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Town Planning towards City Development.

A REPORT TO
THE DURBAR OF INDORE

BY

Patrick Geddes.

PART II.

THE PROPOSED UNIVERSITY OF CENTRAL INDIA.

ESTIMATES: CITY, SUBURBS, AND INDUSTRIAL TOWN.

PUBLIC HEALTH, PLAGUE MEASURES ETC: AND THEIR ECONOMIC RETURN.

THE CO-OPERATION OF CITIZENS.

GENEROSITIES, CO-OPERATION AND SOCIAL FINANCE.

CITY-STATE, CITY AND CITIZEN.

CONCLUSIONS AND AGENDA.

Appendices:—MOSQUITO SURVEY, REPORTS OF EXPERTS &C.

NOTES ON TOWNS AND VILLAGES.

DIWALI PROCESSION 1917.

INDORE.

1918.

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Introduction to Volume II.

This Volume in its first Section reports—and with discussion at considerable length, inevitable under present conditions—upon the proposed “University of Central India” in Indore; and offers constructive suggestions towards the approaching University future.

Estimates for the various undertakings recommended and planned for in the City, the Suburbs, and the new Industrial Town, are next outlined. Following upon these, suggestions are offered with regard to Order and Methods of Procedure. From these Chapters, substantial Economies upon the estimates of preceding Schemes, and on more customary methods of execution, will be apparent.

Beyond economies of planning, whether on ordinary methods or on fresh ones, like those of Drainage Gardens, and—yet more important—of House-Construction, as detailed in their Chapters, stress is also laid on the possibilities of Efficiency Management and Welfare Management, in the New Industrial Town especially.

Most important of these Sections, even in economic valuation, as well as in higher aspects, is that on Public Health. For here—whatever be its roughness of preliminary calculation—is a main feature and appeal of this Report, urging, and at but small expenditure, immediate practical measures for the abatement of plague, fevers and other diseases. And it is here argued that the economies thus realisable exceed all these previous ones, since no longer in lacs, or even tens of lacs: but now in crores, in their saving of human life, and of its productivity accordingly. For from disease comes public poverty; and with public health, public wealth can be renewed.

Yet after all economies are made, the fact remains that City Improvement and Extension, especially when so comprehensive as in this City, call for very considerable outlays, not speedily obtainable from existing channels. Hence future possibilities of Civic Finance are briefly indicated; since for lack of utilising these, City Improvement and Extension are as yet everywhere suffering. Among these measures, the arousal of Citizenship is fertile and full of promise, even in economic values and in financial return, as well as in rise of individual character and efficiency, and in general civilisation. The Civic and productive values realisable through the renewal of Education, and in particular from the nascent University, are also seen to be beyond all customary anticipations.

First and foremost, then, of all possible Agenda, come those of Public Health, in its immediate measures. Yet along with these is needed the arousal of the public to the desire of health, with active sympathy, even vigorous participation, in health measures; and this upto rivalry in the improvement of their old mohallas, and of the Old City accordingly. Beyond this also, to the building up of their Garden Suburbs, and to the development of the New Industrial Town and its success in all respects. Examples of this are already forthcoming, in existing groupings; such as those of Brahmins, Baniyas, Bohras and Brahma Samaj etc. who are already taking up new suburban areas, yet becoming interested in improving their town mohallas as well. Yet we need the spread of such interest far more widely, throughout the citizens, in all ages and classes, both sexes also. This is realisable, and even beginning; as from Boy Scouts to their elders, and from Ladies' Clubs to working housewives and school-girls. In short, a mobilisation of all citizens, akin to that which war has brought about in the countries of the West, is here needed for this warfare of peace; with its cleansing and renewal of the city, its transformation of public health accordingly, and its increase of public and private wealth and well-being thereby. Hence the section on Co-operation in Citizenship, and its call to the Friends of Indore.

Public generousities are here recognised in the past and present, and invited for various needs of the opening future; and indications are next outlined of the needed (and in Europe and America already incipient) transformation in economic thought and in affairs, from individual money-getting towards Social Finance.

In the next section the case for Civics and City Development in Indore is stated in terms of City-State and Capital. The possibilities of both are seen to range beyond customary limits: since beyond their present generous and effective contributions to the War, there appear further and fuller contributions, by example and influence, to the Reconstructive Peace which is at length surely approaching.

In the concluding section, essentials of this whole Report are again emphasised, and Agenda are suggested in outline. The brief concluding Chapter re-states that essential conception of Civics on which are based the present proposals of Town Planning towards City Development, and on which their measure of success must depend, no less than on material factors.

The Appendices include the careful and detailed Mosquito Survey by Mr. M. O. T. Iyengar B. A. of Bengal Malaria Survey; also brief reports to Ministers on various proposals of these volumes:—by Prof. Stanley Jevons on the Planning of the new Industrial Town, and by Mr. Coventry and Principal Mann on Drainage Gardens. Their substantial agreement is encouraging.

Notes, by the writer, on his few visits to Towns and Villages, and with practical suggestions in most cases, are also appended. Finally, the circular of the Diwali Procession of 1917 is here reprinted, as a final reminder that although Town-planning and City improvement are based on definite and reasoned proposals, and controlled by the usual considerations and resources of Municipal and State Government, there is also room, and even need, for other and more popular appeals towards the arousal of Citizenship, and that these may bear fruit in Civic service accordingly.

ACKNOWLEDGMENTS.

The acknowledgments made in Volume I (p xiv) have mostly all to be repeated for the present one, and that not less heartily. To these I must now add my thanks to Judge Burway, by whose wide historical knowledge of Indore I regret not sooner and more fully to have profited, and from whose forthcoming volumes I expect to learn much; as also to Prof. Stanley Jevons, Prof. Lyons, and Principal Mann, for criticisms and suggestions, economic, rural, etc. From Mr. H. B. Learoyd P. W. D., and others interested in the housing, draining and gardening methods here initiated, Mr. Sinha and I have had valued encouragement. To Mr. C. A. Dobson B. A., and other friends, my thanks are also due and tendered.

ERRATUM.

Page 50. Chapter XI. 7th line, for Professor G. Vitaldas of Bombay read Professor Vishnu Digamber, Rector of the Academy of Indian Music (Gandharva Maha Vidyalaya) Sandhurst Road, Bombay.

SECTION I.

The Suggested "University of Central India" at Indore.

Chapter I.

Universities in India; and in Europe.

Introductory.

Before coming here, I had heard of the growing discussion of a University for Central India to be located at Indore; and now, after study of the Petition of its promoters, and some experience of the intellectual as well as the material situation, I am convinced that the idea is both a reasonable and a realisable one. Yet this by no means so simply as its promoters hope.

The subject is thus one which cannot be omitted from any Town-planning forecast; least of all by the present writer, to whom the study of Universities—past, present and possible—has been not only a main interest and purpose of life since student days, but has been the way by which he has come to the study of Cities themselves.

Indian Universities.

Yet after some forty-five years of inquiry and experience of Universities, British, French, German, American and others, it is impossible not to feel, and with even more disappointment than any previous ones, the deep inadequacy of Universities and Colleges in India; and this despite their numbers, extraordinary alike as regards Institutions, Teachers and Students, and the exceptionally laborious assiduity of these latter. The Indian University System arose with Missionary endeavours and initiatives; it increased with State encouragement and regulation, and it has been kept up by importations of variously chosen men from all the various Universities of Britain, Scottish and English, old and new, and with utilisations of the teaching and examining methods most approved in these at various periods. All this, and more, must be given credit for; and, above all, not only the willingness but the eagerness of each rising generation, each annual crop of the strictly selected youth of India. Yet with all this manifold succession and accumulation of endeavour the results are admittedly disappointing to all concerned; and these at once as smaller in quantity and less productive in quality than was expected, even by the less sanguine advocates of Western Higher Education. Something, of course, has been done. Notably for instance the extraordinary diffusion of English; and this upto standards far exceeding the knowledge of any Western people of any language other than its own; so that even in the High School of any small provincial town, one finds boys, let alone masters, more accurate, even fluent, than one would often find in well-known English Schools. Yet while giving credit for all this, and similarly for study in History, in Physical Science, &c, one feels something unreal in it all; since wellnigh everywhere conscientious memorising, and strict examination according to the letter, have outrun, and even repressed, the appreciation of the spirit, and this alike as regards language and literature, history or science. Original and productive minds, free and open to the many winds of the spirit and directing

these anew, are indeed too rarely produced anywhere, or by any system of education: indeed everywhere they seem atleast as much to be survivals from formal instruction, or escapes from it, as products of it; but here in India things are certainly even worse in these respects than in Europe. For the survivals are fewer, and the escapes more effectually repressed.

The academic and graduate output, of personal and original production, has thus been comparatively small in most, indeed all, departments; in Humanities, in Sciences and in Professions alike. The amount of original publication is thus scanty, even as compared with the less active of British Universities and Colleges; and still more ofcourse as compared with the best Continental ones; while the few writers upon any subject regretfully assure us of the extreme paucity of readers. Learned and Scientific Societies are too few; and this at every level, from those whose publications are known in Europe, to the Students' Societies and Seminars which are productive seed-beds of European intellectual work. Most conspicuous of all is the scarcity of Books; and this not only as manifested in the fewness and general poverty of Libraries, but the yet more striking scarcity of Bookshops, especially outside Calcutta and Bombay. Backward though things educational are now recognised to have been in Britain, the smaller College towns are there less poor than are even great provincial capitals of India; while a ramble through the streets and shops of even the smallest German University town, no bigger than a first-class Indian village, cannot but astonish the studious Indian visitor even from Calcutta, or Bombay, the more since he would there find some of the booksellers busy publishers as well. Yet as the Indian Railway Bookstall everywhere presents the standards and ideals of the London ones, why then, with so many Universities and Colleges to push them, are there not more Bookshops, and of educated interest? One would expect these, and with their contents at least expressing the ideas of the age which founded most of them, that of omnivorous readers like Macaulay or Carlyle, like Robert Browning or John Stuart Mill.

Hence in Indore, with its Colleges, not simply two, but at least five—for the Medical College, the Normal College, and the Daly College must not be forgotten—and with its increasing great Schools, and all their many teachers, and other educated men, the organisation of a good Central Library, well equipped both for Reading and for Reference, is urgently required, and with this the encouragement of a good Bookshop, or even a rival couple of them. To establish a University, or even to expect life in Colleges, is premature, without the Library as a Central Power-house of the studious life, and the Bookshops of regular supply of fresh fuel for it.

The ever-increasing State influence and control of Universities, as well as their too exclusive State Service recruitment-purpose,—which has now so much deteriorated the German Universities by a too docile loyalty, even to Empire in its worst manifestations, has here in India created the spirit of routine in studies; and thus of intellectual indifference in the mass, and of disappointment and discouragement among the minds naturally more active; together with a depression among those who fail at all stages from Matriculation onwards, which too often deteriorates them far below the levels of usefulness and character which remain open to this large class in other countries. In fact among the Indian Universities in their way, as among the people in theirs, a kind of neurasthenia seems prevalent. The "spirit of unrest", so much discussed of recent years, and at times so actively dealt with, but as yet only in material ways, is but the embittered expression of this general disappointment, the rebound from this neurasthenia; yet after all a different symptom of it.

The cure lies not through repression, however inevitable this may seem or be in given cases. For this growing dissatisfaction calls for far more general treatment—nothing less than that of putting the Universities—and thus the whole of education with them—upon a fresh footing, at once new and old. For education—vitaly understood and vitaly practised, and whether by simplest mother or oldest sage—is ever the happiest of human activities; since it is nothing less than the realisation of something at least of the culture-heritage of humanity, and its transmission by age to youth, for its further development, and for application in the continued service and ascent of man. But the method which was so naively supposed, and promised, to assure all this, by mid-Victorian administrators—that of memorising lecture-notes and text-books for examinations—is at length being seen to have been a vain imagining; and in every way it has intellectually broken down. Yet, as Napoleon said, “one can only destroy what one replaces”: hence the present organisation of miseducation therefore continues, and must continue, until educational methods are renewed, indeed rediscovered, as they are being, even by some of the present generation. But individual timidity and habit, official and professional routine, and their vested interests, their natural clinging to authority and power, and above all, the general desire of facile ‘success’, in youth, and for it,—all these and more combine, to hold up the existing mis-organisation. Even the beginnings of change are thus made too slowly; still, the existence and the composition of the present Calcutta University Commission is an evidence that the battle is at length being joined, though its issue must still be years ahead.

New Universities in India.

The prevalent disappointment with Indian education has had previous outcomes, even to the founding of new Universities, and these of various types. The natural and proper feeling, that the distinctive tradition and culture of India needs fuller appreciation and development, is expressed in the wide and ardent aspirations and generousities which have founded the Hindu University of Benares. Again, the claims of scientific research are being in various directions recognised, and will increasingly be provided for in various leading Universities, and in other Institutes. Again, offering the antidote of health and sports to the present weariness of learning, one meets at times would-be promoters of further new Universities, whose simple panacea for all discontent and unrest I mildly caricature, by describing it as essentially based on the acquirement of 1200 acres, and the provision of a foot-ball. Hostels are pressed for, and some as far as possible to follow and set the fashion of the more athletic and expensive Oxford Colleges. Administrative Palaces and Examination-Halls are of course not forgotten; and even Laboratories (of a past fashion) are on the plans; since, even in southern and midland England, its long satisfying Public Schools have begun to recognise the need, indeed the urgency, of admitting some general knowledge, some ideas, some experience, of the real world of nature and man around them, and thus even some physical science accordingly, into their essential curriculum of renaissance survivals and recent games. But it is not likely that such too simply belated treatments of the prevalent dissatisfaction, and its dreaded unrest, can satisfy either Eastern or Western minds, which the present war is surely, however slowly, awakening.

Putting this matter still more plainly, the difficulty of all the “University Reform” which we have been so long seeking, is that there is as yet no clear agreement, hardly anywhere clear statement, as to what the needed changes should be. Hence the necessity of a very full enquiry as to these, before setting up another University, even in Indore.

As diagnosis should precede treatment, and City Survey, is needed before City Planning, so with Universities. What then of their Origins?

Historic Origins and Developments of Universities in the West.

Universities arose in the west from the discussion of the great problem of the thirteenth century, that of how to reconcile the prevailing doctrines and traditions of the Christian Church, with Greek thought, expressed in the recovered works of Aristotle. There was also the nascent quest of the sciences of physical nature, and their would-be practical applications, in power over nature. In Medicine the physicians of all faiths—Christian and non-Christian, Jewish and Moslem—had begun to compare not only their drugs, but their doctrines and theories. Lawyers wrestled for the rival claims of Civil and Canon Law. Thus each of our modern "Faculties"—say rather surviving Faculties—takes its academic rise from that fertile period. But discussion deteriorated into wrangling and sophistry; and thus, as ever, the books of the dead weighed down the minds of the living.

Yet one cure for the tyranny of books is given by more books. Hence in the late fifteenth century, the next recovery of Greek, of Plato above all, called forth the University transformation, and further University foundings of the Renaissance: and these were also powerfully stimulated by the strifes of the Reformation, and by its renewed interest in the Old and New Testaments as well as in the Greek Classics; while for all studies the great invention of printing diffused reading and stimulated fresh authorship. But with the fixation of most Protestant bodies by that subordination to secular powers to which L  ther and Henry VIII had committed them, and with the contrasted fixation of Catholic Universities by the Counter-Reformation, to the papal power, the life of all alike largely died out.

From the middle of the eighteenth century however a new influence arose; and this, as before, from outside the existing University altogether—that of the "Great Encyclopedia" of Diderot, Rousseau, Voltaire and other living minds of France.

Origins of the University of London, and of those of India.

As part of his thorough organising and codifying work, by which he still rules from his grave, the great Napoleon did not forget the Encyclopedia: indeed from its essential aspect to him, as a well digested summary of knowledge, he made his University. He thus sought to reconcile the democratic spirit of the Revolution with the centralised authority of his Empire in the "University of France"; and in this way not only to train his needed officials, higher and humble alike, but to school and discipline the entire Nation to a not too unintelligent obedience. The University of France was thus legally entered by every child with the learning of his letters; and all the teaching Institutions of the nation—primary, secondary, and higher alike—were viewed as the ranks of a single Education-service, and with much of democratic openness accordingly. Yet Imperial officialism and rigour were also provided for, by the introduction of the severe Examination-system of Imperial China. For there is no reason to doubt that this was an importation, as definitely and consciously Chinese, as are Tea and Silk and Porcelain themselves, or as had been Chinese Landscape-gardening in the previous generation in England, as Kew Gardens still show.

After the bitterness of the Napoleonic wars had died away, and the ideas of the French Revolution were again working as the leaven of English liberalism, the University of France naturally commended itself as a model to English educational reformers;—whom the mingling of medieval and renaissance traditions, main-

tained with the utmost denominational exclusiveness, had excluded from Oxford and Cambridge, then the only Universities of England. Thus was founded the University of London; and hence its character until recently, and still predominantly, that of an examinational testing-machine, pure and simple. Thus the history of Indian Universities is plain. After various initiative influences, Scottish and Catholic especially, came their present organisation, as essentially that of an importation of the University of London; and with such subsequent modifications, for better and for worse, as an increasingly predominant staffing from older Universities, Oxford especially, has supplied.

Thus in summary the present essential University machinery and working, of Britain and of India alike, may be summed up—despite all their many historic and other differences in detail, in a single term—as “pre-Germanic”.

Germanic Universities, at their Best.

What now is the Germanic University type, with its long-recognised intenser development? This has led throughout the greater part of the nineteenth century, and largely till now; alike in quantity, in thoroughness, and in variety of learning, in personal and detailed research, and consequently in general influence upon the world, even tardily upon Britain itself. Summarised to the utmost, the German University is again the French Encyclopedia. For while, as often in history, the initiative was in France, the great application of it was in Germany. Practically then, the great Encyclopedia was parcelled out, but now for re-editing, into all the studies of the University of Berlin, by the brothers Humboldt, who still sit sublime in marble outside the University portal; and in memory, not only of their respective mastery over the sciences and the humanities, but as expressing that “freedom of teaching and freedom of learning,”—without definite and authoritative curriculum—which has been the watchword of German Universities throughout their best days. Here then was their great advance upon the stereotyped and more or less fossil curricula which still hampered the British Universities—that of surviving medieval and renaissance studies, reduced for pass, even if intensified for honours, as with Classics in Oxford, with Mathematics in Cambridge—and maintained by monopoly in distinctions and in endowments, by conformity above all; and with students more or less poorly prepared, in obsolete schools, mostly staffed by the least ambitious graduates. Germany knew better than import the University of France, as later did London, and thence India. To her there opened—as half a century before to the French encyclopedists (who unhappily never became teachers)—the whole universe of nature, and that of human discourse, as henceforth open to the German student. As the Encyclopedia with its innumerable and apparently unrelated subjects, was too vast for any single mind, he was left free to choose his own study, according to his own aptitudes, purposes and predilections. Alone in Europe, his studies were thus practically emancipated from that fixed academic rule which the renaissance tradition in its decay had established; and which the Napoleonic regime had intensified a hundredfold, by its importation and establishment of examination success as the only portal to subsequent employment.

Thus freed from dogmatic and administrative authority, from memory-taxation, and from economic fears, how did the German study at all, much less study so intensively and so productively, as he since admittedly has done? And this so as to make German the most necessary of all the great languages, throughout the nineteenth century and after, for wellnigh every serious student, of wellnigh every subject in the Encyclopædia? Because one can only really study, still more investigate,

from interest in the subject; and with this we do both. Whereas under external authority, or amid internal fears, one can only cram. In that distinction, clear as between the nutritive kernel of the nut and its shell, lies the historic rise of German Universities, and the long arrest of French, British and Indian ones.

Germanic Universities in Deterioration.

Of the deteriorative influences upon Berlin University from the Prussian State, and from the German Empire since 1871, I have had vivid evidence from my first contact nearly forty years ago, with the old spirit of German studies in little Jena, and with its contrast in the Imperial megalomania of great Berlin. And in subsequent visits and studies in Germany, I have seen and felt the increasing spread of these Prussicating influences throughout Universities and Cities formerly free from them. But since the War all this is common knowledge; hence I have dealt with the past of German learning and its world-services while sober, rather than since its intoxication. And what is now most important for us to note, is that such potent intoxicants are not a Prussian monopoly; but that they are more or less in active distillation wherever the State over-dominates education; and hence active in London, and in Oxford too not a little, let alone in India. Education, like religion, can only be truly vital in the measure of its freedom from external authority; since truth, like goodness, cannot be imposed from without, but can only grow with mind and soul within. That astronomy and mathematics live and think in a world of space wider than that of State-enactments has always been obvious, even to the strictest advocates of central government; but so it is for every science, and for the arts; for literature, if possible even more clearly. For it is not really the kings who have laureated the poets: but the poets who have preserved for memory the deeds and personality of kings.

Summary and Policy.

In summary then no true University has ever been "founded", either by statesmen or by millionaires: they have all historically arisen from a preliminary growth and demand of culture in their cities; and they can be at best but watered and guarded by external wealth and power. This growth in Indore is beginning: how can we increase it? The University is preparing; its establishment and endowment will come in time. What can at present here be done is to be making preparations for it.

Chapter II.

The Present University Situation.

The present University situation in India is thus peculiarly dominated by the survival of an essentially pre-Germanic examination-system; first practically discredited, and now intellectually also. Hence demands for improvement, indeed for thorough modernisation. Yet with all respect to the excellent intention, and often good ideas, of the would-be reformers, and with particular and real personal respect for the present University Commission now sitting, its published Questions—despite their general excellence, so far as they go—show that its range of criticism, its hope

of ordered knowledge, its psychology of education, and above all its outlooks towards the practical re-making of the opening future, are still hardly adequate for the task. For this is nothing less than the designing of the needed Post-Germanic University.

Of the notable revival of French Universities since 1878, from the dissolution of the University of France, I shall not here speak; but for a long time mild and moderate changes have been in progress in Britain. Most notably perhaps in Cambridge; but also in London, and in Scotland; and since Max Muller in Oxford, and all towards their development, into more or less temporarily satisfactory Sub-Germanic Universities. New Universities, largely of this type, have also been established as in Manchester, etc., and above all in the United States.

Possible Improvements in India.

Thus much improvement of Indian Universities can be effected. The present tyranny of Examinations will be abated. A greater range and freedom of studies will be promoted. Research will be encouraged, in any and every direction of scientific, historical, linguistic and literary detail; and still more, as regards problems of technological character, mechanical, chemical and electrical for choice, (as at Bangalore), but medical also.

By such useful changes and additions, this Calcutta Commission will have accomplished much more than have most Commissions in history, since a more or less possible sub-Germanic freedom of studies may result. Yet the real problem will not have been faced; it is doubtful if it will even have been clearly seen: yet if not, the improved and enlarged machinery of the coming Sub-Germanic University of Calcutta, and its congeners, will be found before many years to be meeting the educational and the practical needs of India little more than do the existing lecture and examination-bureaus, so essentially of pre-Germanic order.

Need of a Larger Statement of the Indian Problem.

The problem of the needed Universities for India thus requires consideration from larger points of view, beyond those indicated by the Commission's questions. Many though must become our questions and their details, the main ones are but three. What of India and its needs? And what of the University in general, considered as the expression of the best and the most progressive synthesis of the world's thought and of its times? And all this in application to India, its tasks and problems?

Practical Needs of India, and Education accordingly.

First then, as regards India and its needs. Here opinions vary widely in detail, but upon the general account of India all are agreed—that of a predominantly agricultural country, in many ways poor and backward; and hence urgently needing improvement, of place, work and people, such as Denmark since 1864, and Ireland since (say) 1900, have been achieving. This proposition may be taken as denied by none, but accepted by all, indeed with a certain feeling of impatience, as the reiteration of a commonplace. But its educational corollaries are not yet commonplace: indeed are not yet adequately recognised: for of all kinds of education it is thus Agricultural education which appears and claims to be fundamental, instead of clerical education, legal education, medical education, as heretofore, and at present. And first ofcourse, on practical grounds. With all respect to the activities of chemical and physical research, in which Indians are proving their competence, the practical

returns of agricultural research in India are already far greater, witness the current improvements of seed, of stock, and even of implements. Is it too much forestalling the coming historian of early twentieth century India to say that two of its most important advances as yet may turn out to have been Pusa Wheat, and now the Ewing College Plough? In face of a cultivated and educated public, which as yet knows and understands as little of these as can the most backward villages, such views must seem not only Utopian in their agricultural hope but utilitarian in their educational outlook. But such improvement of seed is a research of biological subtlety; and this improvement of the plough has not been without that alternation of keen observation and reasoning with experiment and practice which is the very essence of all scientific research worth the name. Moreover, little though the Pusa wheat-selector, or the busy plough-maker, may yet have had time to think of it, there lies deep in all such concrete work as theirs, the essential change of philosophy now in progress—from that of the nineteenth century, with its mechanical outlook, to that of the twentieth, with its biological and psychological outlooks. For to all such investigators, the world is no longer seen in the old simple mechanical way, which still rules in the minds of most of our generation, and not least among those of its governing classes, however ignorant of mechanical detail. For our experimental agriculturists, the needed educational revolution has practically taken place. In their ideas of better seed, and better life arising from it, with mechanism, of plough and all else, adapted to the culture of this, there lies not only this renewed and vital philosophy, but its corresponding practice, its moral philosophy therefore as well; and hence in principle, its education also. For now not simply the student is primarily considered, but his service of the people, rural first, but urban also. And the student-assistants which such agricultural professors and practitioners require are obviously no longer those of bookish memory exercises tested by examination, but those of increasingly skilful and intelligent practice, estimated by results. In short here appears the solution of the examination difficulty, the transcending of mere examination by *Estimation*—that of the man and his work together.

What of the graduates of such a vital school and "Faculty" of Agriculture? For the people no longer merely orderly ruling, as of taxation and police; but Leadership, to that "better Farming, better Business, better Living," of Ireland's most effective leader, Sir Horace Plunkett.

Higher Educational Consequences.

As evidence that in such investigators, whose good seed and ploughing are preparing more than they yet realise, we have the stuff of developed and conscious educational efficiency, we see that it is a lately simple agriculturist who has gradually developed into one of the most progressive and effective educationists of the University of Bombay; and there are grounds for hope that his type will soon be multiplied tenfold.

Now then, for practical application in Indore. What of its schools of Agriculture, Horticulture, Fruit-growing and Forestry? Why not thus again double the wealth and yield of the State, as was done in Tukoji Rao's day? And with the deepest educational results accordingly. And even of this be but the day of small things, let us at least have Gardens, from simplest schools to highest. The significance of my prolonged insistence upon gardens and gardening, in a preceding section of this Report, will now be clearer.

Similarly Medical thought is advancing beyond the mechanical standpoint of its post-mortem studies, the externalism of its germ-theory pathology, and towards a wider and clearer view of the processes of life. Witness not only the recent change of prominence, from inorganic drugs to organic serums, but the increasing comprehension of the life-process: and this from the subtlest electro-physiology, as with Bose, to the growing recovery of the broad and simple practice of the ancient founders of Medicine—that of Regimen, and Re-education. These are the interaction of mind and body towards re-established health, through action and re-action with healthy environment.

Again a word of practical application towards the Indore University future is here permissible. How far may the present School of Medicine be developed, as with a fuller co-operation of the Hospitals, and also with the various scientific beginnings recognised or suggested in these pages?

Enough now of the biological sciences and arts, in their Faculties of Agriculture, Hygiene and Medicine, and their utilisation of the preliminary sciences, Mechanical, Physical and Chemical, but these as henceforth subordinate, no longer supreme. What now of the Social studies, the Humanities? Are they to suffer as they fear? How are they to fare at the hands of those who are primarily interested in Culture in its old and literal meaning, in terms of the creation, here and now, of better crops of better life, and only secondarily in the regard and commemoration of past ones?

Better than ever. For the great heritage of the past is now seen no longer in terms of venerable memories alone, to be jealously conserved in our college cloisters, as alleviations and escapes from a too mechanical, monetary, and militarist present world; but as the cumulation and example of all high past achievements, and as yielding precious seed, which again may be blended with our own, and this towards perfections surpassing either.

Further Consequences.

As the studies of Organic life, in surmounting the present Mechanical ones, utilise them, direct them, stimulate them anew, like better ploughs for better seed, so it will be with this correspondingly vital comprehension of the social process. For this is the complex, ever-repeating yet even varying struggle of man towards civilisation; and this not only material but increasingly spiritual; as of seed and root and leaf towards flower. True, the tyrannous cram-trade in dead languages, and in the projection of their dead methods upon living ones, and upon sciences as well, will disappear: compulsory Greek, and even compulsory Latin in England, will go the way of Sanskrit in India. But all this not in favour of the squalid utilitarianism these poor pedants alone see around them, but as part of a true revival of all that is vital in these historic cultures. For the student will be far more vividly initiated into the recovered life of the past: he will be awakened to its wisdom and beauty, and first in his own vernacular, from noble translation, like those for English of the Old and New Testaments, and not through construing (or failing to construe) snippets. He will also learn the old tongues from song, recitation of their poetry, active representation of their drama. He will be told of the glorious regions, the noble and inspiring cities of the past, and be encouraged to visit these; and so on. All this is what the best of the wandering students of Germany were wont to do in her noble past—Winckelmann, Goethe, Schliemann, for instances from the three generations preceding the present too largely Empire-educated one. When he cannot wander, the

resources of all the arts will be employed, and these convergently, to visualise before him a completer, because more selected and concentrated, picture of the great past than even its own generations knew. In practice then, while an Indian student at present often spends the best of twelve or fourteen years in learning English, or a British student a dozen in learning little Latin and less Greek, both will learn more, and more effectively, far more happily also, in three or four. Even the sacred Grammars will only die to live. At first ofcourse they must disappear; but in and from the wider Grammar of the Sciences, Social, Organic and Natural, all that is vital in them re-appears: we but correct their conventional order, of Noun and Verb, into the true and vital order, of activity and fixity, of life and form, of Kinetic and Static; as verb and noun, as creative and as product.

The Post-Germanic University.

We are thus rising beyond the existing Encyclopedia, and escaping alike from its Napoleonic memorising, and its Germanic dispersiveness; from the Encyclopedia Tyrannica of the first, and from the Encyclopedia Chaotica of the second. We are thus preparing the Encyclopedia Graphica; and this as Encyclopedia Synthetica; that is with its scores, hundreds, even thousands of specialisms, now presented more vividly than heretofore, because now vitally as intelligible aspects, products and details of Life, illustrating this in its rich and protean variety, yet no longer concealing its unity, but expressing this more abundantly.

The Post-Germanic University will thus not merely continue the analyses of nature and human life, into which our sub-Germanic Universities are now struggling, but this more effectively, because as parts of its Encyclopedia Vivens. The tree of knowledge is thus seen no longer as the dead material of intellectual timber-yards or practical fuel shops, with their dry sticks great or small, but again as a living and growing tree; with ever-increasing spread of branches, deepening and ramifying mileage of roots, ever more multitudinous leaves and flowers. So vast is the tree that no man can climb over it wholly, yet so simple that all may see the essentials of its vital architecture and of its mode of growth, may gather its blossoms; may taste the mingled sweet and bitter of its fruit, and plant its seeds within the garden of their own and others' lives.

The University as Incipient in Indore.

Of all this there are manifest beginnings in the educational world of Indore. The new High School, with its fresh and vital leadership, the new Normal School, and perhaps beyond all, the present introduction both of Higher and Elementary Schools throughout the City and State, will not only prepare a larger supply of students for the Colleges, but one demanding and encouraging all their best efforts towards the educational transition of the present and opening time. Towards aiding in this movement the many though as yet scattered intellectuals of Indore have also their active part. At every point therefore, the University of Indore may be in the making. And with this Post-Germanic University there will develop the Encyclopedia Civica; and this as Encyclopedia Practica; yet in no narrowly utilitarian spirit.

Chapter III.

University Renewal, as aided by Reconstruction after War.

Re-Housing and Civic Movements.

Permit first an unfamiliar approach, yet practical enough, as from ordinary house-building, to that of Sarasvati's Temple, called in the west the University proper. We are still far from having solved the difficulties which delay and impede the housing movement. For when all is said and done, the Garden Suburb and City Movement have to confess their progress has as yet been disappointingly slow, even in the countries of its origin. For their real difficulty is not economic, but is a psychological one.

The first volume of my long series of Town Planning Reports, of which the present is the latest, was written half a generation ago for a small Scottish City, to which one of its natives, who had grown to be the most known and most generous of America's or the world's, millionaires, had given, in cash, with Park, Library, Baths etc., a full crore or more for its improvement. My volume was favourably, even warmly reviewed, indeed without exception; yet one reviewer, after his eulogy of the book, added—"this word for its writer.—Your improvements are admirable; but your public do not want them: what they want is to be let alone. It is in vain for you to rise before the dawn".

Things have been moving since then; and such criticism has no longer so large an element of truth; yet there remains truth in it; for men's minds are still mainly set on other things than these old tasks of man:—those of tilling the earth, of building the cities. Indeed most educated men now-a-days think of themselves as beyond and above these homely labours.

A Fable of the Bees.

So for them let us adapt the old "Fable of the Bees." In dull weather, when flowers were few, and work was well-nigh stopped, there came buzzing to the bees at this time of depression, a solitary wasp, of genius. Said he, "Foolish bees, are you not tired of your dark little hives? of your dirty old combs crowded together, and of your perpetual search over the fields, to gather a little food for your children? Look how I can use my voice and sting: be like me, and you will enjoy my freedom!" "But what of our old town Hive?" asked one bee. "And of my old home comb mohalla?" asked another. "And of my little cells with the young ones I have to take care of?" said a third. "Foolish bees! these things are all out of date: do you not see how narrow are your minds, how limited are your horizons—merely domestic, local, provincial. How petty all of you!—how ignorant of the great world! But come and buzz with me, and you shall all have voices in it, which we now call votes in it. With all our stings together, we shall not only defend ourselves, but conquer our enemies. Think then no more of hives and combs and cells; for here is the greater idea, that of each bee in the air, as an Individual, like me, all and all in himself, and for himself." "But what of the other bees?" asked a lingering conservative, hesitating to be alone. Said the new political genius: "Don't you see that when all the bees are in the air, they constitute the modern Democratic State? In this great and free Society, we are henceforth emancipated from all cares of hives and homes!" So with acclamation,

the great Revolution was accomplished; and with much making of history thereafter; with little of honey, though much of blood. But now, after the greatest of bee wars, more and more wasp-like, the survivors show signs of return from the glories of stinging flight, and turn towards their old-fashioned working world once more; to renew their broken hives, the shattered combs, and tend the neglected and orphaned children.

The Reconstruction Movement.

It is this movement which is called Reconstruction. It began for France after the Battle of the Marne; and steady rebuilding of ruined villages has thus been in progress since the end of 1914. By 1916 it was able to fill the Paris "Exhibition of the Reconstituted City", and this although the enemy's guns were still within hearing of the Paris gates. To this I took back from India the essentials of the Town Planning Exhibition; and to this Reconstruction Service I hope to return—that of the region in which historic Cities, with their Cathedrals and their Universities, lie ruined and shattered, in which great industrial towns stand idle, robbed of their last machine, the villages destroyed to the last stone, the orchards cut down to the last tree—the garden of France, her mines and workshops, and those of Belgium, battered into destruction, soaked with death, black and livid with decay. Yet once more we shall build again these wasted places, and in some ways better than before.

For men are becoming disillusioned, and this all over Europe; not in Petrograd, alone, but even in Berlin, and through all towns and countries, in all trenches, even in some measure in all council rooms, of the ideas and activities which have brought about this climax of destruction. So though its reconstructive groups plan and build and till from dawn to dark, they also think; and this with more clearness and to more purpose than have those who brought things to this pass. For with all its industrial and imperial and financial greatness, they ask, what has been this industrial world after all? A time of digging up coals anyhow, to get up steam anyhow, to run machinery anyhow, to produce cheap products anyhow, to sell them for profit anyhow, and so achieve "success"—for one per thousand; and this estimated in money gains, and these mainly at death. So too there is disenchantment with the imperial world, with its promise of peace and pride of power, its victories and glories: and with the financial world, with its incalculable and crushing debts. Many no doubt, can still see nothing beyond the industrial progress, the military power, or the financial enterprise which have thus led down to pandemonium; and so may be for the time, as befits that destination, more mechanical, more violent, or more venal than ever; while too many others, in rebound from all this, waste life and usefulness in mere criticism, here radical, there socialist and there anarchist in character, or in the mingled confusions of all these which are flaming up in Petrograd, or fermenting in the unrest of Bengal. But our growing Reconstructive regiments will do better than all these extremes, which meet, however hostile, upon a common ground; that of social theories and political theories alike outworn. But our problem of Reconstruction—the Making of the Future—how shall we set about that?

We have to reopen the coal-mines, renew the machinery and multiply the products like our predecessors of the industrial and liberal age; but now not merely for sale and personal profit, but for clothing the naked. More important still, we have again to till and plant the ground; but now not merely or mainly for market, but to feed the hungry. Again we have to build the houses, but now no longer merely as

properties, as comfort-villas or luxury-palaces; still less as speculations in rise of land values or on profits of jerry-building; but to house the homeless. We have to rebuild the schools; but not to pass examinations in, or provide returns for metropolitan clerks to pigeon-hole; but to teach the children. That is, we have to tell them something of their still undestroyed and indestructible heritage of the spirit, and also to prepare them to help more effectively in every home, and more speedily also in village or city, with the reconstruction of the material heritage now lying destroyed. We have to do all this, as on the battle-field, with its strenuousness; and all this too as behind the battle-field, as in the Staff-Office, and this even upon the same maps; and with even fuller Civic and Regional Survey, of every material feature and element of the situation; yet increasingly of the other elements as well, mental, moral and social.

Reconstruction and the Universities.

Our Reconstructives already largely come from the schools of learning, and from all their faculties. They increasingly continue their escape from the limitations of these, and into that larger world of better understanding which is entered as we exchange our external domination by the letter of our training, to see and think in terms of mechanism alone, for a fuller appreciation of the spirit and of life, say rather of the spirit which is life and of the life which is spirit—since in this life-synthesis the old controversies of materialism and idealism, which seemed so insoluble, are alike reabsorbed, as the dual aspects of life. We shall have with us the best elements of the Universities of the Reconstruction-region:— from Louvain the first martyr; from those long-silenced, like Liege and Brussels, Ghent and Lille; from those hard-beleaguered like Nancy, and those threatened—above all therefore, the historic mother University of the West, Paris herself. From all these, and more, will come together some of the best minds, at once the most broadly social and ethical, philosophic and geographic, and the most effectively specialised, both in thought and in things concrete.

But this is a renewal of the ancient University; and in its historic origins, of eager intercourse of minds, in co-operation of their ideas. Cleansed of the endowments, bribes and gags of capital, as well as of the bitterness of insurgent labour; freed too, from bureaucratic shackles and examination torments, as of their petty rewards and fears, there may and will arise the best beginnings of the University of the Future—now synthetic as well as analytic. And hence these allied Universities, hitherto mainly mingled of Pre-Germanic and Sub-Germanic elements, will definitely initiate the University Post-Germanic.

An Historic Comparison of Past and Present.

That all this again will seem "Utopian" to many is of course obvious. But such critics may consider whether it be not the fact, as the preceding historic sketch has but too faintly outlined, that each great renewal of Universities in history has arisen at times of social transition and war, comparable to the present one: *e. g.* the Renaissance and Reformation Universities, the movements of the Encyclopedia and of the French and the Industrial Revolutions, the University of France with the Empire of Napoleon, and those of Modern Germany after her defeats by him? Again, the renewal of French Universities came as part of the recovery after the Franco-German War of 1870-71. Why then need we despair, even for those best satisfied with things educational as they are, or again for their most pessimistic and unconstructive critics, since the time of Reconstruction is at hand? We see, indeed, already, many points at which it is actively beginning.

Chapter IV.

Beginnings of the Post-Germanic University.

The University Militant.

In the Reconstruction area especially there may soon be created active centres of the needed University Militant, and with growing appeal and support throughout the Universities of the Allied lands. This arousal will even penetrate Germany herself; and shake her proudest citadels, rise above them, drop ideas into them, more fully than can our airmen. And with her specialisms thus surpassed, because co-ordinated; with her State-philosophy over-powered because out-thought, her pride-illusion cured, she will increasingly be brought back to reason, and even to human loyalty, from her fanaticism of an imaginary Teutonic race, and its aggressive superiority—thus returning to her good for present evil, and good for previous good. The University Militant, now regional in its many centres, yet synthetic and integral in them all, and hence increasingly catholic and human, may thus do much towards reuniting the shattered unity of civilization and world-peace; since its principles lead not only to tolerance, but to appreciation of the best qualities of all peoples, and their co-operative interchange accordingly.

Eutopia versus Utopia.

But this prospect must remain Utopian, in so far as we fail to plan, to design, and to initiate it as Eutopian. That is no longer vague everywhere and realised nowhere (Ou-topia); but definite, regional and local, and so making the best of each place, in actual and possible fitness and beauty (Eu-topia). Thus we may recover, and make our choice between, the contrasted meanings—and destinies—concealed by Sir Thomas More in the title of his immortal "Utopia"; but which too commonly has only the sarcastic half of its meaning understood, seldom its real and hopeful one.

Possibilities in Indore, and Generally.

Now Indore is also in the War, and this not merely with its soldiers; but at stake with India and the world, and for all it holds most dear. How may education here be made most of service to it, in the unending struggle for existence, yet culture of Life, to which this War is but awaking us? If the preceding argument be sound, it is the nascent University Militant that is needed; and this it is which may and should be established here. Not merely then another copy of the present Pre-Germanic University type, or of the Sub-Napoleonic examinational and bureaucratic, nor even that Sub-Germanic encyclopaedia of unrelated specialisms, with which most of our present University reformers are too easily content. For here are already to be found the essentials of better beginnings for this needed centre of the intellectual life of Central India, and also for the civic life of Indore; and these now need but to be brought together.

It is a legitimate adaptation of a Sloka of the great Teacher of the West, to say that wherever two or three are gathered together in this spirit of Sarasvati, there will she be in the midst of them. Despite our recent beliefs, it is thus not with money-bags and administrations, controlling and degrading teachers towards gramophones and students towards phonographs, with the best London-made examinational computing-machines to test these, which can either found or continue any true University. Not even a University Commission, though this present Calcutta one be not only the most open and well-intentioned, but the most clearly post-

Napoleonic, and the most competently Germanic, in the best sense, that has ever undertaken such a task.

Sarasvati.

It is such current beliefs as that in examination machinery that are spurious myths, and not that of Sarasvati. For she has ever reigned, and in all times and lands. She was known as Pallas Athena to the Greeks; she is the Wisdom of Solomon, the Holy Wisdom of Christianity. Under a less ancient, but also venerable and enduring name, she is Alma Mater, and of all true Universities; past and possible. The supreme passages of the whole modern prose literature of the west for our purpose are thus first, the "Invocation of Pallas", by the young Renan in his pilgrimage-ecstasy upon the Acropolis of Athens; and thereafter Anatole France's "Reply of the Goddess", pronounced for her forty years later over Renan's tomb. *

But all such divine visions vanish like rain-bows, when they do not congeal into marble; then to be guarded with a reverence which becomes idolatrous in the disciple, but mechanical in the majority; and thus sooner or later broken by the iconoclastic hammer, be this of modern industry or of war. The only security, and even that necessarily imperfect, is to be perpetually meditating out the problems of thought and of action anew, in and for each generation of men; indeed for each shorter crop of students in their training.

Concrete Examples: Education in War Time.

How can this practically be done? For a vivid example from the West, take the famous feat of the Polytechnic School of Paris, the foremost College of Engineers and Officers, and at the moment of what was the supreme historic crisis of France,—at any rate before October 1914,—that of 1793, when fourteen hostile armies of the Central and Northern Powers were gathering on her Frontier, and no army to defend her, save ragged regiments of volunteers, without officers almost at all. A mass meeting was held, of students and professors together, and the danger was fully realized. The first cry of these young officer-students was of course to "Go to the Front;" yet, as it was soon pointed out, this could only be as mere recruits, not yet officers at all. And at this acute psychological moment, a voice called out "Let us do our three years course in three months". With acclamation the meeting dissolved to separate studies; and after the night's vigil the professors concentrated their teaching, and the students their learning, as men had never done before. In three months, they were trained and ready for their duties at the Front; and thus largely was officered the most victorious of all France's heroic armies; while later the same men, at least the survivors of them, were among the most effective officers of the great Napoleon through his amazing years of victory.

Yet now we have bettered this example: our young officers—above all the most brilliant of them, the airmen—have but six weeks training, between home life and the battlefield.

Education in Peace.

Turning from war to the education of peace, it is a sign of these changing times that we see, increasing in the papers, advertisements of brief courses in "Correspondence Schools" of various character. Some may be merely commercial, others too

* Renan. *Souvenirs de la Jeunesse*.
Anatole France. *Vers les Temps Meilleurs*.

simply informational, like too many College text-books and lectures; but others seem to be more vital and psychological than are as yet most University teachings, save the very best. In my own Summer Meetings at Edinburgh, during the past thirty years and more, I have had frequent experience, of how in a single month of vivid teaching, among fresh and inspiring surroundings, and by a group of effectively specialised teachers, brought together by intellectual and international sympathies, and with common synthetic aims, with regional interest and social outlook, the mental attitude of a gathering of good students may be transformed, and even the life-purpose and life-efficiency of the best intensified thenceforward upon a higher level. Any who have known the kindred work, upon a larger scale, of the Oxford Summer Meeting (so largely headed and inspired by the President of the present Calcutta University Commission) have also seen how such veritable intellectual "conversions" may be accomplished, and with what enduring results; as notably towards aiding in that progress of education which was widely sporadic before the War, and is now organising itself upon the national scale.

But, it may be said, and truly, such students are picked and chosen ones. Yes; but by themselves. By their own impulse, their own thirst of ideas, like that of Indian Brahmacharyas of old, and again to-day. Not by measurement upon any Matriculation rack, stretched between the schools and the present degree courses in Indian Colleges; nor with these nourished upon the starvation diet of mere text-books, and these too often the dry dung-cakes of the cram-trade publishers.

The Needed Curriculum and the Transition determining it, as from Paleotechnic to Neotechnic.

But what then—I may be fairly asked, or at least should be—is to be the nature and the spirit of the curriculum, which can make our dry bones live?

Even in the Harmsworth papers, despite their constant limitation to and by the inadequate spiritual leadership of London, there is now continual insistence on the need of our waking up to technical and specialist efficiency, and of better education accordingly. Let me then state the conditions of this, though more generally than is commonly seen.

No one any longer speaks merely of "the Stone Age" of early man. This is now-a-days discerned more clearly, in its two distinct and successive levels, of the Old and the New Stone Age—Paleolithic and Neolithic. Similarly we need now to distinguish our modern Industrial and Technical Age into what we are also now beginning to see as two phases, Old and New; and these may therefore conveniently be discriminated by parallel terms, as Paleotechnic and Neotechnic. In the beginnings of the Old Stone Age, man seems still but emerging from the brute; yet grasping the flint as tool, its spark as fire, we see him advancing to mastery of the henceforth lower animals in the hunt, rising to tribal groupings, and even expressing his strenuous life in vivid art. But in the later Neolithic age, he had reached what are the essentials of civilization to this day: and this not only in the varied tools of special arts and labours, wrought to fineness, no longer that of chipped flints, but that of the polished jewels of the temple and palace treasures of India. For Neolithic man was creating agriculture, with its domesticated animals and plants; and with this its associated higher status of woman, its beginnings of religion.

Now similarly in our Industrial Age (which Indians so commonly, but so exaggeratedly, call "Western Civilization"). We have long been living essentially in

its earlier—Paleotechnic—period, that of getting up coals anyhow, making money anyhow, and having wars anyhow; and with only utilitarian economists and liberal lawyers, or else imperial bureaucrats and bards, as our rival priesthoods, and with financiers ruling above all. But now the ending, or at least subordination, of this Paleotechnic phase is coming into sight. Beginnings of the Neotechnic order have indeed from the first been in progress in every specialism, in every inventor's workshop, in every research laboratory, with increasing polishing of their implements. But now, with the stress of this war of machines and processes, inventor and physical scientist are coming into power; with production-leaders, commerce organisers, and railway re-organisers, to head them, and with the thinking airman surveying wider outlooks beyond them all. For from his vantage-point of survey—regional, and therefore increasingly interpretative—he peculiarly sees the coming transformation, of the destruction he makes to-day into the Reconstruction of to-morrow. This is no longer simply Neotechnic, though this in all its details; it is also Geotechnic; that is Geographic: and hence every true Reconstruction is capable of being comprehensively mapped, and definitely planned for.

This planning is in progress. First in detail, of ruinous villages and dilapidated towns, here and there as circumstances may render possible; but also of larger regions, even whole countries. Thus at the London Summer Meeting, on "War and Peace", organised by Prof. Gilbert Slater of Madras and myself in 1915, we had a masterly discourse by the first of the Belgian architects, in exile, upon the comprehensive Re-planning of his entire country after its cleansing from the invader; and upon this task the best constructive minds of that indomitable country have been finding occupation, hopes and solace throughout these terrible years.

The Essential Transition in its Inner Aspects.

Yet material construction is not all. There is an old and venerable Babylonian tradition, transmitted by Israel to the West, that man had once long ago a home and a garden given him to care for, which were the masterpiece of the divine Geotect, and to which all since planned are but what their kindred garden-suburbs are to Paradise. The story tells how he and his wife lost home and situation together; and these merely through yielding to what are our common modern desires, of things fair to the eye and sweet to the taste, and luxuries of "intellect and culture" as well; and it thus is plainly and psychologically true. The adjustment of our life and surroundings is thus not merely Geotechnic, much less Neotechnic. It must also be spiritual: that is, not merely intellectual: on that point the story is clear. It needs to be emotionally true, and thus practically, ethically sustained, accordingly.

We are thus compelled to the admission—one hard for the student, the man of pure or applied science—that the essential problem of life is not material, but psychical. In a word, life needs to be Eupsychic; or in a older word Religious—a term familiar some time back in India, till "Western Education" enlightened her, as the serpent did Mother Eve in the western story. So for this definite summary we are now ready—that Education, now and everywhere the object of discussion and quest, is not simply Neotechnic, though this is urgent for workers and specialists. Nor even Geotechnic, though this be no less urgent, especially for organisers and statesmen. It is above all, and therefore in the first place, Eupsychic, religious: or, to be more precise, Re-religious. For only in the measure of our breadth and fullness of sympathy with nature and its powers, and with our fellow-men in their past and in their present: throughout all their varied groupings, in their present cares,

sufferings and anxieties, in their hopes, aspirations and possibilities. And "where man is helping man, the Divine is there." Only thus can we have any real understanding, worth the name, of science, much less of philosophy, morals, or statesmanship. And only thus can we successfully initiate the needed Reconstruction, of city and country, upon Geotechnic lines, and with the corresponding command of the needful Neotechnic detail.

Our renewed University and School curricula will thus be again much like ancient ones. Though now upon our modern spiral, they must be at once re-religious in spirit, and re-constructive in effort. Thus they will be effectively scientific because vitally constructive, in all the rich variety of modern and advancing specialisms and applications.

Reconstruction and Educational Renewal Together.

Here then is obviously appearing in this Reconstructive policy—whether this be applied in a ravaged French City, or a deteriorated Indian one matters little—a form of civilization widely different from the present one: and much less dependent upon simple faith in rupees and in routine, whether these be active in Business or static in Bureaucracy. Hence little wonder that the educated public, so largely divided between these two great castes, should have difficulty even imagining the possibility of this Reconstructive form of society, and think it "merely Utopian", although it is already actively at work and growing since the War, and now preparing for larger claims with peace. It was neither for such and such rupees of pay, nor such and such routine of drill,—though of course drill and pay are both necessary—that the youth of Europe have marched out from home, from school and college, from workshop, counter and office, "to face hardships, privations, wounds and death". This was the volunteering appeal of Garibaldi, and indeed of the present war. And the life of youth will thus be turned and led on its reconstructive march by different music from that of the turning of wheels, the scratching of pens, the chinking of coins and rustling of papers, of our passing order of life and education: for it needs and responds to love of neighbourhood and home, of country and city, yet of widening humanity as well. With this growing desire of help and ambition of service, youth will learn in constructive peace, just as with the above examples from war, to be of more real use to themselves and the world in three months, than do most of those conventionally mis-trained in twice as many years.

Conclusions.

What then is the conclusion? We see already here in Indore much of the needed resources. Here are students, teachers too, for one of the vitally reconstructive centres of the University Militant, and thus for developing the needed active nucleus of the future University of Central India. All this only needs fuller mobilisation and better equipment. That the former is possible, there is no fear; the problem for us here is of planning this equipment. Regional and Civic groups may readily be formed, both for study and for service; and these in each of the studies, each of the services the community requires, but now in better understanding of each others' tasks, and thus of their own.

There is thus no destructive interference with the existing studies of schools and colleges; for the change is essentially in their spirit; and in their consequent rise beyond the mere individual examination-passing of individuals, to the more intelligent and more associated studies and services of the world around them, that of

country and city accordingly. Assuming then, here as elsewhere in India, more individual workers in this civic spirit, and the increasing formation of groups accordingly, the following planning may be of service, and this in outline, for main elements of the needful studies, for each branch and faculty of the needed service, and also with the essential Organisation and Intelligence departments; though all these in less fixed and conventional form than that of their present substitutes.

Chapter V.

Central Library and Museum; and Theatre.

General Location of These.

To various citizens of Indore I am indebted for suggestions, as especially to its active Municipal President. From the Home Ministry I have had most of my general instructions, as on reporting on Water and Drainage, of designing the new Industrial Town, of laying out Suburbs etc. But the one suggestion which I have indirectly received from His. Highness the Maharaja is, without flattery, the most distinguished of all; and this as regards both Town Planning and City-Design: since this is made not only with the artistic instinct of the palace-builder but also with the forethought of the educational statesman. For the planning idea is that of the location of a commanding group of buildings upon the high point of the Ghatia Peninsula, between the meeting of the Rivers above Krishnapura Bridge. For thus may be improved and unified this finest of all the city's landscapes. Given the towering monuments on each side of the river, this new architectural mass midway between should complement these, with due contrast, yet harmony; and so complete at this point the City Beautiful.

For this is the highest and the most striking site the entire City affords; and a well-designed mass of buildings upon this picturesquely wooded shore, grouped among its trees and towering over them, will here show to the very best advantage. This point has hitherto remained unoccupied, save for the small neighbouring Temple, because of its inaccessibility since the submergence of the ford, by raising the level of the rivers; but with the supply of a Bridge over the Residency River, from the meeting-place of the roads from and to Sia Ganj and that from the north by Topkhana, and also of a second Bridge across the Indore River, above the Public Garden and old Theatre, this Peninsula point, already the highest and best outlook for the city, will become attractive and accessible as its very Centre. This too is the main opportunity, in all Indore, of beginning to reproduce, upon the high point and ridge of this peninsula, something of the architectural and landscape beauty of old Maheswar.

General Conception of Scheme.

So far then this improvement as regards the general architectural effect required, and the communications necessary. But it is the purpose and use of any such improvement, that is the main thing, its significance in City-Design; and here again my instructions are the best possible. For this monumental group is to embody the intellectual centre and crossing-point of the City, and to be its

educational focus and centre as well. For the buildings desired are those of Library, Museum, and Theatre, the centres of literature and learning, of the sciences and the arts, and thus appropriately beside the Temples and Ghat of the elder idealisation of life. Here then has to be the very climax of all our City Designing—a scheme at once educational and metropolitan.

The best recent analogue I know of to the present scheme is that of the National Library and the National Museum of Wales. These however are separated between two different University Cities; but here, more effectively in every sense, they are to be combined in one. Thus, though the magnitude of the Library and the Museum must here be less considerable, their civic and educative efficiency may become even greater; for it is with such institutions and their working as with the energy of an electric current, which depends not so much upon the magnitude of separate cells, as on their effective coupling into a battery.

Planning of Central Library and Museum.

What then of this Library? What are to be its contents? How is it to be protected from becoming, as too many libraries do, "a cemetery of books", in Lord Rosebery's true and bitter phrase?

Again what of the proposed Museum? Is it to be a mere miscellaneous storehouse, a large curiosity shop, like the old museums of the West, or an orderly series of collections of every kind like the great Museums of to-day, with their innumerable galleries specialised for every aspect of nature, every class of natural objects, every effort, expression and masterpiece of man?

Even the great museums often become little better than carefully kept cemeteries, though less dusty than those of books. Indore need not, as well as cannot, attempt to compete with these.

What then is to be done? How shall we make this museum worthy of the great name which at least one Indian Museum, that of Lahore, has won from the people of its city—that of Ajibghar, the Wonder-House? And since the modern renewals of arts and sciences are but so many forms of "the renaissance of wonder," how can this museum at once arouse wonder, and satisfy it, with wonders yet more? How lead it towards enrichment and productivity of life, instead of letting it die out, as in uneducated minds we allow; or of killing it, as to minds educated on present lines so commonly happens? These questions are now-a-days being successfully answered in many museums, in response to growing demands upon them, and these at all levels, from elementary school-visits to studious consultations. Even the puzzled and wearied public readily gather into eager groups, to follow round the museum an interesting and lucid expositor as guide.

Similar questions arise for the Library, and for its readers in their respective rooms, as outlined on Plan of peninsula—those for children and for women therefore as well as for general readers; and beyond these the Reference Library, for enquirers and students, with study-cells for investigators beyond these.

Museum.

With this ground-floor Library substantially built as a Library should be, we can next raise upon it, at once or as means allow, a second story for the Museum Galleries. As need be the building, on suitable blocks, may be raised to a third

story for special collections and their study. On the main Museum floor for the public we have the problem of summarising, concentrating and utilising the best examples of the best museums, for purposes instructive and scientific, artistic and practical.

Psychological Conditions Necessary for Creation and Maintenance of these Institutes.

In such varied and active ways the Library will escape being a cemetery, and thus become a yet greater, higher, deeper Wonder-House—that of the treasures of the spirit, of that main human heritage of thought and wisdom, which Solomon, traditionally richest and wisest among the sovereigns of history or legend, proclaimed to be “above jewels.” As at every previous vital point of the city’s problems which have come up before us, but now especially for the design of this main group of Culture-Institutes, we see these cannot adequately be handled in the common-place mood of ordinary business. We are compelled to stir ourselves to a higher and broader level of thinking than the everyday one, as well as to be more observant and more intensive in detail. This involves a certain warmth; and it requires activity and ardour as of the climber, beyond our habitual alternation of pedestrian’s pavement and sedentary’s chair. With all real thought-problems it is as with the forging of iron, which to be strongly or subtly fashioned must be hammered red-hot. The eagle rises to his height through the psych-organic stress of life and effort, which heats his blood far beyond that of the labouring ox or leisured snail below him, and so gives him wider and clearer vision, albeit at a temperature far above that of fever. Now a concrete illustration to this point. The great administrator who more than a generation ago created the colossal and varied collections of the South Kensington Museum was wont to say, when the need of some new development was justified to him “Yes. I will undertake this; but not until you find me the necessary madman! I go into nothing without him”. Is it not because founders and administrators too seldom know this secret, that libraries become cemeteries, museums mere galleries, and colleges fall towards cram-shops?

Yet the division of labour also is insufficient; for the madman uncontrolled becomes the victim of his mania, and sacrifices all else to it. But with correspondingly sane and complete organisers at the head, and if possible one and the same vital leadership for Library and Museum, assistants who are departmentally and properly “mad”, upon their subjects, will be invaluable.

Museums and Libraries in Recent Progress.

Too commonly hitherto the Librarian has been more concerned with the orderly keeping of his books than with getting them worn out through use, while still more the museum Curator has been wrapping his treasures within a napkin. But this organization of material wealth, at the expense of intellectual poverty, is largely because Museum and Library are as yet scarcely anywhere adequately related with each other, or with the surrounding colleges and schools, with their city public, or with the towns and villages beyond. But of late years, here and there, each and all of these defects have been changing, towards their very opposites. The Museum is arranged and displayed, and with its specimens now in serial and evolutionary order, intelligently and interestingly labelled. And while a learned and exhaustive Catalogue is made available for the students, a popular and well illustrated Introductory Guide to each gallery is offered to the public for an anna or two, and copies hung beside the cases for those who cannot afford even this. Best of all, the curator and

his assistants divide among them a daily round of teaching, in this or that gallery to its visitors; and this teaching is on each of the various levels required, from the simplest working folk upon their first visit, to the more orderly guidance of the school-classes which come in rotation day by day. A higher guidance is given to the college students on their periodical visits, often by their own Professors and Demonstrators. The Curator, though inspiring and guiding this whole teaching, is specially occupied, along with his learned brother the Librarian, in keeping the Institution abreast with the college professors, the leading teachers, and active intellectuals of the city and its region; and therefore these accordingly, are more and more actively interested in the requirements and the progress of Museum and Library together. Ofcourse the Library, still more the Museum, cannot lend anything of its main collections outside their buildings; yet the more living libraries and museums are now each developing their "Lending Branch"—the librarian sending out his monthly or fortnightly parcel or box of books to every village school-house, henceforth the local Branch Library; and the curator similarly sending round his boxes,—minerals, rocks and fossils, zoological and botanical specimens—for the Nature-teaching of the schools; as also examples of old Arts and new, for the stimulus and emulation of its workshop and drawing-school.

School Results Accordingly.

In schools thus kept stirred to active interests by such healthy change and continual freshness, children and teachers progress together, and this at a rate far exceeding even in rapidity, besides depth, permanence and thoroughness, all the whipping and spurring and terrifying which are needed for the present examination-method; while even this begins to take a new and vital form—that of Estimation, of school and pupils together; and with the inspectors and examiners themselves transformed into encouraging and suggestive guides.

But teachers are not ready for all this—it will be said. So far true; though less true than their official superiors are apt to think. Yet their wide arousal, and this in even a majority of cases, is possible, and often rapid. For here, with this group of Central Institutions once clearly beginning, we can at once introduce the principle of "Vacation Meetings for Teachers," which, for the past two generations in America, and for the past one in Edinburgh, Oxford and Cambridge, and more recently in London, Manchester, St. Andrews, Wales and elsewhere, have been so encouragingly effective.

Essential Feature of Present Scheme.

Each and all of these various features of recent educational progress, and others which might be here considered, are thus in active existence, and at many points throughout the West. But what we may here plan and correspondingly initiate, is the further advance, through organising all these together, through planning all these separate cells and sparks into a single battery—which should thus be proportionally more potent, more steady of current, even though its component cells be not of the largest size. For where paleotechnic educationists, and throughout Indian education perhaps especially, think mainly of quantity of machinery, size of buildings, and outlays for materials, and these for quantity of students, and greater glory of administration accordingly, we humbler neotects are interested mainly in the quality of all these. For we know that it is with all these things as with seed, of which the quality and life are everything: given these, there is no fear but that they will increase and multiply.

Planning in Further Detail.

I may thus, with reasonable hope, proceed to plan upon this admirable site, and on a moderate, yet not inadequate scale, the buildings required for the establishment and working of such a central Power-House of Education as this group of Culture-Institutes should be; first for Indore City and State, but even for its neighbours, for Central India: indeed why not an example and impulse to greater things for India itself, and influence and encouragement beyond. Thanks to friendly Indian scholars, I know something of the Shastras, with their wise provision for house, village, and city, and for their respective planning in detail; and with these we may take a great Hebrew Sloka, attributed to that warlike and poetic king who first conquered Jerusalem as his Capital, and who inspired his son to build after him the world's greatest temple of Unity—"Except the Ideal build the house, they labour in vain that build it". For this great warning also conveys the hopeful assurance that where and while the Ideal is present, its builders may labour with hope.

Here then, on Plan is this group of buildings in outline, though necessarily in first outline merely; for such things need more time and calm to plan than the hundreds of other problems of this city have yet permitted. Enough however if this outline be plain. The ground-floor is for the Library; and of this we have first, (next the entrance from the east side) the Lending Library, with its large book-store. Next opens from this (or from its veranda) the Reference Library, with its book-cases, and reading-tables between them. At the South of this west are the studies for specialists. Opposite this, on the east side of the court-yard, is the general Reading-room and News-room, with its magazines and papers, its books of every-day reference. At the south, continuous with this for the librarian but separate for the public, and with distinct entrance accordingly, is a smaller Children's Reading-room, and also a Women's (purda) Reading-room, next the Temple just beyond. The school-boy and his mother may thus come to the Library together; and she and her boy may from the first understand that he may work his way onward, into and through the men's Reading-room and the Lending Library, to the Students', and it may be that of the original worker. For the plan thus clearly presents to him all the main steps of the long ladder of learning; and yet these as not unattainably steep or high. Again for each library-room, there is a verandah, into which its tables may spread as the need grows, and as vacation students come: while around the whole buildings run pleasant and shady garden walks with views over the river and to the city, and with temple and bathing-ghat invitingly at hand.

A Type Museum, Regional, General and Educational.

We have seen that it is not mere magnitude of collections that make the best Museum, nor most books the best Library; else number of pages would make the best book. Indeed in all cases magnitude has the manifest disadvantage, of concealing main ideas under wealth of illustrative detail. It is thus a Type Museum which is needed, and practicable, for Indore. How is this to be planned? Take an example as far back as a generation ago and more. The new museum of a small Scottish town, one third the size of Indore, and with a county perhaps the size of this district of Malva, was opened by the eminent Director of the British (Natural History) Museum, who explained that he had not come five hundred miles merely personally to oblige his friends of the little Perthshire Society of Natural Science which had built and arranged it; but to express, and this as officially as he could from his position at the

head of the greatest of world-collections, his public recognition of the fact that this Museum had made as yet the record achievements (1) of presenting Nature, in its region, and in all its aspects, with scientific clearness and educational value surpassing all preceding efforts he knew of in the world, and also (2) of relating these well-organized exhaustive Regional collections by a small but equally chosen set of Type-collections, thus lucidly summarising the essentials of our knowledge of nature in all her main departments, of organic and inorganic nature throughout the great world; and (3) of adapting all this, not merely to the recruitment of the Society from local nature-lovers, but for the education of the general public, and particularly of the Schools of the city and region, both with and through their teachers. He proclaimed the position and value of Museums in general as thus strengthened and justified; and in short in every way held up this modest and inexpensive local endeavour to the admiration and imitation of the scientific and educational world, as well as to his own immediate profession of museum-makers and curators. And I have the more confidence in citing the example of this Museum, because throughout the past generation I have had frequent knowledge of its continued and progressive efficiency, and in all these three departments.

Example of a Museum of Regional and City History.

Here then is an example of what is needed in Indore, and of what is here now more easily practicable; alike with Indore's greater resources, and with the help of many subsequent examples. For one of these I may cite an out-of-the-way old town, half the size of Maheswar, with only a small Women's Training College, as its centre of higher education—Saffron Walden in Essex, behind the hills north of London. For here, in its little local Museum, there is organized, in a few small rooms, a lucid and masterly presentment of the history of the place, from earliest flint implements and pre-historic remains, to Celtic ones; and thence through Roman, Saxon, Norman, and later Medieval times, through the Renaissance and later centuries, to the Industrial and Railway age. And thereafter, there begins a presentment of the possible improvements of the town, which may reasonably be accomplished upon this Survey of its growth, its qualities, its defects, its possibilities, its needs. And all this not only by Town-planning, but by its citizens from within, and in the enlightened and moralised citizenship of their own Municipality and region—neighbourhood by neighbourhood, school by school, and thus within the measure of their lives, old and young together.

In such ways, and with such purpose, the smallest town may thus become a true City.

Regional, Civic and Domestic Art and History Museum.

Take another illustration from the museum of the capital of one of the small German States with which we have never had any quarrel, till now that of following Prussia. For here—instead of displaying the riches of its collections in the manner of the South Kensington Museum, where the public wander through interminable galleries, of this and that industry or art alone—through treasures of iron-work till they are sick of ironwork, of textiles till they are sick of textiles, and so on for each department—a wiser curator has worked out a plan of which visitors never weary, and which the tourists from all the world find best of museums to see. For here in one room, not too large, we have the ways and surroundings of the most primitive dwellers in the land; and beyond this of others a degree more developed. Through room after room, of appropriate size and style, there goes on the presentment of each

historic phase of human life, through all its chequered history, and onwards till today. The characteristic surroundings of human life, now homely, now magnificent, are thus presented, not as curiosities or as mere classified collections, but, as artistic unities; not detached from their place in life, like scalps, trophies, rarities, but shown in their use and beauty, among the companion appliances and surroundings, products and masterpieces of their time. In other cities of Central Europe, in Holland, in Scandinavia etc. these living museums have also been arising, so that countryman and townsman can each see how their forefathers lived and laboured, as also the burgher and the noble, the churchman and the king. This form of Museum has a yet fuller development at Skansen, the island park of Stockholm. For here are grouped in succession the reconstructed dwellings, and even type-villages, of all the phases and types of life and the arts. Here are simplest Nomad Lapp tribes, with their reindeer roaming round their winter huts and their summer tents, and so on southwards through all the varied provinces of Sweden, each with characteristic dwellings and their furnishings, each an indication of customs and ways. Similarly again with the developed art of recent centuries, and at length the life of modern times.

Agricultural Museum.

For an illustration of what may be made another of the most practical galleries of such a type museum, I may cite that of Agriculture at Buda-Pesth. For here an old example, (very possibly taken from India), has been utilized; that of modeling, on a small but sufficient scale, the characteristic types of the people of the country,—at their work, in their fields, from ploughing to harvesting, and in their homes, good and bad. Well modeled and coloured figures of all the breeds of the domestic animals are also given, to the immense interest and active discussion of agriculturists, and of young folks generally. Similarly are illustrated, (by real specimens when possible, but also) by well made and coloured models, all the varieties of useful plants, and of their products, from root or tuber, to leaves and flowers, fruit and seed; while forestry, timber, fuel and so on are not forgotten.

Health Museum.

Again as an example of a yet more direct and popular development of the Type-Museum principle, I may cite the small collection, prepared, with womanly feeling and woman's wit, as the (Travelling) Tuberculosis Exhibition of the "Irish Women's Health Organisation Society" by the efforts of the eminent consort of the late Viceroy of Ireland. There is first a clear and sufficient selection of the essential objects, and an explanation of the ideas, necessary to understand the main scientific results of the study and the treatment of tuberculosis, from the germ under the microscope upwards. And next, in vivid contrast, a couple of typical Irish living rooms, of the same size and construction. But the one is dirty and dusty, squalid, unventilated, and therefore unwholesome; and the other well white-washed, and scrubbed clean, with its humble belongings polished and bright, and with its doors and windows well opened to breeze and sun. Stirred by appeals like this, the Irish people, who till lately, despite their large preponderance of rustic life, were the most tuberculous in the United Kingdom, are now rapidly improving in this matter, as statistics show; and this not a little through such universally striking contrasts of conditions of health and disease, as between these houses of life and death. That it would be easy and inexpensive for such skilful workmen as the Indore Tazzia makers to work out suggestions of this kind, and similarly for Malaria, for Plague and other diseases, was lately shown in the rapid, intelligent

and even humorous way in which they made the models of houses, good and bad, for the recent Diwali procession. And now they would readily improve upon these.

Technical Museum, and Associated Workshop.

Yet other classes of Museums call for consideration, and at least some illustrative place. We may leave to the future of the New Industrial Town the Technical School which will soon be necessary for it, to set forth modern machinery, with its processes and products; but our Central yet simple Type Museum should give some clear indication of the nature and growth of all the main industries and arts of civilization; and of course in Central India particularly. And why not with adjacent Model Workshops of the simpler kinds, in which the potter with his wheel, the weavers on their handlooms, might show at once the properties of their material, the processes of their art, and their own skill and inventiveness; their traditions and convention in art yet also their personal freedom and mastery over all these? With these, the colour printer, the embroiderer, and other accessory textile artists. Similarly of course the arts of housing, with the wood-carver and the stone-mason, the decorator and the painter. And why not also the scribe and the illuminator, the lapidary and the jeweler, silversmith and goldsmith? Such a row of craftsmen might easily be housed in the immediate neighbourhood, Art Bazar, beside Art Museum, would thus be interesting to young and old, and a helpful impulse and example to their craft-brethren throughout the City. This is therefore suggested on plan.

Museum Purchases for Type Collections.

Museums spend mainly, indeed all but exclusively, in purchasing—necessarily at high prices—the rarer masterpieces of the past. Types of these are of course needed; and these for history's sake, for their own beauty, and as setting before our period of art—so largely degraded—the rarer masterpieces of the past. Types of these are of course needed; and these for history's sake, for their own beauty, and as setting before our period, of art degraded to machine copy and machine-finish, the standards which Neotects everywhere are striving to recover. Yet in the main should not the annual expenditure on increasing Art Collections be devoted to the encouragement of living mistri as artists, rather than to their discouragement, and even unemployment, by only collecting the work of dead ones? By a clear example of such policy, this Museum might rapidly, and in no small measure, elevate the standards of its nistris and artists, and of their public along with them; and so make a more real contribution to the revival of the Arts of India than have as yet any of the great collections, of Imperial Government or of the States.

And while India has in the past suffered most disastrously, and still suffers, by the general corruption of her taste; and this particularly in the wealthy and governing classes, by their uncritical admiration, and purchase, of western fashions in all kinds of products—furniture, clothing, decoration, etc, should she not now increasingly concentrate on renewing her old traditions of crafts and arts, and on encouraging youth towards fresh endeavor? This cannot be done in any merely retrospective and exclusive spirit; indeed it might be potently helped at present by a few judicious purchases of representative examples of recent western advances in the arts and crafts such were increasingly manifest throughout Europe before the War, and will thereafter again be. For even the artists and decorators who were most sneered at by conventionally trained artists and their public before the war, as "eccentric" or worse, are now being seen as direct and vital, and as straightforward and practical accordingly.

Chapter VI.

Applications in Education.

The Blank Classroom.

Contrast now these various Museum rooms and Type galleries—each more real and vivid than can be books, though good books also should be in them—with the Class-Rooms of schools and colleges throughout India.

There are ofcourse exceptions—say rather beginnings—but in the main is not Indian teaching, like most of our European official teaching also, plainly and literally defective—that is blind, handless, and even worse—heartless, in its methods, and correspondingly in its Psychology? Such emptiness and dreariness of surroundings, even at its best, when arranged with the hope of freeing the inward life, finds its logical development in the Tibetan monastic immurement of the devotee in darkness, for years or for life. And though education-authorities have not yet got so far, they surpass its merely individual examples by their mass application and treatment, and by also adding their examination system, so profoundly mistaken in its psychology, and so deeply deteriorative, to its passes and to its failures alike, though in different yet complementary ways. Thanks to the returning Estimation of Life, as replacing the Examination of Memory, we are now seeing that system as having been the State form, and wellnigh universalization, of the famous Church Inquisition of old, though these now modernised, *i. e.* combined with most of the characteristic evils of the modern factory system, of the modern barrack system, and of the modern prison system, and too much without the respective redeeming features of these—production, discipline and health. Still more precisely, the still prevalent theory of the blank classroom and examination-room—*i. e.* that life is to be developed, and to be measured, in any given direction, by abstracting the normal and improving environment which life requires for that or other functioning—has, for its corresponding and illustrative laboratory experiment, the supply, to young birds ready to fly, of a chamber from which the vital and sustaining air has been exhausted.

The Converse Method.

But in the Educational Renewal which is now in progress—and experimentally preparing therefore to reorganise this system of the past—our young birds are encouraged to fly, and this in the open air, and there observed and estimated accordingly—(a transformed examination-system). In this return to life, to act and fact, lies our dangerous spirit of innovation, as educational authorities in Paperdom apperceive it. Thus on their “primary” level, their compulsory years of trifling over their “3 R’s”—Reading, Riting and Rithmetic—are condensed into as many months, as Madame Montessori has shown, and as I also have independently learned from my wife’s and my own experiments—by the true elementary education of the “3 H’s”—Heart, Hand, and Head accordingly. For, given these—awakening, exercising, interacting—there is living harmony and growth. Hence also there rapidly appears that “explosion into writing” and “explosion into reading,” (into mathematics too) of Dr. Montessori’s vivid and accurate phrase. And similarly onwards from childhood, through older phases, and through many arts and sciences, as I can testify; and on into the War itself; for the war illustrations are thus really only normal educational ones. It is the present system, Primary, Secondary and Higher, which wastes time, and gives proportionally diminished results all round.

Now to justify this strong statment. How? Obviously by supplying for test the simple conditions necessary for experimental proof of these large claims of better education, and these in principle and fundamentals for all ages and classes, and both sexes also. Lately, as so often before, the education of war has had to be made over again from its fundamentals, in the "3H's", and through the survey and mastery of the actual environment; and after the break down of the "3R's", and of the class and examination-room environment for this. So now we have before us, as a main task before these opening years, to reorganise Education anew, and on each level, for Reconstructive Peace.

The Outlook Tower.

Architecturally speaking, the essential and culminating feature of our group of buildings on this site has plainly to be a Central Tower. Here also is in every way the needed Outlook, and centre, for this needed educational endeavour. So let us climb the little peninsula hill, and ascend the fairly long Tower stair which brings us out upon the topmost Turret. With circulation thus stirred beyond everyday slowness of pulse, in short with Heart aroused and Hands alert, Head is also awakened by unusual brain circulation. We see accordingly, with eyes freshened out of ordinary unobservant dullness of habit. We see the immediate roofs and tree-tops, the rivers uniting into one, and the city around these shining waters. Its houses and streets and markets, and busy circulation to and fro, are all below us; and its palace towers, its monumental dome and spires are now on our levels. And all are seen with a new vividness. The Town-Plan, which should be painted upon the roof-platform of the main Tower beneath us, is thus but the condensed and pallid abstract of the living city below; the reality, in all its fullness of details, all their synthesis into beauty, thus lies all around us in the concrete. Around, in this concrete wealth of varied impressions unified as landscape, lies the world of Nature and of Human Life, to which Education, if not an Initiation, is worse than no education at all. Life and Nature in the city, Nature and Life in the surrounding plain, in the horizon of hills and in the changing sky, with its birds and clouds, and measureless blue, and the great sun which rolls over this, from sunrise-glories to sunset-gold and dark. From this vital immersion in the concrete, even our pale school-room abstracts may soon be all drawn forth, but now with fresh force and variety.

The Cardinal Points as Simplest Example.

Take an example. From the geography-book we learnt the terms N. S. E. W. ; and on the wall we were taught to point to them on the Map; but this with its North Pole drawn out as long as the Equator, and towards the ceiling; while the (similarly long) South Pole was next the floor; and West and East were identified with our left and right hands respectively, wherever we happened to face the map, and consequently, on three walls out of four, out of relation to these real directions altogether. Whereas, here on the roof, at night, we learn to find the Pole, and at low noon we mark the South. From these two great cardinal points, we abstractly set off from their meridian line, at right angles, the East and West, and again come to verify these in the concrete, at the sunrise and sunset of each equinox. With such experience as this we can appreciate the old Geographies, written with life, after the great age of discovery which began with Columbus. For on such an outlook one may quote from memory Heylin's Geography—from which Milton wrought so many of the most glowing and magnificent lines of his "Paradise Lost." Take its opening paragraph:—

"Of the Cardinal Points, there are four; North, South, East and West; but these differ in their nature and their significance. The Geographer turneth to the North, for there is the Pole, and about it doth the Earth revolve; but the Astronomer turneth his face

unto the South, for there is the Zodiac, with the Sun and the Moon and the Planets in their courses. But the Priest and the Augur turn their faces unto the East, for there is the Rising Sun. And the Poet turneth ever his face unto the West, for there are the Fortunate Isles”.

In this spirit of thought and feeling, each intensifying the other, true Cosmography goes on; and as science and literature are one, through the marvels and sublimities of astronomy, the travellers' tales and discoverers' wonders of nature, and thence to the mingled sublimities and degradations of man. This is Geography—all the wonder-sagas ancient and modern, from the Ramayana and the Odyssey to the last Tibet exploration or record air-flight; and so from the earliest travellers and pilgrims to Reclus' "Geographie Universelle" and "Great Globe". And after listening, even for an hour or two, to such tales as these, our young pupils become true and keen geographers henceforward, whereas those who memorise the text-book snippets do not learn any geography at all, but only distaste for it afterwards.

I am asked, "What of exact knowledge? There is not enough accuracy in all this". But, as it happens as large or larger proportion of my old pupils as those of any other teacher living, have won success in geography; and this not only in the University and the Training College professoriates at their highest levels in the empire, but in both regional and world-wide travel, and in discovery in both as well. For when "the feeling of the subject" is once communicated, the essential points for each of its departments are swiftly appreciated; and enthusiasm then carries knowledge onwards, even into discovery, and all at a pace and to a degree undreamed by conventional teaching.

There are ofcourse many beginnings of such living teaching. Thus in the Indore Girls' School Courtyard there is an open Geography Shed with Town Plan, with Indore State map and model, and India modeled too, from Himalayas to Ceylon. Here on our Tower will be the best of places for vivifying these models to the scholars upon their visits, and for stirring them to yet more fully visualise the world.

An Initiation towards Art.

Again schools "teach Drawing". But after leaving the drawing school, how few of us have ever cared, or even been able, to draw "out of our heads", as artists do, and as we did before we "learned to draw", i. e. to copy copies and models, and casts, and won the official certificates and prizes? But here instead of teaching the official drawing—primary, secondary and higher, according to the standards and the examinations of its empaperment, which too many of us have learned to death—we re-vitalise the appreciation of beauty. With this there renews the artistic appeal of this many-coloured world of nature and man; and thus even may revive the disappointed art student and his mistrained teacher alike. Leaving our open view from the Turret Gallery, let us enter the Turret itself. This is a dark chamber, in the roof of which has been fixed the wizard's glass of its inventor, Porta, the rival and enemy of Galileo, and first described in his "Natural Magic", but now better known, in its reduced size, as the photographic camera. But here we are in Porta's original chamber itself; and as our eyes dilate in its obscurity, we see upon its central table a picture from the landscape without, (that which the roof-mirror happens to be facing)—with the tree-tops and River, the Bridge, the Ghats and Chhatri, the market-place, the streets, the moving people. But this is now no mere reflection: it is a picture painted in magic water-colour, subdued and softened from the hard glare of sunshine, and toned with exquisite greys: yet, for these more rich in colour-

mosaic; more subtle yet more intense in lights and shadows. As a cloud passes over the sun, the landscape is transmuted into the rendering of a different painter-poet; and if the clouds gather, and a shower comes, our magic glass sends fresh pictures, now darker than the storm, then bright with glorified rainbow, and diamonded on every wet leaf and blazing from every roof before us. At sunset the pictures are more gorgeous than Turner's; yet as dusk begins, the exquisite nocturnes of Whistler appear, and fade into the dark. And so on, never twice the same, though we may look day by day for years. Thus our simple turpining-mirror and lens initiate us towards the varied visions characteristic of the great painters; so that, beyond even possessing their pictures in our mental gallery, beyond most of their collectors in their material ones, we may acquire for ourselves, and with our fellow-students, something of their characteristic powers. So thereafter we and they go back into the everyday world, but now seeing its many pictures for ourselves, and now and thus making our daily walk of everyday life a pilgrimage through the artist's Paradise, which is but the real world he has learned to see. So after writing this, my stenographer-companion and I pause for a moment to verify this freshening of the landscape into picture, as we look between the columns of our veranda; and then go on again refreshed.

Need of Kindred Outlooks Education Generally.

Enough as single example of the manifold initiations into Art, which the well organized and well-administered official Art-Schools of England and India, so grievously omit from their too mechanic copying exercises. But now, what if the same revival of depressed faculties be possible, and with equal or even greater simplicity for each and all of the other studies, also rendered more or less dreary and unprofitable under the conventional education system? .

That ofcourse is what living teachers are actually doing, each in his or her own subject; and often with great success in it, and good re-action on other studies too. But our present point, and planning here, is to bring together each and all the essentials of all these vital outlooks; for this is here within our space and means. For thus we should unite all these too scattered cells and sparks into a battery, and with more permanent-current accordingly, and more powerful spark as well. Thus we may awaken the student, strengthen his nerve, intensify his mental muscle; and even have facilities for such electro-physiological treatment of the more conventional teachers or administrators. For all these, to do them the barest justice, even at their very worst are never intentionally perverse. On the contrary, those who seem to us educational reformers the worst obstacles, are of the best intentions; their limitations are but of too obstinate loyalty to the tradition and letter of schools of educational thought which each had some spirit in its day, and to which (Chapter I) we have done historic justice.

An Example from History Teaching.

The strongly organized error of the educational system now breaking down, and also the spirit of its incipient renewal, are alike vividly illustrated in the career of the late Chief Inspector of Schools for England, Mr. Holmes, long the "hard-working and efficient" head of that administration. Yet in his last years of office he underwent a veritable conversion, with transformation of his whole educational beliefs accordingly, through the teaching of a simple village school-mistress—who, quietly ignoring text-books and examinations, taught her pupils history and much else, and far beyond these standards, in dramatic fashion. So he learned to adore

what he formerly burned, and now passes the strenuous evening of his life in burning away most of what he had officially adored; yet thus extracting from it all it contained of value. His "Education As It Is and As It May Be" is doubly significant and helpful, on one side to teachers, and on the other, to education authorities in transition. For though his colleagues in the English or other Education Departments have seldom as yet got quite so far, I do not know of any one worth considering who is not by this time plainly upon the same road. Even in those who have not yet faced it, the old cock-sureness, with which bureaucratic education was conducted in the past generation, is now silenced; while that general clearness of conviction, and reconstructive policy accordingly, are near at hand, the new English Minister of Education is an unmistakeable evidence, and his active educational propaganda is already becoming a nationally convincing power. But full conviction in this matter of living history teaching, as in others, is necessarily experimental. My own clear faith in its value and its appeal to all has grown from teaching history and social science throughout life, not merely or mainly in the lecture-room, but in the excursions of Regional and City Surveys, and also upon the Stage, from children's tableaux and plays to Masques and Pageants for Universities and Cities. For History too has her magic mirrors, beyond even those of Art—that of Memory, re-creative and therefore dramatic, and that of Interpretation.

As there may thus be more and more vital teaching in Time, so also for teaching in Space; and this whether concretely, as Geography through its Surveys, or in the wider Survey of Astronomy, or in abstract space, as Mathematics.

A Further Example from Cosmography.

As a single example here, yet one uniting all three, take the teaching of the ever supreme, as well as most ancient, among the physical sciences, that of Astronomy, and of Geography so far accordingly. For though at present every philistine in England—be he a real one or only an amateur, even in this—has been shouting in the papers since the War began, for more teaching of chemistry, so as to replace German dyes or outrival German gases, the more vital educationists, who are not of this sub-Germanic school, but Post-Germanic, will more and more begin, in the old pre-Germanic way, which was once the good Germanic one—with the sciences at their sublimest—the starry heavens without, the soul within.

For simplicity first the heavens; yet before this the earth, which turns in them, and so round which they seem to revolve. Upon the open Tower-roof after a fresh view from the Turret-gallery, we may trace our actual horizon, in its irregular circle, upon a city and region map boldly outlined upon the floor. This visible area, roughly measured, may be about 1·40,000 of the land-surface of the whole earth, and thus say 1·200,000 of its total surface of land and sea. So now looking out among the smaller trees and roughly counting and computing, we may point to one of which the total leaf-surface, to that of a small branch, is like that of the great world to our landscape, vast though it seems. It is good to have even the roughest idea of the scale of the world, and this may be refined upon gradually.

An excursion may now readily take us to the nearest hill-top on the horizon, whence the next landscape opens. From this we may leap onwards in thought and on map to the next, and the next again; and so on to the snows of Himalayan peaks: and onwards again, till we have been round the world. Is not a brain thus acquiring, creating, arranging such world-pictures, beginning to learn geography, and to more purpose, than from the text-book memorisings, or even atlas-copyings, which matriculation candidates have been taught to think alone "pay"?

Upon the Parapet of our tower, we mark lines towards the visible places of interest up to the horizon; and then, with the help, of the map, the places unseen beyond its edge. Again beyond these, the main places of India; and even of the world, its main countries and cities; but now for these we need not only the parapet walls but the whole floor. Thus we gain vivid consciousness of our position, upon what for us, as we look around, is the apex of the world-sphere, and thus gradually we visualise it more clearly and as a whole. We soon learn to realise and point down through the world to the position of Japan or England, of Paris or San Francisco, as clearly as the Mohammedan does to Mecca, or as the Christian pilgrim or crusader once could to Jerusalem. With the growing possession of this world-consciousness, our geography and astronomy alike vitally begin; and thence our cosmography may progress to fuller intellectual range and grasp, since carried through the universe upon the radiant waves of cosmic emotion. Is it not this which has made every Astronomer and Geographer worth the name? and every Geometer too?

Further Outlooks of the Sciences.

To work out how such initial impulse may rapidly pass onwards into the definite sciences, geographic, astronomic, geometric, and more, would again exceed these limits; but that such teaching progress is being made, every living teacher of these sciences now more or less knows and shows. In the development of our Edinburgh Tower, and its Nature-Study Teaching, imperfect though these still are, it has often been shown possible "to deliver the goods"; and this to the satisfaction and help of teachers, and even at times to the new stimulus of the mathematician, the astronomer, and the geographer themselves. We make our essential apparatus as for as may be for ourselves, since it is always helpful to begin at the simplest levels. Moreover this helps to explain, and to renew the great historic initiatives of science, like those of Galileo with his pendulum, his falling bodies, and above all his simple telescope, with which his first great night of discoveries may and should be repeated by every student, even every school child in the world. Yet beyond this we may proceed as far as Man Singh's Observatory, accessible at Ujjain; for of this a simplified example should some day be constructed by the College students here.

Similarly for the Outlooks of all the Sciences. Looking out upon the landscape through the simple arcade of our parapet, we may see the river below us cutting into the bank, and thence turn to the hills from whence it comes. But here is an introduction leading at once into Geology; and there may be many others, down to the fascinating pebbles of every field-excursion,—agate, chalcedony, milk-opal and more. With clouds and winds, atmospheric effects and temperature changes, we enter into Meteorology. With the trees, gardens and weeds below us, we become Botanists. With watching the birds and squirrels in the trees, the insects on the flowers, we become Zoologists. And in realising the web of life, upon which, and out of which, all this plant and animal life is woven, we become Biologists.

So with the specialised Physical sciences. Each has its elementary outlook and starting-point along our arcade.

The sun's light and its heat, the world magnetism, the atmosphere's electricity, have thus each their essential observation-arch with its initial experiments, as with amber, loadstone, and simple lens. With the study of air and water, earth and fire, we again become chemists, like those of old; we thence readily progress into modern chemistry, and even with corrections of its too common laboratory limitations. And all with "the feeling of the subject".

An Outlook towards the Humanities.

Nor are the Humanities forgotten. In the medley of human life in every Indian city there is a whole world of Anthropology to explore, and this in living ways, and freed from the grave-violations and skull-measurements, the weapon and curiosity collecting, which have so long been withering that science into trifling in London, and exalting it into megalomania in Berlin. For in the open air we see the origins, the realities, and the common sense of human life and labour—of woodman, hunter and fisher, of shepherd and cattleman, of peasant and gardener; and thence on one day trace these back into their varied simplicities in the country, and on another onwards into their kindred complexities in the town. As an example of this latter, may be recalled the discussion of growing Cereals and working Textiles in Part I, Chapter V above.

Education towards Originality.

From all this it may be noted, that given an elemental, realistic, and vivid initiation into any subject, such as those proposed to be provided here, the student speedily, readily, even directly, begins questioning. That is, he is starting straight onwards to realise the problems of "research", which are seen as vital, and felt as interesting, in this simple school of direct experience. Whereas, upon the more customary (sub-Germanic) view of research and preparation for it, he is expected first to learn so much of other people's facts and theories, and these too much from books and lectures, that he cannot begin, indeed is not allowed to begin, his personal work for years. Thus the fresh interest in the subject, starved from the very outset, has been choked in most, and checked even in the best. The capacity of general grasp is also commonly overwhelmed: so that even the few who survive their degree become but minor investigators, and even this with difficulty. Hence it is that research is so exaggerately wondered at and revered in one mood of the society around us, when not ignored or starved, as in the more common one. But when one comes to know the psychology of the great investigators, say Darwin's, or of kindred minds, though on lower levels, like Wallace's or Huxley's, Pasteur's or Haeckel's, or again like Stanley Hall's, or William James's, or Bergson's, one sees that their "great originality" is essentially that of the eager child's upon our Tower; a larger growth of course, but not different in kind. This, if anything, I experimentally know, having had it out directly, with each of these men and more, and from Darwin himself to many another nature-loving child. Thus, as the outward and visible sign of his childlike greatness—as the living Avatar of the great nature-God, Pan,—I have seen Darwin thrown into more than any childlike or feminine transports—a veritable Dionysiac ecstasy, and even Pan-ic uproar—and all from a peep into my microscope. Yet in this there were only a few common germs and swimming animalcules to see; but these for him were a fresh Vision of Life.

The Historian's Outlook.

Turning again from Natural History towards Civil History, we see more clearly from our outlook how this is to be read. Not in books (—not even this one— I Chapter I!) but in the actual City and from itself; and next, how here is not only the history of Indore, but Indore itself is History. The moving coagulum of Karma becomes manifest in every house-block. Here too before us is not only Indore in its history but much of India; and much even of the West. Here before us vividly are both East and West, with their respective qualities, limitations and defects; their action and reaction for good and for evil; and these all mingling day by day, and

increasingly. From old Bazars and Palaces to new Industrial City, new Palaces and Suburbs; all show more or less of this interaction: so again do Colleges and Missions, Governments and Politics: and now once more; as this whole group of Culture-Institutes—Library, and Museum, Tower and Theatre—is now seeking to advance and clarify them in its turn.

The New Theatre and its Uses.

Here now is a field of possible, and even reasonably certain usefulness for the New Theatre, shown on plan to East of Library, beyond its occupancy by travelling companies, or occasional large meetings. For why not here the Theatre again—as it began, alike in ancient Greece or India, or as it renewed itself at each great period of European and Indian culture—as a living theatre, setting forth by turns the main elements of that heritage of legend and myth, of drama and tragedy, which is the glory of every language, and the main treasure of every University. Why not also the active criticism of the life of the day, like Moliere in his, or Ibsen, Brioux or Shaw in ours, or again the reopening idealism of the future, with Maeterlinck and Verhaeren? And though Indore be yet in the day of smaller things, it has beginnings, which might be helped to grow. And is it not already twice as big as Athens at its greatest?

Open Air Theatre, and Gymnasium.

But our New Theatre will be too big at first for such beginnings. So let us add beside it the true and historic centre of every movement of nascent drama, the small Open Air Theatre. This can be simply and inexpensively cut out of the bank; and so is accordingly shown on Plan near the great one. Behind the stage of this is shown an open air Gymnasium, and a couple of Wrestling Pits, for youths and men. At times the athletes may come forward upon the stage.

For the schools and for the colleges, for societies, too of all kinds, as for instance the Gnan Mandir and the Ganesh Ashrama of Juni Indore, and doubtless many others, this Open-air Theatre should and may be useful; and all may take it in their turn. At times too the Public Band may play there, and many other forms of popular entertainment may also naturally arise. Why not even parda functions at times, initiated by the Girls' Schools or otherwise?

Again, since the new Bridges, and this whole centre, afford a fresh possibility for the route of public Processions, these might be taken along the stage of the Open-air Theatre, and thus shown group by group, with striking advantage.

Yet in all such applications, both Theatres are true and useful parts of the University; since this is here conceived as civic in its usefulness, Athenian in its character.

Chapter VII.

Wider Outlooks in Higher and Adult Education.

Further Initiations towards Studies.

Returning to these outlooks, of arch after arch of the Arcade of the Tower, we have thus a series of essential and vital initiations for youth, indeed for minds at every age and stage.

For from this or that particular Arch of its Science, the young mind may fly—onwards into the world, seeing it in this particular way as it goes. The subject thus made of interest, and of mental habit, it may be followed further in the specific School or College Department of that subject; and there profit by its resources, more actively than can most of its ordinary students. For these have generally the misfortune to begin each subject without any sufficiently clear understanding of its place and meaning in the great world around them, and consequently do not come to it with the fresh interest, much less the awakened feeling and curiosity, of a student started from the Tower. Start him, then from all these, for so may be kept together his working principles, and working habits accordingly. So that he fits himself for mastery; mastery for research or for application, or both together; instead of merely passing his examination for his degree, and thereafter speedily or slowly settling down into that easy forgetfulness of what he is supposed to have learnt, which characterises at present the mass of Indian Graduates, like others elsewhere.

But we see such graduates thus deeply fail in life, as they did with studies, for lack of knowing this, in every matter of real study. Not memorising therefore. For with that concentration and stress of thought which needs the full stretch and vibration of the whole instrument of mind, intellectual, emotional, imaginative, it is as with the intensity and ecstasy of battle, for which “One crowded hour of glorious life is worth an age without a name!”—say also, without an aim, without a flame! But how few students are ever aroused to this tension of thought? Yet without this, one can never become a student at all.

The Organisation of Knowledge, in its main Perspectives.

Again, our Arcade is not merely so many arches, or even a row of them; it is an architectural unity. So with our arches: each is of separate initiation into the life and spirit of each study, as its active and stirring outlook, for what may be its yet more active individual flight therefrom. But now our arches may be viewed as grouped: here into the Arcade of the Physical Sciences, next that of the Biological, and next that of the Social Sciences. So that here is not simply a mode of initiation into separate sciences; but into their groups; their Classification, their Philosophy, their Grammar; as with Auguste Comte, Herbert Spencer, and Karl Pearson, and their disciples for all these.

Again, the customary order of the sciences is that just given—from Physical to Biological, and from these, as “preliminary sciences”—to Social Science. But this the supreme outcome of our studies, and the mistress-science. We may next see that it is the mother science of all the rest, and has always been so. For what are all or any of our sciences, physical or naturalistic, mechanical or medical, but so many reflections and products of human Society upon its onward way?

Thus, though we began by affirming the claims of the preliminary sciences, and justifying these, we have now reached the stand-point of the humanist, and expressed his perspective of thought as complementary to our initial one, and even as dominant for it.

But if this be so, here is the long quarrel of science with the humanities, which still rages so widely, in way of being harmonised and settled; and this very simply—in course of friendly discussion of the aspects of this City and Country Outlook and landscape, thoughtfully considered for a little while from our Tower-top in the open air.

The Complemental Need, of Inlook beside Outlook.

What now of Philosophy and Art? For here the abstract philosopher will intervene; and say with truth—The matter is not quite so simple, since you have not yet adequately provided for my abstract world, still less for my introspective Inlook, into my own mind and soul. So far true, as our description yet goes; but here in our planning is waiting for him another small corner turret; and this without disturbing windows, but with a light-opening in its roof. This Cell is for him to retire to his meditation. In such retirement, as he knows, the great philosophies have been thought out, and profound concepts of all the religions have been attained. So each and all of the sciences needs this Cell, of withdrawal from outward and phenomenal environment, for the extrication by the mind, of the abstract ideas of order and law, which are the essentials of the science, from the concrete wealth of impressions, amid which they are at first concealed. Again, it is in this cell of meditation and vision, that the artist creates his picture, and his imagery seizes him. Art production is thus no mere transcript or copy from nature, as the false pedagogy of drawing schools has so long thought and mistaught. Not even from our Camera, suggestive and stimulating though this be: it is the artist's own personal transformation of his observation and his experience; but this by the creative imagination, and not simply hammered out in the cold, as too many Royal Academicians have done, from the chilled materials of conscious memory.

Examples from Modern Political and Social Differences.

Our reconciliation of many schools of thought is thus increasingly complete; and it may even be carried into that of our other dis-harmonies—even those of Politics. For what are these but differing views of the city and country?—different conceptions of citizenship accordingly. Each and all must thus have some elements of truth, reason and goodwill, undenied by its opponents, and thus educative and helpful for us. For in our City Outlook, and its resulting City Survey, there is no one so revolutionary but can so far appreciate the work and heritage of the past, and none so conservative as to sneer at all our desired improvements, say from the simplest cleansing of the town and river, to the development of plague camps into suburbs, or the planning and progress of a new and better industrial town.

Thus upon this treble Outlook, of the Past, the Present, yet the Future city, the conservative, with all his loyalty to the past, can no longer go on losing sight of present and future, and becoming more or less, for others, "a fossil". Even when most fixed in his particular stratum of the past, he will keep alive his precious heritage in the present, and for the future, with a brightened hope. Again, when the "practical man", so rightly intense upon his present affair, his day's work, his immediate responsibilities and duties—can be persuaded, once in a while, to share our Outlook over the City, he is for the time emancipated from these cares. For he sees they occupy but a small place, in this greater perspective of the life and work of his fellow-men. His egoism, his ambitions are thus felt as limited, and so as limiting. So here suggestions arise of higher, fuller ambition, and of adjusting its aims into a more co-operative citizenship. He is thus no longer mere individual and philistine; but so far a citizen. Why not increasingly so?

As this comes about, he is more efficient in his work as well, be this work humble or high—from bearing a burden to directing a great industry, or from carrying on a little shop to economising the finances or organising the transport of the City or State, with its exports and imports to and from the world. Or again from

the simplest local duties, as of cleansing, of police or post, up to the responsibilities and tasks of government. Thus through our City Survey outlooks, each and every man's possible activities may be widened; the student's simplest individual observation and treatment in medicine realises its value and place all the better within the comprehensive task of public health, or in combating a pestilence. So above all at present, with the soldier, at his post of outlook. Then why not be preparing, for his return, that of the citizen?

Outlooks of Past, Present and Future, and their Reconciliation.

Looking over the City and its fertile plain, every man's task may become sanely seen in its perspective of time. For each is continuing the past, in which it has its roots, immemorial or recent; indeed mingled of both. So each task is like the peasant's, not only a harvesting of past labours, but most of the time a preparation towards the future—an outlook towards what he may rightly design and hope, but never perfectly assure and foresee.

But though in our duller everyday moods, we mostly incline to be more or less preponderatingly fossil in the past, or philistine in the present, there is also another class of minds, thinking and dreaming in the future; and whom we therefore call Utopists, when they seem simply dreamers, or else "Crank", when they seek to accomplish something towards the future, and so obtrude it upon our present. In extreme cases the utopist and the crank unite their dreaming and their would-be doing, and even generalize this into some dream of future and better society. But as their observation and understanding of the present, and usually still more of the past, are deficient, they are apt only to see these as passive obstacles, or as active opponents, to their future dream; and so in turn criticize these destructively, or even at times materially attack them. Is not this broadly the psychology of revolutionary parties in Europe, and of unrest in India?—and that of its customary or would-be repression as well?

But beyond even social surgery, there is hygiene; and beyond force, there is thought, and its diffusion as education. In no small measure we can educate, from this City Outlook, the present confused dreaming of the future towards the sane and orderly preparation for it. This, if anything, is agreed to be the task of education; for which citizenship is nowadays a commonplace, though not yet a reality. It is from the section of youth least contented with the present, most determined to advance upon it, and thus more or less in "unrest", that revolutionaries are at present drawn; yet these are but so many strayed pioneers. The true police for them should thus have been their professors, to open better horizons to each of these ardent young souls, before his disappointment and embitterment. Let us educate such restless spirits in the main aspects of life, in appreciating the corresponding great departments of its activity, and sharing in them too—Industrial and Esthetic, Hygienic and Agricultural, Educational, Economic and Social. Yet also Ethical; with faith and effort in the possibility of these, in their Community, their City, and its betterment around them. Such students are often already searching for all these, and in what we have seen their true and vital order—Re-religious, and therefore Etho-economic. Let us re-educate them, then each and every one; in ways Etho-economic, Psych-organic and Eu-technic; that, is with soul directing body, instead of body overpowering soul.

In a word then, in this Civic college of Reconstruction lies the right treatment and cure of "unrest". Is it not time to be giving it a trial?

From our City Outlooks then, we see possibilities beyond our modern discordant Society, or State, of mere Individuals; and with returning hope, indeed scientific assurance, of the renewing as well as reconstructing City. No longer then a jealous isolation of old and young, a strife of individualistic elders—thereby becoming fossils or philistines, with youth—thereby becoming cranks; but a co-operation of citizens of all ages, deeply rooted in their heritage from the past, actively productive and mutually helpful in the present, and yet shaping this day by day into the better future city they may thus make for their children, and leave to them to carry on into a city better still. Even the deepest buried fossil of us all thus makes the disclosure of his hidden treasure. Even the most narrow philistine is a concentrated stream of energy, which may be better applied. And even the most dangerously unrestful of Utopist cranks, most detached from immediate duties and past traditions, with his thought blown by every wind of doctrine and into dangerous places, is still a precious young seed of the future, and teeming with its best potentialities, as well as its dangerous ones; indeed despite all appearances, with the former especially. It is surely for us elders, who appreciate the past, who survey and act in the present, yet towards the future, to plant these young seeds and water them, and no longer waste or destroy them as we too often do.

Hence knowing as I do, the record of men like Ganga Prasad Varma of Lucknow, at first so stormy and threatening, (even, as it seemed to public order, “the James Larkin of Lucknow”), but next, when practical opportunity was given him, so eminently civic and constructive; knowing too his work in detail through being privileged to plan in continuing it in two successive years, I cannot but think that half of the restless youth of to-day are lost town-improvers and planners; and I would take over from their present well-meaning, but insufficiently psychological custodians, such students as simple tests of eye and hand would select as the visual and constructive ones. With six months training in any Indian City not their own, such men would on the whole be ready for City Survey and Service; or with even six weeks training, would be fit to come to the Reconstruction Front in Europe, and do good work there, fitting them for later kindred work in India. Others, of more auditive and subjective type, I leave for finer tests, by more skilled colleagues. But as I have lately had the honour of re-planning Ganga Prasad’s Memorial Hall, I venture to predict that such at present restless youths would soon be steadied men, making a record deserving their portraits in it, with those of other good sons and soldiers of India.

Religious Differences.

So much then for the reconciliation of social, political and economic contrasts upon our City Outlook, no less than of the sciences, the philosophies. But this also is of increasing charity among the many faiths, so divided from each other, as too static groups; and of inspiring these towards renewed ambitions, yet within their City as a whole. For, as already urged, and as none will deny, all faiths agree in the sacredness of purity of the elements—of water, air, earth and fire—and thus of river and land, of neighbourhood, of home and person. From this agreement may be aroused a renewing of healthy rivalry; and this in co-operation towards health and citizenship. Wider co-operations may next appear, sometimes indeed already do so; witness the open charities. And so intellectually, as well as practically. Tolerance comes with appreciation of the protean variety of life, and its ideals, by those who stand for unity in them, but hitherto have been falling short in appreciation of variety. Conversely, those who appreciate this variety, may strengthen, among our outlooks, in these simple scientific ways, that sense of unity which Indian

philosophies have always recognised. Above all, in this practical open-air everyday outlook—though the cell of meditation be also open, the call of civic duty is made plain. The long delayed unity of religious men is thus possible and practical, within the field of Citizenship, without waiting for co-ordination of their dogmas; since as Dharma for them all.

And that this also is in progress, leaders like Keshub Sen, or General Booth, or Abdul Baha, each with his myriad of ardent disciples, have for a generation been showing. Younger groups too are constantly arising; and with yet more definitely civic efforts; witness the brotherhood of Ramakrishna, the Servants of India, or the Social Service Congress at Calcutta for New Year 1918.

Thus our apparently simple Tower of Geography and Nature-Study steadily develops simple and concrete teaching, of direct observation and simple experiment, by which the student's interest is awakened and started on his course. And this or that simple beginning, in its arcade, upon scientific studies and their practical applications, is now seen to lead farther than commonly do these. For its more thoughtful students it becomes also a Thinking-house of Science and of Philosophy: and even for its visitors of all Religions a reminder of the truths they hold in common. It is plainly also a centre and clearing-house of action, and this more and more of Citizenship, even its higher levels. And since such action is no longer egoistic, but primarily cosmic, and ultimately and supremely social, it becomes even a School of Ethics.

Lest all this seem but abstract, illustration is needed. Western civilization was first known to India from the Greeks; so it is from old Greece to this day, and not merely from new machines, that most is best in it, and that this plan seeks to establish here, may above all be understood. Our universities are not merely Oxford or London, Edinburgh or St. Andrews; it is in so far as they are true daughters of Athens that they can be of some service here.

But first of all, we are justified in now planning a site for the pedestal of Saraswati, in the centre of our Museum and Library quadrangle, with her face towards this Tower, and its most synthetic Outlook towards her.

Again, the image of her Western Avatar, Pallas Athéna, should surely have its place in a building at once so Western as well as so Indian in its character, and designed as the meeting-place of both cultures, and these at their best. Naturally, then she should stand in the storey above allotted to Western culture. The Greek expression of her symbolism and meaning are here of interest to the Indian visitor, and worth his unriddling accordingly.

For one thing, Pallas gave the men of Athens the culture of the olive-tree; and she taught women the art of weaving. The Western University knows this, but teaches it too little. The Western Museum knows it better, and so teaches it more; but neither as yet has adequately grasped the practical meaning and the application of this Greek recognition of Civilisation-Values, as their essential economic wisdom, and the application of it accordingly. What is this? That in every city, and therefore here in Indore to-day, or at any rate tomorrow, the everyday regional life and labour—and here therefore of grain and cotton, of silk, of mangoes and oranges, and the rest—may similarly be developed; and this beyond their everyday aspects of the field and market-place, and into civilization and culture. If so, why not again comparable to the best of those of old?—and thus in a hundred ways surpassing our

present medley of ruins and re-beginnings. And all in a spirit of health and sanity, and therefore hope, transforming our neurasthenic depression of yesterday, our vague unrests of today.

Further Applications.

This University Tower—(may we now call it?)—is thus more than the simple geographic and cosmologic outlook over the country, the historical and esthetic outlooks over the town, with which we began. It becomes an outlook of Rural Development and of Civic Renewal. It is plainly a watch-tower of the growth of Civilization; so why not increasingly a light-house of its journeyings, beyond the present streets and lanes, into high roads still unsurveyed, even untrodden? Why not increasingly a Power-House, renewing and intensifying all these re-constructive and new constructive energies, alike of Country and City, through its intensification, and clearing, of their children's—and students', and citizens'—thought?

In such ways then, our Town-planning is growing onwards, into City Design. Our after all moderate Library, our modest group of Type Museums, our still smaller and simpler, though many-storeyed Tower, with its studiously simplified appliances, may thus be made an initiative, even an initiatory centre, of the coming University. And this, when its day comes, may start more fully cleansed than has as yet any recent foundation, of cram and exam, of externally administrative empaperment. It may start too with more of ripe and carefully chosen seeds from all fitting varieties of the world's best cultures; and so may thus quietly, steadily, and increasingly win a great place of educational usefulness for Indore, for Central India, and even no small influence and example among the Universities of India, now all vaguely struggling towards their needed Renewal.

Chapter VIII.

Further Beginnings towards the University of Indore.

City Studies.

With Library and Theatres, with Museum and Tower, all in active operation and in mutual aid, we have more than a centre for individual visitors, or a greater kindergarten for school visits; more even than a dovecote for College Students, though from this more of them may learn to fly. This Holkar Institute (as it may be called?) will be of interest for all ages, with its outlook and subject wide as the world itself, yet also clear upon the immediate world around us. This is the City:—for the full conception of "City" as it came to the modern West, both from Greece and Rome, was not merely the Municipal area, but the Region around as well; and each in fruitful and vital interaction with the other. The City then is here presented in this fullest sense, at once geographical and social; and this too not only in its everyday aspect, or its historic aspect, but with its active future in progress also, and indeed in more ways than even those of the present plans. Say then its evolutionary aspect. So, in complete summary, we may here express the essential concept of the needed Civic Education—as that of Indore, Past, Present and Possible.

Descend now from the arcaded roof-platform, on which we have considered the aspects of City environment;—first as the Outlooks of the Sciences, physical, organic, and social, (yet also social, organic and physical) and then with deeper and wider outlooks also. We next need the large chamber immediately below, and still with wide outlooks on all sides from its windows, as the Indore Room, with its summarised presentment of the City.

An enlarged City Map is painted over the floor, on which can be expressed, and in vivid colours corresponding to that of the complete Town Plan (82½' to 1") which has been developed as the essential document of the present Report, from the existing City Survey sheets, detailed to every house, and of which the Plans accompanying this Report are reproductions. For each child to find its home in this Plan will be a pleasurable puzzle, and one extending beyond the first personal interest towards an understanding of his neighbourhood, then of his quarter, and next of the City itself. On a large table should be also a relief model of the visible district, upto the horizon hills; unless indeed this can be kept in the open air, in which case it will be more appropriate to the centre of the platform above. Indeed a shelter may be constructed for it there, and with enhancement to the effect of the Tower.

On this floor plan, it is also easy to express by colouring the main historical development of the city, and this more fully than in my introductory Chapters; while the developments accepted for the city will ofcourse also be introduced, since suggestive of the opening future, and thus helpful towards its speedier realisation.

Around the walls, and also in album volumes, the photographic and other artists of Indore may readily combine their efforts towards forming a collection of photographs, sketches, pictures and engravings illustrative of the aspects and edifices of Indore in the past and in the present. Hence not only the buildings, but also the life of the streets, their costumes and activities, and these in all their types and aspects, from State and Festival Processions to the life and occupation of every day, even the humblest. Such a collection will be of interest in the present, and its increasing value to the future will also soon become obvious.

All Books bearing on Indore are ofcourse desirable here: all portraits too of its notables: in short all possible illustrative material and record. Here therefore should meet the City and Regional Survey Committees, which may now naturally and easily be formed; and their survey will gain in value as it is carried on in co-operation, correspondence and exchange with those of other cities, even of the West. A book-case, with portfolios, will thus be needed for the growing documents and graphics of this survey; and of these, periodic and temporary exhibitions may be made upon Wall Screens. Another bookcase, and more portfolios, will soon be required for the collection which should be formed illustrative alike of Indian and other Cities: for Civics is one of the sciences which learn by comparison, and so gains ideas from all.

Meetings, and Lectures to small audiences, may also be held, in this room, concerned with matters of civic and local interest.

Finally, Decoration should be appropriate. What better than large frieze-paintings, kept well above the ordinary picture line, and depicting main aspects of beauty of Indore? Nothing else will more help the appreciation of this, along with the Camera above; and citizens appreciative of their city's beauty are everywhere among the best citizens of all.

Such a City collection makes one of the most interesting of all Museums for a City, as is indeed being recognised more and more widely in the West. Those of Paris and London are the largest and best known; but in Edinburgh we have two Municipal ones, besides that of the Tower; and in many cities at least one of civic history and contemporary interest.

All these things, and more, will be found to renew and advance the civic spirit, which is now happily spreading everywhere. Thus in the Unistates, since about 1900, some 3000 or more Civic Societies have come into being, and these in small towns and even villages:—and that before long a kindred movement will also spread through India, with its many historic cities, its innumerable populous villages, is a prediction which wanderings, now through so many of these, encourage me to maintain.

Indore State.

As below the Edinburgh Room of our Outlook Tower comes that of Scotland—after the Capital its Country—so under this Indore City Room comes ofcourse that of Indore State. Here again its Relief Model is fundamental for the understanding of the visitor; but this, not as interrupted by political discontinuity, (which it is sufficient to mark by a dotted line) but as the surrounding Region, in its natural and geographical character. This Region too, needs to be shown within the larger aggregate of Central India, as this within India itself: and if space compel us here to fall back upon maps, these may be helped by an outline on the floor around the main Model.

Here now is the place for the corresponding Regional Survey, from geology onwards; while the walls may be made as interesting as those of the City Room above, by a growing collection of photographs and pictures, illustrating the towns and leading villages of the State, and of those of its Neighbour States; while the glories of Mandu and Maheswar in the past, and well chosen examples of the present, will provide admirable subjects for the picture-friezes.

The fullest possible illustration of history must here ofcourse be given: and therefore, upon the central screen for pictures, should be collected all obtainable portraits of the Holkar Dynasty, throughout its tradition and up to the present, with those of eminent persons of each reign and generation. And here too may be exhibited and discussed schemes and projects towards the further and fuller development of Indore State and of Central India.

India.

The next lower storey will be the Hall of India, with its magnificent possibilities; again from its vivid Model, from snows to seas, to the frieze of pictures above, the (necessarily often changing) mass and wealth of illustration between, now devoted to one region or period, and again to another, yet not losing sight of the part of Indore within the whole changing complex.

Empire, and Western Civilisation.

Below this again, the Hall of Empire, and of English-speaking civilization. Yet with this too, since now we are on the ground floor, and must thus encroach upon the General and Reference Libraries on either hand, we may use these without injury, since to their adornment. In the Reference Library, since of widest

indebtedness to the whole Western Civilization, of which the English-speaking is but a branch, albeit in some ways the greatest, we may illustrate the essentials of European geography and anthropology, history and civilisation as a whole; and so not only of France, Italy, and other lands of alternating leadership, but all the Allies, the neutrals too, and even our present enemies. For all have had, and will have, their place and significance; and all alike need to be understood. The Americas too are in the main extensions of Europe; and these of ever-increasing importance.

Oriental Civilisations.

For the Lending Library we have again a magnificent and changeful choice, amid the civilizations of the Orient:—on one side that of China, on another that of Japan, and on the third and fourth that of the great Arabian and Persian cultures which have so specially influenced India.

Simpler Peoples.

For the Juvenile Library too we have the vast and varied world of simpler humanity to set before its young visitors—the pictured story of its many types and races over the world, from tropical to Arctic lands, and through Australasia, Africa and America, as well as Asia. The simpler aboriginal peoples of India too, have here their place and special interest. And since these are nowhere far to seek, our extremes have met, from modern Indore City to their earlier world.

Educational Summary.

All these storeys and rooms of this Tower, and its overflowing, are thus necessary for the understanding of Indore and of ourselves, of our place as it has determined work, and people; and likewise for Indore's people, work and place; that is, its citizens' efficiency in dealing with this manifold web of world-relations; which, despite all temporary strains and rendings, is ever weaving men closer, and must yet make the whole world one.

Through this Institute and Tower we may thus range once more; and again from the child's awakening to the wider world around him, yet now among those nearest the world's childhood. Later, and as student, he will be brought into widening relations with its distinctive cultures, both of East and West, and so be more fitted for the individual responsibilities of his life, through this educative presentment of his social heritage and responsibility.

Education may thus oncemore, as of old, grow up between its mother, Religion, and its father, Wisdom. Each may thus better develop its own and the other's provinces of thought and action; until each opening mind, at whatever stage after all matters little, may realise at once something of the infinite variety and interest of the Universe, and within its Unity; and enjoy the possibilities of life, thought and action which these open to all: yet within the unison of Dharma for each.

As any Religion, every Denomination, is a community in its religious aspect, and as a State is the whole community in its political aspect, so the true University is the community in its educational and cultural aspect. And since all these are found and united in every Capital City, so here is at least one true and main centre for the essential University of Indore, of which its Colleges, and its future Charter, are but the centres of fuller growth and sign of maturation.

Women in Education.

Finally, in these days when women are also keenly looking around them, some may think we have forgotten them. Yet to them, all will be in the future increasingly open; and even from the first this will be easy. And though for their Room in this Library we have not ventured to plan so definitely as for others, we should indeed know little, either of Sarasvati or of Athena, of whom we have placed the statues with such honour, if we do not see that their spirit is again living and diffused today; and this in quiet homes and in girls' schools and colleges, and in India perhaps as truly as in the more swiftly opening and widening careers of woman's life and influence in the West. For this Women's Room, then, I would fain see the foremost of India's returning poet-artists do his utmost, as he has already done for that "Temple of Life" and its science together, which was lately so eloquently opened by India's foremost man of science. Yet here even better still, for now more fully with woman's inspiration and counsel. Thus, and thus only, he may portray the Ideals of Life, and do some justice to woman's perpetual maintenance and re-evocation of them, from home to Temple, and also in man's heart as well; from earliest childhood upto the worthy and strenuous labours of peace, to the heroic sacrifice of war, and even to the supreme songs of all the poets, past, present, and to come.

Chapter IX.

State Scientific Institutes, as nascent University Departments.

It has not perhaps been made sufficiently clear that these Institutes of Chemistry, Geology, Agriculture, Bacteriology, Botany and Natural History, as planned above (Part I Chap. XXII) are adapted to serve not only as Departments of the State Service, as at present, but as of capable of becoming of University rank as well. Their practical activity is a great gain for this purpose. How much more real an atmosphere for the student of Geology, for instance, when the lecture-room is beside the Geological Survey Office, and this in active exploration of the State? How much more real a study will here be Chemistry, when in direct touch with practical problems, such as the Thymol, Glass, Dyeing, and other factories will afford? And so obviously it is for Botany and Zoology, for Agriculture and Horticulture, and for Bacteriology, in active touch with tasks and problems of the City, from Parks and Gardens to Sanitary and Industrial work. What University in India will have made a better start with its teaching of Science, pure and applied, than here, where the work is the first consideration, where Faculty organisation is postponed, and where memory-examination is replaced by estimation, of efficiency and productivity?

Erection of Buildings etc.

But though these Institutes, as indicated at I page 124, are planned of lower cost in proportion to space than probably any heretofore, their large size undesirably involves some not inconsiderable outlay: and in these hard war-times, and with other City schemes also to compete with them, their erection may tend to be delayed. Well, let there be one or two of these buildings erected: and all these workers housed

together; the natural growth and fruit of their departments will soon furnish the best possible plea for extension, with relief of overcrowding accordingly.

Possible Initiation as Exhibition Buildings.

These one-storey scientific buildings, with their large laboratory rooms, their long open museum galleries, may be erected in the first place, and even used in part at intervals, as the buildings of an Exhibition, such as that lately successfully held at Gwalior and other active cities. On too great a scale, Exhibitions are costly and wasteful: but when kept within reasonable limits of purpose and of magnitude, their scientific and artistic stimulus, and educative return, to their city and community is great; and their economic stimulus is often very appreciable. Their associated Conferences are also of technical, scientific or social value.

And where shall we find a more convenient or more attractive Exhibition Ground than this—for convenience with its Railway siding at the foot of the Sports Park, and for pleasure with the Horticultural and Zoological Gardens leading on to the City, and this seen in its best aspects, along the Rivers.

Further Advantages of Exhibitions.

The developing Industrial Town has here also its legitimate opportunity of expression, and of attraction: for to make Indore and its industrial advantages better known than at present would at once be good business for the existing industries, and a means of attracting new ones.

I trust also that before such an Exhibition can be arranged, a substantial beginning will be made towards City Improvement, and this will increase its attractiveness for visitors; while conversely, a City is stimulated to its own improvement to receive visitors, just as a hostess sets her house in order, and puts on her jewels.

Exhibition visitors, and tourist visitors, are naturally akin; yet these are not so far removed from students, and even from pilgrims, as these latter may suppose: and through this manifold attractiveness to visitors, Indore—City and University together—may gain much, and in far more than simply pecuniary ways, though these will not be despised.

The small place given to Indore in the guide-books may thus be enlarged: and though few save the wandering European or American tourist may be guided by these, the principle holds more widely. Let the attractiveness of the City, then, be in every way considered: it has bearings on Civic policy and improvements together, and cannot but help these in turn.

Exhibitions and their Academic Critics.

Now I am well aware, that in thus advocating Exhibitions, and especially in the section of this Report devoted to the proposed University, I am sure of criticism from the academic point of view. But such critics doubly fail, alike in history and in current events. As to the former, I have staged in my "Masque of Medieval and Modern Learning," held at Edinburgh and at London University in 1911 and 12, not only the deep historic connection of modern Universities and of medical and other faculties with City fairs, as at old Montpellier, Paris, and Oxford alike; but even their supreme originative event, in the recovery of the works of Aristotle from the Arabic. So it was the travelling merchants, who brought the

next Greek impulse, which became the Renaissance, from Constantinople to Florence, even before the fugitive scholars, from its Turkish conquest. Again in modern times. As a student of Paris University --which, though too little known in India, corresponds in sheer numbers and magnitude to all the Universities of the British Islands put together, and in intensity of thought and productivity at least as well-- and also, in detail, of the world-central Paris Exhibitions of 1878,89 and 1900, I have come to know many of the deep and fertile intimacies of contact between City and University at such times, as of high value to each in turn. In fact, there is no worse evidence of the dulled state of our present Universities, alike in Britain and in India, that such contacts of thought and action, of Art and Science, should be ignored, or despised. Again, since alike here and in Britain, the Germanic culture has been better known and more influential than the French, such critics may find pause for reflection in the fact that the world's largest book-production, and one of its foremost Universities, have been meeting for centuries, and still meet, year by year, in the great Leipzig Fair. Let Indore then take courage in this as in other matters, to break with the present dull and dying conventions, and advance her science and her arts along with her industry and commerce, and these through the Civic hospitality and festival of periodic Exhibitions: and thus all together in the spirit of the nascent University.

Chapter X.

Faculties and Schools of the Modern University; and their Insufficiency for Indore.

Introductory.

The preceding Chapters of this section, ranging as they do from an outline history of the varied origins of Universities to the reinvocation of the goddess of learning in East and West alike, and thence to larger hopes for education, may be of little interest to the practical man in his everyday mood. Hence the need of yet more definite criticisms and suggestions, and these in strictly modern terms.

University Studies as they are: University Faculties.

So let the reader refer to the many and various--yet all essentially similar--stock of University Calendars in the nearest College or public Library, and also to his Encyclopedia,--most typically the Britannica, because, University-like, it is mingled of monographs, frequently of real value, though largely getting out of date also; and before the purchase of its present label as from Cambridge, carefully edited, under its astute American advertising syndicate, for the viewpoint of London imperialism during the past generation, and tuned to its then dominant note. Returning however to the real merit of the Encyclopedia, its variety and openness to almost all subjects of its day, he will find these qualities, and often more fully expressed, in the German University Calendar, if his library has got one; or failing that, in the corresponding volume of any well-developed sub-Germanic University--say Cambridge for choice. Yet in all save the German one, with its Encyclopedic "Faculty of Philosophy," he will find the subjects mainly grouped apart, into the studies of

definite "Faculties," or "Schools." These are of pre-encyclopedic tradition and convention, and also of vested interests more recent; and thus they are not, by any Faculty or University, defensible as adequate for the modern education of its students.

As an example of this, note the now customary separation, from the ancient Faculty of Arts, of that of Science; so as to produce B. A.'s and M. A.'s too largely ignorant of the sciences, and B. Sc.'s if possible still more ignorant of the humanities: while in this Faculty of Science the physical sciences bulk immensely more than do the vital ones.

It is of course replied that the shortness of life involves this division of labour; but the historic explanation is not this, but the notorious conservatism of the older Faculty of Arts, and this both intellectual and economic; thus keeping the old studies in power, and in resources also.

Possibilities of Renewal.

Moreover, to the well-worn insistence on the half-truth, of the endless infinity of every specialism, there have never yet by any Faculty been applied the rejoinders made by comprehensive and philosophic thinkers individually; (1) that for every great field of knowledge, and group of specialisms, there are labour and time-saving methods comprehensive in their logic, and often logarithmic in their swiftness; and (2) on the more general ground of all philosophies; that ever re-surveyed, from the oldest visions of Unity, to the modern conceptions of Universe and Life, in Evolution together.

To make this point clear, compare two sayings, each complementary to the other. The first, to which all will agree, is "The shortness of life makes it impossible for one man thoroughly to learn radium, in which every day something new is being discovered." But note also the second—"The more a science advances, the more it is concentrated into little books."

Both sayings are obviously true today. Witness the bulky Proceedings of Learned Societies on the one hand, and on the other Darwin's "Origin of Species", and many other scientific milestones. That this contrast has always been true, is evidenced by the fact that the first of these sayings is quoted from the monograph of a medieval alchemist, in which I have only taken the liberty of putting "radium" for his "antimony;" while the second is from Leibnitz, who was not only Sir Isaac Newton's one great mathematical rival, and at the same time at home in all the other sciences, learning, and philosophy of his age, but actively creative in these, busy in social life and in statesmanship, and productive as an historian as well. The current over-insistence on the subdivision and separation of knowledge in Universities at present, and its acceptance by their professoriate, is too much that of an intellectual proletariat; of which each is absorbed in his own task, like the various skilled artisans of a house or of a ship, but as yet without the principles, (and principals), capable of supplying the needed unity, of conception and direction.

The building of houses, with town-planning, and of ships, with port-design, are seen to build cities, to organise world-transport, and these together; so now a kindred development, of design and organization, is needed for this varied artisanship of knowledge and research, in all subjects and directions.

It is of course true that too few of our professor-journeymen, or of their student-apprentices, may as yet sufficiently realise the need of this organization of

their labour; yet this state of things only proves such organization the more necessary; and even urgent, since without it much of their labour, if not most of it, is being lost.

The Organization of Knowledge.

Since the Great Encyclopedia, on which even the best of modern Universities have stuck so fast, there has been going on a movement towards the organisation of knowledge—witness works like Comte's and Spencer's, or more lately Flint's "Scientia Scientiarum," or Pearson's "Grammar of Science," all presumably accessible in every philosophical library. For the reunion of the physical sciences by the doctrine of Energy, has worked wonders; so has the theory of Evolution from Kant to Darwin, and from Darwin onwards; and the application of these doctrines has long been stirring and vitalizing studies in every Faculty. Witness the works of Max Muller or Huxley in the last generation, the mass of books, at all levels, scientific and popular, today, from great treatises—like Russell and Whitehead's "Principles of Mathematics"—to the many and popular little rupee volumes of the "Home University Library". But all this evolutionary research, and this presentment of it, is for each of us professors as yet merely his own affair, his personal equation of teaching; and it is not yet incorporated into the Faculty-teaching and the Calendar regulations of our Universities, as the harmonised and synthetic presentment of knowledge it should be, and that it might now be in the Faculty of Philosophy, Arts and Science, henceforth again orchestrated as one. Nor yet has this advancing evolutionary re-synthesis been admitted into the Applied Faculties; though no really active and progressive teacher will deny that it now might be, and so should be.

The University Reorganisation in Progress.

But now has come upon us one of those world-crises of transition, in which as history shows, (pages 4 and 13) the University has ever arisen new-born; and members of all Faculties are being stirred by this. Theologians, of all schools and faiths, are searching and discussing towards the restatement of their ideals. Medical thought is escaping from its hospitals and post-mortem rooms; not only into Public Health, but into perception of the "Vicious Circles" which profoundly correlate diseases with poverty, ignorance, lunacy, vice and crime. Law begins to read the same vicious circles in the opposite direction, as from crimes to their social origins. The long self-satisfied teachers of Economics are everywhere confessing that their classic doctrines are breaking down, and searching towards better ones. Younger applied Faculties, like those of Architecture and Engineering, are moved by Town-planning, and into it; and so on. Above all, Teachers everywhere—primary, secondary and higher alike—are reforming, *i. e.* re-vitalising, their teaching; and this movement must soon be effective upon the Universities of India, as especially in America, and increasingly in Europe. Such movements are everywhere gathering in force and in magnitude; and the Universities will soon be publicly discredited, as at once senile and culpable, if they continue corporately to ignore them; as, in their administrations, they are still practically doing.

More Specific Criticisms.

The past eminence, present power, and administrative stagnation, of Universities, is so great, that the most pointed criticism is needed to express the full gravity of the present University situation. Though some replies (including the writer's) to the questions set by the present Calcutta University Commission will

appear severe, these questions, although the most searching in contemporary history, are still too few, too gentle, for the present situation.

Example of further Criticism, subject by subject: *e. g.* Economics.

The current number of the "Indian Journal of Economics," in addition to pointed criticisms of that science by each of its two leading research professors in India, contains "an Examination Paper for Professors of Economics". These questions will largely be intelligible to ordinary readers; and hence are suggestive in testing conventional University teaching and textbooks, in India or in Europe. For just because chosen from life, from daily avocations, and their outcomes in society, these questions cannot be answered either from the recognized text-books and works of reference, nor from the recognized curricula, say of the London School of Economics, and thence downwards or upwards, as the reader may judge.

Similar Criticisms throughout the Universities.

This examination and cross-examination of University departments may soon be extended throughout other studies. Indeed enough of this examination of the universities has been in progress of late years, among their more active spirits, to show an estimation of them deeply different from the present corporate valuation of themselves. So far as this remains high, it is on grounds of historic personalities, and effective existing ones; but it is nowhere, as yet, in terms of organised educational efficiency. As regards even the Universities at present most dignified and powerful, all are far below what should be their normal effectiveness; since less overcrowded Universities, more ambitious and effective in real work and output—even as yet comparatively without public fame, such as Aberystwith or Clermont, Clark and Wisconsin—would be the first to recognise that they are not yet accomplishing a quarter even of their present purpose and endeavour, so high have these become.

Such criticisms, though they go beyond ordinary ones in their generality and their definiteness alike, are after all only those latent everywhere, and often expressed within the Universities themselves.

This criticism has been necessary in the present Report, for the same reason as the in some ways analogous criticism of City Schemes, *e. g.* Chapter VI of Part I, *viz.* that for the reasons there given, it is not expedient here to embark upon a conventional scheme at present so costly for its introduction and upkeep, and so deeply defective in principle and in details, as is any New Indian University as yet.

A Concluding Warning.

Here then I must repeat that as yet a University in Indore, organised on any present (or immediately probable) Indian type, would be apt to do more to blight the present buds than to advance them. This I venture to maintain, not without some inquiry into such well-intentioned but prematurely fixed endeavours, and these by no means exclusively in India.

Furthermore, in face of the current assumption of pious donors, and of educationally minded statemen—that a University is a simple and definite institution, which can be founded offhand, on any sufficiently large site,—in some cases laid out like a cemetery, in others bustled together like a munition-works, and thereafter in the one case kept in perfect order by its trustees, and in the other maintained in world-competitive productiveness by means of a sufficiently ample endowment, or

other regular provision, of scholarships, salaries and pensions—it is important, here to recall the recent estimate, by one of the most thoughtful and constructive of American writers, of the type and ideal of such institutions, with which his own country now teems, as “ a well-endowed moral vacuum ”.*

Chapter XI.

A Constructive proposal: School of Music.

To this woful state of things, what remedy? For an example let us return for a moment to the close of Chapter VI above, (page 34). Here, in the neighbourhood of Theatre and Amphitheatre, Library and Tower, and of Temple also, is the natural place to provide for the future establishment of a School of Music, and the housing of its Teachers. For this purpose several of the sites marked out in this neighbourhood should be reserved. Towards this purpose is peculiarly suggestive the eminent example of Professor G. Vitaldas of Bombay, whose remarkable success there is not unknown in Indore, and might, at any rate with such leadership as his, be here successfully repeated.

In this connection it is not necessary to recall associations of study and song so ancient as those of India for the East, of Greece for the West, of Israel between; though in each of these historic cultures, the value of music has been justified and recognised in its scheme of education, and indeed given the very foremost place. In ancient phrase, this is of all arts most inspiring and divine; and, in our paler modern terms, it is the most synthetic and most evolutionary.

As regards the coming University—of which such a School of Music should be a part, and this as soon as may be—enough here to note that of all books most generally possessed and used throughout most Universities—above all the hitherto leading (*i. e.* Germanic) ones, but with these also the Scandinavian, Scottish, American and others—is their-“ Students’ Song-Book ”. But there is as yet no London Students’ Song-Book; and in this connection, it is tragically significant to learn that in at least one of the Indian Universities most logically misorganised upon the London model, Music and Song are said to be prohibited in some of its hostels. In this matter, as in so many others, let our spirit and practice be the very opposite of this deadening example. So here in Indore let Music and Song be revived and encouraged, not less even than is today athletics. In time these may recover their educational leadership, as of old. For deep feeling, vital emotion, which it is the special power—the very magic—of music and song to arouse, to discipline, and to express, are also the essential impulse of effective thought; and this in all subjects. Notably even in mathematics, far from emotion as this seems to those who have but been dulled by text-books and frightened by examinations to memorise its formulæ, as so much mental baggage to be inspected, and who have thus come to teach, examine and inspect in their turn. But in so far as he may have learned and meditated aright, the mathematical student is he who can wield this and that among its many and potent notations, and henceforth through life carries a sharper sword of intellect, and more clearly surveys the world, as with swift and soaring aeroplane.

* Charles Ferguson. *The University Militant*. (Kennerley) New York, 1912.

Our poor contemporary results, and our establishment and maintenance of examinational terrorising to obtain them are thus in a vicious circle. This arises, in particular, from our current starvation of the emotional element in every subject, in other words, our dessication and destruction of its interest accordingly. And in general, this is part of the individually too common ignorance of the essential psychology of adolescence; and of the academic organisation of this ignorance into "Universities" and "Colleges," of mental debility or death accordingly. Of this state of things there is no clearer symptom, and symbol, than the present indifference to music, that simplest, oldest, and deepest of the resources of education as ennoblement. But here again, in our Amphitheatre and Theatre, the recovery of ear with the development of the emotional life and voice, may fully keep pace with that of direct vision and its intellectual values upon our Tower.

In this connection, it is here encouraging to be able to point to the remarkable success, so rapidly achieved, by Mr. Durham in the creation of a String Band. The university "Faculty of Music" is thus arising.

Chapter XII.

Further Constructive Proposals.

Examples: Bad and Good.

Yet just as our criticism of mechanical methods apart from life and natural conditions, and in themselves defective, has been followed by constructive proposals at once vital and economical, so here again as regards higher education. For despite all criticisms, of the present organization of Universities, and Colleges, as not only dispersive and ineffective, but wastefully destructive of youth, it is also recognised that these same institutions are everywhere germinating towards a new life, which the opening social situation, of general reconstruction after War, should bring to fruit.

What then can be done at present? Instead of the establishment of another of these new Indian Universities which are already each too much a copy of existing old ones, why not be initiating the better type of University which is germinating, and which will be increasingly manifest after the War: some as new and separate foundations, but also as resurrections, renewals, revivals of the existing Universities themselves. See likewise not only Research Institutions of familiar type, like the Bangalore Institute, but new ones of more vital spirit, like the Bose Institute of Calcutta, or Tagore's School at Bolpur; for each of these is now under the tree of life, and not merely the tree of knowledge.

The University as nascent in Indore.

In summary then, here are the States of Central India needing a University, and here in Indore is a City growing towards capacity for its motherhood. Here too are practical men, able, and by and by willing, to be among its pious founders. Here too are many of the needful intellectuals, indeed in unusual number; and here is the enlightened State. Yet for these to unite to found a University today would be but to repeat the disappointments which are latent, indeed already manifesting themselves, in the most recent foundations, more or less as in older ones. What then is to be done? To continue and encourage growth; but not to force it, least of all to

fix it, as is elsewhere done, by a premature "constitution," of well-meant (and well-made) administrative and examinational fetters.

Let the existing schools and colleges, and nascent faculties, go on developing, and each from within. Let the School of Medicine prove itself in touch with all that is most vital in medical progress; and let those most efficient in this determine how to give this progress the new and better administrative and estimational form which more academic institutions are yet hindered from reaching. Similarly let the Normal School develop, as a vital—and virtual—Faculty of Education, training all levels and ages of mind, from Madame Montessori's defective children to Stanley Hall's picked and gifted adolescents. When it is doing these things, but not till then, it will be a University Faculty indeed, and thus cannot long be denied the name. And so on for every study; from ancient Sanskrit in the Pathshala, to modern Engineering and Commerce. Let the intellectuals be going on with their special studies, and help in teaching them, here chemical or geological, there historical or economic. Let the new High Schools be set free from their present bondage to matriculation cram, and thus to produce eager and living students; for to these matriculation and graduation are alike assured, and even easy. Let all endeavours, like those already mentioned (page 34) in Juni Indore be encouraged, and let their recent gathering, on Saraswati's Day, be but the beginning of intellectual movements of all kinds. From all these various soils and seedlings the academic grove will grow.

For its fuller irrigation, the Library, Museum and Theatre will be found helpful. Or, to change the metaphor, our modern needs, alike of light and labour, need a modern Power-house, and this of full intensity.

The Educational Revolution in Progress.

So far all this may be admitted; but the most important point of the current Educational Revolution still remains to be clearly realised and applied by all concerned. This essential intellectual revolution and transition, now in progress, is that of escape from the mechanical view of nature and life, of social activity and organisation, dominant in the West, from the beginning of the Industrial (paleotechnic) Age to the present War. But from this mechanical view, we have been increasingly escaping to the corresponding vital view, and evolutionary view. In terms of this all studies are being re-interpreted; all activities are being reorganised, not as mere processes of matter, and its energies, dominating man from them, but these as instruments and processes of Life, and this working from and by the life within. Take a concrete example from these pages. No longer merely on grounds of sanitation, and economics, or reviving esthetics, do I plan and plead for the development of Indore as a City of Gardens. For now in terms of education also; even of education, at all levels, from that most elemental labour in which civilization began, to its highest aspects, as Gardens of Life and Youth towards their flowering; Gardens of the Sciences, Gardens of the Muses, Gardens of the Ideals.

These Gardens, thus at once of Civic and of Educational purpose, like so much else in this report, are also designed as a sign and centre of this main intellectual revolution of our time, now fully beginning—from Mechanocentric to Bio-centric—a revolution fraught with even more significance, and with greater consequences, than even was that from Geocentric to Heliocentric, long centuries ago.

Chapter XIII.

The Nascent University at Work in Indore.

Existing Colleges and New Institutes.

Besides the foundation of no less than two distinct University Colleges in Indore in the past generation (where in a far larger western city we should generally only have had one), note also the present large-scale development of Secondary Schools, and these for both sexes, together with the current provision of Normal Schools for each. It will thus be seen that the supply of Scientific Institutes, such as are already in demand, together with the formation of the indispensable Central Library, with various associated Museums, is also a reasonable and even necessary development. The future University will thus be growing, branching and spreading, and its needed staff increasing correspondingly.

Needful Avoidance of Premature Organization.

But instead of prematurely giving it formal organization, of the obsolescent examinational type,—as is so unhappily still being done over India—let Indore be wiser. Let her see that her various Culture-Institutes are all vitally initiated, and doing their real work, before they make the full University claim, and take the name accordingly.

For in this way, as history shows, their reality of functioning, their co-operative educational activity, will gradually, and even rapidly, evolve a truer University organization than has been possible elsewhere in India, where the life of each new University being cramped into the stereotyping mould of the examination-machine.

The fear may at first be felt and expressed for this rudimentary and still informal University—with its Institutes and resources still incomplete, necessarily of secondary magnitude at best—that students would not come. But let us not fear to recall the old and essential nature of students—as persons desiring to study, and thus distinguished from those mainly desiring to pass. Of this first class we should have enough to start with: for some are already here in Indore and its neighbour-States, and others survive everywhere throughout India as well.

Students for the Nascent University.

A City and State so active in educational progress, as all these new schools show, can thus increase, freshen and stimulate its teachers, and also its public. In many families there are men, and women also, who would willingly take advantage of higher teaching, as soon as this can be afforded them. True, many cannot come like professional students for the customary terms: so let us take them for shorter periods. Graduation gives useful final certificates to students at their maturation into life; but let the recent exaggeration of its importance no longer blight the studies of all, and deeply injure those less fully prepared, or less conventionally submissive to our routine. Among these, as life shows, are often the very ablest, and most original.

Let us begin in fact Vacation Meetings, as at least one widely useful American institution has done before attaining its full University Charter and rank—as a Summer School, a Vacation Gathering. It arranged its courses, intensively and interestingly,

for the vacation terms of established colleges, and even shorter ones for the month's vacation of men, and women, already busy. And being, in a small and attractive city like Indore, of good climate, it soon caught its students, indeed in embarrassing numbers. It helped the growth of the town to house them, while also mentally freshening it by this active contact with minds from other places, eager to observe, comparing and learning from their hosts. A University atmosphere was thus created from the first, and spread throughout its region; in a few years even throughout America. Older American Universities soon learned from its example; and thirty years ago and more this was also adapted by Edinburgh and Oxford, and next by Cambridge and others; until these Summer Schools are now to be found even in the smallest college centres of the United Kingdom, and similarly in France, in Germany, in Scandinavia, and even in the long unprogressive Spain.

University Extension.

Again a generation ago, a St. Andrews professor, full of the democratic culture-tradition of the Scottish Universities, removed to Cambridge, and there initiated the University Extension Movement; which at first shocked, but soon generally thawed, the acquired exclusiveness of Cambridge and Oxford. This was next adopted by London University, which imported the admirable Cambridge organiser to develop an Extension system for the vast population of its London area; and this system has since been widely and increasingly successful in all directions. Through the teachers and other middle-class audiences to which this at first appealed, the movement next notably aided the further academic development of London University, from the traditional Examining body which India as yet alone knows, to the great Teaching University which has for the last half-generation been in rapid and distinguished progress; so that other British Universities are now feeling its stimulating example, much as they formerly imitated its exclusive insistence on examinations. On the other side this Extension Movement has also reached the people, as the "Workers' Educational Association", whose branches throughout Britain are growing yearly by scores, and in audiences by thousands. It is also not a little encouraging that of the four eminent educationists brought from British Universities (London, Leeds, Glasgow and Manchester) to strengthen the Calcutta University Commission, one should be the Registrar of the Teaching University of London, and its Chairman the organiser of the Oxford Summer Meetings. Here then is a definite and practical policy for Indore; instead of beginning, as other Indian Universities have so unfortunately done, with the outworn example of the University of London in its unregenerate days, while still of examinational standpoint and interests only. Let us thus here begin with the ever-fruitful "freedom of learning and teaching," and with Vacation Meetings and Extension Lectures, so that the nascent University may from the first be educative, growing and free.

Further Developments: Scientific and Humanistic.

Its nature-studies—Geography, and Geology, Botany and Zoology, Agriculture too in its many branches, from Chemistry and Bacteriology to Horticulture, Fruit-growing and Silk-culture, are all comparatively independent of great libraries; yet the needed and relevant books are already partly here.

Auditive studies, linguistic and musical—similarly depend on the vital teacher far more than on books. These studies may be doubled in efficiency and rapidity alike, from their union in song; and this with invigorating impulse throughout all other studies. For the long pre-eminence of the Germanic and kindred Universities,

and the backwardness of essentially examinational ones, is directly connected with the general musical culture and invigorating song habitual in the one, and the dreary silence as habitual in the other. (see Chapter XI)

So for Philosophy and for Religion. The discussions of the one, the meditation of the other, are not primarily bookish; but develop, like induction-currents, between questioning youth and meditative age.

Even History, and this peculiarly in India, is not primarily a matter of books and documents. As our first pages show, history is also an open-air subject, to be deciphered from the City itself, as its accumulating and enduring record; and the older history of India is in this way being investigated by its excellent Archæological Survey. Yet with this living initiation, history, philosophy and religion will not long lack their growing libraries, not yet readers to use them. In every way then, let us be ensuring the feast of knowledge, the increase of thought, and this from simplest observation to deepest meditation, while yet we can. Endeavours will soon enough be made to regularise all these into the turning of administrative wheels: and if these succeed, it will matter little whether these be of the old London make, or of yet older Tibetan prayer. Even our picked senescents will thus grow senile, and our picked adolescents be subdued into adults of dull respectability to match.

So let us resist this on-coming of death, for which other new Indian Universities have been providing from their first days, and rather seek to ensure the opposite conditions, through freedom of learning and teaching, freedom also from the stereotyped Faculty restraints. Instead of always repeating the same courses in the same curricula, as the old Faculties limit and fix their associated professions wellnigh everywhere, let us rather see that we meet the needs of the changing world-situation, the progress of the times, the needs of people and their work, the needs of the City and Region accordingly.

Further Developments, Medical and Technical.

Let the School of Medicine for instance, vitalise its curriculum, too simply adopted from our traditional Western one, and mobilize itself for war with the many evils of Indore. Let it resolve to take an active and strenuous part in its cleansing from its present tyranny of plague and pestilences, and make it one of those cities of health to which patients come. No present department of study will thereby suffer, but all be intensified; and some to eminence and distinction throughout India.

So for other practical studies and applied sciences. What better Technical School of Manufactures, Commerce, Engineering, Architecture, Arts and Crafts than may be formed in a city beginning an industrial extension and development, so comprehensive as that which we have been in these plans and pages forecasting for Indore? This University would here again be of conspicuously regional and civic usefulness; so as this City development goes on in all these directions, as the New Industrial Town so notably hopes and promises, here is the very place to which eager and ambitious youth may come to learn and help: or if not, what hope or use would there be for such Technical facilities at all?

Return to Higher Studies.

But the University dose not live by 'bread-studies' alone. What hope then for pure Science? And for the Classics, the Humanities, and these in their highest forms?

Science admittedly grows beside, and along with its applications, as careers like Kelvin's or Pasteur's but conspicuously show. Language-studies too should flourish in this polyglot city, with its needs, and facilities accordingly, for instruction in vernaculars and in English as well. So why not let the University be polyglot from the first; neither exclusively English, nor of any single vernacular, as rival extremists too much arrange, or desire. The monopoly of a single language is a Western limitation; handed on from Latin to the modern language prevalent in each country. Yet this is being departed from with advantage: thus our Western University teaching of modern languages is normally conducted in these languages; students soon rise to the occasion, and accessory teachers appear to help them. There have long been beginnings of again teaching the classical languages as far as may be in the same way.

Degrees in Arts and Sciences.

But what of the official Faculties with their customary degrees; especially their B. Sc.'s too ignorant of the Humanities, their B. A.'s too ignorant of the Sciences?

This scheme, official though it at present so definitely is, has no place in the general history of Universities, and is but a late nineteenth century compromise. It was devised by the fossil, for the exclusion of the philistine from the traditional humanistic culture, and to preserve for this its endowments and distinctions; and it was far too lightly accepted by the scientific and practical men, whose education this lamentable division has since been narrowing. University reformers in both camps are now agreed that this was a mistake; for the humanist needs science, and the scientist needs humanities.

Here are again invoked the apparent difficulties of the shortness of life, the claims of specialisms, the needs of the division of labour. But as we have seen (page 47) these difficulties are greatly exaggerated, and where there is a will, there is a way.

Reunion of Humanistic and Scientific Studies.

I am here pleading, not in terms or theory, of scientific interest merely; but, as throughout this Report, am summarising a lifelong enquiry of travel and experience, of educational experiment and endeavour. Thus though repelled, like most, by the sterile "classical teaching" of my school and college days, my personal rebound was not solely to the natural sciences, but also to the classical and historic lands and cities, there to seek the essentials of the life and spirit, of the achievements—and, alas, the failures—of these high civilisations; and to teach them, so far as my limitations and resources admit, as in my Civic Exhibitions and Masques of Learning. The current renewal of higher education, of which all such endeavours are a part, is thus not only scientific, but humanistic. It values the ancient languages, indeed more than ever for their essential literature, if less for the supposed "discipline" of their outworn schoolbooks; and it seeks not only to exhume their material ruins, but imaginatively to reconstruct their cities. And with these their life and thought; even their mythology, with its symbolic rituals and philosophic initiations. It is not only an enquiry into their organisation of the sciences, social and organic, physical and mathematical, but a continuance of them. Not content with studying their Arts, architectural, sculptural and decorative, dramatic and musical, it continues these in the present. And uniting all these, the Citizen-

ship and City Design which gave these historic cities their impulse and their unity, are for us not larger past memories merely, but working inspirations. All this, for us of the West, is Neo-Hellenic: and this not less, but more vitally than was that too isolated, and therefore shortlived, recovery of ancient literature with some, and of ancient art with others, which we call the Renaissance, and upon the drying husks of which our western schools and colleges have since been mainly fed, and are even to this day vainly cramming.

The best classical teachers, as Oxford, Berlin, and many other Universities and Schools can show, are thus moving with the times; and such pioneers are educating successors in number. The long conflict of classical and modern studies—though accented to rival fanaticisms, of idolatry and iconoclasm, during the utilitarian age—is thus in sight of ending, through the enlightenment of both combatants. And is not the same progress also manifest in India?

Chapter XIV.

Conditions for a New University.

What then is needed to found a university?—a true University, of course. First of all the place; the City and the Region needing it; and then the conditions of growing it, from germ towards maturity. Not then any mere standard plan, or metal cast, taken from even the best existing moulds, be these the finest or the most fashionable, the oldest or the latest.

What then are these conditions? First of all, the intellectual movement and ferment of the times. It is in and from these, that Universities have arisen. And they have prospered in the measure not simply of their learning, but of their activity, their own internal movements, their intellectual hunger and desire. No mere scholars ever made a University; though these adorn and grace it, even become glories of it. It is in active enquiry and discussion that Athens, and Paris, have in different ages been of such foremost initiative; and so more or less everywhere. This City and State seem behind few regions of India in these respects; intellectuals and their varied mental activities are plainly in evidence here; and students, and their actual and potential teachers, are largely present. The University may thus be more than a simple union of existing Colleges and Institutes. The true University blossoms from its Culture-City, great or small; hence the significance not only of Athens or Paris aforesaid, but of Edinburgh or Boston (Harvard), of Leyden, Jena, Aberdeen, and a hundred more: and here conspicuously is the rational hope which lately initiated the University of Benares.

University Headship.

Yet for fermenting soma or wine, we need the wine-maker; for ore and furnace the steel-maker; and so on. So for the nascent University, we need the man—the Principal, as we nowadays call him, not entirely to advantage.

In my life of University wanderings, I have met many bearers of this high title, and variously performing its parts. Often retired veterans of other experience more or less adaptable; sometimes a kindly patriarch; sometimes a mere dignitary of

conventional stuffing, at one time sitting on the safety-valve of youth and at another letting its energies run to waste in play, when not to stagnation in routine. Sometimes a great head-janitor, perfected in his low-level efficiency. Often too, in America especially, a super-mendicant, returning cheque-laden to the college-treasurer from his rounds; yet too often also an anxious business-man, perplexed to make both ends meet.

But there are also greater Principals. One searches out and enlists a brilliant staff, varied as the Encyclopedia, from all over his country, and even distant lands; and so attracts students well-nigh as widely. Others are illustrious leaders in this or that faculty, classical or scientific, medical or educational, and with success accordingly. One sets his mind on good general instruction, and another towards honours standards; or towards the promotion of research. Others are all for public service, or for the professions, old or new; there politics and administration, or law. Some actively participate in civic affairs; and some even rise into statesmanship and power; of whom President Wilson is but the foremost example: but most shrink from this. One is a great librarian, a master of books, from their bibliography to their significance; and so he sees to thus vitalising all his college departments, sometimes even his City and State as well; while another's gifts lie in University Extension, and in other influences of a University upon its province.

Now all these, and more, are needed University activities; and the pity is they are not common. Why should they not be expected and, arranged for, in a new University—by offering fuller opportunities to members of the teaching and governing bodies who may be gifted in any of these ways, to exercise such functions, all of which no single man can possibly perform. A University thus needs a Higher Staff, in the full military sense; and to organise this, however difficult, is the most practical of problems. Stanford University (California) is suggestive here.

The Needed Headship.

Yet to evoke all these energies and more, what aptitudes are required! Such a Head must unite Indian traditions at their highest, with intellect at its openest. Beyond even this sympathetic attitude and synthetic culture, he needs organising energies of that uncommon order which can at once revive the oldest or most weary teachers, encourage and help on the youngest, and inspire the students above all; and, beyond and through all these, the citizens, until they feel the University as their own, as part of themselves, and henceforward of civic interest and pride. He must thus be much like a general in the field, as well as in his study-tent, alert to all changes of the situation, yet clear as to his general campaign; and vigilant not only of drill and discipline, but also of the health and spirit, even spirits, of all ranks. Yet not even this high military comparison suffices; for the powers here needed are more widely intellectual, more sympathetic also, in a word, far more of spiritual energy and influence than of temporal authority and command.

Return then to our comparison above of the modern University at its fullest, most encyclopedic, most Germanic in the best old sense, to an hotel whose guests are solitary musicians of varied instruments and aptitudes. The needed Principal, as Leader, has now to create with these the needed Post-Germanic University, Synthetic and Integral, yet Regional and Civic also. Thus to orchestrate all these, he has to be a many-sided lover, even performer of its music, much of a conductor, something even of a composer; and so he will find fitting place for every talent, every level of it; and thus he and they will reach their audience, and raise them to higher levels.

Present Conditions of University Renewal.

In the Middle Ages of Europe, as we have seen, this orchestration was given by religion; at the Renaissance by the revival of classic learning, philosophy, and art, by the idealism of culture and refinement, and again by the strifes of religion, even by the wars of nations. For the Encyclopedic and Germanic culture, the impulse was in the first place that of freedom of teaching and learning, freshness of enquiry and research. It was strengthened by technical applications of all kinds,—physical and chemical, mechanical, medical, and so on. Next came the impulse of the resultant philosophy—of which first the doctrine of Energy, next that of Darwinian struggle and survival, as Evolution, and finally the corresponding political doctrine, that of the State as supreme Power, and end in itself. And these are all culminating in the War today.

But if this be history (and who will gainsay it), no mere continuance or increase of any of these ideals will suffice our present needs: for, as we have seen, the nascent ideal is Reconstructive—and this not simply of local war-damages, but throughout West and East wellnigh alike. This reconstruction, as we have seen, is of more than material kind; and necessarily social and spiritual, as well as civic and regional. In a word it is Eu-psychic; that is re-religious, upon our modern spiral. Only in this spirit can it become truly re-constructive in town and country. For Reconstruction is definitely rur-urban, geo-technic, comprehensive, on the material side, and is thus synthetic for all the arts and sciences; and employs them, in their fullest perfection and detail, as Neotechnic. Yet all these depend upon the social life and purpose which urges and combines them.

General Programme for the Needed University.

Here then, on these general lines, is the programme of the needed University, active and militant in the best senses; and here are careers evoking and developing all the powers of principal and staff, of professors and students together, and of their associated City as well. All specialisms here find their place and opportunity, their appreciation as well. As even our brief history of Indore shows, we need to recall the past; and this not only in historic annals, but in highest traditions; for thus we realise the qualities of its local heritage, yet supplement its limitations from the fuller heritage of India and of the world. So with our survey of the present, with all its practical activities, its growing cultural interests. Yet above all, our faces must be set towards the future, seen as no vague Utopia, but a Eutopia, to be realised. To spiritualise and moralise,—that is to civicise. To intellectualise, that is to synthetise, and to re-specialise. Yet now not in dis-specialisms, but as con-specialism, and thus towards application in life. Here then are main problems of the needed University of the opening future. In the measure of these, let students become graduates in their University and effective in their City.

Here then our Principal will find his fullest leadership. He may be at once the birth-helper of the spirit of youth, redeeming it from its self-centredness as fully as can war, inspiring it to desire the fullest training towards life and career, with their distinctions more fully through service. To see the application and policy of all these many and varied careers of professional specialism, yet guide the dis-specialisms of to-day to become the con-specialisms of tomorrow, will need all his insight and tact, all his knowledge and statesmanship. As Universities are thus guided, (and many are more or less stirring) their rivalry will grow more generous, their jealousies abate; as each develops its civic and regional advantages of situation, its character and individuality as well.

Results on the Faculties of the University.

Yet in this reconstructive development, of University and City together, all faculties, old and new, will grow and strengthen. Technology, with its Engineering, Manufactures and Commerce, will advance the new Industrial Town, and help the old Bazars as well. Medicine will be busy, in the old town especially, and Public Health will advance both in old and new. Architecture and Horticulture will be active in new and old town.

Yet the older studies will not suffer. With Libraries growing richer, Museums more representative, History and Classics have as little to fear as modern tongues. With the reconstructive development of the modern Theatre, indoor and open-air alike, Literature and Drama, Music and Song, will revive their past, from sacred epics to simplest folk-song, yet also encourage the future: it is only the feebler and baser elements of the present which will fall out of sight.

Will Law suffer? In its present exaggeration and overcrowding, let us hope so, and even with confidence: for a youth of ambition will here no longer feel so restricted to the pleader's or the magistrate's career. But for Law at its best and highest, scrutinising and comparing the social web, for its repair, its better weaving henceforward, there is more need than ever (*e.g.* I page 156). The wisest and most impartial counsellors will all be needed for that adjustment of the present tension between Capital and Labour, on the peaceful adjustment of which hangs the future peace of the world no less than on the decisions of the present war; and thus also the future of this growingly industrial city.

But Religion? Historic ideals do not here fail of recognition; for what short of religion, and this in life, is the co-ordination of idealism, thought, and imagery? And these progressing not only towards subjective harmony, but also in action, and this ever higher and fuller? No longer simply of an personal or academic culture, but with our fellow-citizens in the world as well? Such Re-religion will not be condemned by the truly religious. Not even though it utilise all advances of the times; for today there are signs, in all historic faiths, that their best spirits may be, before long, re-expressing their doctrines in modern terms, and in modern applications. And this not least in Hinduism, as the recent visits of the regional Metropolitan have conspicuously showed.

Money Difficulties.

But I am asked—Where is the money for all this to come from? It is an old reply, and one deep in the best annals of every faith,—of every science too, every art no less—that the spirit was never purchased with money, nor is it thus purchasable.

And as a planner of University and Collegiate endeavours longer than even of City improvements, I have seen less need for much money than most suppose—indeed more dangers and evils from its abundance than from its scarcity. High thinking needs plain living for its survival. The first essential, the true and testing examination for a University, is to show how it can strive and struggle along in comparative poverty. This the Scottish Universities have long done, my own for choice; but Glasgow, Aberdeen and Edinburgh also; and they have thus kept in touch with their people, and have been educating them more deeply than have most, through generations, even centuries, while the richer universities of the sister country were still torpid and exclusive in their prosperity. And now that to the Scottish Universities also has come prosperity, in some respects even fatness, each

millionaire endowment lays on us new burdens, while seeming to lighten old ones. For separation is arising from our provinces and their people, even though our benefactors seek to widen our doors.

It was not the richest Brahmins who have been the most learned, nor the best supported Gurus who have been the most educative. Even Prince Siddhartha did not endow professorships, but left all to go out and teach himself. Socrates never thought of funds when founding the University of Athens; and his spiritual son and grandson, Plato and Aristotle, each but taught in his garden, as any citizen who has one may still do; while the poorer Stoics sat in a public Porch. Thus too arose the medieval Universities, Paris and the rest; and Oxford owes far more to the Franciscans—Yogis peculiarly vowed to poverty—than to the millions of Cecil Rhodes. Let us think less, then, of endowments. To the religious or the intellectual life, all beyond a simple maintenance, brings relaxation, even deterioration with it; and even introduces that new type, foreign to all true Universities through their best history, of torpid professoriate, attracted to education by its modern regularity of comfortable stipend, more easily earned than most. To select intellectuals, we do not need to compete in the market, where men of action fairly claim its current rates of reward: we nowadays too often but get the wrong man in this way, the failures from active careers. Let us earn what we can in practice, as lawyers, as doctors, as engineers, as writers or workers; but only a modest income as professors.

Public Generosities ! and how to Evoke them.

Yet there is ample scope for public generosity; and let us make these known. First the equipment of each Department, each Institute, each for its active spirits, and before the permanent foundation of their chairs. It is the best teacher who puts his subject first, as when a youth he longed for a book or an instrument, a microscope or a telescope, not thinking of pay, or pension for using it. Yet were not these our most formative days?

To initiate and then equip the University then, and on an adequate—moderate yet noble—scale, is our first task; but this as a spiritual order; in which each member views his own quest as a high intellectual adventure; and only thereafter, and secondarily, as a means of bread. After the observatory gets built, and the telescope is working nightly, the community will surely not be foolish enough to starve their astronomer.

With this attitude of its University Staff (—and where more readily than here in India?), the material establishment and equipment would be readily assured. Let there be effective demand for these, by men willing to investigate and teach: the scientific Institutes as above planned and more, with their equipment, would in a very few years be forthcoming, and from private sources rivalling and surpassing even public ones. The ascetic scholar may thus win his special library; and with his example the scientific man will not long lack his laboratory or even his Museum. Let the historian and the writer organise the University Theatre—free in open air, for the children, and then in the great Theatre for their parents; and the latter will pay for the former. And so on. Much of the above is the history of a recent Belgian University, in which most teachers have served for many years without pay at all. I have been in kindred adventures for many a year; and, as in each previous unconventional suggestion of this report, am speaking with some experimental certitude.

Hostel System.

With this economy a Hostel system of better type than that of many conventional ones will arise. In these grouped buildings, teachers and their families may

participate (albeit with all necessary privacy of life as well), as well as undergraduates. The usual costly and elaborate administration may be simplified: for students destined to a business career may thus be provided with practice and studentship together. I speak from long experience of such a group of associated Hostels, growing in capital from Rs. 6000/- to 12 lacs, and from a total of 10 persons to nearly 400; and can give details if required. For the moderate budget of such a hostel—or rather residential collegiate—scheme, gives encouraging augury, at once for the strengthening of higher education, and for its permanence; and this with modest, yet sufficient, conditions for all.

Further Applications.

Such lines of organisation might be pursued into further detail; and indeed into wellnigh every department of University work and life. But something of their general line of conception, with economy and practicability, may be made clear.

This financial difficulty we have already met on page 60, yet only so far; and it is now necessary to consider it more fully, if the University is not to be arrested in its growth, on elementary or simply technical levels, and is to deal effectively with those higher studies which are rightly the ambition and glory of every true University.

A Practical Question.

A practical question, before the University can be safely established in Indore, may be put in this form. Assuming the humanities, (and the elements of the physical sciences) already in the main provided by the existing colleges, how far is an adequate scientific development practicable? Can the essential ideas of the physical, biological, and social studies, as abstract and concrete, pure and applied, all here be taught, and alike in general theory and practical application, without developing the enormous elaboration and subdivision of labour in the multiplied departments and chairs of the great modern Universities?

Economical University Planning accordingly.

Here then, so far from entering into any abstract discussion, apparently irrelevant to customary planning, we have been going through a process as strictly practical as are the enquiries of the architect and the calculations of the engineer for the buildings they have to construct; and with the same resultant economy of space, materials and money. For our real and essential University, in all its necessary scientific departments, can thus be of moderate scale, and need not be the costly and interminable labyrinth of a great metropolitan University. Here our students may more clearly understand, more readily take in, more quickly appreciate and realise, this simple presentment of dominant scientific thought and education, work and war, than do those of larger institutions; for in these they too easily fail to see the tree for the leaves, or the forest for the trees—in a word, the principles, amid the overpowering wealth of details and sub-division of labour.

Illustration from a University Department usually costly.

Here an illustration may make this definite: that of one University department as type of many. In Edinburgh we have the vastest and richest Botanic Garden of any University of the world. When I first taught in this forty years ago, its upkeep cost about one lac per annum; and thus it was too vast for its students, and

even for us, its teachers; so that after seven years of exploring it, I realised its variety more than its order. I thence removed to my present chair in a small new college of a small University, without a Botanic Garden at all, and little and bad ground to make one; and at first with a capital outlay of Rs. 1000 instead of an income of a lac. My circumstances have slightly improved; so that I have spent sometimes as much as Rs. 2000 a year upon my garden: while my colleague in Edinburgh has long ago risen to two lacs for his; with corresponding increase of its treasures; whereas mine, in striking contrast to his, remains probably the smallest and poorest Botanic Garden among the Universities of Europe. But for that very reason, it is the simplest and the clearest; that one in which elemental conceptions of Botany can be most quickly and simply realised by an ordinarily intelligent student, within the limited time of his study-period. And thus my students have always passed examinations, on Edinburgh and other standards, not in lower proportion than the average one, but notably higher. So much for their elementary scientific instruction. But the same small Garden, and its correspondingly small Museum, Library, and Laboratories, are still large enough to afford an introduction to the higher and more general ideas of the science; so that my few senior students, and succession of assistants, have again done more, not less, than their peers in richer and apparently better-equipped institutions; in which however the principles of the science are less clearly to be discerned amid this very wealth of detail.

It will next be obvious that these two types of Botanic Garden complete one another: so that the best education for a young botanist is to begin in a small but clearly intelligible collection like mine; and thence to proceed to the richer and completer one, when armed with the general plan of the science which enables him to find his way throughout its labyrinth. In the Gardens here planned, will be found, I trust, something of both these advantages.

Application of the Preceding to University Planning.

My present thesis, as a University-planner will thus be clear; that it is not merely the necessity, but the advantage, of the small and comparatively poor University of a secondary capital—its opportunity, not merely its difficulty—to content itself with such simple and essential Institutes throughout.

It is in fact on this healthy limiting condition, of poverty compelling simplicity, *i. e.* restriction to essentials, (ofcourse distinguished from poverty as destitution), that the historic greatness of the small intellectual centres of the past depends, and also that of many of those of the present. Hence it is for instance that in my own small and poor University of St. Andrews we survive, intellectually and educationally, despite the apparently overwhelming wealth, numbers and modern prestige of the many larger and richer Universities, of Scotland and England; and similarly that the smaller German Universities have so long held their own, in face of all the magnitude of Leipzig and Berlin. And to take a final illustration from the world's University metropolis, Paris, it was from the little Clermont that Bergson brought the biocentric ideas which are now coruscating through the world from the "City of Light."

Here again is the justification of the simple planning of the Chemical, Geological and other Institutes, (I Chapter XXII) north of our proposed Zoological and Botanic Garden, as of these also. (I Chapters XVII-XIX). More simply the same principle and spirit of economy, yet of concentrated efficiency, underlies the planning of the Library and Museum group on the Peninsula (II

Chapters V—IX.) and above all, that of the planning of its Outlooks and the underlying storeys, with their simple equipment. Each is as it were, a small but sufficient type-garden of thought, with its essential seed, and seedlings; and hence enough to initiate growth and flower, even fruit and seed anew.

Chapter XV.

From "Examinations, and Research" to "Research, and Estimation".

Studies and Research.

It is a superstition of Universities, as they rise from the pre-Germanic to the sub-Germanic level, that "original research" is something beyond the comprehension of any beyond a very few graduates; and that these have to be specially prepared, and selected, through long rituals of previous lecturings and memorisings, applied with peculiar thoroughness. But this is too much as if, to ensure the spontaneous flow of a well, we first fill it up as fully as may be. Every true investigator knows that he is still a child-questioner, and more than ever: and like the child, he only takes in the relevant existing knowledge for his question, after he has come to ask it. Hence Darwin's peculiar success as an investigator was in association with his deep feeling of ignorance of nature, and even of technical branches of natural science, both of which he humbly, yet actively, recognised. So also with minor careers, as of every fertile investigator worth the name.

Research, then, is not something to be detached, and postponed, from the active current of College studies; this is but the sign of our stagnant or dead ones. With the active interest in the growing world of knowledge which is felt and expressed in a living "Seminar", of teachers and leading students together, and of these in helpful and studious comradeship with juniors, the fields of study are seen, and more or less by all together, as actively growing ones. Peculiarly is this obvious when a constructive or reconstructive task is in progress; hence the vivid interest of surgery, or of engineering, to its students. But the same is being done, and may, can, should, and will be done, for each and every advancing department of a University, from archaeology to zoology, from geometry to Chinese. Take now a single example (there are doubtless many) of this vital teaching, of and through research, and even by beginners, here in Indore. One of its active professors of economics, after an outdoor excursion, lately asked his students—"How is Indore fed?" No answer. "Well, go and see". The result exceeded his anticipations; for the students, roused to this elemental and varied enquiry, collected so actively, explored homes and bazars so thoroughly, that they and he had next to arrange the beginnings of an Economic Museum, round the class-room, for the 175 food samples they brought in. Next the discussion of these necessities, comforts, and luxuries raised economic questions of all kinds, and now of interest to the whole class. Hence a well-diffused stimulus to reading and further reference, and in many directions; and thence again to further observations, (by one of which Prof. Stanley Jevons and I were lately helped and stimulated in our respective work, and with acknowledgment accordingly).

"Research" is thus possible in every department of the Universities; and this at once collective and personal, and elementary as well as advanced. There will be

little need of any specialised and separate College for Research when all University departments thus open their doors and windows to its fresh and invigorating air.

Estimation v. Examination.

University critics appear but indefinite, when after all their destructive criticisms of Examinations, they have no remedy to propose; and this has too long and too commonly been the case. But here remedies are defined. First, that of definite record of the schoolboy's and student's work throughout his course. Secondly, the periodic, and more or less tutorial, estimation, along with him, and throughout his course, of his developing qualities, and his persisting defects. Thirdly, that final Estimation which appreciates his aptitudes and attainments at the close of his college studies; and which may also help him to find work, and begin his future career accordingly.

Such elements are of course more or less in existence already; and only need fuller organisation. Thus Estimation may be readily adjusted (1) to supply equivalents for the present examination pass and honours standards; and thus (2) to lead to the various degrees; for the old academic titles, of bachelor, master and doctor, are well-worth rescuing from their present deterioration through excess of memory tests, and through the present routine encouragement of cram and commonplace.

I shall be told, as usual, that this is "not practical"; yet my critic knows that the German doctorate is always thus obtained, as of old; *i. e.* after due period of study, by making a thesis, and sustaining it. But as an example of this definite change in a University where the examinations were, and still in general too much are, of the severest, take the Doctorate of Paris, in the form accessible to foreign students. This Doctorate, the most ancient and illustrious in the history of the academic world, can now—say rather, again—be obtained essentially on its old terms, of Estimation. The Indian student, like others, should indeed know that it is open to him, to deposit a personal and attested record of some years of serious studies (of any kind, in any place, and irrespective if need be of all previous examinations in France or elsewhere), together with a thesis.

This must be generally approved by majority of a competent jury of three, who also indicate a couple of questions suggested by and related to the subject of his thesis, but this in its wider bearings; and on these he submits not much "answers" as formerly, but personal essays or brief articles, written at his leisure, and sent in with the main thesis; but oral examination on these may be sufficient. When the main thesis has been approved, he is admitted to sustain it, *i. e.* to explain his view of his subject, set forth his proposed addition to knowledge, and reply to the jury's questions, objections and criticisms. After this ordeal, which I have seen last for well-nigh the traditional three hours, the jury retire to deliberate, and return with their verdict. And not simply of refusal or pass; or this latter with first or second class honours. To this the jury may add a rider; and when—as in the case of my late assistant (now Dr.) Marcel Hardy, though he had presented himself with a record of studies which would to any other University as yet have seemed informal, and without any previous examinational record whatsoever—this takes the form of a statement this "that is in our unanimous judgment, the best thesis, the best addition to our knowledge in this department, presented to the University within our experience", it is evident that such honours are real, and worth having; since at once encouraging and supporting the young investigator upon his career, and stimulating to others to seek to surpass in their turn.

Chapters V—IX.) and above all, that of the planning of its Outlooks and the underlying storeys, with their simple equipment. Each is as it were, a small but sufficient type-garden of thought, with its essential seed, and seedlings; and hence enough to initiate growth and flower, even fruit and seed anew.

Chapter XV.

From "Examinations, and Research" to "Research, and Estimation".

Studies and Research.

It is a superstition of Universities, as they rise from the pre-Germanic to the sub-Germanic level, that "original research" is something beyond the comprehension of any beyond a very few graduates; and that these have to be specially prepared, and selected, through long rituals of previous lecturings and memorisings, applied with peculiar thoroughness. But this is too much as if, to ensure the spontaneous flow of a well, we first fill it up as fully as may be. Every true investigator knows that he is still a child-questioner, and more than ever: and like the child, he only takes in the relevant existing knowledge for his question, after he has come to ask it. Hence Darwin's peculiar success as an investigator was in association with his deep feeling of ignorance of nature, and even of technical branches of natural science, both of which he humbly, yet actively, recognised. So also with minor careers, as of every fertile investigator worth the name.

Research, then, is not something to be detached, and postponed, from the active current of College studies; this is but the sign of our stagnant or dead ones. With the active interest in the growing world of knowledge which is felt and expressed in a living "Seminar", of teachers and leading students together, and of these in helpful and studious comradeship with juniors, the fields of study are seen, and more or less by all together, as actively growing ones. Peculiarly is this obvious when a constructive or reconstructive task is in progress; hence the vivid interest of surgery, or of engineering, to its students. But the same is being done, and may, can, should, and will be done, for each and every advancing department of a University, from archaeology to zoology, from geometry to Chinese. Take now a single example (there are doubtless many) of this vital teaching, of and through research, and even by beginners, here in Indore. One of its active professors of economics, after an outdoor excursion, lately asked his students—"How is Indore fed?" No answer. "Well, go and see". The result exceeded his anticipations; for the students, roused to this elemental and varied enquiry, collected so actively, explored homes and bazars so thoroughly, that they and he had next to arrange the beginnings of an Economic Museum, round the class-room, for the 175 food samples they brought in. Next the discussion of these necessities, comforts, and luxuries raised economic questions of all kinds, and now of interest to the whole class. Hence a well-diffused stimulus to reading and further reference, and in many directions; and thence again to further observations, (by one of which Prof. Stanley Jevons and I were lately helped and stimulated in our respective work, and with acknowledgment accordingly).

"Research" is thus possible in every department of the Universities; and this at once collective and personal, and elementary as well as advanced. There will be

little need of any specialised and separate College for Research when all University departments thus open their doors and windows to its fresh and invigorating air.

Estimation v. Examination.

University critics appear but indefinite, when after all their destructive criticisms of Examinations, they have no remedy to propose; and this has too long and too commonly been the case. But here remedies are defined. First, that of definite record of the schoolboy's and student's work throughout his course. Secondly, the periodic, and more or less tutorial, estimation, along with him, and throughout his course, of his developing qualities, and his persisting defects. Thirdly, that final Estimation which appreciates his aptitudes and attainments at the close of his college studies; and which may also help him to find work, and begin his future career accordingly.

Such elements are of course more or less in existence already; and only need fuller organisation. Thus Estimation may be readily adjusted (1) to supply equivalents for the present examination pass and honours standards; and thus (2) to lead to the various degrees; for the old academic titles, of bachelor, master and doctor, are well-worth rescuing from their present deterioration through excess of memory tests, and through the present routine encouragement of cram and commonplace.

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Now, though long disillusioned of examinations, one cannot teach for forty years and more without having taken part in examining: but this I have to some extent done in the spirit of research as well as of routine duty. I have thus looked into the examination methods of various leading Universities and of the British Civil Service. And as a student I have amused myself by experimentally testing (and thus criticising) examinations, by passing them in subjects of which I had no more real knowledge or interest than has a barrister, who gets up in a few evenings the general ideas, and technicalities, of a subject necessary for his case, and then forgets them; just like too many matriculates or graduates, (or myself in this illustration), when the day of urgency is over.

My examining has been as blameless as any, alike from the University's standpoint and those of its passes and its failures; yet I look back over this with no great satisfaction. Such as I can feel, is in cases where I have succeeded as an estimator of men; and this not simply of actual record and capacity, but of aptitude and latent capacity. Examiners, and with them the presiding mandarins of University administration, I have found clearheaded and hardworking, fair and honest also; it is their system I dissent from. I ask them to become estimators. In some measure of course they are this already, else they could not examine at all. But a far greater proportion of this element of estimation is needed: and above all its ideal—to discern young ability, however immature and unformed, and even where narrowed by limitations, or blemished by positive defects. For there are a few great principles and maxims of education, which are excluded by the examination system. Here for instance is one: "Correct faults by developing qualities"; and this no examiner can do. Again, instead of looking, as examiners must, to standards of pass or failure, of honours, first-class or second, the true educator is he who looks beyond all these, and puts them away as far as may be, even as childish things, so nerving his students towards their real career. So here again is a maxim of education: "What is a great life? It is a thought of youth, carried out in riper age." For classic examples of such estimation, take one or two among many. Recall that Glasgow professor of natural philosophy, not otherwise famous, who discerned the nascent inventor in his laboratory mechanic, James Watt; and so who guided him, set him, stirred him to the task of improving the then crude and imperfect steam-engine; and who thus became birth-helper to the central invention of modern times, and started this greatest of inventors upon his world-transforming career. Take again the kindly and discerning, but not otherwise illustrious, professor of Botany at Cambridge, who alone discerned the spark of genius in one of the most thorough-going of "Wasters", one who had failed in all ordinary respects at Cambridge, as at Edinburgh, as at school at Shrewsbury, and also in the eyes of his own father at home. But this was Darwin: and, as with us, boys who may fail on land often get a new chance at sea, Henslow got him his chance in life, of joining the "Voyage of the Beagle", which his discoveries have made immortal. Yet even this only by personal pleading, after a first emphatic rejection by its Captain, Fitzroy. Nor was he a common-place martinet, but an eminent physiognomist, and usually successful as a judge of character; here however seeing at a glance the youth's obvious defects, and missing his latent qualities. Yet before six weeks voyage, the captain discovered the flame of genius, under its unpromising disguise, revised his first incomplete estimate, and made the generous amends of surrendering his own cabin—the sacred place of the ship—to become this youth's study, laboratory and museum. On this section of the story, examiners and estimators alike may reflect with advantage.

But every school and college failure, I shall of course be told, is not a Darwin, nor is every decent young mechanic a Watt. So far true: but truer still is this

question to the examiner—Do you really know? Is your system—your testing of present knowledge—adequate to discern this promise? And since most inventors or naturalists, most men of letters and the rest, are below "genius", their estimation is all the more difficult, yet also well worth learning. Indeed what is this but the supreme practical research possible to education, as the service of the future?

The conventional reply is, that the mass of students are not even of the second or third rank of originality, and that scholastic and academic methods must be adapted to mediocrity. That they are so is too true. But that they should not be, is evidenced, not only by the War as already urged above, (page 13) but in the career of every effective teacher who forms a true school of thought or application. For he not only produces distinguished men; but he and they together inspire more of the mass of students as well, to rise above this mediocrity. And without having found a Darwin among my own students, I have so often verified the above, alike in experience, and in observation of other estimative teachers in most countries, to be as sure of this method as of anything in the art and applied science of Education.

Take a present example of this estimation, and now of a general kind. Here in Indore, without claiming to discern whether there be genius or no, I find both the number and the quality of its intellectuals not below the averages which I meet in other cities in my wandering profession, but distinctly above them. I then compare my impressions with those of another newcomer to Indore; and one of yet wider experience in his way, the Rector of the City High School; and I am encouraged to find that he similarly estimates his schoolboys, and his staff of teachers, as of an average above, and not below, those of his previous varied experience. Now is not this reasonably encouraging? Just as there is promise for ironworks where the ore is not only abundant, but above average, so is there not here promise for the future University?

A Practical Proposal during Change.

But University methods are hard and slow to revolutionise; and the progressive introduction of Estimation in place of Examination is delayed by the difficulty—happily not impossibility—of re-educating Examiners into Estimators; by the difficulties too, of re-educating University governing bodies, and their public, the graduates, the parents, the students themselves. So meantime let us also, and at once, turn to ask—What is to be done for that sad majority, who fail in Matriculation or later examinations, and who fall rather than rise accordingly; though a few, ofcourse, rise beyond anticipation, despite heavier disadvantages against them, than ever in the world before. Above all, let us rescue these who at present go on failing, till their hearts are embittered or broken, and their precious years of formative plasticity and growth are wasted in drudgery, which comes to nothing. Beginning then with the schools, let us increase the provision of alternative courses of education and towards other outlets,—Agricultural, Technical, Artistic &c. Hence the need of the School Gardens and Workshops already pled for, (I page 149) and these on an even greater scale than that of my suggestions, on plan for City High School, Normal College &c. With such constructive outlets for its present non-matriculantes and others, every University class, as well as every school matriculation class, would be far more effective, with its smaller numbers.

This change would next react on the University itself; for it cannot go on ignoring those whom such reformed secondary education would soon send forth, to

till the soil and build the city; and these more efficiently than heretofore. Its Technical Departments would next recognise the beginning of this efficiency in school days as a true and practical matriculation; and so would begin to accept and to train these very youths, whom present examinations reject and exclude, for their useful careers of reconstruction, alike in Indore and in India.

With this more definite self-realisation of the University—as now leading, and not as hitherto lagging, in practical life and constructive usefulness—its schools of pure Science, and of the Humanities, would also be strengthened. For even pure science advances through its applications, as well as is illuminative towards these: and it is also more responsive to the social spirit which surrounds it than it often knows. Thus our evolution theories since Darwin's day, reflect the progress of invention, and also the Malthusian economics of Darwin's youth. And now in Bergson's day, and this more fully than he or his readers realise, his theories express the regional surveys of his first University, combined with the humanistic aspiration which is so deep in the spirit of Paris.

In such ways, and a hundred more, the University may be revived, even in its most cloistered or case-hardened departments; and so it will send out each new generation of youth into all the professions with larger proportion of leadership and productivity. Literature, History, Philosophy, Medicine, Law and Religion have thus nothing to fear, but much to hope, from every such reform of the University, in which educational psychology and reconstructive purpose are applied together.

Yet a high Education official, after practically admitting, even agreeing with, such criticism at that above, said to me "The University graduates, and the parents, will have things as they are, examinations and all. So what can I do: if I criticise, they think I am reactionary". Too true; yet there are graduates who know better; and also parents who are tiring—as parents did of old—of thus "passing their children through the fire to Moloch".

Estimation for Certificates and Diplomas.

In the existing Colleges, the present rights of duly qualified students to present themselves for the examinations of the Allahabad University, will not in any way be interfered with. Yet in time, it may be expected that the State of Indore, with co-operation from neighbour States of Central India, may develop the beginnings here pled for to full University completeness, with constitution and organisation accordingly. But the essential pleading of the present Report will have missed its purpose, if it be understood as arguing for immediate development of this kind: for the experience of new Universities in India, and too much elsewhere as well, is surely convincing, that in the present stage of University thought (and this particularly, but by no means exclusively, among the administrative and official classes everywhere), such new centres suffer from that over-regulation and over-examination which has above been criticised, too much as do existing ones.

Enough for the years of such developments of higher education as are here pled for, and partly planned for, if at first Certificates be granted, embodying the student's record of studies, with such Estimate of his knowledge and experience, his original and practical powers, as his teachers can attest. It is no doubt difficult thus to substitute Estimation for Examination: but it is time to begin to give this a trial.

The Indore State might soon, indeed from the first, recognise such certificates, and an aggregate of these, as equivalent to the customary examination status, at pass standards; at the various levels of University tests, from matriculation upwards, to graduation in Arts or Science. There can be little fear but that the value of such Certificates and Estimates would steadily rise, and this even in comparison with conventional standards. Probably indeed so much so, through the work of men thus educated and estimated, that the question of modifying the established University methods, from Examination towards Estimation, and with this their teaching methods accordingly, would be raised elsewhere before long.

The nascent University of Indore would thus come to hold a better place among the teaching institutions of India by coming in, in this and other ways above suggested, at the very head of University progress; instead of meekly following at the tail of their conventional organization, as other new Universities have too much done.

Nor would this improved standing be academic or local only. This at first small, and informal, yet real and vital, University of Indore and of Central India, through thus actively taking its manifold part in the renewing of Indore, and acting as its needed Civic College, would send out its students and professional men year by year of increasing efficiency, intensified through their experience. It would thus be from the first a more vital and attractive centre for its varied region; and soon a force in India, even an influence beyond, as one of the centres of that renewal of Universities which is at length beginning.

I may again be asked—Why this note of confidence, in face of the well-known and long-established Institutions of greater States and Cities, with all their attractions, their numbers, prestige, and influence, and in face also of new Universities of wealth and ambition? The answers to this are given already, throughout these pages: but if any be repeated and summarised, let it be this—that with the freedom of teaching and freedom of learning here advocated, and with clear participation in and responsibility to the advancing world of knowledge on one hand, and to the life and needs of their City and Region on the other, teachers and students rise to both opportunities, and this in a degree far above ordinary standards, exceeding present anticipations, and thus stimulating and helpful to other Universities.

Chapter XVI.

Conclusion of University Report—though incomplete.

Here I cut short a long final Chapter, or rather several; dealing with the vast problem of forecasting the future University, in other and more abstract ways than these especially insisted on here, which are mainly from the civic and reconstructive stand-point. For, though that is affirmed, for the present and opening time, as vital and fundamental—and this whether existing institutions with their teachers and students as yet recognise it, or no—it is also needful, for a complete University Report, to review and to discuss, as widely as may be, the existing and changing world of thought and education; viewed, as these commonly are, apart from civic and regional conditions.

Yet as a City can only be adequately understood, and planned for, in the measure of our survey of its past and present, our interpretation of its health and diseases, its poverties and wealths, its qualities and defects, and also after careful forecast of

its opening future; so the same is needed for the University, and if possible yet more. Only after our survey of its past and present is made, and our interpretations broadly cleared up, our forecast similarly made, can full planning be possible.

This has always been the case, as at each period of University building. Hence the beauty of Oxford and Cambridge, from Medieval and Renaissance times: hence the formalism which these and other places show, from the coming in of the utilitarian period. Hence again the mock-medieval edifices of the romantics; and hence the pompous architectural "camouflage" so frequent in academic buildings of the present (or pre-war) order. In the planning of educational buildings here, so far as we have yet gone, other constructive ideas and spirit are now dominant in their turn.

University Theses, here Indicated, but Postponed.

But all such interpretations and forecasts are as yet controversial: and so need to be stated as Theses, to challenge discussion accordingly. Hence largely the form of the preceding chapters, as far as they go. For the present however, there are already theses enough; and the balance may better be presented, as if all goes well it may be, to existing Universities; and this as part of the challenge—and call—of the University Militant, as seeking to express itself in the University Post-Germanic; that is, not only Civic and Regional, as here mainly so far; but also reorganised from other main points of view.

What are these? Too numerous, comprehensive and varied, for treatment within these limits; since not only raising all the questions touched by the present Calcutta University Commission, but more beyond them—questions, and correspondingly theses, philosophical, ethical, historic, and thus, inevitably, even religious and re-religious. Questions and theses scientific; and these not only in details of science and its teaching, but of the best groupings and perspectives of the sciences. Theses evolutionary therefore also; and so becoming philosophical again—as notably in the controversy already mentioned (page 52), as of supreme importance for these opening times—between the current Mechano-centric view of science, which our present teaching for the most part expresses, and the Biocentric view, which now claims to reorganise all studies and teaching from the standpoint of life.

Hence again questions and theses educational; and thus psychological, and necessarily ethical; practical also in many ways; and hence pedagogic, in general, and for the studies of the professions. Finally, questions of the needed organisation for all this; in short the resulting Administration: but this evidently as it arises in working. That is, last, not first; for it is from this mistaken beginning, within the skeleton grip of the past, instead of with minds stretching towards the future, that most new and recent university foundations are already so disappointing to all concerned.

Something of all this has indeed been expressed in these chapters; but more systematic treatment is not possible within the present limits, and so must be left to a separate volume. This however, will bear the present problem clearly in mind, and seek to make good the limitations of the present Report as far as may be; and it will answer, or acknowledge and profit by, such criticisms as this may receive.

Educational Systems Contrasted: as of Spirit or Letter.

No history or literature more frequently, fully and clearly than those of India, expresses the essential drama of all peoples. For has not India oftenest told of the incoming, embodiment and uprising of the Spirit in Life, the expression of this

in the Voice, the Deed, the Word; and then has she not also shown the fixation of these, as the form, the fact, the letter? "Every spirit makes its house, and afterwards the house confines the spirit;" and so in time this becomes its sepulchre, or its cenotaph. Is not this the history of the Avatars, the Faiths, the Books of India; and is not the like plain in the West, from Israel and Greece, to modern issues? Is it not also the process of individual development in Nature; from seed and egg to tree and bird, to flower and song; and yet thereafter, it may be, in time, to fossils?

At the historic moment when the Indian spirit was most eclipsed, its embodiments most fallen, its voice and word most silent, its very letter most dead, there came,—thanks to an eminent administrator, as he outlived his glowing youth—among other imports from the West, its corresponding "Letters," even some "Science" to match; and along with these a revived oriental test of both, that of Examination, in words, in facts, and to the very letter, even perfected to numbers as well.

These two instruction systems, so different, yet so concordant in their decline, might have been made for each other; and they naturally became united accordingly. The resultant spread of Universities and Colleges, and now also of Schools, is thus (with rare exceptions) of their offspring. The culture-product of these is naturally the sum—or the resultant—of their distinctive qualities; unimpeachable to the last letter, the latest examination figures. But the sign is now apparent, as a negative one. The resultant is a minus quantity; intellectual poverty instead of wealth.

The spirit and purpose of the present Report,—as to how best higher education may here be furthered—is thus re-evolutionary. And this term the established system—as not given to observation, not interested in current letters, and disapproving new terms as "neologisms"—may read as revolutionary. For not content with the letter of the past, whether of East or West, we are still less so with their product. We seek now to revive each spirit, of East and West alike, once more to raise each by the highest power of the other, and even to see whether there be not means of combining these powers anew. Must not the results, from the first, now be positive?—even considerable? Perhaps beyond anticipations?

Here however, for the present, an incomplete conclusion, as to the ways of realising this, beyond a modest start of it; and also the adjournment of further development of this theme to the Bose Institute, since methods such as those above advocated are there, at any rate, in experimental progress, and with such ideals informing them. Nor—to do existing University departments justice—are these absent elsewhere, but often the contrary. The criticisms of this report are in the main of institutional trammels, as limiting individual efforts, themselves often admirable.

So enough here, and for the time, if "we learn by living"; and set in action our moderate beginnings, of library and institutes and gardens, with which no school of University thought can seriously quarrel. As these grow and develop, they can be complemented: it is as needs arise, and become expressed, that they can best be provided for.

University Finance—after Estimates.

After above making it clear that the Civic viewpoint, here predominant, is not regarded as the only one, it is best in the present City Report not to enter farther upon others. And this the more since this civic presentment of higher education is here far from exhausted. For after we have discussed the Estimates for City Improvements and Development, which, with all their economies, necessarily

mount up to a very considerable total, we shall see that it is not merely to the State budget, with its many claims and calls, that we must look for the necessary means for great City developments, which are now required within comparatively few years. Where then can we look? The answer, unconventional though it be, is,—to Education, and this especially Higher Education; since if and when promoted, and undertaken, in the necessary reconstructive spirit, this is capable of attaining an economic and social efficiency, and of producing a corresponding civic return, far beyond anything as yet ordinarily recognised by established education-systems and institutions, whether in India or in Britain. For all these have so long been failing adequately to meet the needs of their generation—whether those of the student or of the community—that they have for the most part come to accept these failures as “normal”; and to have this normal failure carried on unquestioningly, even “efficiently”, as their “system”, by administrations made to match.

But the time of reconstruction, both educational and general, is now seen to be opening, especially since the War; here as in the West, and in Cities and Universities alike. These have no longer to be considered separately, as has been customary during the decline of both, and habitual to minds formed amid this decline, and acceptant of it. The converse is now becoming manifest. To the dry bones of their past, long mouldering on opposite sides of the valley, there is coming again the call of Life. Bone is joining to bone, and here and there already the citizen and the student is rising up anew, and others round him. But the call is no longer here merely to action, or there to thought; but now for both, in their alternation and interaction, as life more abundantly.

For the City cannot be renewed without the re-awakening of the life of thought, and this to the full—in creative ideals and images therefore, no less than of ideas, syntheses, philosophies. Thought must recall the vital elements of all religions, arts and literatures, no less than of the sciences, and these not merely dis-specialised, but comprehending Man and Nature. But this is the life of the true University; and hence to revive it needs more than mere “University reform”. To be re-formed, it must be born of the City, and of her travail. It will not remain in its cradle, or its cloister of dreams, but awaken to their significance; and so come forth to give these worthy expression, and make them of service and guidance in its mother-city’s daily life of action.

Thought and action at their highest, are thus the complementary energies of humanity in evolving each of its varied communities. University-City and City-University will thus be increasingly identified. Our City of Thought is thus no mere “paper-city”; but has to become one with the City in Deed.

The purse-keepers of Finance will thus come more fully to understand what they are financing; not merely the City to be more industrial, and the University to be more studious. The Culture-City has not two separate lives, but increasingly one; complex though this be. Some experience of life and of helpful participation in its tasks has been, is, and must be fundamental to every higher education worth the name. And that education “pays”, in the humblest sense, as well as in the highest, is also known, though both still far from sufficiently.

This is obviously a larger claim than those usually made for education: and so by some may be rejected as “Utopian,” a word which of course saves its user all further consideration. But those purposive of City Development on one hand, and responsible for its finance on the other, may be willing to consider the treatment of Social Finance, which follows after that of Estimates; and which indicates how

Education, Higher, Secondary and even Primary, may be put on lines more productive than have been achieved by the past generation, even with all its would-be utilitarians.

In briefest summary, then, I look to University and City, and these in the not distant future, as as increasingly paying their way together; and thus as growing helps to the State, not mere growing burdens upon its exchequer. Capital outlays are ofcourse necessary; but these, it may be shown, are essentially productive ones.

Immediate Practical Possibilities in Indore.

First of all however, it is needful to show that such proposed capital outlays are in themselves not immoderate.

In the first part of this Report, the simplest necessities,—as of water, of drainage and sanitation, of vegetables and fruit in gardens, of dwellings, and the like—have been attended to, with developed planning, and corresponding economies—and those, as Estimates will show, at half, a third, or a fifth of customary rates. Again economies in School-building were pointed to, and pled for; and next, Library, Museum and Tower were outlined, in efficient, yet simple, and relatively inexpensive, form. So now it may be for the University as a whole; indeed why not, as such institutions go, the greatest economy of all? For a small staff, chosen and eager to teach together, and so correlating their teaching, (*e. g.* in one group starting, as civic students might well do, with the Gazetteer—*i. e.* with Indore place, work and people, and thence applying themselves to people, work and place,) may accomplish more for education, in these subjects, higher, secondary and primary too, than has yet been done in larger centres, with their wealth and numbers scattered into dis-specialised endeavours. This, we may be told, is impossible; but Dr. Sadler and I have alike been making such correlations of studies, in our Summer Schools at Oxford and Edinburgh, year after year, in fact throughout the past generation. Last year, the Darjeeling Summer Meeting made a beginning of much the same kind. This movement is also advancing in regular University work, as in America; witness the concentration towards Education characteristic of Clark University; or that towards Rural Development and Education together, so eminently productive in the Universities of various Western States. European examples have also been indicated, as notably that of Denmark, (page 7) of which at least the economic return is now fully appreciated in other countries.

Conclusion.

Here in Indore are groups of buildings proposed, and broadly planned, and estimated for *viz.* (1) that of Tower, Museum, and Library, Amphitheatre and Theatre, and (2) that of Institutes of Pure and applied Sciences,—Geology, Chemistry Agriculture, etc.—with associated Zoological, Botanic and Horticultural Gardens.

When these are associated with the existing Colleges, and utilised by them, as they increasingly may be, also by teachers and others, we shall have here a fuller and more workable combination, for the beginnings of a New University, in this civic, synthetic and educative spirit, reconstructive, rural, and industrial also, than has been realised elsewhere: so that the nascent University, with its moderate scale and means, should make a better start accordingly.

The old days of Cities materially small, yet culturally great, are thus coming within our hope, and even reach, once more.

SECTION II.

Estimates; &c.

Chapter XVII.

Introductory to Estimates.

Magnitude of Schemes.

So far now these many proposals of Parts I and II, with their corresponding plans. It is now time to be counting and summing up their cost; and this—even were it not War-time, with its special calls and difficulties—may well be a matter of some anxiety. For though many cities have had, or now have, proportionally greater schemes of this and that kind, a more comprehensive set of City Improvements has never before come within my own opportunities, nor, so far as I know, in those of any town-planner heretofore. For here are schemes for the repair and reorganization of the old city throughout every one of its Mohallas, and this to the smallest house, the most out of the way lane, the last rubbish-heap: and all with improved Communications, from centre to circumference. Here too are plans for Garden Suburbs, in aggregate exceeding in magnitude the famous prototype, of Hampstead for London, and thus proportionally far larger. The New Industrial Town is beginning on a larger scale than is the type Garden City, of Letchworth. And with all this are the corresponding provisions for increase of Water-supply, with thorough-going Sanitation and River Purification, with replanned and simplified Drainage. With this again, development of Gardens, on a scale fuller than that of other Garden Suburbs and Garden Cities, and these of every kind, from simple sanitarian and market-gardening uses, to those of City amenity; and thence again to the development of Horticultural and Zoological Gardens, in variety, if not magnitude, comparable to those of larger capitals. Linking up the existing Parks and Gardens, great and small, alike of the City and the Palaces, accompanying the purified Rivers, and raising the Nullas on east and west, into river-beauty as well, we have the essential features of a Park System, which may before many years be made as comprehensive as in ambitious American cities. Within this materially improving environment, the centres of religion are ofcourse respected; their neighbourhoods improved with the rest, and their ideal claims also advanced; as notably with the improvement of the Chhatri Bagh as Sacred Park of Indore; while the Purification of the Rivers has its further reward down their united stream, one not negligible for the venerable religious metropolis of Ujjain, only second to Benares itself.

Leaving these considerations founded in past history, and returning to the opening future, here are proposals for the main beginnings of a new University, and this not only planned for the service of Indore and of Central India, but—since beginning with realities of function, and postponing externalities of form—from the first attractive and suggestive to active minds, even in older and larger Universities.

With such many-sided increase of the City's magnitude and activities, both industrial and cultural, and with this development of buildings, both domestic and public, a further development of the Arts is increasingly needed. And this not only

of architecture and its associated arts and crafts, with their setting in the great art of gardening; but beyond these, the arts of theatre and amphitheatre, of music and festival.

Appeal for Strict Economy.

So if any scheme of Town-planning—say now of City Design—can shock, or at least alarm, the practical men and purse-holders of the community, here surely it is. And I choose this aggressive method of now presenting its Estimates in order to put these critics upon their mettle, and to profit by the close economy with which they must thus feel bound to consider every one of the schemes aforesaid. In this way they will also rid themselves of certain vague prejudices everywhere met with by the town-planner—the surviving feeling of the would-be utilitarian period—that when things are beautiful they are unpractical and extravagant, while when ugly, however costly, they are somehow “practical”. Yet this is but the superstition of paleotechnic industry (page 16), which it is the function of town-planning to help forward into the opening neotechnic order, in which the reverse is seen to be true. For economy and beauty are everywhere the index of healthy life, and so go well together. The Electric Supply here urged upon the Industrial Town is thus a valuable economy, as well as a return of amenity, in contrast with the smoking chimneys and dusty coal-heaps of the past; and similarly the Drainage Gardens, although pleasant, and fruitful, will be found to cost but a fraction of that profuse extravagance lavished upon nineteenth century sewers, and repeatedly proposed for culmination here. Similarly, this living initiative of a University, as Civic College, frankly embracing nature, art and beauty, and bringing them within its range of educational and civic service, will be found to cost a mere fraction of any previous one, since not dis-specialised and formalised from the first. And so on throughout these Estimates.

Schemes as Legitimate Developments of Indore.

Finally these schemes and plans must not be reviewed simply as the mere individual devices of their designer, which Indore can now execute or leave, as it pleases. No scheme here submitted is a mere arbitrary invention: it is a legitimate birth of Indore. Witness alike the new Industrial Town, the Residential Suburbs, or the growth of the Colleges and Culture-institutions of the City towards the University level. The Cleansing and Sanitation, the Repair and Renewal of the old City, and the improvement of Road Communications, and of Railway Station, are similar definite needs. The purified Rivers, the Park and Garden system, are at once measures towards Public Health, and provision towards its development to the highest levels.

Such birth-helping, such conservative surgery, and such constructive improvement are thus alike needed by the City; yet its problem here is to see that these various needs are met, their accessory tasks performed, not only as efficiently as may be, but as economically as well. So now to our Estimates.

Order of Presentment.

The order in which these are given below is mainly that of convenience in estimating, and follows, as far as may be, their treatment in the preceding chapters of Parts I & II. The order of execution which may be most desirable, and most practicable, is a different matter, for subsequent consideration.

Chapter XVIII.

Water and Drainage Estimates.

I. Water Estimates.

(see Part I Chapter VII)

First in order of human necessity, and so in treatment in this Report, is Water. Here I note with satisfaction, that, for the simple Water Scheme described, and amicably agreed on—I page 45, the Chief Engineer's Estimate amounts only to Rs. 27000/-. Of this, moreover, only Rs. 19000/- are fresh expenditure required; the balance of Rs. 8000/- being represented by pipes lying in store from the P. W. D. scheme, completed in 1914.

We are agreed that the above moderate Water Scheme will meet requirements for some time to come; save that some further allowance should be made for the provision of additional Stand-posts for the City; say about Rs. 20,000.

Yet in view of the City's extending future, it is well to be looking forward. Thus the cleansing of Piplia Tank, may be done within the ordinary municipal Water Budget; but the removal, to a better and safer site, of its village, is a special outlay which should be considered as soon as may be. As sufficient for this, say Rs. 20,000.

The State Geologist has lately observed the borrow-pits in Bilaoli Tank (I page 47), and is of opinion that silting up is in slow but appreciable progress. (If and when additional water is required I suggest that this progress may be gently, yet not ineffectively aided, by stirring up the surface of the mud in their neighbourhood; but for this inexpensive process no special estimate need be offered).

The repairs of the village Bunds above Bilaoli (I page 47) should also be kept in view: but this, as in the main a rural outlay of direct agricultural return, and only indirectly useful to the City, need not here be included.

For the extension of Water Supply to the Suburbs, the expenditure will be quite gradual, accompanying Road extension, and reckoned for along with this. Recoupment of these outlays may be by the sale, or ground-renting, of the adjacent holdings, and included in the rates fixed for these. Presumably also in the future, a Water-Rate will come to be levied annually, as in most cities.

For the new Industrial Town a large New Well should be sunk; and this will be found substantially cheaper than an extension of the present system (I. pages 46 and 48). From this well, water can be pumped to standposts, provided as required by the growth of the New Town. The cost of this well etc. is reckoned with outlays for the New Industrial Town, to be considered later.

Total of Water Estimates, Rs. 67,000.

II. Drainage Estimates.

(see Part I. Chapter VIII and Chapters XXXVII-XL)

Of the first Drainage Scheme (at Lacs 35) so opportunely criticised by Mr. Lanchester, I need not again speak; nor more than briefly recall its recent revival, in a form reduced more largely in its initial estimate (of Lacs 15) than in its ultimate completeness. However, taking this estimate, as indicated, at Lacs 15, (but plus x where x cannot be less than Lacs 6, and can hardly but be far more)

—the cost of my main alternative recommendations (I Chapters XXXVIII-XXXIX) may now be stated. Yet comparison of this with the preceding scheme is difficult. For its first item, not considered in previous or customary Drainage Schemes, is that above argued for in I Chapter XXI etc. viz. the Cleansing of the Rivers and Nullas. This has been shown yet more urgent than in my pleading for it, by a separate Report since obtained; that of the Mosquito Survey by Mr. M. O. T. Iyengar, Entomologist to the Bengal Malaria Survey under Dr. Bentley. The striking and convincing results of this Report will be found in the Appendix.

A—Cleansing and Improvement of Rivers and Nullas.

Here is a very considerable length to be dealt with: (a) from the lowest Residency Bund, and also (b) from Martandpala, downwards to the Union above Krishnapura bridge, and (c) thence to the Railway Bridge below Indore over the united River, also (d) of Piplia Nulla, from Pachkuia to Kumawatpura and (e) of Palasia Nulla, from Gwaltoli to the main River. To these improvements moreover must in time be added (f) the further cleansing of the main River, as it runs through the Industrial Town for another mile below the Railway Bridge. Say therefore a total length of nearly 50,000 ft. or about nine miles when completed.

To get the Rivers into good condition, we must look to the trimming of the banks, and the removal of the mud over-grown with grass (and thus not flushed away by the opening of the bunds each rainy season). These will yield valuable manurial top-dressing to adjacent river banks, fields and gardens; and also abate the supply of the nutriment to mosquito larvæ which they at present give. To do this thoroughly, we therefore make a liberal and ample estimate.

Rivers are taken at average breadth for cleansing of 50 ft., and the raised Nullas at 25 ft. Cleansing is averaged at 1 ft. Hence say	2,000,000 cubic ft. @ Rs. 10 per 1000 cft.	...	...	= Rs. 20,000
Add for Planting etc.	...	...	...	5,000
				<hr/> Total Rs. 25,000

In view of the diminution of the Mosquito-pest, and other dangers pointed out in Mr. Iyengar's Report—quite apart from the added beauty thus given, as notably by transforming the two present untidy Nullas into equivalents of the Residency River—the above outlay will be well rewarded.

The construction of Bunds upon these Nullas will come with that of the Bridges required for the development of their neighbourhood, as planned; and hence is left to their estimates.

A substantial part of these expenditures is chargeable to the New Industrial Town: yet in view of the unity of the River Scheme, and also of the growing range of Parkways extending along their course (I. pages 117 and 170) it is best to keep this whole scheme together, though its execution below City limits will be gradual, and as required.

B—Drainage Gardens for the City Area.

(I Chapter XI-XIII and XXXIX.)

Here it is difficult to estimate necessary capital outlays. Compensation for portions of land not already the City's property will be required. For preparation, including levelling, and initial cultivation and planting, with provision of movable latrines etc., there are as yet incomplete data. But, after due consultations, it is estimated

that an outlay of Rs. 750 per acre should be not only a full, but an ample, estimate; on which economy may be made with experience, as this develops.

Taking then this high figure for the complete Scheme for the existing City, with minor extensions, the Garden Area required (I p. 190) is 147 acres. 147 acres @ Rs. 750	...	= Rs. 1,10,250
Add for contingencies.	...	14,750
		Total Rs. 1,25,000

C—Existing Surface Drains: Repair and Improvement: with Additions.

This is yet another item excluded from previous schemes, and also not strictly chargeable to the present one. Still, it has here been estimated, for the Main City at	...	...	Rs. 25,000
Two miles of additional Surface Drains should also be made now.			15,000
With this too, may be taken the supply of connecting Surface Drains from the existing City standposts, which was omitted at the time of their construction	...	...	Rs. 11,000
		Total for Drains	51,000
		The grand total of all these items, being Rs. ...	2,01,000

(say Lacs 2) constitutes the complete Drainage Scheme, recommended (I Chap. XXXIX), as sufficient for the essential sanitation and requirements of the existing City, even with provision for arrears of the past; and including the improvement of the River and Nullas of the Industrial Town as well.

D. Underground Drains.

But if and when required, Underground Main Drains, replacing those criticised in Chapter VIII, and as described in Chapter XL and shown on Plan VIII, may be laid as follows:—

Excavation 29, 980 ft. at a full average depth of 6 ft, and breadth 2½ ft. 4,50,000 cubic feet @ Rs. 10 per 1000 cft.	...	Rs. 4,500
Laying of 12" Stoneware pipes, and junctions with existing drains 29, 980 ft @ Rs. 6 per running foot	...	1,79,880
Manholes, Inspection Chambers etc. 300 Nos. @ 250/-	...	75,000
Junctions with existing Latrines etc.	...	20,000
		Total Rs. 2,79,380
Add for contingencies	...	20,720
		Total Rs. 3,00,000

The economy predicted (in I pages 60, 63 and 192) over the scheme criticised will now be seen to have been amply justified. For as just stated, the first sum, of 2 Lacs—(and this including Cleansing of Rivers and Nullas, provision of 147 acres of Gardens, and repair of Surface Drains—all being matters not considered by

previous Schemes, nor in customary Estimates)—is all that here recommended. As regards this second sum, of Lacs 3, the warning given at I pages 60-62 may again be recalled; since this applies equally to all schemes of Underground Drainage.

The contrasted financial advantages—(1) of the two main principles and schemes of Drainage—Rural and Urban—here in contrast, and (2) of the two methods of Underground Drainage, here also at variance—to the City's interest, and to the Sanitary interest and industries respectively, will now be sharply realised. And as the latter have hitherto been having things all their own way throughout Indian cities, like European ones, this rural type of drainage and sanitation can obviously not fail of the struggle for existence and survival, which it is by such figures encouraged to invite. Similarly, though to a less extreme extent, two methods and plannings of Underground Drainage, are here in contrast; respectively, (1) long, tortuous, and deep, since largely against contours, as lately designed; and (2) shorter, straighter, shallower, since following general contours, as here designed (Plan VIII). The economy proposed by this latter scheme, costing Lacs 3 as compared with Lacs 15 for the former, is thus explained; and this though the area of dwellings here provided with Main Drains is somewhat larger, since including an appreciable area of the New Suburbs, though of course by no means the whole.

Chapter XIX.

Estimates Continued: Improvements of Old City.

Note as to these and Subsequent Estimates.

The Estimates of the previous Town Planning Scheme, of 1912, for City Clearances, New Thoroughfares, Bridges etc. exclusive of Suburbs, amounted to Rs. 28, 73, 100 say Lacs 29, or necessarily more at present rates. The following Estimates have been taken, in the first place at the 1912 rates, as regards Clearances, for convenience in estimating and comparing; but, as will be seen, a full and liberal percentage is then added to their total; and this in the first place to allow for the present rise in house values, but also, in the second place, for that addition to compensations, in certain cases, of which the necessity is pointed out at I page 83 and 156:

These Estimates have been worked out for the existing City, and on the present plans for its Improvement and Extension (A) as regards Clearances of houses and acquirement of land for open spaces and gardens; also for minor roads and lanes—by Dr. Deo and Mr. Khushal Chand, Municipal Engineer.

The Estimates (B) Bridges, Roads, and New Buildings of public, scientific and educational interest, apart from Housing, are due to the Public Works Department; and are of course taken at full present rates.

Finally, the Estimates (C) for new Housing are similarly taken at current rates, and are the results of discussions with all those named, while Mr. A. C. Sinha has also contributed suggestions of economy.

References are given where the discussion in previous Chapters of Report may be of interest. But had all these proposed improvements been explained in detail in the Report, its bulk, already considerable, would have become excessive. Every point has however been closely inspected and discussed with the Municipal President or the Chief Engineer, and often both. The Municipal Engineer is also fully acquainted with these proposals. In all cases, clear Planning, on large scale (8½" to 1"), has been attended to.

A. Estimates for Improvement of City Quarters :—

Clearances, Minor Thoroughfares etc.

City Quarters as per present Improvement Plans.	I. Acquisition of Houses and Land (for II).	II. Cleansing and Clearing; Construction of New Thoroughfares and Open spaces.	
I. East of River, and South of Hospital.			
Sia Ganj I. 129		Time has not permitted estimating these Minor Streets etc. in detail, but an approximate allowance of 15 per cent on total of these improvements is added at the end.	
(a) North Rs. 19,734			
(b) South „ 77,785			
Ranipura I. 133.	97,519		
(a) North. Rs. 8,770			
(b) South. „ 16,942			
	25,712		
II. City Area south of Khajuri Bazar and S. or W. of Rivers.			
Juni Indore I. 135. (including Ghatipura) ...	55,475		
Harsiddhi 143. Rs. 6,194			
Moti Tabela and Jamburkhana „ 7,223			
Ara Bazar and Nandlalpura I. 157.	13,417		
East to River Rs. 75,255			
West to New Avenue „ 18,026			
	93,281		
New Avenue, from Old Palace to Machhi Bazar, already cleared as part of 1912 Improvement Scheme.			
Clearance Rs. 47,000		Already expended, hence not here included.	
Construction „ 12,000			
	59,000		
West of New Avenue, to Pipli Bazar I. 158. ...	65,309		
“The Six Squares.” I. XXXIII: viz.			
Odepura I. 163 18,858			
Bohra Bakhal 164. 28,510			
Sakkar Bazar Square 165, including Panbhara (Brahmin) Mohalla. (for New Bohra Bazar). ...	21,766		
Forward...	4,19,847		

City Quarters as per present Improvement Plans.	I. Acquisition of Houses and Land (for II).	
Brought Forward...		4,19,847
Morsali 166.		
(a) West	Rs. 20,463	
(b) East	" 23,454	
		43,917
Dhangali and Nagarchi Bakhal I. 167		
(a) Dhangali	Rs. 16,204	
(b) Nagarchi Bakhal	" 35,583	
		51,787
Kunjara Bakhal		
(a) Main Square	Rs. 42,080	
(b) East of Square	" 5,039	
		47,119
<i>South of Six Squares towards River.</i>		
(a) Pinjara Bakhal	Rs. 12,118	
(b) Naya Pitha	" 16,090	
(c) " to north of Chhatri Bagh ..	" 5,700	
(d) Karao Ghat... ..	" 2,966	
<i>South-West of Six Squares.</i>		36,874
(a) West Chhatripura to West of		
Cotli Hat	Rs. 19,487	
(b) East "	" 10,838	
<i>West of Six Squares.</i>		29,825
Nalia Bakhal	Rs. 14,744	
Itwari Bazar	" 29,005	
		43,749
Mukeripura	Rs. 6,933	
3 Lodhipuras and North Silawatpura ..	" 32,582	
		39,515
<i>West of Lodhipura and South of Malharganj.</i>		
Raj and Bhisti Mohallas		18,180
Malharganj		
(a) Malharganj to State Stables	Rs. 2,620	
(b) Land S. W. of Malharganj		
(for New Cart-Stand 8 acres @		
Rs. 250, plus Well	" 3,000	
		5,620
Forward ...		7,36,433

City Quarters as per present Improvement Plans.	I. Acquisition of Houses and Land (for II).	
Brought Forward ...	7,36,433	
<i>State Stables.</i>		
As proposed Corn-Bazar (see Plague measures)		
(a) Western Courts	(State Property.)	40,000
(b) Eastern Courts etc.		alterations.
<i>West of Malharganj.</i>		
Kumar Bakhal, Karabin Lines and Balaipura ...	1,582	
III. Area North of Khajuri Bazar.		
Krishnapura (to Imli Bazar and including Juna Tukoganj)	19,717	
<i>Kamatipura</i>		
Kamatipura	Rs. 29,614	
Lal Tabela upto Normal School	„ 1,430	
<hr/>		31,044
Manik Chowk	Rs. 26,293	
Kasera Bakhal (East)	„ 4,847	
<hr/>		31,140
<i>Juna Pitha I. 168.</i>		
Juna Pitha		} 23,037
Koshti Bakhal		
Dhuldoya Bakhal		
Ahilya Pura	12,444	
<i>West of Ahilya Pura.</i>		
<i>Mewatipura, Malipura, and Fourth</i>		
Infantry Lines	Rs. 1,380	
Chipa Bakhal	„ 11,388	
Tamboli Bakhal	„ 2,220	
<hr/>		14,988
<i>North and N. W. of Malharganj.</i>		
Lohar Patti and Kasera Bakhal	Rs. 3,078	
West of above	„ 4,731	
<hr/>		7,804
Forward...	8,78,189	40,000

City Quarters as per present Improvement Plans.	I. Acquisition of Houses and Land (for II).	
Brought Forward ...	8,78,189	40,000
IV. Areas Further North West of Imli Bazar Road.		
Gafur Khan's Chhaoni I. 168	11,684	
Ahilya Paltan... ..		
Mahreti Mo.	Rs. 15,945	
Sadar Bazar Mo. and Bhisti Mohalla	5,656	
	8,284	
	<hr/>	
Juna Risala	29,885	
East and West to Junction of Nullas	22,206	
Jinsi,	Rs. 2,992	
Shankarganj	" 492	
Malhar Paltan, and Rathorbera.	" 10,186	
	<hr/>	
	18,670	
V. Areas East of Krishnapura Bridge.		
South Topkhana (from Bolia's Chhatri to Hospital)...	12,876	
Juna Topkhana (North of Topkhana Road) ...	18,571	
Mohallas East of Municipal Office and West of Jail		
Road	4,575	
Lodhipura and Mewatipura	8,862	
Putlighar Road and Sikh Mohalla	180	
Kachhipura	2,181	
Nayapura (and Bhangi Fathak)	1,980	
Choti Gwaltoli (E. of Station) ...	20,803	
Badi Gwaltoli (S. of Palasia) ...	2,750	
	<hr/>	
Total.....	10,28,412	
Add 15 per cent for constructing Minor Streets etc.	1,54,262	
Add 15 per cent for Rise of Property Values etc.	1,54,262	
	<hr/>	
Total.....	13,36,936	
Deduct Rs. 400 per acre, for acquisition of		
Drainage Gardens, say 80 acres (see page 87) out of		
the required 147 acres (page 78).	82,000	
	<hr/>	
Total.....	13,04,936	40,000
		<hr/>
	Say 13½ Lacs	13,44,936
		<hr/>
		13 50,000

Chapter XX

Estimates Continued: New Communications etc.

New Communications etc. in City and in Suburban Extensions, being Main Roads and Bridges; and New Buildings (other than Houses or Institutes; see I. B. and VIII below) as per Plans.

I. Sia Ganj Communications etc. (I 129)

A. *Sia Ganj Suburban Extension.*

1. Sia Ganj Bridge (20 ft.)	...	...	Rs. 25,000
2. Road to join Bridge (30 ft.), with Boulevard to S.	...	...	" 10,500
3. Minor Roads of Area	...	...	" 425
Total			" 35,925

B. *Sia Ganj Corn Market (I 129).*

1. Railway Siding	...	...	" 5,100
2. Corn Godowns at Rs. 3 per sq. ft.	...	...	" 2,52,000
3. Extra or (Reduction) for Corn Elevator? (not estimated)	...	...	"
4. New Road, West of Railway Line...	...	...	" 2,250
Total			" 2,59,850

II. Juni Indore (I. 135) Suburban Extensions.

Juni Indore East to Railway (I 138 )	...	...	" 20,325
S. Juni Indore to Railway	...	...	" 17,125
W. Juni Indore to Railway and Manik Bagh Road	...	...	" 11,060
S. W. Juni Indore to do. do. do. (opposite Sports Park)	...	...	" 22,065
Total			" 70,575

III. New Through Boulevard. I 137 etc.

1. Turning Nulla, to widen Road under Railway Bridge	...	...	" 1,000
2. Raising of River Causeway...	...	...	" 7,000
3. Raising and Widening of Road to Hatipala Causeway (35 ft.)	...	...	" 3,280
4. Riverside Boulevard, along Old River Rampart of Juni Indore 40 ft. (Rs. 12,000). (Footpath bracketed, with railing or lowwall) (4,000)	...	...	" 16,000
5. Cut through Juni Indore Peninsula 35 ft.	...	...	" 2,190
6. New Bridge (N. of Juni Indore Causeway	...	...	" 40,000
7. Cut through Fields to Ara Bazar 40 ft.	...	...	" 3,000
8. River Boulevard S. of Muchhi Bazar to Nawapitha, 35 ft. ...	...	...	" 11,500
9. Continuation to and along N. of Chhatri Bagh 30 ft.	...	...	" 4,400
10. Cut through Chhatripura, and Kagdipura etc. to W. of Katlihat, and to Join Roads of Suburban Plan	...	...	" 11,250
Total			" 99,620
Say			" 1,00,000

IV. Ghati Peninsula (S. of Union of Rivers.) I. 135.

A. North End.

1. New Bridge from Topkhana Road etc. over Residency River 20 ft.	Rs.	30,000
Approaches	„	1,125
	Total	31,125
2. New Bridge over City River to Nandlalpura 20 ft. Bridge ...	„	25,000
Approaches	„	1,125
	Total	26,125
3. Road connecting these Bridges 40 ft.	„	3,500
	Total	60,750

B. Minor Improvements: Ghati Peninsula.

1. Improvement of Road N. from Boulevard at Ganesh Temple to meet New Bridge Road (A 3. above) (average 25 ft.) ...	„	4,300
2. Path on E. of Peninsula, Boulevard to New Bridge Road 675' x 8'	„	675
3. Foot-Bridge to Ranipura	„	7,000
4. Repair of Old Rampart	„	500
	Total	12,475

V. Harsiddhi Bridge and Neighbourhood.

1. 20 ft. Bridge with approaches	Rs.	27,000
2. New roads in Harsiddhi	„	4,125
3. New Ghat and Public Garden (not estimated; suggested for possible Gift)	„	
4. Improvement of Chhatri Bagh Causeway as Footbridge, with Railings	„	4,000
5. Harsidhi, Drive along River to Lal Bagh Road Bridge opposite Karbala Maidan—ft x 25 ft.	„	11,310
	Total	46,435

VI. Road Junction. Imlī Bazar, North-East of Old Palace Square.

Cut back S. corner of Wall (with Sentry-box recessed in angle)	Rs.	4,000
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VII. Krishnapura Bridge and Neighbourhood.

A. Improvement of Krishnapura Bridge.

East End	Rs.	7,000
West End (including Extension of Vegetable Market)	„	3,000
Improved Railings	„	5,000
	Total	15,000

B. Bolia's Chhatri Neighbourhood.

1. Improvement round Bolia's Chhatri	...	...	Rs.	5,000
2. Alteration of Road towards Sia Ganj, with widening of River, (I. 87) ...	...	...	"	5,500
			Total	10,500

C. Bridge Neighbourhood, N. & E.

1. Mohammedan Monument Ground as Public Place	...	...	Rs.	1,000
2. New Riverside Boulevard (I. 87) past Municipal Office to Dewas Ghat Bridge, 30 ft.	...	...	"	5,250
3. Improvement of Municipal River Bund, as Foot-bridge, with railing	...	...	"	4,000
			Total	10,250

VIII. Municipal Office: Extension and Improvement.

<i>e. g.</i> Town-planning Office etc.	...	...	Rs.	30,000
Improvement of Workshops	...	...	"	5,000
Removal of Cattle-sheds etc.	...	...	"	5,000
			Total	40,000

IX. Continuation of Municipal Boulevard to North and North and East.

1. From Dewas Ghat Bridge to Kharkaria Bridge	...	...	Rs.	13,500
2. Onwards to Railway Under-Bridge to meet Road of Industrial Town.	...	...	"	4,500
			Total	18,000

X. Western Suburbs, from Mhow Naka (Star of Roads).

1. Roads of New Village to replace Joshi Mohalla, and Chhaoni Barabhai	...	...	Rs.	9,935
Suburb W. of Kalyan Mal High School	...	...	"	16,925
W. of Katlihar, and S. of Dhar Road	...	...	"	8,625
W. of Lodhipuras and S. of Pachkuia Road	...	...	"	11,500
			Total	46,985

XI. Pilla Nulla Neighbourhood.

1. Raising Causeway North of Burning Ghat	...	...	Rs.	5,000
2. Improving Hansdasji Bridge	...	...	"	2,000
3. Road by proposed Hansdasji Park to Mistrikhana Square	...	...	Rs.	7,600
4. Hansdasji Tank Bund as Footbridge, and Railing.	...	...	"	2,000
5. Broken Causeway North of Mistrikhana raised as New Bridge, with Bund	...	...	"	10,000

6. Band on Existing Bridge to Fort, to raise Water 4 ft	...	Rs.	5,000
7. New Bridge and Road from Polo Ground, with junction to Banganga Road	... ..	Rs.	7,000
8. Raising existing Banganga Causeway as Bridge	...	Rs.	5,000
9. Roads W. of Malhar Ganj and S. of Depalpur Road	...	Rs.	8,500
10. W. of Mistrikhana and S. of Pilia Nulla	...	Rs.	15,495
11. East of Banganga Road and West of Pilia Nulla	...	Rs.	6,340
Total...			73,935

XII. Bakshi Bagh and Bohra Cemetery Neighbourhood.

1. New E. and W. Road South of Normal School, and to Juna Risala Main Drain, (25 ft)	... ..	Rs.	5,940
2. Do—continued to Shankar Ganj (25 ft)	... ..	Rs.	4,690
Total...			10,630

XIII. Roads of Northern Suburbs.

A.

1. Garib Khana to Industrial Town,			
(a) River Road south of Garibkhana to Railway Bridge...	...	Rs.	4,790
(b) Road N. of Garibkhana to Railway	... ..	Rs.	7,350
2. Bohra Park Suburb	... ..	Rs.	3,300
3. Rukmabai's Garden (New Brahmin Mohalla)	... ..	Rs.	2,100
4. Hay-Stack Park	... ..	Rs.	1,100
5. Jail Suburb S.	... ..	Rs.	18,000
6. Do—N.	... ..	Rs.	16,000
7. Kharkharia Suburb	... ..	Rs.	8,000
Total...			60,640

B.

1. New Bridge S. of Police Kotwali...	... ..	Rs.	25,000
2. New Road to this from Jail Road (30 ft)	... ..	Rs.	6,850
3. Do—from Jail Road to Railway Crossing	... ..	Rs.	6,750
4. Do—to meet Road N. towards Polo Ground	... ..	Rs.	6,560
5. Do—to Sadar Bazar (to be continued as Fort Road)	... ..	Rs.	8,680
Total...			53,840

Total of A. & B. ... 1,14,480

XIV. Roads of Southern Suburbs.

1. New Nasia Bridge	... ..	Rs.	25,000
2. Suburb between Residency River, and Chitawad Road	... ..	Rs.	45,330
3. Zamindar's Tank Suburb, East of Bhorkuwa Road	... ..	Rs.	77,353
4. Khati Tank Suburb, West of Bhorkuwa Road	... ..	Rs.	17,662
Total...			1,65,345

XV. Railway Station Neighbourhood.

Under-Crossing Tukoganj Road, and associated Road Improvements	Rs. 19,150
Improvement of Road connecting Railway Station with New Express Boulevard	„ 4,480
Total...	23,630

XVI. Eastern Suburbs.

Raising Bund and approaches, New Dewas Road near New Malwa Mills (*in execution*) under P. W. D. hence not here included.

1. Malwa Mills Road to West of New Road from Mills to East of Tukoganj	Rs. 16,851
2. East of this New Road, to Palasia Nulla	Rs. 18,500
3. Palasia Suburbs New Roads	„ 57,913
4. Two Nulla Bridges, and four Foot Bridges	„ 22,000
Total	„ 1,15,264
Grand Total	Rs. 12,33,529
Say	12,35,000

Note on Construction of Roads.

It must here be noted that all the above Road Estimates are for complete first class construction. But, without the false economy of leaving any roads kutchra, it will be sufficient in many cases, those of light traffic, to start with a narrow line of macadam, say 8ft, and only increase this if and when required. The recovery of at least a substantial proportion of these outlays, by charge upon holdings allotted, or some return by subsequent road-assessment, has also to be considered.

Chapter XXI.

Estimates Continued: Gardens and Parks.

A—City Gardens etc., (not associated with Drainage Scheme) see I. Chapter XV &c.

1. Gardens on vacant Land East, North-East and North of New Palace, (and from Bohra Mosque to Jumma Masjid) with four tanks for fountains I. 94.	Rs. 8,800
2. Minor Improvements;—e. g. Malharganj Square I. 90. Topkhana Garden I. 88 etc. and planting of Open Spaces, Boulevards and Roads, also of River and Nulla Banks, throughout City.	Say Rs. 10,000
Contingencies.	„ 1,200
Total	„ 20,000

B.—Improvement of Chhatri Bagh. I. 96.

Compensations on East Chhatribagh Road. (included in Chapter XIX)

Improvement of Roads and Planting etc. Goalas' Buildings etc. Rs. 8,000
(War Memorial, by subscription ?).Total for A & B ... 28,000**C.—Zoological Gardens. I. 99.**

Northern Section (South of Chhatri Bagh and River).

(1) Compensation for Land. (by Exchange?)

Paths:—6,730 x 8 ft.	Rs. 6,730
Fencing Enclosures, Dens and Shelters, Aviaries and Cages. ..	„ 10,000
Elephant Tank.	„ 5,000

(2) Southern Section. (in Horticultural Gardens. D)

Shelters, Aviaries etc.	„ 15,000
Paths:—1470 x 8 ft.	„ 1,470

Total. 38,200**D.—Horticultural Gardens (South of Lal Bagh Road). I. 102.**

Compensation for Land:— (by Exchange?)

Earthwork	Rs. 7,500
Roads and Paths	„ 5,000
Tanks	„ 13,600
Shade Garden and Rock Garden	„ 20,000
Pergola	„ 20,000
Grassing	„ 5,000
Trees	„ 1,000

Total 72,100**E.—Sports Park, South of Gardens. I. 106.**

Compensation for Land. (by Exchange?)

Grassing and Planting, with Arboretum &c. Rs. 10,000

Total for C. D. E. 1,20,300Grand Total for all Gardens 1,48,300Say 1,50,000

Chapter XXII.

Institutes, Library &c.

A.—Scientific Institutes, South of Lal Bagh Road (II. 121,124.)

One storey Buildings, at Rs. 4 per sq. ft.

1. Geology.	Rs.	46,800
2. Chemistry and Bacteriology.		37,500
3. Agriculture, Botany and Zoology.		52,800
	Total	1,37,100
Contingencies		12,900
	Total	1,50,000
Add Apparatus for Laboratories, and Specimens for Galleries, (say)		1,00,000
	Total	2,50,000

B.—Library, Museum and Tower; Theatre and Amphitheatre, on Ghati Peninsula II. 19.

1. Library, Museum and Tower; (at As. 12 per cft) ...		1,10,400
2. New Theatre. Do.		1,72,800
3. Open Air Amphitheatre, and Gymnasium.		10,000
Contingencies		7,300
	Total	3,00,000
Add Capital expenditure desirable; Books for Library: Say Lacs. 2 }		4,00,000
Objects for Museum Say Lacs. 2 }		
	Total	7,00,000

Grand Total for Institutes when fully developed Rs. 9,50,000

The upkeep of the all the above Institutes has also to be considerable: and for this one Lac annually may readily be utilised.

Uses of the above Expenditure.

Thus, with the above capital outlays, of say ten Lacs. (ofcourse gradually applied) and with annual expenditure of one Lac, or thereby, these Institutes and Gardens would be in a position to meet the main requirements (1) of research and application, and of reference, (2) those of higher instruction, ofcourse in association with the existing Colleges, upon the University level; with (3) Vacation Courses for Teachers, students and members of the public, and (4) the needs of Schools and school visits. Last, but not least, (5) they would be of continued interest to Indore, and would enhance its attractiveness as a regional capital, with increase of visitors accordingly.

That the above outlays would thus be productive—no doubt indirectly, but substantially and increasingly,—appears so obvious as to need no further pleading for.

Chapter XXIII.

Estimates Continued: New Housing in old City for Poorer Classes.

Summary of Proposed Housing Estimates, in old City, as explained in detail below in subsequent chapter:—

200 Houses for Municipal Sweepers Carters etc. ...	Rs. 1,22,000
20 Houses south of State Stables	,, 15,000
Additional Small Housing	,, 40,000
Aid to construction of Corn-Godowns in Malhar Ganj &c. (say)	,, 1,00,000
Outlays towards Concentration of Tonga Stables, and formation of Tongawalla Mohallas (as proposed Plague Measure)	,, 1,25,000
	Total Rs. 4,02,000

Say Rs. 4 Lacs

Compensations already Estimated in Chapter XIX may in some cases lessen the above. Sweepers' Houses may also be provided—partly at least—in Gardens, and some of these with any surplus from Drainage Gardens Estimates, even gradually paid for from their returns. But the determination of such amounts is not yet practicable, and some corresponding additional small housing may with advantage be provided with any sums thus set free.

Summation of Improvements for City Quarters.

When we put together for each quarter of the City the estimates from Chapters XIX and XX, we shall then have the complete Improvement Scheme for each, and forecast of expenses accordingly. The interest and usefulness of this will be obvious. And this not merely as clearing up the whole task before the Municipality, and presenting it in intelligible portions and subdivisions, each easily realised, and on which a gradual Improvement Policy may next be worked out. These also become of definite and immediate interest to the people of each quarter, who have a certain traditional and neighbourly unity of feeling, usually far more intense than for the city as a whole. This is more or less the case everywhere: it is, in fact, as in London, where strong local feeling exists in and for this or that quarter, great or small, old or new—*e. g.* the City, Strand or Piccadilly, Chelsea, Battersea or Hampstead,—but only a very small minority of citizens as yet realise the vast area and the many problems before the immense municipal area of the County Council, and fewer again for the suburban regions lying beyond this. Now without forgetting the desirability of widening people's interests and citizenship as fully as may be, we have also to do the best for and with them as we find them: and even the best way to awaken these wider interests is found through improvements in familiar areas, which local sentiment can

approve and value; for thus they come to see the desirability of improvements for others, instead of grudging and opposing.

Hence beside the large general plans of the whole City, its Suburbs, and its New Industrial Town, we have also to set the minor Plan of each small City quarter together with its Estimates, as above. This task can be readily performed by the Municipal Engineer and his draughtsmen: we have here only had time to prepare samples, but leave all in order for their continuance and completion.

In summary then, this analysis of the general Town Planning Scheme into its Main Areas, Old and New, will afford the definite basis for calling out an active development of citizenship, for encouraging and supporting a healthy rivalry in improvements between quarter and quarter, and for encouraging and appreciating those individuals who by capacity, influence, or generosity, may best advance the interest of their locality, and thus, in the long run, of the City as a whole, for the full Improvement of the various Quarters.

Combination of the Preceding Estimates, for full Improvement of given Areas of City and Suburbs.

My first hope was to combine the preceding Estimates thoroughly, Area by Area; and I do not abandon this merely because of difficulties, though these are greater than at first sight appears. But the work extends over the City and has to be distributed over a term of years; hence with at least the great majority of localities, a single comprehensive improvement scheme cannot be carried out for this or that neighbourhood singly, while others wait; but all in course of years, and as part of the gradual development of the City.

Suggestions towards Agenda are offered later, and at some length; but the City's course of development cannot be fully foreseen, and this especially with that great question pending, of the removal of the Military and Imperial Service Corps from all their present Lines, to such new location outside the City altogether, as may be determined in course of the inevitable military reorganisation after the War, and by its experts. For this removal, as already pointed out (I page 11) cannot but modify the extension of the City. Thus the Northern and Western Suburbs, with their New Roads, will not then extend so rapidly, but largely flow into the disused Military Areas instead.

Again we cannot foresee how far, or how fast, Cotton-workers, and others at present employed in the Industrial Town, may leave their houses in the old town, and migrate to the new.

For all such reason, the utmost I can here attempt with safety is to point out that the figures of the preceding Estimates can be utilised for forecasting any set of Improvements.

Thus from Chapters XIX and XX, the domestic improvements of Sia Ganj are readily linked with those of its Bridge and Suburban extension on the peninsula to southwards, or connected with the possible development of its Corn-Market up to the maximum scale planned for. But this Sia Ganj Bridge and its Suburban Road also belong to the improvement of the Station approaches, and link up with the Main Express Boulevard and thus of with City and Suburbs. So it would be giving an exaggerated view of what are strictly Sia Ganj outlays, if we were to sum these in

the one way; or else an exaggerated impression of the cost of the main New Boulevard Scheme on the other.

Similarly it is better to keep the improvements of Old Juni Indore, as summed in Chapter XIX, quite distinct in our minds from the extension of Roads and Suburbs around it in Chapter XX; and so on for other neighbourhoods.

To the New Express Boulevard however, when this comes up for construction, there must be added the element of compensation for the barn and other small demolitions in Juni Indore, and also for the few houses it cuts through, east of Ara Bazar, amounting to a very moderate sum. All such figures can be obtained from the detailed Estimates for City Quarters, of which Chapter XIX is only a summary; since these are typed out in duplicate, to be deposited for reference at Municipal Office, and at Home Ministry.

Again, the New Buildings at the north end of Ghati Peninsula require at least one of the two New Bridges here proposed, even for their construction, and both for their public use. The minor improvements of Ghati Peninsula, further south, with its proposed Fort Bridge, are largely in connection with Ranipura. This again may be partly depopulated by the New Industrial Town, in which so many of its inhabitants are already workers. Houses or sites here vacated may find a market in connection with the growth of Corn and Iron trades in Sia Ganj.

Another possible factor modifying the development of the City, and this in ways difficult to foresee, will arise if the Municipality of Indore should absorb the present extending Bazar and Bungalow quarter, including that large proportion of the population of the Residency Camp, who belong to Indore City as was originally intended and adjusted (page 130) between the contracting Governments. And though this Quarter is in good order—indeed better than is most of Indore—some moderate additional expense would doubtless have to be incurred, on lines similar to those planned and estimated for the various quarters of Indore, in Chapter XIX. Its inhabitants will also naturally wish to see Indore improved, and this not a little, before desiring incorporation into its citizenship.

Many Improvements too, are naturally for the budget of the whole City, and cannot be included within any local scheme, without disproportion. Sanitary measures like River-cleansing etc., cultural agencies like Library etc., are also general outlays, not local ones.

Chapter XXIV.

Estimates Continued; Layout of Industrial Town.

The expenditure, beyond the Palasia Nulla especially, will be gradual; and at a rate which cannot at present be foreseen. It is here indicated as shown in Plan II, *i. e.* on a very considerable scale of development, viz. of an area of 403 acres for Industrial Buildings and Compounds, with 12 miles of roads, and also of 712 acres for Housing, with 6,350 houses, and 19½ miles of Roads accordingly. Total 1115 acres, and 31½ miles roads.

A.—Main Industrial Roads, south of Palasia Nulla.

These are already partly made, but require

1. Completion and planting—say		Rs. 7,500
2. Extension 3,450 ft. of 80 ft. @ Rs. 6-0-0 Rft. ...		" 20,700
2,550 " " 30 " " " 3-12-0 " ...		" 9,562
6,080 " " 20 " " " 2-8-0 " ...		" 15,200
1,250 " " 15 " " " 1-12-0 " ...		" 2,188
1,500 " " 10 " " " 1-0-0 " ...		" 1,500
	Total ..	56,650

B.—Main Industrial Roads, North of Palasia Nulla, with Bridges for Roads and Railway Siding System.

1. East Bridge, (near Malwa Mills) ...		Rs. 12,000
2. West Bridge (near Brickworks) ...		" 14,000
	Total ..	26,000

3. Roads as per plan		
2,900 ft. of 80 ft. @ Rs. 6-0-0 Rft. ...		Rs 17,400
12,650 " " 40 " " " 5-0-0 " ...		" 63,250
15,900 " " 30 " " " 3-12-0 " ...		" 59,625
16,450 " " 20 " " " 2-8-0 " ...		" 41,125

Total .. 1,81,400

Total for Roads Industrial Area .. 2,64,050

C.—Railway Siding System.

Full development, 4 miles at Rs 13,800 + 12½ per cent ... Rs. 62,100

But of this, the great proportion falls to be repaid by Industries using Sidings, as required; leaving only Common Siding next Main Line, and Municipal Cotton-siding: say ½ mile as property of City, costing it only Rs. 4,600, or say Rs. 5,000, when the scheme is fully developed.

Total for Roads and Sidings Industrial area .. 3,26,150

D.—Roads and Bridges for Housing Area.

1. Repair of Broken Bund, as Traffic Bridge ...		Rs. 15,000
2. Foot-Bridge near existing Railway Bridge ...		" 6,000
3. Foot-Bridge below Brickfields ...		" 3,500

4. Future Bridge south of Junction of Palasia Nulla	...	Rs. 25,000
5. Future Suklia Bridge	... ..	,, 80,000

Total for Bridges of Housing Area ,, 79,500

Roads from existing Railway-Bridge and Northwards, in Western Town.

5125 × 35 ft. @ Rs. 4-8-0 Rft.	...	Rs. 23,062
19,250 × 30 " " " 3-12-0 "	...	,, 72,187
36,350 × 20 " " " 2-8-0 "	...	,, 90,875
825 × 15 " " " 1-12-0 "	...	,, 1,444

Total ,, 1,87,568

Roads of Eastern Housing Area N. E. of Malwa Mills.

15,320 × 30 ft. @ Rs. 3-12-0 Rft.	...	Rs. 57,450
20,400 × 20 " " " 2-8-0 "	...	,, 51,000
4,500 × 15 " " " 1-12-0 "	...	,, 7,875

Total 1,16,325

Planting Roads, layingout Riverside Parks and others ... ,, 20,000

Total for Roads &c. of Housing Area ,, 4,03,393

Total for all Roads etc. of Industrial Town ,, 7,29,543

Say ,, 7,30,000

E.—Municipal Requirements.

Drainage Gardens, 130 acres @ Rs. 200	... ..	,, 26,000
Municipal Buildings, including Police and Fire Stations	... ..	,, 60,000
Waterworks (say )	... ..	,, 6,00,000

Grand Total for Industrial Town ,, 14,16,000

Cost and Planning of New Roads: Suburbs and Industrial Town.

The figures for the future Lay-out (Roads etc.) of all these Extensions, as above given in Chapters XX and XXIV, are thus very considerable—no less than half of Lacs 12, plus 7, say 13 Lacs. But it will be borne in mind that the actual outlays for these are only required bit by bit, and year by year, as the Extension of the Suburbs goes on, and as the increase of Industries and their related Population requires; though ofcourse always keeping the new roads to a reasonable distance in advance of building. A moderate portion of this total future outlay is thus all that has really to be financed, especially assuming the recovery of outlays, from sale of Suburban Sites, and from the Housing and Industrial Sites, of the New Town. This amount, however, will depend upon the arrangements decided on by the Durbar.

The recovery of this cost of roads is normally met, in most towns, out of the prices of the lots which are taken up along their course; and this is surely a more equitable way than that of providing them at the expense of the general taxpayer, rural especially. Here however I may refer to the Report of Prof: Stanley Jevons.

Economy of Planning.

The matter on which the planner's responsibility comes in, and on which the Municipal and State Authorities should satisfy themselves before beginning construction, is this—Are these many miles of roads planned as economically and efficiently as may be?

The first rough and ready way of testing this, is to follow them upon the plans, from origins to destinations, and thus to see whether they be direct or no. As regards Industrial Roads, this will be plain at a glance. As regards Housing *e. g.* along the new Main Boulevard of the City to the furthest Suburb, this surely is plain; for even the slight curvatures which relieve the monotony of straightness are essentially conditioned by natural features, contours, and existing properties; and even where simply used for the sake of variety, and of that diminution of fatigue for man (and even beast) which slight curvature gives, this will be found on measurement to exceed the straight line by only a trifling percentage, well-repaid by the resultant advantage and amenity.

But since the straight line is undeniably the shortest, the traditional and would-be utilitarian engineer, and the reader thus influenced (and more than he knows), may think that here is a clue from by which the still suspected extravagance of the Garden Suburb School of planning can be followed up. So by all means let him try. It will be agreed that the severest test of road economies is that of areas consumed by them in proportion to areas served, both measured in acres accordingly. So let all concerned first form an idea as to the total areas of these suburbs and of the Industrial Town respectively, and this not simply in acreage alone, but in comparison with the familiar area of the existing City:— that is, leaving out its rambling old mohalla extensions, which few readers will know. Let us take the large area shown on Plan I, so far as occupied, between the Railway on the East and Malhar Ganj on the West, and bounded on the north by the east and west Roads from Dewas Ghat Bridge, and on the south by the Lal Bagh Road and upto the south of Juni Indore. Say then 710 Acres, and 60,000 population. Now all our new Suburbs West of Railway, amount to an additional 721 acres, more than equal to this City area west of Railway. Next East of Railway, leaving out the area already settled before the present Plans, along Tukoganj and towards Malwa Mills, we have a new area of 656 acres of suburbs, nearly equal to the above main City Area. So these Suburban Areas together, cover an area of 1,377 acres, very nearly double that of the main Town of Indore.

As to the Industrial Town, its magnitude can be realised by comparing its Plan II with that of the City, Plan I or X, noting the larger scale of the former. The 1,115 acres here planned, including industrial sites as well as dwellings, is thus one and a half times our City Area; while even that shown for future dwellings is as large. The total extensions of Indore here provided for, of all Suburbs and Industrial Town together, are thus no less than three and a half times the Main City Area of old Indore, though necessarily for a much smaller population, yet not an inconsiderable one: say 28,000 for the 3,600 houses of the Suburbs (often with servants) and 31,750, for the 6,350 house-lots planned for the Industrial Town. The essential City is thus extended to more than four times its area, and this for wellnigh double its present population.

The importance of the utmost possible economy in Road-making over this immense area, and for its necessary mileage, is thus clear. So the reader may well and fairly seek to satisfy himself whether the present planning be economical or no;

since from the variety of detail afforded by garden treatment &c. the latter suspicion, already mentioned, seldom fails to arise.

The simplest way of testing this is to take the "Standard Plans" adapted by the P. W. D. of British Presidencies and Provinces from the Bye-Law Sanitary Planning of English Industrial Towns during the two generations before the Town Planning Act of 1910, and still employed in Indian Cities: even last year proposed for the extension of Cawnpore. Such plans thus express the fullest perfection of utilitarian theory, and of application by Sanitary and Engineering authorities in India upto date.

The needed test is simply given, by comparison of the "Standard Plan", for any town thus to be extended, with its planning on the present principles. For the given acreage, with the given moderate number of holdings per acre, (a number determined by Public Health requirements, and therefore profitable to the community, as closer planning would not be) which type of planning needs least roads?

Illustrations of this test, less unfavourable to current Engineering and Sanitary methods than would be the present improved designs, are reproduced in my "Report on Towns in Madras Presidency", Madras 1915. The figures accompanying these contrasted plans are as follows:—

1 Coconada Suburban Village.

I. Lay-out on "Standard Plan".

370 sites of	400 sq. yds.
28 " "	800 " "
80 " "	1000 " "
<hr/>	
Total...	478

II. Lay-out as Improved.

56 of	400 sq. yds.
147 " "	600 " "
40 " "	800-1100. "
43 " "	1260 sq. "
33 " "	1800 " "
<hr/>	
319	
(159 sites fewer, all of smallest size).	

Roads and Lanes = 8 miles.

Area Metalled 57,675 sq. yds.

Cost 23,500

Central Park 8½ acres.

Roads and Lanes 4½ miles.

(saving 3¼ miles = 10 acres).

Area Metalled 38,000 sq. yds.

(saving 19,675 ")

Cost Rs. 14,250: (saving Rs. 9250)

Park and Open Spaces 12¾ Acres.

2 Nellore New Mohalla.

I. Lay-out from "Standard Plan".

Length of Roads	3285 ft.	×	45
do. of Lanes	1340 "	×	14

Total 4635. ft.

II. Lay-out as Improved.

Length of Roads	2100	×	40
do. of Lanes	70	×	10

Total... 2170

Roads, Lanes and waste space 4.1 acres.	Roads and Lanes 1.9 acres.
House-Sites 51	House-sites. 56
(all sites of 45' x 60')	(of which 28 sites at 45' x 60'
	23 (average) 50 x 75
	5 „ 55 x 110
Houses and Gardens. 3.16 acres.	Houses and Gardens 4.41 acres.
Public Gardens. Nil.	2 Public Gardens. .95 acres.

In the first of these examples it will be seen that the number of small houses is reduced, but the spaces given to houses are notably increased; and this mainly by economy of roads, to all but half their former length, though with some widening of streets to avenues. By the same road economy, the areas given to Parks and Gardens, School, Market etc, are increased also.

In the second example it will be seen (1) that here the roads are cut down to less than half in length, and much less than half in area; (2) that in this way the sites are increased in number by 12%, and much more in area, from 3.16 acres to 4.41, being an increase of 40%. Besides this (3) substantial space is found for open spaces or gardens (and a site for a Temple as well.)

We have here happily in Indore no "Standard Plan" for comparison, but using the familiar British India P. W. D. ones, a similar comparison might be made. It will also be seen that the wear and tear of roads is minimised by the mode of planning; since in the mohallas so largely provided, vehicles will be but few.

As Plans and Figures show, the present Indore Plans indicate further improvements and economies, (and fuller amenity accordingly also). For now in short the proportion for this industrial Town (Plans II and III) is reduced for the given acreage to nearly one half the area, length, and expense involved by the traditional method of road-planning. The weakness of the "Standard Plan" is thus exposed; and its title thus requires correction, into Mis-Planning Standardised; and this towards public waste, (a) in land, (b) in constructive outlays, and (c) in permanent use also. Such spurious Town-Planning has been and is simply done, by mere ruling upon the drawing-board—and often even without inspection of the site—of twice as many roads and lanes as need be; and then, by calling these "Sanitary" and "practical," persuading too simple administrators to fix and impose these as "Standard".

Upon these traditional principles, then, our present large Road Estimates would have been wellnigh doubled, including all Gardens replaced by costlier walled Lanes, falsely called "Sanitary".

Thus we Garden City Planners are now carrying the war into our old assailants' country; and this still in India, just as thirty, twenty, and ten years back in England. For what the Town Planning Act of 1910 accomplished for us in England has been but slowly advancing in India: no one in high sanitarian or engineering authority having here as yet entered the Town-Planning movement; nor even, so far as the Cities and Town Planning Exhibition can yet discover from its rounds through five capitals, having yet brought himself to acquaintance with its methods or results; though with the younger generation however this is altering. If any will now suggest improvements on the present Plans, they will be cordially received.

Chapter XXV.

Summary of All Estimates.

The total amounts above estimated in the preceding Chapters are as follows:—

I Old City and New Suburbs (Chap:—XVIII).

Water (Chap. XVIII) excluding Water supply to Suburbs, (not estimated)	Rs. 67,000
Surface Drains, River Purification and Drainage Gardens, [but excluding, or postponing, lacs 3, for possible Underground Main Drains, plus α for extension (I. XL)]	,, 2,00,000
Old City Clearances, Minor Thoroughfares etc. (XIX)	,, 13,50,000
Main Communications; Bridges, Suburban Roads. etc (XX) .-	,, 12,35,000
Public Gardens, Parks etc. (XXI).	,, 1,50,000
Library, Museum, Theatre and Scientific Institutes (XXII).	,, 9,50,000
Old City: Housing for poorer Classes, and additional Plague- Measures, (XXIII).	,, 4,00,000
Total for Old City and Suburbs	43,37,000
	(Say 43½ lacs).

II New Industrial Town (Chapter XXIV).

Industrial Area; Roads, Bridges and Railway Sidings, and Housing Area; Roads and Bridges	,, 7,30,000
Municipal Buildings, Police, Fire &c.	,, 60,000
Drainage Gardens.	,, 26,000
Water. (say)	,, 6,00,000
Total for Industrial Town	,, 14,15,000
Grand Total of all Constructive Proposals	,, 57,52,400
	Say Lacs 58. ,, 58,00,000

III Housing: Possible Advances of Capital (Chapters I. X. & II. XXVI).

Finally for this New Town, for the New Suburbs, and in some measure for the Old Town also, the financial question arises—What amount of Capital may be advantageously advanced, and invested in aid of Housing, by means of Co-operative Societies etc. and on the security of the buildings, to be repaid by rent-purchase or otherwise, in 20 years or thereby ?

Say (a) For Old City (New Dwellings and Reconstructions)	Rs. 4,00,000
,, (b) For Suburban Dwellings	,, 6,00,000

(c) For New Industrial Town.	20,00,000
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Total 30 lacs, to be advanced, (say) in seven years, and repaid in 20 years from date of each investment.	30,00,000
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The possible requirements for Housing may be roughly forecast, as follows:—

(a) Old City (including repairs and reconstruction) say	Rs.	12,00,000
(b) Suburbs. Say 4,000 houses, at average of Rs. 2,000	..	80,00,000
(c) New Industrial Town. Say 6,000 houses, at average of Rs. 800	..	48,00,000

Total	Rs.	1,40,00,000
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Say in twelve years 140 Lacs.

Thus advances to the above amount can be readily utilised; and more if possible.

SECTION III.

Procedure.

Chapter XXVI.

Suggestions towards Procedure and Administration.

So far then as regards the main bulk of this Report with its Plans and Estimates. At this stage it is too frequent for the planner to hand over a report to the Municipality or Government concerned, who then deal with it or not as their daily pressure of work may permit, or select from it for execution such parts and points as may be most pressed for on various grounds. But his report is more likely to be of service if it includes such indications as he can offer as to the matters which appear most expedient and urgent; with suggestions towards their execution, and even, when authorised, with definite beginnings as examples, as per sample of the proposed economical House-construction, now in progress, and also of Drainage Gardens, etc. In such ways, several starts are being made at definite points, and further developments will thus be accelerated.

Procedure after Estimates.

This report, though carefully considered, as well as long and actively laboured on, seeks frankly to stimulate continued enquiry and reflection on its various problems and tasks. For we have seen (I p. 135 & 169) what social problems and difficulties may be raised, by even the most necessary local and general changes upon the humblest Mohalla. The plans which accompany this Report are based on thought and study on the spot even more than in the office, and there on surveys brought up to date by the surveyors of City, and of P. W. D. for Industrial Town, and discussed in every detail with the Municipal President, and at many points with the Chief Engineer, &c, often with help from our various assistants. Yet with all this care, Plans may still need adaptation at various points, and as time goes on; and the Estimates of course also, at this time of rising values, and of wages, costs and charges.

A word to Critics.

In view of these limitations, criticism and constructive suggestion are invited; yet a word of caution may also fairly be offered. Town Planning is like chess, a selection of definite moves among various possibilities; and thus, though the interested looker-on may often think of a different move for himself, and may of course be right, he bears in mind also that this may very probably also have been considered by the player he is criticising. Hence, though in every city, as here in Indore, the planner may and does learn from his critics, he is not able to accept all the suggestions made to him.

The Questions of Procedure, towards Execution of Improvements.

Before all these Improvement schemes and their respective Estimates, in aggregate so considerable—and assuming in a general way the desirability of their execution, (of course without prejudice to criticism of any and every scheme and detail)—three main questions arise:—(1) In what order of expediency, and in what

time, is Execution to be effected? (2) How, and in what time, are the necessary Funds estimated for to be provided? (3) How and through what sort of Administration, is the necessary direction and continuity to be assured, with efficiency and economy accordingly?

Administration.

To most minds, it is the last of these questions which claims the foremost place for answer. Now Municipalities, naturally enough, everywhere claim to be the proper administrators for their improvement schemes. Yet there is no denying that their record, as regards City Improvement and Town Planning Schemes, has seldom as yet been a brilliant one; and that, however constituted, they have various limitations for such tasks. Hence the confidence, both of their constituencies and of their central Governments, in their competence, economy, continuity etc, has sometimes been grievously shaken. My Reports on Indian Cities have too often had to tell this story in detail, and to seek out remedies accordingly.

Nor have Municipal improvements been always satisfactory in Europe. Hence in various cases, as notably with the remodelling of Paris under Napoleon III (1854-70), and also later in London and other cities, the larger schemes of City Improvement were taken out of the hands of the Municipality, and entrusted to a special Board, created and appointed by the State.

City Improvement Trusts in India.

This method has naturally attracted the attention of administrators in India, and has been expressed in the creation of City Improvement Trusts, especially in large cities and capitals, sometimes Indian as well as British. These Trusts have now been long enough in operation to receive criticism in their turn, from Municipalities and the public, which there is no denying on the whole are preponderatingly unfavourable, as has previously been the case in Europe. Hence, here as there, the demand is increasingly being made by Municipalities to the State to restore these powers, and wind up the Trusts accordingly.

Now as a general planner, I have had experience, as above indicated, of the limitations of Municipalities, and of the risks which comprehensive schemes run from delay, and other causes, as also from piecemeal emendation by even the most well-meaning body of town-planning amateurs, representatives of a not fully instructed public, which may include individuals of abilities and energies not always disinterested. Yet knowing from frequent and prolonged residence, as well as from enquiries, something of the civic history in recent times of Paris, London, and of various minor European capitals also, I am compelled to bear witness that the recovery of town-planning and administrative powers by their Municipalities, (though of course not without supervision by the State) has been a necessary one. Having now some years experience of Indian Municipalities and their limitations, and some acquaintance with the work of Improvement Trusts also, I am compelled to report even more disadvantageously of the latter, as on the whole technically, and still more economically—as also civically—inferior to their purpose and promise; so that their directive unity and energy, their comprehensive powers, and rapid and thoroughgoing procedure, have sometimes been of dubious advantage. For while a Municipality may too often blunder and bungle in detailed schemes, wasting lacs, even many of them, a Trust, with its more comprehensive schemes, its larger funds, its greater powers, yet lessened responsibility and immunity from effective criticism, may go even more seriously wrong on plans, in principles, or both; and so may waste greater sums,

and inflict more serious evils upon a city than has any Municipality as yet. Hence (though with regrets for the painfulness of such a statement where good intention is so manifest)—I am here compelled to confess, that the more I see of results, in India, the more does a City, handed over for improvement from its Municipality to an Improvement Trust, appear to me to be thereby “falling from the frying-pan into the fire.” I have had to report, formally and in detail, upon the Report embodying the Schemes, with preliminary Plans and Estimates, and desired Constitution of an incipient Improvement Trust, for an important and growing Indian City; and having thus gone into the question afresh in detail, and without prejudice accordingly, I now feel the more compelled, and on every ground, here to discourage any such well-meant endeavour.

The best method seems that of strengthening the Municipal Town Planning Office by the periodic inspection by the Minister in charge of Municipalities, as is here already practically the case, including inspection of plans, work done, and audit of accounts. That the success of schemes depends upon their planning, and also upon the skill of the executive staff, seems obvious; yet one or both these points have been too often neglected; by Municipalities, and by Trusts as well.

Dangers of Municipal Government from above.

Yet the strengthening of a Municipality by its Government has its dangers, which I know of no City fully escaping. First, that of increasingly centralised administration and official character, with correspondingly increasing detachment from public and popular feeling, and consequently, before long, from public and popular needs and usefulness. This arrangement does not, and cannot now-a-days, lead back towards the patriarchal rule of old, but towards official rule, in which rules replace rule, and officialism paternalism. Next however, certain elements of the community affirm themselves, but these no longer of religious, educated, or aristocratic character. It is the modern powers of Capital which inevitably express themselves, and this indirectly, but all the more effectively, and in varying proportions and ways, in different cities: thus at one place interests of land and property-owners conspicuously predominate, and next of bankers and money-lenders over these. In another city all is done for traders, or for the manufacturers, or next for carriers, witness the long predominance of Railway interests in America, and too largely elsewhere; so that wherever railway and financial interests combine, their unseen government arises, however unnoticed, behind the Government. To give cases would be to outline half the modern history of the West; nor would examples be undiscoverable in India. Everywhere more or less the increasing cost and complexity of Governments, and their dis-specialised departmentalism above all, place them under the support and guidance, and thus the ultimate direction, of those who at once hold the purse-strings of modern society and understand their complex workings as well. And this whatever the form of government be, from the autocracy of recent Russia to the various representative constitutionalisms of Western and American peoples.

What then is the remedy? How are these elements of deterioration, and ultimately of perversion of purpose, to be guarded against in cities? This remedy has long been supposed to lie in changes of government; but that this again ends in disappointment needs no pointing out of particular instances, great or small, since manifest from Petrograd to Mexico, Chicago to Canton.

The Remedy: Encouragement of Citizenship.

Yet the remedy is arising, and spreading in many cities as a new leaven; and now even with growing success to show, at many points. For the change from the

mechano-centric philosophy of the industrial age, and even from its imperio-centric and pluto-centric developments, is now at work: witness, for material evidences, the well-named Port-Sunlight, beside the industrial gloom of Liverpool, or Bournville within hearing of Birmingham with its hammers. And similarly in Germany; for despite its superlative submission and abjection under its conquest by Imperial Prussia, the spirit of its old "Free Cities" has found outlet in improvements often in advance of those of at present freer lands. (See the writer's "Cities in Evolution." London 1914). Similarly in the Unistates. In short the traditional nineteenth century ideal, of "Success in Life", has been taking new forms; that of success no longer individual, or merely of livelihood, however magnified, not in and through machinery and invention, nor authority, status and security, nor of monetary wealth or power, but now that of Success in Living. And this necessarily collectively. Even for duration of living, there can be no security of health without Public Health. Nor is success as regards quality of life merely to be measured in terms of the individual "Culture" which a cultivated minority, in England or in India, only too willingly retreats into its homes or colleges to enjoy. For it is becoming plain that even these individual ends cannot be adequately attained, still less maintained and continued, save in relation to the culture-level of their City; and this must ever be carried onward and upward, if it be not correspondingly to fall. In this discernment has lain, and lies, the ever-repeated world-leadership of Paris; again in this crisis, as in each preceding one, preparing for its renewal. But so too in secondary capitals; in Boston, or in Benares, in Glasgow or Manchester, in Leyden, Montpellier, or Aberdeen.

That India, with its many regional capitals, is stirring in the same ways, though their movement be as yet less clear, its purposes less conspicuously defined, I have been learning through wanderings wellnigh as varied as India offers, and this by no means least here in Indore. More than international issues are at stake in the present War: and what concerns us here in civic matters, is that the internal organisation of society is also in change, and towards new issues; so that old controversies, however still apparently conspicuous, are lapsing, and new births approaching, however little foreseen. What then are these respectively? Liberal and radical still fight round the ballot-box, as in Prussia today; officialist and socialist still discuss salaries and wages, as in London; American millionaire and Russian anarchist alike express their irresponsible personality; while rival Nationalisms are everywhere furiously proclaiming their anthropological myths. Such are the passing controversies, only too manifest; but where is the new birth, with hope for all? Where but in the movements of Reconstruction, rural and urban, which are quietly ploughing and planning across all these quarrels, as already outlined (Chapter III). So for us here in the City around us, viewed as developing towards the highest aims; and these as concrete as Town-planning towards public health and well-being can make them; as idealistic too, and yet as definite, as City-design can make them,—towards "the City of the Good Life"—that in which all may share, increasingly and in their growing capacity, in all that is human.

In the measure in which this concept becomes realised in any City, its citizens begin to participate in City Development accordingly. Their real and active participation is required; and so we must later discuss more fully the ways and means of acting and advancing this arousal of citizenship, without which we can have no fully developing City. From of old it has been the illusion of the spiritual man that his ideal City needed no realisation on earth; and now the converse delusion, of the temporally minded and would-be "practical" man, has been having its day, that material improvements are alone necessary. But as we escape from this futile

dualism, we see Life as at once Psychic and Organic, and presenting these complementary aspects in unending alternation. We see that Organism and Environment are ever interacting; and that Citizen and City can only realise themselves as they progress together.

The Town Planning Movement in England.

Let me put the above warning more clearly. The Town Planning Movement in Britain has in the first place arisen by private efforts and local initiatives, apart from Municipalities and Governments alike. The first (and still almost the only) governing person to take an active and eminent lead in it has been the Rt. Hon. John Burns, long a working citizen of the mostly artisan borough of Battersea, and for many years its representative on the London County Council. With this enlarging scope and experience, he became President of the Local Government Board; and in that ministerial capacity he successfully carried through the Town Planning Act of 1910, which has since been so widely fruitful in England, and suggestive beyond its shores. Thus as in every other Art and Science, so with Town-planning and Civics, efficiency can only be obtained by patiently working up from knowledge of locality and city, and from their improvement in detail, towards larger and more general grasp; and these with civic feeling and determination, acquired in youth, and sustained throughout years of active and untiring effort. It is for lack of this concrete training, in small tasks before attempting large ones, that neither Municipal nor Trust Improvements in India are yet yielding the results which they alike desire, and are too often falling into public waste instead.

"The Friends of Indore."

Hence then the need of public co-operation—that of an ever-increasing body of active citizens, no longer leaving all things now to official authority, or again to Municipal representatives, but loyally working with them, desirous and acceptant of their leadership, and without murmuring; yet if need be, with reasonable remonstrance, since even the best administrations require at times to be reminded that they are not infallible. So important then is this evocation of citizenship, that we must give to it a later Chapter, that on "The Friends of Indore."

Chapter XXVII.

The Needed Town Planning and Improvement Office and its Management.

The existing Town Planning Office, as developed during the past nine months thus requires to be retained, and permanently housed: and still spaciouly, for our large drawing and planning tables occupy much room; and detailed plans, on larger scales, will constantly be required as the work proceeds. Execution will require an active staff: for the work now become that of a Reconstruction Office, co-ordinating all the many labours these plans involve, as of Sanitation, Water and Drainage, with

Cleansing of Rivers and Mohallas, Making of Gardens, and also of Street and Road Construction etc. with superintendence of Building. The work thus ranges from cleansing to construction and completion; and with all this is needed skill of general organisation, close attention to estimates and finance, and vigilance of economies in detail. Nor do Sanitary Engineering, Building experience and aptitude, and Business capacity, suffice for the Reconstruction Office and for its Officers needed throughout the duration of the work. Local knowledge and understanding are also essential, individual tact in dealing with the citizens and with their local and individual requirements. Social appeal and civic enthusiasm too are needed, to arouse neighbourhood after neighbourhood to participate in improvements, instead being indifferent to them, so that before long we may inspire the City as a whole. For this no small measure of moral influence and energy is required; yet not expressed by authority alone, ignoring apathy; overpowering opposition; but turning opponents into allies, and even arousing indifference and indolence into help and hope. For this more than technical expertness and activity are required, more than municipal and business methods: the city improver fails if he be not also something of a miracle-worker to the people, who can show them signs and wonders. Miracles of healing he must do—and can do; since malaria, plague, enteric, child-mortality and more, may all be abated, and these swiftly. Wonders of beauty too, in veritable transformation-scenes; the poorer the Mohalla the better. For in a few weeks, sometimes even days, we can change a squalid slum into a pleasant courtyard, bright with colour-wash and gay with the old wall-pictures, adorned with flowers, even again sacred with its repaired and replanted shrine. Around this, the expanse of rubbish-mounds, befouled in every corner, defiling every home with its germ-laden dust, depressing every household, will from the first year be changing, into a restful and shady open space, with the elders sitting in the evening on the renewed chabutra under the old tree, watching the children at play, or watering the new trees they have helped to plant, and so feel their very own. Beyond this again, instead of some costly "sanitary" horror, (I Chapter VIII), will be growing up a verdant and fruitful Municipal Garden, in which health, pleasure, and labour are again more nearly at one, than our modern cities' work and wealth can often be.

With Public Health, even something of Public Art, thus becoming seen and felt by the people, as uniting towards their common weal, their family well-being, there is little fear of their response. Slender-based legends, often even downright fictions, were long in circulation in the west ends of all our British towns at the outset of our Housing and Town-planning endeavours in their east ends, as to the people's indifference to our improvements of their environment, and even of their careless or wanton spoiling of them. Hence officials and administrators in their offices, engineers and even sanitarians on their rounds, and of course all together in their clubs and in society, smiled with their superior knowledge of the world, when they did not sneer at, or actively oppose, our small beginnings. Yet in time such criticism gave way—since but a survival of that of our puritans to the pageants, of our philistines to the arts, which are at length converting their opponents. We have thus, for thirty years and more, been appealing to some of the most slum-housed and correspondingly depressed, diseased and dying of city populations in the British Isles, that is, in the whole modern industrial world: and even where funds do not reach to rebuilding, we experimentally show that our cleansing and colour-washing, our playground and garden-making and tree-planting, produce more real and more enduring effect upon the people—in ways sanitary and social, encouraging and in the best sense educative—than can any conventional petitioning or agitating, teaching and preaching, left unapplied. More even than can authority and administration, with their ten-

fold greater expenditure, but with their sanitary or building work left ugly and untidy when done: more too than can all our lecturing and writing, whether to masses or to classes. Here at length, is something of the needed civic education, and for all: not the book instruction too simply dispensed under that name, but the reality:— that of life again interacting with environment, and better environment with life, and thus encouraging it to fuller effort. Individual education at school or college, in laboratory or library, is not one thing, and local and civic improvement quite another. Only their dis-specialists can still think so: every one who enters the great world-laboratory of reconstruction now so fully opening, soon learns that city betterment and education are again at one, for man even as for the ants and bees.

The housewife with her helpful children, the girl watering the tulsi-plant, the boy-scout with his daily "good turn" out of doors, the sweeper-mali at his humble task, the craftsman and artist at his labour, and so the Mohalla people at its mending, the Suburb neighbours at its growing—these are each and all plainly helping their great town towards its renewal and its extension, towards its development in health and wealth. But they are also educating themselves, and this practically, morally and socially, and intellectually not a little also. For as this education goes on, that of mere "individuals" into citizens, ideas are not merely diffused and scattered as at present, like new dust over old: they become organised into personal purpose and public life; as from an incoherent, mutually distrustful crowd, into an army bent on victory. Thus for example, instead of merely fleeing from plague, and lying down under malaria, we shall then substantially conquer both, even expel them; and other evils as well.

To this united progress, of Citizenship and Education together, there are no limits. Industrial and Commercial town, with their Schools and Colleges, thus interacting, will grow up, and far more speedily, into the University City; and this with citizen-students and student-citizens. And with this, that highest of Indian ideals, the Sacred City, cannot but arise once more.

Without such aims and efforts, the best of planning can but remain on paper, or fall away from its beginnings. But to co-ordinate all these into steady action, day by day and year by year, is the needed task of our City Development Office. To initiate such efforts, to encourage them, maintain them, accelerate and intensify them; here lies our task: this must be our main Procedure, our essential Agenda. All this needs organising and skill, and these as definite as for the creation and conduct of an orchestra, for the production of a play, and even more. Like these too, and above all, a sustained courage, with its contagious glow of feeling. Behind the cool propriety of the open shop, the steady counting-house and the busy looms, the glowing furnace energises all. The City's progress is like a world-voyaging ship, in which the engine-room and its fires, the captain's chart-room and bridge continuously work together, through storms or calms.

Nothing short of such organisation and purpose, spirit and personality, comparable to that of war upon land, and war with the elements by sea, will ever retrieve and develop any city. It is thus impossible that its Development Office can be conducted in the odd time of those already pre-occupied by the innumerable details of existing administration. To make the best use of the substantial annual budget required, a picked staff is required, energetic, experienced, and economical accordingly; and with a vigorous and inspiring head, responsible to the Municipality, and through

this to the Ministry, and keeping these in touch with the citizens. His periodic reports, if possible at quarterly or at least half-yearly intervals, will keep up and increase the active interest of all concerned.

Cost of Town Planning.

A point of interest is the expense of Town Planning. Let us suppose that the total cost to this City, of the present Town Planning Office, during the past nine months—(1) that of its present head, (whose fee includes his private assistants) plus (2) the staff of assistants supplied by the Municipality, plus (3) the production of large scale Plans, and of the present voluminous Report, with its Plans) when fully reckoned up, and noted as the most detailed and the most comprehensive of Town Planning and City Development schemes as yet in India, (if not indeed any where)—mount upto as much as (or even more a little than) that of the preparation of the two past schemes put together, viz. that for Drainage (1917) and that for Improvement of Old City, (1912). It will then be found that this total outlay is but an insignificant percentage upon the economies it seeks to realise by the replacement of these two previous schemes; thus leaving no cost or percentage at all to be charged upon the many further constructive plans provided for City Developments of all kinds, with planning of the New Suburbs and the New Industrial Town as well. Yet the 1917 Drainage Scheme had already been reduced to less than one half of the cost of the preceding one of 1911, while the 1912 Town Planning Scheme is, as already pointed out (I page 160) probably the best and the least costly example in India of its school and style of planning. In this way my reduction upon the estimates of previous schemes in Indore, though still so considerable in themselves, are not more than one half the average of what my economies have been during previous years of work, in the many cities on which I have had to report in most Provinces and in various States of India. The extravagant outlays, the enormous public waste, involved by the majority of the current City Improvement and Drainage Schemes throughout Indian Cities, can thus be realised; and with this the desirability of continuing such vigilant economy in all schemes and plans as has here been kept in view for Indore. But with this, it is plain that a Town Planning Office pays for itself; and this very many times over.

Note on defects in Customary Valuations for Clearances, and Rates of Compensation.

A matter for serious consideration, and by all concerned, before acquisitions of houses, and land, for these Improvements are begun, is that of the principles on which Valuations for Compensation are to be conducted. Here I must recall my protest, at I page 83 and 84, that the "fair valuation" commonly paid in compensation for the poorest houses removed, only too easily inflicts irreparable damage on the householder, since the amount is too often quite insufficient for new construction and so is spent unproductively, so far as we are here concerned. Such compensation therefore needs to be made on a more generous scale; and this is allowed for in the 15% added to the total of Chapter XIX. It should not be payable in cash, but as each new house is constructed. This will commonly need some advance as well, hence the need of a Co-operative Housing Society. This also may store old materials, after the first demolitions, and then build houses in advance for the needs of others.

But in estimating values of slum-dwellings built and held for rent, municipal valuers commonly tend to give too much, instead of too little; thus giving a premium on neglect and disrepair, on overcrowding and rack-renting, and discouraging better landlords, sometimes even into following such evil examples. Such unsatisfactory buildings should be valued more strictly, and according to their healthy and normal accommodation alone, with full deduction for disrepair.

Vacant sites on which buildings might reasonably be erected, should ofcourse obtain full and reasonable valuation on taking over; but there is no reason for giving site-valuation to areas of minor uses, on which no buildings can be allowed, and which public health requires for open spaces or gardens. The capital value of their average return in past years is here the basis of valuation in such cases, though sometimes a little more may be given.

Justification of Preceding Estimates and Agenda.

For the justification of the preceding Estimates, which the Town Improvement Office has to take over, and as far as possible economies upon, some further and fuller explanation is needed; indeed requiring the following chapters, dealing with the old City and the New Industrial Town.

The consideration of Agenda and Programme is here partly entered upon; but must be summed up more fully later, when the chapters justifying Public Health measures, as probably the most remunerative of possible investments, have been completed and the help obtainable from citizens, as Friends of Indore, has been outlined.

SECTION IV.

Estimates further Explained.

Chapter XXVIII.

Housing and Cleansing, in Old City Especially.

Housing Generally.

Though the cost and scale of each house is a matter for each householder according to his means, its construction, sanitation, etc. is always under municipal control. Still more is municipal vigilance needed with New Schemes; for what use can be the best of plans, unless guided in execution. The resultant increase of real estate, and of taxable value accordingly, is thus encouraged as far as may be. But aid may be necessary, and this in various ways; and these may need State assistance.

The State as Housing Banker.

As an example of this latter, it has been proposed that the State should advance, to members of its Services who desire to build new homes, a proportion of their capital cost, secured upon these; and that it should indemnify itself by periodic deduction from their pay, for the necessary term of years. The State, as banker, thus assures Housing, as well as real saving afterwards. How far can this fruitful principle be adapted to meet the needs of other sections of the public? For the housing needs of many of these are not only more urgent individually, but also more urgent from the side of public health, which is in such fundamental need of improvement for all classes. We must therefore return to these financial problems in a later chapter below; but in these Estimates there has been included a substantial allowance of Capital towards investment on such productive lines.

Old City: Housing for Sweepers, as Estimated above.

But now beginning, as always in this Report, with the paramount claims of cleansing for health, and affirming for the poorest citizens, just as for soldiers or police, that for their highest efficiency, one essential factor is adequate housing, must we not ask the Municipality—Why not now increase the efficiency of your simple rankers, and of their subordinate officers, in their daily war with dirt and disease, by seeing, as soon, and as well as may be, to the better housing of them? Is it not manifest, to whoever has noted throughout Indian Cities, the varying condition and efficiency of their Sweepers, that we can only expect and obtain from them adequate care of our health and homes, in proportion as their own experience and standard of health and home is raised towards ours; and thus no longer allowed to remain as low as at present? In the public interest then, and by no means solely as part of the movement for the elevation of the depressed classes, (I. p. 75) I plead for thus helping them towards respect for their own health and well-being, and thus more for ours accordingly.

Of Sweepers, both private and Municipal, the present normal strength for Indore is not less than 300, or with carters, drain-cleaners etc. say 400: representing about 200 households. The public seldom hear of, still less sufficiently realise, the difficulties of their Municipal Cleansing Department, in keeping up even the numbers let alone the efficiency, of this large corps; but from wide experience of Indian cities, I am safe in saying that these difficulties are very general, frequently serious, and—while left on present lines—destined to increase.

Our proposed Drainage Gardens are here of promise: but how much more effective may these also become, if we can house our Sweeper-Malis, as well as thus increase, improve, and steady their employment? So why not build sweepers' houses in or near our Gardens, so saving them time and journeys, and obtaining their fuller interest and guardianship? Good one-room kucha-pukka (I. p. 81 and Plan III) houses, with ccookroom and veranda, can be built, in pairs, at present rates for about Rs. 470 per house; or good two-roomed houses, as per same plan, for Rs. 750 each.

Assume then, to begin with, 100 one-roomed houses @ 470/- ...	= 47,000
and 100 houses @ 750/-	= 75,000
	<hr/>

We have thus the considerable outlay, as per chapter XXIII
above, of Rs. 1,22,000

But this construction may be spread over a term of (say) 4 years; and it may farther be used as an incentive to steadiness and efficiency. In this way, although the actual rents to be deducted from wages should be at the very lowest rate of interest possible, the real return to the Municipality may soon be high. From this resultant economy to the cleansing budget, any deficit on this rental account may thus be made good. A 5 per cent rental would be Rs. 3-2 monthly on the larger houses: say then Rs. 3, or ever less if necessary; and proportionally for the smaller.

Possible Sources of Aid towards "Raising Condition of Depressed Classes."

Again, need the Municipality make itself responsible for finding this whole large capital sum for construction? Why not appeal to the increasing section of the public who express interest in raising the condition of the depressed classes, and give them this practical opportunity of showing how much they actively sympathise? Investments at moderate interest might be invited: even donations might also to some extent be forthcoming before long.

Co-operation of People themselves.

Again sweepers and carters have some spare time: and they are sturdy fellows, handy, willing, and often intelligent: and what better outlet can a man find for these virtues, or for increasing them, even acquiring them, than in the construction of his own home? For even such partial help as he can give, he may be credited, as a shareholder, with assurance of rental proportionally reduced accordingly, and cash payment on emergency.

House-building has never been a caste-monopoly in India, but the very opposite, one of the most widely diffused aptitudes. But Western-educated townsmen have now lost this tradition, and so are forgetting it for others; hence they talk as if every house were a matter for builders and contractors, just as the west has come to do. But it is time here to escape, as in so many other matters, from the present phrase—"we must accept modern conditions," and to see these as but a parenthesis between the better elements of the past, and their recovery and continuance in the opening future.

I ask then, of the Municipality, whether it cannot find in the City, (or through the Public Works Department?) some capable overseers, for such work of housing—men who could keep up the standards of planning and execution, yet utilise and train the more or less unskilled labour of its employees into satisfactory house-building.

Brahmin Water-carriers again.

Ascending now in the social scale, yet descending in that of prosperity, we come back to the Brahmin Water-carriers (I page 165) as perhaps the poorest and worst housed group in Indore at present, and also the one hard-hit, in fact well-nigh ruined, by the very first of the present improvements, that of turning on the standposts. What compensatory prospect can we now offer them? Yet what poor beginning, and worse augury, for further City Improvements, if we leave them unhelped to struggle on as best they may?

Their case is neither one for mere charity, as of the past, nor for "laissez faire," but for practical treatment. And since the economist hoped for, (I page 166) has not yet appeared, we must at least make some effort meanwhile. For here are a hundred men, cleanly and self-respecting by occupation as well as tradition, and with the feeling of social responsibility and domestic sympathy and duty which are necessarily associated with their work. There are no small civilisation-values; and men trained in them are far too scarce as the world goes, too socially valuable, to be allowed to lapse and drift asunder into any corners of the unskilled labour-market.

The situation is also doubly urgent, in view of the fact that their little square is now planned for the minor Bazar which should decongest Bohra Bazar, and also admit of improvement in that quarter, as by renewing the State Building there; while all this helps to abate the overcrowding of the Bazar shops, with the consequent rise of rentals and prices. So that if we can at once remove and employ these Water-carriers, the city benefits, and this by several "moves".

The Municipal Gardens may here afford outlets: for if the sweeper does any trenching required, a Brahmin Gardener may cultivate; indeed already in Indore sometimes does so.

Suggested Dairy Scheme.

The employment of water-carriers as milk-men is obviously open to jest; but even in cases of yielding to this besetting sin of the latter occupation, it may be hoped that the added water would now be pure.

But we may surely get beyond this. In that present scarcity of good milk in cities, in which Indore shares, there is surely scope for a Brahmin dairy in rivalry with the Goala one suggested for Chhatri Bagh (I page 98).

Ice Factory and "Chilled Milk".

Again Indore needs an Ice-Factory; and here might be some of its workmen. Next, if this and the Dairy can be associated, we can then easily have Chilled Milk—a later improvement on boiling than is Pasteurising, and one far more suited to the climate. For if kept in double tins, with the intervening space exhausted—each practically a big Thermos flask—the germ-growths so fatal to infantile health, and destructive generally, are prevented by the long-continued coolness.

Ice should be made as near the City as may be, while open fields are only at the circumference. But for the modern dairy, stall-feeding must increasingly replace pasture. So may not the two moderate buildings required for both uses, find location in the corner of the site east of Station for new Hotel, or behind the New Hindu Library, and thus with convenient outlet for both ice and milk to City Suburbs, and Residency alike. With ice and milk for delivery from the same cart, both would recommend themselves more fully to customers. And why not surround the buildings with mulberry trees as a beginning, and develop plantations further afield as required, for that propaganda of Silk, recommended at I. 29; and also possible through the Schools? For such industrial undertakings as the above, I do not here estimate, as private enterprise should supply them.

Further House-Building for Persons to be Dishoused by Improvements.

The small houses planned south and south-west of State Stables should also be erected as soon as may be for, the accommodation of local workers and servants displaced by the internal improvement of the Six Squares. This again involves an outlay of not less than 20×750 Rs. = Rs. 15,000; but rental should be immediately forthcoming. The neighbouring Temple will also build 14.

Similarly for the few other small houses, or groups of houses, at other points throughout the centre of the town, as also in Harsiddhi, and in or near Juni Indore; and a few in Ranipura north and south, to abate the house-famine of the poorer classes in Sia Ganj. No housing is so urgent as that required for these householders of Joshi Mohalla, who are already partly evicted, and of whom others have to go, for the completion of the Lal Bagh Avenue to Chhatri Bagh; and their New Mohalla, planned north of Mhow Naka Star, should therefore be proceeded with at the earliest possible date.

But here there are compensations already allowed for in Chapter XIX; and I have therefore only added Rs. 40,000, for such houses as may have to be constructed for letting to those without capital.

Housing Co-operative Bank for City and Suburbs.

In view of the obvious desirability of this, I suggest in above Estimate, (page 99) an advance of capital amounting to 4 Lacs. Not that that can be sufficient; but here is peculiarly a mode of investment which should be supported

by the citizens themselves. Hence also the above suggested capital advances for Suburbs, amounting to 6 Lacs.

Corn-Godowns for Plague Measures: Tonga Stables and Tongawallas.

Finally, we have to add to these housing proposals, the cost of further schemes desirable for public health in general, and urgent as Plague measures (additional to that of Retail Corn-market already included in chapter XIX) which are therefore also described under that heading, in the coming Section V. Public Health. First then, aid towards the construction of Rat-free Corn-godowns near Malhar Ganj, similar to those already estimated for at Sia Ganj (Chapter XIX).

Secondly, the concentration and asolation of Tonga Stables, with houses for Tongawallas as required, for which Rs. 1,25,000 has been estimated, as the total cost must exceed this, but can be partly met by the Tonga business.

Servants' Houses.

This also may be a convenient point to note, with regard to the many prosperous householders who are at present preparing to erect homes upon new plots of land taken in the Suburbs—that their plans must be such as to satisfy the Municipality as to the space and sanitation of their Servants' dwellings as well as of their own.

Mr. Lanchester's Suggestion of Rotation, and Discussion of this.

In the able Report accompanying the Town Planning Scheme of 1912, one of its interesting suggestions is practically to revive and adapt something from an ancient tradition,—that of the Migration of Indian Cities—in the form of “a kind of systematic rotation between occupied and unoccupied areas” of kucha housing in the outskirts of the City. Something of the same idea is also practically implied in the Plague Camps, now so familiar here and elsewhere throughout India. And if public health and sanitation, and with these the customary planning (or non-planning) of Mohallas, and the habits of their people—are assumed as likely to remain what they have become in the comparatively recent past, much might be said for that method, even on the large scale indicated in the 1912 Plan.

Something of this process is to be seen in the present encouraging demand for building-sites in the New Suburbs, all more or less widely spaced and planned. The Migration of a majority of the Cotton-workers etc., from the City, to essentially similar suburban Garden Village conditions in the New Industrial Town, may also be expected, and this as rapidly as its building can be advanced. And this process can be accelerated, if the Municipality can be put in a position to relieve them of their town houses on reasonable terms; then either improving these, or clearing them away, as in each case may be found advisable.

Again, if and when the Military Removal (I page 11) is undertaken, the existing Barrack dwellings, as already suggested (I page 20) may be thinned out or repaired, (often with two or more thrown into one) and thus given a fresh period of usefulness. And as a not inconsiderable number of the poorer working inhabitants of the loose and untidy Mohallas which have arisen beside every group of Military Lines will need, and be needed, to accompany this migration, a further

very considerable decongestion of these Mohalla areas will arise, and with increase of the City's available open areas on easy terms. The busy citizens of the Bazar Town, especially those who have not felt their means, or time, equal to taking up suburban houses at present, may thus spread into these areas; while wealthier townsmen may often be attracted, by such easy access, to taking up vacated areas, and laying out gardens. Moreover such areas will be found remunerative for Market Gardening, with tobacco-growing etc., as is already so conspicuously the case among the depopulated areas of Old Lucknow.

Yet here no such serious depopulation of quarters is to be feared. The many old town-houses, with their great depth in proportion to breadth, their frequent subdivision and overcrowding, which our present planning and sanitary schemes can as yet but indirectly reach, may thus be gradually decongested. Acceleration, where need be, by Municipal agencies will be doubly possible; on one hand by the push of stricter public health regulations, and on the other hand by the attraction of better housing facilities at easy distance.

Comparison of the present Method of Improving Old Quarters, with Customary ones.

The method hitherto dominant in improving old and insanitary quarters, in Indian Cities and mainly also in Europe, has been that of cutting new streets and lanes through them, in as straight lines as may be, of course with compensation, and then of rebuilding along the course of these new thoroughfares, without improvement or modification of the irregular groups of old houses left within the new network of streets. The expense of all this being necessarily enormous, the area treated is necessarily correspondingly limited; while the sanitary result is found disappointingly small. The improvements of Bombay show too many mistakes of this kind.

On the other hand; the method of "Conservative Surgery", which I have worked on in former years in Edinburgh etc. and have applied in many old Indian towns before this, involves more time for local survey, with corresponding puzzling in design; for the problem is now to conserve, as far as may be, all buildings worth repairing, and as far as possible only to remove those either not worth repair, or of lowest value. New and practicable communications are thus obtained, and often fresh building sites as well; and above all, a surprising area of enlarged or new Open Spaces, capable of being planted with trees, and used for play and rest, and with increased space for well, temple or shrine. The old village life is thus so far essentially restored, and that of the street proportionally averted.

Economy of this "Conservative Surgery".

Besides these notable advantages to public health and well being, the economy is great. In no case, in any City, have I ever found the estimates for my "Conservative Surgery" plans, with thorough sanitation, work out so high as one-fourth of the estimate for the conventional straight cuts, though these are taken without providing open spaces, or sanitation, or even cleansing, behind the scenes at all, but at most at one-fifth of these. More frequently one-sixth or one-seventh, and in some cases only one-tenth; since correspondingly displacing fewer households; in one well-known city, only 8 instead of nearly 200.

Stated in another way, this method of improving mohalla after mohalla, instead of piercing them by new streets and lanes, enables the improvement of five, six, seven, or even up to ten times, the area of the city with a given sum. It is thus in accordance with the limited resources of every Indian city, as well as with the the best traditions of the Indian village life, which in each mohalla it helps to revive.

Old City: Cleansing Again.

Among all these many undertakings what is first is most urgent? Little though City Improvement Schemes often regard this, too much though engineering and sanitation in the past have postponed it, the first—the very first—of all improvements for a City, as for every individual man, woman or child of its population, is the immediate one—to get clean. Not less than as the morning bath is the best start for the individual tasks of the day, so is Cleansing for the City. Knowing now more fully than before last Diwali how many other needs have to be met, and after here submitting definite proposals towards meeting each of them, I come back to plead that, before them all we should face this elemental one—and begin at once a City cleansing far greater and more thorough than that of last Diwali.

Immediate Cleansing Requirements.

As the initial instalment, from above Estimates, for Improvement of the Old City, I submit that a sum of Rs. 20,000 should be allotted forthwith, for cleansing expenditure in this current year, beginning as soon as may be, and doing as much as possible before the Plague season returns, and Diwali comes round. To this let there be added from the Estimate for Cleansing of Rivers and Nullas (page 77) say at least Rs. 10,000; and to this say Rs. 20,000 for improvement of Surface Drains. Total 50,000 for Cleansing, in the opening twelve months if possible.

Comparison suggested with recently Drained Cities.

The immediate result to be expected from Cleansing may be expressed in this way. The nearest great city to this, Poona, has just completed a Drainage Scheme on the full modern scale criticised in Chapter VIII, and so at an expenditure of Lacs 20: and this as usual, I understand, without any such modest outlay for Cleaning up, as is above proposed, Rs. 50,000. Assume this executed: then, a year later, let us compare the proportional improvement in health returns of the two cities: that for Poona, as compared with its previous years, now that it is drained at full expense, and that for Indore with its first rough cleaning up, at one fortieth of that outlay, and without new drains of modern type at all. I venture now to predict that these health statistics will show far more proportional improvement here—unless, as is to be hoped, the larger city overturn this forecast by a kindred Diwali celebration! A similar comparison may also be made with Nagpur; and with other recent sufferers from the prevalent Drain-habit. The explanation is simple. Most diseases are functions of dirt, in one form or another: but this on the surface of the City in its air or in its water, and thence variously transferred to the lungs, circulation, digestive system etc. of the community. Directly to deal with all varieties of this, as fully as possible, yet with minimum outlays, is thus the prime sanitary problem:— not to select one sort of dirt, for catacomb treatment, at maximum outlay; and so to leave insufficient means, spirit, or both, for the rest. That is wasteful, if not even all but futile as well. Conversely, with the good result of a comprehensive and general clean-up, even incomplete, we shall be encouraged towards further efforts, and again rewarded for them.

Improvement of Townspeople, in adaptation to improving Environment.

Again, since I have recognised (I Chapter IV) the slackness and depression so manifest among the people and in their habits, and this indeed with unconventional distinctness,) it is plain that I am under no sentimental illusions as to their present state. And quite as little about the success of current appeals—as of democracy, education, or religious revival—since each a too isolated panacea. The biological proposition, that the organism adapts itself to its environment, is here my start-point. The present and manifest co-adaptation—in a vicious circle—of untidy and unhealthy place with correspondingly unhealthy and untidy people, is thus part of the order of nature. Yet this order is here sufficiently within our grasp to transform its working. Thus the thorough cleansing of the Rivers and bunding of the Nullas, cannot but soon have results to show; *e. g.* of attraction to bathing and washing, and these increasingly towards the liberal old Indian scale. The cleansing of the Mohallas from their long accumulated rubbish, and the repair and flushing of the surface drains, will diminish dirt and dust, flies and mosquitos, diseases and deaths accordingly, and this to such an extent as to effect immediate, and increasing, improvement of houses and their well-being; and thus of opening for further improvements, even demand for them. Religion and Education, and also that rise in selfrespect and social status which is now-a-days again arising in working communities, will also be in progress from the very outset of these outward improvements, and may with these be more hopefully be advanced. Just as in these war-years fresh conditions, and fresh and vigorous education have been transforming slack youths into strenuous soldiers, and these by millions, so now in the opening years of the civic and reconstructive world-campaign of peace which is here and elsewhere preparing to follow those of war, a yet more effective transformation will no less become manifest—from untidy and sickly townsfolk, ignorant and depressed, into cleanly, healthy, happy, intelligent and productive citizens. By those fixed to neurasthenic pessimism by present conditions (or by the mechanocentric theories, which correspond to these) this proposition ofcourse appears utopian. But its certitude is none the less experimentally plain to the student of life, as at work in country or town, whether he be sowing better seed in the one, or planning for the other.

So with better Housing, with Gardens and Open Spaces; and, with these planned as Isolation-belts between rows and groups of houses. Here the results must be more than material and hygienic, important though these are. In such environment higher Civilisation-values also appear, and have room to work in; so not only to maintain improvements, but to increase them, and in all directions. For sanitation, sanity and sanctity—although three separate and dis-specialised ideas for the recent futilitarian past, and its survivors to-day, and thus each for many minds practically exclusive of the other two—were all in their beginnings at one, and again may be. So why not say—shall be. Are there difficulties to hinder this? Yes, assuredly, and many of them; but they can be overcome. What better use for individual and social will?—at one in goodwill.

Chapter XXIX,

Planning and Progress of the New Industrial Town.

Industrial Town Planning. (See Plan II.)

Since the purpose of this New Town is primarily industrial, and not suburban in character, the first question has of course been that of the provision of Industrial Sites, and these with adequate, yet not excessive, space, and convenient accesses by Roads and Railway Sidings; and the result of this prolonged endeavour to develop the general suggestions of I Chapter VI, is given on plan II accordingly, which essentially explains itself.

Allocation of sites.

In the Area to south of Palasia Nulla, large areas have been taken up at and since the inception of this scheme some years ago, by three Ginning Factories on Dewas Road, the Hukum Chand and Malva Cotton Mills, the Flour Mill, and more recently the Brush Factory. The Flour Mill now acquires an extension eastwards, with a possible Foundry site. The removal (either to this area or the adjacent one, as may be arranged) of the Harsiddhi Foundry is again strongly recommended, alike in the interest of that industry, and of the improvement of the Harsiddhi and Muchhi Bazar Areas, which has to await this change.

North-west of the Hukum Chand Mills, a large area has been taken, near the River, for the Kalyan Mal Mill. North of this the large area yielding yellow clay beside the river and most of that upon both sides of Palasia Nulla, with the intervening acreage between, has been reserved for a large Brickworks, while smaller brickmakers are now working all the clay areas on the Nulla further east.

Behind the Brush Factory, an Oil and Flour Mill is applying; and if the erection of this be arranged, only one small site south of Nulla will remain unoccupied, if even that. For the remaining large sites, it is understood that the resumption of Sir Kashi Rao Dada's land, with the surrounding Municipal area, will be taken for further developments by the Malva Mills Co. excepting only the small triangular area at the S. W. corner, which is allocated to extension of Ibrahim Co.'s Ginning Factory area to south of this. Thus only one large site will remain south of Nulla, and to this I repeat my recommendation of the removal of the Municipal Cotton Godown; and this alike for the increased efficiency and economy which this situation offers for this purpose, and for the provision of a large suburban area near the town, which will readily be taken up by those citizens for whom other suburbs, like Palasia etc. are inconveniently distant. The near proximity of the New High School Buildings, and their permanent conservation of Chiman Bagh as playing-fields, thus retaining the openness, breeze and beauty of a Public Park, with convenient access to the proposed River Boulevard immediately west of this, and proximity to City, Public Offices, Railway Station etc. all contribute towards making this perhaps the most attractive of all the proposed new Suburbs of Indore.

Vacant Sites North of Nulla.

Returning to the Industrial Town, the allocation of the area south of the Nulla may thus be considered as practically complete. Hence the lay-out of further

Industrial Sites north of the Nulla is necessary; though these can hardly be expected to be taken up until the Bridge west of Malwa Mills, which is necessary for this development, has been set agoing. I therefore recommend this without delay; and with this Bridge, and the associated road-making to a sufficient distance, there seems reasonable hope of applications for sites before long.

Electric Power.

Thus the start of a Central Electric Power Station—which should be located immediately north of Nulla, near Brickfields, and on a sufficient area for ample coal storage, and for further growth—is under consideration. I cannot too strongly recommend all actual and possible Industries requiring Power to adjust themselves to these modern conditions, and to devote some of the capital they will otherwise have to spend on coal-storing, on furnaces, chimney, boilers etc. to the development of an adequate Electric Power Installation instead; and on a growing scale, capable of serving existing and future industries. Experience in Bombay, as well as in the industrial towns of the West, clearly shows that it pays to abandon and “scrap” the best of existing steam-power installations in favour of electricity; and that this would be so in Indore, with the costliness and difficulty of individual coal-supplies—of which war conditions have only been giving an clearer instance and warning—is surely becoming increasingly manifest. Besides these obvious and immediate economies the use of electricity is also found to react favourably throughout the whole workings of every industrial concern, from its cleanliness, skill and science, onwards to yet further issues. These are felt by the simplest workers, and so again react on the general prosperity of each industry.

Railway Sidings.

Railway Sidings have been very carefully considered and discussed, as notably with Mr. Newton, Executive Engineer B. B. and C. I.; and the resulting plan will I hope withstand criticism, and be found efficient and economical in use. Its curves will admit of Broad-guage, should this alteration ever be required. There seems nothing to prevent construction being proceeded with. As to finance and upkeep, the City (or the State) may deal with the Railway, and with the users, the latter being responsible (a) for the total cost of their own special branch of the Siding, (b) for an allocated proportion for the total cost of the system. Or the City may relieve them of this, for a reasonable rental; plus in any case an assessment adequate to meet their share of working and upkeep, including their use of the Common Siding, next Railway Lines. As the system develops beyond the Nulla, the contribution of each new user, more distant from the Main line, will naturally help to abate those at first undertaken by those nearer it.

Besides the sites south of the Nulla, further sites, averaging about 10 acres each are provided north of this. Ofcourse these sizes are merely provisional, and can be increased or diminished to any reasonable extent, with due respect to the course of the sidings, though this too will admit of some modifications, if required.

Defects of Current Industrial Planning and Organisation.

In this connection I must recall my remarks with regard to planning of Industrial Sites, at I pages 33-36; and this the more since a good many months of fuller acquaintance with existing Indore Industries, and proposed ones also, have given me

ever increasing proofs of the distressingly heavy handicap which practically every new Indian Industry is permanently laying on itself from the very outset,—and this mostly beyond subsequent repair, save at excessive cost—through the thoughtless planning, or rather wasteful mis-planning, of its ground and buildings alike, with loss of time, and labour and wages accordingly. To this general criticism, I can still find only the solitary exception of the Brush Factory, though of course others differ in degree.

I entreat then the serious attention of all future Industries, also that of the Municipality, and of the Ministries concerned in this matter—whether with economy of land or with the direct fosterage of industries and commerce—to this need of Better Planning. In this connection I may also suggest the wide circulation of Professor Jevons' Report on the New Industrial Town, published by the Ministry of Commerce; and this also on account of the further questions, beyond planning, with which he rightly deals. For it will need not only better material Planning and Labour-saving, but also Efficiency-management, and Welfare-management as well, unless these Indore Industries are to fail in their turn, as did those of the Swadeshi movement. For their present low level of organised and all-round efficiency still seems, in too many cases, proportionally about as far behind that of their essential competitors in the world to-day, not to speak of approaching ones to-morrow.

This is no doubt a hard saying; but it has to be said.

With these dangers in view, it is doubly urgent for the Town Planner to take such initiative as he can towards the welfare of workers; and we may therefore now pass to the consideration of their Housing. But first a word of their Drainage Gardens.

Drainage Gardens of Industrial Town as a new Industry.

So habitually mechano-centric is our thinking, as of this Industrial Town as all for mechanical industry—with its workers as so many machines in it, its masters so many cash-boxes in it—that it takes quite an effort to realise, that among all its working and productive areas, here for cotton, there for bricks, for brushes, and other excellent and useful things, much the largest area is this of its Gardens, and what should be the most steadily productive and permanent also. These 130 acres will spend on wages, even at three men, at Rs. 15/- per month, per two acres, no less than Rs. 35,000 per annum; not to speak of other productive outlays; and with careful gardening and superintendence, they should yield at current market rates not less than Rs. 500/- per acre = Rs. 65,000 of annual production in return. True, as we get these into cultivation, and also the Old City Gardens, planned to be ultimately of still larger extent (147 acres) the market prices of fruit and vegetables should fall, and that considerably. But this, when considered as municipal business, for the benefit of the public, and not as private business, towards their impoverishment, is all to the good, though no longer so estimable in rupees. But cheaper food there will be, and wages will go farther accordingly; and that is a matter favourable alike to wage-earners and wage-payers.

In short, though this yield of money profit is of course in these days exceeded by any Mill, it remains clear that in health-values and pleasure-values, in civilisation-values too, in short in life-sustaining values of every kind, it surpasses all the rest.

So definitely is this the case, that it may well turn out, (if water-supplies allow) that our garden-belts are too narrow. Is our planning thereby upset? Not at all; this expansion is provided for, as far as may be. Each main block of houses, as laid out, needs only correspondingly slightly to be enlarged. The present plan may thus be modified (a) by giving up one house-plot from the breadth of each interior square, or (b) by widening the gardens in one direction, so that one of the usual six or four rows of houses is left out, and a garden thus comes to face the interior road on one side.

But the Management? Our skilled Agricultural Advisers are agreed that the needed Superintendent can be found, and even with previous experience; for there are already successful Sewage Farms and Gardens in various Indian Cities.

But the Water? As we bund the streams we are raising the water-level of the plateau, saturating it as a great reservoir against years of drought.

But the Bunds? These are but small additions to the needed bridges; and of these one, at Malwa Mills, is already built. Another, on the River, is broken, but only awaits repair; and as without this, and some of the remaining bridges, the Industrial Town cannot go on, there need be no fear of their speedy construction. In such ways, all objections are readily to be met; and when the work has begun and its fruits begun to appear, our critics will become allies.

Since the War we have heard much of "Key Industries", on which Germany so shrewdly specialised; and here Indore economists may find suggestion. But even more important than these are the Root-Industries, which Indore has too long been neglecting: above all the fundamental human activities of Gardening and Building; for which the present planning of Gardens and Homes, and these on a scale of exceptional magnitude, this re-evolutionary scale, of City improvement and development now offers the opportunity and scope, and so the call to the friends of Indore to take active part in it. The present rise in the cost of living in Indore, and the ever-increasing probability of coming shortage in food supplies, makes even the domestic beginnings of Gardening a problem worth the consideration of every house-holder with the smallest space for it; while the promotion of larger gardening beginnings for the coming season must similarly plead for consideration from the Municipal and higher authorities.

Here the growing example of Britain and America, with their gardens increasing so rapidly during these war years, is obviously suggestive. Here a passage may be cited from a letter from an American friend, a linen-merchant of no previous gardening experience beyond his own compound, which has come in as I am writing this section:—

"As to War work in our own City, I am Chairman of the Food Conservation and Production Committee. We are doing very extensive Gardening work: our Committee have something like 3000 gardens under their special supervision, and they have increased the food production of Newton, since 1916, by something like 250%. We are hoping to make a still better showing this year."

So can Indore. The space available for culture is here both actually and proportionally far more extensive, and soil and climate are more favourable. To mobilise

all available Gardeners forthwith, to train the Schools, and many of the community, and start them in time for next season, 1918-19, would thus be a wise civic policy, and may do much towards abating growing poverty and threatened distress.

Minor Industries.

In Garden Villages of this kind, with their homes and health at a high standard, and with mentality freshened by contact with something of rural beauty and growth, minor industries and arts are also found to appear, and with a little care and organisation these may develop. Thus again the New Town may react favourably upon the old.

Many of these Minor Industries are far more adapted to the traditions, temperament and aptitude of the Indian people than are any of the current reproductions of the great manufactures of the West, necessary though these may also be; and they are also mostly better adapted to utilise the regional and climatic conditions. Witness, here in Indore so especially, Fruit and Silk, to which I have therefore repeatedly called attention, and pled for, in these pages. They too, lead to further developments; *e. g.* Gardening to Fruit and Vegetable Preserving, and Silk to Weaving Embroidery, etc. That such industries produce the higher Civilisation-values, while mechanical ones everywhere too readily sink towards the lower of these, is again a matter which Indian statesmen will increasingly realise.

Art Industries.

Art Industries too have been allowed to die out of Indore; and no "Teaching of Drawing" on present principles, imported from South Kensington, and often in its worst days, will ever revive these. The renewal of the arts in Britain has been in direct protest against these paper methods of art-teaching, and by a return to the pre-mechanical traditions of skilled handicrafts, in which one learns woodwork by building or furniture making, wood and stone carving not only by modelling, but by carving wood and stone, decoration by decorating, metal-work by metal-working and jewellery by jewelling; and so for weaving and the rest. Hence the influence of William Morris, and now the yet greater leadership of his successor Henry Wilson, and of their Arts and Crafts Society, which has now won the highest admiration and public honour, even from France herself, as mistress of the Arts. In course of this work, one makes designs and accumulates sketches, and thus succeeds, even creatively, with the drawing which the paper-education ignorantly worships, but cannot vitally produce without real craftsmanship.

But now in Indore, with an old City here to conserve, there to repair and to re-adorn, often even to rebuild; with Garden Suburbs to build outright, and a New Industrial Town as well—there is no finer opportunity for the Arts to-day, whether in East or West. Among our many small initiatives, as of Gardens and Houses, some beginnings of experiment in house-decoration are therefore included, as in Boy Scout House, and where opportunity has offered in that brightening up of the City which is beginning for the approaching Vice-Regal visit.

Minor Industries, also of artistic character, should include Lapidary work, utilising the agates and chalcedonies, milk-opals and the like (which are here so common as sometimes almost to preponderate in railway ballast), down to the manufacture of buttons and other small wares, in which taste and skill are required.

Other Industries.

Other Industries deserve to be carefully sought out and encouraged; such as Soap-making, rag-Paper-making, Tanning, and more; and their development is well worth attending to, in Old or New Indore according to circumstances. Printing, too may have a future, and this beyond the needs of this city, or even of Central India: for there is no reason why Indore should not print for Bombay, as Edinburgh and many smaller Cities so largely do for London.

Chapter XXX.

Planning of Industrial Town. (See Plan II.)

General Layout of Town.

Here the first condition manifest from the outset (I p. 39) is the due separation of the Dwellings from the Factory area, and this for every reason of economy of land, public health etc. Yet all this with the easiest accessibility between home and work which careful planning can give; even the remotest houses of the Town, on either side, being very little more than half a mile from the Industrial area.

Since the general inception of this Industrial Garden City Scheme, indicated in I. Chapter X-XIII, the planning of its great needed amount of Housing has been in progress through many trials. Plan II expresses developments of various kinds upon the initial conception of Plan III, as there explained.

In the present planning, the need of precautions against Plague and other diseases has been kept clearly in view; and this above all from the standpoint of the well-being, health and happiness of homes, with their increase of the disease-resisting powers of the organism, and with the vigour and productivity of both sexes and the normal growth of the child.

The River and Nulla Banks, below building levels, afford a great length of Park and Playground area, amounting to about 41 acres, exclusive of spaces allotted to Brick-fields. Open spaces for School Playgrounds are also provided, and small Public Gardens etc. in the town areas back from the Waterside Parks. A small Park is provided opposite Malwa Mills, including the Mosque and old trees.

The winding course of the River and of the Palasia Nulla, with the varying contours of the land, have essentially determined the gently curving streets of the West and Central Area: but on the all but level plateau of the North and East, there are no such reasons for departing from rectangular planning. The main thoroughfares have all been kept as direct as may be; but these will have less monotony than ordinary straight streets or boulevards, by the more frequent introduction of small squares at crossings, and of occasional interruption of house-rows by bringing the interior garden out to the street, with a glimpse of garden verdure behind flowering trees, or of climbers at their entrances. This principle is also followed, and more largely, at the entrances to internal Mohalla Squares, which are thus as far as possible isolated within the gardens; so that small playground spaces and

children's corners are thus suggested, which can be enlarged if required. These principles are carried farther at some points than others: thus, to my mind, the large northeast block, with its mohallas smallest and most fully isolated, by the largest gardens, from the main roads and from each other, should give the best health-returns of all. Still I trust these should be good everywhere.

As good supervision is necessary for the Gardens, so for these little Mohallas. But here, especially if we attend to the due grouping of different castes and faiths, and encourage kinships and friendships each to form a centre, its own little neighbourhood—in short, if we plant the people, with something of the care we should give to flowers and trees, instead of leaving them to chances, like those of a crowd looking for seats—may they not readily be induced to form Mohalla Panchayats, and in healthy rivalry? and will it not obviously be economic, as well as kindly, of Municipality and employers alike, to encourage these?

Care has been taken that houses facing east and west should greatly preponderate, as notably in the western half of the town. The inclination from this direction, to one side on the west, and to the other on the east, will be more than compensated, in giving to what would otherwise be north and south houses, their share of the dominant western breeze.

Town Districts for Municipal and Postal Purposes &c

Returning to general planning, it will be seen that the site has yielded what are practically a number of more or less separate Town Districts, which may conveniently be made as follows:—

- (a) *Central Town*:—South of Palasia Nulla, with its divisions:—C, (Hukum Chand Mills), E. C. (E. of Malwa United Mills) and C. W. (on River.)
- (b) *East Town*:—With its divisions:—E. (S. of New Dewas Road) N. E. (N. E. of Malwa Mills and N. of New Dewas Road), and N. N. C. (N. of Palasia Nulla and of N. C.)
- (c) *North Town*:—N. of Palasia Nulla and W. of River, with its divisions:—N. E. and N. W. (on respective sides of main North Road.)
- (d) *West Town*:—Including all between W. bank of River, and Railway, with its Divisions:—W. N. (N. of main East and West Avenue from Railway Crossing). W. C. (between this and Bridge Avenue), and W. (that between the last and Railway) presumably the first to be constructed.

The main "Avenues" of each town may most conveniently be given numbers, and so with the "Roads" crossing them, as in New York. Or, if numbering be too prosaic, they may be named after the trees chosen to predominate at entrance and crossings. The main "Blocks"—enclosed between two Avenues and two Roads may again be numbered, or lettered. Within these the little Mohallas will no doubt be named after or by the predominant inhabitants; and in these the houses will be numbered in the usual way. Some such careful districting, naming and numbering will save Municipality, Post-Office etc. from what might otherwise become confusion, with all its consequences.

Location of Buildings of Public Character.

The Post-Office and Saving Bank is best located at the W. end of New Dewas Road, since from this point distribution of letters can most quickly be effected: but Branch Offices may arise as the town grows.

The location of the needed Branch Municipal Office is more difficult, but the site selected, west of the Bund Bridge, has most advantages, including that of speedy access to and from the Municipal Office in town. The Fire Station, and the Police Office will naturally also be housed here.

The Hospital is on the same Bank, a little further north: for the Indian spirit appreciates sunrise on the river. Another Cottage Hospital can be located as required. The Infectious Diseases Hospital is located at the extreme N. W.; and may be moved outwards, if and when the growth of the town requires.

A public Amphitheatre is suggested, cut in the river bank between the Municipal Office and the Hospital. It may be made by the Boy Scouts, and made use of by schools etc., from the first. Its music, laughter and applause will do more good than harm to the patients. A Cinema Theatre is indicated at the junction of roads S. W. of Malwa Mills, and space for another is shown near Municipal Office and Bund Bridge.

Temple sites are also provided at various points; and even their distant view will brighten many long perspectives of street. I have here warmly to acknowledge the generous offer of a private donor, Mr. Jaganath Narayan, of the Flour Mill, to erect a Temple and layout its Garden, at what is the focal point of the whole Town, that of the meeting of its main roads in front of the Railway Crossing: so that the new Town will thus have a seemly and appropriate entrance. The possible future development of the Dhuni is also provided for.

Two schools are located behind this Temple, for boys and girls; and the Technical School is shown a little farther to the east. School locations are also provided throughout the Town quarters.

Public Health Requirements.

Nothing is more necessary for the maintenance of Public Health at the high standard here aimed at, than the regulation of the Corn Trade, with its risks of plague, and also that of the ordinary Food-Bazars, with their innumerable flies. I therefore indicate all such Bazars in definite localities distinct and separate from houses, and with no dwellings permitted within them, any more than in the Corn Godowns shown adjacent. If more Food-shops turn out to be needed, they should be planned with the same care, but never allowed within the streets, though ofcourse other shops, not attractive to rats and flies etc. will be welcome. Co-operative Stores should also arise; at the Bazars for food, and in the streets for other merchandise.

Tonga-wallas are similarly isolated near the Railway-Crossing; and private horses should be carefully looked after. (See Plague Measures in Public Health Section below).

Pasture for cows can be given to some extent along the River-side Parks; and until the town fills up and requires these, the lower reaches can be cultivated with fodder plants, perhaps irrigated by water taken at Kharkharia Bridge Bund.

The Brick-makers should be guided to take clay, as soon and as fully as possible, from the lowest levels along their brick-fields; alike because these will be submerged when the streams are bunded, and good clay thus lost, and because it is desirable that the water storage area of the streams should be as large and deep as possible.

The small existing Moslem grave-yard, on the East Bank of the River, may be left for a time, and a new Mosque Site given near it. But two new graveyards are provided for the future; one at the N. W. extremity of the Plan, beyond the Railway Crossing, and another a little east of New Dewas Road, on land west of Khajarani Village.

The two necessary Burning Ghats are provided; on the River, and on Palasia Nulla respectively.

Water Supplies for New Industrial Town.

As to this fundamentally important matter, I am not prepared to go beyond the general suggestions at the close of I Chapter VII; and so leave the decision between Tunnel Wells by the River, as at the Residency Town and at Ujjain, or by new Wells sunk on the plateau. As the housing is naturally beginning to grow up on each side of the Industrial area, two Water-works may prove more economical than one. As the matter is ofcourse urgent for the development of the town, the Municipality and its Engineer cannot too soon be taking counsel with Public Works Department, and both with Geologist and Chemist; and when the best conditions for locality and purity are decided, the material installation will present no difficulties of design.

I am advised to take the sum of Rs. 20 per head of population for purposes of the present estimates. Hence this, for a population of 30,000; (with some Industrial supply, which cannot safely be reckoned of less consumption than half as much more), brings out the total of 6 Lacs, above included in Estimates. It will be for the Water Engineer to plan the development of the system, upon a scale adequate from the first, yet with adaptation to extension, as industry and population require. A Water-Rate should ofcourse be imposed on Dwellings and Industries alike; so as not only to maintain the system, but contribute interest on outlays as far as may be, if not even in time something to sinking fund.

Surface Drains.

It is a satisfaction here to note that while, on all customary planning, this long mileage of roads would need these, and on each side, thus costing, at present Indore rates of R. 1 per rft, no less than Rs. 1,60,000 say 1½ Lacs—here these need not be estimated for at all, since the direct passage of sullage into the Drainage Gardens supersedes these; and any flow from these Gardens on wet days during the rainy season will simply pass off by the Storm-water Drains, which are already included under Road construction, and which so readily pass to the river and nullas, that they will suffice in kutchha simplicity. And as our Drainage Gardens only cost Rs. 26,000 to lay out (page 99), here is an economy of 1½ Lacs to begin with.

Economy of Municipal Upkeep.

Here without undue repetition, it may be recalled that the expenses of Municipal Upkeep, as regards Roads, Water, Cleansing and Lighting, Drainage and Public Health, should all be permanently much below that of the Old City; and that for Police also. That such hopes are not "Utopian", the experience of every Garden City in the world is justifying, and that increasingly. The reaction of a Garden City upon its Mother City is also everywhere being found one of useful stimulus to the continued improvement of the latter. For as the Garden Village Movement acts and reacts, in ascending spiral, with the uplift of labour, and with the prosperity of moralised capital, these results become apparent to the Old City also. It becomes no longer so passively acceptant of the old vicious circles of its past and present—those of its overcrowding, slum conditions, diseases, its poverty, irregularity, and low efficiency of labour, with the instability of its capital and enterprise as well. Old Indore and Naya Indore will thus progress together.

Possible Future Extension of the Industrial Town.

As Plan II clearly shows, no town can be more favourably situated for this. For extension, and if need be more rapid lateral expansion also, can be arranged as required; and this indefinitely, northwards, eastwards, and westwards also, far beyond the 51 Industrial Sites here provided, and with corresponding space for the necessary Housing as well; since the present fan-shaped outline lends itself to elongation and broadening alike, and as may be required; and this with continued contact with Railway, River and main Roads. The congestion so frequent in Industrial towns is thus provided against from the very outset, and should never arise. Yet to ensure this, Housing must be provided along with Industries; for if overcrowding once be permitted, and slum conditions thus contaminate this new Industrial Town from the outset, its future will be grievously injured, if not even ruined.

Chapter XXXI.

Housing Forecast, and Building Estimates, for Industrial Town etc.

For the general future of the Town, an extensive, though not excessive, forecast is here necessary; as population and housing must keep pace with industrial development, and no longer lag behind this, as at present.

In this Industrial Town, Plan II, we have so far provided for 6350 houses. Of these say as many as 2,000 of one room, (with cookhouse and veranda); but surely 3500 of two rooms from the first; while the remaining 850 of three or more rooms, may here be taken at the average of four. Taking the 6350 houses at an full average of five occupants, of whom two may be workers of one class or another, we have thus 31,750 inhabitants, and 12,750 workers; a number not unreasonably to be hoped for, considering that the two existing Cotton Mills already employ about 4,300 between them.

The Primary Health Condition: Space and Air.

To forecast all possible economies of house-planning and of construction is thus necessary, but these not on the too common method, of cutting down rooms to one, and with air-space below health requirements. As we have planned for health by the spacing out of houses, normally semi-detached, and with inside courtyards and outside gardens and open spaces, there must be no nullifying of these advantages within the home. Room-space should thus be not below the 12'x12 conventional floor-space, but above it, with out-door cook-room, and verandas broad enough to sleep on as well. Hence in Plan III, and in the accompanying Estimates for Houses and Housing, I take 12x15 for the first room, and 12x13 for the second. We are thus only recovering, not exceeding, the dimensions of old village homes, fixed in better days by experience of healthy life.

To assure these health advantages, and all associated ones, is necessary for the continued success of this New Industrial Town. It cannot here be too confidently predicted, too clearly affirmed, that it is upon labour's efficiency—and not, as too much on the past and present, upon labour's depression—that the successful competition of individual capitalists in the after-War future now opening, and still more of industrial towns and cities, will essentially depend.

Given such beginnings of a "Health Conscience" as the average public, both of capital and labour, is beginning to acquire, the Public Health endeavours of Municipalities and Governments will increasingly bear fruit.

In this clear determination not to violate the Health-conscience or the City-conscience, but to develop both together, lies the true inwardness of the Town Planning Movement and of its Garden City developments, with their effective productivity and progress accordingly. Hence the economies of its road-planning, which everywhere, despite airy houses and courtyards, gardens and public spaces, costs so much less than did the Standard Planning of mean streets, as semi-slums. Similarly for its Housing. Abandoning many conventions and bye-laws of construction, which were standardised more for trade-profits than for use or health, it produces houses more spacious, airy and convenient, than heretofore, yet proportionally less expensive. We have justified the first of these claims, that of better planning; so that of proper economies in construction has now to be stated.

Possible Exhibition of Town Plans.

Alike as regards house-planning in its details, and economies of construction also, something may be learned—perhaps even much—from the recent public Housing Plans Competition held under the auspices of the Bombay Government, of which the Plans were lately exhibited at Bombay, and are shortly to be on view at Poona. May it not be possible for the Ministry here most concerned to borrow this collection for a few days of public exhibition here?

Housing Forecast Continued: Economies in Construction, with Estimates for Small Houses.

The reader may again fairly ask—indeed should do so—How far are the above estimates for small houses dependent upon careful estimates, of construction at present Indore prices? Here Mr. A. C. Sinha has gone into this matter in detail, and not only after consultation with Indore builders and mistri, with brickmakers etc. but also experimentally, by beginning the construction, S. E. of Dewas Ghat Bridge, of a

building for the Boy Scouts, broadly answering to a pair of small semi-detached houses on the lines of Plan III, and with his Wall Tiles as there shown. These houses will be finished by the time this Report is issued, so the results of this initial experiment will be open to all eyes. Estimates obtained here for Single-roomed Houses, 10×10×8, may go up as high as Rs. 1,800 each, and for Two-roomed Houses, with similar rooms, to Rs. 2,800 each. These are of course extremely pukka, and with very deep foundations and high plinths.

Mr. Sinha's present Working Estimates—of course taken at present Indore prices for materials—are as follows:—

A. Estimate for One-Roomed Houses.

Abstract of Estimate for a pair of One-roomed Houses 12'×15' with kitchen 6'×8' and 8' veranda on one side, side walls 8 ft. high, roof ridge 16 ft.

No.	Item.	Quantity.	Rate.	Amount.
1	Excavation of Founds	330 cft.	10-0-0 per 1000	3- 8-0
2	Concrete in Founds	330 "	18-0-0 ,, 100	60- 0-0
3	Wall-Tiles for walls and partitions, in lime, with bonding, and lime pointing	3150 sft.	5-4-0 ,,	167-10-0
4	Filling and ramming earth in walls	1180 cft.	5-0-0 ,,	59- 0-0
5	Country teak wood doors 3'×6'	5 Nos.	12-0-0 each.	60- 0-0
6	" " windows 2'×3', (glass not included	6 "	6-0-0 ,,	36- 0-0
7	Plinth-Dry earth filling mixed with morum and ramming on floors.	1000 sft.	4-0-0 per cent.	40- 0-0
8	6" dia. Balli truss	1 No.	25-0-0 each.	25-0-0
9	3" dia. Balli common rafters	978 rft.	3-0-0 rft.	183-4-0
10	6" " " ridge	17 "	0-6-0 ,,	6-6-0
11	Single Tile roof complete with Bamboo frame etc.	1100 sft.	20-0-0 per cent.	220-0-0
12	7"×1" country teak-wood eaves board	147 rft.	0-6-6 rft.	55-0-0
13	Katcha mud plaster	750 sft.	1-0-0 per cent.	7-8-0
14	Contingencies (including glass or mica.) ... ..	...	...	26-12-0

Total ... 940- 0-0

i. e. Rs. 470 each.

*For *Pukka* (brick in lime) construction of above, without other change, the extra cost per would be not less than Rs. 720
and thus each of the houses would now cost Rs. 470+360 = ,, 820

For *Kutchi-Pukka*, (brick in mud), extra cost per pair ,, 500
and each house Rs. 470+250 = ,, 720

The economy thus realised by use of wall-tiles for 2000 one-roomed houses as above, as reckoned for Industrial Town above, would thus be,
compared with *Pukka*, Rs. 7,20,000
and with *Kutchi-pukka*, ,, 5,00,000

All the preceding Estimates for One Room Housing in Industrial Town were made on Wall-Tile construction; and would otherwise have been increased by one or other of the above amounts, or say by 6 lacs, as average between them.

B. Estimate for Two-Roomed Houses.

Abstract of Estimate for a pair of large Two-roomed Houses 12' x 15' and 12' x 13', with kitchen 6' x 8', and 8' veranda on each side; plinth 18" high, side walls 8ft, roof-ridge 16 ft.

No.	Items.	Quantity.	Rate.	Amount.
1.	Excavation of Founds.	800 cft.	10-0-0 per 1000	8-0-0
2.	Concrete in Founds.	800 cft.	18-0-0 ,, 100	143-0-0
3.	Wall-Tiles for walls and partitions in lime, with bonding, and lime pointing.	4962 sft.	5-4-0 ,,	260-0-0
4.	Filling and ramming earth between tiles, in walls.	1772 cft.	5-0-0 ,,	88-0-0
5.	Plinth Dry earth filling (mixed with murum) and ramming on floors.	1365 cft.	4-0-0 ,,	54-0-0
6.	Country teakwood doors 3' x 6'	8 Nos.	12-0-0 each.	96-0-0
7.	do. do. windows 2' x 3' (glass, not included)	8 Nos.	6-0-0 ,,	48-0-0
8.	6,, dia Bdkh Trusses.	3 Nos.	25-0-0 ,,	75-0-0
9.	3,, ,, ,, common rafters.	1417 rft.	0-3-0 rft.	265-0-0
10.	6,, ,, ,, ridge-pole.	32 rft.	0-5-0 ,,	12-0-0
11.	Single tile roof complete with bamboo frame etc.	1614 sft.	20-0-0 per cent.	323-0-0
12.	7" x 1" country teakwood eaves.	225 rft.	0-6-0 rft.	84-0-0
13.	Kutchu mud plaster floor.	994 sft.	1-0-0 per cent.	10-0-0
14.	Contingencies, including glass or mica ... ..	...	...	34-0-0

Total ... 1500-0-0

i. e. Rs. 750-0-0 each.

*Note that:—For *Kutchu-Pukka* (brick in mud) walls and partitions with soorki in lime pointing, instead of Wall-Tile building as above, the extra cost for pair is estimated to be Rs. 1552
thus raising the total cost of each house to Rs. 1526

For *Pukka* (brick in lime) extra cost per pair Rs. 2048
thus raising total cost of each house to Rs. 1774

Hence Economy per 1000 Two-roomed Houses as above:—

for *Pukka* Rs. 10,24,000
,, *Kutchu-Pukka* Rs. 7,76,000

Hence for our 3000 houses in New Industrial Town the extra cost would be between thrice of one or of the other of these large amounts. If in equal proportions of *pukka* and *kutchu-pukka*, say 27 lacs of increase; and this without consideration of interest, profits etc. in any case.

By further economies, of efficiency management, co-operative methods etc. the building outlays above planned for, and the amounts estimated, can be yet farther reduced. The vast sums with which we are thus dealing makes every economy of the greatest importance; since even the smallest details of economy, e. g. the substitution of mica for glass as far as possible, become of substantial amount when reckoned for thousands of houses.

Such further economies in construction can be effected:—

1. by substitution of mica for glass, (on which encouraging experiments are in progress),
2. by introduction of flat roofs,
- and 3. by large contracts for erection in numbers, and with less costly cartage etc. accordingly.

Further economies can also be obtained if remission or abatement be granted by the State, of present taxation on Timber, Limestone and Murum.

- | | | | |
|----|-------------------------------|--------|----|
| 4. | Remission on timber as above, | say | 6% |
| 5. | do. | lime | 2% |
| 6. | do. | metal. | 2% |

Remission of these three items would thus effect an economy of Rs. 45 per one-roomed house, and of Rs. 75 for each two-roomed dwelling; thus reducing above estimates accordingly, to the smaller amount of Rs. 425 per One-roomed house, and Rs. 675 for a Two-roomed House, and correspondingly per thousand, and for the whole. I therefore recommend this sacrifice; it will soon be found advantageous, even to the Treasury.

From the above it will clearly be understood that the proposed economy of building depends mainly on Mr. Sinha's new Tie-wall method, still admittedly—though now actively—in its experimental phase, and on how far this can prevail in face of the large existing brick interest, and habitual use of kucha-pukka or pukka. It is of course chiefly the former of these which it aims at superseding; yet as it becomes perfected, it may make increasing inroads on pukka also, as for ordinary bungalows, even of two storeys. Buildings like the Scientific Institutes Chap. IX may also thus be constructed with this economy.

Further Economies in Construction.

Some further economies in construction, in addition to those above indicated, may still be made. First the great and rapid Military Constructions approaching completion at Mhow must have been peculiarly training the foremen and workmen to rapidity and efficiency: and if fairly large building schemes can here be initiated by the time this skilled labour becomes available, the attraction of at least a proportion of it to Indore would be of great advantage. The new sites which have been of late taken up in the western Suburbs will themselves call for all and more the labour that Indore can supply; so this will not suffer by competition, but gain by example.

As regards Road-making and Earth-work in connection with the Lay-out of New Suburbs generally, and the grading and preparation of Drainage Gardens, the services of prisoners not skilled in trades may be asked for by the Municipality.

Again, the present War has peculiarly revived and developed that tradition of spadework and road-making to which the effectiveness of Roman arms and of Roman peace and prosperity were so notably due; and this admirable combination of usefulness, training and discipline, perfecting of health and strength, will now be more considered than heretofore in all countries. Where better than here, in and round Indore, with its improvements and extensions so urgently required for public health, and for recovery of its long so seriously diminished prosperity?

The bringing in and employment of peasants from the surrounding districts during their times of comparative leisure may also be of mutual advantage. Towards rendering all this earth-work, road-work and building more effective, rapid, and profitable to all concerned, an endeavour should be made towards its "Efficiency Management". This has long passed the experimental stage in America, and is also being found successful in Europe; and the time is ripe, the conditions are promising, for a trial of it here. On the many laps of these Estimates, its substantial percentage of economy, often far beyond all anticipations, is here surely worth trying for; and this in every way, since it also carries with it a rise of wages or a shortening of hours, indeed readily something of both.

With the preceding, the education of the Boy Scouts is here related. At the outset of great City Improvements, we cannot too soon or too fully interest the rising generation in them. Moreover, in tasks like those of Tree Planting, boys are found not only to take an interest, but soon to be of real help.

Passing to students, Working (and earning) Holiday Camps might, and should increasingly, be arranged, for them; and though I do not of course here propose to estimate I may mention a case within my own recent experience, that of the Edinburgh Forestry School Camp, in which 20 students, in their three weeks experience, were certified by the Estate Forester to have done equal to the average work of 14 regularly employed men. Their enjoyment of the change from books, and their gain in health and vigour for the next term's college work, were additional satisfactory returns. Such working Vacation Camps might also be arranged for youths generally.

All these it will be plain, are beginnings of "Efficiency Management"; and they should naturally lead on to further developments of this. In no department of activity should it be easier to arouse and develop skill and efficiency than in the construction of homes in a Garden City; and this especially after we can show a good beginning, finished up to the last details, even of colour and decoration, of growing garden and Tulsi-plant. When these are in evidence, and in habitation, they will convince the doubting.

Chapter XXXII.

Garden Cities and their Critics: with Replies to These.

Will such argument be necessary? Assuredly yes; and even more. When this Report has had its day of interest for Indore, all contrary interests will again rise against its proposals. Partly because, under present conditions, those whose work and aims are to keep houses scarce and dear are individually stronger and better organised than are the many who need and desire houses as cheap as may be: but largely also by sheer conservatism, though this not of the best sort, but only that which finds it easier to follow the past than to go forward. Even the old tradition of Indore, of straight Military Lines, works on in peoples' minds, forgetful of the confusion which surrounds them. Above all, the sanitarian and the standard planner of the old school will say—Look at these gardens: each four times the breadth of our Sanitary lanes. But the answer is obvious. Quite true; so go on, on these prin-

principles. Let individual plots and court-yards be given up, and thus separate houses: you have now your one-roomed chawls. Next you build these in large blocks, and either with back-to-back non-ventilation, or with mutually through ventilation, so ensuring community of noise and its discomforts, disturbance of sleep; and thus increased receptivity for disease, from germs thus blown from house to house and breathed in common. Again, you can pile up these chawls into two, three or four storey blocks, as in Improvement Trust Bombay, and other places; or into yet higher blocks, as in Municipal Bombay, and other places; so why not higher again, as in old Edinburgh, or in modern America, till at length sky-scrapers result. Land being thus given an artificial money value, far beyond that of its possible healthy use, a vicious circle is thereby created, compelling such constructions as are profitable to the ground-landlord henceforward; and thus, as in Bombay, making separate houses increasingly unattainable to all classes save the very richest, who can pay land-famine prices, yet so fix the vicious circle more effectively, though also upon themselves.

Yet so increasingly expensive becomes the construction of all this, so wretched the public health, so elaborately urban the sanitation, so widened yet so bungled the street planning, so intricate the financial land-speculation-parasitism, and so costly the resultant legal regulation and litigation, that the hoped for economies disappear, indeed become negative, with enlarging balances on the wrong side all round. Hence, starting anew with bad planning, another method opens; that of reducing the air-space of rooms, below the normal organic minimum, of 700 cubic feet of air for each of two sleepers. Hence 12' x 12' x 10' for traditional Indian Minimum can be reduced to 10 x 10 x 10, giving little more than $\frac{2}{3}$ of this; or, as I have seen in New Delhi, 9 x 9 x 9, being practically one-half, and even still less 7½ x 9 x 9, if not less still. In this way we can at length boldly start our housing by halving this respiration-figure of 700 cft, as lately with that eminent and well-intentioned group of non-physiological philanthropists, who in their recent and widely influential report, on the better Housing of Jheria Coal-miners, standardised this half-ration of air for future planning! There is thus as yet no limit to the compression of the labouring class, and Standard Planning may still realise its further possible economies of space—at length to shelves, to open coffins—and why not at length to folding people within half-sized ones? Without going so far, houses as small as the worst in East or West in my experience (as yet I may say, the widest and fullest on record), abound in Indore: witness the divided rooms so common; while a new chawl was only last year illicitly built on this plan in Ranipura, but, I am glad to say, promptly dealt with by the Municipality, and as fully as then possible. It is in Cities thus deteriorating, that elaborate and wasteful measures of Sanitation (of which I have here done justice to that of Drainage) are then required, with increase of these, of police, and of all other would-be protections as well. Finally so far, the economist intervenes, especially the well meaning socialist, of State or Chair; so at length has emerged their inmost brotherhood, the Fabian Society, that cleverest, most self-deluding of all the innumerable sects of London, since with largest and fullest equipment of half-truths, and thus increasingly falling into the class-paradise, of inspectorial and clerical appointments, to establish, regulate, and maintain the "Servile State" which is at so many points evolving.

But that this state of things is now being understood, and even by those most depressed by it and least expected to understand it, these war years are already showing: hence western City-life, in such conventional "progress", is now more seriously threatened, as more countries than Russia are showing, by the cessation of War, than by its continued horrors.

It is thus against all these evils, from simplest to gravest, that we have now to prepare and provide as far as may be; and this—not least, but largely first—by a better planning of industrial towns, and the growing initiation of a new civic progress for them, in them and by them.

It is because the general and municipal Government of Indore are here starting so well, *e. g.* furnishing sites on conditions even more favourable than those of the very best of European cities in this matter (Ulm), that I am encouraged thus frankly to outline the evils of the opposite course hitherto usually followed, and also, because steady care, say rather incessant vigilance, will still here be required, to guard against the incoming of this and that evil above-mentioned, and of others not yet mentioned, which are still capable of injuring, if not even wrecking, the future of this most hopeful of beginnings of Industrial, Suburban and City development.

Contrasted Modes of Economy in Construction.

But the architect and engineer may once more reply—as per. recent competitions—we also can construct two-roomed houses for Rs. 750, and this in kutchapukka, if not pukka, and without these new-fangled Tiles at all. Granted; but of what size? Is not each room $10 \times 10 \times 8$ or 10×8 or 1000 cft of air, little more than the normal night's allowance for one sleeper? Whereas here even with rooms $12 \times 15 \times 8 = 1440$ cft, and $12 \times 13 \times 8 = 1248$, = 2688, each room has practically air for two. And when we take the extra space under roof into consideration the advantage of these larger rooms is ofcourse proportionally greater. And, with our cheap walls, we can afford to raise them higher, to 10 ft or more.

In short then, instead of making our building economies at the expense of health and comfort—that is of the lives entrusted to us—we make them in the legitimate constructive and industrial way, by giving better value, in health and well-being than can otherwise at existing rates be done. That the new building method has pukka aspect, and need not be inferior in durability, since well-bonded, as here estimated for, and that it is certainly superior in both aspects to kutchapukka, are points also to be noted.

Chapter XXXIII.

Industrial Efficiency and the Requirements of Housing.

In Regard to working Hours, in Factories etc.

This question here arises to be considered in connection with the growth of the New Industrial Town; since, as we shall see, its solution affects the size and rate of growth of this, and may greatly accelerate its progress.

In all serious discussions of the conditions of Labour in the West, its working hours are no longer forgotten. Here, as often, knowledge has been ahead of the bulk of practice. The long hours, even for women and children, which were established at the beginning of the Industrial Age in Lancashire and elsewhere, now nearly a century and a half ago, were seen before long to be of disadvantage. And this not only by taking advantage of the ignorance, poverty and submissiveness of the labourer and his family, but in large measure to be defeating its purpose; and not

only for the national stock thus being used up, and to this day deeply injured, but even for the profits of the capitalist himself. Yet so deep is the economic unenlightenment of self-interest, that it took half a century to win a measure of protection for children and women; and yet longer for men; and this even now for all incompletely. Yet here and there for many years past, exceptionally conscientious and generous employers had shortened hours, by introducing the Eight-Hours Day; and have had their courage rewarded by finding and proving this best for their own interest also, as compared with the previous nine or ten hours. Hence there are no cases of return from the Eight Hours Day to a longer one, save under the exceptional stress of the War; and this on the whole has been proved mistaken, and is largely being given up.

Lever's "Sunlight Soap" business is much the largest and most rapidly developed and most profitable in the world of its kind, and indeed almost of any kind; thanks largely to that enlightened treatment of its workers of which Port Sunlight is but the salient example; so it is here highly significant that its directors are at present, in full War-time, experimenting as to whether they cannot more effectively cope with the enormous demands upon them by means of a Six Hours Day; of course with two shifts. Nor is this great firm standing alone in this line of progress, I append the newspaper summary of Lord Leverhulme's recent propaganda in Glasgow, where the war urgency of maximising production is peculiarly felt, as becomes the leading centre of Shipbuilding, and of other central industries.

Lord Leverhulme on Industrial Problems:— Addressing the members of the Glasgow Business Club yesterday on the subject of "A Six Hours' Day" Lord Leverhulme remarked that in considering industrial problems they had to abide by economic conditions. They could not allow high ideals and motives to lead them from the path which would alone enable them to meet foreign competition, and that was a strict observance of the rules of economic production of all goods required. He did not believe that the industrial problems confronting them after the war would be settled by Acts of Parliament. They would be settled by the citizens of the Empire themselves, guided by a truer appreciation of the conditions under which they lived. An outstanding problem would be how to produce more goods and more wages, and what methods were to be adopted to set about doing so. One answer to that would be by adopting the system of two shifts of six hours each, instead of one shift of eight hours, which would not only increase production without proportionate increase of overhead expenses, but would give fuller opportunity for leisure to the workers. Long hours of labour were quite unnecessary if they could produce all the goods required in superabundance in shorter hours, and if they could produce all that was required, obviously they could pay the same wages, or even higher.

And though certain lines of occupation—*e. g.* railways and shops—present practical difficulties, and even persistent recurring abuses, there is no longer any serious difference of opinion as to the social and civic advantages, in public health and wealth alike, to be derived from shorter hours, as soon as these can be established.

Now here is one of the few industrial respects in which India has a great practical advantage over the West. Though here as everywhere the peasant works hard and long, neither tropical situation nor climate demands or admits of such continuous and prolonged toil as that of the temperate zone; for this gives no long periods of comparative leisure such as those given by the Indian seasons, and work is thus more continuous, especially as its agriculture becomes more intensive.

In towns too, as well as villages, the traditional Indian craftsman has generally a seven hours day; and though this, considering his less energy-giving dietary etc. may well correspond to 8 or 9 for the west, his hours are of less intense exertion, and thus of less nervous strain.

How great then must be the strain of the modern factory conditions now so rapidly arising in Indian Cities? For here the hours are increased from the traditional 7 or so, to 10 or 11, even 12; and, it is said, occasional overtime beyond.

Can the Indian population stand this? Are they standing it? In so far as not, how far is the long tragedy of Western labour now to be re-enacted here in India? Is not the situation a good deal the same as in Lancashire a century ago? Mills are recruited primarily from agricultural villagers, so far tempted by money wages, but also being pushed out of their villages by land-scarcity. With youth and rural health on their side, and with the hope—indeed frequent habit—of returning to their village for a time each year, or even some day for good, they adapt themselves to the long hours of the factory uncomplainingly. But what of their women, also employed? What of the children brought up under these conditions, and also employed, and at a too early age? What stamina can they develop for the future generation? And what of their children in turn? The prospect is assuredly by no means a cheerful one for Labour; and thus not really so bright for Capital, as at short view it may seem.

State intervention, recapitulating more rapidly the too tardy protection of western labour, thus seems inevitable; but experience indicates that even this can only proceed as it is surpassed, and led, by the enlightenment of Capital and Labour themselves.

But one great argument for long hours is the desire of utilising the fixed capital, of Mill and Machinery, as fully as may be. So that the ideal mill, both from the mechanical and monetary ideal, should run by night as well as day; and war-time is giving incentives towards this.

With this of course arises the expedient of two shifts of workers: but, since turns of night-work are peculiarly exhausting, this method must not be allowed to accelerate that deterioration of labouring populations to which the unrestrained industrial process so actively tends. But with the six or seven hours day, two shifts are quite practicable; as per Lord Leverhulme's argument above.

In view of the simple conditions of housing, and the moderate standard of living which are accepted by Indian labour, is it not possible, even desirable to guide this, not so much in the first place towards the predominant desire of western labour, that of higher wages, but here in India first towards shorter hours?

Of course I am not desiring to depress wages. Far from it; witness the standard of housing here laid down, with its 2 rooms, cookroom and courtyard. Yet these are got for about the present outlay by employers, upon single rooms in their chawls; and indeed for little or no more rental than labour actually pays for half-room slums, even in Indore, with its mere beginnings of the house-famine of greater cities. That is, under the favourable conditions of Indore,—of cheap land from the State, and of cheap houses, erected in quantity and with all the economies here indicated,—many more labouring families can be housed for a given outlay here than elsewhere. In fact well-nigh twice the number. Hence money wages do not need to be increased so fast as where housing is scarce and dear, as so conspicuously in Bombay.

So cannot employers at least make the experiment of employing two shifts, each for a moderate day—of 6, or at most 7, hours? The Mill can thus run 12 or 14 hours, yet avoid the hours of night—when no man should work. The summed

advantages would soon justify this—(1) of fixed capital kept productive for about 25% more hours per annum, (2) of more efficient and rapid labour, no longer over-worked, but now also (3) healthy, contented, and regular, (4) of proportionally fewer accidents, etc.

Again, given the proposed moderate facilities for gardening, these would increasingly be taken advantage of, and thus with increase of real wages, as well as maintenance of health and character, while for those of other interests, workshops towards domestic usefulness, schools, and recreative institutes etc, may be opened, with advantage to working powers, and thus to wages, and dividends alike.

Consequences for Housing.

This discussion, as stated at its outset above, is here relevant and urgent as regards the growth and magnitude of the Industrial Town. For if and when a shorter working-day, with Two-shift system, is introduced, twice as many workers, and thus practically twice as many dwellings, will be required, so that the rate of growth above roughly suggested, will thenceforward have to be correspondingly increased. But since this change can only be established as it is found profitable to and by all interests concerned, the resultant increase of prosperity will tend to provide the ways and means of constructing, and of renting, further houses as required. And as there is no obstacle to the continuous fan-like extension of the town, its congestion need not arise, and should not be permitted. Yet this cannot be done by municipal regulations, as city fathers still often too simply think; but by active Building, and its encouragement by Co-operative Societies, Banks etc.

SECTION V.

Public Health Measures for Indore, and their Economic Value.

Chapter XXXIV.

**City Health Improvement as Productive Improvement:
Plague Losses and Plague Measures,****With their Economic Importance respectively.**

From Chapters (and Estimates) like those on Water, Drainage, New Communications, Criticism of School Sites, and so on, it must now be plain that Town-planning, as here treated, is not opening new lines of unproductive expenditure, but is retrenching, and this strictly, upon existing or suggested separate schemes, and their outlays, actual or proposed.

As to the present Estimates—large as they are, yet unprecedentedly moderate for schemes on the scale these cover—we have now to consider these, as in the main, expenditures towards Public Health: and thus show them as investments, saving in the lives and productivity of the people, and this speedily, and fruitfully, and hence as of wealth-producing value, as well as of civic urgency. Our outlays have thus, as their primary return, the production of better vital statistics; and these are capable of some approach to economic valuation in rupees, and this at once, and increasingly with years. For this purpose, there can be no better example to begin with than that of Plague Measures. For here it is peculiarly obvious that lives saved are lives gained; and with lives we save their productive values also.

Plague in Indore: an Attempt towards its Economic Estimate.

Without recapitulating the general arguments of previous Chapters (I. IV) as regards the care of Public Health in its individual and general bearings, let us now consider the case for Planning Public Health, in terms of its money values. And first the extreme case of Plague. Here in Indore this has been so serious within the past 15 years, as to account for 27, 635 deaths out of 59, 635, thus well-nigh equal to all other causes put together; and these practically, in ten of the 15 years, and mainly in eight of them: i. e. all but one third of a population estimated at its outset at 84,000: or say a full 30 per cent or thereby. Now it has lately been estimated by a leading British Registrar that the populations of the Central Powers, which have lost more severely than the Allies in the War, are reduced by four millions, and by the expiry of this fourth year of War will have lost fully 5 per cent of their population at the beginning, say $1\frac{1}{2}$ % per annum. Thus Germany, in her unprecedented attacks and losses, by her long blockade as a virtual siege, and Austria in her yet greater agony, will have lost in four years proportionally about one-sixth as much as has Indore in its eight worst plague years! And though those proportions would be abated, had we also Indore birth statistics before us, the broad impression of these figures would not be seriously modified. For the population has certainly also been seriously reduced by emigrations from Indore, of which we have no statistics.

Putting the matter of plague-losses however in their least unfavourable light, the average losses by plague over the past 15 years are 1842 per annum, for the 10 real plague years 2760 per annum, and for the 8 serious years 3440 per annum, being respectively 2.5, 3.7, and 4.6 per cent of the population, (averaged even at 74,000, though this is too favourable) instead of 1.25 per cent, the extreme annual losses of Central Powers by the war. Now with even the lowest of these estimates for Indore, (and correspondingly for other Indian cities according to their statistics in each case) it is surely plain that further thought and effort must be given to this problem. Hence let us outline a fresh appeal in as near business form as possible, in terms of estimates—however rough and open to subsequent correction—of the economic losses which this community hitherto has suffered from plague and at present suffers, and of the economic saving to be effected through productive outlays.

Plague, like tuberculosis, does not so much attack children, or the aged, as those in the prime of life; and its loss and waste are thus peculiarly heavy in their economic and financial aspects. At about what sum may we estimate these? In the enquiries and conversations necessary to clear one's ideas before writing—and not forgetting business losses, discredit of the city, cost and losses of annual evacuation to plague camps etc.—my first rough guess at this loss, made without figures, was of one or two crores, but nearer the higher than the lower figure, and this has been admitted as reasonable, but not increased, by various Indore friends. Let us try now to reach some more approximate figure, for deaths at least.

At how many rupees per month may we average the productive value of the lives lost by plague? These losses preponderate in the working and poorer classes, yet the higher and more prosperous classes too have suffered not a little. Take the earning lost, at low average surely for all classes, at only Rs. 15 per month for men: at what value shall we estimate the women, who perish in nearly equal numbers? Their wage-earning value is roughly about two-thirds that of men; but as they perform domestic duties in addition to earning ones, their value to the community, in an estimate like this, must surely be considered as making up the remaining third, and thus as putting them on full equality with men. Say then Rs. 15 all round. But to this we must add their surplus value to their employer and the community; since people are employed to produce more than they are paid. Say therefore, to keep figures on the safe side, an average value of Rs. 20 per month per individual. To get these figures still further on this side, let us ignore the 20 per cent of recoveries, although these involve months of economic loss for each, and often long continued diminution of productivity thereafter. Again let us for the present leave out all outlays for plague-measures—hospitals, inoculation etc. Let us also leave out the loss to the community of its wealth and working powers through all these illnesses in its households, and all interruptions and delays of business involved. Leave out too, the poor-relief needed; and all the expenses and working losses of migrations from the town, although of thousands; and say nothing too of the large element of virtual boycott by people of other cities, though business losses of this kind are notoriously great. In short, in every way let us keep down this first rough estimate, well below what its subsequent careful estimate must be. But Rs. 20 monthly is Rs. 240 a year, and the 2760 deaths for each of the ten serious years, or say 2750, thus amounts to a loss of six and three quarter lacs annually. Or taking 1250 deaths, the lower average of the last three years, (1915-17) say Rs. 3 lacs annually.

Yet even these large figures give no true estimate. For what the City loses by each death is not one year's work; but a whole life's expectation-value of produc-

tive work. It is therefore very important to determine this life-expectation as the real value; and as the mass of sufferers are in their prime, and past the special risks of infancy, we may reasonably average this at 15 years. Hence each lost life has to be estimated at Rs. 240 × by 15, = Rs. 3600. Now it is this figure which has to be multiplied by the total number of deaths 27,635, or say 27,445 for the ten serious years. Our total estimate thus comes out at Rs. 9,88,02,000; say ten Crores, instead of the two of my first rough guess, apparently not below that of Indore people hitherto.

Need of Fresh Estimation.

But if we now start to recalculate afresh,—as I fain would do, had I the materials,—I submit it is for Municipal and Government statisticians, and with the help of an Insurance Actuary, to estimate all this loss more accurately, taking in the various factors above omitted or minimised, and thus obtaining a more definite approximation to the total economic and business loss of Indore. As a city commercially and residentially discredited by plague all these years, it is the best way towards recovering its character and connections to face the whole situation clearly. But for the present, and when all the factors above omitted are taken into account, we may now put the rough forecast of the probable figure a good deal higher. Say this time, even again with caution at not less than 15 crores; if not even nearer 20 in all. Enough, however, here to abide by the lowest of these figures, ten crores, as above, as in Indore City alone, comparable to an annual loss of the entire revenue of the State; however widely different in its incidence.

Take now a fresh illustration of what such sums mean. The incidence of the British National Debt, as increased by the present War for the three years long elapsed, has been taken at about £ 4,500,000,000 for 45,000,000 people, i. e. about Rs. 1,500 per individual. Comparing this heavy burden from the War, with the loss to Indore City, as only 10 crores, from its ten bad years of plague, we find this equal to Rs. 1,350 per individual over its present 74,000, and this for a population of 1/20th or less of average wealth. And although ofcourse here this money loss has not the same individual incidence, the dissipation of energies is comparable in both cases; indeed in Indore this takes the most serious possible forms. And—as we shall see more fully later—it rests upon a population, of short, and thus necessarily unproductive, life-duration, instead of one of far longer average duration, and more than proportionally greater economic productivity.

Under these circumstances, of impoverishment by plague to a degree exceeding all worst previous anticipations, is it not time for the community, and its authorities, to mustering its courage towards putting an end to these losses? Is it not plain that such public ill-health involves corresponding poverty? And if so, that a return to public health would bring with it corresponding recuperation, and more? I submit therefore the serious consideration of Plague Measures, as superlatively remunerative, and thus as no longer to be grudged as unproductive outlays, but the very reverse; not only paying for themselves, but incomparably more.

Plague Measures.

Here the "Memorandum on Plague Preventive Measures" by Major F. Norman White, M. D., I. M. S. Officiating Sanitary Commissioner with the Government of India, which formed a basis for the discussions of the recent Conference here, is invaluable; and cannot be too widely diffused though Indore—say in vernacular editions.

From its points I here only select an economic one. From his figures, which seem careful and moderate, we may take it that the present rat-feeding of Indore costs the City nearly $1\frac{1}{2}$ lacs annually: so say one lac, to be still more on the safe side. So in the next Diwali Procession, let its representative giant Plague-rat this time stand on open money-sacks of bulk to that amount, and spilling their (stage) rupees. But by what grim form of graphic statistics shall we represent the average of deaths per annum, these 15 years since the plague arrived? Or even the lower figure of last season's deaths? And by what number and magnitude of bars of gold shall we express the annual loss these yearly deaths inflict upon the community?

Plague Vigilance Corps; Rat-Precaution Inspectors.

Against even that single lac of food-waste, here devoted to rats, since capable of being saved and better employed, the City can afford to spend, and should spend, the few thousands which would be enough to keep them down. But for this I do not know of a regular and permanent staff in any City; for usually plague duties fall as extras, upon an already sufficiently hard-worked medical and cleansing staff, who naturally cannot but relax, and turn to other arrears, whenever the direct incidence of plague is over. But are there not in Indore, a school-master or two nearing the age of retirement, or in weakened health; and a police officer or two similarly available? One or two capable women also could talk to the housewives as men cannot do. If so, we have in such a group the requisite combination of public instruction and persuasion, with compulsion when need be. To these officers on their rounds, mohalla by mohalla, and with surprise visits as well, should be attached the necessary Sub-Inspectors, again partly women; and with active rat-catchers, and rat-poisoners, kept busy all the year round, and rewarded occasionally for results. Boys too may be interested in rat-trapping, and the Boy-Scout may be made helpful in many ways. Thus, after due notice, a fine may with advantage be levied by the Inspectors, for every rat-hole they detect in any premises. The boys may best aid in protecting their households from such penalties by keeping them filled up.

The keeping of grain etc. in the old high earthen pots, once so common, the fixing of shelves beyond the reach of rats, and so on, would be largely practicable, with women's influence especially: and soon with municipal regulation also. Why not make these grain-pots a condition of the necessary approval of all house-plans as sanitary? To the very poor, to whom the cost of such jars must be taken from food, these might be granted on permanent loan, by the Municipal Plague Committee.

Only by all such measures, and more, and these permanently maintained all the year round, and for many years to come, can due safety now be assured for plague-infested cities like this. I offer then two suggestions more.

New Corn Markets to be kept Rat-free.

In view of the simplicity with which, as Major White shows, rat-free Corn-godowns can be constructed, or existing ones improved, it is but reasonable that these precautions should now be taken, indeed enforced, and maintained, throughout the City.

But must we not go yet farther? Now that grain-dealing is recognised as a "dangerous trade", must it not be dealt with accordingly? Besides standard Godowns, with precautions as recommended, must not Retail Shops also be dealt with, and in much the same way? Indeed, must they not be centralised, into definite Grain Bazars, apart from dwellings, and kept rat-free?

I realise that such town-planning regulation must be as unpopular as possible: since inflicting very real inconvenience and outlay upon a whole class of traders, and tending to raise prices accordingly, so far injuring the whole community; with dissatisfaction in consequence, if not even resistance, and perhaps repeal. But here is a case in which compensation may be considered. This would really come from the lac of economies of rat-food, and from the hundreds of lacs of economies of life which such measures advance: but practically might be given from a small special plague-assessment, which might here fairly be imposed on house-holders, since no other impost can be imagined more directly profitable to them.

The supply of Corn-Bazar accommodation, upon the easiest possible rentals is thus desirable: but where is there space for this, in crowded old Indore? After all these months of searching, I can find only one locality which is at once (1) large enough, (2) central enough, (3) isolable, and (4) may be organised cheaply enough, to serve as the Rat-free Retail Corn-Market which is so urgently required if plague is to be reduced. This space is the little-occupied North-West Court, plus at least the western half of the southern Court, of the State Stables. So I venture to apply for this portion of them, say the Western half; for this area and its existing buildings, with repairs, additions, and fittings, can be made to suit this purpose, and meet the necessary four conditions above indicated. To these buildings then, when adapted, I advise removing the Malhar Ganj and other Corn and Flour shops. Some distance west of this, on the margin of the new Malhar Ganj Corn-market and Cart-Stand shown in plans, I would erect such Rat-free Godowns as may be required for wholesale needs, and thus leave Malharganj itself for dwellings only; with thorough rat-hunting, and special care thereafter. See Plan X.

A similar Retail Bazar will be equally necessary in Sia Ganj, for which the wholesale Godowns are already planned, (I Page 131) and also in the New Industrial Town; and I therefore indicate these on Plans IX and II accordingly.

For these suggested alterations, new buildings and compensations, only a yet rough estimate can as yet be offered. But though this total be positively large, say even Rs. 80,000, none will deny it to be relatively small, in view of the increased health security which this concentration of the Corn Trade would effect. This matter is peculiarly one for consideration by the Durbar; and I suggest its presentment to them along with consideration and report by the State Department of Public Health, as well by that of the Municipality.

So much then for the lines of Plague Treatment suggested by Major White's Circular, and confirmed by the recent Plague Conference here. Yet further considerations emerge, beyond these; and these must here be faced accordingly.

Horse-Keeping, Private and Licensed: The Needed Plague-Measures.

But if we only improve human grain-feeding, we shall still fall far short of success in guarding against plague. For while the cow's food brings her but few rat-attendants, that of the horse attracts and maintains them in number; so in this way we may at any time have an outbreak of plague, even in New Suburbs. Hence just as clearly as we all think of a cow followed by her calf, so it is now needful first to visualise every town horse with a dozen or a score of rat-attendants, and each

of these with its plague-fleas; and so next to have him with these vermin replaced by better and safer companions—a cat in the stable, and pigeons in the yard.

These needful precautions lie in extending the Municipal control, of which Tonga-licensing is only a beginning, into sanitary thoroughness. This is urgently necessary for this "dangerous trade," to which the maintenance and yearly diffusion of plague are so largely and notoriously due. Every Stable, public or private, in this and every town, now needs to be put in order; and this to the precautionary standard given above, *i. e.* of corn-sack kept on shelf 3 feet above ground, and kept clear out of reach of rats. A rat-trap should be in regular use; cat should be kept as well, and a dovecote in the stable-yard. All stables should be open to surprise-visits from the inspectors mentioned above, with initial warning, and thereafter definite scale of penalties for offences and repetitions, followed when necessary by suspension of license, and if need be by withdrawal. Here, if anywhere Municipal Bye-Law and administration need to be strict, and impartial without exception, since life and death are here at stake.

That the numberless rat-holes of the City should be constantly filled up, is ofcourse an obvious precaution, already mentioned. Towards Pigeon-cotes, peacocks etc., the coming Boy Scouts (and Girl Guides) may soon be of great help; and bird-shelters and platforms, such as beautify Gujerati towns especially, may soon here be carved, as well as built, by willing and skilful young hands.

Just as we must concentrate the Grain-shops, so also with Stables. Their localisation into definite stable-areas—the "Mews" of western Cities—is still more necessary in plague-stricken Eastern ones like this, and with general sanitary advantage also. True, even with ordinary western care, such places, only too easily, become unhealthy still. But flies, for instance, can thus be kept down, as well as rats; and enteric &c. abated accordingly.

I propose then to deal effectively with the Tonga drivers, harsh though this may at first seem to them. I submit that their Stables be now collected into definite Mews, with an attached Mohalla for their dwellings. For this purpose an area near the Railway Station should be specialised for the East side of the City; and this I show on plan accordingly, on the vacant field north of Nasia Temple, and thus permanently isolated from surrounding buildings. Similarly another Tongawalla Mohalla is planned on the West side of the town., beside the wholesale Corn-Godowns, south of the new Cart-Stand for Malhar Ganj. With these Corn-Centres adjacent, their common plague-inspection may be regular and thorough.

The existing Tonga Stables between Muchhi Bazar and the River may be improved and extended, and also that at Harsiddhi. But the smaller stables in more central situations should be removed, and no new ones permitted.

After careful discussion of these plans with the Municipal Officers, I think it safe to say that neither the public convenience nor that of the Tonga interest will suffer. For I also locate new Stables at Malhar Ganj; but admit the possibility of improving those at Muchhi Bazar.

As the City extends, similar large Tonga Stables can be provided elsewhere; but always as isolated as possible. The method of isolating Mohallas, of which the planning of the new Industrial Town (Plan II) is an example, is here doubly necessary. The Tonga Mohalla needed for the Industrial Town is thus located at

the best strategic and sanitary point for it, near the Railway Crossing, and east of Line: and the plague-rat inspection of this, and of the Flour Mills etc. further north, will thus be taken in the same round.

This dispossession of the Tonga Drivers from their stables, with compulsory removal to new sites will involve also some re-housing, as near their Stables as may be. But the areas they will thus vacate, and so far de-congest, in the City, may be of more value to it than are the new sites, and the re-housing may thus in every way be of public advantage. For the 211, or say 220, tonga-drivers, we shall largely need houses, averaging not less than two rooms, for Rs. 750 each. Stabling, even with economical construction, cannot be done for less than Rs. 250/- per horse, say therefore Rs. 1000 per man, which would come, if all removed, to Rs. 2,20,000. But this sum can be reduced; thus as above noted there are large existing Stables which only need repair, and which may be extended with economy. Many drivers will retain their present dwelling-houses, as the distance to their new Stables will seldom be serious.

More over as tonga-owners are capitalists, at least in a small way, they may also help with construction, or agree to rent-purchasing. So here a Co-operative Society needs to find its organiser, to help this deserving class, and towards the best use of their earnings, often not inconsiderable—that of acquiring their own homes and Stables. For all these reasons, I trust the sum estimated (Chap. XXIII) of Rs. 1,25,000 may be sufficient.

Even were plague not in question, this financial operation would not be an unreasonable one, since fair rents should be obtainable. But with this constant and future menace, its necessity and urgency are clear: and as the economic valuation of Plague-losses shows, these outlays should be peculiarly profitable, through abating them.

Finally, there are a good many private tonga-owners in Indore, each with one or more horses, who pay Re. 1 as annual registration tax to the Municipality. I submit that every carriage and horse owner, in city suburbs and new town alike, should similarly be registered. I repeat that each and every stable needs be brought within the range of the plague-inspector's surprise visit. A Municipal bye-law should enact (1) that every stable must have its corn upon a rat-free shelf, (2) that both rat-trap and cat be kept, and (3) pigeons also. After a few fines for carelessness have been impartially inflicted, and still more after the resultant improvement of plague-returns becomes known, there will be far less rat-keeping to complain of. Had all such precautions been taken from the incoming of plague, how much better would Indore be to-day?

In summary then, Plague measures have to be as complete as may be: no one measure is enough; for there can hardly but be occasional cases, if not even outbreaks, when all is done. Still, the immense losses, for which money is but one index of a far greater tragedy, may be substantially put an end to.

The Financial Difficulty.

There is ofcourse the usual difficulty, in the way of all Improvement schemes: that of money. For in each and every City and State of the world, the ordinary budget is already assigned to existing services: all of which naturally tend to resist all fresh (and to them external) outlays, as encroachments upon their share of the budget, or upon their prospective increase of demands upon it. But while these considerations may delay expenditures like those on Horticultural or Zoological

Gardens, or even general advantages like new Roads, Bridges and improved Communications, save in so far as necessary for health and suburban extension, they should no more delay measures directed towards the extinction of Plague, than they would the extinction of a fire. Now in this matter of plague, far more wealth, and far more life, are involved than in any ordinary or even great disaster, since the losses already incurred through the past half-generation of domination by plague are seen far to exceed the valuation of the whole City, or the revenue of the whole State. And while plague remains, even on the scale of this past year, or average of the three past years, this must continue to be estimated as corresponding to a Super-Conflagration. Why not now estimate, and act, towards its extinction? Many Lacs, as estimates show, are required; but these almost entirely productively spent, as upon house-building, *e. g.* of Plague Camps as Garden Suburbs. Yet in this way only a fraction of one year's losses by Plague would practically expel it for next year, and the interest of a second fraction would increasingly guard against it in future ones.

The Needed Revolution in Civic Thought and Economic Reckoning.

The moment it is clearly realised, by State Governments and Municipal authorities, that the main wealth of their community lies not merely in past products, nor in the paper or silver claims upon these, called "Money", but in the Life-expectation and productive power of its citizens, we shall have entered upon a new period of Economics, and of Civic and State Book-keeping accordingly. For we shall look at our fellow-citizens and ourselves as every army looks at itself, and is looked at by friends and enemies alike, (1) in terms of its health, and (2) of the necessary equipment and material conditions for maintaining its activity, together with (3) its mental and moral state, its social outlook and purpose, which are commonly summed up as "moral". But a city following the example of its leading classes in merely running away from plague, is too much like a routed army. Yet as even the most hastily retreating army may turn at bay, and win victory and safety after all, why not a City? Why not this one?

So let us proceed to continued stock-taking of the victories and spoils of Death, in his battle with Indore; for Plague is but the foremost of his many victorious generals.

Chapter XXXV.

Public Health Losses of Indore, other than Plague; and Practical Measures.

Plague is here in Indore thought of as something quite exceptional, so that, were this removed, Indore would be a reasonable ordinary place, with no other serious drawbacks to its life and prosperity. Ordinary, yes; too much so; but reasonable, not yet sufficiently. For plague is but the foremost of many not less

preventible evils; and some of them well-nigh comparable to plague, in its milder years, and in aggregate in average greater still. Foremost among these let us take, as generally the most notorious case, that of Infant Mortality; though here in Indore statistics as yet are lacking.

Infant Mortality and its Prevention.

Now it is one of the main Bye-products of the War that in every combatant country—with the possible exception of Turkey as most fatalist and backward—serious thought and effort are now being given to the problem of recruiting their sorely diminished populations, by a new attention to Public Health, and this particularly as regards the Care of Childhood, and the consequent diminution of those appalling rates of child-mortality which still more or less everywhere characterise our mechanical and commercial civilization, and our correspondingly depressed and disorganised rural civilisation also. Why not then let us be planning for thus preserving, and so increasing, this sorely drained population of Indore? why plan new Suburbs and Industrial Town, and yet be losing so much of the generation which comes to fill them?

One of the traditions familiar in the west is that of "the Massacre of the Innocents;" but this has been commonly as a single event of year one of our era, and so is not understood as a too common process everywhere; still less as a long established process, not confined to modern and urban civilisation particularly. And as this child-massacre is described as an act of deliberate policy, so since the birth of the new science of race-life as "Eugenics", there have been pseudo-eugenists—"Herodians," as we may call them—who have argued that the present enormous percentage of child mortality is nature's method of eliminating the unfit, and consequently that we are only weakening the race by any attempts to diminish this.

But this callous sophistry is also stupid: for it is obvious that the present conditions, of ignorance and death, to which motherhood under present conditions is so largely confined, not only effect this massacre, but produce widespread disease and lifelong deterioration upon the surviving children; and this probably in far greater proportion, if not even greater social loss, than that from positive deaths. Conversely, the measures of child-care which, even with our present knowledge, are experimentally found to reduce child-mortality—and not simply to a half, or quarter as sanguine hygienists at first hoped, amid the ridicule of "practical men", but far lower—are similarly bringing with them an improvement in the relatively vigorous children who formerly survived; and this so great as to be beyond the present conceptions of the practical man altogether.

Now these are two statements so strong as to require the citation of experimental evidence for their proof. The first proof is vividly given by a circular before me, of the greatest London Orphanage, one of 7000 inmates in its various homes, and specialised for the last fifty years for destitute children—of whom not one has ever been refused admission, and of which accordingly its child-Hospitals are a large feature. Now to quote their report:—

"The health conditions in the Homes are beyond reproach—a fact witnessed to by their remarkably low death-rate. During the last 20 years this has averaged only 7.76 per thousand. Last year it was only 6.56. When it is remembered that in some districts infant mortality is as high as 240 per thousand, this other figure becomes something nearly approaching a miracle."

Now when this miracle is accomplished, that of the reduction of death-rate from 240 to 6½ per thousand, among children from such slum neighbourhoods, and with everything against them, *i. e.* to nearly one fortieth, and this with all the disadvantages inevitable to Institutions, even at their best but of amateur mothering, what may not real mothers do, when they are rescued from their present ignorance and depression? This is now just beginning to be done by education; not of course of the verbalistic and examinational kind, but by that vital education of woman for womanhood, which is happily here and there beginning.

The Infant Mortality Rates for all India in 1916 were 209·4 per thousand for boys, and 194·7 for girl-babies; and combined for both sexes 202·6; while the ten years average 1907-16 is 200·7. But in Central Provinces and Berar this mortality rises to 265·8, and in Madras falls to 182·8. Whereabouts does Indore stand between these extremes, so lamentable at best? And with her peculiar call for increasing population, how easy, how profitable, to exceed the best of them? Thus in Ireland, with all its poverty and other disadvantages, this death-rate is 83 per thousand, a better figure than that of England or Scotland; through all these, compared with that of the orphanage for the destitute cited above, are still of deplorably low credit to our public health organisation.

Next as regards the saving of even apparently inferior children, it is worth recalling that perhaps the most wretched and dispaired of infant in British Biography lived far beyond three score and ten, and has been commonly reckoned as one of the foremost intellects of the west, Sir Isaac Newton; and this is but one illustration among many that even the care of inferior children may pay. But the advocate of the crude and Prussic Darwinism which is still current may reply that such instances are still too rare to be of statistical importance; not knowing real Darwinism enough to realise how florists, sowing for splendour of flower, are accustomed to select for preservation the most defective-looking, discoloured and deformed, of their pansy or other seedlings; with the experience that it is from these that they obtain a notably larger proportion of freshness and fineness of flower than when they select, as they not unnaturally at first did, the healthiest, largest and most verdantly cabbage-like. And that the same principle holds good in civilization is widely illustrated. not only in the annals of religion, philosophy and literature, but even in the fierce yet subtle game of war, with its often small-sized generals, as is known to every student of history. Yet the records of all true aristocracies,—as for us westerns the Greeks at their greatest—have richly justified our present hopes of vital education; while the daily Roll of Honour, and its photographs in the press, again show that the noble development of youth has been returning, and among all combatants more or less alike. And that Gods, Goddesses and Muses, whatever else they be, are images of humanity at its normally best and brightest, is a proposition verifiable by every educationist, as he or she becomes emancipated from the present misorganization.

Now in this biological and general argument, do I seem exceeding the limitation of my task here, to report for Indore City? Not so far as educational buildings and environment are concerned; nor yet as regards homes even of the simplest. For it is of the very essence of this present responsibility to supply both criticism and constructive proposals. As examples of criticism, I need not go further for illustration of conditions unfavourable to child-survival and child-upbringing than those too conspicuous in Indore, though still more in greater cities like Bombay; on the one hand the small (or divided) rooms of existing slums, and on the other hand the

standard and pukka one-roomed chawls, which have been provided to replace them. On the other hand, it is here strictly shown upon these Plans and their Estimates, and in the actual buildings which are now beginning from these, that the truly standard Indian minimum of two (or three) roomed houses with chabutra, veranda, court-yard and garden, can, here at least, be provided at no greater expense than the one room of the new chawl, and even at no higher rental than it is sometimes paid for one in the slum. We may thus reasonably hope to improve health, and especially to reduce that appalling child-mortality which is one of the main defects of Indian life, one of the main causes of its neurasthenic depression through heart-breaking sorrows, mostly all unnecessary—and largely also of that poverty into which India has sunk, perhaps deepest of all the civilised countries of the world.

As the foremost example, and repertory, of this needed general and social treatment of Health problems in general, and of Infancy in particular, see the recent important monograph—"Scottish Mothers and Children," by Dr. Leslie Mackenzie, of the Scottish Local Government Board, issued by the Carnegie U. K. Trust, Dunfermline, 1918.

Tuberculosis.

But the waste and poverty of India and Indore, so far as disease and premature mortality are concerned, are not yet fully accounted for. After plague and infant mortality, we have still to estimate what are reckoned the main diseases of ordinary life. Take therefore now Tuberculosis, as a main scourge of industrial populations in what should be their youthful prime, and above all others a conspicuous curse of the Cotton Industry for which we are now providing, since the atmosphere of mills, and of weaving-rooms especially, with their too customarily insufficient air-space, is well-nigh as definitely adapted for the growth of tubercle as is that of a Shade-house for ferns. If so, the plan and detail of design of future mills must be on more generous lines of aeration, and the present ones will be seen to require raising of roofs, or spacing out of looms, if not indeed both.

That this is a serious matter, for Naya Indore especially, is evidenced from the Municipal Health returns; for in the nine years of which I have record the total number of deaths from lung diseases is but two less than 3200. And even we deduct Pneumonia and Asthma as mainly occurring at a comparatively advanced age, we have still a mortality, which when estimated like that of plague, works into formidable economic loss for the whole period, or even in human wastage per annum. And while the medicine and philanthropy of the passing generation have rightly and generously endowed Indore with a Tuberculosis Hospital upon the neighbouring hill-top, it is now for us, with an improving City, to reduce tuberculosis just as much as child-mortality; i.e. to but a few per cent of its present ravages. And this—given Mill-improvement—through the better nutrition of returning prosperity, and by bettered housing, with increase of the old-fashioned Indian resource of veranda and chabutra, and the recovery of the good old habits of living, cooking and sleeping as far as may be in the open air, with far less use of rooms than our present bad habits have accustomed us to.

Thus while under present conventions, I supply plans with rooms still of customary type, though bettered size, I must also clearly affirm that houses of larger and wider verandas and rooms, and with windows, not of glass, but of woven wire or some light textile substitute, would be found better and healthier, and thus before long would pay their slight increase, mainly of plinth, walls and roofing.

Limits of space and time prevent me from entering into the larger interpretation of Tuberculosis, from the social and civic point of view; though this is necessary, alike for its adequate comprehension and its treatment. Enough here to refer to the teaching of Dr C. Muthu on his visit to India last year, and to concur in his view of Tuberculosis as one main symptom of that more general deterioration, which can only be dealt with by a policy of Reconstruction, rural and urban together.

Importance of Improved and Cheapened Milk-Supplies.

For tuberculous patients, well-nigh as much as for infants themselves, the improvement of Milk-Supplies is urgent; hence the suggestions towards this already made at various points may here be recalled. The larger Drainage Gardens, apart from houses, may sometimes be planted with green fodder, lucerne etc. but this is insufficient. Has not the time come for developing an Irrigation Fodder Area, conveniently that of the low River Banks of the Industrial Town below the Bund Bridge, and until this fills up beyond that limit? Will not this be found to pay, and so to justify an enlarged development, further down streams? Should not milk-supply be recognised and improved, as one of the very greatest elements of India's developments?

Disease of Digestive System.

Of Enteric, Dysentery etc. I need not here speak in detail, since their gravity is surely obvious, their Public Health treatment also. But is it not a matter of common parlance that the prevalent ailment of Indore is costiveness, not to say constipation? And how many diseases are associated with this, from the obvious stomach, intestine and liver troubles to worse ones, even insanity itself; and here again and above all its peculiarly depressing contribution to neurasthenia, as also to various troubles peculiar to women. Hence of course the enormous use of drugs; even the acquirement of that pill-habit on which the prosperity of newspaper advertising so much depends. But here again the Public Health and Town-Planning remedies are as obvious as they are generally absent. For the conspicuous advantages derived by the rich in Europe from their patronage of the health resorts which arise around every mineral spring of evil-tasted and worse-smelling purgative water, and their enormous consumption of the same rarities in costly bottles, can be essentially enjoyed, without any of these expense and discomforts, by all classes of the population by the simple recovery of the ancient water-drinking habit, and this especially on awaking. So that our already increased, and I trust improving, water-supply for Indore need only now to be popularised by public opinion, and in the schools, preventively to reduce intestinal troubles to a greater degree than can be credited to all patent medicines put together.

There is also a physiological reason for reviving the too lapsed habit of water-drinking, namely this, that though we do not exactly eat when we drink, we largely eat to replace drink; since most of the weight of our food, say from 60 to 96 or more per cent consists of water: and the bulgy over-eating which is a main vice of prosperity, and the too frequent vice even of poverty, is thus excused by thirst and ignorance.

But mere water-drinking, with consequently diminished excess of food, is not enough, even for the ascetic at his best. Here comes in the supply proposed in these plans, of Fruit and Vegetable gardens; and these on a scale which, though

large above that of most cities, will soon be seen as insufficient for Indore and its population, as it returns through their use towards health, and the more vigorous energy which goes with this. There is to my mind no more distressing evidence of the uneconomic minds of our would-be economists, and even of would-be practical economists, like the Industrial Commission and its analogues among Indian parties and schools of thought, than their common lack of understanding of the possibilities of Gardening and Fruit-growing in India, and consequent lack of support for this. And particularly in this fine climate and good soil of Indore, which as Mr. Tamba's or Dr. Dwarka Nath's gardens alike show, can grow oranges as good as those of Nagpur, the best in the whole world.

Experiments like those of the economic botanist of Nagpur, Dr. Douglas Graham, are giving hopes of producing a variety of this orange more capable of export. For while we have in preceding pages endeavoured to do justice to the commercial possibilities of corn, and make provision for these (I page 131), it is a fair question whether there may not yet be found even more profitable possibilities in fruit, in this little California of Indore. Here recall from, I chapter V, as deeply connected both with health and wealth, the comparison of Cotton with all its possibilities, with Silk and Fruit and their higher civilization-values. Is it not increasingly plain that in Indore, Fruit and Silk-culture must be brought into existence, to balance Cotton, and even Corn?

Cholera, and Small-Pox.

I pass here lightly over Cholera, though ever a lurking danger, and even in 1916 serious, (122 deaths); because here general sanitation, and above all good water-supplies, promise greatly increased safety—ofcourse always assuming due precautionary measures, like that of the removal of Piplia Village (I page 45), in which a single case polluting the tank might start a decimation of Indore.

Nor need I discuss any special measures against Small-pox, despite last year's out-break (208 deaths); since hygiene, and housing, cannot but be helpful in addition to the ordinary precautions.

Rheumatic Diseases.

Though these are serious in Indore, their incidence will also be abated by the improved nutrition which will come with the returning prosperity of an improving life-rate, and with the lowering of the cost of living through gardening etc. as from improving agriculture.

Malaria.

Pass now to Malaria. This once ravaged all western Europe, as still its East. The decline of Greece and Rome, and the deterioration and backwardness common at many points of the otherwise delightful Mediterranean region to this day, are thus largely accounted for. But if so, is it not time that here as elsewhere, (witness Bengal), Indian statesmen and city administrators should now fully arouse and brace themselves to dealing with this stupendous evil? No longer ofcourse in mere details, and too often by blundering, like the filling-up of Tanks, instead of cleaning them; but as by the filling up of all the pools and puddles of their towns from the

ample rubbish whichever where abounds, and which would thereafter need but moderate inspection and care with every season. Here in Indore, with its Rivers, the problem is far simpler and easier to deal with than in most parts of India. Outlay at first of at most but Rs. 25000 (page 77), and then moderate maintenance thereafter; but even had this been an annual outlay—what is that when set against the capitalised value of population not only preserved in life, but in working efficiency, for with peculiarly reduced neurasthenia accordingly: producing how many lacs per annum, and even crores for each generation of the City's life ?

As the subject of Malaria is treated in the Mosquito Survey Report printed in Appendix to this volume, and furnished to the Durbar by Mr. M. O. T. Iyengar B. A. Entomologist to the Bengal Malaria Survey under Dr. Bentley (to whom thanks are due and tendered for lending the services of this competent young officer) I need not enter fully into details. Yet let me here point out that the Municipal Death Returns of Table I below, though averaging 700 yearly, give no adequate idea of the seriousness of the ill-health situation, or of the losses this occasions, seeing that most cases are not fatal. For in Dr. Bhandarkar's five City Dispensaries alone, an average of 5631 cases are treated yearly, while the two hospitals of the Residency, which have many Indore City patients, record the enormous average of 6657 throughout the same five years. The annual sum of these, 12,388, no doubt includes a good many patients from the country, who come to the Residency and Indore Hospitals for treatment, but as it omits all home patients, of private practitioners, it may well be doubted whether the above total be not still well under the mark. Here again is room for a calculation of the economic waste and loss, like that initiated for plague.

I am told that "Indore is not considered a very malarious City", but this is poor consolation ! Let us rather clean the Rivers and Nullas, and see if we soon cannot make it the first practically non-malarious City of India. Let me here challenge manufacturer, economist, banker and statesman, in Indore or beyond, to find a more profitable investment; one returning as many hundreds, (or is it not thousands ?) per cent upon the moderate capital required !

The simple details of this Cleansing of the Rivers, in sections downwards, have been fully discussed between Dr. Deo, Mr. Iyengar, the City Engineer and myself, and with helpful criticism from the Chief Engineer. I plead therefore that permission be given to proceed without delay; and that as much as possible be done this coming rainy season.

As the American triumph over the Mosquitos, and their malarial and other fevers which so long desolated the Panama zone, is comparatively well-known in India, I choose less familiar examples, but more relevant ones; since from two old and backward cities, for centuries past no less deeply depressed into neurasthenic apathy and fatalism than can be any in India. First then the Cuban capital, Havana, where I have long ago observed these melancholy conditions. I cite from Doane's "Insects and Disease" (London Constable, 1910)—an excellent introduction to the subject, available in the Indore Officers' Club Library.

"After an average for five years of 712 cases of yellow fever annually, these fell to 136 and 108 in two subsequent years, and then rose to 310. Aroused by this return, the Havana Public Health Service went to work, and this time thoroughly, and so reduced the next year's cases (1901) to 12,

and those of the following year to none at all. After the Americans left Cuba, vigilance was relaxed, and the fever began to reappear: but the Cubans have thus learned the necessity of keeping up the fight against mosquitos.

Next New Orleans, on the American mainland opposite, had its turn. "The yellow fever of 1905 came with a formidable and unexpected suddenness than that of 1897. It sprang into life like secret and armed uprising in the midst of the city, full-fledged and terrible. But there arose against it the trained fighting line of scientific knowledge. Accepting, with a fine courage of faith, that most important preventive discovery since vaccination, the mosquito dogma, the Crescent City marshaled her defences. This time there was no panic, no mob-rule of terrified thousands, no mad rushing from stunned inertia to wildly impractical action; but instead, the enlistment of the whole city in an army of sanitation. Every citizen became a soldier of the public health. And when, long before the plague-killing frost came, the battle was over, New Orleans had triumphed, not only in the most brilliant hygienic victory ever achieved in America, but in a principle for which the whole nation owes her a debt of gratitude."

"The Citizens Volunteer Ward Organisations were organised for the purpose of fighting the mosquitos which were everywhere. To many the fight looked hopeless. The miles of open gutters, the thousands of cisterns and little pools of standing water everywhere furnished abundant breeding-places for the mosquitos. The ditches and ponds were drained or salted; the cisterns were screened, infected houses were fumigated, yet the fever continued to spread. Rains refilled the ditches; winds tore the screens from the cisterns, the ignorant people of the old French quarter refused to co-operate. At last the city in desperation appealed to the President, "who sent a reinforcement from the U. S. Public Health Service." Finally the results began to be apparent. The number of cases gradually diminished, until, long before frost came, the city was free from the great pest. Yellow fever will doubtless appear from time to time in New Orleans and other cities, but there is, at least there should be, small danger of another great epidemic, for the people now know how the disease is caused, and the remedy.

"Not long since I had occasion to write to a prominent entomologist in Louisiana for some specimens of the yellow fever mosquito for laboratory work. The following extract from his reply will show something of the work that is still being done there." I am afraid we cannot furnish specimens of *Stegomyia*, in spite of the fact that Louisiana is supposed to be the most favourable home of this species in South. Since the light occurrence of yellow fever in this State in 1905, a very vigorous war has been kept up against *Stegomyia*, and the ordinances of all Louisiana cities and principal towns require the draining of all breeding places of this mosquito, and the constant oiling or screening of all cisterns or other water-containers. The result is, this species is very rare. Here in Baton Rouge I only see one once in a great while, and it would require perhaps a good many days' work at the present season to get as good specimens and as many of them as you require."

Now in Indore, with its comparatively dry climate, and its excellent drainage to the rivers and nullas, the same destruction can be effected for its mosquitos; and this far more easily, indeed at a mere fraction of the expense; yet with essentially the same transformation in the public health.

Now this is not simply a type of Mosquito treatment, encouraging towards Malaria treatment, Plague treatment, and so on: it is also an example of civic action. As Germany has done wonders for "penetration", for chemical manufactures, and other things, and also for the organisation of military attack and conquest, that America has been doing for railways and for finance in the past generation, for agriculture more recently, and now, encouraged by experimental success of the kind just described, is beginning to do through her Women's Clubs, her 2,000 Civic Societies, her Regional Universities, and the like; and not only for town and village betterment, but for city reorganisation and development; and for public health throughout the whole nation, and over her half-continent.

Essentially the same group of movements will soon be getting their turn in India: and it is henceforth possible for Indore to take up a leading share in these, and this even to begin with, from the next two years' results of river-cleansing, garden-making, plague-measures, and other comparatively inexpensively and speedily initiated steps towards the recovery of public health, and before accomplishing the more costly and elaborate undertakings of all kinds which have been discussed in preceding chapters.

Chapter XXXVI.

Disease as Poverty; and Public Health as Public Wealth.

Every one in a way thinks that he knows that Public Health is Public Wealth; and that correspondingly all forms of disease, all cases of premature death are not only private loss and poverty, but public loss as well. Yet who has adequately estimated these? Especially for the case of Indore, here before us? Let us then enquire into this, beginning more fully and generally than in the preceding Chapter, for Plague alone. So here let us consider the Indore Mortality Returns for the past 15 years, as furnished by the Municipal Office—Table I herewith; and thereafter attempt to estimate their economic significance. Ofcourse, as already urged above, these figures are only intended to stimulate an expert statistical enquiry, and so are offered here merely as suggestive, and with endeavour not towards approximation, but cautious under-statement.

In this Table the appalling total deaths in 1903, 1904, 1906, 1909, will especially strike the reader, with their explanation mainly in the Plague column. Yet not entirely: see the extraordinary mortality in the worst plague-year 1903, from Fevers (then not distinguished as "Malarial" and "Remittent"). The deaths from Intestinal Diseases (other than Cholera) and from Lung Diseases are unfortunately not kept separate from "Other Diseases," until 1907; which no doubt mainly accounts for the high figures in this column in preceding years. Yet not entirely: it will be seen that in bad Plague-years other mortality also tends to be heavier; and though this is readily explicable so far, on grounds of mental and economic depression alike, there is here call for investigation in such conditions whenever arising.

The Table gives no indication as to total population as reduced by Plague. I take this population at the outset of 1903 at 84,000, and despite the 12,565 and 6,938 total deaths of 1903 and 4, the unknown number of flights from Indore, and the losses of subsequent bad years also, I still take the average population for the whole 15 years at the figure of the 1917 census, 74,000. But now dividing this population by the average mortality for the same period: i. e. 74,000 by 3,976, we get the miserable result of 18.6 years of average life-expectation in Indore. A dreadful average for the past 15 years, especially in comparison with the 33 years or so which are the average life-rate over British India!

INDORE MUNICIPALITY.

Table I. Mortality according to Diseases.

Years.	Plague.	Smallpox.	Cholera.	Intestinal Diseases.	Pulmonary Diseases.	Fevers Malarial.	Fevers Remittent.	Other Diseases.	Total of Deaths.
1903	8,915	54	8	...	...	2,013	...	1,575	12,565
1904	5,036	175	...	...	...	571	...	1,156	6,938
1905	8	177	...	...	...	565	...	1,324	2,074
1906	5,017	93	201	...	...	475	...	1,674	7,430
1907	9	32	...	122	401	155	538	1,041	2,298
1908	44	203	3	84	398	126	475	1,147	2,480
1909	2,471	188	88	112	256	99	282	1,284	4,780
1910	129	21	49	112	337	50	448	1,117	2,292
1911	1,938	42	1	59	335	29	185	950	3,539
1912	280	82	26	83	404	49	314	937	2,125
1913	...	108	3	34	359	49	318	790	1,714
1914	...	98	41	56	325	104	409	847	1,880
1915	1,227	3	1	67	383	63	234	913	2,891
1916	1,429	67	122	...	...	382	...	1,387	3,387
1917	1,182	208	...	...	...	443	...	1,409	3,242
Totals...	27,635	1,551	543	729	3,198	5,172	3,203	17,551	59,635
Average for years recorded for 15 (or less)	1,842 (or 2757 for 10 worst yrs.)	103	49 (11yrs)	81 (9 yrs.)	355 (9 yrs.)	345	356	1,170	3,976

Life Expectation in the West.

Now in Britain, despite town slums, bad rural housing, intemperance and other evils, our average life-rate has been raised to fully 41 years. So here of course is a main explanation of the enormous contrast of wealth between East and West, already referred to at I. P. 63., and explained above (page). And upto 18 or 20, 25 or even 33 years, how small must be the economic return of the few working years over the consumption of the merely growing ones? While upto an average of 41 years, how much greater?

Yet that our average of 41 years life in Britain is in itself a deplorably bad figure, is evidenced by the fact that in any artisan Garden Village this figure almost at once rises to 50 years. While that this again is but little to what it should be, is evidenced by New Zealand, with its average of 60. And though this is no doubt here helped by its large element of immigration, after the risks of infancy and early life, it is again but reasonable to anticipate improvements, there, and indeed everywhere, beyond this great increase of India's present full expectation of 33 years: that is, if we devise improvements, and when we execute them. For the too current notion, that the duration of our annual human life-crop is not in man's own hands, and this for better or for worse, is probably the most disastrous and retardative of all the superstitions to be found in East or West, separately or put together. So the converse proposition, (already made at I page 20) cannot be too clearly

stated viz. that it is in terms of the existing towns, villages &c. that their death-rates are determined and varied. In the existing towns—as expressed in their planning, housing, cleansing etc.—without ignoring other factors, yet in such material factors above all—their existing frightful death-rates are inherent, and so to speak normal: *i. e.* adapted. But also conversely. In better planning, housing, cleansing, etc. lies the converse certitude—already experimentally verified in every case in the world where trial has been made, and in proportion to this betterment—that death-rates thereupon fall, and go on falling as improvement continues. That too many so called “Improvement Schemes” have produced, and may even now be producing, the reverse effect, is of course also notorious; but such schemes, when scrutinised, are found to be really of dishousing, misplanning, mis-draining, and so on. Still even these confirm the main proposition, that death-rates and life-expectation are what we make them. Our scientific faith in the Order of the Universe is thus in every way confirmed. We find that its rewards or retributions in terms of life and death are not always or necessarily “to man according to his works,” but assuredly, of either kind, to social man according to his social works. This truth was always known in the truly religious past; it is mainly the individualistic philosophies, of East or West, which have later obscured the general mind, perverted it into its current fatalism, and encouraged it in its apathy.

Our British figure of 41 years is good compared with that of India, because our sanitarians have raised it to this, and from a figure, which for industrial slums etc. was less than three generations ago as bad as that of India. It is still relatively bad, because of the current fatalism, apathy, individualism, and obstinate prejudices which still prevail too generally. Yet still more because the same defects, and more, are still fully represented in parliament and in administrative bodies. Thus when (as is being assured by the loss of life, through the War) the fourteen administrations which at present hold divided control of public health in England, and which thus delay or paralyse each others’ endeavours, are united into a single Ministry of Health of even the most moderate competence and due decentralisation, the fall of death-rates, the rise of life-expectation, will speedily be sufficient to make a new epoch in the national history, and this in many respects more than economic; though life-lengthening will be seen, and in all countries, as a main way of paying for the War.

A Ministry of Health as Ministry of Wealth.

We have above seen grounds for the claim of this heading, in the contrast of Indian poverty with British wealth; for this is to be explained, not merely on the ground that we have coal, machines, ships, capital, and so on, but on the larger and fundamental ground, that we survive into our prime to use or to make these things, instead of perishing at the outset of our working life as India—and in India so particularly Indore—are so much still doing.

I plead then with the relevant Department of Health, and with the Durbar, to consider all possible reductions of this mortality: for by this the progress of Indore has been not merely arrested in the past, but is set back to this day; and with no security as yet of better future, save in so far as health improvements, like Plague Measures in particular, and those of these Plans in general, are now actively initiated and efficiently carried out.

Mortality Abatements for Indore.

Let us start then the construction of a new table containing the last. In this (Table II) I therefore repeat in the first column the deplorable averages, totals

and result, with which Table I closed, i. e. the mortalities of the whole period, of 15 years under consideration, from 1903 to 1917 inclusive. But beside this, when we take in column 2, only the average of the past five years, with 1913 and 1914 free from plague, the improvement is seen to be a very substantial one. So in the next column, 3, let us select from Table I for each of these 8 diseases (or groups of diseases) the returns for its five years of utmost mildness (or even absence); then average these figures; and imagine these favourable conditions as concurrent in a single year. We have thus the favourable result of a mortality reduced to much less than half the average of the past fifteen years and with corresponding enormous rise of life average accordingly, even beyond the British figure of 41 years or thereby. Yet these figures suggest no unreasonable hope, as shown by the next column 4, that for 1913, in which they are on the whole somewhat surpassed.

II. Variations in Death-rates. Past (1,2,3,4), and Possible (5,6,7,).

Disease.	1 Average Deaths for years record- ed in Table I (15 or less) 1903-17.	2 Average of Deaths for five past years, 1913-17.	3 Average for each Disease of its five least serious years, in past 15.	4 Records for 1913, as best year of past 15.	5 Low Antici- pation from Improve- ments, keeping near best years.	6 Practicable Optimum to be hoped from Improve- ments.	7 Optimum from Pro- gressive and continued Improve- ment.
Plague ...	1842 or 2757 (9 years).	768	84	0	75	50	0
Smallpox ...	103	97	51	108	51	50	0
Cholera ...	49 (11 years).	33	3	3	20	25	?
Intestinal ...	81(9 y.)	31	60	34	50	25	?
Pulmonary ...	355(9 y.)	213	322	359	200	175	?
Malarial ...	345	208	55	49	50	50	?
Do. Remittent.	356(9 y.)	192	266	318	200	75	?
Others (in- cluding Infant Mortality ...	1170	1,069	890	790	...	770	?
Totals of deaths and percentage yearly.	3976 =5.4%	2,611 =3.5%	1731 =2.3%	1,714 =2.3%	1,700 =2.3%	1,240 =1.7%	?
At Average of population at 74,000, above figures give as expectation of life—	18.6 yrs.	28.4 yrs.	42.8 yrs.	43.4 yrs.	43.6 yrs.	60 yrs.	60 plus?

If so, let us forecast in column 5, as the very lowest anticipation of our proposed improvements, that we can at any rate standardise this favourable year 1904, with more or less fluctuation of course in details, but at an average total only a very little lower. Yet over even a short term of years, how great would be this gain; how rapid the recuperation of the City!

But no sanitarian worth the name will be content to stop at this; he must aim at results far better still. To keep optimism moderate, let us assume Plague to remain lurking, and with minor outbreaks, and Smallpox, Cholera and Enteric, to be endemic also; Malaria to be reduced substantially no doubt, but to remain unconquered, and even Infant Mortality and other reducible factors of the last group to be reduced, at first only in moderate degree. But our total Mortality figure has now fallen (6) to about that of New Zealand, with rise of Life-duration accordingly.

Yet even the preceding figures cannot satisfy us. Plague and Cholera have to be practically eliminated, as in Western countries in the main, and Small-pox reduced, as with them. Enteric too must be brought down, as in the present armies, as compared with that in the Boer war. Phthisis similarly will yield to better housing, and to the better nutrition of returning prosperity. And when the Rivers and Nullas are cleaned, and kept clean, the drains regularly flushed, the puddles abolished, what chance for so large a survival of the mosquito-diseases? Again why not reduce Infant Mortality to that of the London Orphanage above referred to? Ofcourse we may; so surely we shall.

This final column then, of Progressive Optimum, can have no definite figures of forecast; for though zero is not suggested beyond the first three diseases, and is ofcourse inconceivable for all, it none the less expresses the ideal of direction towards which the sanitarian must daily and yearly be holding the city's helm, upon its voyage through future years of lengthening life.

Summary.

Now, however rough our illustrative figures may be, it is surely becoming plain from them (a) that life and death are neither matters of fate or mystery, but rest, and this peculiarly, with ourselves, in our community-action; and (b) that the mitigation of death-rates is of an economic importance which should put an end to our general indifference to it; since in directness and magnitude of return, and in proportion to capital outlays required it far exceed all other economic and productive endeavours whatsoever, and supplies the sinews of life and labour for these. But to bring these ideas yet more clearly before us, in their practical form, we must now return to Indore as it stands, with its diseases in full activity! and then consider how it may pay the community to reduce them.

For illustrative purpose, I shall again average all individuals as of economic value, but now try an average economic value of only Rs. 5/- per month,—since including all ages and for averaging over the whole State and beyond—much lower than that used for Plague. In this city say then Rs. 120/- per annum per individual life-year, taken all over. Is it here, or previously, objected that this is too high for the average productive value even of a City population? Yet I am surely justified in assuming that with increase beyond the present low average life-rate of Indore, or India, the economic productivity of the population cannot but be increased, How far? Who can say? Yet since I here do not assume for this potential wealth more than up to about one-twelfth of what is commonly reckoned the income per head of the British population, I am surely not to be accused of extravagant optimism by those who have any faith in the future of Indore or of India more generally.

On the above principles then may not each year added to the average life of this population of 74000 be valued at Rs. 60 = Rs. 44,40,000; and this especially

when the process is continued over a period of years. If then, we make up the difference between the average British life-rate, and that of Indore with its plague, &c. say 20 years, this amounts to the vast sum of Rs. 8,88,00,000. Taking the population of Indore State at 1,000,000, and assuming for it a much better average life-rate than Indore City, say 30 years, and a lower average economic value, say only Rs. 40 per head, we have its year-value 4 crores; and eleven years increase of this would be 44 crores. While when we apply the same principle, and valuation, to the 315 millions of India, and this at 33 years average life, the annual amount, thus estimated, far exceeds the revenues of the Indian Empire; so that the figures, even for the easily possible eight years increase to the present British figure, begin to baffle our everyday understanding, almost as do the figures of the astronomer.

Further Possible Improvements.

Yet beyond all this, there is a further life-period and wealth-possibility still—that of the next instalment of prolonged life—that of the decade from about 40 to full 50, which the observed contrast between the average British Town and its Garden City so clearly demonstrates and warrants. Yet why stop about 50? Is not the war showing the value, and even proving the endurance of the men of the next (sixth) decade? So why not have more of them? While as for the generals on both sides, are not they in their seventh decade? The statesmen are often older still: thus the French Prime-Minister, Clemenceau, is as much as ever “the Tiger” though 76, while Thiers or Gladstone are examples of responsibilities lasting, if not even of powers culminating, in the next decade again. India too has her grand old men; and though too few, this is plainly no fault of nature or the gods, but of that extraordinary neglect or disobedience of what should be obvious hygienic rules of life, which in India especially may go on with superlative attention to others.

In this way then the economic and social values of life re-appear, and with their long-increasing increasing increment of value, and these for all classes; since the old craftsman or gardener is in all countries often the best, and the old housewife too. Again, beyond these increments of the quantity of life, with their increases of wealth, there has to be considered the even greater possibilities and returns of appropriate Education. Even the poor instruction which commonly passes under that name is found and considered an investment bringing high interest; but how much more education may be made of value is now and of late years being evidenced; in many ways, and at all ages and phases, in all occupations; as from slum infants to those of Montessori Kindergartens, from school weaklings to Boy Scouts, and now also their Masters to Scout-Masters. So again in the working world, as with Industrial Management at all levels. Again in the military world, from raw recruits to the scores of admirals and generals whom the best advertised of Re-Education Systems now boasts upon its rolls. Or again in the sciences, or the arts, where education only ends with life.

From one point of view all this is so well known as to seem common-place. But for the practical purposes of this Report, the essential is—How is this to be applied? Now into our western world of ideas, so predominantly mechano-centric, the Indian public have practically fallen, despite all pride of other memories: and that practical men here are looking to factories, and more of them, as the main ways to City wealth, is here peculiarly plain. So far well: and planning for these has not here been forgotten. But the essential idea—the most important in these volumes—is still too commonly missed by current economists—that “the only true wealth is Life”.

Though mechanists have been wont to call this—"sentiment", it is none the less science; for this is now being seen as bio-centric, and evolutionary accordingly. For what help are mere machines and factories to a prematurely dying population? How can this at once people the new Town and continue the Old City? Have we not to make sure that they can live out their lives? If so, both industry and agriculture will flourish; and why less than in other lands?

Needed Table of Practical Activities.

Here the compilation of a third Table is desirable and practicable, even necessary—one to keep before all concerned with Public Health, beside the plan of Indore. Below Tables I and II, with their Disease Returns, Averages and Totals and the corresponding Life-rates, (with which their economic valuations, corrected as far as may be) let us put this New Table III, with the Diseases again, but now in fuller list; e. g. with Infant Mortality for instance kept clear, and this with its various main headings.

But now in the wide columns of this Table, should come the List of Practical Measures, with every item needed, as well as every item in progress: thus including all the points mentioned in this and preceding Chapters, and those omitted also.

Yet this Table itself would be but an outline. Upon the Health Minister's desk, this should develop into a card catalogue, keeping progress at every point clear before him. Here in fact, all the modern systematisation of the best American business, all the lucidity of the best French (and presumably German) Staff in war are needed, since for an even complexer problem than any business, a more enduring and varying combat than any battle, even any war.

Even to attempt this co-ordination, however imperfectly, will be found rapidly to lead to improvements in the health campaign, to efficiency yet economy of effort, to magnitude of return.

I regret however that my medical knowledge does not enable me to draft this Table to skilled medical satisfaction. Let each responsible Public Health Officer draft his own, and compare it with those of others: in this way some broad general agreement can soon be reached, though each City has its own problems in detail. My recommendations in this report are at any rate steps in these directions.

Summary Again.

Now, however rough our illustrative figures may be, it is surely becoming plain from them (1) that life and death are neither matters of fate or mystery, but rest with ourselves, and this peculiarly in our community action: (2) that the mitigation of death-rates is of an economic importance not only rebuking our general indifference to it, but—alike in directions and vastness of return, and this also in proportion to capital outlays required—exceeding all ordinary material and productive endeavours put together, by supplying the sinews of life and labour for these.

To bring these ideas yet more clearly before us, in their practical form, we must return to Indore as it stands, with its diseases in activity. For now realising that health-improvement and wealth-improvement are open before us together, and upon the lines of these improvements, it is surely no longer a question of simply finding such small marginal percentage of the State Revenues as may remain over when all existing calls and claims are satisfied; but of converging all available effective mind

and good will upon the problem of financing those which bear on Public Health, and the more speedily the better.*

Conclusion as to Public Health.

After all these separate appeals, as to disease after disease, there remains to urge again, in conclusion, that though diseases are many, health is one: so the problem which arises, beyond all separate treatments is to recover unity. Let us organise our division of labour, disease by disease, and maintain it in all directions; not too simply specialised, as with the health authorities in most cities, distributing quinine, or inoculating for plague, and the like; but now dealing with all the tentacles of the disease-hydra. For the City, like a ship, needs completeness in its sanitation, and in its superintendence; nothing short of these will suffice. Hence it is that the Captain of a great liner oversees the whole ship's cleanliness himself, and will not even depute his to this medical officer, but regularly inspects throughout, from first-class cabins to steerage and stokers' bunks; and with sharp reproofs, and royal wrath on occasion, not to be forgotten by the most thoughtless of any rank or class. Our sanitarians are as yet for the most part like separate craftsmen, each seeing only his own job, indifferent to those of others; but as the ship's architect, and its builder, see to it that all parts and tasks are adjusted to the single result of sea-worthiness, so town-planner and administrator have no less fully to see to City-worthiness, and this all round.

It is to the honour of the medical profession that, like the law, it seeks to protect as sacred each and every individual life under its care, and this without reference to its expectation, or to its economic value. Yet this in practice has become a source of real weakness and delay to Public Health, and it postpones the appreciation, by the modern utilitarian mind, of a more vital economics. For a Hospital thus becomes thought of as mainly of philanthropic interest, a little better than a human analogue to the Pinjrapol, in which sickly and old cattle end their days. The veterinary surgeon and the military one, are here better understood, and none the less efficient, through their urgent practical purpose, that of returning horse and man to the effective ranks as soon and as strong as may be; and the State thus supports their endeavours with an energy which it has never displayed towards hospitals, nor even to Public Health generally. Hence there is need for fuller endeavours than the preceding, to estimate the economic value of life, to dispel the current idea of public health outlays as unproductive, and to replace this, by the claim that of all conceivable economic expenditures and productive investments, these on health yield the very highest of returns, and these often the most immediate also.

The current fatalism, that life is a fixed quantity, and that beyond our control, has now to be replaced by the scientific conviction—and its experimental application accordingly—that of all ways in which our human intelligence, our social will and purpose, can affect circumstances and even control them, this of the prolongation of the current Indore average life-rate for the next half-generation, even its doubling and more, is the most obvious; and also the most easily, inexpensively, and immediately practicable. If then there be any proposal in this Report worth trying, and without further delay, surely here it is. Is it only Americans who can thus apply German thoroughness, French clearness, British steadiness, Indian idealism to their public health and City problems, and reap such great reward? Why not now also throughout India brace up our still prevalent limpness, bend our too frequent woodenness, to the same urgent tasks; and now with energy, even with devotion?

* I find that a Review of the losses of Indore from Plague has been published lately, in the *Malhari Martaud*, by Mr. Mathulal. See Appendix.

SECTION VI.

Co-operation of Citizens.

Chapter XXXVII.

Proposed Civic Association: Friends of Indore.

It is an encouraging sign of the progress of Indore that in various groups and quarters there has independently arisen the idea of forming a Civic Association—as “Friends of Indore”—surely an excellent name. And by the most definite of these initiative groups, I am asked to draft a constitution for membership, with rules, subscriptions etc. The hope, on the assumption customary for new associations, is that if this draft be acceptable, or when it is properly adjusted, the Association may enter on a useful and successful civic career, and advance city improvement in many directions.

Difficulties and Disappointments.

But the matter is not really so simple, as I know by experience of many such associations in Europe. As to constitution and rules, every association makes these most beautifully, arguing them out to the last point, and thus using up most of its initial impulse. As for membership, it invites all the proper people, ofcourse; and most of these gracefully consent; but after their first meeting, they are generally found not to come very often, nor to accomplish very much; so, by and by, most members cease to come back at all. Money is often easily raised, and generously given at the outset; yet the expenditure of this is not so effective as was hoped. Thus I have had to plan for a committee which had funds for its city which would correspond to 3 crores for improving Indore. Yet neither the city nor its representative committee have accomplished what they hoped and expected. There are endless ways to the grave of civic, social and educational projects; we were making them all through the generation before the war: and always as above, with excellent purpose and faultless constitution and rules, highest patronage and membership, and often with ample means. Yet somehow the opening ceremony was the best of it; sometimes practically the funeral ceremony as well—the Imperial Institute being but an extreme case among many. I have been told a story of a very similar kind, about a civic Association, which was started a few years ago, with the most successful, eloquent and well-reported of public Inaugural Meetings; and which enrolled a correspondingly large, representative and influential membership; yet which, somehow, has never met again since that day. The name of the City was told me as Indore.

The common fate of higher education, criticised in Section 1 above, is but a greater example of the same kind. For the mistake of the past and passing generation, as we now see, has been to put their trust in constitutional, administrative, financial, democratic or other machinery; and to imagine that life and purpose were thus assured.

Vital Conditions of Success.

Thus it is that almost the only element of British education which has really stood the test of the war, and risen instead of fallen in esteem accordingly, is that of the Boy Scouts. The essence of their success is obviously not in the static perfections above done justice to, but to the degree in which field-naturalists and ramblers of the last generation have initiated the boys into their life of rambling and camping, their delight in contact with nature, their experience of simple life, simple work, simple comradeship, simple helpfulness. It is in course of this sort of life and experience that the requisite organisation, constitution, rules, and finance have grown up; and fast enough, perhaps already only too fully. The contrasted principles are those expressed in the preceding University Report; according to which, given the desire to pass, the examinational Universities then arise, with formal organisation and its Dead Sea fruit; while conversely, given the desire to learn, we have seen how simple and essential means may be readily provided, and the vital University be thus begun. So now with the "Friends of Indore." Friendly first of all; but this not merely or even necessarily to each other (though that will come), but to Indore; and thus in all sorts of differing, but useful, ways; which a conventional constitution and rules, constructed as these necessarily are for one or a few definite objects, might only too easily limit, or even omit—if not exclude.

In a word then, Life creates organisation as it grows; but the most finished organisation cannot create Life.

The Initial Problem.

Nor will the Friends be simply working by gifts from above, as the philanthropists too much have been; so that their great endeavours have been on the whole much more palliative of social symptoms than remedial of their causes. The Friends of Indore will have to apply their minds to Indore; that is, to knowing their city as no mere philanthropic organisation has ever yet done: as Place, Work and People; as People, Work and Place; and all these Past, Present and Possible. Here the first and later Plans of this Report will be helpful, since the first outlines the material growth of the past, and the others the projected future. Yet the first is but a guide-book map, which no tourist would be satisfied with as a substitute for his actual seeing of the present city for himself; while the second is also but a help to visualise that actual growth of the future, without which these are but inked paper.

So before discussing rules or framing a constitution, let all who feel themselves Friends of Indore explore it, know it, survey it, until as far as possible they know it, at any rate their own part of it, not less but more than does the present writer and planner; and thus find out for themselves, and with mutual guidance, all and more than he has learnt of the city. Why not much more? For stimulated by personal contact with realities of place and work and people, themselves all in change, there is no observer but may make his own fresh discovery, and this often of importance. Especially is this so to the observer himself: for Gautama's awakening, to the disease and sorrow outside his sheltered home, is but the extreme and dramatic case of what happens to us each and all, whenever our open and disinterested survey of the real world around us is given a chance to begin. Thus sympathetically aroused, reflection follows; and remedies, for the evils which have impressed us, are sought on all sides, in alternate discussion and reflection anew. And though our remedies may

be nowadays in the main (or at least at first), more concrete, than was Gautama's, and reached through acceptance of the city's problems, not in retirement from them, the social spirit is essentially akin. The essential "Meetings" of the Friends of Indore are thus, primarily, their own, with Indore; and, secondarily, their mutual interchange of observations, of interpretations and of practical suggestions. To such interchange, each observer will bring something personal; and each will learn from the observations and points of view of others; so that before long all the many aspects of the city outlined in these plans, and touched in this report, will be discussed, and often more fully: their historic origins, searched out, their present understood, their future possibilities considered also, and endeavours accordingly begun.

Natural Division of Labour.

Yet each temperament and personal experience forms its own main interests, and inclines towards this or that line of action. People of similar interests come together; and thus there will naturally arise groups, and before long Committees, of definite inquiry and purpose. One group will thus concentrate towards improvement of the Old City; and, among these again, some will be more interested in its Communications or its Open Spaces, and others especially in measures of Housing and of Public Health. Some will be more attracted to the development of the Suburbs, and others to the new Industrial Town, and there again with differing interests; as towards Industries and their Efficiency, as others again towards the Housing and Welfare of the Workers. Some again will especially see the connection of Education with Citizenship, since city improvement is more for the rising generation than for our adult and declining one; while others, most influenced by their love of the beautiful, will protect and promote the city's beauty, in landscape, in architecture or in gardening. An educational group will certainly also arise, probably from the very first; and so, in view of its special importance, I may discuss its future a little more fully.

Educational Preparation towards Citizenship,

A prime necessity of elementary and secondary education, and in India certainly not less than in Europe or America, is no longer merely the imposing of the 3 R's on present methods, but the education of the 3 H's (page 27) so admirably begun and developed by the Boy Scout Movement, with its happy and intelligent rambling and camping, its astonishingly rapid and varied educational development accordingly, above all for real work and usefulness in life, and even for the 3 R's themselves. So let the Friends of Indore possess themselves of as many copies as may be of the essential Boy Scout literature, and note from this not only the renewal of bodily and mental health and vigour through comradeship, disciplined in nature instead of in the drill-ground, but also in many essentials of technical education, from the simplest crafts and arts onwards to skilled ones. For this is nothing short of a renewal of technical education, from its vital beginnings, and freed from these elements of mere drudgery, which have so much paralyzed the technical schools of the past (I 149). When the occupations of adult life have thus been entered on with pleasure and goodwill, because direct appreciation of their necessity and usefulness, the desired higher skill and scientific understanding is also readily acquired, because now cheerfully, even eagerly. This effective friendship to Young Indore involves the training of Scoutmasters, and these in no small numbers. But for this there need be no great difficulty since boys and their leaders learn together. After making their mistakes on the small scale, and sufficiently in private, as in our Boys Corners, (I page 150) there is no reason why

the best squads should not be allowed the opportunity of proving, and improving their skill by building some actual kacha houses, say first for old and poor folks who may need to be evicted for improvements, and who would at present be insufficiently compensated to provide new ones. Here the practical moral education of the Boy Scout, by his daily "good turn", is one of the best elements of the individual discipline and social training of the movement. It is beginning of Citizenship.

Too generally, and too easily, the Housing movement is impeded by the business of the building trades; since brickmaker and bricklayer, wood-merchant and carpenter, and all the other interests involved, look out, and too strictly, for themselves. Whereas the building of even a few houses in a more social spirit will help to express and stimulate the essentially social attitude of the housing movement throughout its range, and this increasingly as youths thus educated and socialised enter the building trades. And though the mass of scout-masters must naturally be young fellows, there must be here and there some old Mistris available as bricklayers, carpenters etc, whose skill and art would here find spreading influence. Similarly a skilled gardener may in a year or two multiply himself a hundredfold. Hence we have erected the beginnings of the first Boy Scout House, overlooking Dewas Ghat Bridge, and midway between High School and Municipal Office. But it will be for the Boys to finish it, by building their Hall, and making their Garden around.

From Housing and Gardening, both in the city and suburbs, and the industrial town, the step to Sanitation is easy. Mr. Iyengar, in course of his Mosquito-Survey just concluded, has already initiated large batches of the High School boys into his quest. And though the first cleansing of the Rivers is a matter of sustained labour beyond the powers of boys, there is no reason why the subsequent keeping of the River should not largely be helped by them, and this alike in the needed municipal boats, and from the shore. Again with a single Mistris to direct, the boys might build some of the boats, and paint them brilliantly.

Turning to Indore occupations, the scheme for widely introducing the Silk-Industry into homes in Indore, by way of the Schools, and these of boys as well as girls (I. p. 29 &c) may be readily organised by a small sub-committee, bringing silk-expert and teacher together, and in touch with ladies to encourage homes. At this point the expediency and advantage of a Women's Branch of the Friends of Indore may be pointed out, and also its many possibilities and applications to larger matters. Beginning with domestic and sanitary improvement on one side, and with educational and artistic matters on the other, that union of the economic and the cultural spirit, by which a woman unites in her home what we men too much separate between business and college, would grow in influence; and with these in all directions, her gentle suggestion, her direct and personal insight and bright intuition, her wise counsel, even organising wisdom, from which men, even in the largest and highest affairs, so often profit. With women too it must largely lie to encourage and recruit the young men of Indore towards civic service. And as the 600 volunteers of the recent Hindi Conference showed, they are themselves ready and willing for useful activities, as fast as these can be pointed out. Thus the economic students of the Christian College (p. 64) were lately engaged on the inquiry of "How is Indore fed? How is it clothed?"—"How is it housed?—sanitated?" and so on; and thus, in each group, all the aspects of industrial and general life will come into review, and with result accordingly. Bombay Ladies have lately started a "Know your City" movement.

In these matters, I am speaking from experience. In youth I fortunately was awakened, alike by skilled craftsmen and by artists of my city, and by manly workers

upon the earth and on the sea—sharply to realise how much School and College had been busy moulding me, from a natural, active boy, towards a handless, useless, “educated young gentleman;” and that neither their games nor their laboratories were enough to cure this lameness, even for body, much less for mind. From this conviction, some measure of conversion followed, and some entry accordingly to the larger games of life, of the rural and urban occupations, and the practice of several crafts and arts, with their greater laboratory of action. This initiation I have also seen to for my own family, and for others, and with the most satisfactory results. And now this experience is what the Boy Scouts and their Scout-masters are going through; and so in time to re-educate themselves more fully for life, and more effectively for action, than we their elders have been able to do, with the weight of educational authority and of public opinion against us. Much of this no doubt still seems hostile, but its resistance is now only half-hearted; so in the present tug of war, we shall not fail to pull it over; and the Education Departments will be correspondingly transformed.

Re-Education, through City Survey, and its Results.

Such direct observation cannot be too fully carried on among the Friends of Indore. Though they will need an indoor meetingplace, conveniently beside the Town-Plans, why not sometimes also at the Boy Scout House? Their best meetings will be their excursions, as individuals, pairs and parties throughout the City and Suburbs. For they will find that civic studies, and city improvement plans, are alike as dependent on open-air observation as are the natural sciences, of geography and botany, and the rest. All planning, like all true architecture, is a matter of design at and for the place, though afterwards carried into details in the office. The practice of direct observation—here then is the first and best rule any civic association can establish for itself. The use of the high outlooks of the City like the Old Palace roof, the Peninsula ridge, and I trust by and by its Tower of Outlook, (Chapter VI) will be found practice to have at once an intellectual, and even a moral stimulus, which no description can convey. For by all such means our minds are enlarged beyond our domestic boundaries, and above that concentration upon property, that obsession of rights and of rupees, which now-a-days makes far more sacrifices of them all (as for instance in law-suits) than ever did any religion in its palmy days. The too general civic apathy of our times, the not unfrequent passive resistance to improvement, and with these the cynicism and pessimism which at present so often paralyse even noble natures through past disappointments, will all be diminished. The tasks of the City, and of its responsible municipal officers, will thus be lightened; for wherever need be, active co-operation will be at their call; and public-spirited effort will even run in advance of this. The old life-spring of Dharma will be re-opened, its fruitful applications widened, and waves of generous feeling will pass through the community. Already great gifts like the new Dharmasala, and the Bania and Bohra Serais, the new Temple for the Industrial Town, and the like, are evidences of this spirit. Yet not less important—either in the sight of the religious teaching of old or of the citizenship of today—are the smaller public gifts, and even the modest public services, which even the youngest and poorest have opportunities to perform. In such ways, the Friends of Indore may soon grow to numbers and efficiency beyond their anticipations.

The Association's Development and Progress.

Now all this may seem to some indefinite, and in a way it is; for so is life itself. “All growth seems confused”. The established method—that of beginning,

not with a growing baby, but by skilfully wiring together a full-sized adult skeleton, and then creaking its joints—is definite enough; but it ends as it began. Whether the skeleton hang together, or fall to pieces at the first shock, matters little; it is life and its functioning that alone matter: and these build their own skeleton, as they proceed; and this firmly—it may be only too firmly—before long. Life is not in mere mechanism, as administrations too easily come to think; but in response to situations, as they arise.

Leadership and initiative ofcourse are needed; but these qualities will increasingly arise, for each purpose, as need calls. And efficiency will soon be developed more thoroughly by the mutual examination questions of conversation,—What group do you belong to? What are you doing?—than by any division of labour too sharply established beforehand. Yet effective group-secretaries have to be found, and general secretaries too, to whom they report at short periodic intervals. Small special meetings are more productive than large general ones; and though these are periodically necessary, their main work will be the making and discussing of group reports, more than of general speeches. Yet for the larger co-operation and influence of a society of this kind, the opening of new improvements, great and small, the garden party, the theatre, the festival, the Diwali procession, and the like, will be none too large; for the civic spirit needs to function on the large scale as well as on the small, and grows by correlation of the two.

The larger programmes of City Improvement, like those of City Cleansing and River Purification, of Mohallas, Suburbs and New Industrial Town, etc., taken in their local developments, and execution in detail, will easily occupy willing members, and train and specialise them as far as need be. So no real indefiniteness need be feared; for though the new member is not enrolled by rules drawn up beforehand, he is asked to consider and reply, as soon and clearly as may be, what he feels able and willing to help with; and to take counsel with other friends, and with group-organisers or general secretaries towards further clearness as to this. In eliciting and utilising all varieties of aptitude the skill and usefulness of these will grow; and the society will thus be better officered, as well as better manned, year by year.

Education by Books etc.

Books also will be asked for: so here is one of the lines along which the future Indore Reference Library may be begun, that of forming a collection of books and papers on Civics, Town Planning and Social Betterment generally. The literature, though a growing one, is not yet large or costly, as books and magazines go; and for this indications are easily found; e. g. in Unwin's "Town Planning", or on a smaller scale, in my "Cities in Evolution" etc. Reports and press-cuttings on the improvement of Indian Cities should ofcourse specially be collected; and this nascent Library Committee should keep as far as possible in touch not only with British and American publications and periodicals, but with the Reconstruction movement in the invaded countries, France and Belgium especially.

The formation of a Card Catalogue, indicating where, in the various libraries of Indore, such and such books can be consulted, would soon be of great usefulness; and the experience of its preparation would well repay its compilers.

In this way too a Reading-room will tend to develop, in advance of the future Library.

Returning to the fundamental task of City Survey, it will be found of advantage from the first to be in touch with the Association for Regional and City Surveys (11 Tavistock Square, London W. C.); and also with the Town Planning Institute. The publications of the Institute of Social Service, the Sociological Society etc. will also be of interest.

A collection of Pictures, Drawings, Photographs, Plans etc., primarily of Indore, but also illustrative of other towns and cities, of India and beyond, will readily grow; and in this way one of the most educative collections for the future Museum will be set agoing. New acquisitions of these kinds, as well as new books and papers, should be exhibited at each meeting of the Association, and thus keep up its stimulating contacts, at once within Indore itself, and with the movement of City progress generally.

Reports of Meetings should be communicated to the Indore Press, and also beyond; and the Annual Report should be as widely circulated as possible; for by this means contacts with kindred groups in other cities will be made easier. The membership too will be encouraged and increased, as it becomes felt that Indore is holding its own in the Civic movement, and giving suggestions as well as receiving them. Regular exchanges with individuals and kindred societies in other cities, of India and beyond, will also tend to arise: and from these much will be learned.

But the great service and success of the Friends of Indore, in all their groups, will be in helping to get things done. A Civic Association has ofcourse its studious and scientific side, of knowing all it can about its own and other cities: and towards this the City Survey, the collection of records and books, the reading of papers, the practice of critical discussion etc. are indispensable. But the strength and efficiency of the society have above all to be measured by the Agenda Lists of its working groups, and the degree in which they get things done; or any rate help things towards getting done. And this way of practical citizenship will be found to react, and this fruitfully, upon the understanding of city and cities. For practical civics is experimental social science, and this in all its branches, geographic, economic, anthropological etc. on the concrete side; yet none the less fruitful in the fields too commonly left in the abstract, as of ethics, psychology and esthetics; which thus come out again into the concrete—as life, education, and art.

Re-Education Again.

Re-education is needed all round, as the writer for one can tell; for city-mending is like medicine, and planning like architecture, arts in which one is always striving and learning, and year by year in life, and month by month, even day by day, here in Indore. And to recover the habitual attitude of citizenship, as it has been at its best times and places realised of old, is for us poor isolated modern " individuals " a veritable re-education, and this of the longest and most difficult of attainment—to which times of insight and outlook help us—" rare hours, in which the master of eternal powers lightens the dusk within "—but from which we easily fall. India, with its high individualism of the spirit, calls each to organise for himself his religion and his life-education together; hence Karma-Yoga, Gnan-Yoga, Raj-Yoga, and Bhakti-Yoga, through work, intellection, vision and love. Family life and Village life have each reached high developments, and a true Paribar-Yoga and Gram-Yoga have thus long been in progress to produce the women and the men of the panchayat, each at their best. Religious groupings too, ever evolve coherence: thus the success of Islam, its diffusion and its power, or those of Catho-

licism also, have lain largely in the conception, by each, of their Community as a Samaj, and their discipline of devotion to this, a Samaj-Yoga. And so with modern groupings—from Boy-Scouts to present Armies. Well, what are we, now seeking for, but this widening and deepening of individual life; and stage farther, into social life—that of the Town, the City. But this is nothing short of Nagar-Yoga.

The religions, old or new, stretch out towards humanity, thus Islam, Buddhism, Christianity, from of old. Yesterday Positivism, today Bahaism; and even Socialism, up to the war, owed its appeal to its promised internationalism of brotherhood more than to its mechano-centric creed. But now the spirit and ideals of human fellowship are seen to be moving upon reconstructive and civic lines.

- Public Health Again.

From these various quests of spiritual health, however let us return to Public Health, in its immediate measures. Yet along with these, is needed the arousal of the public to the desire of health, with active sympathy, even vigorous participation, in health measures; and this upto rivalry in the improvement of their old mohallas, and thus of the Old City accordingly. Beyond this to the building up of their Garden Suburbs, and to the development of the New Industrial Town, and its success in all respects. Some examples of this are already forthcoming; in existing groupings, such as those Brahmins, Baniyas, Bohras etc. who are already taking up new suburban areas, yet becoming interested in improving their town-mohallas as well. Yet we need the spread of such interest far more widely, throughout the citizens, in all ages and classes, both sexes also. This again is realisable, and is even beginning; as from Boy Scouts to their elders, and from Ladies' Club to working housewives and school-girls. In short, a mobilisation of all citizens, akin to that which war has brought about in the countries of the West, is here needed, for this warfare of peace, with its cleansing and renewal of the city, its doubling—(why not even trebling) of the present brief average expectation of life, in short for the urgent and realisable victory over dirt and disease, poverty and ignorance, apathy and indolence, vice and crime.

For all this organisation is needed, and with many groups and branches of work accordingly, yet all united in active citizenship, as Friends of Indore.

To train and lead such recruits, the Municipality—and its Improvement and Public Health Departments especially—has to aid and guide their organisation. For this the active encouragement of the Ministry will also be of the greatest value, and that of the Sovereign inestimably so. For no Government has ever carried out its aims, whether of war or peace, by mere passing and granting of estimates, but by active leadership and impulse towards their execution as well.

Constitution of the Civic Association.

Return then for a moment to the desired constitution of the proposed Civic Association. A recruiting sergeant is eager to enlist men, yet he is more critical of those whom his appeals may move than if the matter were simply one of everyday employment. In many cases, too, he sees that a willing, but ailing recruit needs first to recover health and vigour; and if so, tells him this in frank and friendly fashion. Well, so must I here, as a recruiter for civic service. The man of every day "practical" interests, (i. e. immediate personal ones) is often for a moment touched by public interest, but too easily falls out when the march begins. Yet often he learns with practice, and to march by marching; hence neither sergeant nor I ask the ultimate standard to begin with. Given the will, strength readily grows, with the way.

Hence instead of answering the gratifying invitation with which the Chapter opened, in the formal way it suggests, or merely by these pages, we of this Town Planning Office have set about building the first Boy Scout House, and with Indore Plan and Picture rooms, where the Friends of Indore may also meet until they need larger housing. An Agenda Book will also be begun, with indications of our small practical beginnings so far, and some notes and suggestions for further consideration.

Aid towards Cleansing and Improvement of the Mohallas.

May I suggest the distribution to as many homes as possible—conveniently effected through the schools and otherwise—of the two essential Town Plans?—the one of Indore as it has grown, the other of Indore as planned to grow farther in the opening future. In this way the conceptions of City Development may be widely popularised should the Civic Exhibition be brought to Indore, it will actively aid in this deepening and diffusion of civic education, and among all classes.

Despite the increasing attractiveness of homes in the suburbs, the majority of citizens will still naturally remain where they are without migrating, save at most in the plague season, and then not all. Thus the main question for these households is—What of our neighbourhood, our Mohalla, and its neighbours? What is to be done for us? And the answer of the Municipal Authorities may fairly be—Well, what help are you to give us in improving your surroundings, and your health accordingly?

Here then are next needed the plans of each Mohalla; one in its present state, the other with its proposed improvements.

The larger improvements are of course the Municipal ones; of water and drains, of roads, lanes, open spaces, and gardens; and these involve removals of existing houses, with individual inconvenience accordingly, even though fair and full compensation be given towards construction of new homes. But the funds for this improvement are insufficient, and increased taxation is not at present proposed; while State Grants are also necessarily limited by the variety of other claims upon them. Hence arises the desirability of a Municipal appeal to the residents of each quarter, to contribute, in the measure of their individual means and powers, towards its required improvements. May not the Members of the Municipal Board take part in this? And also the leaders of various Castes and Communities? And in this way will there not arise in each Mohalla, or at least in some to begin with, a group interested in its improvement, and in making all such funds as may be available for it go farther, through increasing the feeling of domestic and local responsibility in their neighbourhood, and of healthy rivalry with the neighbouring Mohallas accordingly. In course of the beginnings of the Municipal cleaning-up before last Dewali, this feeling was to some extent aroused; and its results were recognised by the gift of an ornamental lamp to those Mohallas which had best risen to the occasion: so here are evidences, and from both sides, the local and the Municipal, that such mutual aid and recognition are both practicable and fruitful. So why not now give this a method a fresh trial before this coming Dewali; and thus a further opportunity of becoming habitual and permanent? In such ways civic feeling and its institutions will advance together, in this too the schools may take a useful part: for homes not readily reached by ordinary adult agencies may be stirred by and through their children. In time, then, the Friends of Indore tend to become co-extensive with the community.

Chapter XXXVIII.

Public Generosities; Local Enterprises, Co-operative Banking, and Social Finance.

Introductory.

Why the above unusual grouping for this Chapter, when generosities and philanthropies are usually thought of, even by the most pious donors, as good works apart from business altogether? Yes, in the present; but not in the past, which clearly understood useful works, great and small—from the building of bridges, the making of tanks, to the digging of wells, or from the provision of great Dharamsalas and Serais to the erection of simple burden-shelves by the road-sides, as none the less pious, and pleasing to the Gods, because they were practical and useful to men. Let us see then, whether, despite the recent sharply defined separation of “Business” from “Philanthropy” in the current mechanical, imperial, and financial points of view, these be not again destined to come together, as we advance into the needed civic and reconstructive order of activity. This reunion of economics and morals in thought and deed, is indeed plainly beginning.

Recent and Present Generosities.

Starting with the philanthropies of business men, I have before me a long list of these; at the head of which, a single donor, rightly honoured alike by Indore and the Empire, stands for some two score benefactions within recent years. Following on his name come those of other individuals, and also of communities, with great gifts and new offers, as of the Dharamsalas and Serais already planned (I. 199); while other public gifts are also recorded, and new ones offered; minor in amount, but none the less useful in their destination, and generous in their spirit and sacrifice.

Among such a public, already so rich in hearty and open-handed Friends of Indore, the large choice of constructive proposals of this Report will I trust, find individual responses: largely no doubt from the deepest purses, like our Library and Museums, Scientific Institutes, Public Gardens, Parks and Boulevards; but also ranging down to features requiring but moderate outlays. Such are for instance, the Spaces and Playgrounds, to be cleared and planted for the Mohallas; and there are also simple contributions, which the poorest may offer, or the youngest help with, like the planting of a tree. For after all the spirit is the main thing, in great gifts or small: and not only may the smallest mount up to large results, but they more widely diffuse that civic spirit among all classes, which is discouraged wherever the wealthy are looked to alone.

Improving Condition of the People; and Welfare Management.

In welfare management in all its forms (*e. g.* Chap. XXXIII etc.), the enlightened and public-spirited employer has constantly been finding his own interests better served, in return for his services to the interest of his workers. Thus the old line separating business and philanthropy turns out to have been but one of the many blunders of the paleotechnic beginnings of modern industry. But its economic theories are now disappearing, as we emerge from its narrow view of self-interest, supposed apart from that of the community. In the neotechnic age of industry which we are

now entering, public and private interests are seen increasingly as one, in the health and wealth of the City, and of its citizens of all classes. As evidence that thus is being realised in Bombay, see leading article, "Times of India" 10 August 1918.

Co-operative Movements.

These have long borne the motto of "each for all, and all for each": and that they are increasingly living up to this is evidenced by the advances of recent years; as from Co-operative Shopkeeping to Co-operative Dairies, and to the Agricultural Banks now so conspicuously successful in Ireland, even to mitigating not a little its religious and political discords.

How the common form of Co-operative Building Society has been developing into more fully co-operative organisations, like Co-operative Tenants Ltd. is an oft-told tale, so easily accessible as not needing to be repeated here, though eminently full of suggestion for Indore development, and in City, Suburbs, and Industrial Town alike. The existing beginnings of Agricultural Banks afford encouragement towards initiatives of this character, and the able Registrar of Co-operative Societies and his colleagues will have no difficulty in adopting their organisation to Housing for Indore. Information and evidence of the successful working of such associations, they can now easily obtain, summarised in current books, and in detail at first hand, as from Garden City and Garden Suburb Association. The industrial captains of New Indore may also find suggestions from leading British employers, like Lord Leverhulme and Mr. Cadbury, and from the successes of others on smaller scales as well.

Social Finance, in its Civic Bearings especially.

On this new and rapidly widening field of economic thought and initiatives I had hoped to write a full Chapter; but space, time and freshness alike fail me for the present. The reader will however find much of what might here have been said in the recent papers of Mr. Victor Branford (in *Sociological Review*, Autumn 1917) reprinted and developed in "*Papers for the Present*," (Headley Bros.) and also in the forthcoming volume, of "Social Finance" in our "Making of the Future" Series, (Williams and Norgate).

Outline of Civic Finance, as at present in Transition and Development.

In general terms this nascent financial revolution may be simply summarised. The classical economic regime has given way. For (1) capitalist industry, in its paleotechnic form, of labour at longest possible hours and lowest possible pay, alike in money and what it brings, has now sufficiently proved its uneconomic and its anti-social character: (2) the regime of increasing consumption of the community's resources by the centralising State, and for its metropolis in peace, and by its military caste in War, is what is being so steadily fought against in the War; yet not in order to strengthen (3) the long-increasing world-supremacy of "High Finance", over States and peoples alike. Yet with this discrediting of these long-dominant economic schools their antagonists and critics of the past generations seem more threatening; indeed in Russia they have become so, with their war within the War. (Thus (1) as labourers they tend to recognise only their own immediate caste and interests; (2) as Socialists, they may project State Armies as their model, or appropriate in detail to the benefit of groups, not to speak of (3) that destruction

into which the anarchist dream too readily passes as violent delirium, thence to subside to nihilism and its despair.

The nascent movement of Social Finance takes none of all these sides. It calls away from the mutual destructiveness towards which all these six schools tend, and forward towards Reconstruction in which powers may be better employed, developed than heretofore—that is, towards life. Life as the healthy well-being and development of all, and this in and with the perfecting of environment—natural, rural and urban, and these interacting as progress. Yet this progress is towards more than material ends, even renewing the best that is variously expressed in the historic idealisms of religion and art, and these alike in thought and life, in University and City (of course in the renewing senses of these, as here employed). Towards this end, the aim of Social Finance is neither to concentrate capital with the first three sects, nor to confiscate or destroy it, with the second three: but to guide it, to diffuse it, to apply it to its true irrigative uses—those of strengthening the community, and as far as may be through its individuals, towards their more effective and productive interaction with their surroundings and opportunities of usefulness. It thus seeks to capitalise not only productive undertakings, but the youth, energy and character these require.

Industrial “Chiefs and People”—hitherto at strife, since these were seeking to organise, but too much for themselves; and those to produce, but too simply towards their own immediate consumption—are thus called to a renewed co-operation of enlarging aims. They are thus awakening, to enter increasingly into their social and civic heritage—the City—& to the transmission of this heritage, increased in all its goods, and as far as may be purified of its evils, to their successors. This arousal of retrospect, outlook, and forelook, and in unison, is thus an intellectual, and practical awakening and even more. It is an evocation of the emotional and moral powers alike latent in every life: with strengthening of desires to motives and purposes, and of practical powers accordingly, hitherto by all schools left too undeveloped. Economic energies thus individually aroused, because socially applied and combined, may thus repeat, within the cities of peace, achievements of intensity comparable to and surpassing those of the fields of War. Hence the past flowerings of cities throughout history, and the promise of new flowerings, now opening before us. For that all best resources and energies, individual and social will soon be turned towards the renewal of cities and civilisation once more, is no dream of the present volume, but the accepted purpose of French, Belgians, and more, for the vast regions devastated, the cities, towns and villages without number, which have been destroyed in the present War; and American finance is already preparing to supplement their own.

How finance is thus turning from exploiting the rustic in mean and petty ways, to capitalising him in the small effective ways of the Agricultural Bank, is thus but a single instance of this change, one already in progress here as in the West; and so next for Health and Housing. From mortgaging and foreclosing on old properties the financier is turning everywhere, to help to build and develop new ones; and so on to greater coming developments in all countries, like those just referred to as preparing for after the War.

From all this discussion then, there emerges the proposition that Governments—this and others—are not being asked so simply as formerly by Civics and Civic Finance to make over such annual grant, great or small, as they can spare for such and such schemes of City Improvement from more customary uses; but beyond this, to be reconsidering their activities and resources in the freshening light.

of this change of Economics and Finance, which is now being inspired by a fresh conception of social policy—that of making the Future, and the Civilisation-values it may create.

Enough however here for the present, if we neither, with one old school, leave all to the people, nor with another, encourage them to look for all to the State. The union of the capital, the energies, the credit both of the State and of its citizens will all be needed for the opening tasks of Indore, and similarly of its sister-cities throughout the world.

But how can communities so war-weary as are ours hope to escape from the poverty and depression of past wars? Only through renewing courage, on the yet higher and more difficultly sustained levels of peace. But we need not despair of this. Britain, which formerly led alike in industries and agriculture, but which has of late years been surpassed by Germans and Americans alike, can now repair her dissipated wealth by rising to and beyond their levels. So neither India in general, nor Indore in particular, need persistently accept their economic levels, at present so many degrees below those of the west—the more seeing they are already far from destitute of individuals of scientific and technical skill, of productive and organising powers, increasingly able to hold their own, and to progress with the best.

A city in development is thus like an army in campaign, whose material objectives, to be effectively attained on pain of defeat, need design, decision and direction from above, yet also hearty, intelligent and strenuous execution from within. Hence this section on the needed Co-operation of Citizens, and this not so much formally as a single civic association, but in their manifold groupings, as increasingly active Friends of Indore.

Civics and Education in Constructive Finance.

The movement of Reconstruction, on which the world is already entering, and through which not only have its widespread War-losses to be repaired, but a better order established, may be described, at least in no small measure as the advance from Politics to Civics, since thus with the redemption of "the Individual" into the Citizen accordingly.

A further source of civic wealth, as yet insufficiently considered by statesmen or financiers, may also here be opened, with the renewal of Education, and of Higher Education especially. For in this opening period of Civic Revivance—rural and regional as urban and industrial—the correspondingly renewing University, as henceforward the vital centre of education for all the social services, may take an increasing part; and this doubly productive, economic as well as cultural; in short, at once inspiring and fruitful.

Thus in sending this long and varied Report to one of the most capable of University Principals as yet known in England and in India, I have asked him to read and consider it, not from the local or the technical view-points, in which he would ofcourse disclaim sufficient knowledge, but in a more general way, as if its sections were actually a series of Reports from so many different University Faculties, upon their City and its possible Improvement. For its historic and topographic Survey are plainly matters of Science and Letters, and its review of Public Health, and of Regional Industries, rural and urban, are as plainly what may and should be expected from the schools of Medicine and of Economics, and these in consultation. Its Water, Drainage, and Gardening might come from the schools

of Engineering, Sanitation and Agriculture; though these no longer separately, but conspecialised, as fellow-workers in council. So with the Housing and the Planning, the proposed new Buildings, and the plea for Art, for Parks and Public Gardens. For these but bring together the specialisms of the schools of Natural Science, and of Architecture and the Fine Arts; harmonised, like all the preceding, by the Department of Town Planning, yet this not without consultation with those of Economics, Finance and Administration.

Above all, the whole conception aimed at is towards that which should—and will increasingly—be evolved by the leaders of thought and of action, in council and in practical endeavour, in short by University and City at their best—the University as Militant, the City as in Development.

That the University proper is thus not a mere external and costly Institution, a hermitage virtually outside its City, but may soon become of the very essence of its reconstructive and productive life, is thus a proposition fundamental to the present Report, and this alike in its constructive proposals, its productive economies, and even its economic productivity.

If this view be justified—that the renewing of Higher Education can become a main resource for our present period of difficulty, and a source of civic wealth exceeding experience and anticipation—it is thus helpful, indeed indispensable, to our civic forecast. Thus, none will deny that Public Health is Public Wealth; but that this is true to a degree altogether beyond customary or even medical appreciation, is here evidenced, and with endeavours to initiate its thorough calculation, and to outline the vast economic and financial productivity of practical measures and outlays for improving the public health—say indeed renewing it.

In such ways then, and more, Social Finance is rising beyond the narrow outlooks of individual money-getting; and Civic and Regional Banks, and Bankers, are appearing accordingly.

SECTION VII.

City-State and Capital.

Chapter XXXIX.

Indore as City State.

Introductory: the relation of Country and Town.

The Town Planning Movement, with all its progress, as yet in England and elsewhere, lacks contact and co-operation with the rural world around it; for even its "Garden Villages" are as yet mere suburbs of their towns, and have not agricultural productivity, and seldom much of genuine touch. Conversely, the admirable Irish Agricultural movement works as yet among the farms and villages, and too much leaves the provincial towns in their decay, and the two great cities of Ireland to their complemental defects, and their corresponding estrangement. Tagore's criticism at the opening of his "*Sadhana*" is indeed unanswerable, that in the West Nature and Man have come to be viewed apart. "For in the city life Man naturally directs the concentrated light of his mental vision upon his own life and works, and this creates an artificial dissociation between himself and the Universal Nature within whose bosom he lies". Yet it was not always thus. The Greek City was at first but the cultural centre of the rural life of the City State; and the Roman "*Civitas*", despite the excessive metropolitanism of Rome, was not the mere Municipal area to which we nowadays restrict the name, but included the rural region as well as its town, the "*Pagus*" as well as the "*Municipium*". Another term, long of similar comprehensiveness, was "*Diocese*", which survives in ecclesiastical use to this day, but was not originally thus narrowed. Our returning concept of the Region, with our pleas for Regional Survey, and along with this for Regional Service, are thus but a renewal of the past. Civics is not a new Science and Art, but the recovery of the life and thought which created our civilisation. So early are the origins, and even the achievements, of what we now call Town Planning and City Design.

Regionalism versus Centralisation.

With this reunion of Country and Town, their activities are seen as normally in harmony. We again think of these together, as City Regions; each a definite geographical area. And as no two regions are alike, but all differ in their conditions, a corresponding measure of decentralisation to these is becoming locally felt as necessary. Yet this is not readily granted to them. Though the West is now full of discussion of peace through "the League of Nations", too many dream, as Berliners have done, of a predominant "World-State", often even with a single central metropolis, naturally enough desired to be their own. As things at present stand, the ever-increasing hunger and desire of each great capital, and in its modern overgrowth more than ever, are not easily kept within bounds: for these great cities cannot but seek to concentrate to themselves population and food, power and pleasure, and too commonly with diminishingly adequate return to the vast areas they subordinate, and exploit, even exhaust. These provinces and their cities and towns increasingly feel impoverished and dissatisfied; and hence the world-wide rise of movements towards decentralisation. In these, the long-

depressed regions and cities are vaguely seeking to renew their old freedom and completeness of life: and thus a tension has long been arising, between them and their metropolis. The recent collapse and break-up of Russia, and the current decay of Petrograd, the advancing ruin of Vienna, and the desperation of Berlin, are thus not simply incidents of this War; they are indices of this vaster social change, which the War has accelerated, into or towards catastrophes. In Britain, with its saving element of real, if slow, adaptiveness, the same decentralising spirit is plainly manifesting itself, and this in directions till lately maintained as impracticable. Above all, those who know France, albeit so long the most strongly centralised of countries to and by her capital, will confirm that even in Paris itself, there long has been appearing, and now more than ever, the geographic outlook, the regional spirit, the clear purpose and detailed resolve of decentralisation. And this, with French clearness, purposes not only to revivify her greater cities of commerce and culture, but to re-cultivate and re-populate her most declining provinces, to develop anew her smallest valleys and towns, and give even the poorest villager less desire to leave his simple home for the great city. Towards all this, not only social thought and scientific work are tending, but the actual measures are maturing in many quarters—measures political, administrative and even financial. And that all this is necessary, even for future self-defence, who will deny? for who dare be assured that this War is the last of these tides of Barbarian invasion which have flowed and ebbed against Mediterranean Civilisations throughout the history of three thousand years?

The Greek Civilisation—that on which our Western Civilisation is essentially founded, and of which all our best advances, of sciences and arts, in literature and ideals, have been, and are again renewals, (that of Civics most of all)—was essentially of City-states; in many ways then, like that of great regions of India; in fact like Indore, and her neighbours of Central India and Rajputana. The spread of Roman roads led to the conquest and development of the old City-states, and exhausted all regions into the metropolitan maw. Yet when these roads were broken down, regions and cities in the middle ages widely returned to separate or inter-dependent life, and this varied and fruitful. And though wars, and in the past century, railways and telegraphs &c. have re-centralised the Great Powers of Europe—essentially around their seven Romes now at War, three against four—yet now the motor and the aeroplane, wireless telegraphy and more, are again preparing to decentralise in their turn. And beyond all such material agencies, there are finer forces at work, both new and old, scientific and spiritual.

Advantages and Superiorities of the Small Countries and States.

In their escape from over-centralisation, is the explanation not only of the survival of small countries, but of their relative superiorities before the War; and this whether judged in roughest summary by the higher value of their securities upon the Stock Exchanges than those of the Great Powers, or on higher levels, by their status in civilisation and culture, and their higher proportion of contribution to these. For with all Germany's eminence in science, the Scandinavian countries and Holland have been proportionally yet more fertile in discovery; while Belgian literature was outshining even that of France. Hence too the long social and political eminence of Switzerland, and her accepted European leadership in true internationalism. Even the relatively backward little Portugal has generally kept in advance of Spain. And though Scotland has scarcely an seventh part of England's teeming population, has she not counted, both in thought and action, for more than that, alike in her great partner's eyes and in the world's? And when all is written

and read of the history of England, there still stands highest among its long line of kings, one who never was master of more than half its area—Alfred, alone called the Great, since unique as hero and statesman, scholar and civiliser.

The Case for the Smaller Cities.

Now if these things be so, and the future be not so plainly all for centralisation to Megalopolis, as Rome or Moghal Delhi believed in their day, or as Berlin has been trying to prove in ours, the future of India brightens, and this peculiarly for her City States, like Indore. The fuller one's familiarity with the great Capitals, whether of West or East, the more must the student of cities turn with new hope to the small ones. Great and rich and grand though may be the cities whose population is now reckoned by the million, their best achievements date from smaller days. Moreover there are now only too many scientific grounds—biological and medical, psychological and moral—and practical grounds as well—for renewing today that estimate of the fateful deterioration of such agglomerations which comes down to us from the past, whether voiced by impassioned patriots and prophets, or by cooler satirists and sober historians. Civilisation, alike in its highest movements and achievements and on its comparatively permanent levels, has flourished best in smaller aggregates; and—despite the megalomania of every Megalopolis, and the deep and manifold depression of every minor city accordingly—it tends do so still; and so may again, more fully.

For in the small city, man is still within easy reach of Nature, and so may have its sanity and health in fuller measure than in greater cities is possible: and yet more his children, who thus escape the deterioration inevitable to townlings. Biologically speaking, in short, the future of survival like the past, is less insecure for the smaller hives than for the great: and culturally also. In education, the smaller centres have generally had the advantage; hence British University teachers have never thought it promotion to go to London; and though each of my old Montpellier University friends has been invited once and again to Paris, only a minority have accepted its attractive and remunerative calls.

Even metropolitans will indeed grant advantages to individual and family life and culture, in provincial cities; but they urge the economic, political and social attractions and opportunities of the Great City. But few realise these; that is, most fail; and so they sacrifice their smaller home-career for the mirage of a greater. But some attain. Yes, but too seldom to any great measure of effective usefulness when all is done. The growing, and well-nigh world-wide, criticism of great centralised administrations, for vast areas, ultimately comes down to this,—that administrators are but human; and, given this diversified world of country and town, human understanding and sympathies, powers and time do not, and cannot, cope with the affairs and needs of more than a very moderate area and its population-groupings; and even than with only a fraction of their life problems and tasks. Local consciousness, and its desire of "self-determination", are now and increasingly awakening with education. This as we have seen, is turning from its past memorisings of details and abstracts, apart from present life, to the real needs, duties and opportunities of life around us in the concrete: hence the survey and service of our own region and city begins to reassert its fundamental place. Thus men are beginning again to see and learn that efficiency in their local affairs and panchayats is in itself a worthy ambition; and even that it is the truest of preparations for wider responsibilities beyond. Most generally stated, it is the rulers of

the small States who have often accomplished more for their lands and cities, and even for general civilisation as well, than have the great. Hence David and Solomon, kings of Israel, are remembered more than the great Pharaohs or the Assyrian conquerors; and the life of Pericles the Athenian stands higher in history than that of Alexander of Macedon. Here too in India, the heroisms of Rajasthan, the spiritual tradition of the sacred cities, outweigh the glories of the great capitals which have risen and fallen throughout the ages. And returning to our own day, in West and East alike, do not the smaller States increasingly take initiatives in advance of the greater? Indeed must this not necessarily be so? For comparatively heterogeneous groups of regions and cities, and their peoples cannot readily be moulded to a single model, nor safely made to progress much faster than their less advanced members are ready for, or than their hostile parties agree.

The City-States of India.

The States of India are thus full of promise for the opening future, and this even beyond India itself. For while in their established peace, they enjoy the best tradition and heritage of the historic Empires of India, of Rome, and of Britain, they are yet free from undue centralisation; and thus they may peculiarly renew the best elements of those City-States of India, and of Greece, to which Civilisation looks back for so many of its highest initiatives and achievements. In the present strife of arms they have been taking loyal and generous share, worthy of their heroic past: yet with the return of peace among the warring nations, and towards its maintenance throughout the world,—which are so perplexing as problems, and cannot but be slow, difficult and even dangerous as tasks—their example as City-States in individual progress, and yet in order and in harmony, may be made more widely helpful still. In short, after their contribution to the War, may next come their examples of reconstruction in Peace.

True; small Cities and States have seldom been exempt from the defects and evils of greater ones; and as preceding Chapters show, I have not erred on the side of reserve or flattery in speaking faithfully of those of Indore. Yet these evils can seldom go quite so far; and even when they do become as bad or worse—as here in Indore with plague, malaria and other diseases—the remedies are far more easily and thoroughly applicable than in greater cities; and the results may be more speedily and encouragingly manifest also.

Practical Possibilities of this Renewing City.

If then it may be taken as the fact that the smaller Cities and City-States have such possibilities, how are they to be applied, and what measures may best assure increasing realisation of them? These questions I have so far tried to answer, as in many Chapters above: but further detail is here admissible.

Do I seem to insist over much upon Town-Planning and to be exaggerating one specialism to the exclusion of others? But consider what, as City Development, this means. To enlarge our ordinary everyday view of our City, with its many activities, let us lay its first Plan (I) upon the table—for here we survey its growth through past generations: and with help of this potent spell, we may recall, evoke, re-visualise their past, and upto the present, now seen more deeply and more fully than before? But as day by day and month by month we study this present, the possible future also, bit by bit, correspondingly appears. Here cleansed and repaired, there cleared and opened, there planted and gardenised, there renewed or

for the first time built. In these ways, our last Plan (X) thus at length evolves, with its careful conservation, yet its many developments. Around this City area, further extensions and suburbs arise, (e. g. Plan IV); and beyond these, the new Industrial Town (Plan II) on the whole of fullest housing, gardening, sanitation etc. hitherto; yet realisable within reasonable time and current resources, and open to further improvement as it expands, and as prosperity grows.

Beyond this again comes the wider suburban area, of Greater Indore—(Plan VI), and this now partly rural; so here our essential task ends, with this forecast of the expansion of Municipal Indore.

Yet that regional and rural interests are not to be forgotten is here indicated by the notes on Villages, in appendix; and these plainly might be expanded, as they doubtless may be by the surveys and plannings of the future, till the whole State is thus developed and enriched.

For other Cities of India, kindred studies and plannings are also beginning. Similarly rural improvements, and with kindred surveys, in various hands. (For a single example of the one, take Mr. Lanchester's volume on Madras, and of the other Prof. Stanley Jevons' Village Re-planning in U. P.).

Such Civic studies moreover raise all social questions, and not simply the material ones, of housing, gardening, farming, engineering, etc. fundamental though there be. In these pages we have seen how industries and arts, health and education, even government, morals and religion are all inter-related; and how the present treatment of all these, as dis-specialisms, needs to be con-specialised and unified anew, orchestrated as it were. The prevalent mechanocentric philosophy thus becomes replaced by the bio-centric, which sees all activities, social or personal, in terms of life and its evolution, and thus aids its rises to better things, and checks its falls towards worse. Thus then, we reach the verge of politics; though not in the abstractions and generalities of its current discussion, but now in the concrete particulars of science, with its applications; and this verbalises less, but realises more. To this realism, politics and politicians must soon alike come. Just as all our hopes and arguments about the War after all depend on its definite regional campaigns, as these are thought out and fought out, so the campaigns of Peace no less depend on its reconstructive and constructive efforts, city by city, region by region.

Summary and Conclusion.

Upon the margin of our final plan (X) of the City as it may be, is thus ventured an outline, in graphic abstract, of its interpretation. First that of Cities as they stand, the resultant of their past—of Religions, Governments, and their associated Education of the lives of their communities, and of the arts and industries which arise and react with all. But now all these are in conflict and confusion, or at best in separateness. On each side of this are the ancient and world-wide symbols, the rival "keys of life", the temporal and the spiritual, in their contrast and alternation, but each too ineffective. Below all this however, in simple summary, the City, as now renewing its progress and development, with its ethical and its social elements, its idealism and its practical powers united, as Ethopolity; with its education and health reunited in Life, and its artistic and industrial endeavours united in Reconstruction. Thus again, as of old, we have the City indeed—the City in Deed. And below this is a graphic like the Greek "fret", but now enlarging as it goes. This is compounded from the two "keys", with their

temporal initiative, of acts and facts, compounded with the spiritual one, of thoughts and deeds; but these now alternating without end, and with increasing amplitude of life, and in each and all its aspects. Thus each great City of the past has grown; so why not ours again, and thus towards Eutopia?

Who is not sceptical of such hopes, 'as dreams'? Yet who does not know the changes upon the world which have been wrought in peace and war, and within the past two generations especially, by the advance of the physical and mechanical sciences? Well; the sciences of life and mind, and with them of moral and social evolution are also coming in, after these seemingly all-conquering predecessors, and now once more to shape the world anew; and this time more like its noblest past, and more near men's hearts' desire.

*For what though Trade sow Cities
Like shells along the shore,
And map with towns the prairies broad,
With railways ironed o'er?
They are but sailing foam-bells
Along Thought's causal stream;
And take their shape and sun-colour
From him that sends the dream.*

In summary then the conclusion of the description of these plans (I. xvii) may here be repeated.

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 City's past, with conservation of its products and results, yet with
2. Removal or at least abatement of many of its 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 even 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, and an increasing influence beyond.

In briefest general summary, then—since beyond the present War statesmen are preparing the needed League of Nations, with the great part the *Pax Britannica*, *Pax Indica*, must take in all this, how can we hope to make an enduring fabric of all these long separate warp-threads of the loom of Time? Only by weaving in the corresponding threads of the woof. What then are these? What but the Cities and their Regions, the City-States; and these at their most varied, their best and brightest? So among these, what better than Indore?

Does this seem indefinite—or a mere "Counsel of Perfection"? Not so: as all through these volumes, the general thought is of direct application. Here for instance is a specific instance. All British India is now discussing a proposed measure of devolution: and without entering into controversies or details, it is agreed

by all that Education, Sanitation and other municipal affairs are to be first elements in this. But throughout India too generally, ideas on the needed progress in these matters are not yet adequate or clear, while practice falls short, in efficiency, economy, or both. Here then Indore, at the outset of fresh departures in Education—primary and secondary, higher and technical—and also in City Development generally, is already more advanced than most other Cities and City-States; and thus may soon, and increasingly, be of leadership, guidance and example.

Chapter XL,

The City.

City and Citizen.

The City Past, Present and Possible, is thus becoming discerned, and as an unceasing social life, after too long concealment from us,—by philosophic clouds, by industrial smoke, by battledust, or by our own four walls—indeed by all these in varying measure. Its past phases are still discernible, indeed still active. Its present aspect is the resultant of all these pasts, and with here so much of good, yet there also much of evil, that the optimism of the one view is dashed by the pessimism of the other; and this until in prevalent thought the latter mainly predominates. No wonder, then, that the practical man turns from the past altogether, to concentrate on doing what lies to hand in the present day. Yet in the City's face and form, viewed even at its worst, yet with the sunrise, there are no real signs of decrepitude; but rather of returning youth, and with its possibilities, manifest and latent. So as citizens, we bear the mingled Burden and Heritage of our City's Past; and on many,—at times on all—these lie as inertia, doubly restraining. Yet on others—say rather to other moods—these unite as momentum—and thus pain and hope together, drive and beckon us on. In either case, we are acting on our City, as well as it on us; hence we call these alternate predominances "Conservatism" and "Progress"; and may come to see the good all in one, the evil all in the other. Hence indeed the easy fall, from Citizenship to Politics. And with this has arisen in the west, and spread too in the east, that strange modern myth—econo-myth, polito-myth—which has taken away from men the memory and understanding of their City, and thus isolates each, blinds and enchants him, into a mere "Individual", henceforth astray, "in business" or "in politics", in market-place or in forum.

Hence it is that any endeavour like the present—that of planning towards the renewal and the development of the City—involves a corresponding appeal to its individuals. For the measure of its success depends on the arousal of each, from his too often life-long training, in viewing himself as but a self-interested "economic man", and so as mere "dust of the State" accordingly—to become as of old, on effective Citizen, henceforth conscious of his City, and estimating the value and bearing of his life's work, be this humble or high, as of his City, in his City, and for it.

In these daily activities of the citizen he will thus come to see the essentials of the City's life and well-being; for even the simpler tasks, of cleansing and clearing, housing and gardening, are full of wealth-values, health-values, civilisation-values, culture and education-values, art-values—in a single word, Life-values; as

will become increasingly plain as reconstructive work proceeds. With these values then, goes the progress of staple industries, both great and small; better food supply and more of it, *e. g.* better cows and more milk, better gardening, better seed and better tools, better housing and sanitation, better water-supply and better use of it, and bettering methods for assuring all these. With and for the handling of all this, better people also are needed, and will arise with action and for it. And as education and citizenship advance together, they will coadjust all these needs; as they substitute for the old vicious circle of individualism and competition, with impoverishment and worse, the opening spiral of Re-construction, and win the wellbeing it leads to.

Problems of Execution.

As execution of city improvements proceeds, difficulties will also arise, perhaps even emergencies. But these viewed broadly, are also opportunities, Key-situations. To utilise these, reflection and insight, decision and guidance are needed from those of directive positions; and with these the ablest minds and skills in their executives, good will and energy among their workers of all ranks. I see no reason for fears in all this: for in City Development its essential activities may soon be made as clear to all, as it has been the glory and honour of war to make even its arts of destruction, through the inspiring call of service. For in active Citizenship it grows ever clearer, that Arts and Industries are no longer mere work-industries or profit-industries, but are life-crafts, health-crafts, and so civilisation-crafts as well. With this seeking of higher ends than those of "the economic man" who has so long obsessed us, true wealth becomes added, and this not simply as the public wealth and private simplicity characteristic of the best cities of old; but with both rightly enriched together, since now with neotechnic efficiency and productivity; and this rising as far beyond the still prevalent paleotechnic waste of resources, energies and lives, as this seemed to do beyond the older economy of India or Europe. Even the monetary obsession and avarice so dominant, before our paleotechnic society reached its culmination in the war, is now also changing; for a better organised city, set towards reconstruction in the civic spirit, must increasingly see to assure maintenance and security of life, even prosperity, to all, according to their works and needs.

Among the leaders in the work of City Development, and in every western country to-day, as of old in India also, are its artists: and with us at their best, these are again identifying themselves with the craftsmen, the mistries, and no longer thinking of themselves as Academicians above them. Hence here a word for Crafts and Arts.

The Renewal of Art in Indore.

Hitherto in these pages very little has been said of Art, or of the Arts and Crafts in this City, though much has been thought and dreamed that remains unwritten. Yet as architecture has ever been mistress of the constructive arts, so Civics is her very mother. Town Planning, as City Design and Development, has throughout the past brought forth all these, and must again do so here. A full Chapter might thus be written. Yet enough perhaps for the present, if I choose and borrow from a recent volume on City Design, by one of our true master-workers in the Arts, an architect and City-planner as well (*C. R. Ashbee, Where the Great City Stands! (Chelsea, Ashbee 1917)*) one illuminating and suggestive passage among many:—

"Perhaps the symbol for which our Post-Impressionist and Futurist painters are so blindly groping will come to us again from India. There they have a god of the Arts and Crafts

and his name is Visvakarma. He is a deity of many hands and of five faces; the corded cobra is around his neck, jewelled amulets and bracelets about his arms; he holds the book and the writing style, the adze and the citron; in his charge, too, are the garden flowers. He keeps the workman's tools, the builder's compass and the mason's plumb-line; for he is the architect of the gods, the revealer of the science of mechanics, of the art of building. In the Mahabharata he is described as the Lord of the Arts, carpenter of the gods, fashioner of all ornaments, who formed the celestial chariots of the deities, on whose craft men subsist, and whom, as great and immortal god, they continually worship. He has many names among his votaries—they know him as "the craftsman", "the wood-cutter", and "divine builder". It was he who first made bricks; it was he who first inspired the dome, when his worshippers saw it floating as a crystal globe within the golden bowl. From him come beauty, rhythm, harmony, proportion; he understands and symbolizes what is in the artist's mind. He is not worshipped as other gods are, with ritual and ceremonies, with burnt offerings and outward services; but men sing of him at their work, or speak of him as their work nears completion; when the fire touches the jewel for the last time, when the finished vase is carried from the kiln, when the flag is hoisted on the roof. There is something about him abstract, aloof, impersonal, strange; something the artist alone understands, for it was the artist that fashioned the sacred thread about his neck, the splendid fire upon his head; and to the artist, his most intimate worshipper, reality exists only in the mind, not in the appearance.

It is from within that Visvakarma, the Great Over-Craftsman of the Universe, goes about his work; and so comes he to be a personification of that Platonic Idea of Abstract Beauty which the East has known, and which for so many centuries has fitfully haunted the mind of the West. Whether it be Plato or Plotinus, Pico della Mirandola or Rossetti, whether on the frieze of the Parthenon or among the mosaics of Monreale, or by the Martyr's Crown at Canterbury, ever and again in the greater periods of our Western development, when we have done our noblest work, the Idea recurs. Perhaps when Visvakarma, looking westwards with his many eyes, shall touch with his many hands the problem of the Machine, he may help us in our search, straighten out our confusion with his gifted fingers, and from the lips of his beneficence blow a little upon our spiritual blindness, help a little in our reawakening."

How this presentment of the opening task of City Development and Reconstruction bears on India and Indore—and even on that fullest presentment of Indore possibilities, as a renewing City, and City-State, of example and influence accordingly, to its neighbours throughout India and even beyond—I need not enlarge upon. Its two-fold note, [1] of respect for Indian tradition, and of hope and encouragement accordingly, [2] its call to the best in India to help the West in ways beyond those of War, will be plain.

The suggested planning of workshops, studios, and homes for Art-workers, near the Library, Museum and Tower group upon the Peninsula, is thus worthy to be realised; since the productions and example of Artist-groups, and the influence of the higher standards of workmanship, decoration, and more, which they may diffuse throughout the renewing and extending City, are not simply desirable, but indispensable to all true and full City Development.

Essentials of Planning.

Of the preceding Report—a slow and difficult growth, from many detailed surveys and interpretations, hopes and projects, gradually clearing up through alternative plannings towards such comprehensiveness and design as it possesses—various criticisms might now be made by the writer, as well as by the reader. But after all, books and schemes, whatever their limitations, are to be read and considered for their essential spirit, thought and argument, and for such useful and practical possibilities as these may justify; so now here. What then has been planned? How far efficiently and economically, and what of all this is most urgent, practicable and profitable, to be undertaken?

First then as regards this Planning. Though further improvements and economies are far from impossible, here is as yet the fullest and most detailed of schemes, so far as the writer knows, for any City: since at once for the Old Town, for new Communications and Suburbs and for a New Industrial Town; and these upon a scale mostly more extensive than usual at present, though not more than should be necessary for the near future.

Since City Life, like organic and individual life, exists and develops with the harmonious functioning of all its organs, and their adaptation to all its needs, the endeavour has been to provide, and in growing measure, towards all of these, and so not only to work in, with and for each as a specialism, but to co-specialise each towards the fuller life of the whole. Thus Water-supply, Sanitation, Public Health, Housing, Communications, and so on: these are in each case discussed and treated all the more constructively and economically because not mere separate ends in themselves, but as parts of the many-sided whole. That synthetic treatment at first seems discursive and perplexing, to those trained within the illusion of separateness which is common to each professional and business interest at present, is only too true. But it is all the more time for these to consider this widening yet unifying mode of treatment; for this, I do not hesitate to claim, will lead to its adoption. It is but in the earlier stage of every scientific and technical education, that we analyse and see and handle things strictly apart: in the needed further phase we again see them as an interacting whole, and so re-adjust them together. It is because minds fix in the first stage, that great dis-specialised schemes—say here past Water and Drainage Schemes—so readily pass into failure and extravagance; and similarly that in so many cities the supply of new communications becomes destructive, and the promise of Housing a costly disappointment, so that the very name of Town Planning now too often excites fears rather than hopes. Yet such mistakes and extravagances have not here been followed; but taken as warnings.

Illustration from New Express Boulevard: its different Aspects.

This unison of the six main viewpoints and claims of life—the material yet the esthetic, the organic yet the mental, the economic, yet the idealistic—which has been throughout these volumes so persistently emphasised, is no mere matter of philosophic demonstration in the University cloister, but one working and realised in the activities of the City, since of the essence of its normal structure and development. Of this the New Express Boulevard, which is a main feature of this City Design, is a convenient symbol, and next may become an experimental result and proof.

For directly utilitarian from its basal purpose onwards,—its saving of time and energy to man, beast, and machine—it first of all brings nearer, either directly or by present, improved or new accesses, the existing business quarters of the City, east, central and west, with the Railway and the Suburbs to west, south and east: all these with each other, and towards fresh expansion for all. Municipal Offices and Citizens, Schools and scholars, Ghats and bathers, Temples and worshippers, are all brought within easier reach of each other. The Palaces, in the City, and of opposite suburbs, and with those the Offices of Government, will thus be mutually more accessible and by easier and pleasanter ways. And so with the centres, new and old, of learning, literature and drama, of science and art.

Yet this route would not have been different from this present direct and utilitarian one, had it been laid out purely by the landscape-lover, as the City's

pleasance, by turns crossing and following the looping rivers, to display those manifold changes of scene and contrasts of view which make this not of course the greatest or grandest, but assuredly the most varied, of all the avenued park-ways and panoramic river boulevards of the world's cities.

And so again, had it been designed by the religious man and the philosopher, as educators. For Religion and History, in their temples and monuments, Art and Nature in their complemental appeals, are all here upon our way, and these not only in their past, their present but their renewing future also. And so with Education, and from simplest to highest. All the deeper and higher elements of life are thus literally also standing with open doors upon this simple road-system, direct and practicable for the everyday life of city and citizen, highest to humblest.

Our new road is thus a microcosm of the city, even of the world, since open to all its attitudes of mind, from modern hurry to contemplative peace. It is the way of life—prosaic and weary, dull and profane, or joyous and beautiful—processional, even sacred, as men's moods and minds may make it: yet now with the call of its higher aspects more clear, its happier alternatives accordingly.

And similarly, as already worked out through Chapter after Chapter, there is this unity and comprehensiveness in our projected Gardens; for the humblest and most utilitarian of them will not be without beauty, and are for educational and social values, as well as material fruit. So those most richly planted for shade and pleasance have place for nature and its wonders, for science and its problems, even its experiments; and yet have paths to temple gardens, with their sacred trees, their symbolic and votive flowers.

The separations by which philosophy and science have so often misled themselves and each other, and in east and west too much to this day—those opposing concrete and abstract, material and ideal, action and thought, business and sentiment, useful and beautiful, economic and ethical, and so on, and thus, through all these separations isolating individualism from citizenship accordingly—are thus here plainly returning to unity and into harmony. Not simply then, are our gardens here useful and there ornamental, our roads in direct and speedy linkage, in uptodate modern fashion, of bazars and suburbs with railway, government and municipality, and for daily uses of prince and people; but more. Upon our modern spiral of progress, we are thus combining the advancing thought of the west with all that best of the past which India has revered—but which some think dead and gone—to find it immortal, perennially human, renewing for our opening future. The City Past, Present, Possible may thus be seen as one, and increasingly set at one.

City Planning and the War.

Of the many questions which have been asked me with regard to these plans and projects for Indora, none has been more general, or more searching, than this—“In all these schemes, how far has account been taken of the War, and of the changing situation of cities accordingly, here in India, as well as in Europe?”

The answer is—yes. To answer fully would be too long—first a recapitulation of preparation since student days, amidst the social tendencies and political tensions, in Germany and France of course especially, but at home also, of which this War has been the long-dreaded explosion; and next with this experience sharpened—not

only by a fuller than common share of its sorrows and losses, but by five visits to France, as well as three to Britain, since the War began, and these in active touch with the movements of Reconstruction for the ruined Provinces, and with that Regional Development which is being widely planned for after the War. In these ways I have had occasion to clarify and to test that hopeful presentment of City Development which is expressed in this Report.

I venture therefore to believe, and even to affirm, that as the present widespread discussions, of matters social and political, both in India and Europe, clear up, their conclusions, and their resultant practical efforts will be seen as substantially identical with those advocated here; so that what may still here seem "Utopian" today, will be seen to be practicable towards Eutopia tomorrow. City and rural development, educational renewal, fresh and thoroughgoing attention to public health, bettered housing and surroundings, better nutrition and better pleasures, reorganised industrial management, for efficiency and welfare alike, and those towards civilisation-values above personal gains—and all with renewal and ennoblement of the arts accordingly, and now, as of old, towards public magnificence, and general happiness and uplift, rather than mere private luxury—these movements and more, here planned and con-specialised for Indore in these pages—are all in active progress, and this more or less in all the allied and neutral countries, and doubtless even among the enemy as well.

For the active minds of Europe have long been seeking for such outlets of emancipation, from the mechanical, the militaristic and the monetary influences which have been dominating economic, social and political spheres. Everywhere, as I cannot too strongly repeat, throughout the changing world a new hope and purpose are appearing—of Reconstructive Peace, in its own way as strenuously organised as can be war, but now centred in and towards Life and Citizenship, and resolute to enlist machinery and science, administration and finance into its service, by regionalising and civicising all their activities.

Hence, though the reader may at many points feel inclined to return to the criticism of the older worldly wisdom, if not even to the cynicism it has so long produced, let him also note these signs of the changing times, these many endeavours and beginnings, and so consider whether he too may not better apply his critical powers constructively, to the clearing up and helping forward of these movements towards the making of the future. It is vain to go on clinging to the now discredited Utopias—those of pre-War beliefs and practices—since we are now increasingly finding better doctrines and practices to replace them; and which are now ready to be brought together, in City after City.

So here, while speaking personally, let me return my best thanks to the Durbar, for what has been the best, because fullest, opportunity of my life as a town-planner, and my appreciation of their patience with what has proved a much longer task than was anticipated at the outset. For though larger cities offer this, that, and the other task upon a larger scale, the opportunity is as yet rare of comprehensive planning, towards all, or at least well-nigh all, a city's modern needs—in short, beyond simple cobbling, of things well-nigh worn out by the past, to the shoemaking of Progress—and why not now with winged feet?

Practical Possibilities of Indore City.

So as the final theses of this long argument, it may now be boldly affirmed, that Indore may be made—and this with moderate outlays, well within the resources

of the City, the State and the community, and even trifling when their results come to be estimated—(1) one of the healthiest cities of India, and this within the next two or three years; (2) that it can be made exceptionally healthy and prosperous, convenient and beautiful, and within five or six years; and (3) a renewed and leading City, within half a generation. And this in much that makes a City illustrious—as for single instance, a distinguished centre of education, science and learning, and so of the practical productivities and the ennobling idealisms which appear with each renewal of these.

For the discouraged reader, whether he smile or scoff at these youthful hopes (of probably now the oldest worker in these matters), let me recall an oft-told tale; that of the prisoner, who languished long years in his dark and solitary dungeon, concentrated on his own thoughts of the past, and despairing of liberty. Till one day, and in anger rather than hope, he shook its massive door—which straightway fell out!—for lock, bar and hinges had alike rusted away: and he was in open daylight once more, with his city and home standing clear in sunrise before him. Thus for even the most resigned and long-established of individualists, the outworn traditional thought-cage can no longer really confine him: its days of strength is over, and it needs but a little criticism and effort to set him free, and on his way to the City.

Failure then is not to be anticipated. The contemporary social, economic, and intellectual situation of Indore is favourable, and its possibilities are thus unusually great: and, though its problems are not without their difficulties, they are clearness itself, when compared with those of the larger world of India, and still more with those confronting the renewal of Europe. Here too is of all conjunctions the most auspicious; that of intelligent, willing and loyal citizenship, headed and guided by a Ruler and Government of enlightenment and progressiveness second to none in India. Hence even greater than Indore's generous participation in the War, is that possible contribution towards the coming Peace, which I have ventured to outline and plead for in the preceding chapter.

dominant in Europe and America, and still in Britain, of social deterioration on the people's side, and of vested Trade interests and State Revenue interests on the other, both impeding regeneration and reform.

Similarly for every aspect of the City's life; for each must and will express itself throughout its future growth, and thus on its plan in detail. Hence the extent, character, and success of Garden Suburbs depends, not merely on their plans, but on the degree and rate at which the city public become aroused to the advantages of rural life, with its health and beauty for themselves, and still more for their children. How far this can be communicated to the rising generation depends largely on the kind of education it gets in school; and I thus make no apology for my repeated insistence in the preceding pages upon the contrast of the passing Education system, of "the three R's", with the coming education of "the three H's", since these are concentrated towards market-place and office by the one, and towards workshop, garden and home for the other; and so lead to the contrasted types of town accordingly, the former so predominant in the nineteenth century, and still today; but the latter characteristic of most that is best in the past, and that is now needed again for the opening future.

Again even the great question of the future of Religion is not outside our problem of planning, as the busy practical man may at first be inclined to think. For it makes all the difference in the world to the future city, whether its existing Temples and Ghats are to fall into decay, or whether the purification of the Rivers from their present filth, the renewal of Public Health from tuberculosis, malaria, plague and other diseases, neurasthenia above all, the development of vital, social, and moral Education, instead of its too formal individualistic or mammonist substitutes—with other kindred changes towards which we may now look with increasing confidence of hope and effort—must not here be followed (perhaps in turn even led) by a renewal of all the essential ideals of Religion? But if so, the Temples of these ideals, yet greater than those of old, will become a clear town-planning requirement. Even for the new Industrial Town, amid its main lay-out of working roads and railway sidings, I have left spaces for future Temples, no less than those for its Technical School. For "man does not live by bread alone". The superstition than he does, so widely diffused by the futilitarian economists of the nineteenth century, has now had its day. Even in the War, with its clashings of stupendous physical forces, we recognise these are dominated by moral and intellectual supremacies.

We see then that the co-operation of practical and scientific men, of administrators and intellectuals alike, towards the fuller Survey and understanding of Indore—in its situation and development, in its material and economic conditions, in its industrial and technical advantages and disadvantages, in its public and private health, in its municipal and public life, etc. has to be completed by the outlooks and inlooks of education and of religion; and these not as formal or fossil, but in life and idealism today. For each and all these factors find their material expression and resultant in the City; and this in every respect, from its general plan to the its utmost detail, as of domestic life or decorative art.

Review of Proposed Economies.

Granting then such a Survey, continuing that of which the elements underlie the present Report, and now coming to the Plans and Proposals, the different quarters and their Schemes and Estimates in detail, with finance and procedure accordingly, will all come up for consideration in their turn. But first of all the Municipality, the Ministers primarily concerned, and the Durbar as a whole, have to

ask—How far are the endeavours and claims of economy made in this report well-founded, and this especially as regards the main planning of the different schemes? Thus the Plans and Estimates of the Industrial Town require to be clearly understood by all concerned, with those of the Suburbs and of the Old City. The proposed Housing will be clearly considered; and the Health Measures recommended need this as well. These present schemes, as shown in the respective chapters, defend themselves, by comparison with more conventional methods: and they claim also to justify themselves constructively in principle and details, and in economy as well as efficiency. If these claims be admitted, we thus come to the selection of the definite Agenda, with which this Report has to conclude, and these large schemes of City Development may fully begin. As these are undertaken, detailed improvements and further economies may at various points be effected by the Officers in respective charge. Beyond this general outline a more careful analysis is required.

Our Water and Drainage Schemes speak for themselves, in view of heavy previous expenditures for the present Water-supplies, and suggested costly remedial outlays also; and in comparison above with the previous Drainage Scheme, and its Estimates criticised in I. VIII. Say however an economy of only one lac on Water, though this is but a trifle in comparison with the costly remedial Water-schemes of others previously called in by the State, since these have never seriously been estimated for. But full thirteen Lacs may be claimed as economies upon the 1917 Drainage Scheme, which might only too readily have been undertaken. Say then for economies so far, Lacs 14. Or if underground drains (as per Plan VIII and I Chapter XL) be made, costing 3 Lacs, the economy so far may still be reckoned at 11 Lacs.

Next comes the Town Planning Scheme of 1912, at Lacs 29, for the Old City. But this cannot be simply compared with the present scheme, at 13½ lacs for the Old City, plus lac 1 for New Boulevard, and about two lacs more for New Communications in town: total, say 16½ lacs. For the two schemes are of different conception and aim. That of the former is the cutting of a thoroughgoing network of new thoroughfares, through the Old Bazar area especially; and the latter is that of avoiding the expense of these, yet also in its way decongesting the old thoroughfares, by the opening of new minor thoroughfares for vehicles, and of lanes for foot-passengers, across the old blocks, and these to an extent in aggregate considerable, and I trust sufficient; and with the notable advantage of thorough sanitation of all the blocks, with supply of open spaces, gardens etc. Thus the present scheme claims at once a more healthy result, as well as a more economical one, with the decongestion of trade and traffic largely realised, though in simpler ways and without seriously disturbing these.

Furthermore, the needs of direct and wide Communications, which the 1912 scheme offered to cut through the old city, are here also met, and this likewise in all directions; but now by keeping outside the Old City, yet sufficiently near this to be of use to it. Thus as regards east and west thoroughfares, Indore is at present but a "One-street City", i. e. having its only direct thoroughfare that of Topkhana and Khajuri Bazar. But the proposed Express Boulevard, from Railway Under-Bridge and across the Rivers to Lal Bagh and Western Suburbs gives it a second direct east-west thoroughfare; and that from west of Station and Sia Ganj through Suburbs of Juni Indore to Lal Bagh Road is a third. The route improved from Dewas Ghat Bridge to Malhar Ganj is a fourth. The proposed New Bridge route across the north end of Ghati Peninsula, and thence west from Nandlalpura will link up Sia Ganj, and Topkhana with Pipli Bazar, is a good part of a fifth. Further

east and west communications are provided to unite the Northern Mohallas with each other, and bring them nearer the crossing of the Industrial Town; so that we shall have thus in time "a six-street city".

North and South Communications are less needed; but these, as plans show, have also been improved, and both on East and West. The resulting Town Plan thus fairly claims to have met the requirements of new and improved communications, with modern breadth and directness; and this not less fully, but even more than did the 1912 scheme, though this has been recognised (I page 137) as one of the best and most economical of its then dominant school. As to economy in detail, and as the most unfavourable of possible comparisons for the present scheme, let us take what is by far the most expensive of its new thoroughfares, its proposed Express Boulevard with its bridge-work and new Bridge, and a full mile in length. This is estimated to cost no less than a lac for its construction; but it demolishes only a very few houses in its way and thus costs an additional 20% = say then 1,20,000 or thereby. Compare this now with Rs. 12,000 for construction of the short portion of the 1912 scheme which has been executed viz, the new Boulevard from Old Palace Square to Machhibazar, which is only 400 yards in length, and has no costly bridge-work etc. But this had to cut its way through old properties, all requiring compensation, which amounted to Rs. 47,000, being all but four times the cost of its construction.

But if two-thirds of the $13\frac{1}{2}$ lacs estimated for Old City improvement, sanitation etc., be left out, as undertakings not provided for in the 1912 scheme, this leaves $4\frac{1}{2}$ Lacs. The present total for comparison with the former scheme may thus be reckoned as $4\frac{1}{2}$ lacs. This, as compared with 29 Lacs, gives an economy of $24\frac{1}{2}$ lacs, or say, at lowest, 23. Adding this to the economies of present Water and Drainage Schemes as compared with the recent ones, viz 14 lacs, or at lowest 11, we have thus a total of $24\frac{1}{2}$ plus 14 = $38\frac{1}{2}$ lacs; or, at lowest of 23 plus 11 = 34 lacs. True, other expenditures, and of great amount, are next proposed; but these are for New Schemes:—(a) the full clearing up, sanitation and improvement of the old City, thus returning the above $\frac{2}{3}$ (9 lacs) to the total of $13\frac{1}{2}$ lacs, (b) for the great extension of the city, by the new Suburbs and Boulevards, and at an expense of wellnigh 8 lacs; mostly for their road-length. Further, (c) commercially developing Sia Ganj with Corn-Godowns, Siding etc. (Rs. 2, 60,000) and also (d) by supplying City Parks and Zoological and Horticultural Gardens (Rs. 1,50,000), (e) Public and Scientific Institutes (Rs. 9,50,000), with (f) substantial investment towards Housing of the poorer classes etc. (Rs. 4,00,000). The total of all these large additional new Schemes for Old City and Suburbs, together about $34\frac{1}{2}$ lacs, is thus only about what has been economised by substituting new plans and schemes for the previous ones, for Drainage and New Communications only.

Other economies have been suggested, as in the design and construction of Scientific Institutes as compared with existing Plans, (I. XXI) in the planning of Gardens (I. 86) in School Location, Planning and Construction, etc. (I. 144-157), though these will not be here reckoned. But in all these ways, the reader may reasonably infer that all these new City and Suburban Schemes are in themselves also designed with attention to economy; and similarly for the New Industrial Town; yet it behoves him to test all this, and as critically as may be. In absence of any alternative plans of kindred type, it is ofcourse impossible to do this precisely; but as compared with the traditional "Standard Planning", still so largely followed throughout India (II. p. 98) I broadly reckon that these would involve an expenditure of not less than 4 Lacs more, for the planning of the New Industrial Town, and of about

as much for the Suburbs, i. e. say at least a total waste of 7 Lacs, which is here avoided. The Drainage, on conventional principles, of these great new areas would readily mount up to far more; here avoided by the inexpensive methods of Drainage Gardens, here costing Rs. 26,000 or thereby, to lay out for the big Industrial Town, and of 130 acres, largely saved from the extra roads and lanes which would have been constructed on "Standard Plans."

For the construction of Houses etc. the economies realisable, if Mr. Sinha's New Tile-Wall invention (as per sample of Boy-Scout House) be adopted, have already been reckoned for the New Industrial Town alone (P. 130-133) at not less than $6 + 27 = 33$ Lacs (or at least well on for 30 Lacs) over the familiar methods; and its adoption in the Suburbs, and in future construction in the Old City, will yield proportional economies.

Again, far beyond all these sums however, is that economy of human life and its productivity which is broadly reckoned for; this is shown, in Chaps. XXXIV-VI above, as capable of yielding results estimated no longer in lacs or even tens of lacs, but in crores—even in the long run tens of crores—and this for Indore City, apart from the results of similar measures when applied throughout the State. And all this through outlays in themselves reasonable, even unexpectedly moderate, in fact insignificant in comparison with their return.

Next however, the question may well be suggested by past experiences of Estimates without number—will not these be seriously exceeded? It is impossible of course to forecast the economic future, and this looks grave in many ways; so rise of costs and prices is only too easily conceivable. This however holds true of all estimates: and the answer may still be made, that perusal of the relevant Chapters, and their figures, and enquiries among the offices which have contributed to them, will show that these are taken on a full and liberal scale. I venture indeed to believe, and therefore to say, that were I desired to carry out sample portions of these schemes, and were I free to undertake this, I should anticipate ending with some further economies, instead of excess on the rates here reckoned; or proportionally, even if they rise from social causes beyond control.

Conclusion.

In conclusion then, whatever shortcomings of design and of presentment these volumes and plans may disclose—(and as both are capable of improvement, points may of course be shown, which will be gratefully acknowledged)—a consistent endeavour of economy has been made throughout, even in matters of public magnificence, like Public Gardens, Culture-Institutes etc., no less than in the humblest details. So, clearly and definitely, I venture to express the belief and claim that this is, up to the present date, the most inexpensive of Town Planning Schemes, for the area, population etc. and what it provides for these; and this alike in details and in aggregate. Its return, in terms of enhanced City-values and social values may also be forecasted and anticipated in some measure, and this as critically as may be—in terms of each and every mode of material valuation—industrial and productive, hygienic and vital, economic, and therefore even monetary.

It is therefore submitted for consideration as "a business proposition", fraught with advantage, and with speedy beginnings of return to the city; and with this we may leave its further returns—in Civilisation-values, Education-values, Art-values—to justify themselves as they may.

Chapter XLII.

Agenda.

Immediate Tasks ?

Enough alike of planning the work, and of explaining it; of defending its rationality and significance, its possibilities and their Estimates. The question now remaining to be considered is—How to work the Plan? Here then is the time to look these over afresh one and all, from I to X; and into their descriptions also, their respective Estimates as well.

It is ofcourse clearly understood that everything depends upon the general consideration and approval of the Durbar, and on the particular selection which it may see best, and find most practicable: but I am encouraged here to set down such suggestions as prolonged reflection indicates as most practical, useful and economical, and these in order of expediency and of urgency; and for City, Suburbs, and New Industrial Town alike.

Public Health and Housing.

First of all then, I set aside my own tastes and preferences, as towards city amenities, culture-institutes, etc.; and put—first and foremost—Public Health Measures, (Section V) as the prime and urgent necessity of Indore. We are now at the usual beginning of the plagues-season: and besides all ordinary precautions, with redoubled rat-war, and the like, much may be done even this season; *e. g.* to initiate the thorough inspection and improvement of corn-godowns, corn-shops and stables, and at least a beginning of that concentration of these, argued for in Chapter XXXIV. It is moreover during this annual period of alarm and dread that measures for the opening year may most easily be initiated, and better co-operation obtained from the public, and from individuals most immediately concerned. The removal of grain-shops to the proposed New Corn-Market in State Stables, the establishment of new Tonga-Stables, with their needed housing and the repair of old ones, may now be initiated. Other speedily desirable working-class housing has been pled for in Chapter XXVIII.

Procedure.

Urgent for these, as for improvements generally, is the speedy acquisition of such needed lands and sites as are not the property of State or Municipality, with such compensation in money or in land elsewhere as may be adjusted, or such other arrangements as may be made, such as arranging for lease-holding etc.—the details of which are beyond my province. For all methods alike, the desirability is plain, of speedily noting from Plans (ofcourse their large scale original) as far as approved, the areas required, and methodically dealing with these, as comprehensively as may be. For with all due regard to existing uses, precaution cannot be too fully taken to prevent these innumerable delays which arise when acquisitions or other arrangements are left to be negotiated separately, as occasion calls.

The demonstration of this urgency is already given by the fact that the suburban sites planned for the large area between east of the Station and Palasia, and between Malva Mills and Residency, (Plan IV) have gone off with rapidity beyond anticipations, no less than 250 of the 800 plots planned having been taken up since May. Demand for the sites planned North-east of the City and West of Railway—

along Jail Road &c, has been more considerable, 175 sites of the total of 290 having been allocated between then and now (end of August). The Southern Suburbs, from S. E. to S. W. of Juni Indore, up to the proposed New Sports Park, and along Manik Bagh and Bhorkuwa Roads etc, will thus soon have their turn of demand, and those planned on the West also. But more or less in all these areas, arrangements with proprietors are required; and experience—as at present of cessation of applications,—is proving that discouragements arise, when after a site has been registered for a new house, the erection of this cannot be proceeded with, on account of the need of arranging between the authorities and the landholder.

As at this return of the plague season, public attention turns most actively towards suburban removal, these immediate months should be fully utilised for promoting the customary exodus to the suburbs; and this henceforward considered as to no mere plague-huts, but as far as possible to the beginnings at least, of suburban homes.

Organisation and Economies.

The removal of cotton-workers and others to the New Industrial Town should also be expedited, as by encouragement of employers and builders. But (as Prof. Jevons also recommends in Appendix IV) if possible also by the State or Municipality building a certain number of small houses, with due variations in plan, as these will serve as attractive and encouraging examples, and be readily disposed of; sometimes even by sale, with or without exchange of town dwellings, but doubtless more generally on the hire-purchase system. The lay-out of Plan III, and as developed in Plan II, (I. VI) should here be considered; and I trust that Chawls will thus never again be constructed in Indore; nor soon anywhere else.

The organisation of Co-operative Housing Associations among different groups of citizens, and this especially, though by no means exclusively, among the working classes, and with the fullest practicable support of these by a Co-operative Housing Bank, is again one of the measures most speedily desirable. At the present rate of demand, a very large building movement must now begin; and to avoid the various dangers and difficulties which cannot but threaten this, foresight is urgent; and financial provision—ofcourse under due safeguards—cannot too soon be made available. The association of public-spirited capitalists, satisfied with moderate return upon the substantial security which good and approved housing provides, may surely thus be obtained: and with this support, and such funds and credits as City and State may provide, deposits at reasonable interest may be invited, and should be increasingly forthcoming.

The remission, or at least substantial abatement, of taxation on building materials, pled for at page 133 above, is also very highly desirable: this will be encouraging from the first, and fully, if indirectly, compensated later. The vigorous utilisation of State forests, quarries etc. should be organised, and again with advantage to all interests concerned.

The combination of all economies, with adequacy of planning etc., as discussed in previous chapters is desirable: and Building Regulations, to keep up standards, and to accelerate procedure, should now be made clear. In this way, new quarters may be protected from that deterioration, in value, health, amenity etc. which even isolated shortcomings may so easily, speedily, and widely inflict upon new quarters.

Great economies in construction &c, indicated in the Chapters on Estimates, and those explanatory of them, (Chap. XXXI)—as already partly evidenced by

the experimental sample, of Boy Scout House at Dewas Ghat Bridge—may thus be realised; and these may be further increased by good organisation from above, and by efficiency management and welfare management of the workmen employed. Towards the latter, at least a substantial proportion of these workmen cannot too soon be housed; say at the eastern outskirts of the New Industrial Town for those occupied in its construction, and in that of the Eastern Suburbs; while in town they may be encouraged to take over and repair houses vacated by migration. This care for their wellbeing will be well rewarded in their subsequent rise of efficiency.

With the approaching completion of the large constructions now in progress at Mhow, an influx of good workmen may thus be attracted here.

How all these and other elements—which make up a veritable mobilisation and development of the housing industries, and one kept free from all mere speculation—may react alike upon the health of the whole city, old and new alike, and upon employment and business, investment and general prosperity, need not here be enlarged upon.

Drainage Gardens.

The experimental Gardens lately initiated at the Hospital, and north of Nasia Temple, are already beginning to demonstrate the full practicability of the scheme of Drainage Gardens; and with the skilled management and supervision which is happily available, they will give no cause for alarm, but much for anticipation. And with due provision and economy of water-supplies, and for their use, (as per sample of itinerant pump lately acquired, and other possible improvements) housing and gardening will progress together.

The twofold exodus—to Suburbs and to New Industrial Town—will notably aid the health of the Old City, and its improvement also, and tend to reduce the cost of the latter.

The acquirement of at least the large Drainage Gardens of the Old City—as notably at Juni Indore and Ranipura, at Gautampura Peninsula, Krishnapura and north of Chhatri Bagh etc.—should also be actively proceeded with, while smaller spaces can be acquired as occasions arise with removals, clearances &c.

River Purification, and its Consequences.

In these ways, the present abominable pollution of the Rivers, by the present influx of sewage, with its manuring of the river-courses and nulla-beds into some of the most overcrowded mosquito nurseries in India, may be speedily abated, with diminution of the present serious fever-deterioration of the community accordingly. With the cleansing of the Rivers this season, and the application of the other measures indicated in detail, and for nullas also, in Mr. Iyengar's Report (Appendix I) together with the progressive utilisation, for garden uses, of the present thirty river-drains, the general health, vigour and productivity of the City will be improved; and to a degree only second to those resulting from the substantial abatement of Plague itself. It is here gratifying to note that Mr. H. B. Learoyd P. W. D. is considering measures for the relief of the East River from Residency Sewage. In all these ways even the large hopes expressed in previous Chapters may before long be realised: thus, from these gardens, that increase, improvement and cheapening in the vegetable markets, which is here in Indore so peculiarly desirable, should begin to be appreciable from next year and onwards, with obvious advantages to the slender family-budgets of the people, and to general health and comfort accordingly.

By steadily continuing up and down stream, and year by year as means allow, that attention to river-bunding of which the view from Krishnapura Bridge gives so admirable an illustration, will come the raising of well-levels, with greater abundance of water-supply. The soil-water level for trees, fields and gardens will be similarly raised; while the adjustment of watered Pasture-strips along the river banks, as levels allow, will also found to reward a trial. All improvements of the quantity and quality of Milk-supplies cannot too soon come up for active consideration: it may even be predicted that the City might profit by the labours of a first-rate Dairy-organiser and cattleman in no less degree than from those of their Drainage Gardener. For such abatement of the enormous, habit-maintained, rate of immolation of the annual crop of childhood to the germs of foul milk, and to the absurdly unnecessary demons of its poverty and scantiness, would soon become manifest, even from his first year of office onwards.

Summary as to Public Health.

So far then these suggestions of the active Public Health Policy required, with its prompt reduction of rats, mosquitos, milk-germs, and—with the general clearance and cleansing—of flies also; and with encouraging fall of each and all the associated disease-rates, and death-rate accordingly. The improvement of nutrition, health and vigour, etc, through the spread of gardening, the diminution of lung-diseases, damp-diseases etc, by better housing, with the diminution of intemperance also, will all become obvious and encouraging as progress begins; and the neurasthenic depression of body and mind, lamented over in I Chap. IV will correspondingly give place to the vigour and joy of life, which, however at present rare, is the normal health-condition of both. The fine rose or peacock, horse or hound, is in the true sense, the most normal one. So also for the child, the youth, the woman at their best: why not then for our species more generally? We begin to see; and so may act.

Communications.

Once all these fundamental necessities of Sanitation, Housing etc, are set in due activity in Old Town, Suburbs and Industrial Town, other improvements, like those of Communications etc. will claim their share of attention, and reward it. The exodus from the old town will facilitate the clearance of its many new lanes and short-Cuts and the widening of old ones, indicated on plan X, of course as opportunities offer, and as annual budget may allow. Thus increasing de-congestion of the Bazar Streets; yet with aid, not injury, to their business. The present keen demand for new shops,—which cannot be without effects on prices—will be somewhat abated, as (a) through the concentration of food-shops to the central Retail Corn-Market (II—145), (b) through the formation of the suggested Secondhand Market in place of the present Brahmin Water-carriers Mohalla (I. 165) and (c) other local extensions, *e. g.* Shakkar Bazar Square. But still more (d) through the migration to the Suburbs, and the exodus of workers to the New Industrial Town, in which shrewd traders are already taking up sites, and in which Co-operative stores may also arise. The sacrifice of Bazazkhana Square will thus be unnecessary; and with the removal of its present Vegetable Market to Odepura interior square, and I trust the erection of its proposed Clock-tower, (I 163) the Bazar Town will thus have its open centre worthily improved, instead of built up. Any growth of shops still necessary will extend along existing streets, and especially I trust southwards, (e) towards Muchhi Bazar and along it, after the proposed removal of its wood-yards to Harsiddhi.

Among larger communications, the proposed Express Boulevard (Plan X) will naturally claim first consideration; and the needed outlays for its construction (II. 84) though no doubt considerable at some points, will be seen so moderate when averaged along its whole length, in view of the very few demolitions it requires, as to be well compensated, as in saving of business-time, through directness of its own route, and diminished congestion of others. The improvements of the Station Quarter and its accesses (Plan IX and I. XLI) will naturally be considered along with this; while the bridge at Sia Ganj, (p. 84) with its further improvement of Station Access, as well as decongestion of that prosperous quarter towards suburban homes, will also reward its construction.

The opening up of the proposed route from Dewas Ghat Bridge to Malhar Ganj will also be found of advantage, beyond that decongestion of the Topkhana—Krishnapura—Khajuri Bazar route to which the City has hitherto been practically limited; and the relief and advantages of these expansions, from what is at present too much “a One-Street-City” into a three-street system and more, will be widely felt. (See Plan X).

Higher Improvements: Culture Institutes and University.

After these main examples of the primary utilities aimed at are set agoing, the higher improvements of the Old City will have their turn. Thus with the migration of the workers of Ghati Peninsula, this finest site-area of the whole City may be made also the central one, with the construction of the needed Bridge across each river; and its crowning group of buildings—that of Library, Museum and Tower, and later its Theatre, (II pages 34 and 90) will complete the Krishnapura Bridge panorama, which is already the glory of Indore. Yet not wholly complete it; for this whole peninsula ridge of sites should be retained by the City or State for the highest future uses; and thus, I trust for the College buildings and hostels of the coming University of Central India, by which the culture and effectiveness, the productivity, prosperity and wellbeing of the City and the State, and their relations with surrounding ones, may all be so much advanced. The gradual architectural development of this whole ridge—beyond question the finest site in Indore, and one of the finest still available among the cities of India, or beyond—should thus be kept steadily in view and in progress; until it rival, in its own way surpass, the beauty of Maheshwar, if not even the panoramic water-front of Udaipur; and even acquire a dignity and a charm comparable to that of the most famed of western University Cities. The east river already recalls the Cam, and the western the Isis; so let College boating begin.

Yet before all this great development, the more modest Scientific Institutes for Geology and Chemistry, for Agriculture and Bacteriology, and, by and by, for Botany and Zoology also, all as planned along the Lalbagh Road (slightly rectified) south of Gadikhana, are what deserve the earliest possible attention; for through such solid work, scientific and technical, as the officers concerned are already doing despite their present inadequate accommodation, the future University is already preparing. The suggestion made above (p 45) of constructing one or more of those of Scientific Institutes in the first place as the galleries and rooms of such a “Central India Exhibition” as might be arranged within a year or two, may here be considered.

If such Exhibition be decided on, no element in it should be more attractive, popular and stimulating than that of Horticulture; and thus the projected Gardens

SECTION VIII.

Essentials, Agenda and Conclusion.

Chapter XLI.

Essentials of the Present Report.

Towards the close of this long Report, with its many Sections, their often numerous chapters and paragraphs, it is necessary to bring these many webs and threads together; and this not only for review and summary, but towards that weaving of the city's future which is the purpose of the whole.

First then the Survey of the City, at once in its general aspects and relations and all these in detail, as on plan to every house. Hence the initial Chapters, dealing with Indore in its geographic situation and its historic growth, and these considered not as geographically fixed or historically done with, but as determining the present, and as conditioning the future.

This study is necessarily incomplete and imperfect, and so calls for fuller enquiry and reflection. The relations of Indore, as Capital to its Provinces and provincial Towns, and its and their relations to the surrounding States, cannot be too fully studied by all responsibly sharing in Indore's Railway, Industrial and Commercial developments, as well as less material ones. Such geographical interpretations need contributions from Geologist and Engineer, from Agriculturist and Manufacturer, from Banker, Merchant and Economist; as ofcourse also from Administrators in their various Departments, to whom I owe helpful criticisms and suggestions.

Similarly for my historic outline of Indore city development: thus Professor Johori has pointed out my lack of reference to Rajput influence, while a talk with a historian like Judge Burway increases my conviction that *e. g.* the period of Ahilyabai, or the constructive work and influence of Tukoji Rao, need appreciation beyond what my brief references have given. And similarly of the work of the past generation, and of the present reign.

All this brings out the need of that Regional and City Survey of Indore for I have pled in I, Chapter I, and which I trust may be actively initiated and continued, as part of that general advance beyond the geography, history and economics of the past generation, of which the "Gazetteer of India" is the monument; but of which a further and more interpretative general Survey of India is the needed successor. Such initiative and efficiency as the present Plans may have on their economic side—as with the Corn-market, or the new Industrial Town—will necessarily be in the measure in which they can correspond to the economic situation they seek to develop: but to guide this there is scope for each of the above mentioned points of view. To the Iron Trade, for instance, in its many possibilities, as towards Agricultural Implements, Mechanical Industries etc, I have not been able to do justice. Again, there are matters I have not entered into at all; yet as a single example of needed enquiry, take the Liquor Trade. Is this to develop along with Industry, as it has done in the Industrial West? Such a question plainly goes deep into the future of the nascent Industrial Town, and of the existing City as well; and it should not here be left to drift into its western condition, too long pre-

Ground?) Another change, which seems eminently desirable, is (b) the removal of the Municipal Office to the present frontage blocks, on Topkhana, of the City High School. For thus it would be in a better or more convenient and more dignified situation for all its purposes; while the old buildings of the School, now de-congested, by exodus of its higher classes to the new edifice lately opened, would be for its remaining Junior classes all the more efficient, if kept back from the noises and attractions of the busy street: while the School would gain in compensation, by taking over the present Municipal buildings and compound, workshops perhaps excepted. These changes have therefore been included in the large-scale City Plan (X); and this will be seen now to afford a range of School Buildings, with grounds, gardens and small experimental farm, most exceptional in extent and continuity, and soon in usefulness and beauty. The various activities housed in the present Municipal compound have been found place for, a little way north-eastward.

Such changes thus do not injure any present planning, but are welcome further developments of it, and are submitted for consideration accordingly.

Other decisions early desirable are, *e. g.* on the proposed removal of the Municipal Cotton Godown to the New Industrial Town (Plan II site 9 and 9 a.) This change is desirable in their common interests, and also as setting free the present area, (as per Plan X) as a Suburb in which sites are eagerly desired. Similarly for that cession of the gardens north of the Jail to suburban needs, which is also indicated in Plan X, though the removal of the Jail itself (I. 169) is ofcourse a quite subsequent matter for future years. The suggested (or rather predicted) Military Removal (I page 11) will come up naturally for consideration after the War; and sooner or later also that of Railway developments, already sufficiently discussed in preceding pages (I. XLI).

Chapter XLIII.

Concluding Summary.

From such points for the nearing future need I return to my pleading above, of urgent measures of Public Health, of Suburban allotment, etc., and of Industrial Town? I leave these in full confidence of their speedy consideration. Let me rather conclude all the interpretations and practical suggestions of these volumes with a final summary of the essential idea which has guided their interpretation and planning towards action, and by which these have now to stand or fall. This is not irrelevant to action, as the discouraged "practical man" in these days of Babel, is apt to think; but determinant of it, since we act from within. And just as the present War is the definite carrying out of a clear-thought theory—that of "the State as Power" and of the individual's "Will to Power"—so civic action here, and the coming Peace itself, depend, and no less plainly, upon our attitude to the older and newer doctrine which is the antidote to this—that of Etho-polity—(Family and Community, City and City-State) in Life and Reconstruction; and of "individuality" as involving Citizenship in these.

As in a box, the six sides—though each in its distinctive plan and place, with even its name accordingly—are not detached and dealt with asunder, so, and more brightly, is this unity manifest in the faces of a crystal. Still more does this unity

exist among the six distinguishable activities and aspects of a living being; and in those of a City, above all. The mechanical and physical, the organic (medical, agricultural etc.) have been in our time most considered, but even these too separately: and mainly in that order of ascent: thus basing all things upon material power and its machines, upon the power of numbers, and with financial conceptions dominating all. The ethical and religious, the intellectual and educational, and the esthetic and creative activities, have thus become dissociated, and at most considered as "spheres" apart from that of "practical life", and from each other. In short these three are out of order, and the first three are in the wrong order; while these three are isolated as "objective and subjective", 'material and spiritual'. Hence largely the present confusion in thought, and conflict in action, with the multiplication of evils accordingly. (See summary on Plan X.—diagram in N. W. corner).

But with the current rise of the evolutionary and social sciences in their turn, after these of the physical and mechanical world, and to views beyond theirs, we now see in the living being its feeling, its intelligence and instincts are in unison with its social and its individual life, and their activities: and the fitness, and even beauty which it presents, is appreciated as the outcome and resultant of all these together. We see too, in every human being, that his moral and social character, his mentality and health, his physical activities, are all co-adapted and inseparable; and that his esthetic aspect and productive output are at once a resultant of all these, and a factor in them. In short they are the product and index of the social conduct, the individual behaviour, the material activities, by which his individuality is expressed and estimated. Disharmonies indeed abound; but these are not left as the 'Mystery of Evil', but seen as evils which we may trace, and treat.

Still more manifest then is this unity in the larger social Life, the life of Cities, diversified within and unique without, though each is and must be. That their life cannot be successfully conducted by Religion and Morals alone, is manifest in the tragic history of all sacred cities: while that these cannot be replaced by State Administration or Politics alone, is manifest in the present tragedy of War, as conspicuous example. Success, recorded or latent, lies in the union of these; *i. e.* in the measure in which ideals of social life inspire association and activity, as Etho-polity in "the City of the Good Life" expresses itself in the Community of men. Thus the 'Duty' and the 'Efficiency' of these two past rival worlds of Religion and Power, unite as Duty-Efficiency; *i. e.* in a needed word, as Civicconduct. Thus too minds are kept sane; for as mind increasingly controls body and maintains health, so the renewal of true Education, and this in the fullest and best senses, is realisable. Hence our proposed Civiccollege; and this not simply to renew Public Health and advance Agriculture, but Life more and more, towards highest and finest developments. With these advances, expression in Art must reappear, and lead the Crafts. Witness City design for Architecture, as this for building and its crafts, witness too the nascent renewal of the mechanical industries, though now last instead of first; yet thus rising, from their recent paleotechnic worst, and towards the neotechnic best.

The City of the good Life is also that of good Rule; and so likewise of Education, Health, and the rural life-cultures these are so fully in keeping with. Yet all these inspire also the craftsman's heart, head and hand. Feeling, knowledge and skill, thus rise towards perfection in beauty, as of old. Thus "goods" (at once in their fullest sense, as well as the too long narrowed economic and industrial one abound once more. In short Handicrafts become Civicrafts, and flourish accordingly.

In such concrete thought and experience—and as no mere abstract theory of social philosophy, but this gradually deciphered from some two hundred cities, and applied in some two-score—the present Report is offered. If yet briefer and simpler summary be asked, and this in exclusively practical form, let it be this—that in Indore past and present, and substantially with such traditions, men and means as this City possesses, we may now practically and economically, steadfastly and speedily proceed to cope successfully with its many evils; and even soon, to evoke much of the best that lies ready to be developed, in Indore Possible.

2. Seepage from Pipliya and Stream, from Pipliya to Martandpala Tank:— Very clean water, with many fishes; but algae present, and grasses; and therefore *A. fuliginosus*.

3. Martandpala tank. Very clean water: large number of fishes. Very very few mosquitos.

4. Seepage from Martandpala and lower Manikbagh section. Water very clean, but over-grown with weeds and breeds mosquitos: *A. culicifacies* and *rossi*. Fishes are present, and control the mosquitos to a large extent.

5. Lal Bagh Section (Railway Bridge to Lal Bagh Dam). Opposite Lal Bagh the river is broad, and has been deepened; therefore no breeding places. But below and above this region, there are large breeding areas for mosquitos. Fishes are present, but not in good numbers. Algae weeds, debris.

6. Karbala Maidan section. (Lal Bagh, Dam to Kabutarkhana Bridge). River zig-zag, over-grown with weeds, shallow in many places; but no sewage contamination, and fishes are present. *Marsilea*, *Hydrilla*, grasses etc. ill kept. Bad breeding places; *A. culicifacies* and *fuliginosus*

7. Chhattri Bagh Section:—Grasses and weeds, *Marsilea*, *Hydrilla*, and floating scums; river often broad and shallow, with pools at edges overgrown with grasses; mosquitos breed here. *A. fuliginosus* and *culicifacies*. Slight contamination with sewage. Fishes not many.

8. Machhi Bazar Section:—Floating algae: Very bad contamination with sewage; stinking in several places. *Clathrocystis* to a large extent, as to make the water greenish; weeds also. *A. fuliginosus* and *culicifacies* in numbers. Fishes very few.

9. Nandlalpura Section:—(Juni Indore Causeway to Nandlalpura). Nalla on right very bad. In river, fishes very few. Floating masses of algae, and *Clathrocystis*. Further contamination with sewage. *A. fuliginosus*, *culicifacies* *rossi*, and *Culex*.

C. PENINSULA SECTION AND CONFLUENCE OF THE RIVERS.

This part is fairly free from breeding places, though occasionally some floating debris. Water is deep, sides pukka, fairly clean, frequently used, larvicidal fishes few. Larvae few. *A. fuliginosus* & *rossi*. *Clathrocystis* in small quantities. On Peninsula, a garden grows down to water edge and beyond; and so provides debris for food of larvae.

D. THE UNITED RIVER.

(1) Krishnapura section, down to Municipal Bund, deep and few larvae.

(2) Dewas Ghat section. Water very shallow and dirty; course irregular. Plenty of Anopheles. Sewage running in, fishes entirely absent. *A. rossii*, *culicifacies* and *Culex*.

(3) Burning Ghat section.

Not a single fish. Water mostly foul. Algae abundant. *A. rossii*, *stephensi*, *culicifacies*. Part of river protected by *Lemna*, which keeps river to some extent larvæ-proof; but gaps are bad.

(4) Kharkadia Section. (down to beyond City limits). Partly covered with *Lemna polyrhiza*; but other parts very bad. *A. stephensi*, *culicifacies*, *fuliginosus*, *rossi*. Algae in Pools. Water slightly clear, but practically no fish. Sewage again.

II. Pilla Nulla.

1. Hansdasji Section. (Pach-Kuia down to Hansdasji Temple).

Near Pach-Kuia, water very clean, but over-grown with weeds; *A. barbirostris* present, which generally lives in clean waters.

Below Pach-Kuia too, water clean. River shallow, zig-zag. Fishes present. *Chara* &c. *A. fuliginosus* and *culicifacies*; *Culex*. No sewage contamination.

2. Mistri-Khana Section. (Hansdasji Dam to Mistri-Khana). Bad river-course, floating weeds, algae etc, shallow; puddles, &c. As a result of breaking of stream into separate pools, there are not many fishes. No sewage contamination. No continuous water. *Anopheles* breeding; *A. culicifacies*, *fuliginosus*, *rossi*.

3. Sankarganj to Graveyard. Very large contamination with sewage, and water is foul. No fishes at all. Very large numbers of *Culex* and *A. rossi* breeding. With reference to mosquitos, this section is in an extremely bad condition, a single panful of surface water often containing 400 or 500 larvae and pupae. Water in long stinking pools often covered with algal scums.

4. From Graveyard down to City boundary. Water gets clearer near road-crossing, but relapses to original condition. Very large numbers of *Culex* and *Anopheles rossi* breed here. At places where water is not foul, we get *A. culicifacies* breeding. A large number of *A. rossi* and *Culex*.

III. Palasia Nulla.

1. South-east of Dewas Road Bridge. During time of observation the Nulla was dry for some distance from its source. Small pools and puddles contain algae etc, with *Anopheline* mosquitos in numbers; also calcines. Fishes are present in some pools, and these do not breed many mosquitos. Species are *A. culicifacies*, *Stephensi* and *Rossi*.

2. Dewas Bridge Road down to small Temple on left. Water is broken up into pools. Shallow, weeds, algae, *Spirogyra*, bluegreens. Fishes present but not many; and not in all pools. *A. culicifacies*, *fuliginosus* & *Stephensi*.

3. From Temple down to Malwa Mill bridge.

Most of the way it is dry, with few puddles and pools. Fishes very rare; *Anophelines* breeding in some places.

4. Below Malwa Mill.

Water foul, due to Mill effluents, stagnant; *Culex* breeds. Below this too, water is foul. Chiefly *Culex*.

IV. Minor places.

(a) Drains.

Most of the open drains of Indore are kucha; the water flows very slowly, and there are small pools in the course of the drain. Generally *Culex* breeds in the slow moving waters of these drains. The bigger drains, some of which are pukka, have some flow of water. But even there, mosquitoes were found breeding. These drains have a flat-bottom instead of being U-or V-shaped. After some time the flat bottom gets silted up, and the course of the water is restricted to a narrow winding path between the silt. Thus the flow of water is retarded. In these cases, I collected *Culex* larvæ.

(b) Wells.

Many of the wells are kept clean. But there are also wells which breed mosquito larvæ in numbers. Generally the unused wells are bad; some have vegetable matter on surface. Anopheline larvæ breed in cleaner wells; bad wells breed *Culex*. In some wells, even if to all appearance clean, they breed some anophelines.

(c) Fountains and Water from Stand-posts.

Fountains often breed mosquitos. Large numbers of *Anopheles* larvæ were collected from the water in the two fountains of the Lal Bagh Palace garden. Some pools or fountains in the Tukoganj Palace garden also breed mosquitos.

Accumulation of water from Stand-posts breed mosquito larvæ both *Anopheles* and *Culex*; especially in places where the water stagnates a long time, and has algal growths on its surface.

So far then the results of the Survey.

Causes for the present Condition of the River.

A. *Sewage contamination*:—In this case the effect is indirect. The diluted sewage acts as a manure to vegetable growth like algae etc. and these furnish, either in the live condition or in the decaying state, the best of food as well as protection to these mosquito larvæ. These food-furnishing algae are *Hydrodictyon*, *Spirogyra* and the blue-greens and weeds; which are stimulated to better growth by sewage water; and these likewise help mosquito larvæ to develop. We see how in the Residency Park the river is free from mosquitos, because there are no algae; and this because there is no sewage contamination.

Besides helping to furnish food and shelter to the mosquito larvæ, the sewage water kills many enemies of mosquitos, like fishes. The species of larvicidal fishes like *Haplochilus*, *Rasbora* and *Barbus* do not live in water polluted by sewage.

Water polluted with sewage generally has the minute green alga called *Clathrocystis*. I have noticed that where this alga is present, there larvicidal fishes are few, if not altogether absent. It is not possible to ascertain if there is any antagonism between this alga and these fishes; but this alga is not present in pure water. It is absent in the good river water in the Residency; and we get the larvicidal fishes there.

B. *Want of depth*:—The river is very often shallow; and as a result of that we get the weeds, grasses, &c. growing in the water, as well as along the sides. In between these plants, the mosquito larvae live safely, and are also furnished with food from the decaying leaves. These weeds and grasses do not grow in deep waters; hence in the Residency, where the water is deep, these plants are not found growing. In the same way near Krishnapura, the water is deep, and these plants are absent. Near Manikbagh, the water is shallow, and these plants thrive well there.

C. Proper care is not taken to keep the river in a good condition. A comparison of the rivers in the City with the river in the Residency shows how the river can be made clean, healthy and beautiful, and how by neglect and bad use, the rivers become dangerous.

The Mosquitos.

The species of Anopheline mosquitos breeding in Indore are:—

1. *Anopheles Rossi.*
2. *A. culicifacies.*
3. *A. Stephens.*
4. *A. fuliginosus.*
5. *A. barbirostris.*

Culex sp. was found breeding in a great many places in the city.

Now with regard to malaria, Nos. 2, 3 and 4 are capable of transmitting malaria, and vigorously. We cannot at first sight say which is the worst culprit of the three. For this purpose a large number of dissections would have to be done during the malarial season, and then the percentage of the infection would show which species is the greatest danger. But they are all dangerous species. And if the present condition of the river continues, the malaria of the city will increase, in geometrical progression. Already there are quite a large number of malarial attacks every year, even judging from the hospital admissions alone. The following are the figures of malarial admissions in the hospitals.

Year	Residency	City	Total
1915	6041	6159	12,200
1916	5660	5482	11,142
1917	4771	5405	10,176

These numbers are really terrifying. They ought to be mitigated; and they can be:

Besides the prophylactic methods, which I will discuss hereafter, there should also run along with these a parallel working in house to house treatment; e. g. free distribution of quinine &c.

So as to find out the efficiency of these methods, I have proposed to Dr. Bhandarkar, State Surgeon, to take a Spleen Census, and find out the percentage of enlarged spleens among children, young boys and girls before and after the malarial campaign. I expect very remarkable changes will come of it. When suggestions embodied in this report are brought to a close, it should be remembered that the river and other waters should be maintained in the same good condition. Otherwise the malarial epidemics are certain to recur again. If these methods are carried out efficiently, I am certain the malaria of the city would be very considerably lessened.

Filariasis.

About the danger of Filariasis from these mosquitos, again I can hardly emphasise overmuch.

With regard to the so-called 'harmless' mosquitos, *Anopheles Rossi* and *Culex*, a word might be added. They do not transmit malaria; but it should be remembered they do transmit Filariasis (Elephantiasis). I hear that at present there are very few cases of the disease in the city of Indore. Others say there are no such cases at all. The danger is therefore not felt, and so is minimised. But if there are cases local or imported, the infection cannot but begin; and may dangerously spread; because these mosquitos are certain to be infected, and would thence transmit the disease to others in increasing numbers. It is not possible to restrict people suffering from the disease from coming into Indore; because during the stage most infectious to the mosquito, there is practically no outward symptom of the disease, except occasional fever. In such a case, the danger is from the importation, which nobody could prevent. The best method is prophylaxis. I therefore propose to treat every breeding-place, malarious and non-malarious alike. Here is a further argument for same:—(from Dyer and Knab's "Mosquitos of America")—

"Abundance of mosquitos means enormous economic loss to a community, entirely aside from the important question of health, and individual property owners realise this more than do official bodies." Beyond the loss of blood, we get the worry, vexation and loss of sleep, which are all quite important. Cattle and horses also suffer from these mosquitoes in some parts of India.

Other possible Dangers from the present Condition of Rivers.

A. During my inspection work I collected many adult *Filarias* from the river water. The species was not identified because of want of literature. Some of the species of *Filaria* are pathogenic; and the larvae of these, which are minute and microscopic, could easily be swallowed if anybody drank the water. Even though people do not drink the river water, there is always a danger of possible infection with elephantiasis.

These worms live only in water containing a large amount of organic matter, such as the sewage waters bring in. If this is stopped, these worms would slowly disappear.

B. The river water also contains large numbers of the minute crustacean *Cyclops*. It is known that this creature harbours the larva of the Guinea-worm in its body, when it is infected by it. In case these *Cyclops* are infected, there is the danger of the disease spreading, when people take in the water by chance. It is lucky there is no guinea-worm in Indore; it is present round about Indore, as I am told; so it is easy for these waters to get infected. Here again, it is well to get rid of this *Cyclops* by cleaning up the river, and turning the sewers away from the river. These organisms thrive much better in foul water than in good water; and in course of time, would disappear completely.

Suggested Methods of Mosquito-Control in Indore.

A. It is necessary that the drains which now fall into the river should all be somehow diverted elsewhere. I am in full agreement with Professor Geddes' Gardens scheme to divert these drains into, and I am grateful to him for having

made the way clear for me. The diversion of these drains is absolutely necessary for the river to be kept clean, and for the small larvicidal fishes to live, and keep the water mosquito-free.

B. Surface-cleaning of Rivers and Nullas.

This is to remove the food stuff of the larvae, as well as to deprive them of their hiding-places. For large portions of river, the best method is to have a long net, made of strong cloth attached to a rope, and adjusted with floats on upper side and sinks on the lower, to be dragged by two men on opposite banks. At other places two simple nets are required; one to be worked by two men on shore, the other to be used by a man on a boat. A rectangular frame of light wood, 6 feet by 1 foot, is attached to two long poles on either side. A net is made of thin strong cloth, and two men can then easily clear the surface of the scum. The other net is made of a ring of iron (two ft. diam.) which is fixed to the end of a long pole. The man in the boat waves it along the surface of the water, takes the scum out, and puts it into his boat. It is advisable for this purpose to have a good boat in every big section of the river. School-boys would take a pride in coming into the boat, and would help the boatman in his work.

It is also desirable to have a boatman who can swim, and also knows how to save people from drowning.

It should also be noted that these boats might pay for themselves; at least to some extent, by being hired out for pleasure-trips, on the stream in the evenings. During flood seasons, it is also advisable to attach thick wire nettings, fixed by clamps to the walls of the dams at the places where the water flows over, so as to catch all floating debris, floating plants, scum &c, which are brought along with the current of water. A workman clears these accumulations from the net, once or twice a day.

C. *Cutting and clearing weeds that grow in the water:*—THIS IS ALSO NECESSARY for keeping the water free from mosquitos. The weeds should be cleared periodically; not by long hooks as they do now, but by the men going down into the river, and cutting the weeds right at the bottom. When the cutting and clearing of weeds is over, the surface of the water should, soon after, be cleaned by nets described above, because the small bits of plants which float on the surface would provide shelter and food for the larvae. Grasses along edges should also be cut. *Eichhornia speciosa*, the "Water-Hyacinth", is just making its appearance in some parts of the river. This a peril to the future river, as it is a rapid grower, and would, in the course of a very years, cover large areas of water surface. Then it would cost a good deal to clear the river. But if it is checked now, it would save a lot of money. These stray plants should be collected and burnt, or dried for manure. They are rich in potash.

By far the most efficient method of dealing with the aquatic weeds is that of liming the bed of the river. Before the flood season, the water in each section of the river should be let out, and the bed cleared of its silt. It should be noted that this silt is a very valuable manure for vegetable and fruit gardens, and could be sold off. Then the bed of the river is limed, so as to destroy the underground stems and roots of these aquatic weeds. For unless these are destroyed, new shoots come out in the course of a few months, and require re-cutting; so that, I think, in the long run, this is a cheaper process, for the plants will not grow again for about four years.

In order to empty the river sections, where we do not get the sluices running down to the bottom of the dam, to siphon out the water will be the cheapest method.

D. The next proposal is to deepen the river in places where it is shallow.

E. *Introduction of Larvicidal Fishes*:—My idea is to utilise the local fishes after experimentation, rather than to import fishes from other places. Apart from monetary considerations, the local ones are preferable to the imported ones. I collected several fishes; and on experimenting, found that the following are good larvicidal fishes.

Rasbora sp.

Haplochilus sp.

Barbus vittatus.

These are great enemies of the mosquito larvae. They live in good water. They are present in the Sherpur tank, upper Residency river. Martandpala and in some parts of Palasia Nalla. Specimens in spirit are herewith sent, with their respective names.

These fishes should be collected alive and unhurt, from the tanks &c. of the villages near by, and then introduced into the river and nullas when their waters are made clean. If the water is foul when they are introduced, they will die.

Besides these larvicidal fishes, I suggest the introduction of surface-feeding fishes which eat up vegetable matter like algae &c. *Nuria danrica* is a fish present in Indore which is of such habits.

Dangerous enemies of these small fishes are the predatory fishes, which are certain to be present in nearly all deep waters. It is a matter of common observation that the larvicidal fishes disappear some time after their introduction. That is because of these predatory fishes. In such cases, it is better to catch these either by line and hook, or by emptying the river out and then catching these fishes.

F. Ducks and Geese, and Swans, which are more beautiful, should be introduced and encouraged. People who have gardens along the river should be encouraged to keep swans and geese. These birds eat up not only some of the mosquito larvæ, but also the algal scum on water surface, and so help to keep to the water surface clean.

G. *Oiling*—For bad pools and puddles I advise oiling. A mixture is made of 50 per cent Petroleum and 50 per cent crude oil. "Liquid fuel" is also used for this purpose, as it is cheaper and quite efficient. Men are provided with poles having a bunch of long rags tied at one end. This end is dipped in the oil, (which they carry in a bucket), and then they beat this pole on the water, so as to give a good film of oil on the surface. In places where there is vegetation this should first be cleared. For the lower parts of the Pelia Nalla, oiling should be done at once, and continued until the suggested improvements are carried out. It ought to be done once a week. When the water is clean and contains plenty of larvicidal fish, oil need not be used. Cresol may be mixed with the oil for bad waters.

For drains &c., small oil cans with cotton wicks so adjusted as to give a drop of oil twice or thrice a minute, should be employed. Similar drips were employed in the Panama Mosquito work.

"Resin-Caustic Soda Carbolic acid" mixture might also be used for bad pools.

On the Importance of interesting Children

Every young boy and girl is a born naturalist, with a keen eye and a brilliant power of observation. The schoolboys and girls could very easily be trained to be very nearly expert—and they take a keen interest in insect life.

The first to start this movement was Professor Hodge of Worcester, Massachusetts; and Dr. T. S. Lankford of San Antonio, Texas, has carried it out on a large scale. He was so successful that others have followed the example to great advantage.

During an epidemic of yellow-fever in San Antonio, Texas people at first denied the existence of yellow-fever in the city; but later said that there could be no connection between mosquitos and yellow fever. They were too old to learn, and were too stubborn to take in new ideas and facts. Then the Chairman of the Sanitary Committee (Dr. Lankford) grasped the happy idea of educating children with reference to mosquitos and diseases. The teachers were taught first, and then the children were roused to interest on life and nature. "An aquarium with mosquito eggs and larvæ was kept in every school-room, where pupils could watch them develop: large magnifying glasses were also given to study to better advantage. The children were encouraged to make drawings of the mosquitos in different stages of development. Groups of boys and girls were sent out with teachers to hunt after the breeding places. Rivalry sprang up among the ten thousand public school children of the city in the matter of finding and reporting to the Health Office the greatest number of breeding places found and destroyed. Record was kept on school blackboards as to the progress of the competition, and great enthusiasm was stirred up. Lectures illustrated by lantern etc. were given, and the children took very great interest in them. "One result of this work was that while previously there had been from 50 to 60 deaths a year from malaria, this mortality was reduced 75 per cent the first year after this work was begun; and in the second year it was entirely eliminated."

The simplicity with which the whole thing was done, and the efficiency of the method, ought to appeal to the schools and public of Indore. To schoolboys of the City High School two lectures were given by me on Insects, chiefly mosquitos; and they were shown leading species, and the way to find their breeding-places. They took great interest. Mr. Dobson, the Head Master, offered a prize for the best description and drawings made from direct observation. I am eagerly watching this development; and trust that Indore will follow the example of the Unistates.

Summary of Recommendations.

The Rivers.

A. Residency River.

Boundary Section:—Surface cleaning. Deepening river and widening Grasses to be cut, introduction of fishes.

Siaganj and Hatipala Section:—Making river narrower and deeper: Cutting of grasses. Flushing the present water out during flood season. Fishes to be introduced.

Juni Indore Section:—Should be made deeper in some places: pools on sides should be filled up. A uniform course of river necessary.

B. City River.

1. *Piplia Tank*:—Algal masses should be cleared. Grasses should be cut.
2. Seepage from Piplia and stream from Piplia to Martandpala.

The seepage water should be made to flow, instead of stagnating as it does at present. The stream should be cleared of weeds and grasses and kept free from algae.

3. *Martandpala Tank*:—Grasses on banks should be cut.

4. Seepage from Martandpala and lower Manikbagh Section. Seepage water should not stagnate. The stream should be kept free from grass, *Typha* &c. The bed of the stream should be excavated and limed in dry season. Being the beginning of the river, the process could be done without much difficulty.

5. *Lal Bagh Section*.—Fishes to be introduced. Surface cleaning and weed clearing in some places.

6. *Karbala Maidan Section*.—Some parts should be deepened and broadened. Weeds should be cleared. Liming of river bed is necessary. Reintroduction of fishes some time after liming.

7. *Chatribagh Section*.—Removing floating scums by surface cleaning. Pools at sides should be filled up; fishes should be introduced.

8. *Machhi Bazar Section*.—Cutting of grasses &c. Flushing of river in flood seasons to remove *Clathrocystis*. Cleaning bed of river; introduction of fishes.

9. *Nandlalpura Section*.—Flushing of river water in rainy season. Surface cleaning. Introduction of fishes.

(1) *Peninsula Section and Krishnapura Section*.—At least one boat should be kept in this big section. Surface cleaning. Flushing of present water. Flushing out big predatory fishes. Introduction of small larvicidal fishes.

(2) *Dewas Ghat Section*.—Heightening Dewas Ghat dam; bed should be excavated. Fishes should be introduced.

(3) *Burning Ghat Section*.—Lemna should be cleared, and fishes introduced when water is pure,

(4) *Karkadia Section*.—Lemna should be cleared.

Pools on edges to be filled up. Broadening and deepening river. Introduction of fishes.

Pelia Nulla:—Should be converted by building or adjustment of dams into another river like the Park river of the Residency.

Sec. I. Weeds to be cut. Bed to be made deeper. Algae to be cleared. Liming should be done to keep down vegetation.

Sec. II. Water should be made continuous by deepening etc, and should flow, and should not be allowed to stagnate into pools. Fishes should be

introduced, weeds cleared etc. Adjustment of dams in some places; see plans by Prof. Geddes.

Sec. III. Oiling every part of the nulla, once a week, at once, clearing of weeds, until Improvement Plan is carried out. The introduction of fishes, ducks etc. clearing etc.

Sec. IV. *Graveyard to City Boundary*.— do. as for No. 3.

Palasia Nulla.—1. South East of Dewas Road bridge the Nalla should be deepened, so as to hold water throughout year. The dam should be made much higher. Algæ should be cleared.

2. Dewas Bridge Road to small Temple.—Water should be continuous. Fishes should be introduced. Algæ should be cleared.

3. Temple to Malwa Mill Bridge.—should be deepened.

4. Below Malwa Mill.—Oiling for the present.

Some of the suggestions here are only temporary measures. It is expected that this Nalla would be made a beautiful river by proper care and good engineering. My idea is to make this Nulla as well as the Pelia into two beautiful rivers always full of water with trees on its banks; free from algae and debris; with no larvae; with fishes in the water and Swans on it; with people having pleasure trips in boats on the water. All these are quite possible; and could be done cheaply too, when we see how nicely and easily the Residency authorities are keeping the river so picturesque, so healthy and so clean.

Drains.—The principal drains should be provided with oil drips at different places. It is better to have V-shaped drains. The present drains should be cleaned of silt quite often.

Wells.—Should be cleaned and stocked with *Haplochilus* and *Rasbora*.

Fountains.—Should contain fishes. There should be no plants or debris in the water.

Water from stand-posts.—Should be made to flow and not allowed to stagnate. These accumulations should also be oiled.

M. O. T. Iyengar.

Acknowledgments.—I am much indebted to Prof. Geddes for his valuable guidance and help in my work. My thanks are due to Mr. S. B. Hudlikar for having kindly placed his microscope at my disposal.

Note on Sherpur Tank and Surroundings.

(21 April 1918.)

The main Tank, so far as time allowed for observation along part of the tank, is quite free from mosquitos. But the tank just below is overgrown with aquatic plants, and breeds mosquito larvae. The other pools and ponds (apparently more or less seepage) near by, also breed mosquitos. The anopheline larvae I collected in the places were bred out in the laboratory. They belong to the following species:—*Anopheles rossi*, *fuliginosus* and *culicifacies*. Mature *A. fuliginosus* were also caught in the village near by.

Of these species, *A. fuliginosus* and *A. culicifacies* are dangerous malaria carriers; and the villages can hardly but infect these mosquitos.

As at present the locality seems far from a non-malarious one. But if proper measures are taken and maintained it can be made non-malarious. The large tank, which is overgrown with weeds and grasses, should be cleared of its weeds, and the scum of the surface of the water removed, by men on a boat provided with suitable nets for catching the scum. Fish (*Haplochilus* or *Nuria*) should be introduced to eat up mosquito larvae. The grasses at the edges should be cut and the edges kept clean. A similar treatment should be accorded to ponds near by. Small pools and puddles should be filled up. The seepage from the tanks should be directed into proper channels, so as not to stagnate and thus produce small breeding places for the mosquitos.

If these steps are done the locality is certain to be free from malaria.

(Sd) M.O.T. Iyengar.

APPENDIX II.

Report to Home Minister, by B. Coventry Esqr., C. I. E., Agricultural Adviser for Central India.

On Proposed Drainage Gardens.

I think Professor Geddes has made out a very strong case in favour of the adoption of the policy of "All to the soil" in place of that of "All to the sewer", and I think the Darbar would be well advised to adopt his ideas for the Suburbs of Indore and the City. Their chief merit consists in my opinion in the fact that they are very economical, truly sanitary, very profitable, and have great value from the aesthetic point of view. You could not say any of these things in regard to a sewerage scheme. I don't think there ought to be two opinions as to which of the two is preferable. Where I think discussion might reasonably take place is in regard to (a) details concerning the methods used; and (b) the organisation required to make the scheme effective, and therefore efficient. When I was in Government service it devolved upon me to set up what I might call the little town of Pusa; which as you know is the head-quarters of the Agricultural Department of the Government of India. Every thing had to be built new, as there was nothing. I was at the outset confronted with the problem of sanitation and drainage, and had to decide between engineering propositions, septic tanks and "All to the soil" proposals. I adopted the last. From such experience as I had gained from many years residence in this country I determined not to have a drain in the place. I planned to catch as nearly as possible everything at its source, and to bury it in mother earth. I succeeded in doing so without any offensive appearances or bad odours. The trenching-ground, which of course was of suitable dimensions to allow of rotation, could not in any way be detected except by the fine appearance of the crops it grew. The result is that Pusa has probably the best health bill in India. I should however add that I also controlled the milk supply and the mosquitoes, and I think Professor Geddes would do well to include these two important items in any Indian scheme of sanitation. Everything of course was on a small scale which made it easy. Now Professor Geddes' scheme of sanitation differs very slightly from the one which I adopted. In some respects it is greatly superior, as in the introduction of the manured garden. The Garden scheme for Indore City is I think practically the same in its essentials,

viz. the materials are caught at source and buried in the City Gardens. In the Suburb scheme however a kind of semi-automatic latrine is introduced. Here I should like to express the opinion that over this the scheme may break down. I have not seen the latrine and should like to do so, and I may possibly change my mind on seeing it. But what influences me at the moment is the belief that it will be very difficult to ensure continuity of policy. The successful working of the scheme depends too much on the individual inhabitant. I fear he will prove a broken reed. I think therefore it would be better, and lead to less risks of failure, if the Suburb scheme were on exactly the same lines as the City scheme; and with the added advantage that it can be freshly planned.

2. The other point on which I might say a few words is that of organisation. It would be a very great advantage if Professor Geddes could include in his report the cadre of the general staff required to establish, develop and maintain the scheme. The whole scheme must of course be developed gradually; so that it is not so necessary to know what the ultimate staff would be (though the Darbar might like information on this also) but rather what is required now and during the next few years. My reasons for suggesting this are as follows. Firstly, Proper Organisation and Administration is essential to the success of the scheme. If this fails the whole thing fails. Secondly, this is not a matter which should be left to amateurs to devise. Though it is the work of the Darbar to appoint its officials, it requires some guidance as to their class, qualifications and pay. Though Professor Geddes could not be expected to settle all the points, his help and advice would be very advantageous; and the report would be more complete if it would include an estimate of the staff required. Thirdly, I have been mentioned as being willing to help in procuring men for garden work etc. This is correct; and I shall be glad to give all assistance in my power to aid the scheme. But my ability to do anything is limited to giving advice; and I can generally only indicate how and where suitable men could be procured. But in order for me or anybody else to do this to the best advantage to the Darbar, especially when Professor Geddes has left the place and is no longer here to give advice, it would be a great advantage to have particulars of the posts to be created, the nature of the work, and the pay which should be offered.

3. Before closing these remarks I should like to endorse Professor Geddes' reminder (I. p. 47 with reference to Water Supply in Chapter VII) that the great water reservoir "must always be Nature's Subterranean one," and his opinion as to the desirability of making bunds, not so much for the purpose of supplying water schemes, as to keep up the level of the water-plane. I believe that no more certain, more plentiful, purer and cheaper water supply can be obtained in the Malwa Plateau for town or country than subterranean water. During the last year 6 or 8 bores have been put down in the rock in the Ratlam Bazar, for drinking purposes, at a cost of about Rs. 250/- each, including cost of boring and the deep well pump. They are an entire success. These are small things. But this system, developed on a large scale like at Ujjain, I agree with Professor Geddes, would be infinitely preferable to the construction of large Reservoirs.

(Sd.) B. Coventry,
Agricultural Adviser.

APPENDIX III.

From Harold Mann, D. Sc.

Principal of the Poona Agricultural College.

DEAR MR. BAPNA,

Professor Geddes has asked me to write you a note with regard to his scheme of Drainage Gardens in connection with town planning at Indore, and I have great pleasure in doing so; because I feel that his scheme is a practical one, and that if carried out efficiently, it will solve in a much cheaper manner than is usually done the problem of the disposal of the sewage of an Indian city. It seems to me essential in India to deal with the sewage question on a cheaper basis than has been done in Europe if it is in any way possible; and Professor Geddes has shown a method which seems to me at any rate in Indore to be likely to be successful. Ofcourse I only speak on the agricultural side, but I am sure if the scheme in question is really efficiently done you will get a large amount of agricultural produce, and at the same time deal with the refuse in a sanitary manner.

The scheme, as I understand it, is to utilise a large number of open spaces in and round the city as places for the disposal of nightsoil and also of drainage water. Professor Geddes has, I believe, estimated that there are about 147 acres in and round the city which can be used for this purpose. There is, I understand, a population of about 74,000 in Indore, and ofcourse this number will have to be arranged for. If successful, any extension of the city would be provided for by separate drainage gardens in the locality of such extension. So that we are justified considering that we have to deal at present with a population of 74,000. Counting that the nightsoil produced per head of population is about $1\frac{1}{2}$ lbs. per day, and that the amount of liquid drainage will, apart from rain, come to a maximum of 2 gallons per head per day, we have to deal with about 111,000 lbs. of nightsoil and 148,000 gallons of drainage water per day.

Let us take the disposal of the nightsoil itself first. This amounts, as you will see, to nearly 18,000 tons a year, say 122 tons of fresh night soil per acre per annum. This ofcourse is a fairly large amount; but if it is trepched in the ground at from 8 to 12 inches deep, I think the soil is capable of taking this quantity, and still remaining sweet; provided that heavy crops of fodder and vegetables are raised on the land. I should have been better pleased if a little more land could have been provided within the possible limits, but if no more is available I think this quantity will do.

If these drainage crops are, however, to be a success, they will have to be watered with the drainage water and in addition with a considerable quantity of fresh water. The 148,000 gallons of drainage water per day would, I calculate, under intensive cultivation of vegetable and fodder, supply enough water for 55-5 acres, and hence it will be required to be supplemented by water pumped either from the river or from wells to the extent of at least an equal amount, even including the rain which will prevent the necessity of pumping during three or four months in the year.

But the method of manuring with nightsoil which I have described above is one of the most efficient methods known, and would enable you to raise enormous crops of fodder and vegetables on this land, provided the water was given. I antici-

pate that even with the necessity of pumping a considerable amount of water on to this land to supplement the drainage water, you will have a very considerable demand for it for market garden purposes. What is practically the method of manuring I have described has given astounding results in Northern India, and I believe would give similar results with you. It consists in opening a trench at least 12 inches deep along one side of a field, emptying one day's nightsoil into this trench, and then immediately filling it up with soil so as to form another similar trench for the second day's supply. You thus place the nightsoil at a depth of from 8 to 12 inches from the surface at once, where it cannot be any nuisance, and where it decays with great rapidity. It cannot also harbour flies. At the same time the soil which is stocked on manure such as I have described, 8 or 10 inches below the surface, is one which is exceedingly fertile, and on which fodder crops and vegetables will grow with great luxuriance.

This being the case, I believe that, provided suitable sites can be obtained, and provided the system is efficiently managed, this method of the disposal of the nightsoil of Indore will result in rapid and cheap disposal without nuisance, and at the same time give a very considerable return to the city from the rent of land thus treated. In expressing this opinion, however, there are two provisos which I must make. These are:—

(1) That the system is efficiently managed. This is absolutely essential, as the slightest slackness in running the system will lead to an abominable state of things which I do not think could be tolerated by any self-respecting city for a moment. I therefore say that absolutely efficient management *at any cost* is a *sine qua non* if you adopt the suggestion made by Professor Geddes.

(2) That the land in which the nightsoil is placed and on which the drainage water is run must be constantly under cultivation. I anticipate you will be able to let the land, and that it will be possible to do this on fairly high rates. But if you cannot, it is essential that the land should be cultivated by the Municipality itself. In any case I should like to see the Municipality keep a certain amount of land in its own hands, under an efficient manager, in order to show the people the best way of getting the biggest possible return from such land.

I recognise that the scheme suggested by Professor Geddes is a new idea. With efficient management, however, and suitable land I do not consider that it is by any means entirely an experiment. It should work, and should work without nuisance; and I hope that you will be able to carry it into practice.

With very kind regards and thanks for the welcome which you gave me at Indore.

(Sgd). Harold Mann.

APPENDIX IV.

Note by Prof. H. Stanley Jevons, M. A. Research Department of Indian Economics, University of Allahabad.

On the Plans of the Industrial Town of Indore.

(1) *General*.—Having been asked for a general opinion in regard to the plan of the Industrial City prepared by Professor Geddes, I have carefully examined the plan and have been all over the site lying on the east side of the river on three separate visits, the first being with Prof. Geddes. In its main outlines and general conceptions the plan seems to me excellent. The separation of distinct areas for the factory sites and for residential purposes, whether for the factory managers and subordinates or the work-people, should be an essential feature of every such scheme, and Prof. Geddes is perfectly right to adopt it.

As regards the area of the factory sites, I understand that the demand of the would-be factory and mill owners is here, as elsewhere, for very large sites; in fact for as much land as they can get. Up to a certain limit an increased area usually means increased efficiency of a factory, and the determining point will be the price which has to be paid for the land. The main object should be to get the smaller sites near to the existing city, and for the larger and larger sites to be allotted further and further out. This cannot be followed as an invariable rule, however. The proper method would be to graduate the rate of rent per acre, so that it is high for sites near, and low far away. I understand that the land is to be vested in the municipality, and would be leased out by them. I would suggest that the terms be leases for 99 years at a fixed rental, with the option of continuance for another period of 99 years at a rental to be arranged, but not exceeding three times the original rental.—For sites near the city I would suggest fixing the rental at from Rs. 70 to Rs. 80 per acre per annum. At a medium distance, *i. e.*, immediately beyond the Nala, the rates might be from Rs. 50 to Rs. 60 per acre per annum; whilst further out, *i. e.*, sites 19 to 24 and beyond, the rents might be fixed at rates varying from Rs. 30 to Rs. 50 per acre per annum. These rates are suggested on the assumption that the municipality will make at its own cost pucca roads with bridges, culverts and drains where shown on the plan, and that each factory owner will be charged with the proportion of cost of putting in the railway sidings. A still better plan would be for the municipality to put in railway sidings itself, and charge the rent for them at 7 per cent on the cost. I think the above-named rental rates are the lowest that could possibly yield a satisfactory return to the municipality, and they might need to be a little higher. In the case of comparatively small concerns, taking up small areas of less than five acres, it might be desirable to grant them rebate of rental for the first two or three years, say 50 per cent reduction for the first two years of the lease and 25 per cent reduction for the next two years—thereafter at the full rate.

(2) *Sidings*.—The general form of the sidings, namely, a circular arterial siding with main branches running between a north and north-east direction is satisfactory.

I have already suggested verbally that the sidings should all be planned with a minimum radius of curvature which is the standard for the broad guage. In this way the conversion to the broad guage, when once it is introduced to Indore, would be greatly facilitated. This change has already been accepted by Prof. Geddes.

The main branches running northwards would be best arranged so as to diverge from one another at a slight angle, say 6 or 8 degrees, and they should have a row of factory sites on each side of them, thus giving four rows of sites.

(3) *Power Station.*—For the success of the industries of Indore it is essential that there should be an abundant supply of power available at the lowest cost possible. Since in normal times the railway freight on coal is nearly double the cost at the pit, Indore must be reckoned amongst the places where the cost of generating power by steam is high. It appears that it would be difficult, if not impossible, however, to provide a supply of more than 4,000 horse-power by hydro-electric power available within a distance of 90 miles. Such hydro-electric power could not be sold in bulk at less than As. 1½ per unit. Very probably with the increased cost of machinery and of the transmission lines, due to war conditions which are likely to persist for some years, the current could not be sold at less than As. 2 per unit. The main point, however, is that the greatest conceivable supply, which must be obtained from at least three totally distinct generating stations, could not exceed 4,000 horse-power. This would hardly suffice for the existing demand for the mills in Indore, and there is a considerable further potential demand for miscellaneous industries, and for household and street lighting. Taking into account all the existing and potential demands, and assuming two new cotton mills, which are projected, to be built, and to require electric power, there is already in sight a demand for about 10,000 horse-power, provided the supply is cheap enough. There appears, therefore, to be an opening for the establishment of a large central electric generating station, driven by steam turbines, and with all the latest devices for fuel economy, and for efficiency in the generation and distribution of electricity. The buildings should be so constructed as to be capable of extension from time to time as the demand for power increases. The generating units might be of 5,000 horse-power each, Babcock-Wilcox watertube boilers being used. From time to time as the demand increased an additional unit of 5,000 horse-power would be added. It would be worth investigation whether a plant for coal distillation and recovery of bye-products might not be included, according to the scheme outlined by Colonel Godfrey in his third article in the London paper, "The Financier," (quoted in the "Times of India", Monday, April 29, 1918). By the establishment of such a central generating station located in the industrial city itself, it is probable that an unlimited amount of power could be supplied to cotton mills and factories at a rate somewhere between one anna and one and a half annas per unit. I would recommend that the State should offer a concession to be floated in Bombay or elsewhere for this purpose. The concession should consist of the monopoly of the supply of electric power for 60 years at an agreed schedule of rates, and containing a guarantee by the State to take current normally equivalent to 5,000 horse-power for the State mills, and for distribution through its contractor to the consumers, in the city and suburbs and the residency, including the small power consumers. The company would negotiate separately with the big mills, but with the assistance of the State.

(4) *Housing of Workers.*—It is impossible to over-emphasise the importance of attention being given by the State to the adequate provision of improved housing accommodation for the existing industrial population, and for the greatly increased number of mill-workers and factory operatives, which is expected to be required. It is most desirable to give the workers every inducement to become permanently settled in Indore. I think that the State (through the Home Department) and the Municipality, should each erect a number of cottages, say 20 or 30 each, of different sizes and designs, with a view to finding out what is the most satisfactory design, and what are the cheapest materials which are satisfactory, in view of all the

local conditions. Of course, these experimental houses should be built on a site carefully planned in accordance with Prof. Geddes's scheme.

When the results of the experiments are available, the building should be commenced upon a large scale. The questions which will then present themselves are:—(1) Who shall build and own the houses? (2) Who shall manage the property and collect the rents?

It may be taken as a universal experience that mill and factory owners are averse from troubling themselves and expending money upon housing their work-people; and will always prefer that somebody else shall build for them. If they are forced to undertake the building themselves, they are obliged to lock up capital at an unremunerative rate of interest, and they consequently build the minimum required for their own employees, and make a practice of ejecting from their houses persons who leave their employment. If there is a general shortage of good housing accommodation, this provides a very undesirable power of compulsion over employees. Moreover, if it were made a rule that employers must build houses up to a certain standard for their work-people, this would greatly discourage new industries from coming from outside to settle in Indore.

I am led, therefore, to the conclusion that the best plan from all points of view would be for the State to assume direct responsibility for the housing of the work people; and that it should establish for the purpose a Trust, to which the State would lend the necessary funds at a rate of interest not exceeding 5 per cent per annum. As the rents which could be realised by this Trust for its houses would, probably, not be sufficient to pay more than 4 per cent on the capital invested, it might prove to be necessary for the State to require from all employers of labor a contribution to the expenses of the Trust at the rate of eight or ten rupees per annum per person employed, calculated on the average number employed during the last two or three years. A better policy, however, would be to make residence in houses provided by the Trust, or in any other houses certified as fit, compulsory on all mill employees, so that the employers would thus be forced to pay the wages necessary to cover the economic rental of good houses. In this way the stimulus to private building would be maintained. If the Trust were to let houses at rents corresponding with less than the market rate of interest, there would be no inducement to private capitalists to build, and the whole burden would be thrown upon the Trust. The better plan is that the Trust should set a good example in building the types of houses required, and thereby also stimulate private enterprise to do the same. The Trust would of course, not be a profit-making body, but would regulate its rates of rental so as to yield a net 5 per cent interest, and reduce its rents if it found that it was making a profit.

(5) *Library and Information Bureau for Industrial Town.*:—It would be a distinct public service tending to promote the growth of modern ideas in the management of industrial concerns, if the State were to establish a technical library and bureau of information in a small building to be erected at a conveniently central point in the industrial town. It should not be overlooked that it is desirable to set aside a certain part of the industrial town in close proximity to the factory sites for a residential area for managers and assistant managers. This library and information bureau should be situated in the middle of, or close to, this residential area.

APPENDIX V.

Notes on Towns and Villages.

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Burwaha.

Old Ironworks and the Possible Future.

I regret that I have no sufficient experience in matters metallurgical to qualify me for offering any opinion of technical value either upon the old Iron Works, or upon the mine or ore, though I observed all with great interest upon our recent visit (5-6 May, 18).

Speaking however quite generally, I cannot think the present Iron-Works buildings &c. can have now any more than their break-up value for materials.

My impression of the mine and ore was naturally a very hopeful one; but it is obvious that full prospecting is now required, in order to determine whether the quantity be sufficient to justify enterprise, on the large scale which can alone survive in present times.

Assuming the results of this prospecting to be successful, the location of the necessary Iron-Works Village will next require careful determination; but this again involves a thorough study of the whole locality. This will lie with the responsible metallurgist, in conjunction with the geologist, the railway and road engineer, the water-engineer etc.

Only when this general location is fixed, and when the scheme and scale of working, with transports etc, have been broadly laid down, on grounds of technical economy and efficiency, can the Town-Planner come in; but from this stage he can be of service. Planning such as that advocated in Naya Indore, will here be adaptable, for what has been said of the evils and the possibilities of industrial conditions, applies to metallurgical villages no less than to textile towns.

Burwaha Town.

As regards Burwaha Town, I may submit a few remarks. Its Public Health obviously requires serious attention; for the present visitation of Plague is, as everywhere, but an indication, and nemesis, of the accumulated insanitation and overcrowding of the past.

The neighbourhood is pretty obviously malarious, owing to the neglected condition of both the Rivers. After bunding of these, with cleansing of their banks, the expense of maintaining their purity would be only moderate, and the whole outlays will be amply repaid in the increased vigour and productivity of the population.

The methods advocated in my Report for Indore are here readily applicable; and can be easily worked out with little time and expense; say in course of a visit by the Municipal Engineer. Here also Mr. Iyengar's Malaria Report on the Indore Rivers will be found suggestive.

The Distillery is a principal factor in River pollution; while its characteristic and powerful odour is surprisingly in evidence, even on the high ridge of the Palace.

This river pollution is easily dealt with, and the odour can also very largely be reduced. I was glad to hear, from Mr. Shambo Nath, hopes of recovering valuable residues from the present waste—but I must strongly urge that this recovery scheme be planned, from its outset, so as thoroughly to do away with all further pollution of the River, even by more or less purified residual waste. I am much mistaken if any element from the present processes, or of the proposed additional one, can be of injury to the soil; but on the contrary, I am convinced of the manurial value of all such waste. I therefore plead for the acquirement of sufficient ground, below the distillery, to admit of irrigating with the sullage water, as I may call it; and also for manuring, with the solid waste from the distillery. In this way a further economic return can be maintained, with diminished scarcity of vegetables and fruit for Burwaha town; as well as serious nuisances abated, which at present must depress the health as well as the pleasure of Palace and homes alike.

B. Maheshwar.

My visit to this fine old city was too brief to admit of preparing any notes and suggestions in detail; but of its noble situation, its monumental river-front, its historic atmosphere and indestructible appeal of idealism, no visitor but must carry away impressions enduring throughout life, and ranking high among his vividest memories of travel. For here are perspectives, and associations too, in their way comparable to those which are the glory of Muttra, and even of the great Benares itself. The worthy maintenance of these cannot but ensure their continued development; and the treatment of the deterioration which is only too manifest beyond this focal centre may fitly accompany this, with returning health and prosperity accordingly. The revival and adaptation of the old Silk industries are also here peculiarly worthy of consideration, as part of that current invigoration of economic policy throughout the State which is happily now in progress, in the competent hands of the Minister of Excise and Commerce and his advisers.

From Maheshwar I returned to Indore with two questions (1) why is this old Metropolis of the State architecturally so much nobler and more impressive than is the modern City of Indore?—and (2) what can be done towards giving Indore something of this dignity and beauty, if not even of deeper qualities still, although of course now in terms of our own day? Partial answers to these questions are anticipated in my Chapters on the Purification of the Indore Rivers (I.XXI) and on the Library, Museum and Theatre group on the Peninsula between them. But after this visit to Maheshwar I feel more hopeful and more ambitious for Indore, and this especially for the worthy utilisation of its peninsula, which alone gives something of that combination of lofty site and river situation which give their beauty to the old Capital. Here in Indore may not this situation be developed for and by the University, of which the initial group already planned may be but a beginning?

C. Chandrawat Ganj, near Fateh Bad.

In the course of our day's visit (17 Feb., 18), Dr. Deo and I were able to form tolerably definite ideas as to the material requirements of this active and growing commercial village, which only needs the supply of such a plan on larger scale (conveniently 82½' to 1") as may enable us to set them down upon it.

This plan can easily be prepared by a Public Works Surveyor in a day or two; since a full and accurately measured house by house survey is not required, but only a general outline of the streets and squares, with their main blocks and outlying compounds indicated.

The considerable growth of this Village, since its foundation only some ten years ago, and also the remarkable extent and attendance of its Sunday Market, are kindred evidence that this location has been well chosen, and that the prospect of developing this into a prosperous little Commercial Town, is a reasonable one, which at once justifies its promoters in applying for such assistance and encouragement as the State can give, and the State in granting these as far as may be consistent with its general responsibilities.

Since both sellers and buyers come largely from the surrounding territory of Gwalior, into which this village area is a salient projection, it would be desirable to ascertain, by actual counting, on average and exceptional market-days, at different periods of the year, how many of each class belong to each State. And while this situation has thus in it a certain element of instability, owing to the possible future development of some new and competitive trading centre in Gwalior itself, it is also a matter of observation in all countries that commerce tends to overflow political boundaries, to seek its own line, and to form its own convenient centres. Moreover when the working and the reputation of a market are once formed, they tend to persist, and are not easily interfered with. I understand that a small endeavour has already been made at a short distance within the Gwalior boundary, to set up a competing centre, but without success; so that the continued growth and prosperity of this village may reasonably be looked for. The competition of Gwalior may more likely take the form of developing the advantage of some similar projection of Gwalior into Indore, further up or down the railway line, than of further competition with this one.

What then are the material requirements for raising this growing Village into a prominent and prosperous Market Town ?

Needed, Roads.

First of all, ofcourse, the making of a good Road to and from the Station. Sellers and Buyers alike mostly come on foot, by the at present passable kacha foot-path through the fields; and this only needs to be widened and straightened to furnish the direct communication required, between Railway Platform and Market. In the second place the existing kacha road to the level Crossing, south of Station should be improved. In the earlier portion of its course from the Village, it should be kept more or less parallel to the road just mentioned for a couple of hundred yards or more, before turning south-west to the level crossing. Its length will not be seriously increased, while the line of a second street will have been thus provided for the future town. This can also be continued as required, towards the Railway, conveniently in the direction of the Railway Well.

Furthermore the present kacha road running north by west, from Gwalior territory to the east end of Chandrawat Ganj, and thence north-west into Gwalior again, should be improved throughout its whole moderate length of less than a mile through Indore State. For even these moderate road improvements would encourage visitors from Gwalior, and would also stimulate that active and progressive State to improve its own roads continuing these Indore ones, and all with advantage for the comings and goings of this market town.

Thirdly, the present very kacha road to the adjacent small agricultural Village, southward, and further eastward also, should be improved; since it is obviously of advantage to inland Indore villages to be brought into communication with Railway and Market, here together.

The older Agricultural Village.

A considerable proportion of the Sunday Market is occupied with vegetables. No doubt there are largely, though not entirely, produced by this old village, and by help of its small Irrigation Tank. Though this is not in positively bad order, it is long since it was cleaned. Hence, and in view of the growth of population and trade this Tank may now with advantage be enlarged as well as deepened; since obviously a greater quantity of water could be stored, and usefully employed.

The large, deep and winding Nalla will also reward bunding, and this Bund might be provided inexpensively in conjunction with the small Bridge, which is necessary for the improved road between the old village and the new. For this raising of the Nalla level, by the four or five feet which seem easily possible, would raise the water-level of the immediate agricultural district, and perhaps bring some of its waste land into cultivation also, as well as improving the wells which are increasingly needed for Chandrawat Ganj.

Needed Lay-out for Chandrawat Ganj.

Returning now to the new village, its material requirements may be briefly stated. First an extension of the present Lay-out, which is regular and tolerably good, both as regards the Main (east and west) Street and its crossing (north and south) main Thoroughfare, and minor streets for dwellings. These are to some extent happily begun in squares, which only need clearer definition on the Town-plan to protect them from the encroachments and deteriorations which are already beginning upon them, while trees should ofcourse be planted for their protection and further improvement.

I am informed that the Police force (of three constables and two chowkidars) is found insufficient; but instead of removing the Chowk, I would simply enlarge it upon its present position. For instead of prolonging the main street through this site, I should preserve and develop the present ordinary entrance of the town from the Station, past the two small country-houses, of leading Indore merchants. My reasons for this will be apparent when drawn out on the new Town-plan, which will easily be prepared whenever the Survey asked for at the outset is provided.

Two remaining public improvements already desired and obviously both of advantage—not only to the existing community but to its increase—are the provision of a *Hospital* and of a *School*. It is obvious that these are not wanted to occupy land between Chandrawat Ganj and the Station, which will obviously increase in value for the business purposes and the dwellings for which it is so well adapted. Both Hos-

pital and School should be located to the east of Chandrawat Ganj, and towards the edge of the adjacent waste land, which surrounds the cultivated fields immediately to the eastward of the Main Street.

The supply of a *Public Garden* has also been suggested. A Garden is already so far in evidence in association with the principal Temple, but a further open space, attractive for planting, will be indicated on Plan.

Fiscal Question.

Next arises a question beyond material Town-planning, yet important for future Town-development, that of the suggested removal of the present market taxation, and the recognition of a "Free Ganj." Alike on general grounds of economics and as regards the further town before us, it seems evident that this freeing of trade from impediment and restrictions would be of advantage here, as elsewhere so largely through the world, to all parties concerned, and in the long run not least to the State itself.

General Considerations.

So far this preliminary report, within the limits of its instructions. Yet a more general impression may be noted from this visit; and suggestions for consideration may be permitted accordingly.

For here is not only a local and special problem, but an illustration of a world-problem—that of the declining Agricultural Village on the one side, and the rising Commercial Town on the other. And while one appreciates the business ability and energy which have created this active Bazar and Market centre, one also feels and fears the growing ascendancy here, as well-nigh everywhere in the world at present, of the marketing and profit-making processes over the essential productive ones. For the Commercial Town itself we may therefore ask, is it not possible to introduce some active and productive Industry, appropriate to this particular location? Or at any rate, Industries connected with the advantages of Indore generally—such as Silk and Fruit-growing? Again the presence of a few country-houses of Indore merchants suggests that this neighbourhood may become increasingly attractive in this way.

Again, is there not also scope for activities directly helpful to the rural life of this district? Silk and Fruit, in addition to the present vegetables and crops, of course again suggest themselves. The situation is not one for any large development of agricultural co-operation, since most of the neighbouring villages belong to the Border State and not to Indore. Yet a good Co-operative Society here, with its conspicuous results upon local prosperity, might soon stimulate demand in neighbouring Gwalior villages for similar encouragement from their own authorities; and their consequent general rise in wealth would bring its contributions to the commerce of Chandrawat Ganj.

Final Considerations.

A further and still more general observation was at once conspicuous on our visit, and characteristic of India. Everywhere this little town, and its people and visitors show the abundant traces of an old and wealthy civilisation:—surviving in the draperies and colours of women's costumes, in the jewels worn by both sexes, in the spices and perfumes, the domestic as well as personal ornaments, and other

luxuries of the Bazar; while spacious rooms, wide verandas and vividly decorative painting of them, all bear evidence to an old way of life dignified and refined, even exuberant and joyous, beyond the ways of modern communities.

Yet along with all these survivals of wealth and high civilisation there are only too manifest here, as everywhere in India, the contrasted phenomena of neglect and untidiness, even dirt, dilapidation and squalor; which in too many places give this new and ambitious little town already the aspect of an old and depressed one. What is the explanation of this? Is it not that of general Indian history—of communities disheartened through past centuries of disasters and wars, which have thus left their scars, their weakenings and dispiriting, fixed in the habits of the people until this day? Despite generations of peace, and some returning opportunities of prosperity, great social, organic and mental maladies, of disheartenment and depression, even to neurasthenia—are still only too manifest, in new towns and old villages alike; as in this Capital and its State, as in India, indeed also in the Western world. For our commercial and mechanical phase of civilisation no longer satisfies us anywhere. What then is the needed step, even the needed cure? Not merely simple increase of trading, but much more. Nothing less than a freshened Village and Town-life, a larger conception and purpose accordingly, with renewed endeavour for State and Community, alike in country and town. Fundamentally then the problem here is not simply of trading, but is of rural development, with village and town development accordingly, and thus increase of trading itself. Thus, with "*better farming, better business, better living*" (to cite the watchword of Horace Plunkett as foremost in the renewal of Ireland from disheartenment), we should have re-heartenment; and the social and moral uplift, the mental and bodily vigour of populations no longer depressed, but inspirited, would soon be manifested in renewing prosperity, with its many growths and flowers.

If these views be justified, the improvement and development of the Indian Village is no less important and pressing than can be that of the towns. The policy of the future lies in co-adjusting these needed labours, more than Herculean though they be; and so to substitute for the old vicious circle, in which town and country have too much been interacting,—that of mutual impoverishment and worse—the opening spiral of Reconstruction, regional as well as civic, with all it leads to.

D. Bamnia: New Market Village.

Beside Bamnia Station, it has been decided to plant a New Village, with Sayar privileges for its Market, and with applications for holdings accordingly. For this business nucleus of what will soon be a village, and perhaps by and by a town, a plan has been drawn. This has been criticised on the spot by the Subha Sahib of Indore, and found satisfactory; so that his allocations of sites are now actively proceeding.

E. Villages around Indore.

1. *Rao*:—From repeated visits (though unfortunately without any adequate plan) my resulting impression, as so often, is depressing as regards the recent past and immediate present, but is more than usually hopeful as regards the opening future. For here in the old village are all the dirt and decay, dilapidation and disease so manifest throughout India, and standing out so sadly against the surviving evidence of better days gone by. Beside this too, in the modern suburban village, is the confusion of new buildings, too often ill-constructed, and unplanned throughout—

that is, as yet ill-planned, while the planning for the new industries is not yet adequate (Cf. p. 121 &c.).

Yet here on a smaller scale—and therefore proportionally more hopeful, more manageable, less costly—are the three problems of Indore City—the old Centre, the Suburbs, and the Industrial town. To town-plan for all these—given the needful outline survey, is thus no difficult matter: and I strongly plead for this, as worthy the attention of all the main interests concerned, the agricultural, the suburban, and the industrial alike. How readily these may be made to help each other, and to enhance their respective advantages, will become increasingly manifest, as soon as this purpose and endeavour towards their co-operation is set agoing.

2. *Piplia*.—The early removal of the village, so doubly desirable on account of its dangerous proximity to the city's main water-supply, and of the feverish conditions imposed by its seepage, has been already recommended, and a new site suggested accordingly (I. 44). It thus only remains to plead for the utilisation of this removal as an opportunity for improvement, and for producing, at small outlay and in short time, a small model village; which could not but yield experience and encouragement towards larger developments elsewhere.

3. *Chitawad*.—Here is an example of a village recently removed to its present site from its old one within the Residency. Its new plan, with the houses spaced apart around a village green, is much to be recommended for consideration and application elsewhere. Its advantages—hygienic, social and other—will readily appear with that reflective inspection which its proximity to the city invites.

4. *Gwaltoli, Khajrani, Banganga, Suklia and Sherpur*.—It is one of the deficiencies of this Report that although the proposed extension plans for Indore extend more or less to all these villages, their problems have not been studied, much less dealt with. Yet this coming extension of the town, in their direction, and upto their limits, or even more, is fraught with interaction for evil, unless this soon be considered, designed, and directed towards the better things which are locally possible for villages and town, in useful and many-sided co-operation.

N. B.—Towards the needed study of villages and their possibilities, agricultural, industrial etc. a growing literature is accessible. As an indication and introduction towards this, the recent excellent and well illustrated "Study of a Deccan Village", by Principal Mann and his pupils, may peculiarly be recommended (*Oxford Univ. Press, Bombay*).

APPENDIX VI.

(From Circular of) Diwali Procession 1917.

This Diwali Procession is authorised by His Highness the Maharaja and the Durbar in order to encourage the cleaning and brightening of the City which is appropriate to the season, and also to stimulate the public to hopeful and energetic action in dealing with the causes of plague, especially the rat pest, and the deterioration, overcrowding and neglect of homes. It will further help to make known the schemes which are in preparation for the general improvement and extension of the

City, and for the better housing of its inhabitants—whether these remain within the limits of the present City, or take up new homes in the Garden Suburbs and Villages, or the new Industrial Town, which are at present being planned and prepared.

The order of the Procession is as follows:—First, as in Dussera and Mohurram Processions, it opens with Military Music and Cavalry Escort, preceding the Representatives of the State on Elephants, and followed by Camel Drum and Camelry. But the route will not be any of the usual ones for processions: it will be determined on the plan of visiting and honouring the Streets and Mohallas which may best have cleaned and brightened their houses and their surroundings, and of awarding decorative lamps to the Mohallas and garlands to representative house-holders, who have taken the most active part, and set the best example. As far as possible, the route will be made known the day before the Procession, and its bugles, drums and bands will also call the attention of the public.

After this leading State Pageant, common to all Processions, will follow that appropriate to Diwali; and to begin with therefore, its rural origin, in the Harvest Festival. Hence the Car of the Sun; next that of Mother Earth, and that of Water, all appropriately adorned; and following these, as their natural outcome, the Harvest. This is represented by a car of grain, followed by the ancient and original presentment of Ganesha, as the Harvester.

Following on this expression of Corn as the most important of crops, the next place belongs to that on which the prosperity of Indore now increasingly depends, its Cotton. This is borne by an Elephant, with Banias in its howda, weighing and counting their rupees, and doing Puja to their account-books, according to custom. Then comes Lakshmi, Goddess of Prosperity, upon her white elephant with her lotus throne.

So far all is prosperity and cheerfulness; but now the scene changes, to that of presenting the worst evils from which the City at present suffers. Indian musicians follow, with mournful music. The Tigers of ill omen appear, and figures representing diseases and scattering germs. Then upon a dirty cart with buffalos uncleansed, a dirty house, with rats therein; then the gigantic Rat of Plague, with its fleas; and upon its back the huge and hideous Narakasur, the antagonist of Rama, and now Giant of Dirt, with his destructive distribution of germs. These are courageously attacked by the spirits of cleanliness and of health, though with incomplete success. For Dirt can never be destroyed, yet the warfare with it must never cease.

The City begins thus its hopeful and reconstructive presentment. This opens with a new Standard—that of the City's Plan, borne by the figure of the City as Mother. Then come Sweepers, with their carts and oxen at their brightest; and after these the Municipal Cleaning Squads of the Mohallas, with their tools adorned with garlands; and next representative Engineering Workers, here represented by a squad of Firemen with picks and spades. Now comes a car with another model of one of the ruinous, overcrowded and neglected houses of the City; but following this, come cars showing old houses being repaired, whitewashed, painted and adorned. Then come cars with craftsmen of the housing trades:—the Masons and Carvers, the Brickmakers and Potters, the Carpenters and Carvers, all vigorously at work; and after these, come joyous Musicians, followed by Models suggesting some of the New Buildings of the approaching future.

Cars of Gardening, bearing banana, orange, and papaya plants, and others laden with vegetables, fruits and flowers, symbolise the proposed large development

of gardening in and around Indore, with its improved and cheapened food, and increased health accordingly. A car follows with Tulsi plants, to be given away among housewives who have best cleaned their homes.

In the concluding car the "Judges of Diwali", who give to the representatives of the best cleaned Mohallas the lamps and garlands which express the City's appreciation of her most faithful sons and daughters.

When the Procession has completed its round of the best cleaned portions of the City, after sunset, the Plague-Rat and Dirt Giant will be taken outside the City, overthrown, destroyed and burnt; with a display of Fire-works to conclude the rejoicing.

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