School Compound, the existing small Mohallas (of Kumar Bakhhal, Chamar Bakhhal, and also the large and more prosperous Topkhana, both north of the main Topkhana Road and south of it) will be found on Plan cleared up, all the way down to the Residency River.

### **Municipal Buildings and Compound.**

It has been in the past proposed to bring the Municipal Offices into the City: but with the present policy and plan of extension in almost all directions, and especially to the new Industrial Town, and also with its improved and dignified access, afforded from and to the city by the new River Boulevard on its west, this removal is no longer desirable or expedient. The position thus becomes a central and first-rate one: in fact the best possible for speedy access from and to all quarters.

Let us now take the next north and south road, that immediately west of the river. Let us start west of the Dewas Ghat Bridge, north of Municipal Office

compound, and proceed north of the Lalabela Sweepers' Compound, of which the improvement, after amicable discussion with its residents, is indicated on plan. Here on west we have Ukhaji's Garden, already allotted to the Bohras (page 92), and on the east Ram Bagh, Padamsi Nainsi's garden, Jati's garden etc. As these become available for building, care should be taken of the buildings, wells, trees etc.; and the principle maintained of houses as far as possible isolated, or at least of small groups, separated from each other by permanent belts of vegetation scrupulously maintained; though the sizes and shapes of these garden blocks will vary widely, according to circumstances. Ram Bagh is shown as planned, for the class of houses indicated by Dr. Deo as in local demand.

### **New Normal School etc.**

This important College should have generous increase of its present land allowance, and this not simply for games, nor even for the Laboratories and Workshops of the opening future, but for Gardens; since these,—as existing evidence, let alone foresight, goes to show—will be more and more required for the training of the teachers of the future. The recent developments of primary education in the more progressive countries—France, Switzerland, America, etc. have long been showing, and the present change in Britain confirms, that the rural teachers, and even the urban ones, cannot much longer go on being trained in the prevalent collegiate atmosphere, of urban ignorance of the natural world. I therefore propose to leave for such uses the southern quarter of Rama Bai's garden. The rest remains available for a Suburb, and similarly as regards as much of the cultivated and open land to north and eastward as may not be needed for later educational development. East and west houses can become the rule, though modified as we approach the River, and the Women's College Road to northward. But the large Haystack field next the river, opposite the High School, I leave unplanned, as the only site in this quarter remaining available for future educational developments; and one likely to be needed for a College someday.

As already indicated, a complete planning even of the open land of this quarter, is only possible when the Imperial Service Lines become vacated for their future more suitable Military location. Their present buildings, though not in very good order, are not past repair; and though some demolition, of the worst houses especially, is necessary even to give healthy isolation, a money value, in aggregate not unsubstantial, may thus be realised towards abating the expense of this military removal.

### **Imli Bazar Road.**

Once more let us set out upon a northward journey; this time upon the road from the north-east angle of the Palace Square, proceeding by Imli Bazar road, and past Gafur Khan's Chhaoni into the northern suburbs. This is the most beautiful of all these old north roads, in parts the most inhabited, yet also largely the most open, with its many and extensive grave-yards and gardens. Here are the largest Mohamedan Quarters of the City, with their prominent tombs, their various traditions. We have here an admirable area for predominantly Mohamedan and Bohra Garden Suburbs. Sites more or less vacant can be acquired opposite Bakshi Bagh and northward; and still more when the area occupied by the Mounted Police can be vacated for another further west, say in the Fort area, and when the Imperial Service Corps can also be removed to the modern Training Camp already suggested (page 11).

Ahilya Paltan and Maratha Mohalla can then be improved, by attracting some of their occupants to these new areas, and re-planning and improving the areas they vacate; and this is already fully indicated on plan. North of this, the Sadar Bazar, with its preponderating Hindu character, similarly requires improvement; and this is not impossible, as the plan will show.

Similarly for the small Mohammedan Bhisti Mohalla, in which a foot-bridge over the Nulla is suggested, to connect with Fort Road. North again, we come to a large open space, of Grave-yard, Mosque and Idga, which needs but a little ordering and planting to give it the full beauty of a Park, and still a sacred one. A new Mohammedan Suburb is also suggested on plan, on the opposite side of the Nulla.

North again we have a Sadhu's small Temple, with a large fruit garden, and buildings which the Nulla is here threatening to cut away. Beyond this is another grave-yard, again practically continuing this north Park Area, while a large space of gardens on the eastside of the road maintains the open character of this practically country region. The Moslem Mohalla just mentioned, may readily be extended in this direction, as required, and be connected with these sacred buildings and cemetery Park by a Foot-Bridge.

When the Military Removal takes place, the various Officers' Bungalows should readily bring their full value, from purchasers who do not wish to wait for new houses to be built, or who do not expect time for their own trees to grow.

### Park System.

We may now review these three north roads looking southward from the Boulevard which runs west to east, a hundred yards or so south of the Polo-Ground; *i. e.* the Khadkhadya Ghat Bridge Road. This can easily be made a Parkway; most simply by planting a second row of trees beyond the present one on each side, and not building between this and Polo Ground. With all this our preceding improvements combine into a North Park System, enclosing Garden Villages.

There remain still two other minor northward roads to west of that which we have been last considering, those on each side of Juna Risala. But before their improvement, let us first pass further west to the largest of all the main northward roads of the city; that running up from east of Malharganj, between Jinsi and Malhar Paltan, and east of Shankarganj, past the Fort, towards Banganga. East of this road, and north and west of the Nulla, there is a considerable extent of ground: This lies partly open, but in military use, and with large buildings, including the Fort; and north of this we come to brick-field hollows. The domestic utilisation of these military buildings, with the planning of the open ground, and the reclamation of the lowly disused brick-field area for garden purposes, is indicated on Plan; and this Garden may be further considered, as an area in reserve; when we come to replan the Drainage System proposed for the city, in a later chapter.

### De-Congestion and Re-Housing of Communities in Garden Suburbs.

Return now to the Imli Bazar Road lately mentioned, from Palace Square.

On this Road is the spacious Bohra Bagh, containing the Cemetery, the Garden, indeed Park, and the Meeting-place, of this large and prosperous community, as also the home of their venerable Molla. Here was lately arranged

through a mutual friend, a meeting with some of the representative men of the community, interested by my suggestions for the improvement of their grounds, and for the adjacent housing, in convenient situations around these of both poor and richer families of their community. It was gratifying to find them fully awake to the present overcrowding and insufficient open space of their main centre in the City, at Bohra Bakhali; as also to the peculiarly heavy incidence of tuberculosis and other house-diseases which are associated with their strictly observed 'Parda' system in that neighbourhood. They were thus open to the suggestion of reserving their large grounds, while the men are absent during the business and working day, as a Zenana Park, with its gardens improved, and this made attractive to a more open air life for their women and children. For since these new homes can easily be planned so as to have direct and private access to the park and gardens, the matter of play for the children, with corresponding incitement to exercise and fresh air for their mothers and elder sisters, is thus solved; and this without in any way conflicting with the traditions of the Community. ( See pages 92 & 93 ).

The same principles have commended themselves in other quarters of the town. Thus the Bohras of Siaganj are considering the building of houses for their group upon the Peninsula, as part of the new lay-out projected across the River. Similarly for yet another group west of the Railway: perhaps one at Palasia; so that the de-congestion of the present Bohra quarters throughout the City is thus becoming encouragingly assured.

The example of this to other communities should now also be made the most of. Why not by other Moslem Communities, as above suggested, *e. g.* near the Mosque and Idga further north along in road ?

Again the head of the Jain Community has spacious grounds and fruit-garden on the parallel road to eastward. Why not here or hereabouts a Jain Garden Village ? and possibly others elsewhere ?

Among the Hindu public, with its many caste-groups, and increasingly with other social and business groupings also, may not the same policy appeal ? I trust so; and submit that this present suburban opportunities only need to be brought before them, with definiteness such as these plans supply, to lead to the taking up of quite a number of groups of sites, each planned with its own distinctiveness. To crystallise all these into definite quarters may seem to some at first sight a retrograde step, but I cannot think so. Such groups tend to create and maintain a good standard of housing and health throughout their limits; and this is a clear gain to the whole Municipality. Moreover they tend to become better and more public-spirited citizens; for when they feel pride in their own new Mohalla, they will not only help to keep up its standard and example, but be more, not less, interested in the general well-being of the town; and, were it only for their own sakes, in that of poorer and less organised neighbourhoods around. For our European Garden Suburbs the propaganda has to be made to individuals, who take up their houses one by one; and thus our new Villages and Garden Cities grow but slowly; but here in India collective appeals can be made; so why not with more rapid development accordingly ? It is encouraging here to note that by the active energy of a leading member of the Bania Community a large and attractive Suburban village may be set going for them before long.

Again, the organisation of co-operation in housing has been difficult in England; and it still goes on slowly; since the possible co-operators in every neighbour-

hood are all strangers to each other, without other ties. Whereas here each community has ties without number, of antiquity and strength, of blood and faith, of caste and occupation; with a tradition of collective action accordingly, and of generosity of rich towards poorer brethren; and sometimes even to the public as well, as recent benefactions show.

Instead then of thinking, as many do, that these "advanced western methods" are not applicable in this "conservative eastern atmosphere", I am compelled to the exactly opposite opinion. I believe that the many groups of an Indian city may organise and carry out large housing schemes, of course duly adapted in details, far more easily than we too scattered western "individuals" have as yet been able to do. The Bohras above mentioned are an example of this, and why not a dozen more communities before long? A judicious, but active, propaganda is of course required; but this should not be very difficult to set agoing.

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## Chapter XXXVI.

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### Indore East of Railway.

#### I. North of Tukoganj, to Malwa Mills, and to Palasia Nulla and Palasia.

##### Area East and North-East of Palace.

This large area, as large as the old City, was started with the spacious suburban eastward avenue of Tukoganj, with its villas, bungalows and mansions; and has also been extending northwards, past Palace, Park and Guest-Houses, to Malwa Mills and New Dewas Road. Its lay-out has naturally been continued on similar lines, though now for the most part somewhat less spacious ones. The original Plan has been improved and simplified, with some economy of roads and ground, but its essential Bungalow-character is not departed from.

The vacant land east of Lalkothi Palace, though too narrow for a Race-course, or a Park, will furnish an excellent and spacious site for the proposed Official Residence for the Chief Minister, and yet leave bungalow sites to east of this. All these sites are being rapidly taken up, and will soon be built on.

At its northern end, this Bungalow Quarter will be separated from the Malwa Mills and the Bazar opposite them by the wide bay of the Nulla; and this, when the stream is bunded, will fill up the old Nulla depression, and with almost a river-effect accordingly. The proposed Park border to this, and the new School, with large playground, etc. will further increase the isolation of these quarters from contagions.

##### West of Lal Kothi Road.

West of the Lal Kothi Road, and between it and New Dewas Road and the Railway, the whole area is shown as re-planned.

### **New Dewas Road etc.**

No more workmen's small houses—and still less any chawls—should be erected along the New Dewas Road, which will naturally become the main South street of the New Industrial Town, and connecting it with the City, with good Bazar shops etc. accordingly, and larger dwellings.

The recent generous promise by a worthy citizen of a fine Temple for the south angle of the Shilnath Camp (Dhuni) area will make the best possible start for the New Town. At this main meeting and divergence of Roads, and behind the Temple Garden, I locate the Boys' and Girls' Schools which should soon be needed for this quarter. Also, a little further eastward, the Technical School; so as to be near the Educational quarter, and the City, as well as of easy access from all parts of the Industrial Town.

### **Dhuni.**

The road system here is improved, as shown on plan; and though a few house-sites are marked out, there will still be room for the development of buildings for the religious and pilgrimage uses desired by those so strongly interested in the Dhuni; and, until their scheme materialises, this open tree-planted space will serve as a little park and playground north of the new Temple and Schools, and be attractive to dwellers further north also. See page 99.

### **Post Office, and Bank Site.**

Opposite the New Temple, on the southside of New Dewas Road, is the natural site for the branch Post Office, which will be needed for the New Industrial Town; and beside this a Bank Office may also naturally arise.

### **Pinjrapol.**

The Pinjrapol need not of course be removed immediately, nor until demand arises for its possible sites: but these are marked out on plan; since this location is evidently far too valuable to afford henceforth so large an area for these humble uses. Necessary, admirable and philanthropic as these are, they will not in the least suffer by removal further eastwards; and, despite the necessary expense of demolition and rebuilding, this will be found to pay, and very satisfactory. I therefore suggest in compensation an at least equivalent area, north-east of Residency, at East Gwaltoli village; and either south of this, or east of the Nulla: but I may best leave the exact location to those better acquainted with the available pasture-land of this quarter, and able to make the needed re-adjustment with least inconvenience to villagers, and general advantage if possible.

The large Mango Orchard, west and south-west of the Pinjrapol, is also planned out for Bungalow sites; and the whole area down to the Palace Park, and over to the Guest-Houses, is made the most of.

### **Area South of Tukoganj, and North of Residency.**

Here, along a smaller avenue parallel to Tukoganj, a new row of smaller country homes has been arising. This only needs completion.

The zone of Vacant Land between this and the north boundary of the Residency, measuring as nearly as may be 200 yards in depth, is shown as allocated in

part as gardens for large mansions towards its east end. But to the west, I advise levelling this ground, planting shade-trees ( mangos and tamarinds ) along its borders, and leaving it open as a Playing-field. Cricket-pitches, Football and Hockey-grounds etc. will be more and more in demand from Young Indore as years go on; and our new Express Boulevard from the City by the River south of Machhi Bazar, and through Juni Indore to the Under-bridge and Nasia Temple, will make these playing-fields far more convenient and attractive to the City than at present. The site for the proposed Hindi Library may best be on the western margin.

For the old Plague Camp ( in any case to be vacated ) we have already found a central, yet better isolated, location (page 143). This area I therefore now divide into large sites for Bungalows, for which the variously shaped sites admit of laying out gardens and approaches so as to seem more than usually spacious.

## II. Railway Station Neighbourhood.

The remaining areas may best be planned from this main point of arrival and outlook. The roads adjacent to the Station, and essential to it, and the open Station Place, admit of slight improvement, which is accordingly suggested on plan.

### Serais and Hotels.

In addition to the existing Maharani's Serai, an imposing building erected in 1910, no less than three new Serais are proposed by different donors. One by the Bania Community, for their members and visitors, another by Mr. Kalyan Mal, for general Hindu use; and another by the Bohras, for visitors of their community from other cities. Furthermore a Hotel has been proposed, at first on lines too large and palatial for the requirements of this city for many years to come, and which I need hardly plan for; but, more recently, on the minor scale which present and probably future requirements indicate as likely to survive: and for which a site must be found accordingly. Here then are no less than four kindred sites to be found, all as near the Station as may be, and clearly in sight of it, as well as easy reach.

Immediately south of the existing Serai is a good site, only partly occupied by a small bungalow; but this is unfortunately limited in frontage, and spoiled in aspect, by the oblique expansion of the adjacent and unsightly piece of irregular waste land, left unused by the Railway after the erection of its Station-Master's house etc. But if these two pieces of land can be thrown together, and then re-divided by a line at right angles to the road instead of oblique to it, there will then just be room—but room enough,—for two of the three proposed New Serais. With the existing Serai, we shall thus have a fine line of three kindred buildings, harmonious in general architectural effect, and giving at once the finest and most hospitable possible impresion to visitors arriving at Indore. From the accompanying sketch plan and elevation, which have been made at my request by Mr. H. Foster King, F. R. I. B. A., an architect already well known and appreciated in Indore, it will be seen how desirable is this grouping; and I therefore very earnestly hope and recommend that the execution of this scheme, by acquirement of the needed site from the Railway, may be proceeded with, and that the generous donors of these fine buildings may not be disappointed or delayed.

The Railway Board may perhaps ask—Why not these new buildings on the portion of land further east, lately re-conveyed to the City and still unused? But

the answer (above and beyond such compensation as may be agreed on for surrender of the frontage land, long useless to the Railway) is, that that piece lies too far east, and is behind both the Station-Master's and Police Superintendent's bungalows; and it is therefore out of sight of the Station, save in the distance, and then only at a single point. At this exact point we locate the entrance of the proposed small Hotel, of which the gate and sign can be made visible from the Station, so as to guide its visitors, but little or nothing more. It is not therefore suitable for the third Serai, whose donors naturally desire a conspicuous situation for their proposed fine building.

For this, Mr. King and I are agreed, following a suggestion from Dr. Deo, that a first-rate site can be found by taking up the east corner of Gwaltoli, facing the Siaganj Railway Crossing, and thus only a little way south of the Station and conspicuous from it. Here are already shops and houses; but dilapidated, and needing rebuilding. We therefore recommend acquiring this site, and recovering its extra cost by building a Serai of different type from the preceding ones, with shops on the ground level—(a first-rate situation for them, between Siaganj and the Residency)—and with the Serai accommodation on the first floor accordingly. A fine building is thus obtained for this commanding situation; one desirable for improvement from every approach and point of view; and where, at the same time, good business may be done.

When Mr. King's sketch elevations are viewed along with their plan, the transformation which these three new Serais, in addition to the existing Serai, will effect upon the existing Station Place and its approaches, will be convincing to all concerned. Here is in fact a range of buildings fully in keeping with, and worthily leading up to, the architectural dignity of Topkhana, with King Edward Hall, Government Offices, Law Courts etc. The improvements already recommended for the Railway Crossing, (page 89) and for the adjacent Public Garden (page 88) will now be seen as doubly desirable.

#### Gwaltoli etc.

Given all this improvement of the Station Quarter, the remaining clearing up of Gwaltoli, and of the Cart-stand to south of it, is an easy and natural one. With the new Garden next the Nasia Temple (page 81) everything will thus be put in order, from the existing Serai all the way down to the Under-Bridge and Express Boulevard. Nor must we forget the increased importance of the road between the Christian College and the Nasia Temple towards the proposed New Bridge over Residency River to the new suburbs. It is earnestly to be hoped that the threatened College wall, which would destroy the present pleasant garden aspect of this road, as already on the north, may not be erected.

It may be remembered by the vigilant reader that the only remaining unsightly aspect of the railway entrance to Indore is that east of the line and opposite to Gwaltoli; but this has been already attended to (page 131) and shown on plan. I well remember the depressing and unfavourable impression of all this squalor and confusion on my own first arrival in Indore, six months ago; and every stranger must more or less share this feeling. None will deny the desirability of thus thoroughly clearing up and transforming this whole Station Neighbourhood in useful ways, as now fully indicated; and of giving this fine situation the seemly, hospitable and architectural character towards which all these generous benefactions are ready to combine. Those leaving Indore will also carry away a better recollection of the City.



## Chapter XXXVII.

### Cleansing before Drainage.

#### Introductory.

We have now gone over the whole City, Old and New. The planning of the New Industrial Town has first been outlined (Chapter VI). Next (Chapter IX &c.) the continued development and extension of "Plague Camps" into extensive Garden-Suburbs, habitable throughout the year; so that all these extensions, the industrial and the rural together, may substantially de-congest the City; with gain to its cleanliness, and abatement, if not removal, of its present beginnings of house-famine. Such clearances as are indicated on the plans as needful or desirable can thus also gradually be effected; and without raising rents or further reducing the standards of family accommodation, as otherwise follow upon municipal clearances. The improvement of Public Health will thus from the outset be in progress, as statistics will show: and improvements may thus be vigorously undertaken, though I trust under the precautions emphasised above (page 157). The business efficiency of the town will also thus improve; in short, wealth as well as health. Such, in summary, are the Improvements of Chapter XXIV and onwards.

The moves of action upon the Improvement Plan, like those of a chess-board, have of course carefully to be thought out, in and for each quarter. For when improvements, estimated and approved, are thus adjusted in detail, their progress, made thus move by move and step by step, will be more rapid and more economical; since without most of the unforeseen friction and resistance which even the best improvement schemes, insufficiently considered before execution, too often provoke for themselves accordingly. Here the very contrary of this should here be possible; to take a growing mass of public opinion with us, and from the outset. Even with active arousal of citizenship; and this to the extent of loyal acceptance of such personal inconvenience as must sometimes be inevitable; but also, and more generally, co-operation in improvements; and even to generous initiatives towards the bettering City, and these in street after street, mohalla after mohalla, home after home.

#### Cleansing before Draining.

Towards all these desirable ends, what is the needful policy of those desiring their execution? What policy can be more needful, or more helpful, to initiate improvements throughout and outside the City, than to announce and inaugurate these, and in the most simple and inexpensive, yet conspicuous and fruitful way, because sympathetic and inoffensive! How is this? By a renewal, and on a greater scale, of that strenuous endeavour of cleansing which was made for a few weeks before last Diwali, and which not only notably abated the association in the popular mind of town-planning with demolitions, but encouraged domestic and local efforts; and so appreciably contributed to the improvement of public health. To resume this simple process—of cleaning up, and clearing up,—that is how to prepare the public towards the co-operation and participation, which is the necessary condition of success at every point. This process is actually emphasised before Festivals and public occasions; and I see it going on at present, as I write, before the All-India Hindi Conference. So might it also with advantage before Holi and other festivals; but, above all, let us begin preparing for Diwali 1918. This is my first

recommendation, and entreaty, This time public and local co-operation may be more fully elicited, and private generosity also; and those throughout all classes, and not merely from the rich alone, though theirs may as usual be initiative. The too slender Municipal Budget is at present fully occupied with maintenance of its daily services: hence for these extra tasks—*e. g.* the clearing out, throughout the town, of the accumulated rubbish of many past years, which was conspicuously begun last Diwali, but still mainly remains to be dealt with—it needs support, and this not merely by a grant from the Government exchequer, which has to meet the calls of the whole State, but also from the Indore public, who directly profit by the proposed cleansing. Active help—and of various kinds—is here needed by the Municipality; and from all citizens who are truly friends of Indore.

It is also gratifying to be assured, and by those best qualified to judge, that the public recognition of the Sweepers and Municipal Labourers in the Diwali Procession of last year, with the small improvements effected in their Mohallas, had a bracing value upon their labours, manifest even now, months afterwards; so that we have here again a line of policy which should be actively continued. Thus to increase the effectiveness of labour will no more fail of civic reward than it does in industries and manufactures.

### Cleansing Scheme.

With the skilled co-operation of Dr. Deo and his able and energetic assistant as Public Health Officer and Cleaning Superintendent, Dr. Nayasarkar, a Cleansing Scheme has been adjusted, which needs only brief outline here.

Before removing rubbish, we must know where to put it; and the present dumping-places along the river-banks *etc. e. g.* at Dewas Ghat Bridge, or south of Muchhi Bazar for New Boulevard, can now take but little more. At the Peninsula point opposite Sia Ganj, however, a large quantity can be disposed of; similarly behind the Basalt Rampart of Juni Indore peninsula, and other points agreed on for future gardens, *etc.* Thus every cart load should count twice: first as rubbish removed, so leaving cleaner homes, cleared drains, good soil-pits for future tree-planting, open sites for building spaces, future playgrounds and gardens, properly levelled, and so on. And secondly, as material for filling up mosquito-puddles, embanking or bottoming new roads, or for improving the soil of future gardens; and all according to the nature and quality of the rubbish removed.

And as wind lifts far less dust from level and tidy surfaces than from irregular ones, the Dust- nuisance, though as yet largely inseparable from town-life, can be greatly abated. For after such cleansing, there is at once diminished, yet more effective, sweeping of streets and homes. There are fewer rats, and there are fewer flies; and so in every way less deterioration to goods, food and milk. Perhaps above all we may reckon the diminished impurity of the air we breathe. So in all these ways and more, such cleansing pays, in health and vigour, and in wealth as well. That cleansing is not a mere matter of extra taxation, but of profitable investment—and this in health and wealth alike—may thus be brought a step nearer realisation, alike by the general public and the educated and governing classes; who at present everywhere are failing fully to recognise these advantages, though within their easy grasp. Yet after this effort all alike will find this open secret of city wellbeing clear to them henceforward.

### Public Health Results more definitely.

Without repeating Chapter IV, we are realising its suggestions. For thus we at once diminish that poisoning, by dust and germs, of lungs and bowels, which

initiates so many of their respective diseases: we abate malaria as promptly, by thus filling puddles and tidying nulla margins; and we reduce the plague-rat army, by removing the rubbish among which it lives and feeds. And above all, in a cleaned Mohalla, there arises a pulse of encouragement and hope; and these are the symptom and the promise, of abatement of its prevalent neurasthenia.

Ofcourse if we merely do this occasionally, or only yearly, things soon slide back more or less, towards their old conditions, and the pessimist's croaking then discourages fresh endeavours. The cleaner state of things has to be maintained; yet this, even with the same Municipal staff, will be less difficult to do. And still less so after each such period of festival impulse: hence let us utilise them too, for all we can. Here also lies the very real hygienic value of colour-washing, house-painting and decorating, of tree-planting, garden-making, and so on. Each garden-patch upon our plans is thus not merely significant as a finished product, desirable, beautiful, and ever-improving, as in growth it should be; but in some ways most of all in its making, as a definite social impulse. So let the Municipal President, and his Garden Assistant, before and while making the garden for this or that Mohalla, give a stirring up to its people, to be rising to the occasion; and this in the other yet kindred, ways, with their own homes and surroundings. In such ways, improvements may not only be maintained, but further improvements desired and asked for; and health, productivity, and city wealth thus be raised, and kept on higher levels along with them.

### Co-operation of Schools.

How Schools may assist in these matters, has been already suggested and implied in Chapter XXIX: but that very definite process of education, of parents by and through their children, may here be said a further word for. Thus the diminution of town dust gives a far better chance to silkworms; and Dr. Joshi's admirable Silk School (pages 29-31) may thus emerge from its too specialised retreat into the schools. Let it plant their playground borders with mulberries—and there with those fruiting varieties which, albeit of less valuable leaf for silkworms, have so strong an attraction for the voracious young creatures of our own species. Silkworms will thus find their way from schools into homes; and for these their dust must all the more be cleared out, and taken away. Here in fact is an instance of how we may now get beyond the expert stage to the civic one: for though silk-experts everywhere long fail to persuade peasants, children persuade their mothers; and thus the fathers, who resist the expert's frontal attack, will be captured by this flank one. So again for fruit-tree-planting, and for vegetable gardening. The City Gardener whom we need is thus no mere expert; but one who has been himself a gardener as child; and so can again garden with the children, and with and from the Schools to the Mohallas.

### Utilisation of Volunteers.

Again, the Hindi Conference, with its 600 volunteers—mostly young men, students and others,—was full of promise for City Betterment. How can these energies be enlisted? What more promising way of initiating this improving City Future than with those will enter into it?

### Removal of Garbage.

In all "Sanitation in India", of the kind described in Turner and Goldsmith's standard volume of that name, already mentioned (page 72), there is no separation

made among the matters removed by the dust-carts daily. Yet though thus indiscriminately collected, and dumped, they may (or may not) then be picked over. The contrast is instructive as given by Dr. Turner, between Bombay and London waste. In London 64 % is cinders and ashes; then dust 20, straw 3, paper 4, food-waste 4 or thereby; and the small balance, of 5 %, is of broken glass, pottery, old metal, tins etc. But in Bombay cinders and ashes are under 2 %, and broken mineral matter no more; and the bulk consists of hay 42 % leaves 14, green vegetable matter 8, and straw 1.5, say 65 %. Then no less than 21½ of waste paper, 4½ of dung, and the remaining 10 % of mingled mineral and other rubbish. In Indore the composition must be somewhat different; with less paper, for instance; yet also mainly of vegetable nature. And some too goes to choke the drains. The disadvantage of Indian refuse is that it is more bulky; and so needs more cartage, as well as for a longer distance to the fields. How then was it disposed of, before the present age of more or less European sanitation? The answer is obvious: it was eaten by the cows: and for the Mohammedan Mohalla by its goats, and its fowls also. In the great city, as an illustration in Dr. Turner's book strikingly shows, the untidy old cart, dropping rubbish as it goes, is now being superseded by the motor-waggon, on its way to the destructor. But we cannot easily everywhere in India afford these latest luxuries; and I for one will not recommend them to Indore.

Given our Mohalla interested in its own cleaning up, why not frankly revive the old customary Indian method, which would dispose of a great bulk of it? It does indeed still largely survive; for people who have cows, get garbage for them from neighbours who have none. There is thus no serious difficulty—beyond that of the too impersonal nature of modern sanitary administration, and its consequent loss of touch with family life—in organising this custom more fully. The more people in Indore can keep cows, the better; provided the shed be clean and well drained; and in our new suburbs, and town-rebuildings too, it is easy to insist on this; nor is it impossible to repair and improve existing conditions even in the heart of the City.

Again, in our City Gardens, why not keep cows, thus largely fed? Their milk may form a valued part of their keepers' wages, themselves gardeners or carters. Similarly, let a child goat-herd be arranged for in each Mohammedan Mohalla: such perambulation would clear away much that at present goes to Municipal carts. But, it will be objected, such vegetable matter is at present often too polluted to be eaten, by cows at least, if not by goats as well. Yes; but whenever children and their mothers become interested in feeding their animal visitors, this pollution will be guarded against, in fact practically put an end to.

But what of the abundant paper, old hay and straw, uneatable leaves, dust, and the like? Why not start travelling round the Mohalla an expert dung-cake maker, who would mix these into the fuel? With an added touch of the cheapest combustible oil, such cakes might immediately be made popular.

#### Disposal of Residue.

There should thus remain to cart away only a fraction of the present volume, the inorganic matter for the most part. Next I should not cart this so far as is customary; but take it to the nearest open space or garden, and there bury it in a trenching-hole, upto and even well above the surface; then cover it with earth again, and so have a raised terrace: for this is a great improvement to an open space, alike for children to run up and down, and for elders to sit on in the evenings. A pipal tree will grow admirably, planted upon a platform made in this way, when it has had a season to settle; and thus its humble origin would soon be forgotten.

Now a very appreciable proportion of the City's cleansing budget is spent on this cartage of garbage and rubbish: and to reduce this, by even one half, is a saving worth attempting: its value may be further realised if we translate it into a capitalised gain, at say 15 years purchase. The best way however is simply to keep in mind and aim the actual economies of carts, cattle and men, of diminished wear of roads and lessened dust, and of abated congestion, effected for the city's thoroughfares, by every dozen bullock-carts taken off them.

### Further Cleansing of the River.

Through the removal to the Gardens of the present thirty and more Drains which at present defile the river, and of the rubbish dumps along its banks as well, the more essential improvement upon its condition will be accomplished. Yet to complete this, one further improvement is desirable, and this should be proceeded with, as soon as the bunds are opened this season. Proceeding from above downwards, the river-bed should now be regularly cleansed of the long accumulated decay and slime which make its bottom so unpleasant during this period, and which prejudicially affect the purity of the river at all seasons. This is of course a matter of some expense, though not great: since the mud need at no points be carried far, but used to fill up holes on the banks, and above all to top-dress the existing and future gardens of the neighbourhood. To do this is no mere expense for removal of dirt: it is the fundamental investment of mankind in history, and still the best: that in fertility; the transformation, for every yard this mud can cover, of the agricultural poverty of India into the wealth of Egypt and China.

The appreciably increased depth and volume of the River is also a further aid towards preventing stagnation and maintaining purity. This silting up of the River, since its bunding, has already gone on too long: and should now be attended to, as it is growing worse every year.

### Old Wells.

Although in general I plead for the retention, and garden use, of the many old wells of Indore, and especially of the fine old Bauris, so often architectural monuments of which any City might be proud, there are undeniably a number which may be dispensed with. But even these should not be filled up: there is a far better use for them, that of conversion into Ensilage pits. Though Ensilage is not yet used in Indore, Indian agriculturists are increasingly awakening to the great advantages, both of economies and profits, which are obtained by its use: and at the Ewing Agricultural College at Allahabad, and doubtless also nearer, they may be seen in successful yearly working. I am glad therefore to have Mr. Coventry's high authority in support of this recommendation. The experiment might for instance be made for the oxen of the municipality; and the experience would thus spread to others. The preparation of the well bottom and the management of the pit are easy matters, into which I need not enter here.

### Haystacks.

Though this point be not in place in this chapter, its relation to the above makes mention here convenient of the many Haystacks of Indore. Their great number, and bulk, and the extent of vacant ground kept around them, from risk of fire, are all obstacles to town-planning, and I have been compelled to recommend their removal from various points needed for suburban and other developments. But

with the introduction of ensilage, there is correspondingly diminished need of hay: and though some of this also will always be required, the abatement will be a great help to many areas. The grass-cutter's interest will be helped, not hindered; for more people will keep cows when these are found to give more milk. Furthermore, let me call attention to the compression of hay by the military authorities, as economical of bulk, with improved keeping of the hay, with diminished danger of fire, and far greater possibility of localisation and extinction.

### Conclusion.

The plea for Town-Cleansing might be carried yet further; enough however to begin with; and to increase the demand for that improvement of the present Drainage System, which we are now ready to consider.

## Chapter XXXVIII.

### Surface Drains.

#### Introduction to New Drainage Scheme.

Let me first recall the argument for abandoning the present disastrous habit of Indian Municipalities, of entering into Drainage Schemes before Town Planning; and so ask the reader to turn back to pages 49-59, to refresh, at least from the section-headings, his recollection of the detailed criticism of the recent Drainage scheme; and to glance once more at pages 60-64, this last especially.

Ofcourse the new and simplified Drainage Scheme, which we have now to consider, is dependent upon the acceptance of the proposed Town Planning Improvements, as shown in detail upon the plans: but as these have now been amicably adjusted, to their last details, with the Municipal President—whose local knowledge is, in my experience of six months in Indore, without rival—I may reasonably assume that no serious alterations upon these plans need be anticipated in the near future, nor until social changes, at present unforeseen, may arise to render further Town planning desirable in the public interest.

#### Survey of Existing Surface Drains.

It is a further defect of conventional Drainage schemes that they pay but scanty attention to the existing surface-drains of a town; and seem generally even to discourage their repair. I have seen this resigned attitude, of indifference to the present life in expectation of future bliss, applied so far in various Indian cities, as to produce the filthiest and most pestilential conditions, and to allow these to extend and increase for years after the promise or project of the scheme, and still without its beginning. I know others in which the Drainage scheme has begun; and in which this accumulated squalor of the past, added to the inevitable obstruction of such great operations, make up a state of filth and misery which has again to go on for years. And all these deteriorations of the surroundings are producing a depression of the health and spirit of the community never to be forgotten by the visitor, and slowly by itself.

Things are happily not so bad in Indore: still the beginnings of them are manifest; as since the advent of the first Drainage Scheme, and through the

withdrawal of the allowance of Rs. 5000/, formerly budgeted for surface-drain repairs and extensions; and with deteriorations of the system accordingly inevitable at many points. No doubt pending a Drainage Scheme, the construction of new surface-drains is an uncertain matter: but the old ones at least should be kept in order meanwhile. This has indeed been done as far as the reduced budget allowed: and much good and health-giving work has also been effected in the lanes by paving, and by the supply of drain-channels behind houses.

But whether the past Drainage Scheme be revived in some new variant, despite my criticisms (Chapter VIII), or the scheme I have next to propound be accepted, it is obvious that surface-drains are not to be dispensed with: on the contrary, for any scheme, they cannot be too good.

Hence in any case a Drain Survey is expedient: indeed I see I should have pressed for this long ere now, and got it in detail; with presence or absence, repair or disrepair, efficiency or stagnation, all clearly marked down, for every street and lane, upon one of the sets of survey sheets of the whole town.

### Improvement of Surface Drains.

A less thorough survey has however of course been made; and the resultant impression is much better in many other towns. Here most of the drains do run, though often too slowly: but this sometimes by mere choking, and not always by deficient gradient. The commonest source of trouble is that the road has risen too high over the drain-edge; so that the rubbish taken out by the sweeper on his rounds is pushed or blown in again before the removal-cart comes along. No sweeper can be expected to clean very vigorously under these discouraging conditions. The remedy is rarely to lower the street to its former level; but, more commonly, to build a new course of stones upon the drain-edge, so supplying a narrow kerb, to keep back waste-matters from falling in, yet of course with a three-inch gap at every yard, to admit storm-water.

Again the drain is commonly of unsatisfactory section, too wide at the bottom, and also too rough. In pointing the joints with cement, these roughnesses may also be filled up. In future, drains should be built with better dressed stone, or with a half-pipe at the bottom. Good sections are now illustrated in every engineer's book of reference, adapted to all the varying requirements of volume and gradient.

### Flushing of Drains.

The flushing of drains has rarely been possible in the past, owing to the insufficiency of water-supply. But now that the Municipal supply is doubled, by the opening of the standposts of the P. W. D. system, (page 41), and that further supplies are inexpensively realisable, (pages 45-48), there is no reason why Drain-flushing should not be as regular a municipal service as any other: and I cannot too strongly recommend that this be set agoing forthwith. To have erected standposts without any connection to the adjacent surface drains was of course a false economy; and puddles arise around them in consequence. But the recently obtained estimates show that the whole set of 280 posts can be connected with the drains for Rs. 16727 and I trust that this necessary work may soon be authorised and set agoing. The expense of this is however a mere arrear of the preceding P. W. D. Water Scheme: hence indispensable though it is, I accordingly do not include it as part of my Town-Planning Estimates to follow, but leave it, as indeed also the repair of surface-drains generally, to be reckoned as part of that general upkeep of existing roads which is

the every-day affair of a Municipality, and which no one would think of debiting to its new Town-Planning at all. The Surface Drains of the new Suburban Extensions, and of new City Thoroughfares, are estimated, as part of the expense of their Road construction.

Returning now to the needed Flushing of Drains, this will easily afford the needed test of drain-efficiency. Proceeding regularly throughout the city, and conveniently from the lowest levels towards the highest, let each drain-length, below a standpost, be cleansed; and then let a simple dam be made, (say with a leathern well-bag distended with cotton-waste, and weighted with a stone), on each side of the inlet of the standpost, so as to run in, and hold up, sufficient water. When the dam on the lower side is pulled out, we shall soon discover how well the water runs away, or how soon it may come to a stand; or whether, as in some cases, it runs underground or under houses. Minor repairs may then speedily be made; and serious ones arranged for. Ofcourse where, as in some cases, this experimental flushing proves the drain runs nowhere, this section must, until improvement, be left out of the flushing scheme.

### Conclusion.

But in the main, the existing Drains can speedily be put in much better working order, as part of that general Cleansing of the Town which is here pressed for, as the best of preliminaries, at once for Town Planning improvements, and not least for that further and fuller Drainage, which we are at length ready to enter upon.

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## Chapter XXXIX.

### Drainage after Town Planning and Cleansing: Proposed Drainage Scheme.

#### Introductory.

The general nature and principles of the proposed Drainage System for Indore have so far been indicated; as, in short, a return from the current method of "All to the Sewer," to the older method of "All to the Soil". Hence speedy resultant productivity of Gardens, and purification of Rivers; and all at but a fraction of the previously proposed outlay, and this with economic and other return. To avoid repetition as to all these points, references have been given at the beginning of last Chapter, to which we may now add Chapters XI & XII, and these will be assumed as read and considered.

#### Drainage of New Suburbs, and Industrial Town.

And since even the most ardent advocate of such a scheme as that criticised in Chapter VIII will hesitate before estimating also for the long mileage of our New Industrial Town and Suburbs, and adding these outlays to that for the existing city, I may reasonably hope that the Municipal Gardens, as shown on Suburb and Naya Indore Plans, will be established, as these new quarters develop. Chapters XI to XIV have already fully explained these suburban proposals, and may again be glanced over, ( pages 74-81 especially, and page 86 ).



### **Drainage of the Existing City: Sia Ganj and Juni Indore.**

We may therefore return to the City, and go through it as far as may be in the same order as that of its Town-planning Improvement, Chapters XXIV-VI and XXXI-V. First then Sia Ganj and Ranipura (pages 133-4), and notably the ideal test case of the Hospital Nulla Garden; as also that of Ranipura for its Moslem public. With these also may be noted the garden slope of south Topkhana. With the bridge from Sia Ganj to the Peninsula opposite, the slight raising of the low ground as a Garden is also recommended.

Again for Juni Indore, my proposals are clearly outlined on pages 140-141 and on Plan. When the main garden south of Juni Indore is started, its drains can be adjusted; and the minor gardens shown on plan will also develop in due course.

### **Condition of the Rivers.**

Here now may conveniently be considered the present state of things, as regards the Rivers, since their woful condition furnishes conspicuous and crying evidence of the need of improved Drainage. So on the present City Plan, (1) are marked, with 30 black arrows, the present main inlets of abomination, with which Indore is polluting the Sacred River and the drinking water of its Mother-City of Ujjain. Yet the Rivers here enter pure, only a few miles from their mountain sources, and immediately below its reservoirs from which we drink in safety. And though the bunding of the rivers through Indore assures their landscape beauty throughout the whole dry season, it becomes noticeable, by the end of March, that the rivers, begin to smell. So in another month or so, they stink—as thenceforward, until the full onset of the rains in July, though every prospect pleases, among the vastest and vilest cesspools in the history of insanitation.

### **Residency Sullage entering the River.**

But now beginning at the highest points, with the Residency inlets, the State Engineer and I have suggested simple and economical treatments of these (page 53); and so feel reasonable hope of their consideration. And similarly, we have above been disposing of other drain inlets, down to Krishnapura Bridge; so that, for the Residency River at least, the task of cleansing presents no serious difficulty.

If and when any such difficulty arises, *i. e.* should the population of any area outrun the absorbing capacity of its garden area, the introduction, at the lowest point, of a small septic tank—or of such improved appliance as may by that time be available—will ofcourse be necessary, but for the present this is not required.

### **Drainage Further Down Stream, East Bank.**

We now pass Krishnapura Bridge, and take with us such drains as at present enter there, down the New Municipal Office Boulevard. The strip of low ground, close to the river, can easily be irrigated from these; and so become a Garden, at once attractive and educative for the large City School, on the opposite side of the Boulevard.

The large Nulla running down through the Municipal Compound, and containing the sullage of the Chamar Mohalla and others to the eastward, can similarly be widened and terraced along its banks to furnish an excellent Garden, like

that of the Hospital; yet leaving space for sites beyond, as shown on City Plan. Then crossing the Dewas Ghat Road, we descend into low fields (already largely used as a dumping-ground by sweepers); and here we can dispose, and more efficiently, of all the present or future population can supply. In Nayapura too, its unwholesome and mosquito-breeding cesspools may be run off into its proposed Gardens.

In this way the whole east side of the town will no longer pollute the river but inoffensively enrich the land. What now of the right bank, and the larger River?

### Drainage on West Bank of the Indore River.

We now cross the river by the Dewas Ghat Bridge, and note the existing Septic Tank. This was erected in 1914 for the Palace, but its working should be reinforced by the supply of additional sewage from that neighbourhood, since ample and regular supply is a main condition of for its efficiency. Immediately north of this is an old dumping-ground of city rubbish, which only needs to be lowered a little, by extension towards its north end, to furnish an excellent Garden for the quarter to westward. To water this the existing steep and deep storm-water channel can easily be supplemented (and, in the dry season, superseded) by a small sullage drain at higher level. There is no drain-inlet further down stream; and ofcourse none should in future be allowed.

We turn then up-stream. Opposite the west end of the Municipal Office Bund, we note two available Garden spaces, sufficient for their immediate neighbourhood.

West of Krishnapura, and running south to behind the Statue Place (shown on plan as improved) we have a spacious vacant bank, with scattered trees, largely made up, in the past century and more, from the rubbish of the town, and now bearing several Temples. Leaving due spaces around these, and laying out paths to connect them, this somewhat neglected area may speedily be transformed into a Public Garden. Here Roses are suggested as the main feature, and those of the exuberantly flowering and tall-growing varieties. These should be trained over the walks as a Pergola, and also grown on posts and chains along the centre of the beds on either hand, with smaller roses between, and chrysanthemums in intervening spaces. These flowers peculiarly flourish in rich soil, and reward manurial treatment. This Garden will be in contrast, yet general harmony, with the existing bright Municipal Flower Garden beyond the Ghats and Chhatri, and so will double the attractiveness of the River-side Promenade which is so desirable along this quarter of the city, so central as regards access and attractiveness alike.

Proceeding up-stream northwards, we come now to the large, but neglected and practically disused, private gardens of the houses of Nandlalpura Road. These should be acquired, as also the patches of open ground around the river-side Mohalla of Kabutar Khana. South of this again is a good field, of 2 acres, already often contributed to by the sweepers: and next to this, south of the road to and from Juni Indore Causeway, and of the old Mohalla mound (on which I have suggested locating the School mentioned in Chapter XXVII, is the vacant low-lying peninsula, of 7 acres, already pointed out (page 143) as one of the best Garden-sites of the whole City.

Further up-stream the low-lying vacant ground of Harsiddhi Peninsula, on its north-east, and thus on both sides of the proposed new Bridge, affords two utilisable areas, which will also improve the present beauty of this river landscape. On the north side of the river, the new Express Boulevard, south of the Machhi Bazar, may grow a belt of roses, chrysanthemums etc. 500 yards in length, upon its embankment slope, between its road-level and its retaining willows, when appropriately sullagewatered.

We next come to Nayapitha, whose dilapidated and plague-infected houses we have already on Plan largely marked for removal, with adjacent thinning to northwards. Here we mark out on the Drainage Plan, a good large Garden space, of 5 acres, north of the new Express Boulevard along the north of the Chhatri Bagh. With its range of noble Tamarind trees along the existing drain-edge, we have here the conditions for a garden in general effect maturely beautiful, even from its beginnings.

### Resulting Improvement of Rivers.

So in course of this journey round the River banks of the central city—an hour's walk in all—the reader may see for himself that each and every one of the drains at present entering the river can thus be dealt with, hence the black arrows—thirty or more—which disfigure the plan of the existing City, do not reappear upon that of Drainage. These inexpensive, simple and practical operations once effected, as they may be in a single dry season, or two at most, the present annual evil smell of the River will thus disappear, for good and all; and it should henceforward flow out of the City practically as pure as its confluents enter it. Hence the legitimacy of the petition of Chapter XXI, to the State, the City, and their religious communities and leaders.

More than the youth of Indore will also soon appreciate the possibilities of boating and swimming along its whole bunded course, as well as of bathing properly at every Ghat alike; and not, as at present mainly, going so far as its highest one, above Chhatri Bagh Bund, beyond contamination of the present drains altogether.

### Summary for River Basins.

Now reviewing our whole Drainage Planning, so far as we have yet gone: *i. c.* round the actual basin of the uniting Rivers, it will be seen that we have now provided (1) for the whole Eastern Bank of the River: and (2) for the Western Bank as far as the main zigzag dotted line on Drainage Plan indicating the Watershed, and thus running across the old city from North-east to South-west.

### Remaining Drainage, by the Pilia Nulla Basin to North-West.

As already clearly pointed out in Chapter VIII, (pages 54 and 59) this is the present and actual Drainage Basin of the greater portion of the Old City; hence it is but natural to preserve, and utilise as far as possible, the course of the existing drains, as they run to these three northward streams, just as has been done in the past and present. We begin, then, with the eastmost of these three, now largely transformed into the large and well built stone drain, starting north of Aligoal street, and at present receiving the sullage and storm-water of surface drains, back to the dotted Watershed line, beside the Old Palace.

It will be seen that this Drainage Area now includes only the small North East of the Old Fort town; but it drains, as it runs northward, all the Imli Bazar chain of Mohallas of its right bank—from Gafur Khan's Bazar and Chhaoni, Ahilya Paltan, Marehta Bazar and Bhisti Mohalla to Sadar Bazar; and on the left bank, Juna Risala etc.

We pass next to the middle Drain Nulla. This at present collects both sullage and storm-water from a large area of the western town, running straight northwards from its start west of the Lodhipuras, till it bends round Malhar Paltan, before falling into the Pilia Nulla. But at this bend, it cuts too deep to be made conveniently available for irrigation purposes; and the vacant land beyond is therefore planned as a suburb.

Hence we proceed to the main Pilia Nulla basin, and drain west and north-west to this; and we take in the drains which at present run into the Middle Nulla, just described, but with provision for their overflow, in storm-water season, into their present direct course.

Hence the main drain lines shown on these two portions of the Drainage plan are continued westwards to the slope of the Pilia Nulla, which happily affords 14 acres for irrigation. It also easily admits of carrying the surplus sullage by the proposed Bund across its stream to the open and low-lying ground of its left bank, which may thus afford all the additional garden land we can require.

Moreover, many open spaces have now been planned; as preserved, enlarged or formed; in course of the detailed study of Improvements during these past months, especially as described in Chapters XXIV-XXVII, and XXXI-XXXVI; and these are shown in full detail on the large scale and reduced on City Improvement plan herewith. As is indicated on Drainage plan, a certain number of these areas, of not inconsiderable aggregate (not less than 12 acres in all) will gradually become available as Gardens, while still leaving sufficient playgrounds and Squares for the Mohallas. The Gardens will also themselves soon become a source of pleasure to their neighbours: and will increasingly be taken over by them (or by a Mohalla Panchayat) from the Municipality.

### Acreege and Population.

So far then, the general description of the proposed Drainage Scheme. But the reader may (and should) next proceed to more particular enquiries. First of all, he may ask—what is the proposed relation of Acreege to Population?

This proportion varies ofcourse from city to city, with its water supply etc; also from climate to climate, dry or wet: and from soil to soil; since no two soils are equally suitable. It varies also with crops grown, and skill in growing them.

Here the City's Water-supply, though improving, will not become great. The climate is relatively a dry one, with rapid evaporation accordingly, and this even in the rainy season, as India goes; and the soil, though usually heavy, is already at many points substantially lightened by town rubbish, which can moreover now be directed to the Garden-sites chosen, and utilised there for years to come. Between the maximum advisable with good horticulture, that of 1 acre to 1000 persons, and the very minimum attempted anywhere, of 1 acre to 100, we take, as a reasonable number, 1 acre to 500. Thus a good, but not excessive manurial supply will be assured, without over-loading or over-watering. In the newly designed Industrial

Town, as land is abundant and inexpensive, we allot 1 acre to 320 persons, and the same in Suburbs of small houses; while in those of larger holdings the population will of course be smaller. Tennis or Badminton Courts, or other playgrounds, may also find room in these gardens without danger.

### Acreege and Population in detail: Area by Area.

Taking our figures for the present from the local Population Statistics adopted by the previous Drainage-Scheme, we must now go over the town once more, and in detail; so as to assure ourselves of how far the available Acreege of each Drainage Area meets the needs of its population, upon our allowance of 1 acre to 500.

The Figures may be arranged in tabular form:—

Locality.	Population.	Acreege required.	Acreege available.
<b>A. East Bank of River.</b>			
1. Siaganj, Ranipura and S. Topkhana, (excluding 2 acres of Hospital nulla.) ... ..	5,623	11½	11
2. N. of Topkhana to Dewas Ghat Road. ...	4,742	9½	11
3. Juni Indore ... ..	6,912	13½	17
<b>B. West Bank of River.</b>			
4. Laltabela and Rambagh to Dewas Ghat Bridge W. ... ..	1,482	3	3
5. Krishnapura and Juna Tukoganj ... ..	3,367	6¾	6
6. Nandlalpura and Bosanquet Market, &c. ...	2,713	5½	4
7. Ada Bazar, Muchhi Bazar and New Avenue ...	3,434	6¾	6½
8. Chakla Bombay Bazar, Kanjra Bakhhal &c. ...	4,462	9	8 <small>[ not including Zoo ]</small>
9. Nayapitha, Silawatpura, Kagzipura and Chattripura ... ..	5,077	10	11½
<b>C. Pilla Nulla Basin.</b>			
10. Malsiri, Khajuri Bazar, Northwards to E. Juna Risala and Sadar Bazar ... ..	6,057	12	11½
11. West Juna Risala ... ..	1,430	2¾	2½
12. Rest of Old City, and its existing Western Suburbs ... ..	28,360	57	15+42
	73,659	147	107+40

It will be seen from the preceding figures that the relation of acreege to population is in most cases equal to, or above the proportion fixed; and sometimes well above it, so as almost to approach our large suburban allowance, of 1 acre to 320 persons. For the few smaller areas, a slightly more intensive gardening

may be adopted, or a portion of the area may be drained off into one of the neighbouring ones with space to spare. After the re-study of levels in detail, which is necessary before execution, other minor adjustments will also be possible.

### Population Difficulties, and their Solutions.

Here a question by the reader may be anticipated. What if population, and sillage accordingly, increase beyond the capacity of these Garden-areas, indicated on the Drainage Plan? The figures of population are also on the high side, not the low; hence a farther margin of safety. Further there can be little—at most points hardly any—further house-building within the old city on the west bank, and comparatively little on the east also, so far as these areas at present drain towards the River, or henceforth into its adjacent City Gardens. Furthermore, our new Industrial Town is planned to promote a considerable exodus of working people, to its more spacious holdings nearer their work. Again, our new suburban extensions, with their attractive development of temporary Plague Camps into permanent Garden Villages, will also increasingly tend to abate the present crowding of the City; while within this, the detailed improvements described in Chapters XXIV-VII and XXXI-VI and shown on Improvement plan, will further assist this thinning process by an appreciable percentage, since we must remove more houses than we rebuild. The population of the City areas of the above Table cannot thus be expected to return to the figures above taken for them, and still less to exceed them. Thus the future population of the new Boulevard west of Ara Bazar will not equal that reckoned from the area now cleared for it; and similarly for other areas as improved.

Finally, in this respect, as above mentioned, if and when any Garden should become over-loaded, a small Septic Tank can then easily and inexpensively be constructed at its lowest point, for purification of any surplus, with delivery only of a harmless effluent, practically indistinguishable from ordinary Nulla water, into the River.

But though this remedy is at any time and place available, we need not fear to have to fall back on it. It will not be required. For our allowance of land—1 acre to 500 persons—is ample, as we shall now see.

### Acreeage of Land actually required, in Europe and in India.

To defend these figures from technical criticism by the engineer or hygienist, we may best here quote from Dr. Turner's "Sanitation in India" (1914 edition, page 247). In his Chapter III, on Sewage (section of "Treatment of Sewage on Land"), he writes as follows:—

"The most suitable land is sandy, porous soil, but clay land can be broken up, and made efficient.....One acre is required for 2000 persons, if the sewage is chemically precipitated; but if it is not, one acre for 1000 should be allowed. In India less land would be required. Evaporation is faster, and much sewage would be required to cover the land. The effluent is sufficiently pure to be discharged into a river or stream.....In India especially, sewage farms, if properly managed, are very profitable." "

Could any evidence be more encouraging for the method, and area, here proposed? Instead of giving less than one acre per 1000 (as we are above encouraged to do) we are giving two acres per 1000 of population, and thus avoiding all risks of over-supply of sewage, by a margin of safety of the very amplest. Thus we are safe from the the very beginning; and so need not fear over-loading any garden at all.

The area of ground above indicated, as required for the main Drainage Area Northwest of the City, and beyond the Pilia Nulla, may therefore be set agoing upon a much smaller acreage than that of 40 acres, indicated by our proportion elsewhere, of one acre to 500 inhabitants. The working of the 15 acres at present available, on the townside of the Pilia Nulla, will give the requisite experience as the Scheme grows and develops; and next the needful acreage can be acquired on the further side, and this experimentally worked up to its absorbent capacity, but not beyond. In this way, the right acreage will be found to be well below this large area of 40 acres above suggested to give large margin of safety. Yet as Indore can easily consume far more fruit, vegetables and flowers than even our total acreage will grow, there is no reason for economically curtailing this.

So great, in fact is our margin of safety,—and especially for this high plateau atmosphere, with its rapid evaporation—that we anticipate that it may at times be necessary, or at least profitable, to use the old wells which are so common in and around the City; and the itinerant Pump and Pumping-Engine, lately acquired by the Municipality as an economy upon the existing method of lifting water by bullock-power, may then become available.

#### **Proposed Drainage Gardens, during Rainy Season.**

The reader's next question may naturally be—Assuming the workableness of the proposed scheme throughout the dry season, what of it during the rains?

First, note the large margin of safety indicated in the above paragraph: viz. that our land can take in more than twice the supply we provide. Second, as the Indore rainfall averages only about 30 inches, spread over four months, this can only on really stormy periods, which are comparatively few, over-tax the purification-capacity of gardens properly levelled and terraced, ( as per Mr. Coventry's instructions—pages 81 and 141 ). Thirdly, when they do, the increased volume of the River is then also so great that the percentage of impurities overflowing from the Gardens into the River will be so copiously diluted in it as to matter little; and thus largely be oxidised along its course, and in a few days reach the sea. Still, chemically and bacteriologically speaking, the proposed system, in such storm-saturating periods thus admittedly so far falls short of perfection: but its economy, and working efficiency, throughout not only the dry season, but most days of the rainy season as well, will be seen to leave this element of imperfection an innocuous one.

Moreover, it must not be forgotten that every Drainage System, in India or elsewhere, has necessarily, during these stormy periods, this very same imperfection. And with a moment's reflection, the reader will see whether it be these filtration-gardens, or the sewers with no filtration, which will most pollute the rivers.

#### **Conclusion.**

From the present Chapter, it will be clear that the promise made ( pages 63-64 ) at the close of the destructive criticism of the preceding Drainage Scheme, ( Chapter VIII ) viz,—after first attending to Town Planning, to provide a simpler, speedier, better, and greatly more economical Scheme of Drainage—has now been made good.

The Estimates to follow will give as careful a forecast of its expense,—and so of its economy—as may be: and the one, I trust, will not be found too much to alarm, or the other to disappoint, the Municipal and State Treasurers, or their tax-payers. \*

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\* Any criticism as regards this Drainage Scheme, in principle, or in its details, which may be received in time for press, will be answered, ( or accepted ) in the Appendix to Part II; or in writing subsequently.

## Chapter XL.

### Possible future Underground Drainage System.

#### Conditions of this, and Practicability, if and when required.

A further difficulty will now occur to the reader. These Gardens will at the outset receive Surface Drains alone, But suppose Western conveniences are introduced ( pages 61-62 ) some day, and Underground Drains with them ?

The answer is, that—as the Drainage Areas are now, as nearly as may be, the natural ones, those given by the Relief and Contour of the City—all new underground drains need only be sunk as little below the surface as is consistent with their safety: i. e. 3ft to begin with; seldom deeper than 5 or 6 feet, and then only for short distances; and never to the great depths of the former scheme. So they can generally still run into the Gardens, much as do the existing ones; and in most cases without pumping. The gigantic excavations and corresponding outlays of conventional Drainage Schemes, made against natural contours, are thus shown to be unnecessary.

#### Conditions of Design.

Despite our preceding recommendation, for the present at any rate, to develop the Drainage Scheme as above indicated, with Gardens, and Surface Drains to them only, we next face the question of Underground Drainage, as a possible further development.

We have therefore made the necessary Preliminary Study of this; sufficient to lay down on the Drainage Plan, the main lines of a Possible future Underground Drainage Scheme, capable of providing for the carriage of sewage in the event of the adoption of Western conveniences ( W. C.'s etc. ) in various quarters, or even throughout the City.

In designing this, we still differ from most schemes, such as that criticised, by making full provision for its gradual execution, quarter by quarter, as necessity may arise. For plainly this demand can only come about in the richer quarters first; and later, if at all, in poorer ones. The advantage to the Municipal Budget, from this procedure, will be obvious; since there is no longer any question of the usual gigantic scheme, contracted for and carried out for the whole City upon a great scale in a very few years.

#### Underground Drainage Scheme.

Let us now go through the City, in the same order as that followed in the preceding pages. ( 190 etc. ) A and B. for East and West portions of the Drainage of the Main Rivers and C over their Watershed, to the main Drainage Basin of the Basin City towards the Pilia Nulla. ( See Drainage Plan ).

##### A. East of Rivers.

- A. I. Starting then from the east end of Siaganj next the Railway, we may ( if and when required ) lay down a line of piping, running down to the Sayar Square ( page 132 ) formed at the meeting of Hathipala and



other Roads. Here a similar drain meets this, from the Topkhana Road, running southwards down to the River from its crossing with the main E. & W. Topkhana Road, between Bridge and Station; and thus draining Chuna Bhatti also. These uniting drains are now taken through Ranipura, to its Gardens on the east bank of the Residency River.

- A. II. Again, when necessary, another Drain can start from the Sayar Square (with connection with the preceding as a relief in case of accident). This runs northward, west of Hospital, and along Putlighar Road, and straight onwards between Kachhipura on the east, and Mewatipura on the west. At their north point, it turns west along the bed of the old Nulla dividing these from Nayapura, and broadly follows its slope down the Dewas Ghat Road towards the River. But before reaching this, it turns northward into the large Garden afforded the low ground towards the River.
- A. III. Furthermore, another Drain may be taken, along North Topkhana Road, to enter the Municipal Nulla garden.

This Underground Main Drain System, for the eastern portion of the City, even when completed, will be seen to be shorter and straighter than that of the previous Plan criticised in Chapter VIII; less deep also, in every way less expensive accordingly. Minor connections, from any Mohalla or quarter, can ofcourse be made as required. The main thoroughfare of East and West Topkhana Road, is not interfered with.

- A. IV. If required for Juni Indore, its Underground Drains may follow the main lines shown, being essentially those of Surface Drainage southward mainly to the large Garden, and northward to Peninsula facing Sia Gunj.

### B. West of River.

- B. I. We may now pass, as before, to the west side of the River, by Dewas Ghat Bridge. Here as already mentioned, an existing Underground Drain comes from the Palaces to the existing Septic Tank; and lateral connection may at any time be made, up to its full carrying power. This Septic Tank Installation can also be extended as required, if the adjacent Garden become insufficient.

Suppose however this existing Underground Drain to become fully loaded, and a new one required accordingly: this may follow much the same course from the Palaces, and take in branches as desired; e. g. from North Krishnapura.

- B. II. From the south of Krishnapura, and along Nandlalpura Road, an Underground Drain can be laid to the Gautampura Peninsula; and it can similarly receive branches from Bosanquet Market etc. and from Ara Bazar, at least its southern portion.

- B. III.** Again, along Muchhi Bazar—which is likely to be rebuilt, and this before many years, as a prosperous Bazar Street—a Drain can be carried to the same Peninsula.
- B. IV.** But by the New Harsiddhi Bridge, a further branch may be taken, bringing with it drainage from the west and from the southern part of the Old City, from the dotted watershed line downwards, (or if need be, from some distance north of this, with only moderate excavation through the slight ridge which decides the watershed). This Harsiddhi Drain, when the two small Gardens beside the new Bridge are sufficiently utilised, can be taken farther on, to the Vegetable Garden of the "Zoo," west of the Elephant and Cattle sheds of the State Gadhikhana. So far then, for the Drainage Area of the uniting basins of the main Rivers.

### **C. Pilia Nulla Drainage Basin.**

- C. I.** We now proceed to the Pilia Nulla Basin. Beginning, as before, with the existing large open Drain from Gafur Khan's Bazar northward, we may make to this an Underground Drain along Aligoal Road from N. W. corner of Imli Bazar, which will as usual take in branches as required.
- C. II.** We have now to lay out the possible Underground Drainage towards the main Pilia Nulla basin, on the west. The Main Drain for this quarter should start from the south corner between Pinjra Bakhhal and Lodhipura, taking in branches as need be. From this point, it runs straight north, past Shakkar Bazar, for 700 yards to the S. E. corner of the Infantry Lines; and there makes its only turn, thence running straight west to the largest of our Drainage Gardens, of 15 acres beside the Pilia Nulla, beginning a little south-west of Mistri Khana. To this Main Drain, straight tributary drains may be laid along the streets of the Lodhipuras, Sitlamata Bazar, etc. as may be required. It is also easy to bring into this Drain, at its bend to the west, a drain from the quarter immediately northward: (and this may be connected with the line to the existing open Storm-water Nulla Drain northward, mentioned above).
- C. III.** For the Western and Suburban Area, another Main Drain may again at any time be constructed, parallel to that just described; and starting at the southwest angle of Lodhipura, and thence receiving inlets as required, it runs northward (with the only double bend on our Plan) upto Malhar Ganj. Through its central street it turns westward, and thence runs, by the line of a proposed Road, across what are at present mostly open fields, (but are now planned as future Suburbs); to cross the Pilia Nulla, by the proposed Foot-bridge, and open into the low-lying Garden on its left bank, already mentioned (page 189).

### **Execution in Sections, as required.**

This scheme of Underground Drains is shown on Drainage Plan; and its simplicity and directness will be obvious, as also the ease with which it can be

carried out gradually,—each and every portion, if and when required,—yet so that if in the remote future, the entire Town should be westernised, no part of the work done would need to be undone or altered.

### **Farther Economies in Execution.**

For this purpose it will ofcourse be necessary to make these Main Drains of sufficient diameter; yet in view of this scheme being designed in distinct portions and directions, this diameter may in all cases be a very moderate one; again a substantial economy over schemes of customary type. Thus no brick-built Tunnel Sewers are now required. Simple Stone-ware Pipes, from 12" to 15" in diameter, according to their respective duties, will suffice for this entire System.

The shorter and simpler network of Main Drains above proposed, is also at shallow depth, with economies accordingly in each respect, and without danger to foundations. Instead of large and costly Flush-Latrines, we are content with small and simple ones, and these mostly hidden in our Garden corners. Sweeper's Huts, on the decent minimum two-room standard worked out for the Industrial Town, will cost less than half of those of the preceding Scheme: and so on.

### **Estimates in Preparation.**

The preparation of Estimates as definite and detailed as those of the recent Scheme is not possible, without spending upon this Scheme the good few extra weeks required for verifying the necessary levels, preparing Working Drawings, etc. But, this as already indicated at the outset of our present Drainage Scheme, is in our judgment not yet necessary. Still, in the Chapter on Estimates, as approximate an Estimate will be given as possible under the circumstances for this Underground System; as well as for the simpler Surface Drainage Scheme which we advise as sufficient for the present needs, and which should in any case be carried out to begin with, as fully outlined in the preceding chapter.

### **Conclusion, as to Cleansing and Drainage.**

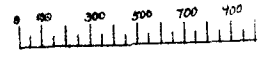
These four Chapters ( XXXVII-XL ) successively outline the main steps of the needed and possible improvement of the City, as regards both Cleansing and Drainage.

First, the urgent, and rapidly health-productive, tasks of the General Cleansing of the Town; which should go throughout all streets and lanes, all quarters and mohallas, and be started as speedily as may be, so as to do as much as possible before next Plague season. With this Cleansing, there naturally begins the regular Flushing of Surface Drains; with their repair, improvement and extension as need be.

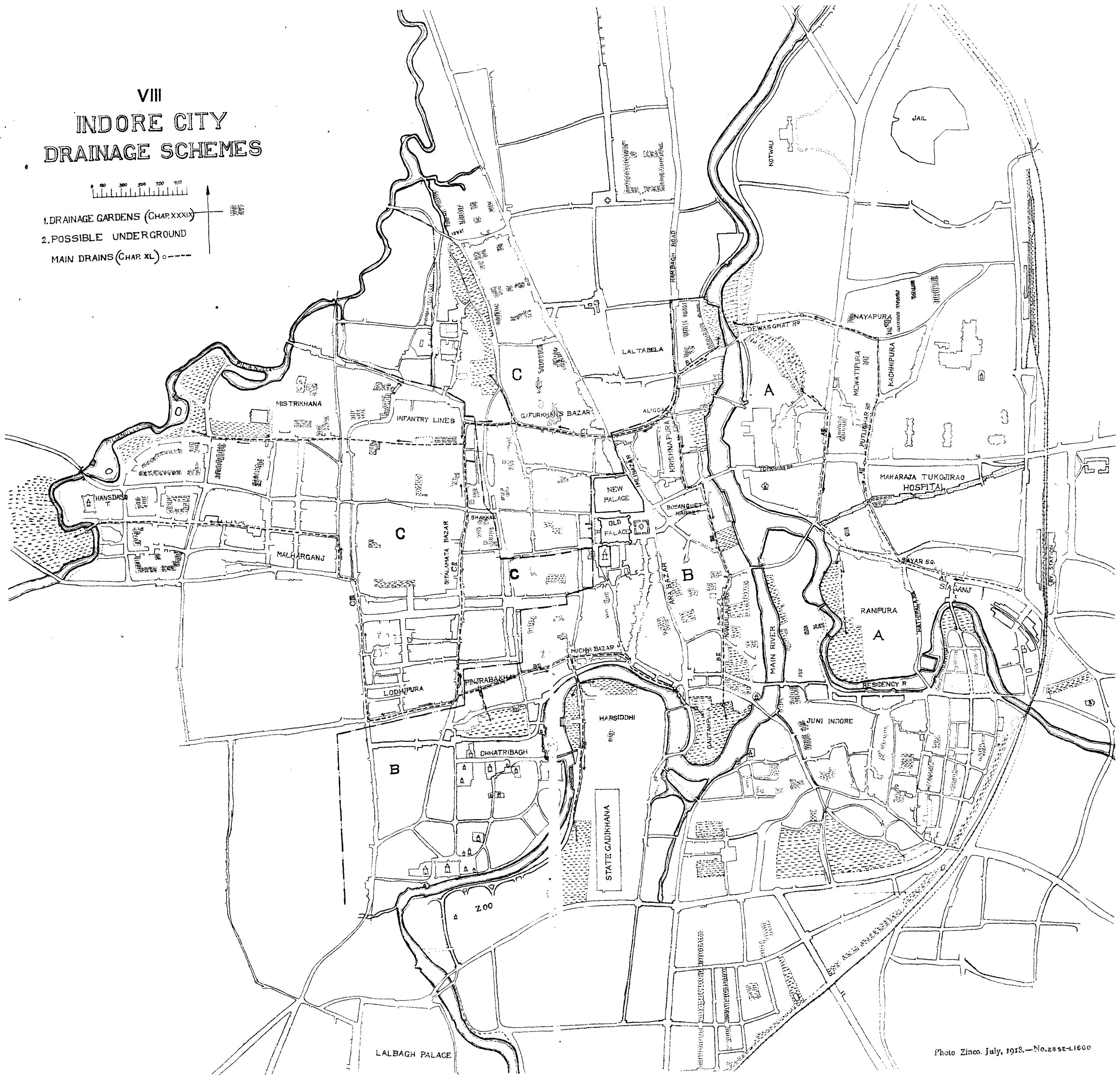
The main Surface Drains should no longer enter the rivers and nullas, but be led into Gardens; and these are planned accordingly, and are being initiated at certain points. Their area is ample: but septic tanks can be introduced if, where, and when required. This simple Drainage System will long suffice, at least in the main.

Finally, the possible future introduction of a General Underground Drainage System is provided for. This is designed in accordance with contours etc., and so as to be executed in sections, as required. This Scheme is also clearly outlined on Drainage Plan, and its approximate figures will be given in the Chapter on Estimates in Part II.

# VIII INDORE CITY DRAINAGE SCHEMES



- 1. DRAINAGE GARDENS (CHAR. XXXIX)
- 2. POSSIBLE UNDERGROUND MAIN DRAINS (CHAR XL)



## Chapter XLI.

### Railway Station Neighbourhood: East and West Station Place.

#### Introductory.

For every modern city of East or West, the Railway Station naturally becomes one of the main centres of the City, and this increasingly, converging and concentrating us towards it more and more. Goods and passengers, business and pleasure, are day by day strengthening this concentration. Yet the planning and organization of Stations remains in the country which invented Railway and Station together, and throughout its civilization, at its nineteenth century phases of development; and modernisation of Stations has been too much left to other countries, and especially to Germany, America and France. Of late years however, engineers have begun to pay attention to this problem: and after the War, the impulses of economy and efficiency will combine.

Without being able to claim full competence in this matter—which ofcourse needs the engineer as planner no less than the planner as engineer, and both with the architect—the needs and possibilities of improvement of the Indore Station admit many suggestions for improvement; and present opportunities compel one to submit some of these. Hence the use, even need, of the accompanying Plan VII, on which these various recommendations are brought clearly together, more fully than at page 176.

I leave the main problem of the Station—its actual working—untouched; noting only that the available space admits of all necessary growth and improvement for a long time to come: and that, as already pointed out (Chapter III) this space, alike in the Station and along the line, admits of introducing any future lines without encroachment upon the City area.

#### Need of West Station Entrance and Platform.

The only point at which I here venture to criticise the working of the Railway is as regards its exclusive frontage and entrance from the East—the right side for the Residency, but the wrong one for the City. And this the more since both ordinary approaches from the City are by crossings, at Tukoganj and Sia Ganj, which may either—or too often both—interrupt the traveller, and just when time is precious, and urgency is great.

The remedy is ofcourse the very simple one, shown on plan—that of adding a West Entrance and West Platform to the Station, connected by one, or two, Over-Bridges for passengers. I suggest this New Entrance opposite the end of Hospital Road; with new West Platform opposite the present East Platform, and two Over-Bridges, one at each end; but ofcourse this sketch is open to improvement by the Railway Engineer. A modest beginning of Station buildings will ofcourse suffice, with due allowance for future growth. The economies and advantages of this West Entrance are too obvious to need any detailed exposition.

#### East Station Place.

The present road is broad, but can be widened, as an East Station Place; and this widening I show at the expense of City Sites opposite, rather than of the Station, which may in the future need all its ground. I indicate however a row of

trees within the Railway border, which can be removed when need be, but will probably have time for growth before this: for all additional shade is desirable.

The entrance from Sia Ganj to the West Station Place needs but little improvement. But that from and to Topkhana Street requires to be straightened from its present curving course near the Tukoganj crossing. This change like all others, will be clear by comparing the two plans:—A. That of the whole Area as at present, and B. that including all Improvements proposed.

On Plan B. this straightening is shown as at once to meet this main Cross Road, and be continuous with that coming from Goods Station, west of King Edward Hall. The Culvert over the nulla is therefore shown rebuilt a little further west.

A small Traffic Square is thus provided; and a good building site indicated on Plan B. becomes available at this corner, if and when required. It is obvious, yet should be kept in mind, that this future building upon so fine a site, whether this be for Railway or other purposes, should be a seemly and presentable one, worthy of its neighbourhood, and with perspectives from all the four sides and approaches, from which it will be conspicuous. Why not here then the new General Post Office? What situation can be more central for all interests concerned?

The removal of the four present Oil Tanks to a new site (north of Goods Station?) is also urgently desirable, alike on grounds of amenity and safety.

#### **Tukoganj Crossing and Minor Subway.**

By this improvement of the Station, the crossing of Tukoganj will ofcourse be appreciably less used. Yet its ordinary through traffic, between City and Suburbs, must greatly increase, with the large extension of these now so actively beginning; and thus inconvenience will be daily felt by increasing numbers. And although the construction of an Over-Bridge is at once prohibitively expensive and destructive of the architectural effects of the whole neighbourhood, the question of the possible Under-Bridge will thus certainly re-appear. Yet to make a really efficient Subway, replacing the crossing altogether, would be an unpleasing exchange; and it would necessitate costly deepening and widening of the present Subway for the existing nulla with danger from this in flood-time. Gradients too are fatiguing.

But with the above proposed rebuilding of the Road Culvert, shown west of the Railway Culvert, this latter, with its moderate available head-room of 9 ft. will be sufficient for ordinary light vehicles, as well as for passengers and motors, while laden carts alone will then have to wait at the closed Crossing, as all do at present. This minor Subway scheme, I therefore recommend, as shown on P. W. D. drawing; but clearly as an accessory to the crossing, not a substitute for it.

The slight widening and improvement of the Crossing (already mentioned at page 89) should also now be arranged for, with adjacent tree-plantings to northward especially.

The improvement of the vacant ground on each side of the Nulla, as a small Public Garden (and why not with Band-Stand, say at the old Well?) is also very desirable; and will I trust be proceeded with, as the natural completion of the improvement of the Hospital Nulla upward in this direction, as well as downwards to the River. ( Pages 133-4 ).

### **East Station Place: New Dharmsala, Serais, and Hotel.**

Coming now to the East side of the Railway; this is already adorned by the fine Maharani's Serai, ( and also by the new triangular Garden between the road-junctions behind this ). South of this Serai comes a site occupied only by a small bungalow, belonging to the State; and south of this again is the patch of ground belonging to the Railway, and long lying unused.

Desires have repeatedly been expressed by different communities and individuals to provide further new Dharmsala, and Serais, if sites can be obtained close to the Station. It is evidently here, and here only, that two of these can be located; with the third at Gwaltoli, opposite Sia Ganj. For the proposed Hotel, the vacant field lately resumed from the Railway Company is required.

Authority having been given me to invite Mr. A. Foster King, F. R. I. B. A. to develop my sketch-plan, and this to elevations, his result has been successful; and these sites are applied for accordingly, for these purposes. Thus not merely a row, but an architectural group, of three fine public buildings,—all distinctive, yet in keeping, and quite contrasted with, yet worthy of, the main public buildings immediately westward on Topkhana—may thus immediately be erected.

The one and only difficulty—I trust not serious, still less insuperable—is that the vacant frontage site belonging to the Railway is required to give space for these: for not even one of these two new buildings can be erected without this. I trust therefore, that in view alike of the long unused condition of this site, and the notable improvements to the Railway Station Place thus proposed, the generous donors will not be delayed in proceeding with their respective edifices.

### **Further Minor Improvements: Station Gardens.**

The present East Station Place with its roads may be somewhat rectified from its present irregularities, and its shade increased by re-planting the space where trees have died. The too squalid railway chawl opposite these New Sarais should also be rebuilt, and screened by shrubberies. These slight improvements are also submitted on Plan B.

Here also may be suggested to the Railway Company, that this important Station of Indore still lacks almost entirely those pleasant and refreshing Gardens, which for a good many years past have been increasing throughout India, even at very minor Stations; and always with advantage and pleasure to the public, and to the Railway Staff as well, who take greater pride and care in their Station accordingly: so that the small outlays required for planting and upkeep are found of advantage. Alike on East and West Station Places there are facilities for this: and wells are not lacking: while additional water may readily be obtained.

### **Proposed Bohra Serai; and Improvements Southward to New Boulevard.**

Leaving now the Railway, and passing southwards, the notably great improvement which will be effected by the Bohra Serai, facing Siaganj Crossing, will readily be appreciated. The present road from East Station Place, running beside the line and downwards towards the river, to meet the road from Residency, and under Railway-Bridge to the river Causeway, is now shown widened as an Avenue; thus beginning, or completing, the new Express Boulevard, which is the principal

City Improvement as regards Communications which is suggested in this Report. Its Nulla is shown passing direct into the River, instead of first turning under Railway Bridge.

The little used kucha road, continuing that north of Christian College and running north of Nasia Temple, is already being transformed into one of the Municipal Gardens recommended in Chapter XII etc. This will utilise a substantial proportion of the large stream of Residency Sullage at present passing under the windows of the Dharmsala, and entering the River immediately below, and at a point where washings, of vegetables and clothes, are commonly in progress.

### East of Railway Lines Again.

Leaving the new Boulevard after its improved passage under Railway Bridge, we may turn northward by the existing road east of Electrical Generating Station, (shown in B. with its compound enlarged for further extensions) and thence past the present State Distillery Compound. This is shown in B. re-planned as New Corn-Market, and north of this are shown the proposed new Corn-Godowns, with proposed Railway siding, south of Sia Ganj (Chapter XXIV).

Starting again from Express Boulevard near Electrical Station, there is shown on B. a proposed New Road, parallel to the Railway line, and thus serving as a Relief Road when the new Corn-Market and existing thoroughfare are thronged, and also removing the squalid and irregular area, with kucha buildings, which at present give so unfavourable an impression to the visitor arriving at Indore from the south, or leaving in that direction. Decent houses are planned along this new Road, facing the Railway, from which a row of trees next its boundary may sufficiently separate them.

### Conclusion.

We thus return to the Sia Ganj Crossing, and thence to the West Station Place with which we began. This whole set of some 15 or more improvements, can thus be clearly appreciated upon Plan B. The main outlays being those of the philanthropic builders of the Serais and Dharmsala, the outlays asked from City and from Railway will be seen in the subsequent Chapter on Estimates (in Part II) to be very moderate.

Yet the cumulative result will be second to few, if any, of its kind and scale in India.

In conclusion, it may be pointed out that though this New Express Boulevard cannot compare in architectural interest with those of many other cities, it possesses the very largest succession of distinctive landscapes anywhere—having along the single mile of its course between Chhattri Bagh and Railway no less than ten distinct river-views up and down: surely an encouraging example of the essential correlation of utility with beauty.



## Chapter XLII.

### Western and Northern Suburbs.

#### Western Suburbs.

This should have followed Chapter XXXV; but was omitted on the ground that here the plan seemed so clear and simple as to need no explanatory text, other suburbs having been fully enough described in detail, as well as all in principle. But the Indore public are thinking too exclusively of the whole suburban development which is now opening, as either Easterly in its general direction, or Southerly: so it is necessary here to add a word for Westerly extension also. It is in the main towards the west that cities extend, and this for good reasons: as notably that the air is purer, the breeze fresher; and also that it is more attractive to set out towards the sunrise in the morning and towards the sunset in the evening, as when one lives on the west side of the town, than to travel each way with one's back to the light, as when one lives on the east. And there may be other advantages as well.

The western suburban sites have the very material advantage of proximity to the main City, and this increasingly. For already the suburban development extends on the eastern side to Pabna—a mile and a half east of the Station, and over half a mile from the Old Palace, and it is west of this that the bulk of the business City lies. Whereas, if we take Bazazkhana Square as the centre of this, and Malharganj as its main eastern quarter, the economy and convenience of going westward for one's suburban home instead of eastward is manifest. For the distance to the middle of the western suburban area from Bazazkhana is only half a mile; while beyond Malharganj the suburbs begin practically at once.

There is also an old development of gardens to westward, especially along the Dhar and Sherpur Roads, and this long before the easterly development of Tukoganj quarter was ever thought of: and to this westerly direction the suburban development may and should increasingly return.

#### Military Barracks: Their possible Utilisation.

The future of this westerly development to a large extent awaits the decision as to the Military Removal to a rural area suitable for the requirements of modern military training, not so much suggested, as predicted, after the War. For the present Barrack accommodation is capable of economical adaptation to the cheap housing, and plague-season-housing, of a large proportion of the poorer Indore public. The military rows are at present in too long and continuous lines: but these can be broken by the removal of the houses least worth repair. Their back-to-back one-room houses should of course be pierced through, so as to afford two-room houses: indeed, as far as possible, adjacent two-roomed houses should be thrown together, by knocking down the intervening compound wall, and so giving a four-roomed house, and thus with double compound large enough for children and garden-plot. The removal of the Stable-lines will also increase the Municipal Gardens which are so desirable for sanitation and isolation of the house-rows: so that the present dangers of plague may be minimised.

### Western Suburbs Again.

Returning now to the development of westerly suburbs, the execution of this plan is already beginning, with the erection of the small new Mohalla which is so urgently necessary for the rehousing of the population removed for the construction of the new Avenue running N. & S. between Lal Bagh and the S. W. Corner of Chhatri Bagh. It will be seen that this suburban scheme extends northwards along a main new Central thoroughfare running north from the Lal Bagh Star of roads. But this is not needed to be a great traffic road, and so is kept narrow; since the already existing road, starting also from the same star, first to N. W. but then running northwards, along the eastside of the Body-Guard and Infantry Lines, will be the main road for Motors etc. The large New Cart-Stand provided S. W. of Malhar Ganj for its extensive corn-trade, and the existing private gardens left untouched, will usefully help to isolate these new Western Suburbs from the old City.

### Further Isolation from Main City.

These westerly extensions were at first planned as elsewhere continuous with the main city. But in view of the strongholds of plague which are rooted in the City, and so difficult completely to eradicate, greatly though we may and must reduce them, the plan as now shown is preferable. For this leaves a practically continuous belt of open spaces between the old city and its needed western Suburb development: so that the diffusion of contagions between the City and the Suburbs will be at least substantially abated. And though on this side the Suburban holdings are commonly of small size, the Municipal gardens which separate their rows will all aid this isolation, and impede the spread of diseases. In this connection I plead that this large Isolation-Belt be permanently retained, and that its existing private gardens etc, be not allowed to be built over.

### Further Precautions.

The Municipal Gardens should each have a cow-house, in which the surplus clean vegetable garbage of the neighbourhood can be consumed. And since householders seldom keep either doves or cats, both should be regularly installed in each Municipal Garden, as the day and night Plague-Police; the former busy all day picking up the grain etc. which otherwise feeds rats, and the other vigilantly picking off the rats on their nocturnal ramblings.

All these may seem but small precautions, but they are none the less very real ones: and to give them a more dignified aspect, I may add a final plea for the resplendent peacock, which will also admirably help in further diminishing that too profusely-generous rat-feeding which is the main supporter of plague in Indore, and throughout India.

### Communication with Railway Station etc.

For direct rapid communication with the Main Station, with the Easterly Suburbs, and the Residency Town, as also with all the northerly thoroughfares of the main City, the new Express Boulevard will here be of great service, coming as it does to the middle of this New Suburban Quarter.

### Northerly Suburbs.

The nearer northerly Suburbs have been outlined in Chapter XXXV; and of these for the present, nothing more need be said. But after the Military Removal, this quarter will develop further north. Employers, Managers etc. in the New Industrial Town may soon begin to establish themselves here after the easterly suburbs have filled up, and thus find a situation doubly convenient; since of easy direct access both to the Industrial Town and to the Main City, and in particular to the Educational Quarter, of which the New High School, the Girls' School and College at Garib Khana, and the Normal College are the substantial beginnings.

The Polo Ground here forms the centre of the large Northern Park and Parkway which should permanently isolate this Northern Suburban area from the city: with this too will be connected the future Ring Boulevard already referred to ( Page 114 ).

**X**  
**INDORE**  
**IMPROVEMENTS & EXTENSIONS**  
 [NEW FEATURES in DARK LINES. DRAINAGE GARDENS ]

