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CREATIVE DEMOBILISATION

Vol. I:
PRINCIPLES OF NATIONAL PLANNING

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CREATIVE DEMOBILISATION

Volume I

Principles of National Planning

by

E. A. GUTKIND

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PREFACE

DEMOCRACY against totalitarianism; freedom from want against want of freedom; world-wide co-operation against domination by regimentation and suppression: such are the issues of the present struggle as they are generally defined. But beneath them there are forces at work which are common to *all* countries and which have thrown both opposing camps into the present turmoil. These forces arise out of a sense of values which differs from that of past generations. In this process of revaluation, the shrinking of the world is a factor of primary importance. Spiritual and material intercourse is increasing in time and space on an unprecedented scale. The outcome of this forces us to face the problem of a world administered as one coherent unit and to make the best use of the resources which Nature and Man have put at our disposal. We are witnessing to-day the birth-pangs of a new era. We must adapt ourselves to a new outlook and to a new mode of living which ask for the utmost courage, vision and rationality in our thoughts and actions. Our task is immense, not only in its vastness and complexity, but in its uniqueness. It is the first time in history that the social and economic fabric of the whole of mankind has been in a state of transformation at the *same* time and with the *same* goal. No country can live in isolation, and every change in the structure of one country has its inevitable reactions on the rest of the world. Every country has not only a duty towards itself but towards the world. Domestic reconstruction is the fundamental counterpart of international co-operation, and vice versa.

Planning on a national scale must be conceived, therefore, as an essential part of these wider issues. The post-war world which Great Britain wants to build up at home is but a fraction of the problem which confronts the post-war world. It would be presumptuous to claim that one person or even a group of selected persons could contribute towards the solution of these problems more than modest suggestions in one field or another. This book is certainly no exception; and I am sure of the support of the various authors who co-operated by writing the memoranda of the second part when I add that they realise the limitations of this study in view of the multitude of problems involved in National and World Planning. But the general tendency of the book is dictated by the recognition of the worldwide interdependence of social and economic forces. The problems which have been dealt with and the suggestions which have been worked out with special regard to Great Britain will have relevance for other countries.

To supply the starved countries of Europe and Asia with food and clothes and shelter after the armistice and to prepare a smooth-running organisation for this purpose now, during the war, is certainly essential. First things first. But this immediate necessity must not blind us to the imperative need of laying the foundations of a long-term policy now, during the war, and so lifting post-war reconstruction out of the sphere of generalities and trivialities. Thus, National Planning must steer clear of the Scylla of a too short-term approach and of the Charybdis of high-sounding but empty generalities behind which vested interests of all brands can conveniently hide, hoping to start again where we left off in 1939.

The book attempts to lay down *principles* of planning on a national scale. It is not concerned with the working out of details which belong rather to the sphere of regional and local planning. But these latter could not produce the desired results without the framework of a master plan. National planning is a new discipline, and has been practised hitherto only in Soviet Russia and to some degree in the U.S.A. The reports of the National Resources Committee are of outstanding value, and it is for this reason that ample use has been made of them in the form of quotations or by summarising such of their findings which have a special bearing on problems of national planning. It might also be appropriate to explain the relatively large number of quotations from other sources; the main reason is that the literature of national planning is very widely scattered and is not generally well known. I deemed it important, therefore, to supply the reader with as much first-hand knowledge of the views and experience of other countries as possible.

This work is the result of studies of many years in general and of the last two years in particular. It incorporates a Report on the work of the Demographic Survey and Plan which was called into being at the end of the year 1940 by the 1940 Council, a Council to promote the planning of social environment. Since then it worked for about one year under the auspices of the Council. The responsibility for the ideas expressed in this book rests entirely with myself. I desire to express my indebtedness to the Chairman of the Council, Lord Balfour of Burleigh, and to the Hon. Secretary, Miss J. G. Ledeboer, for the help given to our work and for their sympathetic understanding which led them to acknowledge the necessity for independence in this research work. Generous assistance was given to our work by Mr. G. A. Jellicoe.

My sincerest thanks go to Mr. G. L. Pepler, of the Ministry of Works and Planning. Without his help and without his consistently willing advice and support our work would have

been impossible. He established contact between the Demographic Survey and Plan and regional and local planning groups and Planning Officers all over the country. I wish to express my gratitude for the readiness with which they supplied us with valuable information.

I am greatly indebted to all those who contributed towards our work by preparing and writing the various memoranda published in the second part. In spite of their own pressing work they were kind enough to give useful advice and to devote valuable time to the formulation of their ideas in a form which, I have no doubt, will be appreciated by all those who are actively or passively interested in national planning.

To several friends I gratefully acknowledge the help which they gave me in the final preparation of the manuscript, and to Mr. W. Frankl the valuable assistance in the preparation of the illustrations. But for the devotion of my daughter the work of preparing and writing this book, especially under the difficult conditions of war, would never have been completed.

E. A. G.

LONDON,
July 1942.

FOREWORD

By HERBERT READ

THE two volumes of *Creative Demobilisation* for which Dr. Gutkind is responsible, as author of one and editor of the other, represent the most comprehensive attempt yet made to apply the notion of " planning " to the concrete problems of our national life. Planning has become the catchword of our age: not merely, one suspects, because it is a necessity inherent in our historical situation, but also because it offers for many people a welcome escape from the ambiguities of political action. It is the " scientific " attitude in social relations, and to be scientific in our days is as good as being moral. It happens that I personally belong to that minority which still believes that morality, and therefore science, is always subordinate to the idea of sublimity. I believe that nothing would ever have been achieved in the sphere of social reform without a fiery and irrational concept of revolution, a concept at the opposite pole to any notion of scientific planning. " It is the idea of revolution which has raised the proletariat from its degradation "—these words of Kautsky's seem to me to express the historical truth, and I cannot believe that the immense problems of the future are to be solved on altogether " reasonable " lines.

Dr. Gutkind was presumably aware of my attitude when he asked me to write a Foreword to his work: there are provisoes within his own plan which show that he, too, is aware that human beings cannot be handled like docile cattle. For example (page 32):

> The noblest aim of national planning is to shape the environment of man according to his social needs as an individual and as a social being. A social relationship cannot be set up at the command of some authority or other, however enthusiastic it might be. It must grow. The faint flame which might be kindled must be very carefully sheltered

—or possibly, I would like to add, fanned into a fiercer flame. Dr. Gutkind never, so far as I can see, surrenders this standard of individual human liberty. His planning is a contribution to that " planning for freedom " which the Editor of this International Library of Sociology and Social Reconstruction has shown to be, apart from totalitarian planning, the only exit from the inevitable and intolerable chaos of *laissez-faire*.

Laissez-faire is still, presumably, a possible attitude for those people who are so scientifically benighted that they continue to

think in terms of a universal " struggle for existence ", with the survival of the fittest as the moral justification for the ruthless elimination of the unfit. Such a distorted Darwinism is openly proclaimed in the doctrines of fascism, but it is not sufficiently realised to what an extent its unacknowledged acceptance accounts for the instability of our democratic institutions. The contrary conception, for which there is better scientific evidence, stresses the interdependence of social factors—and the irreducible social factor is the individual human being. A society progresses in security and well-being in so far as it perfects the mechanisms of mutual aid. That is the specific contribution which Kropotkin, who has been my mentor in these matters, made to the science of sociology. It should be perfectly evident, therefore, that we who stand at the libertarian extreme of political thought are not on that account in any sense opposed to the idea of planning. The only logical opposition to planning is a predatory and anti-social egotism.

At the same time, there is planning and planning. Even within the general concept of planning for freedom, there is the choice between direct and indirect methods of influencing human behaviour: there is an almost infinite choice of means and an overriding need to define the ends. Dr. Gutkind devotes a separate section to the discussion of these preliminary problems, the chapter on " Methods and Means ", and what he says there must be taken as axiomatic. It is a book of many " musts ", and the reader may at times begin to feel that such a spate of categorical imperatives is not compatible with freedom. But let the reader then remember a sentence which appears on page 63, and which I would like to have seen set in the fattest type in the compositor's machine: " Let us not forget that there are no absolute values in personal life and that everything is relative; and further that this relativity forms one of the most creative values of mankind, namely our gift of spontaneity." This surely implies that planning will only succeed in so far as it takes place through spontaneously evolved institutions and associations. But obviously we must define the nature of such institutions and associations, for otherwise we are in danger of merely reasserting, perhaps in a somewhat paradoxical form, the principles of conservatism.

Not that we should be afraid of finding ourselves in the company of Swift and Burke, who were a good deal more democratic than some of their latter-day disciples. I think the point I want to make might be expressed by saying that there is no spontaneity without tension, and no tension without growth. A society, which is a cellular organism, will always resist the conscriptive logic of an intelectual system—will resist it successfully or die.

One must beware of forcing analogies from natural philosophy. Man is not a bush to be pruned, nor is society a garden to be laid out in a pattern. The proper study " of mankind is man "—but we do not interpret Pope's adage literally enough. We should base our plans for society, not on the ant or the bee, the garden or even the stud-farm, but on man's own evolution—his social and individual development. The anthropologist and the psychologist should preside over our basic researches. The nursery is perhaps our best laboratory.

It is in the sphere of education that the distinction I am trying to make clear is most clearly illustrated. From every quarter of the political horizon we are now offered schemes which, however much they may differ in details, all agree in being " organisational ". The Conservative and Unionist Party at one extreme, the Fabian Society at the other extreme, and the Trade Union Congress somewhere in the middle, all, like the Abbé Sieyès, are constitution-mongers. Youth is so much plastic material to be moulded by " a system of education ". The infinite variety of temperament and disposition, of needs and capacities, is forgotten in the desire to make the *enfant terrible* a model citizen. The one place these committee-men overlook in their search for the truth is the mind or heart of the child itself, as expressed in its habits and spontaneous behaviour. But there the principles of organic order, of morale and social discipline, are openly revealed. This is not a baseless generalisation. The necessary research has already been carried out—by Jean Piaget and his colleagues of the Institute of Education at Lausanne (in my opinion the most fundamental piece of research accomplished in our time), and by Susan Isaacs and other educationists in this country—and it only remains to plan according to the natural laws inherent in human association. It has been proved beyond question that co-operation is the only " technique " of intellectual and moral progress, and it is a technique which implies collaboration and not direction, the freedom of initiative and not the impress of authority. The crisis in modern civilisation has many explanations, but it is possible that the most fundamental is this : that mankind has reached a stage in the development of individual self-consciousness at which an externally imposed system of law is no longer acceptable : the individual has outgrown the swaddling-clothes so thoughtfully provided for him by those institutions which for centuries have stood *in loco parentis*, and is now seeking more adult modes of support—modes which must be reciprocal because the individual is admittedly too weak to stand by himself. Planning therefore becomes, on this assumption, the establishing of what Piaget has called " relations of a new type between individuals who meet as equals, relations

founded on reciprocity, relations that will suppress egocentrism and suggest to the intellectual and moral consciousness norms capable of purifying the contents of the common laws themselves" [1]

It is on our capacity to form such " relations of a new type " that the future of our civilisation depends, and I think it is evident that since such formations are spontaneous, they must be largely fortuitous. Is such fortuity inconsistent with planning—with such planning as is envisaged by Dr. Gutkind and his collaborators ? That, I would say, depends not so much on the plan as on the planners. The initiation of free men into reciprocal relations is a process demanding infinite tact. A free man can accept obligations : for as he may learn from that most profound of modern philosophers, Martin Buber, the antithesis of constraint is not freedom, but unitedness (*Der Gegenpol von Zwang ist nicht Freiheit, sondern Verbundenheit*). Freedom is a clearing in the human jungle : but, that clearing made, we must build. Here is one ground-plan to consider : to consider in the spirit of free men who have voluntarily formed themselves into a building association.

[1] *The Moral Judgment of the Child* (London, 1932), p. 401.

INTRODUCTION

TO-DAY we are face to face with one alternative only. The post-war world must be systematically planned, now and on a large scale, or we shall be overwhelmed by the turmoil of events which will inevitably follow the cessation of hostilities. There is no other choice, and those who believe in the possibility of a muddling through would be dangerous counsellors if we listened to them. Planning demands systematic and conscious direction from the top in order to produce decentralised achievements through regional and local activities. And this means that a preconceived long-term policy must be kept in view at every stage of the National Plan of Great Britain which is the embodiment of the will to reshape our environment and to adjust it to the rapidly changing conditions of the future. What matters is that we master the situation and not that the situation masters us. Planning is a continuous process. It needs a continuous readjustment; and it needs a solid and integrated substructure upon which a new Britain can be built. The foundation stone of this work is a Creative Demobilisation. On this stone the words are engraved: To Generations To Come.

The Demobilisation must be the initial stage of the National Plan. It must not be conceived and carried through in the spirit of unemployment relief. All works undertaken at the time of the Demobilisation must be productive contributions towards the same end—the creation of environment which guarantees free self-expression and personal liberty, and which widens economic opportunities for all groups. They must be contributions towards a progressively improving standard of living, and they must lead to a deepened responsibility towards the community and to a social fabric in which human relationship can fully develop.

" Reconstruction " is not the right expression for this task, nor is " control " an adequate means of carrying the necessary measures through. Both terms are vague and may mean anything. And this is possibly the reason why they are so commonly used. " Reconstruction " does not suggest a new departure to a new terminus, so much as a kind of " reconditioning " or starting again where we left off in 1939. Nor does it even hint at the imperative necessity of a national plan and of planning as a principle. Unfortunately, the term " reconstruction " has become so established that the author himself has used it in the following chapters. He would have it understood that he implies a systematic and planned procedure when he alludes to " reconstruction " in his vocabulary of post-war planning. The word

" control " is similarly loosely used. Control may imply a series of partial and isolated piecemeal preventive measures, or it can imply a comprehensive and foresighted effort. Behind both words there might be good intentions, but even the best intentions are not enough if they are not guided by knowledge and understanding of the challenge in our situation.

What is the real nature of this challenge ?

The age of expansion has come to an end. Territorial expansion is impossible in a world where every part has already been allotted to one or another state. And spatial expansion of the big cities in this island is likewise an impossibility. In both cases such expansion would be an encroachment on the rights of other groups and a curtailment of their living space. Population expansion is coming to an end. Western Europe, and Great Britain as part of it, can no longer serve as the great reservoir supplying population to other countries ; nor will the rural population of Britain flock to the towns as it has done in the past century. Industrial expansion is coming to an end in all those countries which have been first in the field of industrialisation. Other parts of the world are being rapidly industrialised. Britain and her industrial districts will feel this turn of the tide after the war. There will be no need to increase the productive capacity of British industry and its technical equipment unless the machines are to stand idle. And finally, the expansion of imaginary values, money, prestige, parochial pride, adherence to the past, the " wonders of technique " and the notion of an almost automatic progress—all these idols are disintegrating. This adoration of quantity was the driving power behind the achievements of an age that began with the liberation of the individual from the fetters of mediæval orthodoxy, and now it is ending with the disintegration of man's personality, with the disruption of society and community feeling, and with the disorganisation of man's activities all over the world. No country can expect to be exempt from this process. But every country will have to make an effort to stop this disintegration and to create a pattern of life for its citizens that has been conceived in another spirit and that can inspire in them a new outlook.

If expansion and a " quantity " sense of values are coming to an end a fresh start and a readjustment to new ideas and new goals will be necessary. Already the way is becoming clear. It leads in the opposite direction, away from expansion and quantity towards integration and quality. Let us not deceive ourselves. The change will be enormous. It means the end of " economic man " and the emergence of " social man ". Integration and quality both demand that conception and execution must achieve their objectives through systematic co-operation and wise planning. There is no other possibility. If we do not want to turn

back and to perish we must advance in this direction. How can we expect that social problems can be solved satisfactorily by a *laisser-faire* economy or by a society in which vested interests of all brands are dominant? "Social man" will not be born until we have planned for him a favourable environment in which he will be free from economic insecurity but alive to social responsibility. We have reached a time when it is indispensable not only to take stock of our present knowledge and practical achievements but also to apply this knowledge systematically to the primary task of a just distribution of its implied benefits. How else can we strengthen the link between the activities of the individual and the community, between knowledge and its application, between an emerging new standard of values and the needs of the present situation; how else than by purposive and rational planning? We can call it anything we like, co-ordination, integration, inter-relationship, guidance, direction. Each of these words implies that only by a concerted effort can we make new opportunities and means so as to meet in a balanced way the challenge of our situation.

These objectives cannot be reached by methods which have failed already, methods which are still being considered in some quarters as valuable and workable, provided they are given just a little overhaul. Yet this is not the point. It would be a pity if these vital problems were dealt with in an atmosphere over-shadowed by indifference and a lack of understanding of the fact that we are passing through a crisis of singular dimensions and that only the boldest actions can avert a dangerous breakdown. The age that is now drawing to its close leaves an immense heritage of precious achievements at our disposal. If we recognise the uniqueness of this situation and our great chance and obligation we should rejoice that our generation has been called upon to lay the foundations for a new age. But there should be no wavering as to which way we have to go. We have to choose between a dynamic equilibrium and an unbalanced and alleged stability; between co-operation within a democratic community and domination by totalitarian methods; between a free and undivided personality and a regimented robot; between personal initiative plus systematic planning and the deadening hand of an over-centralised administration. And we must make up our minds whether the machines shall be our masters as in the past, or our servants, affording us more leisure for social intercourse, recreation and self-education; in brief, for a life worthy of human beings. Can there be any doubt what our choice must be? Britain's society was the first which had to feel the disintegrating impact of the Industrial Revolution. Britain's community, united in social partnership, can also be the first to inaugurate an era of social

evolution, if a national plan provides the framework within which collective and individual activities are soundly balanced and directed towards the same goal—towards a social fabric with a diversified environment that gives scope for every human gift.

These are our objectives. And what are the objections we are most commonly met with?

The first objection. The means by which national planning can become a reality are not free from political controversies. It is, therefore, unavoidable that the opposing camps label each other as " politically biased ". I suppose they are biased, for nobody can claim to be without prejudices. One of the greatest Europeans said : " I can promise to be sincere but I cannot promise to be unbiased." He had the courage to admit this very human quality. Should we not bring something of this spirit into our approach to national planning? And should we not try to simplify the issues involved by getting down to the roots of the problem? Then, we could find a common platform and spread the view that the issues are, in fact, purely human and not political. As long as we are sincere there should be no objection to national planning as " just another of these trouble-making political 'isms ".

The second objection. It is raised by people who call themselves " scientists " and wish to be considered in this capacity as " objective ". Everything that runs counter to their own " scientific " vested interests is condemned by them as " politically biased ". But they confuse the issues. Fortunately, their number is not great, but they are sometimes in rather influential positions. Behind a " scientific " smoke-screen they might become a stumbling-block to a progressive evolution. These experts insist that certain things should not be done because they conflict with certain principles laid down by themselves. They think that they are refuting their adversaries if they repeat their own arguments without listening to those put forward by the other side, but, in the long run, they only multiply the problems. They believe in " fact-finding " but they are living in a world of unreality. They are incapable of understanding that " fact-facing " might smash their laboriously erected structure and that they are the last persons who could put their " fact-findings " together into a systematic whole. Their mental efforts are confined to watertight compartments in which they pile up heaps of details. They are a special breed of tyrants, for the less they are qualified for serious scientific work the more ambitious they are. They are helpless as soon as the human factor enters their sphere of work. It is at this very point where they will tell you : we are not writing or working for a political platform. And then they retreat like snails into their " compartments ". Yet, they are the foremost propagandists of the objection that planning is bound to be a failure if

their special kind of " fact-finding " is not used as the sole method. Our answer is that collecting facts is not enough, and never is a substitute for facing facts. In other words imagination is just as important as the intelligent use of the facts at our disposal, and synthesis is the indispensable complement of analytical spade-work. I hope not to shock these all-too-timid " fact-finders " by quoting Thoreau : " If you have built castles in the air, your work need not to be lost ; that is where they should be. Now put the foundations under them." Or Emerson : " No facts to me are sacred. Why should we import rags and relics into the new hour ? Nothing is secure but life, transition, the energising spirit." We may be sure that the true scientist will not identify himself with these over-timid colleagues, who are a stumbling-block to the readjustment of our ways of living. As the British Association state in their Declaration of Scientific Principles : " Only by the fullest and freest adaptation of ideas to new conditions can this readjustment be achieved. Intense mental effort and clear vision are now needed." Facts should be an inspiring challenge to conquer difficulties. They should be recognised as what they are in reality : expressions of man's will, of man's power and of man's work.

The third objection. What is the use of planning : you cannot build a bridge before you get to the river. With the same justification one could say : do not learn anything before you really need it. It is doubtful whom to pity more, the poor man who has to build the bridge or the people who believe in this amazing insight. If one wants to build a bridge one must prepare the plans and assemble the material beforehand, or one must be prepared to stop at the bank of the river. The same holds true of national planning. There should be no need to explain that planning must precede execution and that execution according to a preconceived and well-prepared plan is the only means of carrying us over the stream of difficulties which we have to expect after the armistice. Must we really repeat again and again the warning that unless we make systematic preparations we shall be carried off our feet and drowned in the whirlpool that will follow the armistice ? Planning is the very opposite of a strait-jacket. What remains of this objection to national planning ? Obviously nothing else than a rather inefficient attempt to obstruct planning on principle. It is difficult to decide whether this attitude is dictated by fear or by escapism. Whatever the reason may be, people who spread such ideas are Quislings betraying constructive preparation for a peaceful development.

The fourth objection. Life is a compromise, and plans must be, therefore, compromises in themselves. It is somewhat irritating that the same people who are convinced that their " facts "

represent absolute values and are, as such, free from any compromise, are especially predisposed to suffer from this "compromise complex". Is life really a compromise? The answer will vary, of course, in accordance with different attitudes towards life. The notion that compromise is a good thing has still a strong hold over many minds. No wonder. All of us have a certain liking for the golden mean. It is not too disturbing and it gives us a comfortable feeling of moving among equals. But planning as such cannot know any compromise. Moreover, compromise leads, in the long run, only to delays, to additional expenditure and to wasteful operations, and it is said to result sometimes in the unpleasant situation of falling between two stools. The very idea of national planning would be undermined if it were not based on objective findings and if it did not aim at ideal solutions. The National Plan is an *ideal plan* which represents the final goal in an uncompromising and incontestable form. This does not mean that it is a rigid pattern. On the contrary, one of its main characteristics is its flexibility. It provides the framework within which there is ample room for the dynamic manifoldness of contrasting values. And this is just the opposite of levelling and watering down everything for the sake of compromising. As long as we believed in absolute values and did not sufficiently understand the subtle interweaving of the numerous individual threads which compose the social fabric, it was only natural to consider a compromise as the best solution. But to-day we are entering the field of sociology and psycho-analysis and are gaining a deeper insight in human values and human needs. We have come to realise the productive force of contrasting values and the destructive results of an alleged uniformity. We may safely leave the belief in absolute values—good *or* bad, we *or* thou—to a lop-sided totalitarianism. We are advancing towards a richer civilisation where relative values and the whole scale of human potentialities will find their rightful place. Under these circumstances it is almost a crime to think of national planning in terms of compromise. As far as national planning is concerned it is the gospel of the weak and has become obsolete. The organisation of a far-sighted society and the organism of a diversified community will create a firm but plastic framework that is more promising than a compromise-ridden "balance" which is really non-existent.

And the fifth objection which is also rather usual. Planning cannot be based on assumptions. Of course not; but certain assumptions have to be made. It is never possible to prepare for every possibility or even to foresee all facts relevant to just one single problem. We must be aware that mistakes and experiments are unavoidable. Every progress in human history had to be paid for with sacrifices. But these sacrifices are nothing compared

with the far greater costs and displacements which a war—after all the consequence of our failure to prepare in time the right things—inflicts on mankind. It is not enough to know, to do is imperative. And it is not sufficient to will, to act is essential. And we have got to act. We cannot wait till research has investigated all relevant problems. As a matter of fact research work can never be completed. It is a continuous process—like national planning. And this is an experimental adventure that should arouse enthusiastic consent. Why should we be afraid of such an inspiring prospect? Only the coward wants to know his way, said Socrates. But it is not even a travelling into the unknown. It is rather a moving forward along a path we are building ourselves. And in so far it is not even wholly experimental. Lord Hailey remarked at the meeting of the British Association in London: "It is sometimes said that if we have failed to be more systematic in our policy of development, it is because we are not ourselves either a very logical or a scientifically minded people. In our own national life we prefer to act on a sense of expediency rather than on principle; we trust to improvisation rather than to logical scheming, holding that this is more flexible and more readily adjustable to the complexities of actual situations than are the results of more abstract thinking." Does all this not tacitly point to this sense of adventure and experiment which is so essential to national planning? It is almost like a predisposition towards this "not knowing the way" beforehand. Many people call this attitude "muddling through". But why not a muddling through—according to plan and to scientific principles? If this quality can be turned into the channels of national planning it might achieve surprising results.

An introduction is not the appropriate place to enumerate the assumptions which we have to make. They are being dealt with in detail in the book itself. Only this: labour, material and brains are available to build a new Britain. Thus, the main assumption we should safely make is that "the humbug of finance" does not, in fact, exist and will not be allowed to check the effectuation of the National Plan.

Planning on a national scale asks for a new line of approach quite different from what "planning" pretended to be in the past. National planning means that we have to plan from the top without neglecting, of course, the other end of the problem, local and regional planning. Consequently, we have to tackle both ends at the same time. We must not deal with the problems involved in these different schemes one by one, but we must look at them and tackle them as one coherent whole. And we must do it boldly and systematically, not timidly and haphazardly. National planning is, therefore, concerned with the working out

and laying down of *principles*; its task is not to make detailed investigations or to carry out plans in detail. *This conception is the guiding principle of this book.*

The deeper reason for the still rather widespread misconceptions about national planning is not only *lack* of imagination but *distrust* of imagination as something " vague ", " not academic " and even " unpleasantly ambitious ". It is, therefore, only too natural that the work of those who have to do the pioneering and to erect the scaffolding is unfavourably regarded and haughtily dismissed as " nebulous ". But it is precisely imagination and a clear vision which are needed. Yet this is another kind of imagination than the anæmic wishdreams of the " fact-finders ". It is a disciplined imagination, just as systematic as a scientific experiment and not deviating from the ultimate goal of the ideal National Plan. No doubts should exist that national planning is bound to be a failure without a disciplined imagination and without creating *new* facts. It is unavoidable that many time-honoured habits and valuations must be thrown overboard if we do not want to sacrifice our determination to build a better post-war world through complacent slothfulness.

Everything is more or less debatable, and it is not possible to protect ourselves from criticism. If we are sincerely convinced that ours is the right course we must steadily follow our way, defying all critics. And if we are persistent enough criticism will gradually die down. We cannot expect that so great a task as the replanning of Britain can be carried out without opposition, especially from all those who are clinging to the past. But non-committal generalities are no constructive means for dealing efficiently with the great changes which are awaiting us after the war. Systematic planning on a large scale demands determination, courage and initiative, especially in face of obstruction. But tensions and complications, if they are not ill-intentioned, are stimulating forces and indispensable elements of social progress. We cannot wish to escape them if we want to create a diversified pattern of life, work and settlement.

It is obvious that such comprehensive work as national planning needs collaboration and efficient dovetailing of work between the various groups which are engaged on its various aspects. Moreover, much valuable research work will be in vain if the existing lack of co-operation is allowed to persist. The production of surveys by local, regional and central bodies, compiling in many cases already well-known facts, is useless if it is not accompanied by investigations into future possibilities and by concrete proposals for their realisation. The output of surveys, reports and pamphlets on the conveyor belt will lead to nothing without a thorough integration of these numerous activities. Each group

should work on an assigned problem of national planning so that the sum total of their investigations provides at least some parts of the foundation of the National Plan. Without such a co-ordination we will be faced merely with a mass of isolated and partially unsuitable research works.

If we want to stem the tide of the events which will threaten us in the post-war world, we must act energetically, systematically and with foresight. We must develop this spirit of collectivity in which alone national planning can fulfil its great task. We must be determined to lay the foundations now, during the war, and to inaugurate the rebuilding of Great Britain with a Creative Demobilisation.

THE MEANING OF NATIONAL PLANNING

THE word " planning " is a bugbear to many people, but like all phantoms it loses its terrifying power if one fathoms the " secret " behind it. We must, therefore, understand the true meaning of planning on a national scale before we embark on a discussion of its implications in general and in detail.

There is no need to reopen the controversy that has been going on for years between the advocates of a *laisser-faire* economy and those of a planned one. Several characteristic problems, however, have emerged from these arguments. On the one hand, stress has been laid almost exclusively on economic planning, leaving aside planning in the social field. That this is so is not at all astonishing, for we are still living in an age when economic man has arrived but social man has yet to emerge. It is, therefore, fortunate that planning has actually not yet taken shape in this country—as it has with few exceptions in most other countries of the world—for it is much easier to imbue a new movement with a fresh and a more mature spirit than to alter the spirit of an established movement. On the other hand, up to the present the issue of *laisser-faire* versus planning has been more or less purely political. Unbiased objectivity and common sense have hardly played their part in this struggle. Only now a more objective attitude towards this problem seems to be developing, fostered not so much by the actual experiences of war economy as by the growing understanding of the deeper causes of this war. Maladjustment of international production and distribution and the incapability of balancing demand and supply at home have opened the eyes of an ever-increasing number of people to the imperative fact that the way out of this situation must lead inevitably to a more systematic and rational organisation. Thus, in this respect too, the prospects are not unfavourable. There is a fair chance that planning can be kept out of the party machinery, although the danger is not yet over. The heat of political emotions and slogans might well debase " planning " and deprive it of its outspoken character. Yet another problem is : a common platform seems to be developing, where both principles, i.e. *laisser-faire* and planning, can meet. This would be a most hopeful sign, for on such a platform a new and special kind of planning could be built up, namely *democratic* planning.

Yet the paramount problem, that which integrates all others, is how we can combine the good elements of *laisser-faire* with the good elements of planning ; or, in other words, what can the old and new principles offer as their individual contribution towards

freeing human values from the burdens which indifference and neglect have imposed upon them. The task is colossal, and resistance will be very strong—in spite of the good omens. This country will experience the same setbacks as the U.S.A. under Roosevelt's administration. The Special Housing Commission of New York reports: "Practically every step in social progress in the U.S. goes through the same three stages. First, it is said to be contrary to the laws of God and man. Then, it is unconstitutional; and finally it is accepted as natural, proper and the only reasonable state of affairs." Roosevelt himself remarks on the occasion of the acceptance of his re-election to a second term: "The age of machinery, railroads, steam, electricity—all those combined to bring forward a new civilisation, and with them a new problem for those who want to remain free. From out of this modern civilisation economic royalists have carved new dynasties, new kingdoms built upon the concentration of control over material things. They created a new despotism and wrapped it in robes of legal sanctions. Individual initiative was crushed in the cogs of a great machine. An old English judge once said: necessitous men are not free men. Liberty requires the opportunity to make a living—a living decent according to the standard of the time, a living which gives a man not only enough to live by, but enough to live for. To-day we stand committed to the proposition of freedom—no half-and-half affair. If the average citizen is guaranteed equal opportunity in the polling place then he must have equal opportunity in the market place."

How can we prevent such unfortunate influences gaining the upper hand after the war? The best we can do—for the time being—is to get a clear understanding of what planning on a national scale should mean; and furthermore we should spread our knowledge of planning and make people "planning conscious". To do this we need a clear definition of ends and means of national planning.

It should be obvious that even a *laisser-faire* economy cannot and does not work without state assistance, especially when it is in difficulties. This assistance has been freely given in the form of financial subsidies accompanied by a more or less enforced centralisation of the industrial organisations. This controlling assistance of the State extends to railways, power supply, shipping, the labour market, the capital market, educational systems and to many other branches of our life. Yet a great many of these measures lead to friction because they are of a preventive character and do not form an organic whole. The mechanism of *laisser-faire*, as such, is based on private initiative and competition, and thousands of individual decisions are expected to produce social decisions in the interest of the community. "Planning",

on the other hand, has usually been undertaken through fear of wars or in the wake of depressions. Planning must outgrow this restrictive and negative character, and must be freed from the influence of interested groups. It must be made a positive and conscious control of human activities in the social and economic field. Planning must not merely be concerned with the problems of quantity and distribution; it must aim at creating opportunities for all. Indeed this very lack of opportunity is the result of restrictive "planning".

Planning has been discredited because it was undertaken timidly and was based only on economic considerations—as far as it went. Yet economic planning without an international economic order is an impossibility. However, it is quite a different affair to put social problems first. This is something that can be done by every country individually. One's own house must be put in order before one can embark on an efficient international relationship. This is a further reason why, this time, planning must be social planning, and why the misunderstood primacy of industry must be dethroned. "In international as in national affairs, economic policy can no longer be an end in itself; it is merely a means for achieving social objectives", as President Roosevelt said before the International Labour Office Conference in Washington.

It is beyond the scope of this book to investigate the possibilities and trends of world planning. However, social planning in one individual country inevitably produces certain reactions in the international economic field. These reactions must be taken into account; they call for very thorough and far-sighted research work, especially in a country like Great Britain, the heart of a Commonwealth which spreads over the world unlike any other political body. The fact that some parts of the Empire—Canada, Australia, India for example—are increasing their industrialisation must have its reactions on the mother country. Quite apart from the pressure of war economy this trend is natural because agricultural countries always tend to reduce their agricultural pursuits in order to turn more to industry. Yet, whatever happens, great doubts will persist whether a too one-sided structure—in the case of Great Britain a too industrialised one—is desirable. Even if the industrial capacity of Great Britain remains the same the danger of economic crises cannot be eliminated. The obvious safeguard against such crises is to make the socio-economic structure more elastic. If this can be done flexibility will render it easier to withstand the impact of industrial or agricultural exports from other countries. If one intends to bring about a better balance between the agrarian and industrial structure, between town and country, in order to give the population more security against

economic crises, the following question will arise. Is such a balance between agriculture and industry desirable in a country like Great Britain? Shall one-sided industrialisation and urbanisation be reduced in favour of increased agriculture? Is it not unnecessary to proceed in this direction if the whole world is open for supply of agricultural products? Why should Great Britain not remain the workshop at least of her own Empire and of a certain number of other countries? To put the problem in this way would be wrong. The fact of an even, well-balanced world market must never be an excuse for not protecting the population as far as possible against economic fluctuations. Such fluctuations are unavoidable even under far-reaching international agreements. The Royal Institute of International Affairs stated quite rightly in the *Problem of International Investment*, 1937:

> The benefits of international specialisation are often very unequally distributed between countries in a period of rapid change. A country cannot commit itself without misgiving to one or two lines of production on which it is almost entirely dependent for its ability to purchase from abroad its necessities and everyday luxuries. The desire for a diversified economic structure is part of the attempt to spread risks. A country dependent on one or two commodities may consider it worth while to pay a high price for economic security, and to develop alternative lines of production as an insurance against uncertainties of economic change.

This also holds for Great Britain, for the world is not static.

The factual expression of the functions which make up the life of people is the structure of their settlement. Consequently, without changing the fundamental prerequisites, i.e. the conditions of the environment within which people can live and work, it is useless to try to change the social and economic conditions. In other words: the structure of settlement has to be tackled first. Even if it is not necessary to reduce industrialisation, a more balanced structure must be developed, and at least part of the population must be made part-time workers in agriculture and industry—thus giving them more security against crises.

This is an additional reason for the systematic redistribution of industry and for the reorganisation of agriculture on a national scale in the light of international relations quite apart from the industrial and agricultural policy in general. Moreover, what holds good for the country as a whole holds true also for regions which have been over-specialised, e.g. in woollen or cotton manufacture. If people can earn their living in industry and in agriculture at the same time, as far as this is possible, they will be capable of filling their place in the community much more satisfactorily than if they are faced with the insecurity of unemployment. A balanced diversification of industry for the country

as a whole, therefore, will greatly contribute towards a more productive structure of society. Furthermore, industry and agriculture can hope to find good markets—at home and abroad—only if their products can be paid for; and this can only be achieved if people can earn their living under better circumstances, i.e. under more balanced conditions.

National planning is, therefore, an integral part of world planning; at least the international relationships of the world have to be taken into account with regard to their *general* reactions. We have to face the fact that the world is a factual unit, and that no country can live in isolation. We must find a solution for the administration and organisation of the world as a whole. The arguments put forward by Lewis L. Lorwin of the Institute of Economics of the Brookings Institution, Washington, on the World Social-Economic Congress, 1931, are significant:

> The principle of planning seems to call for a world economic policy which strikes out along new lines. So far two lines of development have been suggested more or less clearly. One is the idea of regional economic systems more or less self-sustaining, within which a number of industrial and agricultural countries in different stages of growth could maintain a balance. . . . But there is another alternative. It lies along the path of regarding the world market as a unit and of effecting international economic agreements between the different producing countries for rational co-operation in supplying the demand of that world market. The international cartels of to-day are merely a first step in that direction, . . . a step which is far from being in harmony with the principle of economic planning. For international cartels, like their national prototypes, proceed on the basis of limiting output in order to meet existing effective demand at a profitable price level. . . . What is wanted, from the point of view of planning, is the development of real world needs, raising of living standards everywhere so as to utilise fully existing productive capacity and to expand it further. The opportunities in this direction are certainly large. An examination of the map of the world shows wide stretches of territory and tens of millions of people who are still far below the level of even the most elementary decency in their standard of living. For a long time to come China, India, the Near East, South America, etc., will call for manufactured goods, for capital to build factories within their own borders, for technical aid, and for credit to develop their natural and human resources. What the world may look like when material conditions in all countries are raised to the level of the advanced countries, no one can foresee. It is a picture to stir the imagination and to rouse the productive energies of all countries and to hold out the promise of indefinite growth and expansion. It is on this basis that one might visualise an attempt to co-ordinate the efforts of all countries in a common world purpose through a World Economic Planning Board which would undertake the task of trying to map a course of world develop-

ment. . . . It is because of the inevitable trend towards world unity and co-operation that a beginning must be made by those who can rise to a world point of view now.

What can the *laisser-faire* and planning principle offer? *Laisser-faire*, rightly understood, can offer individual responsibility, individual initiative, flexibility and quickness of decision. Planning can offer systematic co-ordination, rational application of scientific and technical achievements, a balance between supply and demand guaranteeing a decent standard of living.

Thus, *laisser-faire* stands for individuality; planning stands for community. Planning will and can create the framework within which each person can live a free and full life which would be impossible—as it has been impossible for millions all over the world—if the encroachments of individual selfishness are not curbed in the interest of the community. Yet, this balance between *laisser-faire* and planning must not land us in a woolly synthesis which will satisfy no one. On the contrary, the distinct difference between a framework and its content must be preserved. Here again there must be no compromise but clear distinction, for this alone will guarantee high standards of achievements.

> If there is planning for over-all stability to prevent extremes of inflation and deflation, if planning measures are positive rather than restrictive, if public intercurrence takes forms that mesh with the market system, if competition prevails in the market sector, and if monopolistic elements are met either by methods that bestow effective competition or by public control, then the principle of *laisser-faire* and the principle of planning may work harmoniously in the economic world of to-day. . . . Conscious attempts to foster social adjustments are the best economic defence of democracy. Democratic societies must lay particular stress on social devices by which conscious fostering of social adjustment may take place otherwise than through authoritarian decisions at the centre executed by administration from the top down. Co-operative undertakings illustrate one such device, regional planning conferences another. As the best defence against the political necessity of yielding to anti-social pressures from interested groups it must set up a broad, forward-looking programme. Instead of controls that defend the interest of special groups by maintaining the scarcity-value of their products, positive planning must seek to substitute higher levels of consumption and greater leisure.[1]

Planning is never an end in itself but a means to an end. It is, therefore, only secondarily a matter of organisation. Primarily it is a moral problem. The ethics behind planning should not be like "police regulations", but should be the highest human principles and values. The attainment and realisation of them

[1] E. Staley, *World Economy in Transition*.

must be made the true standard of life, and this is, of course, quite different from an ethic which prostitutes itself to the practical needs of life. One of these principles is that personal freedom, in its highest sense, can only be attained through the highest responsibility towards the community. Thus, a plan can never attempt to prescribe what the life of the community ought to be according to some imposed standard. It can, however—and this is the only reasonable notion of planning—create an environment within which the individual can live his free life as a member of the community. Life is a dynamic force, and so planning must not be rigid, or else the framework of planning would break. In reality this means that planning is a continuous process; it does not come to an end when the first master plan comes into operation. It needs adapting and overhauling, always taking into account the changing needs of the people and the newly offered technological means. It needs exercise and practice just as we ourselves do if we are not to deteriorate through intellectual and physical sterility.

We read in the Report on Regional Planning in the St. Louis Region, published by the National Resources Committee of the U.S.A.:

> Man ever seeks to improve his environment. In a primitive state the control of environment is a matter of individual action. In a collective society this necessitates planning. The factors which affect environment—physical, social, economic—are a matter of common concern. Planning becomes, therefore, a universal function of government, for the areas of administrative control of environment are national, regional and local. Thus we have national planning, regional, State, or interstate, and local (city or county) planning. In this and other countries individuals first attempted to plan their own environment more or less independently. As population increased and the demands on natural resources multiplied, freedom of individual action diminished and social and economic necessity demanded certain planning measures, which measures have steadily increased in number and complexity. Through lack of adequate judgment, ingenuity, foresight, and clearly defined objectives—in short, because of inadequate planning—environment becomes from time to time more or less unsatisfactory in all areas of control.

Have we not already experienced "planning" from time immemorial, without being really aware of it? Does this hitherto imperfect "planning" need only some very efficient improving and systematising? If we understand that we must develop a special kind of democratic planning which integrates a community framework and individual freedom we, the Democracies, would be making one of the greatest contributions.

Democratic planning aims at achieving security and a higher

standard of living ; it aims, therefore, at increasing the demands of the people without eliminating the principle of private property. It substitutes for the individualistic *laisser-faire* economy the national point of view as the over-riding principle, which implies, of course, some central authority which has to co-ordinate and unify conflicting interests without using dictatorial methods though at the same time with the full and systematic backing of the Government. Consequently, existing boards such as the Central Electricity Board, the Industrial Board, suggested by the Royal Commission, and still others which will come into being, must be incorporated in a Central Planning Board working under the guidance of the Government. Only such a systematic co-ordination of the various agencies operating the social and economic functions of the life of the nation can produce a balance between demand and supply. Moreover it can direct the distribution of capital and labour, and, in this way, can influence efficiently the redistribution of population and industry.

The Royal Commission on the Distribution of the Industrial Population has made some contribution towards a definition of national planning. It states :

> The local and regional planning schemes may be expected in due course to cover all the land of Great Britain which can be regarded as suitable for development or likely to be developed, even if only very sparsely. Accordingly, if fitted together, the plans would form a plan covering virtually the whole country. Such a plan would not, however, constitute a national plan in the true sense : it would be nothing more than a collection of local and regional plans, a patchwork of schemes of varying size, and varying merits, which had not been co-ordinated and moulded to form a coherent whole. A national plan conceived as a whole would be likely to differ substantially from a national plan constructed by merely piecing together the local and regional plans. The local and national interests may easily clash.

This statement is very much to the point, although it needs putting into practice. Yet if one reads, for instance, as a definition of planning that it " implies the intelligent use by a free community of its environment, for the common good of its neighbours, its successors and itself ", one does not really know what to do with this definition. It is so general that it may mean anything.

What then is planning on a national scale ? We must clearly define what has to be done and how it has to be done. Several quotations from various authors shall follow, which will help to clarify the real issues. K. Mannheim in *Man and Society* :

> Anyone who plans for freedom, that is, provides for citadels of self-determination in a regulated social order, has of course to plan for necessary conformity as well. The liberal age could give its

whole attention to the propagation of the idea of freedom, for it could build on the foundations of the traditional conformity it had inherited from the old community culture of the Middle Ages. We shall have to waste a great deal of energy in the next few years replacing the old pattern of traditional conformity which is now disintegrating by a new one. We shall discover new values which were lost to us in the age of unlimited competition; identification with the other members of the society, collective responsibility and the necessity for possessing a common background for our attitudes and behaviour. But once the new community has acquired the necessary unity of outlook—a conformity which is not to be discouraged—there is no reason why provision should not be made, both in the educational system and in the very structure of society itself, for gradual modifications, culminating in individual personality. To-day we can afford to create opportunities for encouraging the growth of individuality because modern social technique can offer much sounder guarantees for the smooth working of society in the basic spheres of life than societies of the older type. But the mere fact of the existence of masses is not an obstacle. It is by no means impossible to split them up into small groups in which there is scope for initiative and individuality. In these small groups in which everyone feels that a great deal depends upon his actions, and learns to act upon his own responsibility instead of losing himself in the anonymity of the mass, social patterns grow up in which individuality can almost certainly develop. Sociology has already reached a stage in which it is possible to say which social forces and constellations have fostered individuality in the course of history. Planning for freedom does not mean prescribing a definite form which individuality must take, but having both the knowledge and experience to decide what kind of education, what kind of social groups and what kind of situations afford the best chance of kindling initiative, the desire to form one's own character and decide one's own destiny. . . . The extraordinary subtle machinery of democratic control is completely at the disposal of a planned society and could prevent it from degenerating into a dictatorship. The only real problem as far as social techniques are concerned is to combine democratic responsibility with rational planning. We cannot decide whether democratic machinery will work in a planned society until we realise the difference between liberal government at the stage of invention and totalitarian government at the stage of planning. Nor is it only in Fascist and Communist states that the government is totalitarian, in the sense that it tries to get all the controls into its own hands. The Western democracies at their present stage of development are gradually transforming the liberal conception of government into a social one. This is chiefly because the state no longer confines its attention to the three spheres of legislation, administration, and jurisdiction, but is changing into a social service state. . . . The essence of the change is from the negative safeguarding of freedom and property to the exertion of a positive influence on the process of production and the distribution of wealth, as exemplified by the

social services. . . . It is true that even to-day ideas can create no new worlds by themselves, but it is decisive for future events whether or not sound thinking goes on to-day and whether it reaches the ruling élites. These considerations tend to make it even more desirable in the present period of reconstruction to consider what is the best form of planning and how far it is practicable to combine planning with elements of freedom. After a long search for abstract principles the time must come when more people will realise, even if they have to learn it from their own distress, that the reconstruction of society is a matter of life and death for every citizen, and that most of our calamities can only be removed once we have understood that politics form a set of problems which can never be solved by prejudice, but only by a gradual and conscientious study of society.

Lewis L. Lorwin of the Institute of Economics of the Brookings Institution, Washington, stated at the World Social Economic Congress, 1931 :

The basic economic problems of balancing wants against wants, of finding the best and most efficient schemes, techniques for the utilisation of natural resources, of developing incentives to work, of stimulating the discovering of new knowledge and the application of science to economic life, remain to be solved by special devices and methods. Nor can economic planning *per se* supply rules as to the optimum size of a plant, or the best regional organisation of industry, or as to the relative merits of large and small farms, or the proper relation between agriculture and industry, or as to the most effective policies in finance. Neither does it carry within itself an answer to social and cultural problems. The character and purpose of a planned economy does depend on the larger social planning in the wider sense of the term which tries to supply an answer to these questions. The two are interrelated in the sense that economic planning can become a conscious method of operation only when used in relation to a clear plan of social purpose and development and when it operates through mechanism and institutions which promote its fundamental principle, the conscious co-ordination of productive resources to the needs of the people.

The National Resources Board in 1934 :

Planning does not involve setting up a fixed and unchangeable system but, on the contrary, contemplates readjustment and revision, as new situations and problems emerge. Planning is a continuous process, and necessitates the constant re-examination of trends, tendencies, policies with the least possible friction and loss. The natural life is like a moving wave in which a new equilibrium must constantly be found as it sweeps forward. Even physical planning is subject to continuing revision as new factors such as the motor vehicle appear to supersede old ways, while planning in the broader sense of the term is likewise subject to change as new inventors come in to disturb older calculations. Stubborn adherence to an

outworn plan is not a mark of intelligence but stupidity, whether in the life of individuals or of nations. . . . Wise planning provides for the encouragement of local and personal initiative, realising that progress may as easily be smothered by over-centralisation as by the opposite. Wise planning is based on control of certain strategic points in a working system—those points necessary to ensure order, justice, general welfare. It involves continuing re-organisation of this system of controlling points from time to time. The number of controls is never as important as their strategic relations to the operation of the society in which they work.

And the Report of the National Resources Committee on "Technological Trends and National Policy":

Anticipation of the future is the key to adequate planning for the best use of our national resources. It is, however, more difficult to look forward without the aid of precise instruments, than it is to look backward, with the aid of memory and records. . . . Planning is usually carried on in relation to a specific task, for a definite time, in a limited territory; but changes coming from without these limits may upset the best laid programmes. Thus the chemical inventions making substitutes of wool and cotton from cellulose, gasoline from coal, and rubber from coal and chalk, may affect cotton, coal, and timber production, and no doubt policies in regard to other natural resources. So closely interrelated is the mechanism of modern civilisation that a change occurring in one part, say in industry, will produce an effect in a quite different and unexpected part, as for instance, in the schools, or the use of natural resources. Hence we need a view of the general causes, types, and trends over a broad front, since any specific programme may be affected by forces originating elsewhere. Invention is a great disturber and it is fair to say that the greatest general cause of change in our modern civilisation is invention; although it is recognised that social forces in turn encourage or discourage inventions. Certainly developments in technology cause a vast number of changes in a great variety of fields.

These statements, based on theoretical conceptions and practical experience should prove that there is nothing to be afraid of in national planning. They provide material for the general lines which national planning should follow if it is not to interfere with the creative faculties of the individual in the interest of the community. Can we hope that these ideas will direct the preparation and the execution of post-war planning? If they do, the struggle for a better world will be more victorious than even the most glorious victory in this war.

SOCIAL AND PHYSICAL PLANNING

TO define national planning more in detail we must differentiate between social and physical planning. Physical planning does not consist of problems directly related to land and water only, but includes aspects of agriculture and industry, transportation and communications and many others. Important as they are, they are not an end in themselves, for human values and human resources are more significant. Social planning, i.e. the activation and integration of these values, has, therefore, to provide for all those services which affect, more or less directly, the well-being of the masses. Among them are educational and health services, recreational facilities, all of them essential for raising the standard of living. It follows that, if we recognise the primacy of social planning, physical planning in its broadest sense must take its direction from the sphere of man and the needs of man as a gregarious being. Both kinds of planning are complementary; and both must be kept within the limits of reality which they should neither force nor displace but help to clarify in the orbit of things as well as of people.

What functions are to be embraced in planning on a national scale? First let us consider the social field.

Education and health, recreation and social relationship may be indicated as the most important problems. Again emphasis must be laid on the fact that planning can and should provide only for an efficient organisation of these services and facilities, but that it cannot and should not interfere in a forcible way with the choice of the individual to make use of them.

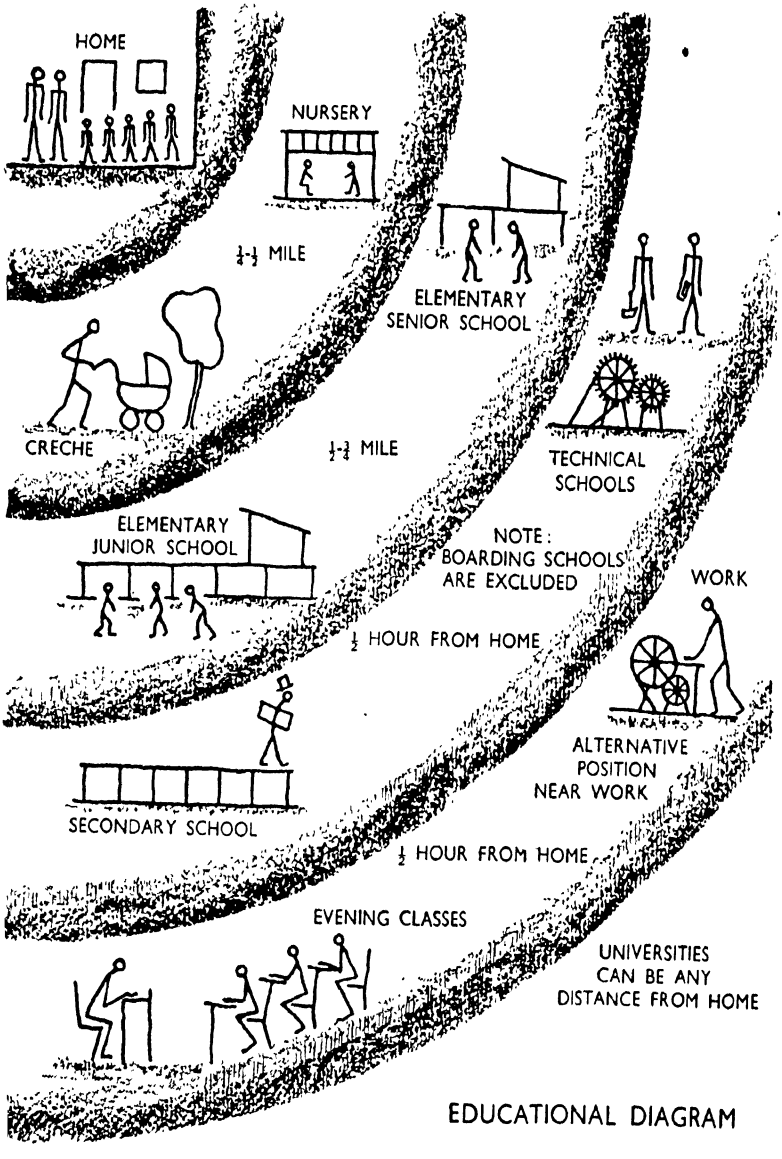
Education is a matter of concern for children and adults, both actively and passively. It needs, therefore, all kinds of institutions for all ages. In general we want to stress that

> the conception of education has changed its meaning. "To educate" is "to bring out" and "to develop" latent potentialities of the individual and not merely "to teach" in the sense of systematic instruction. . . . The process of living is a synthesis involving the mutual interaction of the individual and his environment and the purpose of education is to promote and to facilitate this process. Planning for education means, therefore, to provide an environment which is full of diversity and enhances the development of inherent potentialities. The environment should offer every possible chance to the searching mind. Knowledge ought to be obtained in connection with practice and the realities of life not in form of unconnected theories. Many possibilities for achievement in different fields ought to be provided; the mind should be stimulated to

> research and talent to develop. A healthy environment offers so many opportunities that each individual has a chance to choose and take all that which is needed both for the physical development and for the formation of character and personality. . . . A large healthy family represents in itself a rich environment in a natural form. If, however, the family consists only of the parents and one or two children the environment becomes limited and poor. This state of isolation and biological impoverishment could be compensated by providing conditions similar to those existing in a large family. This can be achieved by bringing together children of different ages who belong to a group of families—a community. These children experience the adventure of living together, thus educating themselves and each other. . . . Education involves not the child alone but the whole family as a biological entity. The parents educate the child, but the child also educates the parents. The opportunity for education must therefore be as great for the parents as for the child. If a sufficiently diverse environment is provided the family will select from it what is necessary for each phase of its development. This mutual interaction will proceed in each case in a characteristic rhythm.[1]

In detail: institutions must be provided for young children—kindergartens, nursery schools, schools of various types; for adults—universities, evening classes, lectures, technical schools of all kinds with all institutions attached to them which are needed for raising the whole system to the most efficient standard in every part of the country. The shortcomings of educational facilities in rural areas must be overcome by introducing not only a sufficient number but also the same quality of educational services as in urban districts. The obvious difficulty is, at present, to develop a system as highly efficient and complete in areas where there is a scattered population. But this situation will improve, as the National Plan aims at a more even distribution of population and, especially in the countryside, at a concentration of settlement in order to abolish the haphazard buildings spoiling the beauty of rural surroundings. On the other hand, if it is difficult for children and adults to go to more centrally located educational institutions, these must be made " movable ". That means that teachers, lecturers, educational films, etc., must be brought to those communities which are too isolated or too small to provide all the teaching facilities needed before they can play their part in a system of education which is considered essential. The antagonism between town and country can best be abolished—and it must be abolished at all costs—if every member of a rural community is aware that he must be given " a better factual and rational equipment for thought about social life ", and that it is essential " to develop such forms of education as would reduce his

[1] Association for Planning and Regional Reconstruction, Ltd. Report No. 5.



EDUCATIONAL DIAGRAM

social conservatism and raise his industrial and social adaptability. . . . The definite purpose of adult education in rural areas must be that of drawing members of classes—and through them the whole community—into the main streams of civilisation. It must not "ruralise" but most "socialise", and the latter in the expansive rather than the restrictive sense.[1]

Thus, educational planning must create a co-ordinated system of education on a nation-wide scale, which leaves no gaps for any member of the community. It must integrate the regional and local needs and possibilities; it must use all means to bring all educational facilities to all people, making education "movable" where necessary, and supplying the stationary buildings for carrying the education into effective operation. It must aim at offering equal opportunities to every individual if it is to be a democratic education.

The system must be based and planned on a detailed survey taking into account the effects of an increasing rationalisation in industry which reduces the working hours and which leaves more time for recreation; it has to investigate the increasing possibility of the decline in employment of young people and the growing desire for acquiring more knowledge; it must supply us with data and good solutions for keeping the educational system efficiently workable even in time of crises, such as unemployment, dislocation of workers and reduced incomes; it must enable us to predict and to prepare in time the educational facilities in accordance with the changing age composition and the numbers of the population; it must provide ways and means of adaptation in accordance with the redistribution of population and industry and with changing trends in occupation. The investigation should be extended to the possibility and desirability of distributing the costs of the whole system regionally, not locally in order to eliminate obstruction or evasion by local authorities. In a paper read before the British Association at their meeting in London, 1941, J. S. Huxley distinguished five changes regarding education:

> (1) The unification of the general educational system, both as regards its class aspect and its ideological (religious-secularist) aspect; (2) the tapping and training of the large reservoirs of unutilised brain power in the less wealthy sections of the community, both by an extension of general education and by increased facilities for specialised secondary and university education for a selected minority; (3) the provision of facilities for training the new potential élites, of the skilled mechanic and airman type, which the change in our class-structure is throwing up; (4) the need for enlisting education to help in providing a high degree of social

[1] A. W. Ashby, *The Sociological Background of Adult Education in Rural Districts*, 1935.

stimulation and social self-consciousness, as the basis of a modern democratic but well-integrated society; (5) the need for uniting national educational systems with a common basis for world education.

The whole system must be elastic and must be based on the most advanced principles of communicating knowledge and stimulation to all. The framework must be planned on a national scale in the same rational spirit as the scientific management of a large industrial establishment. Yet above all that stands the imperative necessity to create a social environment in which human values can be preserved, stimulated and cultivated. The creation of such an environment is the more imperative because " the cleavage between education and the outside world " must be avoided, as Huxley put it;

> e.g. it is hopeless to expect æsthetic values instilled at school to have much influence save on an exceptional minority so long as the world outside school is dominated by ugliness and the crudest commercial motives. That is why adult education and the general culture of society are important to the educationalist in the narrow sense. But if the outside world must be related to the educational system as well as vice versa, it is equally important to avoid introducing into the educational system any features which are wholly out of touch with the standards and ideas of society in general.

Health as well as education concerns the population as a whole. Health services must include not only institutions for preventing and curing disease but also for creating a state of physical and mental health which enables the individual to be creative in both respects. In the main we can agree with the argument put forward by the Association for Planning and Regional Reconstruction:

> Health is not represented by physical health alone; mental health and social health are equally important factors of the conception of the whole idea of health, and they have to be considered equally with physical health by those who plan for the future health services. . . . It must be emphasised that health is not a passive state which is characterised only by the mere absence of disease. Health must be considered as an active process expressing the well co-ordinated functions of every single part of the organism. . . . The usual conception of Health Services is a misconception because almost all existing Health Services deal with either prevention or cure of disease. . . . The aim of the Health Services, however, must be cultivation of positive health. This task involves the consideration of almost every section of social life including housing, transport, balance of industry, agriculture, food distribution, education and leisure, indeed, almost every problem has its " biological aspect " which should be dealt with in collaboration with the Health

> Services. . . . A definite distinction between Health Services and Medical Services is essential because only then full justice can be done to each of them. The task of the Health Services is " cultivation ", the task of the Medical Services is " correction ". Cultivation means the development of potentialities to perfection, correction means the amendment to the highest possible degree after damage. The two are completely different functions, which act in different fields. But the demands of each are equally great.

An efficient and far-sighted Health Organisation, working on a national scale, can greatly help to influence the environment by producing a " Health Charter " and insisting that this " Charter " must be made obligatory. Such a " Charter " must lay down general principles regarding environmental needs, not as minimum standards, but as ideal standards which ought to be applied wherever there is any opportunity. They will fix requirements as regards air, sun, space, variety and change of environment, open spaces, relation between work and leisure, social relationship, mental and physical employment and many other problems which contribute to the creation of a sound, stimulating and balanced environment. Here again the main stress has to be laid on influencing the individual by giving him an adequate environment and all opportunities which can reasonably be asked for, although, in this field, there are many more possibilities of exerting a direct influence. Thus, Health Services, as distinct from Medical Services, can exert a definite control in the sphere of national planning by taking an active part in the rebuilding of urban and rural settlements, and in the building of new ones. It is not merely a preventive task; it is an essential and creative part of post-war planning, and, if carried out intensively enough, it will help to reduce disease.

Health Services need a new organisation. The idea of creating Health Centres in urban as well as in rural areas as nuclei is sound, but it must be done all over the country, and the right people must be put in charge of them. From these Centres a net of Health Services must be operated, as fixed stations and as advisory mobile institutions covering each region and integrating the various tendencies working on the same lines. Hardly any help can be more welcomed by the men who have to prepare plans and to build and re-build in urban and rural areas than these influences radiating from such a Health Organisation. It would strengthen their position considerably.

The work of the Swedish State Institute for Public Health is a good example of the scope of such Health Services. It tries to extend and develop social welfare institutions of a permanent character. The task of this institute is to spread knowledge of prophylactic measures which can help to preserve and advance

public health. It is organised in three departments: one for general hygiene, one for occupational hygiene, and a third for the hygiene and control of food stuffs. In addition to their information work all three branches carry on scientific researches in their respective fields. The first-mentioned department provides education in social hygiene for public health officers—physicians, district nurses, dwelling inspectors, etc. The matters dealt with are, for instance, housing hygiene, maternal and child welfare, tuberculosis care, water and drainage questions. The task for occupational hygiene is to investigate and prevent ill-health and accidents arising from unsuitable working conditions. This department also investigates the possible risks of shift work and extreme industrial rationalisation.

The organisation of the Medical Services needs overhauling and completion. An important problem is, among others, the right spacing of medical institutions like hospitals, clinics, maternity homes, etc.; i.e. the appropriate "hinterland" of each type has to be investigated; how many people can it serve, how much personnel is needed; what and how many buildings are needed; how can they best be fitted in the new pattern of the structure of population and settlement that will come into being; and many other details.

There is no need for restating the fact that the better these Medical Services are the better the chance of the possible growth of the population will be. In the long run, the costs invested in Medical Services give the greatest possible return. The higher they are the better the results.

There are still some other problems which should be dealt with to a much higher degree than has been the case. Industrial hygiene and control will exert an outstanding influence upon the general arrangement of industrial plants and their lay-out in detail. Research in diet and nutrition has started only recently; and it is obvious how strongly this can, and will as it is hoped, provoke changes in agriculture and horticulture.

Improvement of health and increase of longevity will ask for more expenditure and for a more systematic organisation if progress is to be greater in the future than in the past. We are entering a more difficult and a more subtle phase in which medical science will have to play a still more important and active part. Social and economic conditions in general, and Health and Medical Services in particular must be improved, extended and organised as essential parts of the National Plan.

The National Resources Committee states in its Report on "The Problems of a Changing Population", 1938:

> The progress already made in control of disease is perhaps the proudest achievement of modern civilisation. Back of this progress

in physical well-being are the forces of biological, chemical and medical research; hospital equipment; the services of physicians, dentists, and nurses; the manufacture and distribution of surgical instruments, appliances, and medicines; public health control; education in nutrition; standards of living; and provisions for recreation. The possibility of further progress in health is dependent on (1) the quality of scientific research, (2) efficiency in the organisation and administration of health services, and (3) adequacy of economic support for those services. Progress must be sought along all these lines." And with regard to the costs of medical care the Committee summarises the reports of other groups by recommending " that the costs of medical care be placed on a group-payment basis, through the use of insurance, through the use of taxation, or through the use of both these methods ". This is not meant to preclude the continuation of medical service provided on an individual fee basis for those who prefer the present method. Cash benefits, i.e. compensation for wage loss due to illness, should be separate and distinct from medical services.

Recreation. The suggestion that recreation should be " planned " seems to upset many people. Even if they admit that education, health and other things might be influenced systematically they will immediately reply that it is not only impossible to " plan " recreation but that it should never be done, for it would mean considerable interference with our private lives. This is the usual reaction. No sensible planner has the least intention of interfering with the personal sphere of life. On the contrary, one of the primary aims of planning is to surround this privacy with a better environment which will make it a reality which it is not to-day. Though indeed privacy is not all. Man needs and wants company; he needs relaxation and opportunities of finding a congenial circle to share his leisure time pursuits.

What is meant by planning for recreation, or rather by planning recreational facilities? Again—the creation of the right environment. We must distinguish between physical and mental, between individual and collective recreation. To the first group belong: open spaces of all kinds like parks, playing fields, school and sport grounds, etc., on the one hand, and on the other hand libraries, social institutions like communal centres, theatres, museums, etc. Individual recreation may include gardening, reading at home, travelling and many other diversions; collective recreation may take on many of the forms already mentioned. What remains to be done in this whole sphere? Can it be " planned " within the framework of the National Plan? Yes—it can be done very efficiently if we have in mind not only the existing opportunities but the future potentialities which must be made part of the National Plan. Our knowledge of these potentialities is still rather poor, still more our inclination and

capability of creating them. A thorough research should, therefore, precede the planning in this field, more even than in the others. We should consider life as one coherent whole, surveying all its aspects, and correlating every single aspect to the potential recreation, thus looking at and dealing with the problem in the light of action and reaction. Every special kind of work should be counter-balanced by a suitable active or passive recreation. It is evident that such a research demands quite a new approach to this problem, and that it will cover a vast field.

In spite of this obvious lack of knowledge and experience certain points of view are already manifest. Outdoor recreation has so many aspects that we cannot deal with them within the framework of this book. Only a few principles to which due consideration should be given in the National Plan need be mentioned. Recreational areas can be provided by national, regional and local agencies. An efficient inter-relationship between these various types and a co-ordination of the various commercial activities serving these areas should be established. There must be a clear distinction between public and private enterprise so that each finds its proper place in a nation-wide plan for recreational facilities. It will need a detailed study not only of the situation and size of the areas which are to be preserved but also of their possible internal structure; i.e. should existing rural settlements be included in public areas; is it desirable that areas of afforestation should be made part of such areas; and what is to happen with regard to agriculture and horticulture? In other words, do we want to create and to preserve a kind of open-air museum where nature without any human activity is paramount; or do we want to show the interacting between nature and man, as a reflection of the ever-lasting problem of challenge and response, by including man's work but restricting, at the same time, any new interference with the natural landscape? Further, access to these areas should be convenient and attractive. A plan for the redistribution of settlement will have to pay great attention to a systematic spacing of these areas in relation to each other and, on the other hand, to urban and rural settlements. There is, of course, a marked difference between short-term and long-term recreations which will have its bearing on the accessibility, although good access is essential in all cases.

In their evidence before the National Park Committee in 1931 the Town Planning Institute stated:

> National Parks should be component parts of a nation-wide scheme of parkways, parks, open spaces, and playing fields, linked together by through traffic roads which are not development roads.

It appears that this consideration has receded somewhat into

the background. The intention of creating National Parks proper should be supplemented by a whole system of parkways linking them together and thus eliminating the unpleasant gaps between them. Lewis Mumford, in a private letter suggests:

> that the old-fashioned multiple-lane highway, with traffic moving in both directions, is, especially for high-speed motor transportation, obsolete. It seems to me necessary that we should carry to its conclusion a method of planning already in existence in the best of our American parkways: the method, that is, of separating completely the traffic lanes, making all major traffic-arteries "one-way streets". Because we are still thinking in old-fashioned terms, our present separations vary from a few feet to fifty yards or so; but in planning great transportation routes, there is no reason why the separation might not, for convenience and economy in routing, be as distant as a mile. A ten-lane, or even a five-lane arterial road creates a swathe of desert through the countryside, monotonous to drive along, deadly in its social effect, impossible to conceal from the air, tending to create extensive costs for grading. The establishment of separate roads for north-bound and south-bound traffic, with wide public rights of way on each side, will speed up night driving, reduce accidents, and provide a far better wayside environment.

These principles are sound and should be applied for the inter-connecting system of parkways. It would greatly help to relate the distribution of National Parks and of Regional Recreational Areas to the main centres of population, for it would improve their accessibility, especially for those parts of the country which are at a disadvantage with regard to the more outstanding natural features.

Due consideration should be given to the following order of importance which has been suggested by Th. Adams in his evidence before the National Park Committee.

(*a*) Places of historic interest, such as parts of Salisbury Plain;
(*b*) Places of exceptional scenic attraction, such as parts of the Lake District, Welsh and Scottish mountain regions, etc.;
(*c*) River valleys, especially those radiating from large cities, or where more control of flooding is desirable, and where there is danger of destruction of beauty;
(*d*) Uplands adjoining the coast;
(*e*) Low-lying marshy areas, where reclamation schemes are desirable.

We should try to weld these areas into a coherent entity; especially point (*c*) concerning the river valleys radiating from large cities would contribute towards an uninterrupted scheme of through traffic roads leading right up to the interior of the urban areas.

The other group of recreational areas is of a more urban character. They may be classified as playgrounds and playing fields usually part of the site of schools; the neighbourhood park for children and adults belonging to every residential area—about 20 acres parkland to every square mile residential area; the large parks within and just outside the urbanised districts. All these parks should be interconnected by a system of parkways. The administration of these areas should be exclusively in the hands of the local authorities.

An integrated system of all these recreational areas all over the country needs a definite policy which should find its expression in the National Plan. It is not necessary to mention how strongly it would influence the lay-out of urban and rural districts alike, their spatial relationship, and the distribution of population and industry in general. An environment of which outdoor recreations are an integral and systematic part will offer far more attractive and useful opportunities to the physical and mental well-being of the population than the present situation, in spite of the progress that has been already achieved.

Social Relationship. The noblest aim of national planning is to shape the environment of man according to his social needs as an individual and as a social being. A social relationship cannot be set up at the command of some authority or other, however enthusiastic it might be. It must grow. The faint flame which might be kindled must be very carefully sheltered. In this, possibly less than in any other branch of our life, is coercion or expectation of quick results justified. Yet what we must do is to provide for all facilities making up the framework within which a social relationship can develop. These facilities represent collective needs; and they must be effected independently of the law of supply and demand. The sum to be spent by local administrations for such utilitarian purposes as streets, transport and other public services will decrease when compared with recent decades, for their range covers, in many cases, not only the present requirements but can easily be adapted for extension in the future. The amount of expenditure on social services can, therefore, be increased without neglecting that for purely practical needs. This consideration will certainly play an important part with regard to the fulfilment of the social needs of the community.

The first question which needs careful investigation is: what is a social unit? We will deal with this problem later on in detail. Here it is sufficient to say that a social unit, based on the family as the smallest group, must consist only of that number of families which allows personal contact to be easily maintained and, on the other hand, which allows the daily needs

of diversity and inspiration to be fulfilled. The city as such is a social organism but not a social unit; it is the expression of society; the neighbourhood unit must be made the realisation of a community.

What institutions are desirable? The idea of a communal centre for each neighbourhood unit has been promulgated during recent years. It is doubtless a good idea, but everything depends on how it is operated, for mere proximity is not social contact, although the element of mobility is essential. A communal centre is the natural place where people can meet for discussions, for lectures and for any other kind of entertainment. It could be combined with shopping facilities, a library, a clinic and other useful institutions. It might have some contact with the school for each neighbourhood unit would have its own schools as being the natural place for the social intercourse of the children. Corresponding institutions are needed in rural districts. Communal centres can be made foci for the occupational training of men as well as of women, and for physical training of any kind. The 1936 Housing Act gave powers to local authorities to build community centres on new estates. It is to be hoped that this encouragement will find its full expression after the war but that the possible enthusiasm of local authorities will not suppress the spontaneous efforts and the democratic significance of these community associations. The neighbourhood groups need the backing of the authorities, local and central ones, in practical and especially financial matters, but they should be left alone in all matters which concern the social work itself. It remains to be seen how far the community centres can be made representative of a vertical section of the community embracing various strata of society. Very much will depend in this respect on the planning of a settlement in general, for it lies mainly with the town planner to arrange the lay-out in such a way that a one-sided social structure can be avoided and "the suburban tradition of salary-earners of isolating themselves" can be foiled.

There are, of course, a great many other possibilities for establishing and cultivating a social relationship, and, as already pointed out, their systematic provision for all parts of the population in sufficient numbers and in easy accessibility is essential. Though indeed we have to admit that we still lack knowledge as to what is needed and how it should be applied. Sociology is a rather new discipline. It seems that sociological surveys are more common in U.S.A. We will have to learn from the experience gained there.

However, we should not forget that social relationship can best be promoted if the environment in general is pleasant and

rationally arranged. Social relationship begins at home. The household must not be such a burden that the housewife is practically excluded from taking part in the social life; the arrangement of houses must be such that privacy—real privacy—can be found whenever wanted, but that social contact is a matter of course. The lay-out of private gardens in connection with communal grounds can greatly contribute in this direction; and in blocks of flats communal institutions like kindergartens and communal kitchens might, if wanted, be set up; while clubs, and small parks surrounding the blocks will also foster social relationship.

It is not easy to draw up a definite programme of research for the practical realisation of a social relationship. This alone will need a longer preparation, and much will become evident only during the investigation. But this research work should be considered as one of the primary prerequisites of national planning, and should be carried out on the largest scale possible, with the active assistance of planners, psychologists, social investigators, doctors, administrators, architects and some other experts, and last but by no means least, with the help of some common people who have just a bit of common sense.

A net of such institutions must cover the whole country. They must be well balanced one against the other so that a systematic integration of the different kinds of social facilities in their time and space relations can be realised. It might seem strange that just this sphere of our life which is, at the moment, still a kind of unknown no man's land, is expected to exert the greatest influence on planning on a national scale; but, to anyone who is unbiased, it must be clear that social forces have an enormous explosive effect. If they can be directed into right channels fateful eruptions can not only be avoided but the explosive force can be harnessed as an unrivalled creative power. Let us create these channels, and let us build a whole system of them reaching every part of the social stream. Cities, towns, villages, and open country will present quite a different picture after one or two generations. The social forces will help us to split up our congested urban areas, to intersperse them with open spaces and verdure and to create the islands of the neighbourhood units interconnected by main arteries and an easy and fast-flowing traffic. The whole atmosphere of the working places will be altered and many buildings for social recreation will be added to them. We shall revive the rural areas and give them a new social spirit and put an end to the sterile aloofness of the isolated farmstead. The motto of national planning is "social problems first". This must govern our whole procedure from the very beginning.

Considering the physical aspect what functions are to be embraced in national planning? The emphasis, in this respect, must be on national; or in other words, what can and should be planned on a national scale. It is obvious that there are many problems which belong to the sphere of regional or local planning groups and which should be excluded, therefore, from a national scheme.

The development of the land and water resources is not an end in itself. What is significant is whether these resources are being utilised for the real benefit of humanity. Land and water constitute only the basis upon which man himself can build up his environment and respond to the ever recurring challenge of nature. He expresses himself through the medium of agriculture, industry and distribution. The mere fact that he does some kind of work is not in itself decisive; what is important is how he faces the problems of nature which must be solved. The natural resources of a country are a unit and should be considered as such. Their location is fixed, but their sphere of influence spreads over the whole country. It is man's work alone that decides where and how they are used. The actual situation resembles power stations dotted over this island from which a grid of man-made works radiates. It is just the fact that these basic resources are immovable which subjects them to planning on a national scale. Only in this way is a rational and equitable distribution of their gigantic potentialities possible, and only thus can the interests of the whole community be safeguarded. We are living in an age when the claims of the masses are preponderant; production and consumption alike must be organised with this end in view. Although no one has any doubts that this is so, there are still many who do not dare to draw the inevitable conclusion, possibly because their subconscious traditionalism is too strong. Our attitude towards these problems is becoming more and more scientific. Science stands in the forefront of all those forces which are breaking down the barriers between countries and, within a country, between the different regions which supply the country with daily necessities. The magnificent Declaration of Scientific Principles which has been made a kind of Charter of the British Association states this point in the following words: "While only a century ago the village was an almost self-sufficient unit, to-day the world is our unit. To such a disturbing change of outlook and obligations we are not yet attuned, and we must readjust our way of living, for only by the fullest and freest adaptation of ideas to new conditions can this readjustment be achieved. Intense mental effort and clear vision are now needed."

This means in practice: the natural resources of the land and of the water must be planned and administered as a whole if we want to advance from a more or less merely quantitative to a qualitative utilisation; only then will the redistribution of the population and its workplaces lead to the creation of an environment which offers the best opportunities to all individuals. What we need is the most advanced and the most efficient reorganisation of the natural resources and of the application of scientific principles for the community and by the community within which the individual lives and works.

Although a certain tendency towards some control of the natural resources and of the main branches of production is discernible, we cannot avoid tackling this problem seriously if we want to win the peace. International collaboration is not possible without an internal balance of the social and economic structure; planning on a national scale must, therefore, embrace these main natural resources and their immediate functions.

The first step in this direction is to make an inventory of the physical resources. Much valuable work has been already done in this respect. The Land Utilisation Survey is an important contribution, besides the Geological Survey and several other investigations. The redistribution of population and industry implies, however, that the use which is made of the land to-day might undergo great changes in the future. We should know, therefore, as a corollary of the Land Utilisation Survey, what potential uses are inherent in the soil if we want to avoid mistakes and to adapt the different uses to the land that is best suited to them. We need the land for agriculture and forestry, for extracting industries, for buildings of all kinds, for recreation and the various means of transport. Our greatest mistake has been that these different categories were not considered as one whole and that not sufficient consideration was given to the very specialised needs of the many types of activities which, in their turn, each of these main groups included; e.g. the different needs of the different types of agriculture and horticulture as regards the quality of the soil; or the varying requirements of different types of buildings such as houses with gardens, factories, railway stations; or the manifold possibilities of recreational facilities; or the needs of transport growing more and more specialised from day to day. Waste in land is one of the most unfortunate characteristics of the past. We are hardly awake to the full implications of this problem. There is not only waste of land revealed in grassland made derelict by unsuitable farming, by careless accumulation of industrial wastage, or by unrational tracing of lines of communication of all kinds, but also by the exploitation of minerals; for if the commercial and private point of

view prevails, only those deposits are extracted which are most easily accessible and other strata are rendered almost inaccessible for the future. If we want to avoid all this waste of valuable national assets and of labour, it is obviously not enough to control the natural resources themselves but also the primary human activities based on these resources, and if we admit that they are closely interrelated—an assumption that cannot be refuted—we must logically take the next step too, namely of directing systematically these activities within the framework of the National Plan. In this connection it is interesting to note that the Conference of Bishops, Laity and Clergy in Malvern 1941 expressed the opinion:

> In our present situation we believe that the maintenance of that part of the structure of our society by which the ultimate ownership of the principal industrial resources of the country can be vested in the hands of private owners may be a stumbling block. On the one hand it may deprive the poorest member of the community of the essentials of life. On the other, while these resources can be so owned, men will strive for their ownership for themselves. As a consequence a way of life founded on the supremacy of the economic motive will remain. The time has come to proclaim the need for striving towards a form of society under which, while the essential values of the individual human personality are preserved, the continuance of these abuses will be no longer possible.

The National Plan aims at laying down principles for the development of the near and more distant future, as far as this is possible. Consequently, the knowledge of the potential qualities of the land should be considered as essential. One may put the problem as follows: what factors favour, in general, a useful development; and what factors are holding it back. Positive factors are: favourable physical and climatic conditions; international and inland waterways; natural resources including good recreational conditions; possibilities of a more rational use of the land in connection with the redistribution of industry and transport and the extension of the electric power supply; the natural trend of the population to certain districts. All these factors are closely interwoven so that the neglect of one might lead to a break in the whole chain. Factors retarding or even preventing development are: unfavourable physical and climatic conditions such as are conditioned by the relief of the country, by an abundance of rainfall or snow, by a shortness of growing seasons, by a frequency of foggy days and by a sparsity of sun. Most of them are being mapped for the National Atlas. Further, the possible exhaustion of some resources such as minerals, fisheries, agriculture; the standstill and subsequent decrease of the population; etc. All these tendencies should

be taken into account if we plan for the future, but the conditions existing to-day, as far as we know them and understand their significance, are to be considered more as the starting point for the National Plan. They have the same meaning as the station of departure has for a train; the railway line, the intermediate stations and the terminus are the actual purpose without which the whole project would be useless.

Distinction has been made between natural resources and human activities based on them. In general, we must further differentiate between production in rural and urban areas and in connection with water, on the one hand, and distribution of this production, on the other hand. We will deal with these problems in detail in the next chapters. Here it is sufficient to state the main reasons for what must be included in national planning in order to make it efficient and significant.

A procedure restricted to some prohibitive measures would be meaningless; it must include ways and means for bringing about a certain result by influencing it positively. Without this we would run the risk of destroying even the meagre results of restrictive planning. We would fall back to the time of Adam Smith; we would revert to the position of those who were sure that the whole system of a nation's economy was bound to operate smoothly because an enormous number of individual decisions were expected to produce adequate corporate results. Yet such thinkers forget that besides their own business sphere there were other, and even more important values—human values—which are only now beginning to take their rightful place. If we do not want to destroy the very forces which are the essence of a democratic order we must exert a conscious control over economic life in order to create the elastic framework within which the individual is free to make full use of his initiative. We must develop, therefore, some positive means for the re-location of industries systematically applied for the whole country, apportioning them to the various regions according to the productive and consuming powers of the redistributed population; and we must subordinate this economic readjustment to the social needs which must be given paramount influence. If we accept this challenge—and there is nothing whatever against it—we are in a much better position to balance the needs of industry and agriculture against each other, for the social forces are the co-ordinating link for both of them. Hence, we need positive means for the reorganisation of agriculture as a national industry, national not only in the sense of being of national importance in war time but of being subject to a reorganisation on a national scale including industrial activities based on agricultural raw products.

It was only natural that production occupied the first place during the last century, when the population was increasing. Now the picture is changing. Production as such is no longer a problem; we are approaching a stabilisation of the population as regards their numbers; we are facing a situation where the mere quantitative provision of goods of all kinds is shifting to a qualification of the demands of the individual. In other words: the actual problem is to-day the raising of the standard of living, and, as the natural consequence, distribution and consumption will undergo corresponding changes.

> Many people are willing to acknowledge this approaching change; but they conceive it too much as taking place on the terms dictated by the past: namely, by a mere raising of the wage level and by a continued dependence upon individual consumer's demand. . . . Those who believe this overlook another kind of change that is taking place: a change in the mechanism of demand. Under the earlier economy, the demand of the individual consumer was for such goods as he could personally consume: this was the main regulator of production. . . . During the last generation, however, there has been a steady shift from individual demands, satisfied mainly by machine industry as an incident in the creation of profits and dividends, to collective demands, expressed in goods and services that are supplied by the community to all its citizens. . . . The community attempts to normalise demands and to satisfy human needs by taking care that the most important wants should be met, whether the individual's own preference is sound or not. In urban communities we do not leave the provision of a sanitary water system or the provision of education to accidental choice; we erect a standard of cleanliness or of literacy and make acceptance obligatory to the whole community. . . . This shift in the incidence of demand gives to programmes of city development and of housing a place of peculiar importance in the national economy: sound planning along these lines ensures that the shift in the distribution of income, which is inevitable if our productive system is to be kept running at all, shall be soundly managed, in such a fashion as to increase the real goods, in health, comfort, and joy, available to the ordinary citizen.[1]

In this connection we are mainly concerned with what is "plannable" in the physical sphere on a national scale. The distribution of power and of goods is the factual prerequisite of consumption and of the apportionment of a certain number of people to each district, urban and rural. The distribution of power and of goods cannot, therefore, be separated from consumption and regional allocation of the people when we are discussing this problem, although they cannot be considered as entirely belonging to planning in the physical sense.

[1] L. Mumford, *Whither Honolulu?*, 1938.

The "appetite for power", especially in the form of electric power supply, is constantly growing. The relatively few power stations, fixed in certain places, have to satisfy a demand which is spreading over the whole country. Consequently, this interspace must be bridged; and it can be bridged efficiently only if the distribution of power is operated systematically for the country as a whole. A definite principle seems to regulate such a situation: the more the production is fixed in a restricted number of places the more necessary it is to distribute it systematically by a national organisation if the consumption is widespread. In social terms: power makes human happiness possible if we apply it rightly; it substitutes for the work of ten to fifteen human beings one mechanical horse-power; it thus releases men not only for other jobs but for education and for a healthier and freer life; it increases and cheapens production and products; it shortens distances, connects remote parts of the country and makes practically every kind of production dependent on it; it is the basis of a decent standard of living and of the creation of an environment within which social relationships can develop efficiently.

It is of interest that Lloyd George in his 1923 report had recommended the complete industrial rehabilitation of Great Britain, pointing out that the industrial centres of the United States of America used two and one-half times more power *per capita* than did England and that the real wages of the American workers are greater in about the same proportion. The more power at a workman's disposal, Lloyd George concluded, the greater is his output and the higher his wage; while at the same time, the lower will be the cost and the market price of the goods he manufactures.[1]

The same factors which have produced the enormous demand for a decentralised power supply are still in operation and

saturation of the power market is not yet in prospect. These factors, although generally well known, may be summarised:

Increase in buying power.
Increase in population.
Increase in per capita use.
Service of new areas.
Increase in proportion of homes served.
Increase in uses in homes.
Increase in use of home and farm appliances.
Increase in uses in agriculture and forestry.
Decrease in cost of equipment and installation.
Decrease in cost of power.
Development of new industries.

[1] Quoted from "Technological Trends and National Policy". National Resources Committee, 1937.

Decreased use of mechanical power ; substitution of electrical energy in industries, transportation, etc.
Decentralisation of industries.
Increased per capita manufacturing activity.
Technical advances in electrical utilities and industries.
Increased volume and raised standards of lighting (streets, highways, public places, homes, etc.)
Higher general standards of living.[1]

Distribution of electrical energy has been explained as " the retail business of the electric utility industry " ; and so it is. It is brought right down to the doorstep of every building for the consumption of domestic, commercial, industrial and other customers by the electric grid. We must distinguish between three factors with regard to production and utilisation of electric power: first, there is the source from which power can be produced ; secondly, there are the prime movers transforming their energy into workable power ; thirdly, there are the means by which this power can be used. The first two factors need a closer local proximity, whereas the third one can radiate to every place, but all of them are interconnected. The methods of operating them in practice must result in a systematic network spreading over the whole country so that the needs of the community can be efficiently fulfilled. Several possibilities exist for meeting these requirements : the various power systems covering the country are operated by separate agencies ; each power system serves a certain area only ; a central authority supervises and operates a superpower transmission network. In the first case there is the obvious danger that the various agencies will compete with each other in the same way as every other commercial enterprise and not be able to supply each customer within their region with the necessary energy at low costs, especially if the demand varies intermittently in accordance with the peak hours ; if the capacity of the power station is great it could rationally be used to the full ; the sale price would be necessarily high, or it would not be profitable. In the second case, if a certain region is allocated to one agency it is very likely that the power supply will not get to every customer under the best price conditions and that the system will not be big enough to meet the demand which sometimes varies greatly in time and quantity. The best solution lies, without any doubt, in the last possibility, that of the supervision of the whole national system by one authority. It can co-ordinate the various systems, adapt them to the changing needs, extend it to areas which are considered as not " profitable " from a purely commercial point of view, and it can balance, unify and reduce

[1] " Regional Planning, Pacific Northwest," National Resources Committee, 1936.

prices. The Central Electricity Board has taken up these tasks, but a great amount of work remains still to be done before the ultimate aims of cheap and easy access to all strata of society and to all, even the smallest, industrial consumers, can be gained. For this is the essential prerequisite for a redistribution of population and industry in urban and rural areas. A central authority is in a much better position to deal with the fundamental requirements such as, besides availability, the capacity of the whole system and its increase in the future, safety and emergency installations and reliability in general. The result will be, if all the various factors are observed, in the words of the National Resources Committee :

1. A more adequate and flexible supply of firm power for present and early future needs.
2. A greater use of existing facilities for generation, transmission, and distribution of electrical energy, and of invested capital.
3. Reduction in new capital expenditure.
4. Greater opportunity for diversification and decentralisation of industry through the wide distribution of power.[1]

The extension and rationalisation of the electric grid constitutes one of the basic prerequisites of national planning ; this work itself should be made, therefore, part and parcel of the National Plan.

Similar considerations should be applied to the distribution of goods and persons through transport. Compared with what has been achieved already with regard to the electric supply the unification of the various means of transport still lags far behind, although some tendencies in this direction are taking shape. The " transport grid," using land, water and air, is a three-dimensional system. Its social importance is too obvious and needs no further discussion. We are only concerned, in this connection, with explaining why the transport system needs a unified organisation and direction, and why its planning and adaptation to future changes must be embodied in the National Plan.

We are, perhaps too easily, inclined to regard this problem as one of mere improvement in degrees ; we do not think, in general, of more fundamental changes like the building of new railway lines, or the eliminating of other ones, or the abolition of overground stations in the major cities and their replacement by a rational system of underground stations ; and similar far-reaching measures. We are more or less only overhauling the existing system because we know that there are no means through which it could be as fundamentally altered as, for instance, the extraction of nitrogen from the air as fertiliser instead of using manure. We are, of course, justified in this attitude, but the degrees of changes which are imperative for the future development should be some-

[1] " Regional Planning, Pacific Northwest," ibid.

what greater and should be executed with more speed. They should be made dependent on exigencies which are essential to national planning if the redistribution of population and industry shall produce a better and more even pattern of settlement.

A more decentralised structure of settlement, on the one hand, and the repopulation of relatively empty areas, on the other hand, is not possible within the framework of the present transport system. The utmost that could be done is some decentralisation within the boundaries of the existing massing of the population, i.e. within an area stretching from the South-East around London to the North-West roughly north of Manchester region and shaped like a " coffin ". Professor E. G. R. Taylor, the inventor of this " coffin " has stressed the necessity for an extension of the transport system to the " outlying " parts in the east and the west. A similar extension should be added in the region north of the line Glasgow–Edinburgh. This is an example of what should be done if the structure of settlement is to be altered beyond some minor reforms which would lead, in the long run, only to new drawbacks. Looking at the problem from this broader aspect, what then are the principles which must govern the readjustment of the transport system ? In general, we must reduce the distance between home and workplace, shopping centres and recreational facilities, and we must increase the capacity and the speed of this near-traffic to the highest degree possible ; we must improve the long-distance traffic by the extension of its net, by increasing its speed and flexibility, and by a general rationalisation. Furthermore we must co-ordinate all types of transport in order to bring about the highest efficiency, the cheapest fares, and the greatest mobility of the population in the interest of social intercourse and exchange of ideas and material goods.

If the National Plan aims at a redistribution of industry in accordance with the re-location of consumption by promoting smaller industrial units and a sound diversification of industries in every region and in every urban and rural community, the consequence will be a reduction of freight traffic. Is this a likely assumption ? We can observe all over the world a distinct tendency towards a re-location of industries in order to save freight costs, and to build new factories in better location out of these savings. This special side of re-location is more obvious in heavy industries, whereas lighter industries tend, in general, to disperse and follow the centres of consumption. Further, it can be observed that the waste of materials is decreasing through a more intelligent use of these waste materials and by improvements in the manufacturing process resulting in a longer use of the products. Advanced technology in general leads also to a more rational husbandry of materials and goods. Another factor might

be the standstill and subsequent decrease of the population, although this would be counterbalanced, at least partly, by an increased and more diversified consumption. Possibly the most important factor will be the growing introduction of pipe-lines for various uses, as e.g. oil and gas, the urgently needed systems of district heating, and the electric grid. It seems as if a general "grid-consciousness" is about to develop, the result of which would be, in the first instance, a considerable reduction of the transport of coal and of other raw materials. Admittedly some of these factors are, at the present time, assumptions, but why should not the imported oil be distributed, at least to some degree, to some major centres of consumption through pipe-lines; why should the millions of fireplaces not be replaced by district heating; and why should the household not be electrically equipped.

The reduction of the near-traffic between home and centres of daily occupation and recreation has already been mentioned. The urgent necessity of reshaping the structure of our towns by bringing, first of all, home and workplace nearer together is almost the gospel of modern town and country planning. Its logical consequence is a considerable reduction of traffic which will do away with traffic congestion in a metropolis like London and in some parts of the big cities.

The situation is somewhat different with regard to long-distance travelling. In general, it can be assumed that it will increase, if all the various means of transport are taken into account. Increased leisure, increased speed, reduction of fares, and the general tendency towards "moving about" and "seeing the world", all these factors tend to increase passenger traffic. But it is very likely that the railways will carry less passengers and will feel the competition of the motor-car and motor-truck haulage. Air communications will also play an important part in the future, although they will contribute much less to the reduction of passenger transport on the railways. How far the future of the inland waterways will be affected is difficult to predict, but it is quite possible that they will play their part in connection with the changes in the structure of settlement.

Besides the trend to reduction and interchanges between the various types of transport, elimination of over-aged and unnecessary stations and collateral lines running to the same places on almost identical routes is one of the future tasks. Much valuable space could be gained by the demolition of some of these stations together with the railway lines radiating from them; for instance, Euston, St. Pancras, King's Cross Stations in London cover an enormous area. It should be not too difficult to replace them by one new station, if possible underground. The whole district would gain considerably and a sound town-planning scheme could

be carried out. Something similar would be advisable, e.g. in Manchester and a few other cities. The advantages would be very great; air, sun, no smoke and no noise, verdure and space would be the result; and the railway system itself could be efficiently reorganised and simplified.

Extension of the railway and road system into parts of the country neglected hitherto, e.g. to Wales, to the Highlands, and to Cornwall, is another prerequisite of an intelligent redistribution of population and industry. For instance: the population of Wales is concentrated in the south, while the middle and the north are more sparsely populated than the relief of the country justifies. If the communications could be improved and the electric grid extended, it is certain that a useful re-concentration of South Wales could be achieved and the emptier districts be made more productive.

Rationalisation in the form of electrification, higher speed, more trains, better technical equipment, the use of collateral routes for fast and slow traffic—if their elimination is not advisable—lower fares, etc., all this will contribute greatly towards an improved pattern of settlement in accordance with the needs of national planning.

An organic co-ordination of all categories of traffic and an amalgamation of the railways should be the way to bring about the highest efficiency of the whole transport system. Everything is susceptible of change and, after all, traffic is made for man and not man for traffic. If we were to rely on the existing transport we could not even conceive a really efficient National Plan, to say nothing of its being carried out. The structure of settlement envisaged by the National Plan must determine the transport system and not vice versa. The planning of transport must, therefore, be worked out on a national scale.

Distribution in a physical sense cannot be separated from the distribution of consumption and of population. Both categories overlap each other. We will deal with these problems in more detail in the next chapter. Here we will only consider a few general questions. Up to the present the influence of consumption on the industrial structure has not been very effective because the organisation of the consumers is only in the first stage of development and because, on the other hand, the organisation of industry is very powerful. The growing consciousness of the fact that industry is not nearly so immobile as past generations made us believe leads to a mobilisation of industry that follows more and more the location of consumption, or in other words, the distribution of the population. The National Plan, aiming first of all at a redistribution of population, is thus the " prime mover " towards a better integration of the needs of the consumers in a reorganised

structure of settlement and industry. If, in the course of future national planning, we hope to see the emergence of a balanced regional division of the country, we have ample reason to promote the ascendency of consumption over the demands of production. At present the competitive economic system is constantly producing cleavages in the homogeneity of a region. Towns compete with each other because big and small business want an increase of population in their respective towns. The more people congregate the more money can be made by private business ; and the parish-pump attitude is only the " natural " reaction under such conditions. The National Resources Board remarks in this connection :

> Another evidence of the disintegrating effect produced by our economic system on the sense of regional community is shown by the attitude of the small cities which cluster around large metropolitan centres towards such centres. Much of what is called urban-rural cleavage is really the traditional antagonism of the small town against the metropolis. . . . This fact is due in considerable part to the effect of the automobile and good roads upon the trading habits of the farmers and the small-town dwellers who live within a convenient trade radius. . . . Instead of confining their purchases to the small city adjacent to their own homes, they tend to go to the larger city for their more important purchases. The result is a jealousy and ill-will on the part of the less fortunate merchants of the smaller towns against the metropolitan merchant class.[1]

Regional unity cannot flourish if a competitive struggle is going on which has issued in the first place from the private and public representatives of production and commerce, and much less from the consumers. These tensions can and will be smoothed out if the interests of consumption take the first place, and if production is made the servant of the consumers—not only by paying lip-service. Consumption concerns everybody directly ; production is an immediate concern for only a part of the population. It is an old story that the more directly people are concerned the more ready they are to exert their influence. Thus, we can hope that the turn of the tide in favour of the priority of consumer needs over producer profits will do away with certain vested interests which destroy regional unity. The National Plan intends to prepare a new density map of Great Britain ; this means in reality to work out an apportionment of the population to each region for the double purpose of redeveloping the congested urban areas and increasing the capacity of settlement in rural areas. A redistribution of population on a regional basis is, therefore, one of the main objects of national planning, and as such is a very important justification for giving foremost consideration to the needs of the

[1] " Pacific Northwest ", ibid.

consumers. We need badly a thorough investigation in these needs from every angle of life if we want to pave the way for a higher standard of living. On the basis of these investigations research should be undertaken as to how the fulfilment of these needs influences production with regard to categories, unit-sizes, location, labour and distribution. As a matter of fact this approach to the problem might revive the old struggle between those who think it is best to follow the line of least resistance, i.e. to do what is possible—they seldom define the actual meaning of this mysterious word " possible "—and to rely on the capacity of production as they understand it ; and those who want to base the procedure on a reasonable standard of demand. They prefer to follow the line of potentiality. They intend to base planning on the needs of the consumers and they are convinced that this can be realised if the people desire it.

The foregoing pages might help to clarify what national planning should embrace in the social and physical field. Four general principles seem to emerge, applicable to all these fields. They are : integration, diversification, rationalisation and balance. All of them belong together, and their observance in national planning will give us a flexible and stimulating foundation on which to build a creative environment.

METHODS AND MEANS

HOW can the various factors, described above, be brought into operation? The methods and means consist in providing the plans, the legislative and financial machinery, the right personnel and a clearly conceived programme for research.

The National Plan must decide the tempo and direction of the whole procedure. The plan in itself cannot give the answer for all spheres of our social and economic life. It is a means to an end, nothing else. And this end—as has already been stated—is to prepare consciously the efficient co-ordination of all productive resources, human and material, for a higher social and economic standard of life through scientific research and creative imagination. We have to travel a long way to reach this goal. The changes can be achieved only gradually, but they must take place correspondingly in every domain that will be affected. We must, therefore, balance the various requirements with regard to time, place and individual undertaking. Thus, we must balance against each other the time factor, the place factor and the object factor. We cannot expect quick results, but we can work in an atmosphere of stimulating hope if we know what we want and if we carry out what we want to do—systematically. The emphasis lies on "consciously" and "systematically". If we do not believe that we can act according to this maxim we are declaring our own bankruptcy, for we are denying our faith in the future and in our own capacity.

As regards the time factor we can distinguish four stages:

1. The inventory of the existing conditions and resources in the form of surveys and plans.
2. The general outline of the "ideal" social and economic needs and of the necessary activities to bring them about.
3. The actual plan of reconstruction and of its execution.
4. The carrying out of the plan according to a schedule regarding time, place, object.

It is evident that stages one and two can and must precede the other stages, and that they are the obvious problems which are to be tackled now, during the war. They must be ready at the end of the war if the demobilisation is to be a creative part of the National Plan. Watching the present position and the attitude of people foremost concerned with post-war reconstruction one cannot get rid of a somewhat uneasy feeling that the integrality

of the Demobilisation and the National Plan has not been sufficiently appreciated.

Demobilisation and national planning are indivisible. No works must be carried out at the time of the demobilisation which are not integral parts of the National Plan. Every project in every social and economic sphere must be related to long-term national reconstruction. If this is not done, the danger, indeed even the certainty, cannot be avoided that the whole National Plan will be spoilt from the very beginning. We should know what it means not to be prepared; and we should have learnt the lesson that an energetic start along right lines can decide the whole issue. Consequently, it is the imperative task of the Government to control *now* the numerous projects of regional bodies which have been prepared before and during the war with regard to their relevance to planning on a national scale. If they are not in accordance with the general plan their execution must be discouraged and they must be replaced by other projects which are the initial steps of the National Plan. This positive procedure towards local and regional authorities must be complementary to the activity of the Central Government itself. Schemes of a national character must be ready so that they can be put into operation immediately after the war. I want to stress this point most energetically. At present there are many people with the best intentions who lack a real understanding of what a National Plan should be. Yet good intentions without knowledge and insight are sometimes more dangerous than a complete absence of ideas. I suggest that a special body should be set up, the duty of which would be considering every project which has been prepared or which is intended to be carried out when the war is over and examining its value in the light of national planning. A creative demobilisation is the *sine qua non* of the National Plan; it is half the battle in the struggle for its realisation; and without this foundation national planning should be abandoned altogether. One cannot build a new house if the building site is a mess.

We must draw up a general plan outlining the whole way from the beginning to the "ideal" goal; we need, within this framework, plans for shorter periods of, say, three to five years; and we must prepare schemes for their immediate execution fitting in this double framework. But we should be aware of the necessity that the first and second category must be flexible and adaptable to the changing needs of the future and that they are only a framework within which the concrete schemes are to be conceived and carried out. Planning is a constant application of the means at our disposal; and as these means are subject to evolution we must be in a position to adapt ourselves and our actions to these changes.

Time, place, object—when, where, what—must be well balanced and their inter-action needs a thorough investigation before the respective plans can be embarked upon. The fulfilments of one stage must be incorporated in the conception of the next one; e.g. it would be wrong to build a town near an under-river tunnel where it might be without a sound functional basis unless one is absolutely certain that the tunnel will be built and what route it will take; or it would be the wrong sequence to move some industries if no sufficient labour supply can be made available; or it would be an unsuccessful procedure to establish some agricultural factories in a rural area before the necessary raw material can be produced in sufficient amount. Such considerations might seem to be hackneyed truism but in reality they are not always taken into account.

The first stage includes the preparation of an inventory. It is only natural to know where we have to start; but it is not so necessary to know the whole historical evolution nor, as has already been explained, to be content to state only existing facts. It is much more important to survey these facts from the point of view of their potential value for the future. Planning must start where we are to-day; and it is not sufficient, therefore, to investigate the trends which might persist after the war but more the trends which are desirable after the war. There is a definite difference between the survey side and the planning side, especially in regard to the later stages. Apart from the fact that a survey is usually much more concerned with laying down its findings in the form of reports, and a planning procedure more in the form of maps and schemes, each of them covers, at least under the present conditions, a different ground although both are complementary to each other. Without pretending to put forward a watertight argument the situation in both of these fields as it is to-day may be defined as the following: the survey side of national planning attempts to proceed from the bottom by gathering the necessary information; the planning side attempts to start from the top by looking at the problem as a whole and by penetrating the underlying strata at some specially selected points. The first may be compared with a frontal attack, the second with a pincer movement. Both attacks are needed and, if efficiently applied, will produce the desired result. Both, surveying and planning need local and central research; and staff work demands work in the front line. One may assume that the one is a more static method, the other one more dynamic.

The second stage, built up on the facts and material assembled during the first stage of the work, is one of formulating the principal issue and advising appropriate methods through which the "ideal" social and economic needs can be accomplished,

We should not be afraid of an even experimental approach to some problems; this can hardly be avoided for we can never hope to avoid mistakes at any price. Experience in many countries should convince us that what sometimes appears to be an experiment turns out to be the most efficient procedure if boldly and systematically handled. Thus, this part of the work embraces the preparation of the necessary organisation, the legislation and the provision of the financial means and the personnel for planning.

The third stage is one of practical preparation. A plan of mobilisation for a period of several years is to be worked out with due regard to the formulation of the general principles which have been laid down previously. This stage is characterised by the concreteness of the plans; they must be applicable immediately when the time is ripe.

Finally, the fourth stage sees the execution of the numerous works which have been prepared by local, regional and national bodies.

The above classification is meant to clarify the procedure; it is, of course, not a strict pattern, the less so as the different stages overlap each other; preparation and practical execution will always proceed side by side and research will still go on when guiding principles are already being formulated. Some factors determining the whole procedure are of special importance. They will be dealt with later on. Foremost among them are the changing structure of population and the impact of technology on the social and economic conditions of the Nation. We must always bear in mind that influences from " outside " are bound to crop up and to exert their pressure in a sometimes quite unexpected direction. But, we are to-day, in spite of these *deus ex machina* possibilities, in a position to guard our plans against such infringements, at least to some degree, if we make them adaptable to changes in the future. For instance, we must plan for a decreasing as well as for an increasing population. Estimates of future population trends are a rather vague affair; nevertheless we must make provision for both possibilities and work out respective plans. Let us assume that in about one hundred years time there would be only 25 million people living in this Country: it is obvious that the structure of settlement would be quite different from what it would be if the population should increase beyond the present level. Or in the sphere of technology: it is well within reach of our capacity to produce artificial cotton or fibres replacing wool; both inventions would deeply affect planning and upset the structural balance of settlement which has been envisaged in the National Plan. Consequently, hypothetical plans on broad lines should be made a special study. We are not as unprepared towards coming changes as we commonly think.

> Though the influence of invention may be so great as to be immeasurable . . . there is usually opportunity to anticipate its impact upon society, since it never comes instantaneously without signals. For invention is a process and there are faint beginnings, development, diffusion, and social influences, occurring in sequence, all of which require time. From the early origins of an invention to its social effects the time interval averages about 30 years.[1]

Such conjectural plans are a kind of retrospective affirmation that the original plan being flexible enough will serve its purpose and carry us in the right direction. The National Resources Board limits the time interval rightly to about thirty years within which the social impact of an invention becomes effective. That corresponds to the lifetime of one generation. The new generation is freer to absorb new influences because it is less hampered by traditional considerations. This is the case in almost every sphere of life. The National Plan should be adapted, therefore, to this cycle. It should envisage a period of three generations for its long-term policy; then the change in the spiritual approach to the various problems will reach its peak as compared with to-day. The first generation is experimenting and preparing, the second one is putting the results into practice, and the third one is spending lavishly out of the accumulated capital. Though these periods project over each other, certain cyclic trends, as described above, do exist as history teaches us. Some people might be afraid of taking so long a view; they will say that forecast of and planning for conditions of so distant a future are impossible. Such argument is beside the point. We shall not and cannot predict the future, but we must not bar the way by too rigid a planning and by leaving out of account trends the possibility of which cannot be discounted to-day.

We cannot deal with finance and can only make the following suggestions. As the National Plan is a matter of national concern the Government will be bound to contribute extensively and systematically. The Royal Commission seem to have something of this kind in mind when they say under (6) (III) (*b*): "In cases approved and to the extent approved by the Central Authority, financial assistance should be available for the municipalities from Government funds especially in the early years," after having stated that it would be desirable to deal "with the problem on a regional rather than on a municipal basis". Regional and local groups act as the trustees of the whole nation, for their efficiency and financial capacity are the ultimate factors which decide whether the natural resources are being wasted or being intelligently used. In both cases the nation as a whole is vitally affected. Besides local and regional works, a great many public works will be carried

[1] "Technological Trends", ibid.

out which are of direct national importance—as, for instance, reclamation works, highways, electric power supply, National Parks and parkways, airways, fisheries and many others. They all form a coherent whole. The Government cannot ignore some of them by leaving the raising of the necessary funds to local or regional authorities unless it means to imperil the whole system. It would be a great step forward if ways and means could be investigated as to how the National Plan could be financed. The war costs about £15 million a day. Peaceful reconstruction can do with much less. How far can we base the work on material and hours of work as being a step towards coping with the problem ; or can we combine it with the floating of a Reconstruction Loan ? These are the questions which must be decided by open-minded men who are capable of looking beyond the time-honoured principles of an orthodox financial policy. There is one argument, however, that must be suppressed, namely that the National Plan is a Utopia and cannot be realised, as this Country will be too poor after the war and it would be foolish to spend money on this work. People who say this should understand that work produces new values and new money and that we cannot live without producing somewhat more than is needed for our bare existence ; and that, after all, the situation after the war might be anything but " orthodox ". Yet—it is better to stop here for we have promised that this book will not deal with politics.

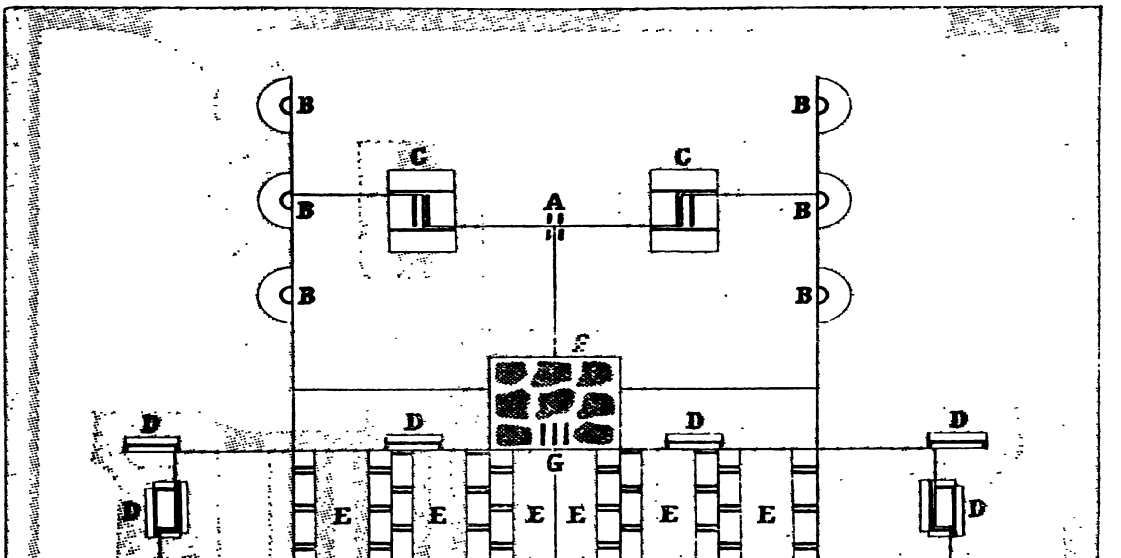
Where are the men who can carry this enormous work to success ? Plan the planners—is the answer. One is not quite sure that the best use is made of the planners already available, and that there are not a lot of people who assume the air of planning experts and who muddle on in an endeavour to convince other people of their ability merely because they produce reports on something.

The education of planners should be made part and parcel of the National Plan. It calls for unity of theory and practice from the very beginning. Only from true knowledge of life, of all relationships and influences, will there arise planning work of general importance. Man is not merely a producer, he is also a creator. He must, therefore, achieve a synthesis of work and thought. The National Plan offers a number of opportunities for this kind of education. One of the new settlements which will be built in the course of its execution should be made the centre of such educational institutions. This community must not have the character of a university centre. The School of Planning and the training workshops do indeed form the centre, but not the whole, of the community. The settlement would start with 300 to 500 families occupied in agricultural and industrial work. The training workshops would be an integral part of the College as well

as of the settlement itself, since they would serve the double purpose of working for the needs of the inhabitants and for the practical instruction of the students. Students and inhabitants would thus have a reciprocal influence on one another. This community would include not only the houses of the settlers, but also their industrial workshops and centres of agricultural production, from which new forms of work will be constantly arising. The central "industry", the power which binds together the whole settlement, remains the New Building Community College which introduces fresh blood into the community and acts as the directive force. The Building Community would acquire increasing influence, especially by its appeal to the younger generation, which seeks to reconcile the two polar factors: loyalty to facts and precision of thought. Youth rejects the intermediate stage of vague and indistinct sentiments leading to imperfect results. Deed and thought are not in opposition to one another but have to be synthesised. The extension of the settlement by the influx of new members will be a small-scale demonstration of the necessity of town planning. Plans for such a settlement should be prepared now and, if possible should be realised even during war-time so that the education of planners can start as soon as possible.

The American Society of Planning Officials together with the American Institute of Planners have edited a Report on "Personnel for Planning". By kind permission of its Executive Director, W. Blucher, it is possible to quote some parts of it which will be of special interest to all those concerned actively in planning. It will be a useful addition to the knowledge gained in this country.

> Cities of every size, counties in every section of the nation, and most of our states are placing increasing reliance upon their official planning agencies. What are planning bodies doing that differ from functions of other departments, but which are in no sense a duplication of their effort, and which justify their existence? In cities, the plan commission is usually engaged in getting and using the facts about land use, streets and traffic conditions, zoning, platting of subdivisions, public building and park locations. Surveys are conducted and the results analysed; maps and reports are drafted, and recommendations made to the city council, or to officials who request aid of the commission.
>
> What kind of surveys, what kind of recommendations? The zoning map and ordinance is made from land-use data; the changes recommended in the street system—openings, widenings, extensions —are based upon information on traffic flow and on conditions in congested sections. Locations of transit lines, parking lots, parks, airports, housing projects, trailer camps, school sites are recommended by the planning agency on the basis of surveys and from



A *Central Farm.* **B** *6×34≅200 Farmers, collective & individual land 8500 acres, average size of each holding including collective land 85 acres & individual land 225 acres.* **C** *2×200=400 Farmers, collective & individual land 17000 acres, average size of each holding including collective & individual land 425 acres, individual land 125 acres.* **D** *2×160+40×70 Farmers, collective & individual land 3900 acres, average size of each holding including collective & individual land 13 acres, individual land 0·25 acres.* **E** *800 Fruit Growers, collective & individual land 3750 acres, average size of each holding including collective & individual land 4·7 acres, individual land 1·7 acres.* **F** *4000 Residents of Green Belt.* **G** *School & Workshops.*

Collective Land *Individual Land* *Buildings* *Residential Quarters*
Main Road *Road*

Scheme of the New Building Community.

studies which point out ways of properly relating them to the plan for the city's development. An extension of these activities is to list the proposed changes in order of need, in relation to the city's expected income and total out-go, estimated by years for a period ahead.

The planner must be able to see the relationship of one problem of the jurisdictional unit with which he is concerned to another problem or to several problems. The many relations which public improvements bear to private lands and buildings, which industry and business bear to population, which locations and standards of recreation fields and of schools have to the children who are to use them—these are some of the things which concern the planner. He must depend upon the knowledge and expert ability of the specialist, inside government and outside it, because the service he performs relies upon, draws from, and is to a considerable extent a correlation of, the work of many.

The planning board with its planning staff must be able to assemble related data, review the elements in a given situation, and bring into balanced relationship the work and activity of all agencies or groups concerned. A planner is a specialist in seeing the relations between and correlating the work of specialists.

The committee presents detailed job descriptions of the following two basic positions, those of Planning Director and Planning Assistant.

I. Planning Director

A. Duties :

(1) Administer planning unit and supervise technically trained assistants such as architects, draughtsmen, economists, engineers, research assistants, and statisticians. Administration includes planning work programmes, assigning work, and controlling progress.

(2) Supervise the preparation of, and prepare for, the proper boards, commissions, committees, or officials, reports and recommendations dealing with the present status of the problems indicated in subhead no. 4 below, affecting the governmental unit with which the planning director is concerned and which are referred to him explicitly or implicitly by law, by the legislative body, or by any superior executive officer.

(3) Plan their immediate or future solutions within the means available or reasonably expected to be available. Establish time sequence within these means. The preparation of plans requires both consideration of public improvements and the regulation and guidance of private developments. It involves co-ordination of all factors that, from an over-all comprehensive point of view, are involved. The essential task and primary duty of the planning director is to supervise a programme which represents informed, conscious co-ordination to obtain constructive consideration of problems affecting the community and its future growth and development.

(4) Supervise the preparation and the making of surveys, collection of pertinent data, the conduct of required investigations, and the analysis of these data and other relevant material required in the consideration of the problems referred to in the manner indicated in subhead no. 2 above. Utilise best available expert advice either in the planning director's own organisation or outside it. Surveys and data may cover and include :

(*a*) Rural land and its uses : agricultural, forest, recreational ; urban land and its uses : residential, industrial, commercial and recreational.

(*b*) Transportation : railroads and terminals ; airways and airports, waterways and port facilities ; highways, streets and transit facilities ; utilities for power, communication, and sewage disposal ; other basic improvements required for production of goods and services.

(*c*) Population distribution : by area, age, sex, race ; conditions affecting community health, education, crime ; social organisation ; housing.

(*d*) Industry, agriculture, and commerce : location factors and production problems ; levels of income and cost of living and their classification by major employed groups and geographic areas ; public finance, including taxation, tax delinquency, land value.

The above are primarily important in their bearing upon growth, stability, decline or advance in quantitative and qualitative aspects of areas concerned. Past and future trends are important.

(5) Co-operate with official departments and also with private agencies in the areas concerned and consult with them respecting correlation of plans and programmes.

(6) Supply information and co-operate with interested public and private agencies, educational and public opinion-forming, in the conduct of programme to promote public understanding of planning.

(7) Perform other work as required.

B. Special Service :

In certain jurisdictions, the director will be responsible for the application of planning principles to private or public property in connection with such controls as zoning, subdivision regulations, or any others established as the responsibility of the planning unit by law, ordinance or specific instructions.

C. Qualifications :

Creative ability in developing and stimulating development of comprehensive solutions to complex problems of a social, economic, and physical character. Such ability requires broad vision, imagination, thoroughness, and sound judgment, together with competence of a high order in the abilities indicated as necessary to perform the duties specified above ; i.e., to administer, survey, analyse, and co-ordinate relevant factors, to prepare written reports, speak publicly, and to possess similar clearly implied abilities, including the capacity to evaluate the importance of data and to present material clearly and accurately.

II. Planning Assistant or Apprentice

A. Duties :

(1) Under immediate supervision of persons in a higher planning grade to assist, in any reasonable way, in the work of the planning unit. Most assignments will be of a strictly planning character; but, as the position partakes of the nature of internship in both government work and in planning, assignments may be made in all phases of the unit's operations in order to familiarise the planning assistant with the functions of the planning agency; opportunities should be provided for testing the planning assistant's powers of analysis and his ability to use judgment, and ability to think in terms of relationships in the solution of planning problems.

(2) Planning: under immediate direction and subject to supervision to locate, select, and compile data dealing with planning problems in tabular, descriptive, graphic, or map form; to make field observations or checks of existing conditions pertinent to the planning agency's programme. Ability to utilise library facilities and to explore available sources of information; to prepare memoranda summarising work performed or to be performed; to prepare reports or sections of reports based upon analyses of data collected.

(3) General: Map and reference material filing; adding and calculating machine operation; elementary drafting; answering simple enquiries presented by telephone, in person, or by letter.

(4) The data and surveys will include almost the same items as enumerated above under (4) *a* to *d*.

At the last Conference of the British Association a paper was read by O. Arup in which the main problems of a modernised education were dealt with.

> The problem is the same here as in other spheres of human activity—a wealth of new knowledge, new materials, new processes has so widened the field of possibilities that it cannot be adequately surveyed by a single mind. Corresponding to this increase of means there are increased or entirely new requirements to be satisfied. Our needs increase with the means. Standards are raised, new services introduced. This produces the specialist or expert, and the usual problem arises, how to create the organisation, the " composite mind " so to speak, which can achieve a well-balanced synthesis from the wealth of available detail.

Two main remedies recommend themselves.

> One is to have the planning carried out by a team of experts whose combined knowledge covers a substantial part of the relevant technical information. Another is to have all the technical information which may have a bearing on the problem checked up, classified, standardised and made easily available.

However, the first possibility appears not to offer a really efficient solution.

The trend towards the formation of larger planning groups on a commercial basis which is already apparent has, however, serious drawbacks. One of the major purposes of each group is to be successful, to make profit. This may fit in with the interests of society as a whole, but often it does not.

The other remedy should be preferred.

The creation of a fund of unbiased information available to all. This would mean the setting up of institutions working for the benefit of society as a whole, which would therefore probably have to be financed by the State.

Finally, the presentation of the National Plan. The result will be laid down in the form of reports, maps, diagrammatic schemes and actual plans by the central planning agency as well as by regional and local agencies. Besides these more or less expert statements effort should be made to make the general public " planning-minded ". Planning can hardly be successful without the active support of the public; at least public opinion must not be in opposition to the work of the planners. It seems that the general attitude is relatively favourable towards planning. Of course, there are always fluctuations of attitude which are sometimes rather superficial. Yet for conducting an intelligent educational campaign on the basic ideas of national planning something more is needed than to put over propaganda for daily consumption. Some underlying and more stable attitudes do exist which are the obvious starting point. There is, first of all, the deep conviction that things cannot go on as they did before the war; that mere muddling through will not do, and that only a systematic procedure can lead us out of this present chaos. Then there is the general desire to preserve and even to improve the natural resources of the country in the interest of the community, while, last but not least, there is a feeling that all parts of the community should share equally in the fruits of reconstruction. All these tendencies are in favour of planning; we can, therefore, justifiably dispense with " propaganda " and can turn to more sincere means: to persuasion and explanation.

This can be done by the written and the spoken word and by a visual approach. All strata of population must be reached; we must not only approach what is termed " the general public " but also those directly connected with planning as central, regional and local authorities in every sphere to be touched by reconstruction: industrialists, agriculturalists and the whole host of potential reconstruction doctors. What are the subjects which are to be presented? Here are a few suggestions selected at random.

Order as opposed to disorder.
Freedom within planning.
The planned household.
The individual and the community.
The idea of a neighbourhood unit.
My home is not a " castle ".
Crowded districts or sun, air, space ?
The child as the centre of community life.
The rural workshop and industry.
What the electric grid can do.
The present distribution of population and after.
The new diet.
Flats or small houses.
Leisure.
The smokeless town.
Afforestation.
Social services.
The field of influence of our towns and villages.
Location and mobility of industry.
Speed and transport.
Planners at work.
The region and how it grows into a unit.

This list could be extended *ad libitum*; but even so it will give some idea of what is needed. One principle must, however, dominate all these suggestions: it is not enough to show the present conditions; the potentialities of future developments inherent in our existing situation must be brought out clearly. This will give ample scope for trick films which, if cleverly carried out, might help a good deal in promoting new ideas.

It is appropriate to summarise the main points which are to be considered as essential principles of national planning because this subject is new in theory and practice.

(1) National Planning provides the framework within which the individual can develop a free initiative and a full responsibility towards the community. It is a continuous process controlling the strategic points of the fabric of society and bringing about the desired changes gradually and intentionally.

(2) National planning must be flexible in its character and adaptable in its scope, in order not only to withstand the impact of changes in the international, as well as in the national sphere, but also to turn them to the most productive use.

(3) National planning must be positive, starting simultaneously from the top and from the bottom and proceeding correspondingly with regard to time, space and objective. A bold action in the sphere of the unlikely is preferable to over-cautious procrastination.

(4) Democratic planning, in particular, must balance con-

sciously and systematically the activities and decisions of the individual citizen and the inalienable fundamental rights and needs of the community, thus involving a certain amount of centralised decision while producing decentralised achievements.

(5) Democratic planning must reject coercion and propaganda; it believes in and uses persuasion, education and exposition. It attains its results by creating a vital and healthy environment as the only rightful means of engendering the development of the capacities of the individual, who can then make full use of the possibilities offered to him by independent scientific research and invention.

(6) Planning embraces numerous spheres of life. Not political aims but social gains are at issue.

(7) Planning takes its primary direction from the social needs, as the connecting link binding all other functions of life together in the interest of the community as a whole as well as of the individual citizen.

(8) Planning of the natural resources centring around land, water and air results in producing the maximum effect with regard to human resources and human values. Thus, social and physical planning are complementary and must proceed simultaneously.

(9) Planning aims at a higher standard of living and leads to the preponderance of the demands of consumption over production and distribution.

(10) Planning proceeds on a national scale in order to span the gap between the fixed position of the natural resources and the places of consumption spread out over the whole country.

(11) Planning co-ordinates and systematises on a national scale the more important human activities in the field of production and distribution through the medium of which the natural resources are to be made available to every member of the community.

(12) Planning investigates the potential values of human and natural resources for development in the future, taking the existing conditions only as the starting point.

(13) Planning changes the structure of settlement. It intends to re-develop congested urban areas and to increase the capacity of settlement in rural districts in order to redistribute the population and their workplaces more evenly over the country.

(14) Social planning is comprised of education, health, recreation and the promotion of social relationship. It develops a co-ordinated system on a national scale for all these categories to widen the opportunities for every member of the community alike in town and country.

(15) Stationary and mobile, outdoor and indoor, communal

and individual facilities of every kind are to be integrated in order to reach even the remotest places and to guarantee diversification, vitality and responsibility, and to create an increase in the demands for social institutions.

(16) A system of National Parks interconnected by parkways and linked to regional and local parks is the "green grid" between which decentralisation and dispersal of settlement develop freely and systematically.

(17) Social relationship is to be cultivated through the obligatory building of community centres together with all other institutions related to them; the rationalisation of the household; the promotion of consumers' organisations; and through the splitting up of amorphous settlements into neighbourhood units.

(18) Physical planning balances the favourable and unfavourable natural factors against each other by a rational use of land and water according to their different uses so that due consideration is given to potential development in the future and to the decreasing significance of geographical obstacles in the light of the increasing capability of man in overcoming them.

(19) Distribution of power, goods and men over the "grid" of the electricity and transport systems on a national scale is a prerequisite of the National Plan. Rationalisation and elimination of dispensable installations, co-ordination of all means of transport and extension of the transport system to more remote districts increase the capacity and efficiency of the distributive system as one of the most important conditions of the redistribution of population and industry as a matter of national concern and national control.

(20) Legislation and finance, the administrative machinery and a trained personnel must be ready at the time of the demobilisation which must be considered as the initial stage of the National Plan.

(21) National Boards for the main branches of production and distribution must be set up, subject to direction by a Central Planning Authority but equipped with sufficient power to operate their assigned field efficiently.

(22) Long term, short term and yearly plans forming a coherent whole must be prepared and adapted to the changing conditions. Central, regional, inter-regional and local bodies must be systematically co-ordinated.

The following suggestions have been drawn up with special regard to the knowledge needed immediately for planning on a national scale. They do not presume to be complete. Rather, they want to "state a case". The formulation of an exact programme of research is a kind of research in itself; and many items will turn up only in the course of the work.

We must beware of all those self-styled and make-believe planners who think that almost every sphere of human life is liable to "planning". They must be brought down to earth with a bang and must be reminded that the ultimate objects of planning are human values and that these human values are embodied in man himself. No surer way could be found of wrecking all hopes of a systematic reconstruction than trying to "plan" the individual human being. This danger should not be underrated; it has been aggravated recently to a considerable degree. A programme of research must be kept free from these influences even though they might hide behind such formulas as "the biological approach" or "scientific objectivity". I do not want to be misunderstood; I do not want to see science abused by amateurs and political busybodies. The programme of research for every category of planning activity must be drawn up and the research itself must be carried out with the fullest consideration of the fact that planning aims at the systematic and intentional direction of some major functions of human life in order to create an elastic and useful framework for the personal life. Every direct interference with personal life must be excluded; personal life is not "plannable" unless we wish to put the clock back to a totalitarian state. We must make use, of course, of all scientific means in approaching a problem, but we must know, at the same time, where the limits of science are. Let us not forget that there are no absolute values in personal life and that everything is relative; and further that this relativity forms one of the most creative values of mankind, namely our gift of spontaneity. Only a beginner will believe that every viewpoint is already a standpoint; only a rightly understood relativity will enable us to take up our standpoint after having reviewed the multitude of viewpoints. But "the fool steps in where angels fear to tread."

(1) What are the educational needs, outdoor and indoor, for children and adults with regard to their

categories, numbers, unit-size;
spatial distribution and service area;
mobile and fixed character?

How can an efficient educational system, offering equal opportunities to all, be organised in accordance with

the changing structure of population as regards age, sex composition and numbers;
the redistribution of population in general and in detail;
a reduction of working hours and the need for recreation and its possible combination with education;
the spatial needs of industry and the principle of "learn by

doing " through a combination of industrial production with education ?

How can a stable efficiency of the educational system be maintained even in times of crises ?

(2) What are efficient health standards for children and adults with regard to air, sun, space, variety and change of environment :

the relation between work and recreation, especially with regard to working hours, working process, workplaces, open air life, mental and physical employment ?

What institutions are needed with regard to their

categories, numbers, unit-size ;

spatial distribution and service area ;

mobile and fixed character ?

How are the Health Services to be organised as an integrated system and open to all on equal terms ?

How will the changing structure of population affect the administration and spatial organisation of the Health Services ?

How are the Medical Services to be reorganised as complementary to the Health Services ?

How will a changing diet influence the production of food ?

(3) What are efficient standards of

active and passive ;

outdoor and indoor ;

mental and physical ;

individual and collective

recreation according to their special characteristics under urban and rural conditions and to their specific correspondence to different types of manual and mental work ?

What institutions are needed with regard to their

categories, numbers, unit-size ;

spatial distribution and service area ;

mobile and fixed character and internal structure ?

How is it possible to develop a " recreational grid " covering the whole country and including parkways connecting the various parks ?

(4) How can social relationship best be promoted in town and country ?

What are the principles on which a long-term and a short-term policy respectively should be based ?

What institutions and facilities are needed ?

What constitutes the workable service area of a communal centre and what services should be attached to it ?

Is it desirable to combine Health and Medical Services with a communal centre ?

Shall the communal centre be the administrative focus for such services ?

(5) How can the potential qualities of the natural resources best be developed with especial regard to the redistribution of population ?

How can the various land uses be balanced against each other ?

Is a mere permissible control of the land and the main human activities or a national ownership of the land preferable ?

(6) How is the distribution of power to be organised in accordance with the needs of a redistributed population ?

How is the distribution of transport to be organised in order to

reduce transport between home and workplace ;

extend transport to hitherto neglected areas ;

increase speed ;

rationalise existing installations ?

How can the " coffin " be destroyed through an extension of the transport grid and a combination of all types of transport ?

(7) How will the National Plan be financed ?

How can the existing capital, brain power and labour be integrated ?

Is it desirable to replace local rates and other local financial obligations by regional rating and taxing ?

THE FOUR FUNCTIONS

HUMAN life consists in its visible sphere of the four functions of housing, working, distributing, recreating. Their physical manifestation is human settlement in town and country and all that it implies in the broadest sense. We know that these four functions are not soundly balanced and that the function "working" in particular has assumed such a preponderance over the others that not only the whole of our functional life, but also of our personal life has been thrown completely out of gear. This disparity and the resulting uncertainty as to the true values of our life are the deeper reasons for the degrading state of our urban and rural settlements. The restoration of this balance is the prerequisite for successful planning in the future. If we admit the co-ordination of these four functions and there can be no doubt about this—we must go still a step further and ask: Is this balance sufficient in itself, or does it still need a connecting link like the scale-beam of a weighing machine? The answer is: Yes—but the reason is not easy to explain. However, it is too important a problem in relation to planning to be left in abeyance. I remember a lively discussion with two other persons who were eagerly interested in planning; they tried to convince me that economic problems should be considered as of primary importance, for, so they concluded, where man can work and earn enough money, there all other problems, especially the social one, would be solved automatically. Although I tried hard to convince them that no true community of happy human beings has ever been founded on money alone, I did not succeed. This state of mind is very common. If we allow it to continue we should be encouraging the perpetuation of all vested interests. It seems that the scale-beam is urgently needed! But is it right to put the problem in this way? Not quite, for this scale-beam does already exist. What is needed is only to make it workable again. In other words, the centre in which the four functions meet is man himself; he is the connecting link and the balancing power. Following the terminology of Professor John Macmurray we may call this side of human life the personal life or the social life; in any case it is something that is different from, but complementary to, the functional life. At the time when the above-mentioned discussion took place I did not see the way as clearly as I do to-day. Now I know that this discussion was about aspects of life that are not comparable. The question whether economic or social problems are to be given primacy in national planning simply

cannot be asked. Economic problems are in a different sphere altogether from social problems; they belong to the sphere of the four functions, while social problems belong to the sphere of the personal life of man and are, in fact, the scale-beam which balances these four functions. The fact that this balancing-beam does not work without friction explains the unbalanced interrelationship between the four functions. Consequently, planning must (*a*) re-establish the balance between the four functions of housing, working, distributing, recreating; and (*b*) free man so that he can live his personal life full of responsibility towards himself and the community and be strong enough to weigh the four functions against each other.

But this balance demands a clear distinction between the four functions; it must not lead to a woolly synthesis or to a compromise which would achieve nothing. The very idea of a balance is just this complementary differentiation which brings out in regard to each of these functions the fundamental needs and their possible realisation. If we are planning new or replanning existing settlements, we must, therefore, start with (*a*) a well-founded social programme and (*b*) a workable conception of how to fit the four functions into this social programme; but we must not proceed the other way round. This may sound rather simple and self-evident but the difference is enormous. Our extraordinary evolution of technique has failed hitherto to take adequately into account the social problem. If we really dare try and get to the root it would mean the end of "economic man" and the emergence of a new social relationship. We should be fully aware of the magnitude of this change; it comes near to a complete break with our past conceptions. The more we understand its significance and the more we are ready to admit its inevitability, the greater are the chances of avoiding a revolutionary breakdown and of using mechanical discoveries and developments as instruments in a peaceful and creative evolution.

Yet we have to deal with facts, and facts are stubborn things. If we are to distinguish clearly between the four functions we must also find ways and means of really interrelating them so that they can fulfil the requirements of daily life. One factor stands out clearly in this respect: it is the space-time factor or, in other words, mobility. The new structure of settlement must be planned on a larger scale; and this fact alone explains the importance of the space-time problem. It means that distances can and must be reduced in time, and that the interrelationship of men and cultural and material goods can and must be closer. Decentralisation and dispersal of the population and their workplaces amounts in reality to a spreading out.

And although there will be a reduction of distance between home and workplace the need for more and better inter-communications will grow; but it can grow satisfactorily only if the scope and speed of our communications are increased. We are experiencing to-day the shrinking of the earth in a cruel way. The war affects all countries and the battlefronts stretch over vast distances. Speed and mobility mean everything. We are getting used to the fact that the earth is one unit. In fact, the development seems to overstep itself, e.g. electrical signals carry the words of a speaker in the Albert Hall more quickly across the ocean to listeners in America than the same sound waves can reach those listeners who are seated in the seats furthest away from the speaker in the Albert Hall itself. We are witnessing all this but we have not yet seen its implications for this island which is not "shrinking" in the same degree as the earth. Of course, it is a political, social and economic unit, but something seems to be wrong if one needs over one hour for travelling from a residential place on the outskirts of London to the City, or eight hours for the journey between a coastal town in Wales and London or Manchester, whereas a trip from Europe to America can also be made in about eight hours. The question then arises: how can this shrinking of the space-time relation be made really effective; and how can the two "nations", the countryfolk and the townspeople be welded into a coherent social and economic unity. We will understand the true implications of these questions better if we look at the four functions more in detail.

First, housing must be balanced against working, distributing and recreating. The obvious prerequisite is that we can spend enough time at home for a real consummation of the values which homelife shall offer materially and ideally. The home as accommodation for the night only is an impossibility. But this is the normal case if people have to travel every day early to their workplace and come back late because the distances are too long. This might seem to be a rather elementary argument; but often just these simple facts are the most decisive. To absorb fully the atmosphere of a place and to get stimulated by it needs some time. Consequently, work and recreation must be as near our homes as possible. A truism?—Yes, of course; but let us look around at the existing state of affairs. To achieve an adequate proximity, an efficient distribution of power, goods and men is essential. Housing must also provide both for privacy and for social intercourse. The senseless phrase "my home is my castle" does not take all of this problem into account. It was always somewhat perplexing to envisage Mr. and Mrs. Smith as Lord and Lady of their "tunnel back" jerry-built

castle. Again, the solution is very simple: houses or flats must be grouped together in such a way that a social focus holds a limited number together; and, at the same time, the arrangement of the houses or flats must be such as to make real privacy possible. How this can be done will be discussed later. Yet, there is still another point to be made: so far only external factors have been mentioned. The internal factor, e.g. the construction of the house itself and the arrangement and equipment of its rooms are likewise very important if we are to be filled with the energising spirit which enables us to keep the four functions in balance. The house or the flat must not be a burden either for husband or wife. It must not be something like a totalitarian state encroaching on the time and energy of its inhabitants. The house and the flat exists for their sake, not vice versa. This again is a rather simple statement; but, also in this case, it is quite sufficient to look at the present situation. The little time which the man can spend at home, in many cases, is fully occupied with some household repairs or other work, and if there is a garden he may have the advantage of gardening over the week-end or he may go to his allotment desperately trying to persuade himself that all this is just his hobby. The housewife's burden is much better known because she is courageous enough to call her work by the right name—that is, just work—and not to enhance it by self-deception.

A counter-example will make this problem clearer. We may safely assume that a "back to the land movement" will be propagated after the war. This will be a "remedy" for unemployment if the preparations for the National Plan have not been completely finished before the demobilisation in order to provide sufficient work systematically directed on a national basis which can absorb the stream of men and women released from the forces and industries. This movement need not be mentioned at all if it would not be a hindrance in the way of a successful redistribution of the population and industry and to the establishment of a balance between the four functions. This idea is based on the establishment of "subsistence holdings" as a means of offering "living space" to the unemployed. But actually it is no solution; on the contrary, it hinders national planning. From the point of view of town planning these settlements are wrong, because they increase the growth of towns by their situation on the periphery, by sprawling out along the main roads. They are wrong, also, for the countryside because they cling to the poorer soil as the new "settlers" do not possess enough capital to buy better land. From an economic point of view, these holdings are wrong because they are too small to guarantee a sufficient economic basis and full work. The

intention is to develop such subsistence holdings in the neighbourhood of existing industries thus providing at least a chance of industrial work side by side with the work on the land. Yet, is there any real guarantee of industrial work, and is the existing location of industries such that it can serve as a nucleus for an improved structure of settlement? And as regards the function housing, it is bound to be a failure, because the three other complementary functions cannot work correspondingly, and the essential prerequisites of housing itself, as described above, cannot be fulfilled. Here, we have an example of the detrimental result of planning a settlement for the fulfilment of one of the four functions only, in this case, for finding work.

The second function, working, must be balanced with housing, distributing and recreating. The conditions and requirements of work in town and country are different, although not as different as is commonly assumed. To bridge the antagonism between town and country, one of the essential problems of national planning, the cleavage between work in towns and work on the land must be lessened, especially in regard to technique and standard of wages. The first demarcation line between town and country was removed and the barter economy disintegrated when the peasant became accustomed to buy goods manufactured in the towns. To-day he has reached the second line. The impact of modern life on the countryside is growing stronger and stronger. Science teaches rational cultivation; technique the use of modern machinery; the wireless communicates all the news of the world; the world market dictates the prices. The second line will be crossed just as the first one, and no interference from men still living in the past will stop it. As the "burgher" of the Middle Ages, rooted in his native town, developed into the "city nomad" without personal bounds in his city, so the craftsman-peasant rooted in the soil will become an industrial countryman without any personal relation to his surroundings, if no new and personal homogeneity between himself and his work can be created. The existing professional specialisation has destroyed the ethos of work and the happiness man can find in working. We must restore them, or else the function working will push aside the other functions to a secondary place. The assimilation of the principles of working in town and country is the necessary prerequisite for a redistribution of population and industry and for the re-establishment of the other functions to their rightful place in human life. A decentralisation of urban areas demands an increased capacity of the rural settlement and produces as a result of this change a concentration of buildings in the country-

side. This is the basis on which a revivified social life can develop.

The workplace must not be too far away; and the working hours must not be too long. It is again the time-space problem that has to be solved. This can be done either by the restriction of the daily working hours or by restricting the work to, say, 4 or 5 days of the week. The proximity of home and workplace is another factor resulting in time saving. What are the needs of the function working under these conditions? With regard to the reduction of working hours, scientific management seems to be the obvious way if one does not assume that production as such shall be reduced. F. W. Taylor, the "creative genius of scientific management" made a little known statement before a special Committee of the House of Representatives of the Congress of the United States in 1912. This statement gives the essence of the problem, especially in regard to the approach we have in mind. He said

> that scientific management had never been inspired by any desire to establish a new social order, but to make human relations harmonious in industry as it is to-day—individualistic, capitalistic, with specialisation and division of labour. This harmony is to be established by an intellectual revolution on the part of both employers and workers concerning their common purpose and the means of achieving it. The purpose is greater leisure and culture for workers as well as employers through greater prosperity resulting from greater productivity. The means to this greater productivity is discovery by research of a "science" for every operation and every relation between operations in co-operative activity; and the formulation of the discovered laws into rules of co-operative procedure. The organised investigations for discovery of the laws governing the joint activities should be participated in by workers, and the resultant procedures should govern owners as well as workers. The co-operation must be voluntary—not imposed by one party on another—and could if necessary be promoted by collective organisations. The achievement of voluntary co-operative activity is a matter of education and understanding. The mechanisms of scientific management should not be confused with the principles. The latter are enduring; the former, expressions of the principles, may vary from place to place and change with changing conditions of the application of the principles. Therefore scientific management is not something which may be imitated or bought outright, or imposed by one party on another, but is a process of co-operative education in learning how to achieve ever greater productivity and ultimately greater leisure and culture.[1]

Proximity of home and workplace must necessarily result in

[1] Quoted from "World Social Economic Planning", World Social Economic Congress, Amsterdam, 1931. The original text is out of print.

a splitting up of larger industrial units. These industrial and social units are dependent on each other, in so far as the decentralisation of industry and, in its course, the subdivision of industrial establishments, increases the mobility of industries and the possibility of locating them near the homes of the workers. We shall deal with this problem later on in more detail.

If working is to play its efficient and integrated part in life, stability and sufficient wages must be secured. This means that a sound diversification of work must be offered in every community. And this is not only important from an economic point of view but also from a social angle, for too one-sided a professional structure leads to sterility of the social attitude. This problem will also be dealt with later.

The working function, integrated according to these principles and not kept in a watertight compartment, will greatly help to make up for the utter neglect of the social problem in the past in favour of the " industrial progress ". It will have to give up something of its previous almost overwhelming preponderance, but it will be more creative in a deeper sense, for it will help to link the functional life of man to his personal life in a far more efficient and balanced way. It will not try any longer to solve the problem of want in the midst of plenty simply by doing away with plenty, but it will adapt itself to the balanced order of the four functions.

> Industry is no social benefit unless it makes possible better human living. Our civilisation of the last hundred years has suffered from too little attention to that fact. One of the " goods " of which the production needs to be greatly increased is a by-product, the health and the happiness that come from conditions of daily work sanely adjusted to the physiological and psychological make-up of human beings, and from daily surroundings in which individual personality and family life may flourish.[1]

The distributing function, applied to power, goods and men, is the obvious connecting link in a practical sense between the other functions but is in itself an important part in the fabric of our life. We may quote also the following sentences from Staley's book in this connection, where he says that we can use fully to-day

> the advantages of electric power over coal-steam power for decentralised installations, combined with sane city and town and regional planning, and the greater productivity of modern industry based on new techniques and wider access by modern transport to all the varied resources of the world. . . . The general tendency of " neo-technics " to put emphasis on the exact adaptation of material to function continues to increase the advantages for economic welfare of a world-wide raw material supply area ;

[1] E. Staley, ibid.

and, we can add, for the growing factual oneness of this country.

> The specialised nature of many products of industry in this age also enlarges the market area required for efficient operation. For some industries every person may be a potential consumer, for others not one person in a hundred thousand. In general, industries making durable goods and highly specialised producers goods require a wider market area in order to maintain a steady output at a large volume than do those making non-durable consumers, goods.

And,

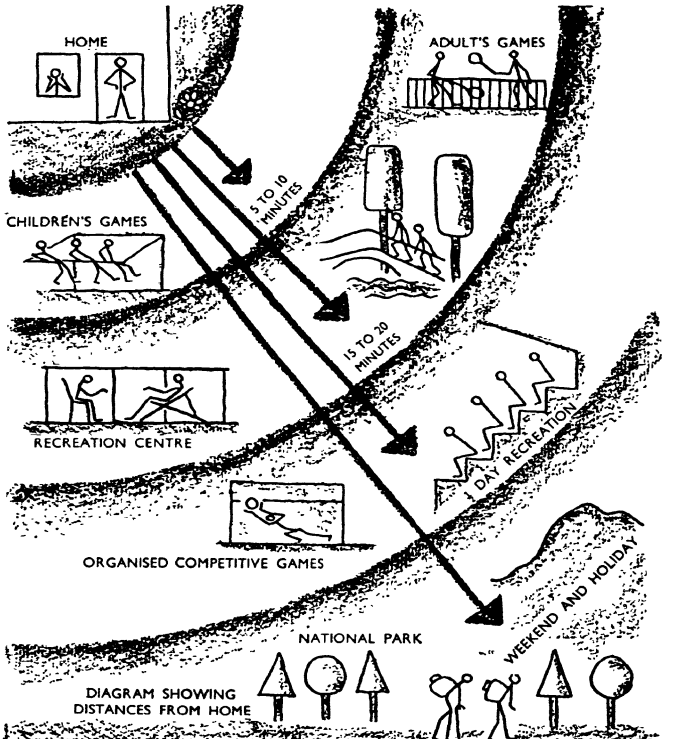
> the world has been shrinking at a rate unprecedented in history, and it continues to shrink. At the same time, new methods of production have been introduced. Large-scale industries and specialised products have put a premium on wide markets. More exact adaptation of materials to function, rising industrial outputs, new inventions creating new wants, have brought a mounting demand for an unimagined variety and volume of raw materials, to be satisfied adequately only by drawing on widely scattered sources. In all these ways our scientists, inventors, and engineers have been pushing in the direction of a unified, world-wide economic system.

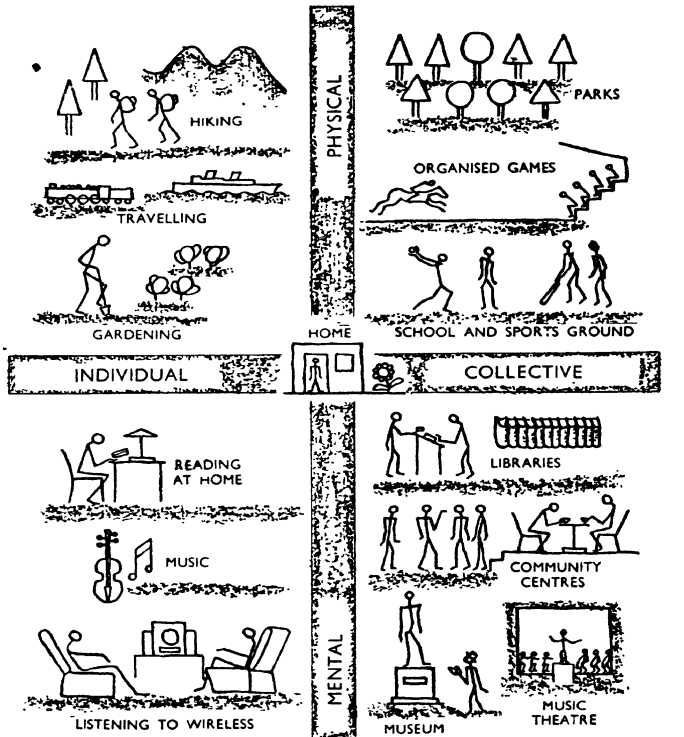
This is true—and rightly interpreted it proves that the materials needed for production are so diversified and numerous that the location of industry becomes more and more independent. If most raw material has to be got from elsewhere it is only reasonable to split up production and to follow local consumption. A split-up production promotes social and economic unity. Centralised production destroys it.

There is no need to repeat what has already been said in regard to distribution. Only the following may be added. The distribution of power, goods and men alike was hitherto focused on the towns; the countryside remained a kind of passive interspace between them. Rural "distribution" is thus secondary to and dependent upon urban needs. This development was natural, for the towns, and not the country, were actively engaged in creating and spreading our present technical and scientific inventions, of which distribution, as insufficient as it may be, is one of the most characteristic factors. The extraordinary opportunities given by motor transport, to mention only one example, have not yet penetrated to the villages between the main roads, which are still isolated and cut off from modern life. A redistribution of population must alter this if it is to be successful; it will create new standards of distribution which are more flexible and adaptable to the social needs of every community. There must not be any more "remote" parts;

there must be, on the other hand, no delays through congestion or through slowness; the time-space relation must be rendered efficient to the full. It is not at all an over-simplification to say that almost the whole problem of the four functions can be reduced to the time-space factor. There is nothing philosophical about this problem; it is an entirely practical affair and can be tackled successfully, for we have all the necessary means at our disposal. The housing, working, and recreating functions will work the better the more distributing reaches every part of the country in the shortest time possible, in the shortest intervals possible and under the most economic conditions possible. The system of distribution is like the arteries of our body. If we suffer from arteriosclerosis we must do something for it. Our community is a living aggregation of all our homes, of all our places of work and recreation; and the system of distribution is pumping the lifeblood of power, goods and men to all its parts. If there is something wrong with it—and there is a definite proof that this system is ill—we must reorganise it on a national scale, i.e. for the benefit of the whole body "community" unless we want to let it starve from undernourishment and irregular circulation.

The recreating of function cannot be made productive simply by a reduction of the time of work. It is a far more complex problem which starts with the organisation of the household and the architectural plan of the house or the flat, and beyond this with the social conditions in general. It seems that it is far more difficult to break down the over-aged and burdensome habits of the individual household than to organise a social environment from outside of which recreation is an integral part. Yet, without a thorough overhauling of the whole material arrangement and an emancipated atmosphere in the individual home, the recreating function will remain a mere by-product, something that might be practicable but is not a matter of course. We still think that recreation is not a necessity but a kind of premium for good boys and girls who have done their work with distinction. Recreation is fully as important as any of the other three functions and is intimately interwoven with them. And not only this, the various needs of and facilities for children and adults must be balanced against each other if the whole system of recreation shall work as a creative part of our life. And again, it must work in regard to time and space. Recreation for short intervals must be possible at home or very near to it; a whole day's recreation can be somewhat further away but must be in the neighbourhood; week-end recreation occupies the third ring of the recreational diagram, whereas several weeks' holiday takes, of course, the last and outer ring. Indoor recrea-





Recreational Diagrams.

tions can be grouped correspondingly. All this shall prove that indivisible unity exists between home, town, surrounding country, region, and the country as a whole and recreation as the fourth function. The interaction between environment and man finds its factual expression in individual and communal recreation which are both complementary to each other in the physical and mental sphere. It is not an exaggeration to say that the recreational agent, if rightly understood and fully performed, is one of the strongest in the reshaping of our towns and homes. It splits up the amorphous structure of urban districts in an organised system of settlement units; it drives green wedges between these units interconnecting them; it provides the nucleus of outdoor and indoor recreation around which houses and workplaces can be laid out advantageously; it concentrates scattered settlements and preserves the beauty of the countryside; it demands and develops communications; it stimulates a better design of industrial plants and small workshops; and it affects fundamentally the home, its relation to the garden and to the lay-out of residential and industrial quarters in general. The demand must determine the supply of recreational facilities, and also their quality. Education for leisure and through leisure will raise our standards.

The law of the balance of the four functions should be the first commandment for every planner and for all who are either actively or passively concerned with the reshaping of our future. To act contrary to it should be considered as a mortal sin against the spirit of planning. It must be emphasised once more that clear distinction between these four functions is imperative and that synthesis will never produce any result.

THE IMPACT OF TECHNOLOGY

"ALL experience hath shewn that mankind are more disposed to suffer while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed," states the Declaration of Independence. These words touch the heart of the problem. They explain why it seems to be so difficult to persuade most people of our imperative need to take into account the potentialities inherent in scientific discovery just as much as the customary and tried methods when planning for the future. Flexibility has been indicated as one of the main characteristics of national planning. We must be ready for changes in the structure of population as well as in the field of technical innovations. For there is hardly a single innovation which does not influence the social and economic sphere of our life. It is, of course, not easy, indeed it is sometimes scarcely possible, to predict the course which some technical trends may take. But what we can do is to develop a framework of national planning that is wide and adaptable enough even for changes of a fundamentally different nature. Such considerations have hardly received enough attention in our preparations and discussions about national planning. The technical means which are at our disposal to-day were accepted as the exclusive methods for putting the machinery of national planning into operation. It is just for this reason that attention must be given to this problem in a work like this; but it should be understood that the following pages can give only a general indication of some factors which are of special importance in regard to planning. It is, therefore, merely an attempt to "state a case", for the problems are manifold and of such magnitude that a large number of experts will be needed to investigate it in all its detailed ramifications.

Technology, and behind it science as the motive power, are the triumph of reason over instinct just as much as planning is the ascendency of conscious control over the instinctive forces of an uncontrolled *laisser-faire*. Planning and technology belong together. They spring from the same roots and both lead to the same conviction: what matters is how we can master the situation so that the situation shall not master us. Hitherto we have developed and relied upon our sense of reality almost exclusively; but we need not only to see things as they are but as they might be. It is this sense of new possibilities which will break down inertia. It is most strongly inherent in science and technique. It stands in the forefront of the forces which

are transforming our admiration of sheer quantity into a truer understanding of quality, thus paving the way for making human values our standard of planning. Science and technology have to explore the differences as well as the similarities in things and functions: and this is of special importance in our present situation and in relation to our present subject. The scientific spirit was the dynamite responsible for the disintegration of our civilisation. It will also be the main constructive force in reshaping the future. The last century saw a desperate struggle for a synthesis between the many forces which science brought to life. Men were overwhelmed by this impact, and it was only natural for them to look for past precedents as they always do when they are unable through lack of vision to cope with problems in a sovereign manner. Let us hope that the future will give us power and energy to appreciate and analyse the many forces at work in our community and to blend the results of this accurate analysis into an inspiring and significant whole where each function has an appropriate place. Technology and planning are the practical components of science and rationality, and as such they form a coherent whole.

The ensuing observations are based to some extent on the excellent Report of the National Resources Committee "Technological Trends and National Policy", which is, as far as it is known, the only contribution looking at this problem in its entirety. In the opening sentences it says:

> In an age of great change, anticipation of what will probably happen is a necessity for the executives at the helm of the ship of state. A study of invention offers a very good clue to future social conditions and problems of a nation. . . . The scientific achievement comes first and the social effects later. The fact that there is a lag makes invention a social barometer. . . . Whether the social effects of inventions can in practice be read off this barometer with sureness is doubtful in the present stage of the advancement of social science. But that inventions are an indicator seems clear, though it may require special education so to use them. The usefulness of scientific discovery as a guide for national policy is also strengthened because of (*a*) the great variety of inventions and (*b*) the number of points of contact between a modern government and the affairs of its citizens. It follows, then, that whether plans are made and executed or not, trying to anticipate is an endeavour of prime importance, unless drifting is to be the course. These conclusions were at the basis of the recommendations of the President's Research Committee on Social Trends appointed by President Hoover in the autumn of 1929 and which reported their findings three years later in their report, *Recent Social Trends*. In discussing the vast complexity of problems that confront our Nation, that committee found . . . that the clue to their understanding as well

as the hope for improvement lies in the fact of social change. Not all parts of our organisation are changing at the same speed, or at the same time. Some are rapidly moving forward and others are lagging. These unequal rates of change in economic life, in government, in education, in science and religion make zones of danger and points of tension. . . . Scientific discoveries and inventions instigate changes first in the economic organisation and social habits which are most closely associated with them. . . . The next set of changes occurs in organisations one step further removed, namely, in institutions such as the family, the government, the schools, and the churches. Somewhat later as a rule come changes in social philosophies and codes of behaviour.

In general, one may assume that technological changes tend to precipitate social changes, and that the adaptation of modern man to his machine-made environment is different from his adaptation to nature in so far as the former is rapidly changing. We must distinguish, in the first instance, between the influences which inventions exert upon producer's goods and consumer's goods. Both are primary influences of the new technology. A farm tractor, a producer's good, replaces horses; it means the purchase of gasoline and new forms of farm management. Air conditioning of a house, a consumer's good, alters the construction and use of the house; it calls for pre-fabricated units which must be made in new factories and marketed through an efficient organisation.

Each of these primary effects may, in turn, produce derivative effects. Thus, as the tractor replaces animals on the farms there follows as a derivative influence less need for horse feed, which means that land used for growing such feed is turned to other uses. This is a secondary effect. As land formerly used for stock feed yields other crops, the quantity is increased of other agricultural products, which tends to lower their prices. These lower prices are, in turn, mirrored in land values, perhaps in demands for tariff protection. Thus, these various derivative influences occasion effects secondary, tertiary, and so on. Each effect follows the other much like links in a chain, except that the succeeding derivative effects become smaller and smaller in influence. The effect of the tractor on lobbying for a higher tariff is very slight in comparison with other forces. A derivative effect in another direction is the stimulation the tractor brings to the co-operative movement in various ways, but especially in the purchase of gasoline. In general, the first primary effect of an invention is found in (*a*) the economic practices of production and (*b*) in the habits of the consumers using the finished product. The economic organisation as a whole may be the secondary influence if the technologies concerned are important ones. Thus, the tractor has the influence of making farms larger because on the smaller farms a tractor will not pay. Time is required to purchase additional land and to

consolidate farms. In other ways tractors influence the agricultural economic organisation. They make the adjustment to a business depression more difficult than in the case of horses and mules, for in a depression it is easier to raise feed than to buy gasoline. The tractor also moves the farmer a bit closer toward specialised commercial farming as contrasted to subsistence farming. . . . Later derivative effects impinge on other social institutions, such as family, government, church. Thus, the great economic changes that followed the power inventions modified the organisation of the family. Women went to work outside the home. Children were employed in factories. The home gradually lost its economic functions. The father ceased to be much of an employer or manager of household labour, at least in cities and towns. There followed a shift of authority from father and home to industry and State. In cities homes became quite limited as to space. More time was spent outside by the members of the family. In general, then, these changes in industry reacted on the family life.

It has been demonstrated that production of food without soil is in immediate reach of our possibilities. Potatoes and tomatoes, for instance, can be grown in tanks containing some chemical materials and water exposed to light and fitted with electrical heating. The potentialities seem great if one considers that " one tank of exactly one one-hundredth acre of water surface produced 25·6 bushels of potatoes, and yields of other crops are equally impressive ". Will it be possible to produce such food without soil in or near by every town, thus reducing the demands on traffic ?

Television, installed at home, may work in creating new family and social bonds replacing the theatre and the cinemas, and also changing the structure of traffic and settlement.

We have to admit that material factors produce far-reaching social problems, although we must always be aware that these material forces depend on the will of man and on his insight into the potentialities latent in technological trends. The actual knowledge of technological facts is not enough ; behind it there must be, at the very best, a certain amount of unanimity of purpose, moral courage and a real determination to overcome strong and inevitable resistance to inventions and the consequent social changes. The real trouble begins when the results of pure science are applied to the affairs of our daily life. The timid souls try to convince us that it is no use to rely on " vague predictions " and innovations which will not " pay ". Nothing venture, nothing have.

The report of the National Resources Committee states :

While in its early periods capitalism was more responsive to advance in technology, there have always been within it forces

which have checked maximum receptivity to technological innovations. Factors inherent in the structure of capitalism have often made technological innovation overwhelmingly, and sometimes exclusively, in the interests of a relatively few owners of industry, and to the disadvantage, sometimes temporary, but often permanent, of the masses of the population. The technical innovations in the early phases of the industrial revolution were introduced with callous disregard of the havoc they wrought in the lives of the skilled artisans, as have such changes, with few exceptions, since.

And it quotes from the British Report of the Committee on Industry and Trade, made in 1929, by Sir Arthur Balfour:

> It is when we come to consider the relation between the research associations and the industries themselves, and the extent to which these industries avail themselves in practice of the results of research by their own associations, that we find most cause for disquietude. . . . We have laid special stress on the importance of this aspect of the question of scientific research in relation to industry, because, in our opinion, it is the imperfect receptivity toward scientific ideas on the part of British industry which is at the moment the main obstacle to advance.

This attitude still persists and is a great obstacle to the prompt adaptation of inventions to the social conditions changing rapidly and at different speed. Sentimental values and customs play their part in preventing individual and collective adjustment to a new environment. Even discomfort seems immaterial in such circumstances; and it is a common experience that unemployment produces violent outbursts against modern technology rather than rational adaptations of the social structure. It is too easily forgotten that labour opportunities have been multiplied enormously just through modern technology. It would be very interesting to investigate the actual displacement of labour as the consequence of technical inventions. While it cannot be denied that technical changes may produce unemployment, it is also true that they may lead only to a shifting of workers from one industry to another, or to a temporary displacement of workers in any or all of the following ways:

(*a*) Diverting production from a competing plant in the same industry.

(*b*) Reducing the output of another industry by offering a cheaper or more effective substitute.

(*c*) Reducing the amount of raw material, fuel, or equipment used by eliminating waste and spoilage.

(*d*) Reducing the amount of labour required in the industries using a given product by improving its quality and efficiency.

Such considerations should make it imperative to avoid a one-sided economic structure and to plan for a sound diversifi-

cation of industries and occupations in general and in detail. The problem of a " surplus population " need not exist if these principles are applied systematically all over the country. It seems that there are several factors standing out quite clearly, i.e. a shortening of working hours will greatly help towards an adaptation of the social conditions to technical changes; an expansion of total production will work in the same direction and stimulate the demands for consumer's and producer's goods; scientific management of the individual plants and industrial planning on a national scale will reduce the dislocations and the time lag between innovation and social effects. The development of technology will go on; it will even increase and it will react upon the social structure with ever growing intensity. National planning, as a means of peaceful evolution, has got to take these changes into full account, even though we are not certain where technical inventions will lead us, or what novelty they will bring into our situation.

A few selected examples of technological implications in various fields shall follow. They are meant to be a slight indication of the problems involved, especially in regard to national planning. They do not pretend to give a complete picture; but they might help towards a more comprehensive investigation into the influences which technological trends will exert upon the social conditions and the special requirements of planning.

If one aims at an *agriculture* fully and systematically integrated in the national structure, it is obviously not enough only to make improvements in the farming process proper but also to introduce far-reaching changes into the whole life of the countryside. Technology is playing a decisive role in both respects. There is no need to dwell on the social importance of modern communications; the motor-car, the wireless, the telephone, the newspaper, the cinema, all tend to break down the barriers which have separated rural from urban communities and isolated groups of settlements from larger villages. They are slowly but effectively disintegrating the old way of rural life and thus preparing mind and intellect for the necessary adaptation of technological innovations. One of the greatest obstacles to the general introduction of modern methods of production as well as of the facilities of daily life is the variation in standards of rural living. Housing, education, public services, capital resources, farm equipment, etc., all vary greatly not only in different parts of the country but even in the immediate neighbourhood. An improvement can be expected only in connection with the emergence of a new social-economic structure in general, towards which a redistribution of population and industry will inevitably

lead. Technological trends in agriculture are, in the main, in the direction of larger farm units. It has been pointed out that the new term " tractor sized farm " has been added to " man sized farm " and " family sized farm ". A certain modification in favour of smaller farm units using machinery seems to be discernible, making good a long standing neglect. The adjustment towards larger units depends, of course, on many factors; topographical reasons may be one; the impossibility of acquiring more land may be another.

> Larger units in many types of farming, particularly those which lend themselves to mechanisation, tend to reduce production costs and increase net income. They make possible a greater division of labour with more specialisation; they justify larger investments in machinery; they make possible purchases of supplies in larger quantities and reduce overhead costs much in the way larger factory units achieve certain economies that are impossible for smaller competitors. But, except for very rare cases incident to the production of specialities, the farm unit, no matter how large, cannot harvest the monopoly gains that in many cases grow out of consolidation of industrial units.

If there are to be larger units besides family farms, will it mean that a smaller proportion of the population will live in rural districts? Not necessarily; for large mechanised units are the given places where agricultural industries can be developed, employing people who might not have been in the countryside before. To use this agricultural industrial capacity to the full and to make a continuous process of manufacture possible, technical equipment such as refrigerators is needed. They help the industrial farmer to cope with the perishable nature of foods produced in the agricultural factories. Refrigerator equipment in transportation has permitted the production of perishable goods in regions best suited for growing them. Just as important are refrigerators in households and small co-operatives, so that a better distribution is possible by storing a sufficient surplus of some of the commodities.

Changes in farming methods and in rural life modify the type and structure of buildings; the replacement of animal power by machinery demands different accommodation and reduces the feed storage needed for work stock. The great achievements of modern architecture have so far not touched rural buildings; they are almost entirely restricted to towns. It would be most desirable if modern architects would pay more attention to rural buildings so that an end could be put to the embarrassing romanticism which is especially strong in this field. The replacement of old and deteriorated houses proceeds very slowly, much more slowly indeed, in rural areas than in

towns. But a functional lay-out of the villages and functional plans for the buildings are urgently needed if economics of labour and accommodation for all sorts of equipment shall be introduced, at long last, in rural settlements.

It is impossible to deal with the influence that modern technology has been exerting on drainage and irrigation, on animal and plant breeding, or on weather forecasts, etc. All that goes far beyond the scope of this work. But due regard must be given to the potential development in this branch of rural life, for it will influence the distribution of population considerably. In this respect, the right use of the soil is of special significance; but beyond this

> it appears probable that in the future certain physiological and morphological differences among mankind from various geographical regions may be explained by nutritional differences which in turn may be explained by differences in the availability of the plant nutrients occurring in the respective soil types of those regions.

The Russians have developed principles according to which the soil is being considered

> as a natural body, dynamically responsive to the environment, of which the active factors for soil development are the climate, the vegetation, the relief, the age or length of time the environment as such has been active, and the parent material. Although it is recognised that the marked characteristic of the soil is its productivity for plants, the soil is not looked on exclusively as a medium for plant growth, but rather as a distinct entity whose physical and chemical characteristics have been shaped by an accord with the environment. Hence the soil of a specific area is not lacking, according to some standardised concept, but is the accompaniment of a certain environment with a characteristic inherent productivity for certain plants. Accordingly, soils are studied as objects in themselves, and differences in the structure, colour, depth and texture of the various horizons are noted. This has led to the establishment of soil types, defined by certain physical and chemical characteristics which have been developed by the environment. It follows necessarily that soil types are limited in geographical extent, according as one or more factors of the environment may change. This newer concept carries the thought that all techniques of crop and livestock production are ultimately concerned with specific soil types as units of the landscape, having a distinctive profile, native vegetation, range of relief, drainage, response to fertiliser, inherent productivity, adaptations for crop plants, and other features.

This new approach to the problem will, if it proves to be valuable on a large scale, lead to important alterations in the structure of settlements.

One unit of electricity milks 22 cows, cools 30 to 35 gallons of

milk, sterilises utensils in a 48 cu.-ft. chest for 8 to 10 units per operation, churns 100 lb. of butter, washes 2,000 milk bottles.[1] This is what is possible in the dairy industry alone if electric power supply is available. An interesting point is made by the N.R.C. in regard to the delivery of dairy products:

> The question of changing methods and time of delivery of family milk supplies and the forms in which milk is offered becomes increasingly important socially. At present in most cities the milkman starts on his rounds at a very early hour in order that fresh milk and cream may be delivered in time for his customers' breakfasts. This schedule makes his life abnormal and irritates that great number of light sleepers. For each quart, or 2 pounds of milk on his truck, the milkman carries 2·6 pounds of bottle and bottle case, and for the smaller units of cream the proportion of dead load is still greater. Only between one-third and one-half the load on an outgoing truck consists of milk. . . . Researches in refrigeration, in container technology, and in the chemistry and bacteriology of dairy products have shown ways out of some of these awkward conditions. The greater refinements in sanitation on the farm and in the dairy, the development of more effective refrigeration for the farm, for tank cars and trucks, for the dairy plant and for the home, and the attainment of greater speeds of transportation, have all contributed to make retail milk more palatable, much safer, and much less rapidly perishable than it was only a few years ago. It may now be kept for several days in the home refrigerator in excellent condition, instead of souring within a few hours. This points toward delivery of milk at times more convenient for both delivery man and customer. Daylight deliveries are already made in a few cities.

What courses of action are open and how will they affect the structure of settlement in rural areas?

> It has been said that the forces of technology cannot be stopped but they can be directed into more socially desirable channels. If guidance is attempted, "socially desirable goals" will have to be determined. And this determination rests upon decisions as to the character of agriculture that is wanted.
>
> Should agriculture strive for maximum efficiency in production with larger and larger units, more concentrated ownership and management, and fewer farmers?
>
> Should it seek to support a larger population with small incomes, with an increase in the number of farms—an increase which would limit the application of technology?
>
> Should it seek some middle ground in which the ideal of "family farms" is uppermost, that would limit, without eliminating, further technological advance?
>
> Is there more justification for imposing a bar to technological

[1] *Electricity in the Countryside*, edited by the British Electrical Development Association, 1939.

advance in agriculture than in the case of numerous industries that have moved out of homes and small workshops into large factories ?

Instead of seeking to restrain technological advance would social ends be better served by concentrating on efforts to increase industrial production and employment in the expectation that jobs would ultimately be available to many excess agricultural workers ?

The answers will be difficult to find and will necessitate reconciliation between many conflicting attitudes. The prospect of more rapid technological advances in coming years emphasises the need for the early valuation of the social gains and social costs that are likely to arise out of each course.

One example may illustrate the social effects of technological changes in the *mineral industries*. The general trend of technology seems to point towards concentration of mineral production in a smaller number of larger plants. This would definitely affect the location and size of mining communities, and would face us with still more problems regarding the realisation of a sound socio-economic balance in such settlements.

With regard to *power supply* it may be referred to the remarks in the previous chapter. Two other examples, however, should still be mentioned. Air conditioning seems to be one of the innovations which will be extended to the home, the office and the factory in the near future. It will contribute to a greater economy in fuels ; it will keep the city noise away ; and will almost certainly alter the architectural conception of every kind of building. Further, both district heating, already mentioned, and electric heating more commonly used than hitherto, will reduce atmospheric pollution. Central power generating stations could be located outside the towns, thus providing a nucleus for new settlements. If smoke development by industrial plants could be avoided far less consideration could be given to the location of industries on the lee side of towns ; and this, together with the greater mobility of industry in general, would free our hands in regard to the lay-out of settlements to a notable degree. But, beyond this, coal heating reduces the degree of sunlight over large cities ; e.g. there are 2,806 units in the surroundings of London as against 1,122 units in London proper. There are about 75,000 tons of soot in London in each year of which about two-thirds are produced by open fireplaces. The yearly damage through smoke for the whole of Great Britain has been estimated at between £40 and £50 millions. The extension of smoke is considerable ; in a case of a town of about 24 miles diameter it can still be felt in a distance of 60 to 70 miles. It is partly the cause also of increased fog, rain and formation of clouds. London is the best-known example. Kew Gardens have about 360 hours more sun than the City for the whole

year. In general, one may say that the larger the city the greater the possibility of foggy days; e.g. London had between 1871 and 1875 in the year average 50·8 foggy days, and between 1886 and 1890 74·2. Investigations carried out during thirty years in Manchester revealed that there was about 6 per cent. less rain on Sundays than on weekdays; gas and smoke produced by the factories decreased from Saturday afternoon till Monday morning. Such observations should result in drastic changes.

It seems that good results have been achieved with communal heating and hot water supply to whole districts in the Soviet Union. The *Anglo-Soviet Journal* reports that

> with central heating stations a 30 to 40% saving on fuel is possible and that one station with a power of 25,000 kilowatts could ensure a saving of 25,000 tons of coal a year.[1]

There are about eight million open fireplaces in regular use in this country, not including those which are used only occasionally in bedrooms and living-rooms. Rather less than an hour a day is spent in lighting, tending and clearing away each fire; and each will need between two and four tons of coal a year. A figure of about 1% of the coal consumed is quoted by the Fuel Research Station as representing smoke production.[2] These figures and their comparison with the advantages of district heating speak for themselves.

A few sentences may be quoted from a paper read at the meeting of the British Association, 1941:

> It should be noted that an adult person consumes about 30 lb. of air per day, which is ten times as much as the consumption of solid food and about seven times as much as the consumption of water. The provision of pure healthy air is therefore nowadays hygienically as important as the supply of potable water. Of equal importance is the provision of ample and cheap heat for domestic hot water supply and space heating. The social problem of rehousing great masses of the population in healthier and more spacious dwellings cannot be solved without adequate heating. . . . The transmission of heat has already been carried out to a distance of six miles; and there are no special technical difficulties in transmitting heat an even greater distance, and in providing large cities with complete heat distribution systems, in the same way as for water, gas or electricity supply. . . . The provision of healthy air and more sunshine will also have an effect upon the distribution of the population and upon future town planning. It will modify the movement from towns to places outside, dormitory towns. This movement has extended the main source of air pollution; but the centralised supply of heat would create a new economic basis for

[1] October, 1941.
[2] Information supplied by the Combustion Appliance Makers' Association.

> town planning; with shorter distances between places of business and residence and with a simplified traffic system, and consequently with less strain, less waste of time and reduced travelling expenses for the population.[1]

Another example from the *chemical* industry. It is known that some industries need a special quality of water, soft or hard, and that their location has been determined by the availability of the right kind of water supply. Now it is possible that

> "water-softening chemicals and the base-exchange materials such as the zeolites are used on a large scale not only for industry but for domestic supplies, involving the treatment of water for a whole municipality down to individual household units." And: "There is a growing tendency towards not only preparing water to meet a given set of industrial conditions, but to require that industry so to treat its wastes as to return to the streams water which will be useful to other industries and for other purposes."

In some cases in U.S.A. one has been so progressive as to attempt zoning of streams according to specified uses, a procedure which should ask for consideration also in this country.

Rationalisation of the *building process* must be part and parcel of national planning. It is impossible to carry through a task as enormous as the redistribution of population and industry as long as the construction of buildings takes place according to the old principles of handicraft. Houses are consumer's goods and as such must be liable to mass production, i.e. a continuous working process, standardisation, rational use of modern machinery and modern materials are essential prerequisites. If one is going to build a new town for about 30,000 persons after years of difficult preparation, the project is carried out in many sections: a process taking years to complete. It is, of course, impossible under such conditions to rationalise the building process and to reduce the costs of houses. Or take another example: after 1918 several million houses were built in Great Britain. Only small numbers of them were erected as compact settlements; by far the greater part was scattered all over the country just like confetti thrown by revellers at a carnival. Let us imagine the grand results in better construction, better layout and lower costs if these houses had been erected coherently with regard to time and space. Thus, rationalisation demands concentration and standardisation, and this is indeed possible, for the State can exert a decisive influence through financial subsidies without which a building programme cannot be carried through. New methods of construction change structure, arrangement, and appearance of the houses, the social habits

[1] A. E. Margolis.

and the lay-out of the settlements. The National Plan will gradually reverse the shift of population from rural districts to the towns; under its execution an enormous number of new houses will be required. We must recognise, from the outset, that it is hardly possible to comply with all local requirements at the same time; it is just this tendency which spoilt the great chance of a creative reconstruction after the last war. National planning must develop a procedure by which the most rational use will be made of available material and man power for the whole country; and the plan must not allow pressure of local authorities to divert it if their demands are too parochial to be compatible with the good of the whole country.

The control of temperature, humidity and air cleanliness will be of great importance to the houses of the future, and insulation will help towards a better privacy. Prefabricated houses—the horror of all sentimentalists and romantics—will dominate the field. This will considerably contribute to the reduction of costs and to an increased speed in the erection of houses. Whether the shop fabrication of complete panels or the structural frame principle will be more advantageous it is still too early to say. Here there is an extraordinarily important field for research and practical experiment.

As already stated, the picture given above of the influences technology exerts on social problems and vice versa is far from complete. It is meant to be only a sketch hinting at some trends and touching only a few problems in somewhat more detail. My intention was to show that national planning must proceed on lines which do not neglect the potential forces inherent in technological innovations and in the general trend of modern science and technique. We cannot go back; we must, on the contrary, make full and systematic use of these forces. A return to small-scale production is impossible in industry, just as in agriculture, which will move forward to production on an ever larger scale. The decentralisation of industry, and in its turn the possible subdivision into smaller units of some large industrial establishments is no hindrance in this respect. What matters is the *principle* of a rationalised production, and that can be applied even in smaller units. Decentralisation is far more the result of technology than a reaction to overcrowding; and this should be kept in mind if decentralisation is to be successful. We must look at the problem as a whole, and not be afraid of daring experiments. We must look forward, for the future is more important than the past and the present. It is entirely our own failure if we do not master the forces which we ourselves have created. National planning without technology is a Utopia.

Resistance to technological change has been so much a part of the texture of the historical process, that it cannot be ignored when the future of technology is charted. There are psychological factors in individual and group behaviour which predispose toward inertia in receptivity to innovation, but these may be counterbalanced by potent incentives that promise material and non-material rewards. The basic determinants of the presence or absence of impediments to technological change lie therefore in the nature of the social, and primarily the economic, structure of a society, in the degree to which it offers incentives to the masses of the population, and in the manner in which these can be realised through a planned economy. Capitalism has, inherent in its structure and functioning, factors which militate against such realisation and thus prevent industrial practice from keeping apace with scientific knowledge.

MAN-MADE LANDSCAPE

BOTH the conception and the procedure of national planning must be based on the understanding that analysis and synthesis belong together. The last hundred years have laid stress almost exclusively on analysis; they produced a gigantic amount of factual knowledge, but the facts thus discovered were not welded together into a synthetic and co-ordinated whole. This tendency is still strong, hence the predisposition towards research which fancies that its isolated results, though they might be valuable, automatically produce an integrated system in themselves. But it appears that we are now entering a stage where the opinion is spreading that we must co-ordinate and systematise what we have achieved. We cannot any longer be content with adapting man to nature, but we must adapt nature to man. There is something inevitable and predestined in this evolution; and it is up to us to make not only the right use of the possibilities offered to us but to do it in time and on a grand scale. This enormous task confronting us loses somewhat its overwhelming impressiveness if we realise that the influence which man is exerting upon nature is nothing unusual; that it has enabled man to change the natural landscape into a man-made landscape; and that, especially in a country like Great Britain, there is hardly any part that has not been transformed by man's work. Planning on a national scale means a re-shaping of our environment. The redistribution of population involves a far-reaching remoulding of the land of Great Britain. The face of this island will not be the same if and when national planning does its job. Possibly more than in any other field it seems imperative to look at the problem as a whole and to interrelate the various regions and their specific potentialities from a national aspect. The world around us is an integral whole; it is a synthesis in itself; but man's response to the ever changing challenge of nature has been a haphazard, conservative and over-analytical and retarded response to many little details while ignoring the underlying unity. Our approach to this problem has been termed "Human Geography", but, as a matter of fact, it has inspired, in the first instance, contributions to an analytical explanation of the natural and man-made landscape. This science deals with the elements of settlement, traffic, economy and the interdependence of man and his environment. It cannot lead us to synthetic conclusions because we have used the analytical method in our past researches into these problems. We made the same mistake as in town planning; we tried to

deal with different functions in isolation. But now we are convinced that the functions which make up the practical life of man must be balanced against each other; and that it is man himself and his personal life which alone can hold this balance and integrate the functional parts creatively. It would go beyond the scope of this book to indulge in theoretical disputes about the true meaning of Human Geography; but national planning would land us in an impasse if we did not try to keep away from an analytic segregation in a double sense: the mastering of nature by man embraces the natural as well as the cultural landscape already reformed by man during thousands of years. Furthermore, the knowledge of detailed facts piled up, especially during the last 150 years, must be fitted into the synthetic conception of the whole problem. We must understand the interdependence of man and nature in its totality if we hope to be sovereign masters and trustees of the gigantic monopoly which nature as the greatest producer has built up.

Pythagoras says in the *Metamorphoses* of Ovid: There is nothing in all the world that continues in the same state. All things are flowing onward, and every shape is assumed in a fleeting course. Even time itself glides on with a constant progress, no otherwise than a river. For neither can the river nor the fleeting hour stop in its course; but, as wave is impelled by wave, and the one before is pressed on by that which follows, and itself presses on that before it; so do the moments similarly fly on, and similarly do they follow, and they are ever renewed. And, believe me, in this universe so vast, nothing perishes; but it varies and changes its appearance; and to begin to be something different from what it was before, is called being born; and to cease to be the same thing, is to be said to die.—If only we could understand this eternal truth the changes involved in national planning would appear normal and we would not hesitate to invoke them energetically and systematically. We take the land around us as a matter of course; yet we understand very little of its history, although it is the work of man. We have become used to our surroundings and take existing conditions as something that have always been and must last. This attitude is dictated by sentimentalism, not by insight. It overlooks the fact that the man-made landscape is like a seismograph on which the finest oscillations of civilisation can be read and also those of the will and power of man. Economic necessities play only a secondary role; the more consciously we act, the less will we be inclined to recognise so-called facts as definite and to follow the line of least resistance. We will do what we want to do and not only what is easy to do. I am especially anxious to prove that the great changes in our natural sur-

roundings which are involved in national planning are in fact necessary and a matter of course if our plan is not to be a failure. Only too often one has to listen to the objection that it is impossible to wash out the present map of Great Britain; that is precisely what national planning, understood as the reshaping of our environment, should do. It is merely the time factor which is decisive. People who make these objections are Utopians, for they hope to master our extraordinary situation with some petty reforms. Only a fool would not admit that such far-reaching changes need time; but what must be clearly understood is that the right foundations for these far-reaching changes must be laid now, and by us, and that some easy little reforms are only a stumbling block in the way of free development.

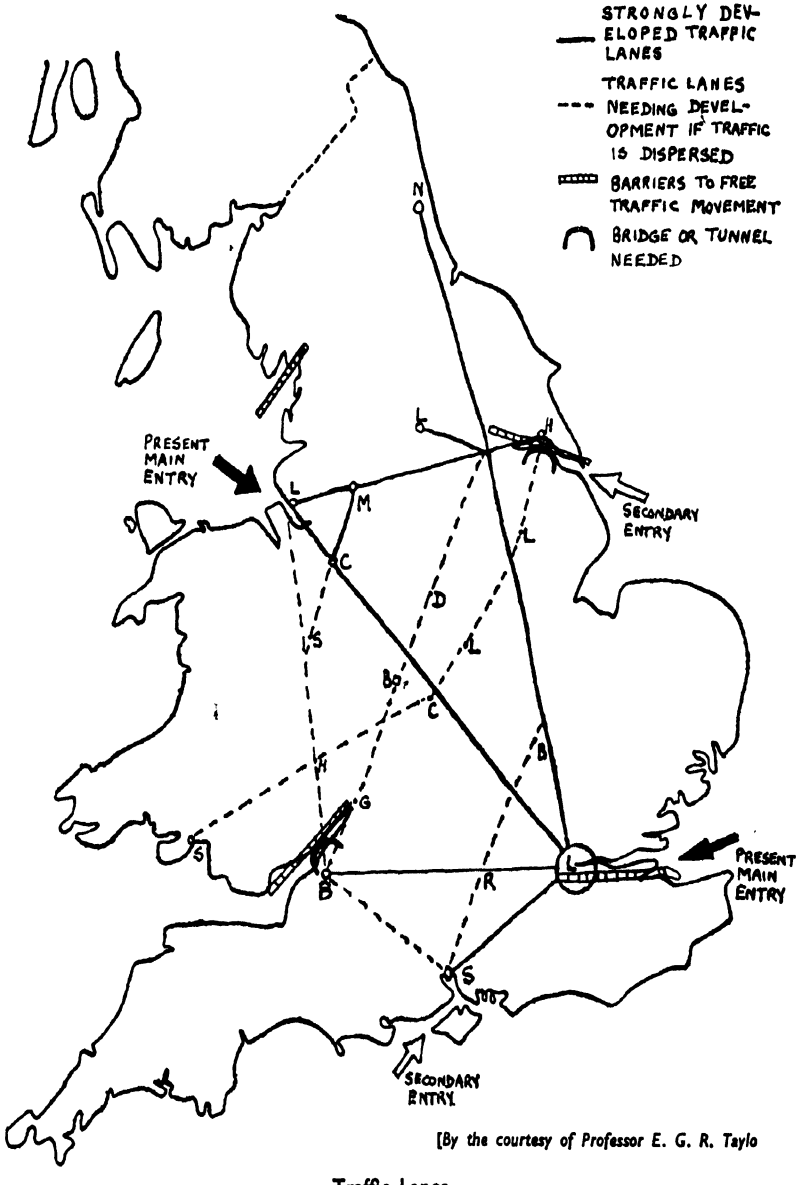
The more densely peopled a country is, the more intensive and thorough is the re-shaping of its landscape by man. This is the case in Great Britain; and this fact alone should prove that this country can deal efficiently with this problem if it wants to do so. We have passed the stage of "correcting" nature for the mere sake of our protection; we are advancing from this instinctive and empirical procedure to that of consciously planned methods based on knowledge and understanding as well as on abstract speculation. We want something more than mere protection; we want to conquer the universe and not only to extend our living space but to enhance its value. As long as we are looking at each region of the country separately we cannot expect to make the best use of it. National planning removes this ineffectiveness by co-ordinating the different parts, in order that each region can attain its real individuality. Thus, in this sense, synthesis and co-ordination beget analysis and individual valuation. The man-made "second nature" will increasingly take the place of the original face of this country, and the more this process advances the more indirect man's interference will be. It was direct and simple as long as he built his dams against floods and roads for transport; but waves travelling through the ether, aeroplanes flying through the air, nitrogen extracted from it, and eugenics of men, animals and plants—all that fulfils indirect functions and has an indirect meaning not easily comprehensible to most people.

The changes of our environment in time are overlapping those in space and vice versa. The present man-made landscape is the result of a long and complicated development. The stages following each other differ, moreover, quantitatively by the varying degree of their influence on nature, and qualitatively by the specific adaptation of their cultural achievements to nature. In the early stage Great Britain consisted of disconnected "cultural islands"; the natural landscape was still predominant.

Transition and contrast between nature and civilisation were sometimes abrupt. Gradually the " cultural islands " have coalesced till a certain balance has modified the former abrupt contrast and the whole area of Great Britain has become one coherent cultural landscape and has acquired a face entirely different from that of earlier phases. Now, we see a new kind of " islands " ; we see the crowded cities, we see whole urbanised districts in contrast with sparsely populated rural areas. The population of these " islands " is as dense as if they were oases in a desert, and like oases they are the centres of the social and economic life on which all roads are focused. This ever intensifying displacement of nature is the work of man, and of man alone ; it rubs out the map of Britain and draws new features on it. First comes the displacement of the original vegetation and its transformation with an increase of inhabited areas ; then settlements become dotted over the country connected by the lines of communications. Thus develops a pattern composed of a fixed structure of settlement and cultivation and of mobile factors represented by fluctuations of men and goods. This pattern has been shaped in its fundamental aspects by the distribution of land, water, relief and climate. These are the underlying primary factors. But within this general framework there was and there still is ample room for man's activities, although the natural landscape will always remain the underlying and basic substance gleaming through the structure of cultivation, settlement and transport. In a paper read before the Royal Geographical Society Professor E. G. R. Taylor stressed the significance of this problem in the following words :

> It is common ground that under the influence of a complex of historical and physical factors, the pattern of English industrial development began to take shape nearly a century and a half ago, and that a policy of free trade and *laissez-faire* led to the sharpening and deepening of the outlines of that pattern until it came to be looked upon as stereotyped and final. It is common ground also that changes during the last twenty years, none of them strictly geographical, have rendered that pattern in some measure obsolete. The distribution of industry no longer fits the distribution of the industrial population, and we have " distressed areas " and lopsided urban growth. Putting the situation into geographical terms, we can say that, with the growth of economic nationalism, marginal or sea-board location has lost a considerable measure of its old importance. Hence areas that relied mainly on such a location for their prosperity are now distressed.

Professor Taylor has also prepared an interesting map showing the unsuitability of the existing transport system and its necessary extension. The existing system fits the old pattern of



[By the courtesy of Professor E. G. R. Taylo

Traffic Lanes.

settlement; it serves foremost "the coffin", but it is rendered somewhat obsolete, especially with regard to the needs of a redistributed population and industry. One reason is that the deep inlets of Liverpool, Bristol, London and Hull, and to a minor degree of Newcastle, prevent a rational planning of the railway system as long as they are considered as factual obstacles. It will be one of the major tasks to remedy these conditions by building bridges and/or tunnels.

If we look at a map showing the distribution of population in 1700 or 1800 we find that the population was at that time more evenly spread over the country than to-day. At about 1700 the centre of gravity of the population was on both sides of a line between London and Manchester. This area included the important ports of London and Bristol. At about 1800 the picture has changed: Lancashire, Warwick, West Riding, and Staffordshire were most populated besides the London area. Although within these four districts the developing industrial zones coincide mainly with the coalfields, it is not yet the coal which produces these agglomerations of population. Only a certain localisation of individual industries is developing. In Warwick and Staffordshire especially the iron industry and pottery, in East Lancashire and in the West Riding of Yorkshire textile industries, are concentrating and contributing to the growth of certain towns. At about 1800 all this was only beginning. The far greater part of the population was living in the country. There was not yet a clear distinction between town and country labourers. Many industrial workers were farm labourers with better pay than farm hands. These relatively higher wages were paid especially where a certain shortage of labour developed, namely in the neighbourhood of the more and more industrialised towns. It is, however, characteristic of the times around 1800 that the already more densely peopled centres of population were increasing more quickly than the rest, although the contrast between the agricultural and industrial counties was not yet strong.

Gradually a new fabric and structure of settlement is being created by the development of communications and the increased exchange of goods between various regions. Great Britain, almost the end of the world during the Roman Period, is becoming more and more its centre. In the Middle Ages each region was more or less self-supporting as a consequence of primitive transport; the supply could be satisfied only unsystematically, and in many cases the soil had to be used for purposes for which it was not fitted. To-day the situation is changing. We can use the land to the best advantage by a rational and specialised cultivation leading to the interdependence of all regions. We

are also capable of making a more rational use of natural factors such as the position and accessibility of the land; physical structure; the limited amount of first-class soils; the more humid climate of the west and the cooler summers of the north. We are gaining a better understanding of how to balance static factors—mineral deposits, geological structure and climate—as against dynamic factors—changing needs of consumption and production, changing possibilities of the transport system.

In the past we have re-drawn the map of Great Britain in a continuous process. We must re-draw it once more, aiming at a more even distribution of the population and remembering that such changes have happened before, and that it was man who consciously brought them about. Daniel Defoe wrote in 1724:

> The Face of Things so often alters, and the Situation of Affairs in this Great British Empire gives such new Turns, even Nature itself, that there is Matter of new Observation every Day presented to the Traveller's Eye. The Fate of Things gives a new Face to Things, produces Changes in low Life, and innumerable Incidents; plants and supplants Families, raises and sinks Towns, removes Manufactures, and Trade; Great Towns decay and small Towns rise; new Towns, new Palaces, new Seats are Built every Day; great Rivers and good Harbours dry up and grow useless; again, new Ports are open'd, Brooks are made Rivers, small Rivers, navigable Ports, and Harbours are made where none were before and the like.

It is true, it took a very long time for the present results to be achieved. But why should we be inferior to our ancestors; why should we be less daring; why should we not proceed more intentionally and systematically? What speaks against it? Nothing—nothing at all! The demobilisation will be creative, and the rebuilding of Great Britain will be successful, if we understand the true meaning of the challenge and response between man and nature and if, being convinced of the capabilities bestowed upon us, we act accordingly.

The land is the basis of most of man's activities. National planning wants to create the right environment for these activities, and it must, therefore, start with sufficient power to consider the land as its basis. Without a definite disposition of the land no plan is possible and we may as well not waste our time on it. Edward Gibbon Wakefield wrote in *England and America*, published anonymously in 1833 in London, some sentences which, although meant for colonisation in a new land, should be made the governing principle of every Government which has to replan their country. Understood in the right sense and applied respectively with due regard to our modern conditions,

they would form a kind of Charter of the National Plan for Great Britain:

> In the art of colonisation the first rule is of a negative kind; it is, that Governments, having power over waste land and seeking to promote the removal of people, should never throw away any of that power; should never dispose of waste land except for the object in view, for the removal of people, for the greatest progress of colonisation.

In other and plain words: the Government must have full power over the land. This view is becoming more widely held now, and it is more the method of achieving this control that is being discussed. But let us not underrate the opposition from vested interests. It would be deeply regrettable if party politics and shallow slogans were to gain the upper hand in these discussions. We cannot deal with this problem, at least not from this angle. There is now a tendency for this issue to be couched in the somewhat vague term of "control". If we mean by this that "control" has got to be exercised, then it might be possible; but if we mean that "control" may be used, then it is insufficient. In any case "control" will involve a very long-drawn-out procedure; and judging from experience, taking the existing Town and Country Planning Legislation as example, one cannot help being very sceptical as to its efficient and quick working. It would be far more appropriate to invest the Government with power over the whole land of Great Britain, and to find ways and means of adequate compensation. The Government could then transfer their power to regional or local authorities or to a Land Trust. But planning would not be hampered by delays which would inevitably be caused by a complicated administrative procedure and by the rival claims and interests of local authorities. We need the land for agriculture and forestry, for urban and rural settlements of all kinds, for transportation and for recreation. Each of these groups asks for a special type of land; but all are closely interrelated and are, in fact, one unit. Consequently, the land also must be treated as one unit. A master plan for Great Britain must assume, therefore, that there are no internal boundaries in this country, no areas which must be excluded from planning, and no stage of transition which must be passed before such a plan can be worked out. It is interesting to note how this problem has been dealt with in a broadsheet issued by P.E.P.:

> For a long time to come, however, there must be a stage of transition in which the best in the old pattern must be identified, adapted, and given its place in the new. That is why, for example, all talk of land nationalisation must be regarded at this stage as

> academic. Even if nationalisation should eventually be proved to be the best solution of the problem, no such radical change could be effected without immense dislocation and trouble until the public ownership and management of land has developed its technique and its personnel a great distance beyond the stage it has now reached.[1]

But the execution of the National Plan is, as a matter of fact, an " immense dislocation " in itself; it is difficult to envisage how one could wait till ownership, management and personnel have developed far beyond their present stage, and plan, at the same time, a redistribution of population and industry with a long-term view. It is the National Plan which creates the requirements of public ownership in general and in detail. The administrative organisation of the land and its preparation for the various purposes must take place within the framework of the National Plan, but not vice versa. P.E.P. say, quite rightly, because land is " the permanent platform of human activities long views and continuity of policy are essential ". But how is this possible if one is to wait for the adaptation of national planning to the administrative machinery ? Of course, it is true that there is a great " variety of types of landowner ", and that " each of these types of owner has special features and relations to the problems of management, of town and country planning, of finance and taxation, of transport, of industry, commerce and services, and of sport and recreation. Some are gaining ground and others are losing importance." But here again the question arises: shall one wait till this variety has given place to more similarity ? The broadsheet states further that " there is a much stronger case for the compulsory public acquisition of land where large-scale development or redevelopment is required, and the case is strongest of all where effective combined action would otherwise be unobtainable ". As national planning is concerned almost exclusively with large-scale development or re-development, very few cases would remain outside this principle.

If we want to develop a sound balance between town and country and to do away with the antagonism between them, we must consider the land as one unit not only in the material but also in the ideal sense. The urban attitude towards this problem is predominant in this country; it has led to a one-sided policy in regard to the land used for agricultural purposes. On the other hand, rural interests are often short-sighted in their consideration of urban needs, especially if they mean an encroachment on rural land. Both attitudes must be reconciled by a better understanding of each other which can best be realised

[1] *Planning*, No. 181, November 1941.

by a unified administration of the land in town and country alike. At the Oxford Conference of the Town and Country Planning Association in 1941 Sir Ernest Simon declared:

> One thing is, therefore, essential before it will become possible to start post-war replanning and rebuilding of our cities on the best possible lines: individual ownership must be abolished.

And a following speaker, J. F. Eccles, stated:

> Land has no value at all unless work is directly or indirectly done on it in the form of human effort on a continuous basis. . . . The more one examines this problem the more one is driven to the conclusion that there is only one sensible and logical method of coping with the situation. It is that the State should acquire the freehold of the whole land of the country, leases to be granted to the owners as a secondary transaction.

These statements are sound, they can be made real if so-called political considerations can be excluded. What is the actual meaning of "politics"? It has been defined as the art of doing what is possible. But, again the same question arises, what does "possible" actually mean? Mr. Smith has certainly quite a different idea from Mr. Brown of what is possible in certain circumstances. The actual strength of the almost magical notion "politics" is its vagueness. It is equally as indefinable as the famous "balance of power". Everyone agreed that it was something that must not be touched; but nobody knew what it was in reality. Would it not be quite useful to find out what is behind this magic screen on which the word "politics" has been written? Is there anything at all behind it, or is it just the same as with the rites of witchcraft where only the initiated pretend to know anything.

But whatever the outcome of these controversies will be, the reshaping of our environment can proceed successfully only if the land of Great Britain is at the free disposal of the Nation and of the planners, as the trustees of the Nation. In the light of a long-term policy the apportioning of the right type of land between the various uses is essential, and not only of the land as it is used to-day, but also according to its potential value. We have not only to plan for our own or the next generation; we must lay the foundations of a new age during which the man-made landscape of Great Britain will undergo profound changes. If the foundations are not strong enough, posterity will indeed have the right to condemn us.

The actual procedure of national planning with regard to the suitability of the land for settlement consists in eliminating, selecting and applying.

The *eliminating method* tries to exclude all those types of surface which are not suitable or not available for the development of settlements. About 15% of the land surface of England and Wales has been estimated as unsuitable for industry because of its relief—too high, too steep, or too broken—and because these areas reduce the accessibility to parts lying behind them, e.g. to West Cumberland and to West Wales. It is, however, a different thing to suggest the exclusion also of areas which are too sparsely populated to afford a sufficient labour supply. This would apply to the existing conditions and only to siting of industries. It might well be possible that the National Plan will arrive at new results with regard to such areas as are being considered unsuitable for industry in the present state. The Demographic Survey and Plan went somewhat further, in that it did not restrict its work to the elimination of land unsuitable to industry only and to the existing conditions. It is an attempt to give due consideration to unsuitability in relation to varying purposes. The Volume II contains maps and a memorandum on this subject; they explain the procedure in more detail. However, it is open to discussion whether it is better to start this work with a negative or with a positive method. The right approach will probably be to apply both at the same time, i.e. eliminating unsuitable and selecting suitable places, the more so as geophysical conditions overlap socio-economic ones if sites are to be determined for new settlements or existing places are to be prepared for further development. The attached memorandum draws attention to the fact that it is neither possible nor desirable to define exact physical limits; rather is it important to know where such disadvantages occur. The decision whether these obstacles shall and can be overcome depends largely on the new structure of settlement which the National Plan will work out.

The *selecting method* aims, therefore, (1) at the location of sites suitable for new settlements; (2) at the location of villages and towns which can usefully be extended; and (3) at the location of urban communities which need a resettlement of parts of their population. These three problems are dependent on one another; they must be dealt with, therefore, at the same time in addition to the eliminating procedure. They will be discussed, especially in regard to decentralisation and dispersal, in a later chapter; here, the following remarks may be sufficient.

(1) Sites for new settlements. While one can agree in principle with the demand that the best agricultural land should be preserved for agriculture, there is a certain danger to overemphasize this point. Quite apart from the fact that it will be impossible to avoid encroachment on good agricultural land for non-

agricultural purposes in any case, the idea of a "city wall" within which the space should be used to its fullest capacity could become true only if one would build considerably higher buildings than to-day. To build higher would be the only way to secure an adequate measure of open space. This is quite possible and even in some cases desirable; but it is only one solution.

We must consider the siting of new settlements from many points of view. Volume II contains a memorandum: Economic Utilisation of Land in Planning Processes, by A. W. Ashby. It discusses this problem in detail. There are, however, still several other considerations to which due regard should also be given. Little attention has been paid hitherto to the effect of the social needs of a community with regard to the siting of new places. In other words, the selection of suitable sites for new settlements must depend largely on the space relation which the totality of the four functions, housing, working, recreating and distributing, demands. A primarily geographical approach or a more or less casual siting, dictated for the most part by the availability of land not highly suitable for agriculture, should be ruled out. If this is granted, the following considerations should determine the allocation of land for a new settlement; the choice is between two areas A and B. A is first-class agricultural land; B is of poorer quality. A would almost certainly be excluded if the agricultural value were alone decisive. A is near to good communications and the distance to the next town is less than from B. It may further be assumed that the whole area of A would be needed for the new settlement whereas only a part of B, which is much larger, would be taken up by the new buildings including all associated development. Balancing the advantages of A and B against each other in the light of the costs of building and associated development and the returns for A, and, on the other hand, of the necessary agricultural development for B, one should take A as place for the new settlement and develop the agricultural value of B. The savings from the development costs and the returns of A can be used, at least partly, for the agricultural development of B. Moreover, there is the possibility of a horticultural belt around the new settlement A. This belt could be made highly productive; the most fertile land and the most urbanised area are very often closely interrelated. Ashby suggests—and this plan is entirely justified—"that the costs of developing relatively unsuitable land for certain agricultural purposes would be far less than those of developing relatively unsuitable land for building purposes." The new settlement is a stimulus for an increased agricultural productivity

of the land in its vicinity; "agricultural land and farms previously at relative disadvantage gain advantage and on the whole the occupiers are not slow to use their opportunities." Industrial and residential purposes require relatively small areas compared with agriculture, especially if the lay-out is rationally planned and a permanent open belt limits the size. If we maintain that social needs must be the dominant factors in national planning, and that nature must be adapted to man, as far as this is possible, the choice between A and B for a new settlement must go in favour of A. "Social costs and expected social returns should determine the allocation of land for different purposes," but it should not be a rigid rule that this or that type of land must be excluded for one purpose or the other. Consequently, plans for the lay-out of new settlements should be made, together with plans for the agricultural development in the vicinity, and both should be valued according to their social costs and social returns. Thus, the possible disadvantage of taking even first-class agricultural land for building purposes can be turned into a far-reaching advantage for both sides.

Such a procedure will greatly help towards a sound diversification of the socio-economic structure; the interrelationship of agriculture and industry, thus established, must necessarily lead to the establishment of industries which are based, on the one hand, on agricultural materials, and which, on the other hand, can supply agriculture with part of its requirements. In addition still other industries can be located in such new settlements, which will further tend towards a useful diversification.

There are a fair number of types of such semi-rural settlements. From the standpoint of site there are possibilities in (1) Highland Country and (2) in Lowland Country. The former might offer opportunities

(*a*) In a steep-sided valley, with a V-shaped cross-profile.
(*b*) In a steep-sided valley, with a U-shaped cross-profile and ill-drained floor, e.g. a glaciated valley.
(*c*) At a convergence of valleys.

The latter might offer opportunities in

(*a*) Valley-side terrace.
(*b*) Hill- or scarp-foot.
(*c*) River-bank.
(*d*) Knoll ("dry-point") in area ill-drained and/or liable to extensive flooding.
(*e*) Inter-fluve.
(*f*) Sea-coast of regular, low, and sandy nature.
(*g*) Sea-coast of irregular, rocky nature.

From the standpoint of function there might be for each type mentioned above

(*a*) agricultural settlements combined with agricultural industries;
(*b*) agricultural settlements combined with other industries;
(*c*) agricultural settlements combined with agricultural and other industries.
(*d*) rural towns combined with agricultural and rural and other industries.

In each case the considerations regarding the allocation of land will be different; but there will be no rigid rule if the social and economic costs and returns are wisely balanced against the present use of the land.

The foregoing suggestions apply to compact settlements. But there will be numerous cases where small dispersed settlement groups do exist already and which cannot easily be abandoned; and further, where it is not possible to plan for compact settlements because the choice of suitable land is restricted. Small parcels of good and minor agricultural land might be interspersed in a region where it is not appropriate to alienate the good land from agriculture though small the individual parts may be. We must find, therefore, a solution for the efficient provision of social and economic amenities and utilities in such dispersed settlement groups. There have been several attempts to present the compact settlement as the only solution. Such a view is either superficial or insincere, all the more so since it comes from quarters which are far from being so revolutionary that they would lean towards really fundamental changes. If one agrees to the development of compact settlements one must also agree to large-scale agriculture; for only large-scale cultivation and dairy farming could have the effect of drawing the farming population together and of eliminating out-lying farms. While it might be possible to pursue such a course in some areas it would not be possible or advisable to do so in the greater part of the Country. Even admitting that many sentimental objections to large-scale farming will have to go after the war, a strong case for dispersed settlement groups will persist. We must find, therefore, a solution for such groups which will ensure the provision of social and economic facilities in the same degree as for compact settlements. The allocation of land for residential and agricultural purposes will need an especially careful consideration in such cases, possibly in connection with the grouping of a certain number of small settlement units around a central compact unit.

(2) The extension of existing towns and villages. Two differ-

ent reasons might justify the further development of existing settlements: either the communities are ill-balanced socially and economically, and need, therefore, some additions in order to produce a good balance; or they are well balanced but need some measure of enlargements the reasons for which might be found outside their own orbit, e.g. the structure of the region in which they are situated is changing because other communities are being redeveloped or new ones are coming into being; or because the transport system is undergoing changes through extension or diversion of some lines of communication. Whereas the further development of the latter types may follow similar lines as those which prevailed hitherto, the former types demand a more or less drastic break in their structural composition. We are here concerned with the allocation of land; the problems and effects of a diversified structure on a balanced community life will be discussed later. To think first of the smaller towns as places suitable for further extension should be the obvious approach to this problem, because the larger towns and cities need redevelopment, and this will take place, at least partly, within their own sphere of influence.

Structural changes produced by new settlements and by the extension of the existing ones will have a far-reaching influence on the internal balance of the regions concerned; the space relation between the various settlements will be considerably affected, and this fact will have its decisive bearings on the allocation of land for the different purposes of agricultural and residential-industrial requirements. The space relation between settlements should be determined by the social and economic functions which each of them exerts upon its immediate and more distant hinterland. While doubts might be justified regarding a fixed pattern of distance-standards, certain assumptions can be made which give at least some clue for a possible pattern of settlement and, especially in this connection, for the amount of open country left between the compact settlements. The following table has been compiled by a Continental scholar. It should, however, be clearly understood that this table can give only a very generalised idea of the space relation between the various types of settlement. Although it should be understood also that it is based on their functional interdependence, which has, to a certain degree, universal character because the social and economic services must be relatively similar, even under different conditions.

If one agrees with these assumptions it is evident that in a number of cases settlements spaced according to such principles will take up land which might be of a high agricultural value. On the other hand, at the extremes, it would certainly alter the

size and functions of the settlements if the space between them were either reduced to such a degree that they almost merge into each other, or so greatly extended that the existing balance with other neighbouring places were upset. Both possibilities should be ruled out if one is aiming at a more even distribution of the population. Consequently, the pattern of settlement will determine the use of the land, and not the use of the land, as it is to-day, the pattern of settlement. This is, of course, to be understood *cum grano salis*, but certain laws regarding the spacing of settlement must obviously govern the redistribution of population and industry. Further, still another aspect which also has a bearing on this postulate must be taken into consideration. The further development of existing communities situated on or near lines of communication is also a factor limiting the free choice of the available land. It will cause marked changes in

Grade of town.	Population	Service area.	
		Radius (miles).	Area (sq. miles).
I	800	2 5 to 3·0	17
II	1,500	7·5	54
III	3,500	14	160
IV	9,000	22·5	480
V	27,000	38 5	1,500
VI	90,000	67 5	4,300
VII	300,000	112	13,000

the land uses around these settlements; it will be unavoidable to take up some of the good agricultural land, for there is for the most part such an area around settlements of over 500 families or thereabouts. But every extension creates also new needs. An intelligent lay-out can almost certainly preserve some of the good agricultural land by using it for a green belt with market gardening and dairying from which fresh food can be supplied to the community. Moreover, a "compact" settlement does not mean that such a settlement is compact in itself. Modern town-planning principles necessitate the splitting up of towns and the driving of wedges of open space into the town. Although it will hardly be possible to use them for the above purposes, they might well be suitable for allotments, which should not be too far from the residential quarters.

In general, the right appropriation of land for different purposes depends far more on its potential values than on its present use. One need not be too timid in this respect if a far-sighted

plan can be produced for the region as a whole, balancing the many factors systematically against each other.

An extremely difficult problem is presented by the decaying mining communities, especially in the valleys of South Wales. They are a typical case of a one-sided socio-economic structure; they need, therefore, some new elements. The difficulty is that there is no land available for additional industrial or agricultural enterprises. One solution might be, however, to evacuate a portion of the population gradually and to bring in some other occupational groups. But the best solution will be to thin out these communities, thus creating more room and more security for work for the remainder. The other portion of the population could be transferred to the middle and north of Wales as part of a long-term programme of redistribution of population and industry. The Barlow Report deals exhaustively with the problem of the Special and Depressed Areas: it recommends among other solutions, under No. 311,

> transference, with financial assistance in various forms, of unemployed to more prosperous areas with new openings; the creation of Trading Estates and smaller industrial centres; Land Settlement; [and] the location of factories required for the Government's Defence Programme.

The Commissioners for the Special Areas stressed the necessity of "the introduction of new light industries into the areas in order to diversify and extend the opportunities of employment". While it may be possible to apply all or several of these remedies in some cases, it seems to be hardly feasible to make use of many of them save the first recommendation in regard to already overcrowded valleys, i.e. transference of part of the population. Settlements of this kind cannot only be found in the Special Areas but also in other parts of the country. The problem will need a different and specific solution for every case; but it is commonly known that the desolation by industrial, residential and road development renders the land useless for agriculture for long periods. Thus, the great query remains: what can be done with the land which served such a purpose if and when the population is to be evacuated to other parts?

However, let us not forget that we do not "plan" man but his environment. The memorandum on *Reconstruction in Wales* by E. G. Bowen shows the difficulties should the human factor be neglected. Or let us quote Th. Sharp:

> Occasionally well-intentioned suggestions are made that the men of an area like South-West Durham should be given work on the land, should be provided with allotment gardens, small poultry farms and such-like, should be encouraged in handicrafts and kept

quiet at social service centres and settlements. Such suggestions rouse an angry smashing impatience in all who know the facts of the position. What fools are the working classes taken for, that they should be handed baubles like these to play with while their bellies are empty and their lives are falling to ruin before them? County Durham, despite its being predominantly industrial, has developed its agriculture on a fairly extensive scale. In the middle and coastal areas particularly there is a high proportion of arable land to pasture. Even here in the hill country the land employs seventeen persons per thousand acres, which compares not unfavourably with the general average of twenty-five per thousand acres for mixed farming in the most agricultural lowland parts of England. Yet even so, less than 3% of the working population are employed on the land. If the agriculture could be intensified to the standard of the Norfolk arable farms employing thirty-three workers per one thousand acres (which is very unlikely), it would still employ only 6% of the population. Even if it could be brought up to the standard of the Lincolnshire potato farms with about sixty-two persons per one thousand acres (which is wellnigh impossible) still it would employ only about 11% of the total workers. Even if the whole of the rural area was divided among the workers so that they might labour in the dull misery of the continental smallholder for the rest of their lives, they would only receive less than an acre of land apiece. Talk of solving the problem of *this* derelict area by a back-to-the-land movement is dangerous nonsense in the face of such facts.[1]

(3) The re-settlement of existing urban communities. As far as lay-out, decentralisation and dispersal are concerned these problems will be dealt with in the chapter on Decentralisation and Dispersal. In this connection only the reaction of resettlement on the allocation of the land is to be investigated.

As long as the urban communities were extending and spreading their tentacles haphazardly in many directions the problem seemed to be relatively easy to the generations which carried this development through. They took up the land, and its market price was regarded as the right standard of its use. But a growing understanding of the social and economic needs of a community and of its relation to its neighbourhood was gradually changing this careless attitude. The need for a more appropriate allocation of the land, according to a specialised segregation of the different functions, grew into a differentiation of districts for residential, industrial and commercial purposes. Zoning wants to curb the acquisitive activities yielding so much to so few against the interest of so many. The next step must inevitably lead to a general control of the land unless zoning is to

[1] Th. Sharp, *A Derelict Area. A Study of the South-West Durham Coalfields.* (The italics are the author's.)

become a mere farce. To restrict detrimental activities does not yet mean to eliminate them.

> These problems in community development have been intensified by land speculation and the tendency to treat land as an exploitable commodity and to regard land ownership as absolute, entailed with a minimum of social responsibility. Some of the effects of this have been population congestion, inadequate provision of essential community facilities, unsound land values, subdivision far in advance of or in excess of need, and instability of land utilisation. . . . A growing social consciousness has led to a recognition that desirability of residential surroundings should not be dependent primarily on the wealth of the inhabitants, but should be attained and maintained for all through measures of community planning and control. But this growing social consciousness has not come alone from the stirring of men's souls. Of powerful effect has been the general detrimental result—and, even more so, the direct cost to property owners and to the community as a whole—of the misuse of land and of urban deterioration. Conflicting uses and haphazard development impair property values and destroy neighbourhood character; they tend toward the stagnation of property which would otherwise be beneficially used in an orderly manner; they result ultimately in spreading areas of obsolescence, deterioration and decay, costly to maintain, economically unproductive and socially detrimental. These results of earlier unplanned development are harassing cities the country over.[1]

To-day we recognise that the sprawling of the big cities has reached a stage where a further development on the old lines is impossible. The pendulum is swinging back. No one wants to impede the life or to reduce the importance of the cities and the large towns. On the contrary, every sensible person, and especially every planner, wants to instil new life blood into the arteries of urban settlements and to change the nomadic and impersonal urban society into a sedentary and personal urban community.

> The basic land-use pattern, while fundamental, cannot stand alone, but must be an integrated part of a complete physical pattern, covering the physical structure of the community, its physical facilities, the nature and extent of its land uses, and the distribution and density of its population. Unless zoning is based on this broad foundation, it can do little more than deal with the obvious and must face the future of the community blindly. Zoning cannot be regarded as a master plan, nor as part of the master plan. The master plan is a basic physical pattern. It is expressed in broad and general terms. . . . The very nature of zoning is incongruous with this "general character" of the master plan. Zoning is precise and exact. Much confusion in thinking and practice can

[1] National Conference on Planning held at San Francisco 1940.

be avoided if zoning is correctly regarded as a measure of control which is invoked as one of the means used to make the master plan effective, to translate the master plan from a pattern and standards into reality. This conception of zoning will also lift zoning from being merely a means of preventing obvious abuses to its greater usefulness as an instrument of direction.[1]

And, we may add, it must lead to a systematic redevelopment which can take place either in existing suitable settlements or can result in the planning of new settlements both outside and independent of the overgrown city, except in the case of satellites, which are, of course, dependent on it. Consequently, we should prepare no plan for urban resettlement without a corresponding plan for rural development. A shifting of population from existing urban areas "would withdraw agricultural advantages (as of special markets) and transfer them to new areas", as A. W. Ashby remarks. Thus, any creation of new or any marked extension of existing urban settlements affects also the agricultural structure and the use of the agricultural land. We must take, therefore, the regional view; and even beyond the actual region proper, we must take into account the adjacent regions. In some cases it will be neither desirable nor possible to redistribute population and industries within the same region, if we aim not only at an internal regional but also at an inter-regional balance. We need, therefore, a thorough control of the density of population and intensity of land use.

The underlying land-use and population-density pattern must be more than a fabricated design which merely takes account of topography, past development, means of transportation, and apparent trends in land use. It must be designed to serve the needs and habits of the people of the community. It must take account of the economic base of the community, of the reflection of that economic base in the economic character of the community as represented in levels of family income and in the structure of property values, and it must take account of the social and cultural characteristics of the community. It must consider space standards not only in terms of light and air, but also in terms of the effects of urban claustration on fertility rates and on the biological sufficiency of urban populations.[2]

In general, it is likely that resettlement demands the creation of a number of new lines of communication, roads and railway lines; it will also affect the existing traffic ribbons in so far as they need broadening, straightening or shifting. Although the land needed for transport is a relatively small amount it is essential to provide for these purposes in time, i.e. within the

[1] National Conference. Ibid. [2] National Conference. Ibid.

framework of the master plan. All these problems are so interrelated that only comprehensive planning can solve them and enable man to continue the successful reshaping of the landscape. Yet we must not be too reluctant to extend and to change the existing system of transport. If social and economic consideration demand settlements where the transport system is insufficient it must be altered and adapted to the new conditions.

Highways and railway lines exist to connect settlements; they must not be considered as opportunities for settlement in themselves. But this is actually what has happened during the last decades. The tentacular suburbias crept along the highways and useless gardens with cheerless and dirty backyards lined the railway tracks as the symbols of man's inability to master this situation and to put human values first. How different is the approach to a modern town from that to a mediæval town with its clear lines and characteristic compactness, unmistakable signs of a sound community life. In this case the functions of traffic are clearly distinguished from the functions of settlement; they are not mixed up, as under modern conditions. If this detrimental scattered urban expansion is to be redeveloped it means that, at least, parts of these excrescences must be removed and the land on which they stood must be given to other purposes. This is by no means an easy task, for, as already pointed out, such land would need a very long period before it could be handed over to agriculture. A solution might be to convert it into parkways leading out of the cities, and connecting the urban with the regional and national parks. Such parkways, greatly improved and widened as compared with existing by-passes, should form parts of the green wedges radiating into the cities from the green belt surrounding them. Especially in the case of the railway lines the additional advantage would be that this noisy and polluting traffic could be sufficiently separated from the residential quarters. In general, it may be said that the houses along railway lines are older and more obsolete than those along the high-roads although the latter are mostly of the jerry-built type. In both cases it should not be too difficult to set a definite limit for their lifetime and to free the land, in this way, say after thirty years, from these monstrosities. The latent idea that land once used for building purposes must always be used in the same way, must be given up.

Zoning is a means to promote such changes in the use of the land. Zoning as an instrument of planning offers the advantage that it can prevent scattered and premature urban development by the application of use and density control.

The land-use and population-density pattern of the master plan,

if it is to be competent, cannot be confined to the political boundaries of municipalities. If the municipality is a part of a metropolitan area, the plan must extend to the entire metropolitan area. If it stands more or less alone, the plan must extend at least to the area which is rather closely related to the municipality economically and socially. The land-use and population-density plan will not indicate a static pattern, but should indicate, in an area which is subject to population increase or in which the economic base is changing, areas which are subject to immediate urban development and those which are ultimately subject to such development, in so far as this can be determined. It is recognised that these are relative terms, but they can be somewhat defined in relation to the curve of probable population change or to the change in community pattern which is likely to result from a change in the economic base of the community. The underlying land-use plan will thus indicate areas which are subject to expanding urban development within a reasonable period of time, based on the rate of population change, the nature of economic change, and the estimated rate of utilisation of land for various types of major land use. Scattered urban expansion beyond such areas, frequently as a result of land speculation, unbalances a normal and orderly extension of utility and other services and results either in excessive cost per unit for such services or inadequate provision of them. Such scattered uses also tend to disrupt the land valuation structures of the areas in which the intrusions occur.[1]

Consequently, we must distinguish between re-development of built-up areas and a directed development of still unoccupied areas as two component parts of the problem " the re-settlement of urban areas " ; or in other words, we need " retrospective " and " prospective " zoning. If the land of Great Britain were to come under a general and really efficient control, or were to be entrusted to the Nation, even the " retrospective " zoning could come true without great difficulty. Without such measures the procedure would be very complicated and, as mostly happens, would cause so much delay that it will be more or less frustrated. In any case, the following should be done :

(1) The sale of any private land within areas assigned for any of the above-mentioned purposes is to be blocked.

(2) The reservation of park strips along lines of communications is to be secured.

(3) The rounding-out of existing public areas through the reservation of adjacent and suitable private land is to be guaranteed.

(4) The prohibition of new and the cancellation of already effected subdivisions of land within areas assigned for any of the above-mentioned purposes is to be made compulsory.

[1] National Conference. Ibid.

Complementary to such general principles adequate legal means are necessary to deal with the respective problems which have and might develop in connection with war damage. The Interim Report of the Uthwatt Committee has already made some recommendations in this respect, especially (No. 7)

> that the Government should now announce as a general principle, that compensation ultimately payable in respect of public acquisition of land or of the public control of land will not exceed sums based on the standard of " pre-war values ".

And they further state (No. 31):

> It is essential in our view that the definition of areas which may be the subject of reconstruction plans, should be made as soon as practical. In this connection we have come to the view that no scheme for the replanning of these areas can be effectively carried through unless there is a power of compulsory public acquisition.

And (No. 34):

> Any area, which owing to the extent of the war damage which has occurred within it, or within part of it, ought in the opinion of the competent authority to be considered for redevelopment as a whole, or which could be acquired by the competent authority for any purpose for which such authority may be authorised to acquire land compulsorily (either with or without the approval of Parliament) under some enactment for the time being in force. . . . It will be observed that we have in our definition of " reconstruction areas " referred to areas which include or embrace areas of substantial devastation and such other areas, developed or undeveloped as are likely to be required in connection with consequent schemes of re-development.

It is commonly agreed that every urban community shall be surrounded by a permanent green belt serving the threefold purpose of (1) limiting the size; (2) offering recreational facilities; and (3) producing fresh food. On the other hand, this surrounding open space must be connected with the open spaces within the town by means of green wedges incorporating the system of parkways and, as far as possible, of the railway lines, the latter being underground, at least some portion of it in the larger towns. Land is needed, therefore, for different purposes and in different amounts. The *raison d'être* of this " green grid " is—from the point of view of the lay-out—to split up the structure of the towns into a number of " self-contained " communities. As this will affect, in the first place, existing settlements of, say, over 50,000 inhabitants a partial re-allocation of the land will be inevitable. This raises the question of the internal structure of the " green grid ". The circular belt will include farm land, not only in the case of London and the other

big cities, but also in any other case. As it must be not too far away from the centre of the cities a certain amount of redevelopment will be needed as e.g. the removal of industrial enterprises or of residential buildings from this peripherical zone. Almost the same will be necessary as regards the green wedges, but here the purpose is different. As already mentioned, it is quite feasible to include allotments, but it would be impracticable to have farmland in these open spaces. Similarly in the case of smaller settlements; farms will be included in the green belt but shall not be placed inside the settlement even though part of the population may be agricultural. We must clearly understand that the principle of the splitting-up of urban settlements by a " green grid " must not lead to a separation of parts which belong structurally together. On the contrary, it should produce a greater coherence of the individual urban units by intersecting them with a functional system that fulfils quite different purposes, i.e. of traffic, recreation and cultivation. If these zones were intermixed with industrial and/or residential buildings, not only the costs of public services would be increased by their undue extension but more time and more money would have to be devoted to transport. On the other hand, the green belt must be broad enough to permit the efficient and unhindered pursuit of agriculture; and this has in its turn, its decisive bearings on the spacing of settlements. Green wedges must be broad enough to separate efficiently two built-up districts as well as to fulfil the functions which have been assigned to them. These various points indicate that the use of the land dictated by carefully prepared plans is more decisive in the redevelopment of existing settlements than the preservation of some portions of the land for purposes which they have served in the past or which might merely save " a degree of quality in the total farm land ", as A. W. Ashby suggests. We can also agree with his other conclusion that " on the whole it appears desirable that the immediate agricultural services such as the supply of milk, fresh vegetables, and eggs, should be rendered from the vicinities of new settlements, as hitherto, rather than from specially allocated areas inside them ".

The relation between the periphery and the centre of urban communities thus gains a completely different significance from that which it had in the past. Both are directly interconnected by the " green grid " and the stop to the peripherical extension decreases the pressure on the central district because it limits the number of inhabitants and thus decreases the concentration of business activities in them. This is just the opposite of what most people expect; and it may be indeed paradoxical that the limitation of size shall lead ultimately to a loosening-up of the

inner structure. Yet there is no secret behind this process unless systematic planning is considered as some sort of esoteric procedure.

Three categories of land uses are of special importance so far as the inner part of urban places is concerned. They are the business district, the slum areas, and the parts destroyed by enemy action. As regards the business districts: we may safely assume that the decentralisation of business districts may not keep pace with that of residential and industrial districts; and that even greatly decentralised industrial production is compatible with a centralised administration of industry and commerce, and is even more advantageous in some cases. Nevertheless we have to reckon with some measure of " automatic " decentralisation of business districts and with its reactions on the areas surrounding them. We must, therefore, control the intensity of the use of the land in business districts as well as the use of the land itself in so far as it might be desirable to develop open space interspersed between the built-up area within these districts. Intelligent zoning can do a lot in this respect if density of population and intensity of land use are brought into an efficient relation in regard to the special conditions of business districts. Up to the present the traffic capacity of the streets has been considered almost the sole purpose for modernising business districts. Regulations concerning height and bulk are also not sufficient to guarantee even a minimum of the effect needed for a comprehensive redevelopment of urban settlements.

> There is a lack of adequate scientific information as to the factors entering into the aggregate results of the use-density of the business district on traffic capacities within the district, and as to desirable functional and use-density patterns. Daytime " population " per use varies widely among various uses, and the population turnover per use varies still more. Until exhaustive research, far more extensive than anything thus far undertaken, has unravelled some of the complexities of the problem, and until a co-ordinated method of control has been worked out (involving tax policy as well as zoning regulations) height and bulk limitations beyond those necessary to assure adequate light and air are largely arbitrary. Meantime, zoning in practice can do little more than prescribe apparently reasonable " envelopes of open space " for buildings in the districts of most intensive use. But at the same time means should be sought for extensive research looking toward the establishment of sound principles for the control of use-density. These principles, and the general patterns resulting from them, should be embodied in the master plan and zoning regulations should be devised to accomplish their purposes.[1]
>
> [1] National Conference. Ibid.

Most business districts need thinning out considerably, a process which can best be achieved by the development of open spaces. If the daytime population cannot be reduced and the same amount of office floor space is needed as before, the solution is to build higher buildings and to separate them by healthy and pleasant open spaces. If, however, the decentralisation of commercial and business enterprises is gaining momentum no need arises to increase the height of the buildings. In this case, one may rely on a " natural selection ", i.e. the preference of the better buildings and a gradual shift of the offices to them although it will be very helpful to give some measure of promotion by the re-zoning of the areas destined for open spaces. A similar re-zoning can provide parking space and thus also help in the loosening up of the congested areas. Both methods, applied systematically, can greatly assist in the reshaping of the business districts and in the development of a continuous system of open spaces linking even the inner parts of the towns with the open country. If such a selection by decentralisation can be made a systematic and effective procedure the basic and fundamental business activities will remain in the central district such as the finest and most specialised retail business, the headquarters of finance and of corporations, the municipal and, in some cases, governmental administrations and the like. There will be losses of artificial values in the central districts based on the assumption of a continued growth, but such a redevelopment will result in a fairer taxing of the taxpayer who after all has to carry the burden of the extensive costs of patched-up reforms. The problem of redeveloping urban settlements must be looked at as a whole affecting the entire area plus its surroundings.

The thinning-out of the business districts influences the surrounding areas. We are witnesses of the way in which new sub-business districts with shopping and commercial facilities rise, and how the areas adjoining the central business district change into the forbidden mongrel-quarters which we all know. We can observe the same trend as in other connections : trade and other activities are following the buying power.

Slum areas can be converted either into new and better built residential or industrial quarters or into open spaces. Preference should be given to the latter solution whenever possible, and no really cogent reasons do exist to cover the area with new buildings. If one reads in a study on the rebuilding of one of the leading cities, published only recently, that one congested quarter should be rebuilt with " flatted " factories, five or six storeys high, one is inclined to ask : is it really necessary to erect new buildings on such sites ; and would it not be better to consider the shifting of such factories to a place outside the city boundaries using them

as a nucleus for its development? While one can agree with the suggested solution of "flatted" factories, doubts may exist about the value of the scheme in detail. The "tunnel-back" buildings do not give enough air and sun, especially not in the lower storeys, because their projecting annexes are too near to each other. It would be better to build still higher, to build only two groups of buildings without annexes and to gain, in this way, more open space. The same floor space could be provided under even better conditions and possibly even at cheaper rate for the bulk of the buildings is more compact. If there must be rebuilding at all it is better not to stop half-way but to look for the most radical solution which is for the most part also the best. In such a case the use of the land as such remains the same as before, but the whole area must be under one unified control. If the area were to be converted into an open space other problems would arise, apart from a general re-zoning, such as its connection with other open spaces, the elimination of through traffic and its relation to the adjoining quarters with regard to density and distance. In general, much can be said in favour of preserving such areas as open spaces; it would be advisable, therefore, to prohibit their rebuilding, at least, till the National Plan and the regional schemes are ready.

The resettlement of existing urban communities involves much shifting of community services—churches, hospitals, theatres, shops, etc.—to other places where they are better located and can fulfil their functions with more efficiency than in those parts of the town which are losing their population in the process of an internal decentralisation. All this affects the use and the control of the land which can be handled efficiently only if large-scale schemes can be worked out.

The reshaping of the man-made and of the natural landscape is in fact part of the still more comprehensive task of the reshaping of our environment. Social and economic factors are the dynamic forces which direct the work of man in practice; behind them there is the eternal fight going on between our sense of reality and our sense of possibility but, on the whole, forcing us on to ever renewed attempts at transforming our surroundings in accordance with our changing ideas and needs. If we want to realise our social ideas and to make them the foundations of national planning we must intensify the adaptation of the geo-physical conditions to this conception and subordinate the various uses of land to it. We cannot be content to accept existing conditions and "facts" derived from them. If we see a number of factors, common to the different problems, emerging from the foregoing investigation we must be aware that their value is relative, and that national planning aims at

developing new factors. Thus, nodality as it influenced the location of towns in the " paleotechnic " age will assume another meaning in the future. The words of Vidal de la Blache " les routes ont fait les villes " might be changed to: les villes font les routes. Nodality has led to a certain amount of diversification of the social and economic structure; but a new diversification may also lead to a new nodality. The space relation between settlements of various kinds has been determined by a now outworn system of functions; a genuine balance of functions, built upon the intelligent distribution of social and economic services, will create a new space relationship and a new gradation between the various types of settlement. Regions, hitherto circumscribed foremost by geo-physical factors, will take on a new shape and a new internal structure. Uses and yields of land, hitherto determined in the first place by manifest natural conditions will be improved and differentiated by social needs and scientific considerations. Accessibility confined in the past to slow and inadequate transport, will gain a new meaning by fast means of manifold and widespread communications making mobility of goods and men the self-evident principle of planning. The one-sided focusing of a region on one city and of the whole country on its capital will be reduced.

> Plans must result in a more complicated pattern and a more comprehensive life, for the region for this geographic area can only now, for the first time, be treated as an instantaneous whole for all functions of social existence. Instead of trusting to the mere massing of population to produce the necessary social concentration and social drama, we must now seek these results through deliberate community planning and closer regional linkages. One might call this new method of designing city and region in working partnership the principle of unity by apportioned distribution rather than unity by centralisation. The latter means physical spreading and control from a dominant centre, whereas the first means functional spotting. Any one part of such a complex may become, for a special purpose, the centre of the region.[1]

The redistribution of consumption will play its decisive part in the decentralisation of urban areas; and the " green grid " will free land hitherto used for building purposes.

These are only a few of the factors which are inherent in more or less all sections of the procedure of national planning. " Preservation " is a word that should belong to the past; it may be reserved for the eternal Babbitts. Change and improvement must be the principles of national planning; and they must be, first of all, the corner-stones of a creative demobilisation. The

[1] L. Mumford, *Culture of Cities*.

man-made landscape of the future will be incomparable with the legacies of the Industrial Revolution; it will be reshaped in the sign of a social evolution. May we hope that the post-war generation, and also all those who are actively concerned with the preparation of post-war reconstruction, will understand that the whole is something apart from and infinitely more than the mere sum of all its parts? Will we rise to the occasion and interrelate these parts, thus creating a genuine and powerful unity pregnant with new potentialities? And will we take in time the necessary steps to co-ordinate the enormous amount of factual knowledge?

AGRICULTURE INTEGRATED

IF we are sincere we will admit that, in our discussions of town and country planning, we have almost forgotten agriculture as such. It was put in the category of "preservation", but it was not considered as an integral, and indeed complementary part, of town planning. Now, under pressure of war, we turn to the land, expecting it to produce automatically and at once a considerably larger portion of our food requirements than in peace-time. We are apt to forget that our neglect of agriculture in peace-time inevitably produces a situation where the farmers have neither the experience nor the technical equipment necessary for such a task. When the demobilisation comes we shall turn to the land once more, expecting it to absorb men released from the forces; but again we shall probably forget that the structure of rural settlement cannot be interspersed with "subsistence holdings" without seriously endangering the whole fabric of national planning. Thus, the land has been regarded as something to which one should turn in times of crises; and it is still being looked at by many people as first and foremost a suitable place of recreation or as an outlet for their romantic sentimentalism. In reality, agriculture, even in such a highly industrialised country as Great Britain, is a very different proposition. If we fail to understand this fact we cannot expect to put national planning on a firm basis. Industry and agriculture are socially and economically interdependent; and both together produce what we need.

Both sides, town and country, have sinned in the past; they did not understand each other. The history of their relationship shows how strong this antagonism was, and still is; it is a graphic account of a town-versus-country but not of a town-and-country movement. Agriculture, though the oldest industry, has been most neglected since the Industrial Revolution. Townspeople have so far done only very little to help country people to make themselves more independent of the cycle of nature, of its periodic birth, death and renewal, which imposes a rigid rhythm upon their work and their life. The fact that civilised town life is really based on agriculture is not obvious to men reared in towns where the rhythm of life and the inexorability of natural limitations such as the weather and the soil is partly hidden. Therefore modern townsmen have neglected agriculture through ignorance of their own dependence on it; they evaded their responsibility, although most if not all modern problems confronting the farmer are town-born. The antagon-

ism between town and country must be superseded by a creative unity; our past neglect of agriculture must be turned into its productive re-establishment with the same rights as industry; our one-sided dependence on nature must be reduced by a scientific and social impulse. In short, agriculture must be integrated into the complex structure of our urbanised social and economic life.

In spite of the impact of modern life on agriculture the farms of Great Britain, and especially their lay-out, are not very different from those of a century or more ago. And as for the present distribution of rural settlements—excluding the urbanised areas of course—we may assume that it is also not too dissimilar from the general structure of settlement in earlier centuries. W. G. East pictures the state of affairs in 1800:

> Despite the many changes of eight hundred years, the distribution of settlement sites upon the English plain was very similar in 1800 to that in 1086. The eighteenth-century traveller, as he left the built-up area of the towns (and, except in the case of London, this was not large), passed out into a countryside studded with nucleated villages, hamlets and homesteads, no less evident then than before. On the one hand, nucleated villages formed compact groupings of dwellings, usually around the parish church, and spaced out as a rule several miles from each other. On the other hand were found dispersed habitations, either homesteads or single mansions, or hamlets. In some cases, these scattered settlements prevailed widely, to the virtual exclusion of nucleated villages; in other cases they were dispersed between adjoining villages.[1]

This description still holds true to-day for many parts of the countryside. This preservation of time-honoured conditions arises partly from the idea that "those who labour in the earth are the chosen people of God", as President Jefferson wrote, and partly from the conservative attitude of the countryfolk towards the towns and everything they stand for. The townsfolk were disliked and regarded as influences destructive of the peaceful life of the country. This distrust of townsmen by country people gave the former a convenient excuse for leaving the farmer to his fate as a person not to be included in ambitious projects for urban development. The farmers themselves were unable to keep up with the changing conditions because the opportunities of a good education were lamentably lower in the countryside than in the towns, and because the progressive decrease of the rural population made the provision of social and economic services in general more difficult. It is, therefore, entirely justifiable to ask:

[1] In H. C. Darby, *An Historical Geography of England before* 1800.

> How many of the people who deplore " the state of agriculture " or the " depopulation of the land " would like to take their families out of reach of gas or electricity, and piped water, out of reach of decent schools without a three-miles walk or a ride in a rickety and draughty 'bus, out of reach of good cinemas, and six or eight miles away from the doctor and the pharmacist, three miles away from a post-office, and no home or office telephone? These are the conditions under which a high proportion of agricultural families now live and must continue to live for a long time to come.[1]

Although these questions were, in this special connection asked about Welsh agriculture, they have a general application hardly less conclusive than the answer:

> This poverty in respect of services is the result of the sparsity of population together with the low levels of incomes. Migration has been the traditional method used by the agricultural families to adjust their incomes and standards of living as near as possible to those of the industrial and urban classes, and indeed it is practically certain that no equally effective method was open to them. But this migration, with its accompaniment of rising production and income per person, has not gone far enough to raise incomes to the level at which the real deprivations were avoidable. With the present sparsity of population, incomes must show a tremendous rise before the relative poverty is removed. No practically conceivable increase in density of population, without increased incomes, would remove the deprivations. But a rise in incomes together with an increase in density of population would enable the rural communities to overcome their most serious disabilities.

If we want to put the relation between town and country on a productive basis we must change the life in the countryside. We cannot be content to let the countryside feed and people the towns. To reverse the movement away from the land, at least the same level of rural as of urban incomes is needed, and new opportunities of employment must be found, not in agriculture only but also in new industries. It has been suggested that a body of rural sociologists is needed " to put the townsman under the microscope ". Certainly a very wise idea, for it would greatly help towards a better understanding of the mutual problems linking town and country together, foremost among them being the fact that the well-being of industry depends very largely on an adequate number of well-paid agricultural workers. The growing urbanisation of the past century involved the farmer more and more in commercialised and complicated economic development; it changed the whole character of rural life without changing, at the same time, its physical environ-

[1] A. W. Ashby, " Planning Welsh Agriculture ", *Welsh Housing* and *Development Year Book*, 1934.

ment, although the demand for industrial products was increasing. Thus we have already laid the foundations on which a revitalised rural civilisation can be built. The Americans have coined the word " rurban ", and the French, the expression " urbanisme rural " for this new entity. The Fifth Congrès International d'Architecture Moderne, held in 1937 in Paris, adopted the resolution :

> Ce n'est pas la ville qu'il faut ruraliser en abaissent son niveau de civilisation—c'est la campagne qu'il faut urbaniser, civiliser, mécaniser, en sauvegardent ce qu'il y a de précieux dans son ancienne culture.

Thus, the interrelationship between town and country can be made effective and genuine if we bring industry representing the towns, and agriculture representing the countryside, into a close contact and immediate proximity ; a gradual assimilation of outlook and habits will be the result. Some hope of achieving this lies in the fact that farmers appear to be more inclined towards group action than heretofore. They feel that the individual farmer has to overcome greater difficulties if he stands entirely alone, the more so as commercial farming has gained almost complete preponderance. Farmers who have little or nothing to sell are an anachronism. They have been called " functionless human beings in society ". Yet their danger of becoming so would be very real if the idea of subsistence holdings with which many people are impressed were put into practice, and thus the land was treated as a mere specific for the cure of urban unemployment. The adjustment to changes produced by industrial unemployment must not be accomplished by bringing people back to the land who cannot be wholly and productively integrated in the social and economic structure of society. It would almost certainly lead to a mentality not too dissimilar from an " unemployment complex ", for nobody can live without the conviction of being a useful part of the social machinery. A lack of ambition and interest would be the unavoidable result. These people would be robbed of their share in the economic opportunities which should be open to all men alike. In short no healthy development of rural areas can be based only on an attempt to absorb displaced urban workers. Agriculture must be accepted as a basic industry, and its fundamental function in the national economy must govern its development—neither charity nor antiquarian æsthetics are a sufficient basis for an agrarian policy.

It would be a great mistake to assume that an assimilation of outlook should mean that the " urbanite " sets the standard for all other categories. The problem is much more complex ;

and unless we recognise this fact we shall fail even with our most elaborate schemes. M. L. Wilson explains in an excellent article, " Beyond Economics " in *Farmers in a Changing World*, how interrelated these problems are :

> The real genius of any possible reform effort will reside not in its technical competence . . . but rather in its psychological and cultural insight. He emphasises the satisfaction of psychic needs " for security, for self-respect and prestige, for intimate experience and for a relationship with the unknown. . . . It is insecurity and confusion that drive men into frantic loyalty to extreme ideas and into desperate and harsh oppression of those who disagree with them." [1] We must understand " that social and economic truths are not absolutes to which mortals have ready access."

We must, therefore, take into full account the special characteristics of countryfolk and plan an agricultural economy in harmony with the needs and mental habits of countrymen. The tendency " to think from the concrete case rather than from only generalisation of experience " is a welcome counterbalance to the speculative mind of the townsman. But, " on the whole, because of residence in small groups and the power of group-approval or disapproval, and because of the lack of opportunity for intra- or extra-community association between individuals who begin to have radical views or attitudes, the countryman tends to be socially conservative—not only in political affairs but in many other lines."

People are inclined to assume that there are village communities, spread all over the country, having a high degree of uniformity and internal coherence. In reality, this is not the case. Rural communities differ considerably from each other in regard to their social as well as economic conditions ; and the alleged entity of the village itself is a rather doubtful affair.

> The community as such is only concerned with certain of the more customary relationships, the primary and often primitive interests. . . . In the cross-working of the influences between the individual and the community, the individual is alternately checked and supported and the community changes for good or ill.[2]

If we think that we can develop a new structure of settlement in rural areas on the firm basis of community feeling, and of the family as a unit fostering such feeling, we are mistaken. National planning must proceed very carefully in this respect if it wants not only not to destroy the valuable elements in rural life but to make them productive. The impact of technology and science on agriculture tends to obscure the impact of sociology, which is

[1] *Yearbook of Agriculture*, 1940. U.S. Department of Agriculture.
[2] A. W. Ashby, *The Sociological Background of Adult Education in Rural Districts*, 1935. British Institute of Adult Education.

its essential counterpart, and which is only in a somewhat less favourable position because it is of a newer origin. Their interaction upon each other promotes the trend towards a modernised and efficient structure of settlement which is more than a mere change in the size and lay-out of small farms. People who think that they can reform agriculture without a fundamental transformation of rural life are seriously mistaken. But hitherto the latter problem has hardly been touched; and this fact explains why a reshaping of the village within the framework of a new structure of settlement has not yet been attempted. The creation of a new and better environment for life in the country must proceed with the clear aim that social problems must come first. It is obviously impossible to develop a high technical standard of farming and preserve, at the same time, the old social structure. The tensions would be too great and would lead to an eruption. Rural society is a mechanism as complicated as urban society. The time has gone when our community was a real unit. In a modern complex community

> there is a high degree of specialisation. Men do not do the same things. They have far less understanding of each other and share fewer common loyalties. The community is split up much more into opposing groups with special interests to defend. Moreover, men do not understand the reasons for what they do. They do many things under the compulsion of remote forces, not those within the community itself. Changes due to advances in technology are rapid. Under the circumstances, the sense of values, of what is right and wrong, becomes confused. Life is far from being a harmonious whole, and it may lose much of its meaning. The adjustment of men to their environment and to each other is out of gear.[1]

It is for these reasons that we must emphasise again and again that agricultural adjustment to the modern way of living is first of all a social and a cultural one; its realisation cannot be accomplished by changing the physical environment but by integration with a society which enables everyone to be a useful member enjoying the same rights. Rural sociology is one of the youngest fields of research. When it has developed it should contribute very materially to the reconstruction of agriculture. We should make use of the excellent work already available in the U.S.A.

In planning we should not forget that the land is there, but that there are not enough and not the right people just where they are needed. The people are more important than the land; and they must take the first place in our vision of the future. The future is more important than the present; and

[1] *Farmers in a Changing World.* Ibid.

thus we must plan for the coming generation and understand what they want and what they need. We must look, therefore, at the problem in all its complexity. Isolated facts alone, valuable as they are, will never produce an integrated agriculture.

THE LAND.

The way we use the land now forms the obvious starting-point of any further development. On this basis, about 7% of gainfully occupied persons supply nearly half of the food for the whole population. About 15% of gainfully occupied persons could feed the whole population if enough land were available. Assuming agricultural conditions of the English-speaking world as a whole, even 12% might be sufficient to supply the whole population with food.[1] It might be possible that an increase in production and even a relatively large one could be accomplished without increasing the number of people employed in agriculture.

What is to be the basis on which the new pattern of rural settlement shall be developed? Is production or consumption to be the standard? If we accept the first we might be more inclined to stick to the present uses and management of the land than will be the case if we consider the consumer needs of the population as the guiding principle. As already pointed out, the general trend seems more towards the latter; and this finds a further corroboration in the coming changes in the distribution of population which will considerably affect the existing centres of consumption in many cases, and which will even create new centres. The issues involved are of a twofold nature: first, production in general should be raised up to the highest level possible; and secondly, certain types of production will need a certain amount of shifting to other places.

Following Dr. Dudley Stamp's Fertility Classifications in Land there are in England and Wales about 37 million acres of agricultural land of which about 17 million acres have been classified as potentially first-class land; 6 million acres as rough grazing and heath and the rest as second-class. Some 54% of the agricultural land, i.e. about 21 million acres, would be needed for the production of vital foodstuffs by a local "service" agriculture. The case in favour of a local "service" agriculture surrounding the places of consumption is strong, the more so as the intention of limiting the size of urban settlement by a permanent green belt works in the same direction. However, it will neither be possible nor advisable to make a rigid principle of this postulate. J. R. Currie points out

> that the British Isles can be looked upon as one economic unit as far as production is concerned; by this I mean that proximity to

[1] A. W. Ashby, *The Effects of Urban Growth on the Countryside*. Ibid.

or distance from market is not of the first importance in arriving at a decision upon priorities in production. Taking milk as an example, it may be better economics to produce milk for the London market in Dumfriesshire than to attempt to do so in East Anglia or Essex which are only a fraction of the distance from London; or again, to produce for the Torquay market in Somerset rather than in the small valleys running into Dartmoor. A great deal depends on the intensity of production in its effect upon cost, and in turn economic intensity will depend on the suitability of the natural environment. There is little doubt that the west, with its liberal all-the-year-round rainfall, is most suitable for grass production, and therefore for dairy farming, and this far exceeds the significance of any proximity factor to large markets which the east may have, as far as economic milk production is concerned.[1]

We must carefully balance the various factors against each other and not try to enforce solutions for no other reason than that they provide excellent material for neat diagrams.

However, it will be possible to develop a local "service" agriculture in a number of cases. The following is an extract from a broadsheet published by the Association for Planning and Regional Reconstruction which gives some more detailed explanations.

The table that follows shows the upper and lower limits of a balanced national diet. It has been drawn up as a flexible working guide, after an analysis of several proposed diets, including those published by the British Medical Association, The League of Nations,

TABLE A.—STANDARDS OF INDIVIDUAL FOOD CONSUMPTION PER WEEK

Food.	Proposed diets per individual per week.	1937–8 weekly consumption	Percentage imported 1937–8
Foods easily grown at home :			
Milk	4·75 to 10·5 pts.	3·9 pts.	—
Fruit	1·52 to 1·86 lb.	1·24 lb.	47·7%
Vegetables	1·32 to 3 2 lb.	1·66 lb.	34·7%
Potatoes	3·5 to 7 0 lb.	4·2 lb.	3 2%
Eggs	7·0 to 7·0 eggs	4·5 eggs	31·8%
Meat (Beef and Mutton)	0 66 to 2·0 lb.	1·7 lb.	53·8%
Meat (Bacon, etc.)	0·34 to 1·0 lb.	0·9 lb.	68 2%
Fish	1·0 to 1·0 lb.	0·9 lb.	3·2%
Foods generally imported :			
Fruit	1·34 to 1·64 lb.	1·10 lb.	100·0%
Butter	0·5 to 0·5 lb.	0·5 lb.	91·4%
Other fats	0·25 to 0·33 lb.	0·3 lb.	100·0%
Cheese	0·25 to 0·5 lb.	0·2 lb.	79·8%
Bread	5·00 to 5·00 lb.	4·1 lb.	80·5%
Sugar	1·00 to 1·00 lb.	?	77·4%

[1] In a private communication.

the Canadian Medical Association, Professor V. H. Mottram and Sir John Orr and David Lubbock. The figures are compared with the actual 1937–1938 food consumption of the nation, deduced from *Feeding the People in Wartime* (Orr and Lubbock).

In arriving at this standard diet range, questions of age, sex and occupation have been disregarded.

The Calorie value of these proposed diets lies between 2,500 and 3,500 Calories per day; the Calorie value of the average 1937–8 diet (assuming 1 lb. sugar per head per week) was about 2,600 Calories.

Fresh Food Requirements

Assuming a diet within the standard range of the theoretical diets set out above, and assuming that a local service agriculture has to produce the vital fresh foodstuffs, what quantities are required, per annum, for a given number of people?

TABLE B.—CONSUMPTION OF PERISHABLE FOODSTUFFS PER 1,000 PERSONS PER ANNUM

Food.	Standard range of diet (in tons).	1937–8 Consumption (tons).
Milk	88·5 to 195·0 (31,125 to 68,250 gallons)	72·4 (25,350 gallons)
Fruit (home-grown)	35·2 to 43·15	28·75
Vegetables	30·6 to 74·2	38·5
Potatoes	81·0 to 162·0	97·5
Eggs	20·4 to 20·4 (365,000 eggs)	13·0
Beef, mutton, and pork	15·3 to 46·3	39·4
Bacon, etc.	7·7 to 23·2	19·7

Standards of Fresh Food Production

If these vital fresh foods are to be produced close to the point of consumption, what acreage must be devoted to service agriculture? To arrive at these figures, certain standards of production have been obtained which serve as a basis for calculation, as follows:

TABLE C.—STANDARDS OF FRESH FOOD PRODUCTION

Food.	Acreage required.	Assumed production.
Milk	1 cow per 3 acres	550 gallons per annum
Fruit (home-grown)	2 tons per 1 acre	assuming a normal year
Vegetables	7 tons per 1 acre	per annum
Potatoes	8 tons per 1 acre	per annum
Eggs	Hens folded over whole acreage	150 eggs per hen per annum
Beef, mutton, and pork	150 lbs. per 1 acre	per annum
Bacon, etc.	Pigs fattened intensively	

To achieve the standards of production aimed at, for a given head of the population, the following acreages of land will be necessary, assuming the figures in Table C to be approximately correct:

TABLE D.—PRODUCTION AREAS IN ACRES

Food.	Standard diet range per 1,000 persons per annum.	Actual diet per 1,000 persons in 1937–8.
	acres	acres
Milk	168·0 to 372·0	138·0
Fruit (home-grown)	15·8 to 19·25	6·9
Vegetables	4·36 to 10·6	3·5
Potatoes	10·2 to 20·25	11·8
Eggs	—	—
*Beef and mutton	228·0 to 690·0	588·0
Bacon, etc.	—	—

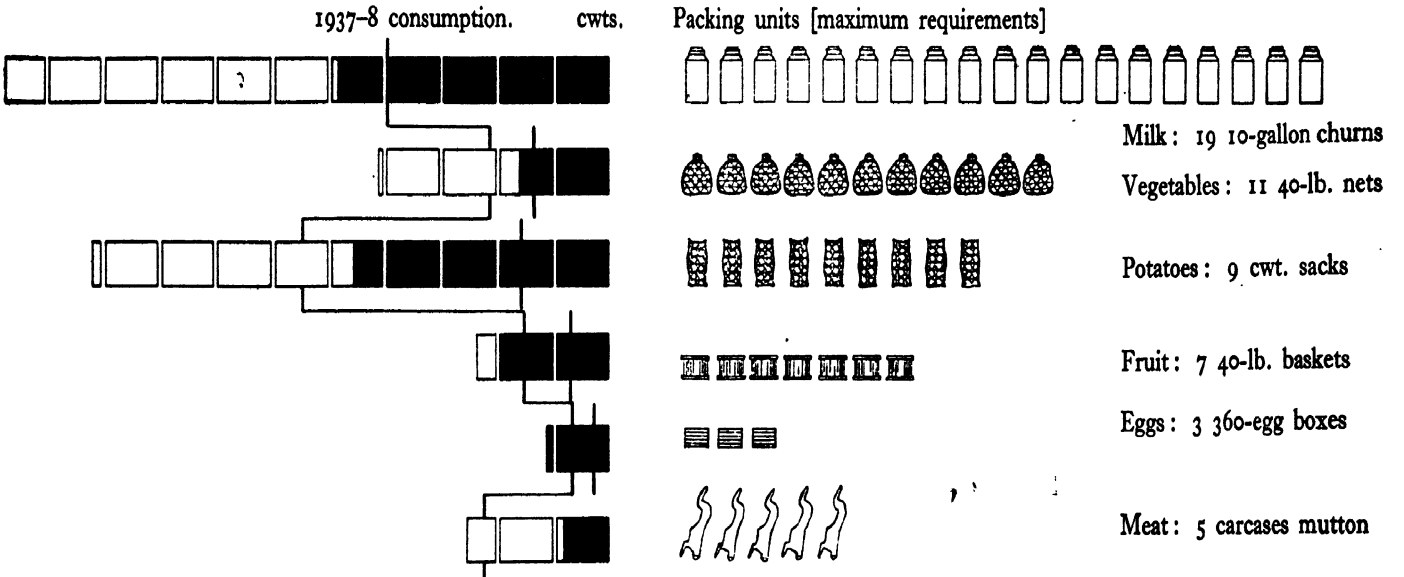
* Very little of this acreage need come within the zone of "service" agriculture. The greatest part would be on the hill-land pastures of the country and elsewhere, whilst some would be included in the milk acreage.

No major changes—and there will be a great number of them—can be brought about without making full use of the potential fertility of the soil. We are fairly well informed about its present use; but much remains to be done regarding future possibilities.

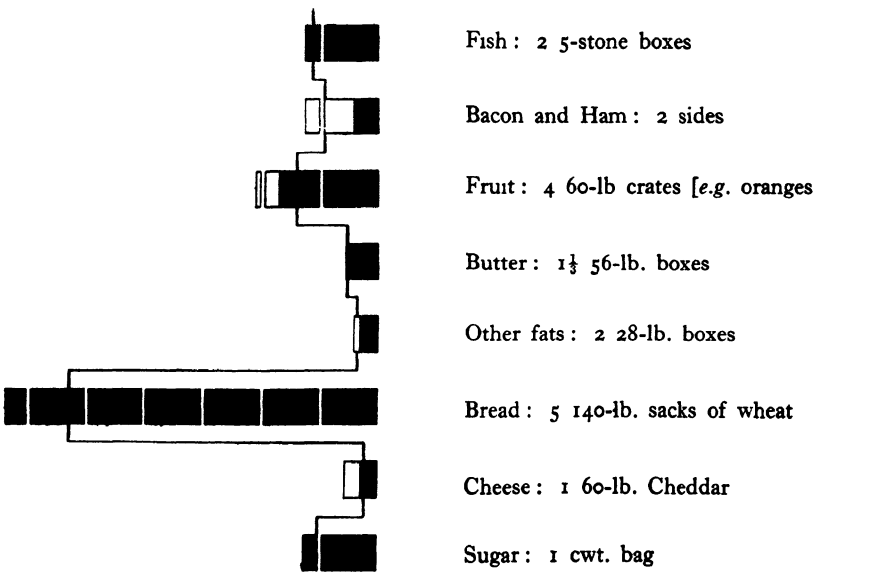
Survey before Planning.—Planning would begin with a survey of the neglected area, not necessarily field by field, but farm by farm, so as to obtain a broad picture of the soils involved, their condition and capacity for increased production. Much of the material for such a survey exists, and it is assumed that the knowledge possessed by the Advisers on Soils and Economics of the provincial College and the County Organisers, together with the data collected by the War Agricultural Committee, would be at the disposal of the group of technical men drawing up the plan. On this survey a decision would be reached as to the type of farming best suited to each of the soils found in the area and the size of unit to be aimed at in each case. It might be found, for example, that region A should be reconstituted into mainly arable farms, on an alternate husbandry principle, of from 3,000 to 5,000 acres, while region B would be fitted for dairy farms of the 400- to 800-acre size. That being decided, a more detailed apportionment of the area would be entered upon in order to trace the boundaries of the farms to be constituted, having in view the creation of the most economically workable units, when taking into account the lie of the land, the roads, the water-courses and the buildings available or required. At this stage would be indicated the major works of improvement necessary—water-courses and drainage, reclamation of bushed land, grubbing of hedgerows and spinneys, liming and slagging. The survey would also indicate where small farms would be fitted among the larger units, also which areas of land would be suitable for intensive cultivation or which should be afforested.

Food Requirements per 1,000 People per day

The foods shown below could be produced at home in zones of service agriculture, but include only the minimum weight of meat [see diagrams page 3 and in Broadsheets 5 and 6.]



Most of the foods shown below would have to be imported, including the rest of the meat.



Each rectangle equals 1 cwt. Black, minimum requirements; White, maximum requirements. When there is a second line, in addition to the line indicating 1937 consumption, this shows the proportion imported out of the total consumed in that year. These imports have only been indicated in the first group of foodstuffs.

Packing units named are representative, but vary locally and with means of transport.

The diagram shows that the fresh foods and bread present the major handling problems, by reason of their weight and bulk.

The Executive.—On the basis of this survey a working plan for the area would be drawn up, and that would be handed over to the constructive branch of the organisation to carry out. This branch would deal with the plan section by section, submitting its proposals and estimates. Its engineering section, for example, would have to consider the costs of the drainage work suggested and estimate how far its proposition would be economic; it would also have to submit estimates for road-making, buildings, etc. The farming section would have to prepare to farm the land while the reconstruction work was going on, and presumably would afterwards have to keep more or less of the land in hand for a time in order to establish its capacity to earn a given rental. Doubtless the organisation would have to remain in continuous occupation of one or two of the big farms of various types in order to provide training grounds for managers of farming on such a scale. There are men in a small way who can be picked out to conduct a big business, but, as has often been experienced, it by no means follows that because a man has made a success of a 200-acre farm he possesses the sort of mind that can plan and oversee the work on 2,000 or 3,000 acres. The new large-scale farming will not spring into action everywhere at once, but competent managers can be found for the earlier ventures, and on them the sub-managers and managers of the further farms can be trained. Thus one of the needs of agriculture would be met, i.e. the recruitment for the management side of the industry of young men of capacity who otherwise would have little or no capital on which to make a start.

The other branch of the organisation concerned with reclamation would prepare the working plans for dealing with the areas on which the survey had suggested such work would be of value. But again a reclamation branch cannot spring into existence fully grown; only by trial and error can the branch accumulate experience and build a corps of men who can deal efficiently with the problems presented. The great Indian Irrigation Service had to grow and learn its methods as it went along.[1]

Although the countryside is not "a blank sheet of paper" on which we can design any scheme we like, the map of Great Britain will be redrawn during the next generations—as far as man's works are concerned. Thus, for example, Sir Roy Robinson stated in his address to the Chartered Surveyors' Institution in 1938:

> that we are well on the way to proving that many hundreds of thousands of acres of practically worthless land hitherto classed as unplantable can be successfully afforested at low costs.

The existing map of agricultural Britain has been drawn by the farmer with his plough. The future map will be drawn by science. British science has produced excellent results in this sphere, and it can be expected that it will enable the planners

[1] Sir Daniel Hall, *Reconstruction and the Land*, 1941.

to proceed with national planning most systematically. Nevertheless, some achievements as they are accomplished in the U.S.S.R. are of great interest and stimulation.

> The absence of its own food base hampered and held back the economic growth of the extreme north. Science came to its aid. . . . Beyond the Arctic Circle there now grow cabbages, carrots, onions, swedes and turnips of various kinds, radishes, kohlrabi, peas, cucumbers, pumpkins, and so on. . . . The Kola Peninsula is a new Arctic industrial region with 150,000 inhabitants and will soon be supplying itself with its own vegetables and milk. The new Siberian town, Igarka, which lies 100 kilometres to the north of the Arctic Circle, has its own vegetable supply.[1]

But the structure of British farming stands in the way of similar achievements. Of course, the conditions are different; Britain is a country of small spatial dimensions that cannot be compared with Russia. However, we may follow an authority like Sir Daniel Hall:

> Farming throughout the world is going through a phase of change, of enlarged opportunities due to advances in the scientific knowledge of the growth of plants and animals, to developments of mechanical power applied to the land, and to the growth of the art of organisation. To a considerable degree, British farming with its present structure cannot utilise these powers of increasing and cheapening production, because of the smallness of the farming units and the haphazard parcelling out of our land, which has been laid out into farms without consideration of economic working under modern conditions.

And even the reclamation of land is hindered by numerous private boundaries; if all land were treated as one and it was divided in accordance with the needs of agriculture and not by rights of property, it could be more productively used.

Let us imagine—quite apart from political considerations—that the land of Great Britain would be one great estate. It is evident that, taking a long view, far-reaching advantages would be the result; land uses and management could be improved systematically.

> If the State is aiming at farming efficiency, it must, directly or indirectly, exercise control of the use of the land, and since that control can only be brought into play by an owner the first requisite of any constructive policy is the acquisition of agricultural land by the State.[2]

Among the main problems involved in such a unified control would be power to decide to which uses particular land should be put, and this decision implies a national plan for land utilisation, with an organisation which could decide what are economic

[1] N. Mikhaylov, *Soviet Geography*, 1935.
[2] Sir Daniel Hall, *Reconstruction and the Land*, 1941.

farming units and what are the necessary qualifications for managing such units. On the subject of control we may refer to the previous chapter, with a renewed emphasis on the fact that planning by the reservation of certain areas for agriculture does not give a guarantee that these areas will be used for agriculture in the best possible way. Positive encouragement and distinctive guidance are needed. As regards operation and management, J. R. Currie stresses, in the memorandum published in the second part, "the constant interconnection between economic and social factors, between the land as a commodity and the basis of the agricultural industry, on the one hand, and the countryside as the scene and centre of rural communal life, on the other". He suggests, therefore, that the following problems should be tackled in any scheme of agricultural reorganisation:

(1) The readjustment of the size of the units of land ownership and management.
(2) The readjustment of the size of units of farm management and operation, that is, farm holdings.
(3) The readjustment of the shape of farms.
(4) The redistribution of fields, and the adjustment of their boundaries, to rectify faults in lay-out.
(5) The provision of adequate farm buildings and dwellings.
(6) The re-positioning and rearrangement of farm-houses and other farm buildings, with reference both to the convenience of the individual farm and the formation of economic grouping of villages.

In one case, however, restrictive planning may be usefully applied; this is in order to prevent socially undesirable settlements. Such restrictive measures, based on the classification of land, can be useful if they are accompanied, at the same time, by positive guidance. U.S.A. has useful experience in this respect. In some states legislation has been drawn up, and zoning laws prevent scattered occupancy which would unduly increase the expenses of local public services, or to give a certain measure of protection against misrepresentation by unscrupulous land agents.

The distribution of holdings according to size and numbers is the following [1]:

Size groups in acres.	5–20	20–50	50–150	150–300	Over 300	Totals.
Numbers . . .	134,789	90,192	108,885	42,469	15,324	391,659
Acreage . . .	1,528,568	3,041,537	9,536,521	8,869,108	7,007,405	29,983,139
Numbers in %	34·4	23·0	27·7	10·8	3·9	
Acreage in % .	5·1	10·1	31·8	29·6	23·3	

[1] According to Sir Daniel Hall.

As can be seen from this table the smallest holdings occupy the first place in numbers but the last place in acreage.

Comparative figures of the distribution by size of holdings in England and Wales for 1913 and 1933 [1]:

Acres	1913 %	1933 %
Above—		
1 and not exceeding 5	21·3	18·0
5 „ „ „ 20	28·0	25·8
20 „ „ „ 50	17·9	19·8
50 „ „ „ 100	13·6	16·1
100 „ „ „ 150	7·3	8·3
150 „ „ „ 300	8·6	8·9
Above 300	3·3	3·1
Total	100·0	100·0

The decrease of holdings has taken place almost entirely in the two smallest size-groups. But these figures must be accepted with certain reservations as, for example, the great decrease in the smallest size-groups may be due, at least partly, to the increasing accuracy of the returns of the Ministry of Agriculture or to holdings absorbed by the extension of towns which are generally surrounded by smaller holdings.

> Nevertheless a part at least of the shrinkage in the number of holdings below 20 acres in extent must be attributed to the disappearance of this unit as the result of its uneconomic size, while the decrease in the number of holdings above 150 acres is largely the result of the activities of County Councils and the Forestry Commission, and of the gradual decline in the number of large arable holdings which has accompanied the decrease in arable acreage and the increase in livestock production.[2]

According to C. S. Orwin, about four million acres are in public and corporate ownership, but this figure may have been largely increased recently. Between 1928 and 1937 about 460,000 acres of agricultural land have been absorbed by building and development, and about 108,000 acres by sports grounds. In the following years about 80,000 acres a year seemed to have been used for non-agricultural purposes. "Each 1,000 acres probably means loss of occupation to fifty workers", as A. W. Ashby remarks.

A. W. Menzies-Kitchin gives the following classification of

[1] Agricultural Returns, 1913 and 1933.
[2] A. W. Menzies-Kitchin, *Land Settlement*, 1935.

small holdings as they are affected by economic and natural conditions :

(1) As a result of the limited area on which he operates, the smallholder must concentrate on the production of high value commodities. Of these, pigs, poultry, milk, market garden and glasshouse produce and fruit are the most important.

(2) Holdings on heavy land, if successful, are mainly in pasture ; they produce milk, pigs and poultry, and are generally fairly large purchasers of feeding stuffs.

(3) Holdings on very light land concentrate on pigs and poultry and, where possible, add barley and sugar beet.

(4) Holdings on medium or good quality land permit more diversified cropping, and generally contain a fairly high proportion of arable land in cash crops, together with a variety of livestock. The better the land the smaller the area required to support the family. The main horticultural areas are on these soils.

(5) Centres of population are generally encircled by smallholdings of the smaller type producing pigs, poultry and eggs, market garden and/or glasshouse produce for local requirements, and frequently milk. In certain closely populated districts—notably Lancashire—the small 3 to 4 acre intensive poultry unit has been developed.

(6) Downland holdings are mainly devoted to dairying, sheep and poultry keeping. The dairy holding is generally about 50 acres in extent while the size of the poultry unit varies according to the capital investment and the production technique.

(7) In hill districts smallholdings cover fairly large areas of poor land and are generally of the subsistence type, sheep sales providing the main cash income.

(8) With the advent of motor transport, and the disappearance of the tradesman's pony, the demand for bare-land pasture near the villages has declined.

(9) As a result of low prices in practically every agricultural commodity, there is an overall trend towards an increase in the area of the productive unit.

(10) There is a very definite increase in the concentration of production as the area of the holding declines, e.g.

(*a*) Holdings under 2 acres derive their income mainly from glasshouse production and market-garden crops.

(*b*) Holdings from 2 to 20 acres may concentrate on market gardening, glasshouse produce, poultry, or pigs, while in certain areas, near towns, milk is produced. In this size group, the income of pasture holdings is generally derived from livestock and their products, and the bulk of the feeding stuffs required are purchased. Such a method of production may be described as the factory system of agriculture, as the land is used not to produce food but largely for " floor space ".

(*c*) Holdings from 20 to 50 acres have a much more diversified organisation. They produce milk, pigs, poultry and eggs, fruit, vegetables, wheat, sugar beet, barley, veal and fat

> stock, etc. On pasture holdings of this size the factory system sometimes operates, but for the most part the agriculture is based on mixed arable production. A considerable variety of commodities, mainly livestock or livestock products, are cashed, and a large part of the food consumed in their production is grown on the holdings.

The foregoing considerations concern only a small fraction of the many problems involved. The new pattern of settlement must develop a sound balance between the spatial continuity of the areas, on which the agricultural work proceeds, on the one hand, and the lines of traffic and the comparatively very restricted space needed for settlements of all kind, dotted over the country.

THE PEOPLE.

The pattern of rural living has, in spite of all differences, many characteristics in common with that of the towns; the impact on modern life of the motor-car, the wireless, the telephone, business organisations and the fluctuations of the world market, is too strong to leave the farmer untouched. Nevertheless great dissimilarities persist. Although the family unit is breaking up because the younger generation tends to leave the country, farming remains, in many cases, a family affair; and although rural houses have, in general, more adequate space to offer than urban ones, farm families lack more facilities than even bad or small flats or houses in the towns. To a certain extent, farm families produce more goods for themselves and are thus more independent of the insecurity of income and fluctuating value of money than an industrial worker. But the same tension exists in each case between the actual income and the spending habits, since the industrial worker aims at living in the style of families with an income somewhat higher in the income scale. The "migration from the land" is regrettable only in so far as it leads to the unsystematic growth of the towns; but it is in itself a natural process. Thus, the rural population was reduced to a level where the difficulty of providing satisfactory social and economic services could hardly be overcome.

> Here is the dilemma: to raise output per person and income each agriculturist cultivated more land, and as the land per agriculturist increased there were fewer families to form churches, schools, and all the other forms of social organisations or, alternatively, agriculturists and members of their families had to travel farther for their social satisfaction. At various income levels there are maximum limits of distances which may be travelled for purposes of education and other social activities, but even when transport is available the time-cost of association tends to be high. . . . But

a new set of conditions has arisen. The total rural population is increasing, and it appears that the existing proportion of rural population in the total will not only be maintained but may be increased. With such change the social disabilities of agricultural and rural families should diminish. This maintenance of total rural population is being achieved with diminishing numbers and proportion of agriculturists, with increasing numbers of non-agriculturists keeping up a tendency to increase the total. The change does not occur uniformly, for those villages which have such amenities as piped water-supplies, electric current, and good transport (especially 'bus) services most easily retain their populations and even attract increases. Many of the villages which are denied these modern amenities are still losing population. In some parts of England a considerable redistribution of the rural population itself is going on; the larger and better villages are gaining and the smaller and poorer are losing.[1]

Superficial reforms will not solve the problem. We must develop the same balance between the four functions—housing, working, distributing and recreating—just as much for the country people as for the townspeople. Without fundamentally changing life in the countryside we cannot hope to make agriculture an integral and creative part of national planning.

We are inclined to attribute the increase of population to the growth of industrialism, and to draw conclusions from this "fact" which cannot stand a minute investigation. What we may say is, that a marked increase of population and the development of industrialisation took place during the same period of the nineteenth century. But we should not forget that the population may have increased already between 1700 and 1750 by as much as 20%, and in the latter half of the eighteenth century by about 50%. The decisive causes for this rapid increase were a high birth-rate and a declining death-rate due, in the first place, to improved medical knowledge. On the other hand, the same people who praise the blessings of early industrialism as far as the growth of population is concerned seem to have a rather bad power of observation regarding the later periods. They seem to be blind to the fact that the population of Great Britain will come to a standstill. And this happened as a result of industrialism and of a dwindling agriculture. But we were disposed to boast about our institutions and their uniqueness, because we looked spellbound at our urbanised civilisation, regarding everything outside its orbit as of lesser value. We, as "urbanites", behaved like a primitive tribe believing in our "totem" industry and identifying "our own local ways of behaving with Behaviour, or our own socialised habits with Human Nature". These last remarks are taken

[1] A. W. Ashby, *The Effects of Urban Growth on the Countryside*. Ibid.

from a book which should be read universally, although it seems, at the first glance, to concern only anthropologists. It is written by Ruth Benedict, and its title is *Patterns of Culture*. I wish to quote the following passages because they give the essence of the issues involved in the relationship between town and country if we understand them within the broader frame of the nature of our society, and apply them correspondingly. Let us replace the word " our " by " urban ". as the true expression of our situation, and the meaning will be quite clear.

> *Our* achievements, *our* institutions are unique; they are of a different order from those of lesser races and must be protected at all costs. So that to-day, whether it is a question of imperialism, or of race prejudice, or of a comparison between Christianity and paganism, we are still preoccupied with the uniqueness, not of the human institutions of the world at large, which no one has ever cared about anyway, but of our own institutions and achievements, our own civilisation. . . . We interpret our dependence, in our civilisation, upon economic competition, as proof that this is the prime motivation that human nature can rely upon.

The sources of this behaviour go back

> into what appears to be . . . one of the earliest of human distinctions, the difference in kind between " my own " closed group and the outsider.

The " own closed group " is the urban population and the outsiders are the countryfolk, who have been left without a real chance of keeping pace because industrial and urban progress meant practically everything. But

> social thinking at the present time has no more important task before it than that of taking adequate account of cultural relativity. In the fields of both sociology and psychology the implications are fundamental, and modern thought about contacts of peoples and about our changing standards is greatly in need of sane and scientific direction. . . . It is only the inevitable cultural lag that makes us insist that the old must be discovered again in the new, that there is no solution but to find the old certainty and stability in the new plasticity. The recognition of cultural relativity carries with it its own values. . . . It challenges customary opinions and causes those who have been bred to them acute discomfort. It rouses pessimism because it throws old formulas into confusion, not because it contains anything intrinsically difficult. As soon as the new opinion is embraced as customary belief, it will be another trusted bulwark of the good life. We shall arrive then at a more realistic social faith, accepting as grounds of hope and as new bases for tolerance the co-existing and equally valid patterns of life which mankind has created for itself from the raw materials of existence.

We must give up the rather narrow-minded attitude towards rural problems and look at the wider world in order to learn from the facts outside our own sphere. The population of China has increased although Chinese culture has an agricultural basis. Of course, the conditions are utterly different. But let us look beyond the material facts. It has increased under the shelter of an unbroken family tradition, i.e. of *social* values. And this proves that it is not only industry which is "promoting" the growth of population. At least, this fact should shake the only too complacent self-confidence of the adherents of the "law of population growth through industrialisation", and open their eyes to the truth that there are still other stimulants to and deeper reasons for an increase of population and for a possible stop to a decrease. Professor H. J. Fleure in *The Geographical Background of Modern Problems* quotes Principal Frasier of Achimota:

> Society is still for many an unending trusteeship handed on to offspring as the parents join the great cloud of witnesses,

and then comments:

> This conception of society has great elements of value, and a good deal of it persists among agricultural peoples even in Europe. Perhaps we of the industrial nations may need to relearn it.

And O. E. Baker quotes in his Presidential Address, delivered before the Association of American Geographers in 1932, Ungern-Sternberg:

> Whatever other causes may be quoted in connection with the declining birth-rate, like urbanisation of the population, prosperity, popularisation of contraceptive methods, emancipation from church, competition of pleasures, housing-problem, unfavourable economic situation, etc., they cannot be called independent causes for declining birth-rate, since all these manifestations can finally be traced to the main cause—they are but enhancing and favouring factors. Therefore, the *causa causans* of the declining birth-rate within the western European sphere of civilisation is the striving spirit, a derivation of capitalistic mentality.[1]

Does country-to-town migration exert a selective influence on the remaining farm population? No conclusive answer has yet been found to this debatable question. One group compares rural communities with "fished-out ponds populated chiefly by bullheads and suckers"; while others deny that migration to the towns is selective in the sense that all those "who are better, physically, vitally, mentally, morally, or socially" leave the

[1] R. von Ungern-Sternberg, *The Causes of the Decline in Birth-rate within the European Sphere of Civilization*. Eugenics Research Association, 1931.

country.[1] Obviously we still need a great amount of research work before this argument can be settled. But we may assume that the migration which has already taken place from the country will leave the agricultural population poorer in the future, in so far as the influence and number of older people will be greater. If this is the case, it is an additional reason for improving the social and economic conditions of rural life. While it is true that the drift from the land is a symptom of our material civilisation, it is likewise true that we cannot bring people back to agriculture without lowering output per man, incomes and, consequently, the supply of industrial goods and social services.

As regards age and sex, migration has been selective. Following Ashby's figures, which he has worked out on the basis of the Census and related information, we see that

> birth and survival rates per 100 married couples are higher in the country than in the town, but because of the more favourable age-levels in the towns they show rates of natural increase about the same as those prevailing in the country.[2]

And

> the general rural population can go on maintaining itself in about the same proportion of 20% of the total as in recent years, and can go on increasing at about the same rate as the urban and total population.

The ratio of females to males increased in the rural population:

FEMALES PER 1,000 MALES.

	Rural.	Urban.
1881	998	1,083
1891	1,008	1,087
1901	1,011	1,086
1911	1,001	1,087
1921	1,026	1,115
1931	1,016	1,106

The proportion of persons 20–39 years of age shows the greatest increase in the rural groups, especially of males:

[1] National Resources Committee, *The Problems of a Changing Population*, 1938.
[2] A. W. Ashby, *The Effects of Urban Growth on the Countryside*. Ibid.

	Per 1,000 males.		Per 1,000 females.	
	Rural.	Urban.	Rural.	Urban.
1881	256	308	269	315
1891	267	312	274	321
1901	280	329	290	340
1911	295	329	300	339
1921	280	299	294	324
1931	301	320	299	325

The rural population has less people at the best physical ages and slightly more old people:

1931.

	Urban.	Rural.
0–4	7·4	7·8
5–19	24·9	25·2
20–49	45·4	42·8
50–59	11·1	11·1
60–	11·2	13 1

These various factors have to be taken into account if and when new labour requirements arise in connection with the development of a more diversified economic structure in rural areas. In any case, under present conditions we cannot expect that settlement on the land can create new employment if it is not by new opportunities. If this can be accomplished it would almost certainly lead to a more balanced distribution of national income and a greater purchasing power. By far the greatest part of the income is being spent on food, on an average about 50% among the poorest group. But it is even higher in numerous cases. The following table is based on a collection of budgets in Lincolnshire in 1937 [1]:

Income per person per week	Under 5*s.*	5*s* to 7*s.* 5*d.*	7*s* 6*d* to 9*s.* 11*d*	10*s* to 12*s.* 5*d*	12*s* 6*d.* to 14*s* 11*d*	15*s* to 17*s* 5*d*,	17*s* 6*d* and over.	Whole group.
	%	%	%	%	%	%	%	%
Food . .	68·5	64·8	62·1	63·2	56·3	59·9	59·3	62·8
Rent and rates . .	12·7	11·9	12·2	11·8	12·9	11·7	11·9	12·2
Coal and light . .	11·0	11·1	11·6	12·3	13·5	11·7	12·1	11·7
Clothing and footwear .	2·4	4·9	5·2	3·9	7·5	6·0	6·0	4·8
Clubs and union . .	3·6	4·3	4·1	5·6	6·5	5·9	5·9	4·8
Instalments, etc. . .	0·9	1·6	2·8	1·7	1·3	1·6	1·8	1·9
Insurance	0·7	1·1	1·1	0·9	0·5	1·3	1·2	1·0
Other expenditure . .	0·2	0·3	0·9	0·6	1·4	1·9	1·8	0·8
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

[1] *Welsh Studies in Agricultural Economics*, 1940/1939.

And the next table shows the proportion of expenditure on all items in the Rhondda Valley:

Particulars.	Head unemployed without supplementary earners.		Head unemployed with supplementary earners.		Head employed.		Whole group	
	Summer	Winter	Summer.	Winter.	Summer	Winter.	Summer.	Winter.
	%	%	%	%	%	%	%	%
Food .	49·2	47·1	47·8	47·7	42·1	39·6	45·4	43·1
Rent and rates .	17·8	20·2	14·0	15·2	14·3	13·2	15·7	15·6
Fuel and lighting	7·8	11·2	5·3	8·9	7·4	9·0	7·1	9·6
Clothing . .	7·5	3·3	13·2	3·9	10·1	17·2	9·9	11·0
Insurance .	5·1	4·2	5·3	3·7	3·5	5·2	4·4	4·7
Personal	3·5	3·3	3·7	6·3	6·7	2·9	5·8	3·6
Soap and laundry	2·2	2·8	1·6	2·8	2·3	1·9	2·1	2·3
Thrift clubs .	1·8	4·0	1·7	7·7	1·6	4·2	1·7	4·7
Books, library, subs. . .	1·3	1·2	1·7	1·7	1·7	1·3	1·6	1·3
Medical and chemist	1·3	1·3	1·6	0·7	3·0	1·3	2·1	1·2
Other	2·5	1·4	4·1	1·4	7·3	4·2	4·2	2·9
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

It has been said that wages must be the background against which we formulate all our plans affecting the land of England. Are those the wages on which to build a new pattern of living in rural areas? The answer is obvious.

Subsidy is no remedy. Rather, the money wasted on subsidies should be used for the improvement of rural conditions in general by a constructive and not merely a palliatory policy. The problems lie much more in the psychological sphere: the restoration of faith in the stability of economic conditions and the improvement of knowledge of the problems affecting agriculturists, directly and indirectly, are the prerequisites of a constructive policy. They will help more than anything else to stimulate social and economic improvements and to integrate agriculture and industry, country and town. Figures are not available, but we may safely assume that the maladjustment of rural institutions to the reduced number of persons using them has resulted in an increased cost per person of all social services. In general, rural communities have added new services in a piecemeal fashion to a social framework already out of date. What we need is a kind of spiritual "levée en masse" that expresses and leads to universal rejuvenation and faith in living. The increase of social and economic services needs about the same service population in urban as in rural areas. Such services are the vanguard of the new spirit; and they can be used more efficiently and rationally if the rural population does not increase too slowly. Judging from urban experience relatively

few persons can serve a relatively large population. As already pointed out we need long-term plans for the development of social and economic facilities in the country and based on a new conception of rural life. Cultural goods must be made " movable " so that they can be brought to every rural dweller. The social and economic " grid " must be extended everywhere and its capacity must be intensified. That the need is great, and that the readiness is growing has been demonstrated by the fact that larger and better villages are attracting more people in some parts of England than smaller and poorer ones. If this trend persists and can be encouraged and spread to other parts, it would be a welcome help in the process of redistribution of population. The advantages of social life are obviously compensating for longer distances to and from work.

Even if all necessary services were provided the disparity between their full utilisation and incomes, as they are to-day, would persist. The raising of the income level is linked with an improved standard of social services. We need, therefore, a detailed investigation into these problems and a comprehensive programme for education of children and adults. Ashby outlines such a plan of agricultural education and advisory services.[1]

> The work of this service would be on the farms, in the form of instruction, demonstration, and even moderate forms of direction. Some of the educational forms of its activities would continue, but the emphasis would be on the direct application of knowledge. Even this service would require to renew its faith and hope both to expand its conceptions and to develop the detail of its advice and instruction. The conceptions would be developed on the basis of agreed or determined plans for given areas. Such plans might be made by a Planning Council consisting of representatives of the chief of the agricultural science, selected farmers, and representatives of public interests after preliminary surveys made on their behalf.

The motto is " learn by doing " ; special agricultural education should serve only as a starting point from which the pupil learned to approach other and non-agricultural problems.

> Whether working with the present farm units, or re-planning of lay-out and re-equipment, areas might be taken like a county or half a county. But it must be emphasised that mere dabbling with one or two thousand acres here and another parish elsewhere, or the scattering of a dozen small experiments over the Principality, will neither solve the agricultural problem nor re-absorb any important number of people. On a radical plan of change and development one experiment on 20,000 acres would be of more value than ten on 2,000 acres each, and would be far less costly. Indeed, the cost of such re-planning and equipment would largely turn on the

[1] *Planning Welsh Agriculture.* Ibid.

unit of area for treatment and the former organisation adopted for the purposes. With any plan for development on present farms, half a county to a county might be the experimental unit. But in this case, the larger the unit selected for development up to the area of one or two counties, the greater the probability of willing acceptance on the part of agriculturists. . . . Village or social life planning will be at least as important as mere farm planning in any comprehensive effort towards such general development of agriculture as seems to be commonly desired. There is need of experiments in the establishment of new agricultural communities with plans for a new lay-out and equipment of holdings, some new roads, water supply and electricity ; and with provision for schools, halls, and churches complete. Such of the old equipment as is not obstructive could be used, and on the basis of the old the new could be partly built. A new agricultural civilisation, however, requires its own plans, and in many cases these need to be both drastic and full.

It seems that U.S.A. has successfully experimented with a similar kind of rural planning. It goes under the name of "County Land Use Planning" and is considered as the true expression of democratic traditions and as a ways and means to meet new needs.

It extends down to all the small local communities in the county ; it is not confined to land use but takes in educational conditions, medical care, and a host of other things that are important in each community. . . . It is an effort, in fact, to vitalise the traditions in terms of modern life. Many people believe that it may turn out in the long run to be the most important agricultural development of the past few years—more important than any specific programme. . . . The agencies in charge recognised that farmers should take part in planning how the programmes should be carried out in each community. Consultation with the farmers was necessary to determine the facts of each local situation and to obtain agreement on the adjustments needed and the local programme for carrying them out.

Farmers, administrators, and technicians work together.

The area method was adopted as the simplest and most practical approach to so complex a planning problem. Most counties have several kinds of areas. In some most of the land is fertile and arable, while in others most of it is poor. Some are thickly settled and others sparsely settled ; some have little soil erosion, while in others erosion is severe. There are mountainous or hilly areas, rolling and flat areas. One area has one type of farming, a neighbouring area a different type ; and each has problems that differ from the others. It was believed that a common understanding and agreement on the location and characteristics of these different land use areas would provide a good starting point for planning.

After agreeing on the location and general characteristics of a land use area, the next step is to agree on the problems and the type of adjustment needed. This means determining, among other things, whether the present use of the land is the best use. Is the land being managed in the most effective way? What kind of adjustment, if any, is needed? Agreement must be reached on the particular adjustments needed for each area. In one area the major need may be a change in farm organisation, perhaps requiring credit aids and technical advice to assist the farmers in making the change. In another it may be greater emphasis on soil conservation. In yet another it may be improved forest management to help support the people and their local institutions. Retirement of submarginal farms and aid to people in finding new opportunities may be needed elsewhere. In many cases a combination of several different kinds of adjustment might be needed in the same land use area.

It was decided to undertake this co-operative planning in such a way that the land use plans for different counties would be comparable and could be put together or summarised for purposes of district, State, regional, and national planning. This meant agreeing on a common procedure that could be adapted to local conditions.

The planning organisation does not end with the committees. Its real foundation is the people of the different neighbourhoods and communities. The people who are not members of planning committees take part through public meetings at which the committees report what they have been doing and free discussion is encouraged. They participate, too, through individual discussion with committee members in the course of frequent personal contacts.[1]

We said that the farmer crossed the first frontier when the barter-economy changed into the abstract and rational money-economy. He passed the second frontier when he became inescapably entangled in the fluctuations of the world market. Now he has reached the third frontier, which science will help to cross. This frontier is a new stimulus, for, behind it, there lies the land of freedom from want and of individual responsibility rejuvenated as social responsibility.

THE WORK.

Work in the country needs diversification, rationalisation and co-operation to the same degree as in the towns. All three factors must be employed on a large scale if they are to be effective. This will be possible as the result of decentralisation and dispersal, drawing people from urban areas and re-settling them in the country, either in villages or in small towns. Diversification can be introduced by bringing suitable industry to rural areas, rationalisation by providing electricity and modern equip-

[1] *Farmers in a Changing World.* Ibid.

ment, and co-operation by respective organisations and scientific management. Large-scale application of these principles is requisite in order to counterbalance the unequal rates with which farmers can apply the various innovations. The larger the units to which these innovations can be made accessible, the more hopeful is the prospect of overcoming inertia and opposition; and the more diversified the social and economic structure of a community, the better will it withstand crises and fulfil its obligations towards its individual members. The influence of these changes on the structure of settlement in rural areas will be felt in regard to size, layout, and the functional relationship between the various settlements, on the one hand, and, on the other, between the individual settlement and its hinterland. In the sphere of agriculture proper there are corresponding factors reacting on the pattern of settlement. A possible increase of food production may be brought about in several ways:

(*a*) By bringing more land into food production.
(*b*) By bringing correspondingly more labour to the land.
(*c*) By substituting mechanical for animal power.
(*d*) By rationalising the productive resources of agriculture, i.e. getting the right crops on the right land together with the right management and labour.
(*e*) By producing food of a higher nutritive value.

Directly or indirectly these methods would either increase the number of agriculturists, or would, at least, stop their migration from the land, or would concentrate them in compact settlements, and bring new establishments to rural areas.

The introduction of industries raises the problem: how can the interaction between them and agriculture be made more fruitful? Where lies the optimum point of balance, or rather the optimum line of development, as changes will always be going on, and no definite pattern can be fixed. In other words, what industries, and how many non-agricultural people, should be added to the existing configuration of a rural community? Certain determinants can be derived from the results to be aimed at. They are: a social and economic balance of community life; more security against crises; more leisure time. It has been suggested that a community should be considered as ill-balanced if more than about 30% of the gainfully employed population are employed in one industry. This might be a useful standard; but we need still more detailed knowledge before we can arrive at definite conclusions. There might be some industries which are almost independent of fluctuations and would thus not endanger the stability of the community even if still more people were employed by them. We should study, therefore, the industrial structure of some diversified settlements and regions

which have proved sufficiently elastic in times of crises. We may distinguish between the following categories:

(1) Industrial activities directly and normally connected with rural life.

(2) Agricultural industries based on or connected with the production and processing of agricultural raw materials.

(3) Industrial activities connected with the distribution of agricultural products.

(4) Suitable industries based on non-agricultural material.

(1) A considerable amount of new buildings besides the reconditioning of existing ones will be needed after the war. A very conservative estimate puts the number of new houses needed at about 250,000.[1] Once the arrears in building and public works in rural areas have been made up, there will be a continuous demand for building personnel to maintain the improved standard so that a return to the former unfavourable conditions can be avoided. This, together with the new building programme for houses and industrial establishments, will absorb a considerable portion of workers and employees; an additional number of "newcomers" will be needed in the extension of public services of all kinds. These basic local industries are the prerequisite of every further industrial activity in rural areas.

(2) Under this group may be ranged:

(*a*) All activities connected with the recovery of derelict land, the conversion of land to other uses, the bringing of new land into agricultural use, the possible improvements of agricultural pursuits in general.

(*b*) Industries as, e.g., distilling, starch making, potato drying, butter and cheese making, preserve making; leather and other materials; the manufacture of artificial materials for insulation, plastics, etc. In general, we may assume that the number of products based directly or indirectly on agricultural raw materials is increasing and will lead to new subsidiary industries.

(3) To this group belong activities such as the administration of producing, marketing and controlling organisations; control and use of the waste products of the towns, storage and distribution, and all pursuits auxiliary or complementary to them.

(4) This category comprises numerous light industries, e.g. hosiery, electrical equipment, knitted goods, tailoring, basketware, furniture, paper-making—to mention only a few.

It has been stated that there would be little gain if non-agricultural industries should introduce "an alien class in the social sense". It would be regrettable if such ideas were

[1] Lord Addison, in Brian Vesey-FitzGerald, *Programme for Agriculture.*

accepted, for they make a real integration of agriculture and rural life impossible. It is just this introduction of new elements which is needed, in order not only to diversify the economic structure but to enliven and enrich social activities and thinking. If an intelligent and systematic use can be made of the various types of industries mentioned above, it will greatly help towards improving the socio-economic balance as well as the structure of settlement in rural areas.

These changes will result in part-time employment in agriculture and industry. This process means, of course, a far-reaching readjustment in the social and economic field and takes a long time. But it is a sound development; and it is very significant that the necessity for it has been recognised and finds growing understanding and encouragement in many countries. The experience gained in U.S.A. seems to be especially valuable. We must distinguish, however, between part-time work in two locally separated communities and in the same community. The first one is not desirable, but the principle of part-time employment remains the same.

> The ramifying network of good roads, use of the automobile and autobus, together with the construction of electric power lines and the almost universal availability of the telephone, is resulting in an increasing number of urban workers living in villages or small suburbs and even in the open country. Likewise, there are many farmers who are finding part-time work in towns and villages. . . . Many factories have already moved from cities to rural villages, and there are indications that this movement may increase. Some experiments, notably Mr. Ford's at Dearborn, Michigan, suggest the possibility of combining work in winter in the factory with work in summer on the farm. It is significant that between 1920 and 1930 the rate of increase of the rural non-farm population, which is composed chiefly of people living in villages and suburbs having less than 2,500 population, was greater than that of the nation as a whole.[1]

Part-time work can be organised either in seasonal or in weekly or in half-weekly shifts; or one might think of the occupation of different members of a family working either in agriculture or in industry. Regarding seasonal shifts: this might be possible in some cases, but as a general principle, it will hardly be applicable, because it would too greatly reduce categories and numbers of industrial openings to be of any real value. There will be only a limited number of industries suitable for seasonal work and really independent of economic fluctuations. In any case

[1] O. E. Baker, "Rural-Urban Migration and the National Welfare." Presidential address published in the Annals of the Association of American Geographers, 1933.

we must gain a more exact knowledge of the working of such industries before we can consider this solution as the most promising one. It seems to be much better to organise part-time work weekly or half-weekly, for it would offer a better security against crises and a better chance of social and economic diversification. The family unit as the basis of part-time work should be excluded, for it does not exist in reality, at least not generally and only for a limited period. The younger members break away; their contribution to the household budget can only be temporary. If and when rural life is revivified, then it can be envisaged that the family unit will gain a new importance and become a real entity. But even then, the stimulating effect of alternative work on each individual member would be missing, for each one would, almost certainly, stick to his original work.

The following communication from J. R. Currie, Economic Research Department, Dartington Hall, throws much light on the problem of seasonal work.

> As I see it, the fundamental problem is to procure the maximum, or rather the optimum, distribution of labour-forces throughout the year, on crops and livestock which will give the best returns on the labour expended. It is difficult to procure factual data over a wide field to quote a definite figure, but as far as I can ascertain the position, there is wastage of man-power on the farms in this country, arising from the difficulty of providing a comparatively constant amount of productive work throughout the year. The present structure of agriculture makes such a loss almost unavoidable. I think that a figure of 25% loss would not overstate the position if holidays and time lost through sickness are added to the number of other non-productive hours. Often, especially in winter-time, men are given jobs simply to keep them occupied. The better type of farmer, of course, generally tries to obviate such a waste of labour and of his own financial resources. In our own case at Dartington we have tried to overcome this by organising our farming along definite lines and by using certain labour-saving devices. We have thus cut down the proportion of unproductive work to a little over 12% of the total, or about one-half of the amount on the average farm.
>
> If the above factors are taken as the criteria of the types of farming to be fostered, we may see more clearly the advantages that could be obtained by locating our urban units in specific farming areas. For example, other things being equal, we would have our population settlements of 4/20,000 in districts of intensive agriculture or horticulture, where the soil, etc., was suitable for growing market-garden crops, or for apples, cherries or plums. These types of production require a great amount of seasonal labour, which urban centres are most likely to supply. Many townspeople, especially women and young folks, are able and willing to undertake seasonal work during the spring and summer, but are unwilling or unable

to take up work throughout the year. For certain crops casual labour is most important. We have the example of the Kentish hop-gathering, for which London and its satellite urban areas provide seasonal pickers, although the hopfields are quite a distance from their homes. Again, the raspberry pickers go to Blairgowrie from all the big towns in Scotland, especially those in the East, for this short-term seasonal job. With a planned unit of contiguous farming and urban areas the least desirable aspects of seasonal labour conditions could be eliminated, and the surplus urban labour could be more fully utilised without the necessity of the workers leaving their homes except during the daylight hours.

This now brings me to a consideration regarding the numbers that each type of crop would require, and the nature of their employment.

As far as agriculture in this country is concerned there are very few specialised types of farming which can be carried on in isolation; in other words, mixed farming is inherently most suited to our climatic and soil conditions. Therefore, in considering the organisation of the units of production it is necessary to integrate the labour requirements of the various crops in the suggested rotation to meet the greatest economic use of labour and resources. The first requirement for tackling such a problem is the determination of the labour involved under normal conditions in the production of a unit of any given crop. To meet this I have carried the analysis of labour requirements slightly further than those set forth in the memorandum. It may appear rather academic to commence building up from these, but the alternative is to take data from other types of farming and rotations which may not have been balanced, and from my earlier statement of the lack of productive outlet for labour it would appear that some of our rotations from this aspect are not too well balanced. Of course, the size of unit as well as the nature of farming plays some part in determining the problem of making the most productive use of labour.

(1) In South Devon, where the type of farming is fairly homogeneous, the productive outlet for labour varied with the size of the farm.

PRODUCTIVE MAN-WORK UNITS PER MAN RELATED TO OTHER FACTORS U.

Productive man work units per man.	Crop acres per farm.	Percentage acres in tillage.	Number of cows per farm.	Acres per animal unit.	Man equivalent per farm.
Less than 200 .	31	24	7	3·8	2·9
200–259 . . .	50	27	10	4·0	3 3
260 and more .	67	27	12	3·8	3 4
Average .	50	26	10	3·9	3·2

The above figures, taken from the Agricultural Survey of South Devon, show that the farms had an average labour requirement of

3·2 men for 50 crop acres and 75 acres of pasture, with a spread from 2·9 men per farm of 31 crop acres to 3·4 men for farms with 67 acres of crops, or more than double the acreage of crops for an increase of one-half of one man equivalent. On these farms the casual labour was on the average only 6% of the total regular labour (including the farmer's and family labour), or 14% of the paid labour.

(2) Garden crop production before the war was rapidly becoming a part of the general arable farm production, and it is doubtful whether it should be considered separately from the general farm, except for very specialised lines. This type of farming is very diversified, varying from the more extensive type of crops, like broccoli, to the glasshouse-raised tomato. The latter form of production can be looked upon as being a separate type of enterprise, as there are few conditions in which it can be run in conjunction with outdoor fruit and vegetable growing in a complementary sense as far as actual production is concerned, although as a unit of management or in the case of a grower-retailer, the two types can often be run as a profitable combination of enterprises.

Regarding the labour requirements of glasshouse culture, an acre is generally considered to require the labour of six regular men throughout the year, with the additional labour of two to three casual workers for four to six months, depending upon the crop. The yield, for example, of tomatoes averages somewhere about 40 tons per acre.

For outdoor market gardening, the average labour requirements are about one man for three acres, where the fullest use is made of up-to-date mechanical equipment. In addition, one to two women per acre are required during the summer for picking, etc.

The latest official estimates for the average yield per acre of these crops are :—

Green beans	3·0	tons	per acre
Green peas	2·2	,,	,, ,,
Cabbage (for human consumption)	9·0	,,	,, ,,
Brussels sprouts	3·7	,,	,, ,,
Cauliflower or broccoli	8·0	,,	,, ,,
Carrots	11·1	,,	,, ,,
Onions	6·0	,,	,, ,,
Celery	7·7	,,	,, ,,
Rhubarb	9·3	,,	,, ,,
Apples (Cider)	55·8	lb.	per tree
,, (Other)	33·1	,,	,, ,,
Plums	34·3	,,	,, ,,
Pears (Perry)	49·0	,,	,, ,,
,, (Other)	20·3	,,	,, ,,
Cherries	39·9	,,	,, ,,
Strawberries	19·5	cwt.	,, acre
Raspberries	19·2	,,	,, ,,
Black currants	17·9	,,	,, ,,
Red and white currants	20·5	,,	,, ,,
Gooseberries	34·4	,,	,, ,,

These estimates are only for one year, and the average yields present wide variations between one year and another.

Labour on Crops and Stock (on Dartington Hall Farms)

	Oct	Nov.	Dec.	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Total.
	Hours per acre.	Hours per acre	Hours per acre	Hours per acre	Hours per acre	Hours per acre	Hours per acre	Hours per acre	Hours per acre.	Hours per acre	Hours per acre.	Hours per acre.	Hours per acre.
Wheat	12	6	3	—	—	1	1	1	—	—	17	6	47
Barley	1	1	2	3	4	5	4	2	—	—	5½	12½	40
Oats	1	2	3	2	4	4	4	1	—	—	9	12	42
Mangels	31	39	4	4	4	4	9	20	50	40	4	1	210
Swedes	2	1	3	2	1	3	2	10	18	26½	14½	1	84
Potatoes	78½	15	5	10	30	52	20	15	39	3	7	43½	318
Broccoli	—	—	—	5	1	6	13	10	42½	40½	13	—	131
Dairy Cows, per Cow:													
(*a*) Hand-milking twice.	11	10½	11	11	10	11	11	11¼	11	11¼	11¼	11	131¼
(*b*) Machine*: three times	13	12½	13	13	11½	13	10	10¼	10	10¼	10¼	10	136¾
Sheep per 10	5	5	6	7	7	8	9	6	12	5	7	6	83
Other cattle „ „	8	11	24	26	23	25½	20	14	9	9	8	11	188½

* Milking three times a day, and daily milk yield ⅓ greater.

The introduction of industries in agricultural communities without their resulting in part-time work might be useful for the community as a whole; but it would not create that degree of security for the individual member of the community which can be expected from part-time work. When a crisis developed, the community would be hit hard, for unemployment of a part of its members would burden it with heavy expenses, and those employed in the affected industries would not be able to fall back on agriculture. It will be some help if gardens can be provided for most of the inhabitants in these mixed agricultural-industrial communities. But these gardens must be of a sufficient size for cultivating vegetables and fruit and keeping poultry, so that they can make a real contribution towards the household budgets. Some lessons can be learnt, in this respect, from Belgium and from U.S.S.R. It seems that in the latter case the factories or co-operatives are actively helping. For instance, at the end of the year 1932, gardens and acreage of the Hammer and Sickle factory in Moscow comprised over 435 hectares of land with a great number of hot-houses. The electric power station in Moscow has 8,120 hectares of garden land. The Stalin Works in the Donetz Basin has about 20,000 hectares. The co-operatives and factories actively promote among their members and workers the development of gardens and allotments and the purchase of cows, pigs and poultry. In 1932 there were over 250,000 workers' families in the Donetz Basin whose vegetables were supplied from their own gardens.

We can assume that rationalisation in factory and in the fields will increase after the war or will be maintained where it has been already introduced to the fullest extent. This will be an additional reason for part-time work. Both rationalisation and part-time work interact upon each other; in order to employ gainfully as many people as possible, the working hours must be reduced, thus setting free people for either work and/or leisure. A purposefully directed part-time movement can considerably smooth the difficulties inherent in this development.

The transformation can be, of course, only gradual But it will absorb a continually growing number of people of all age groups and both sexes, while at the same time corresponding changes in the structure of settlement are being effected. It is evident that new modes of life in the country will stop the migration to the towns and, beyond this, will attract great numbers of people, especially those who have still some ties in the villages.

In general, the criteria of this transformation are steadiness of employment, freer choice of work, and more time for recreation.

The introduction of electricity and modern equipment is the prerequisite of an integrated life in the countryside.

Electricity is needed for the houses, the farms and the factories; it works against depopulation, economic disparity and social isolation. Mechanical power in general has separated the worker from his tools and agriculture from industry. But the extension of electric power is bringing agriculture and industry together. It will create new opportunities of work; and although together with the rationalisation of the farming process it will almost certainly cause some temporary displacement of labour, it will also certainly open up new careers and opportunities. But will the agricultural and the new industrial-agricultural population be in a sufficiently good economic position to pay for it? Will this change, if carried through on a large scale, cheapen farm products and increase the gains of the farmer? We may safely expect that it will influence population trends just as steam power was responsible for the massing of the population in the towns. And we may also expect that it will result in better public services and a higher standard of life. Rural electrification

> can be used in many ways to lower the cost of production or improve the quality of products. On dairy farms it can be used for milking, separating, cooling, pasteurising, sterilisation of utensils and refrigeration of products. On poultry farms it is used for heating incubators and brooders, for illuminating laying houses to increase egg production, and for mixing feed. In market gardening this power is used in pumping water for irrigation and for washing vegetables, in heating hotbeds and refrigeration for temporary storage of perishables. On grain and livestock farms fewer jobs have been found for electric power, but it can be used for pumping water and for storing grain and hay. Where water is pumped from wells for irrigation of field crops electric power is used extensively. More than 200 different uses of electricity on farms have been noted. Rural electrification has its most immediate effect in the home.[1]

It has been suggested that a five-year programme of rural electrification should be initiated, including

> the design of a distributive electrical network of ample capacity and on standardised lines, providing 11 kv. three-phase overhead lines with single-phase spurs, and achieving the utmost simplicity in switchgear and protective appliances. Such a programme would involve extensive new capital works which would not provide an adequate return for a number of years, but the repopulation of the countryside is an object important enough to justify unorthodox methods of finance.[2]

To-day, 67% of the population of the rural areas in Great Britain has a supply of electricity available, as compared with only 10%

[1] "Technological Trends." Ibid. [2] *The Municipal Review*, 1941.

of farm families in U.S.A. in 1935 who were receiving central-station electrical service, but with about 95% in France, 85% in Denmark, and 100% in Holland. There are to-day over 20,000 miles of low-voltage mains, running from the transformer to the consumer's house, in rural areas, in addition to the much bigger mileage of overhead lines. It must be remembered that

> the population of all the rural parishes in Great Britain represents a bare 20% of our total population, but occupies approximately 89% of the total area, giving an average distribution of population per square mile of 115, as compared with 4,810 per square mile in urban areas.[1]

The discontinuity of rural settlement explains the greater cost of electricity supply for the countryman; there will be from 100 to 300 consumers in an urban area on an average per mile of distribution main, whilst in the country there may be only from 10 to 30. The capital expenditure on a typical rural distribution line is approximately the following: poles, including insulators and ironwork 30%; copper conductors and earth wires 30%; labour for erection 20%; wayleaves and overhead charges 20%. With an increase of the rural population the higher costs can be spread more advantageously and thus be reduced for the individual consumer. If the land passed into the trusteeship of the Nation, these costs could be reduced still more by eliminating the costs of wayleaves and rates. A further means of reducing costs, and of achieving a faster development of supply and a more rapid connection of isolated consumers under favourable conditions, lies in the use that could be made of co-operative associations for constructing and operating a rural electrical system. Denmark, Sweden and Finland have widely used these organisations. U.S.A. also is embarking on these lines; co-operative associations may borrow funds from the Administration because it is recognised that "economical and efficient service must be obtained through collective action" and that such a

> co-operative association should consist of farmers in a compact rural area with at least 100 miles of line and approximately 300 members, or a density of about three to the mile. The increasing acceptance of co-operative enterprises in rural areas may well provide the foundation for small industries to utilise the products of the farm for processing into commodities. . . . Some of these processing enterprises offer possibilities for whole or part-time employment.[2]

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[1] *Electricity in the Countryside.* British Electrical Development Association, 1939.

[2] *Farmers in a Changing World.* Ibid.

The British Electrical Development Association points out that

> there are in this country between 65,000 and 70,000 farms of between 100 and 300 acres, representing about 46% of all farmland in Great Britain. Whilst a great number of these farms specialise in dairy work, a large proportion are the type of farm with land that has been for many years under-stocked, and for the last thirty years badly neglected. The land needs more stock and more labour, whereas the farmer, year by year, is able to afford to pay for less and less labour. It is on farms of this kind that the electric motor is of the greatest benefit.

However, the term " rural electrification " is somewhat vague; there is no fixed rule as to its exact application. It is sometimes applied to development of a more suburban and even urban character. Taking into account the importance of rural electrification as the basic factor of a sound policy of decentralisation, it is appropriate to give an example of its working in practice. It appears that the electricity distribution scheme carried out in Dumfriesshire by the County Council of that area can serve as a representative example. The following data are based on and taken from a paper on Rural Electrification by J. S. Pickles read to the Institution of Electrical Engineers.[1] The author states:

> " Such schemes should not only provide supplies in all rural centres of population, but make a deliberate attempt to give supplies to all rural houses, small hamlets, and all those premises in the countryside usually found singly or in small groups. . . . The figure obtained by dividing the known population by the total area is most misleading and can give a very erroneous impression of the actual area, owing to the fact that many rural areas contain portions, possibly hilly or marshy country, which are virtually unoccupied. A much safer working figure is obtained when such unoccupied territory is excluded, and the population per square mile of the effective area is arrived at." In Dumfriesshire the " actual density of population is 55 persons per square mile, but, when the mountainous and virtually unoccupied parts are excluded, the effective population is approximately 100 per square mile. Even this basis does not necessarily give an accurate idea of a rural area, since it takes no account of the important factor of distribution of the population. In some areas 75% of the inhabitants may be found in the towns and villages, and this means that electrification is simplified, whilst in others the corresponding figure may be no more than 25%, the balance being spread over the countryside, rendering electricity distribution much more difficult. . . . A

[1] *The Journal of the Institution of Electrical Engineers*, 1938.

distribution where one half of the population of the area is in the towns and villages, and the other half is scattered over the remainder of the area might be regarded as a normal distribution."

The scope for electrical development varies considerably according to the type of farm. The following table gives the probable consumption under average conditions.

Type of farm.	Units per annum.
Dairy farms, and arable farms with some stock	10,000–20,000
Poultry farms	5,000–10,000
Mixed farms (poultry, dairy, stock, arable) .	1,000–5,000
Stock farms (feeding)	1,000–3,000
Hill farms (sheep)	500–2,000

The supply area covers the whole of Dumfriesshire with the exception of one town ; it is self-contained and no electrical development had previously taken place. It is, therefore, a very good example of demonstrating the potentialities of electrical development. " Supply has been given to every consumer (*a*) without any contribution towards capital cost, irrespective of the length of the necessary service main ; and (*b*) without the payment of any guaranteed minimum revenue. The supply area is 1,070 square miles in extent and contains a population (1931 Census) of only 52,282. Six small burghs and twelve principal villages house some 24,000 of the inhabitants, the remainder of the population (34,000) being found in small villages and hamlets, and in isolated farms and houses scattered over the countryside. The area is almost entirely agricultural in character, with a little associated industry in the shape of a few creameries, sawmills, quarries, and grain mills. The total number of occupied dwelling houses within the area (1931 Census) is 14,176, and the total possible number of consumers may be taken at the round figure of 15,000."

The capital expenditure at the end of the fourth year amounted to roughly £415,000, of which the main items were £172,000 for high- and low-voltage overhead (wooden pole) lines including wayleaves, compensation, etc. ; £60,000 for surface wiring ; £26,000 for underground cables ; £47,000 for transformers and switchgear ; £24,000 for services ; £21,000 for meters.

The number of domestic consumers rose from 736 in the preliminary years to 8,430 in the fifth year of the working of the scheme, and the units sold during the year rose from 175,956 to 8,100,000. The corresponding figures for industrial consumers, factories, works, and miscellaneous rose from 4 to 70 ; the units from 16,310 to 1,700,000.

The total number of dwelling-houses, consumers, and cookers, at the end of the fourth year, is given in the following table.

	Dwelling houses with number of rooms as under.									
	1 and 2	3	4	5	6	7	8	9	10 and over.	Total.
Occupied dwelling-houses (1931 Census)	4,402	3,567	2,236	1,236	805	604	470	326	530	14,176
Consumers . .	1,346	1,381	1,224	629	373	215	217	152	230	6,217
Number of cookers in use .	585	788	538	244	122	63	71	44	71	2,526

The following main conclusions emerge:

(1) A network providing general supplies in every town and village can be established without fear of financial loss.

(2) By spur lines the basic network may also supply without any undue fear of loss the majority of farms, isolated houses, and groups of cottages if they are reasonably near to the main lines.

(3) Contribution by the consumers towards the cost of service connection, or a guarantee of any minimum annual revenue other than that which is inherent in the normal two-part tariff, may not be necessary.

(4) Such development normally covers from 70% to 80% of the total consumers within the area. The rest can only be reached by extensions made on a basis which ensures, by agreement, an adequate return.

Farm power and equipment affect the *size* of the farm unit. But "mechanisation" of farming is not a twentieth-century phenomenon; the coming of "the internal combustion engine in recent years has merely accelerated the pace of development. This age-long process of improving mechanical aids in farming is likely to continue, and should logically result in relatively diminishing employment in agriculture, and a narrowing of the differential between rural and urban incomes."[1] In general, the trend is towards larger-size units, although factors like inability of acquiring more land, outside employment and part-time work retard this development under present conditions. If the small tractor can be successfully introduced into the small-farm organisation it will reduce the tendency to increase the size of the farm unit. Thus both types of farm units must find their appropriate place in the new structure of agriculture.

When farms have to be put to farms to constitute larger units, boundaries at the same time have to be rectified between different ownerships in order to ensure the most economic structure, one

[1] R. McG. Carslaw and C. Culpin, "Labour, Power and Equipment in Arable Farming", *Journal of the Royal Agricultural Society of England*, 1936. Also for the following.

determined by the lie of the land instead of by the accidents of traditional ownership. This is not to claim that only large farms should be constituted; that again would be to contradict accidented nature of the countryside; the land must be planned for economy of production, and though the layout will generally be one of much larger units, farms of all sizes will still be inevitable.[1]

In 1931 there were about 70,000 fixed or portable oil and petrol engines, and nearly 20,000 tractors in England and Wales. Since 1931 an average of over 4,000 tractors has been sold in each of the years between 1931 and 1936; but about 3,000 become derelict per annum. In spite of this increase "the application of power and machinery to British agriculture has not brought about important changes in the farming systems. Rather, there has been a gradual adaptation of new power and machinery to the existing systems, resulting in an increase in the efficiency of man labour." During the ten years 1925–34 the output of farms increased about 18½% while the number of employees dropped 14%, and the output *per capita* increased nearly 40%. In general, we may assume that the productivity of farm labour has been increasing during these ten years, at the rate of at least 2% per annum. The most significant feature is the gradually increasing application of technical methods to the small mixed farms. The following table, quoted from Carslaw and abstracted from Report 19 of the Cambridge Farm Economics Branch, relates to 1,000 farms in the Eastern Counties in 1931. It gives the percentage of farms in different size groups equipped with certain of the more important items of machinery.

Size group.	Percentage of farms in different size groups equipped with:					
	Tractor.	Motor van.	Fixed engine.	Threshing machine.	Steam tackle.	Milking machine.
Acres.	%	%	%	%	%	%
20–50 . . .	3	2	9	—	—	—
50–100 . .	10	5	27	1	—	1
100–150 . .	23	6	40	2	1	1
150–300 . .	47	10	44	7	1	2
300–500 . .	64	12	44	25	5	4
Over 500 . .	78	27	57	46	14	3

Though a certain machine may in theory economise in man- and horse-power, its use will actually decrease the net farm profit, unless it permits *total* farm income to be increased *relative* to total farm costs.

[1] Sir Daniel Hall. Ibid.

The larger the farm, the greater the amount of work done by each unit of equipment; e.g. the average number of days' work done per tractor per annum varies between 30 on farms of 20–50 acres up to 130 on farms of over 500 acres.

The size of the farm unit depends upon the kind of cultivation and the character and location of the land.

In *Reconstruction of the Land* Sir Daniel Hall states the following:

> *Replanning for Larger Units.*—Perhaps the major requirement for the future is the replanning of the land to obtain those larger farming units which modern economic conditions require, and which alone afford adequate scope for the recent applications of power to the operations of cultivation. The land on which this regrouping into larger units is most required is the second-class land of the country, such as the lighter clay soils of the Keuper Marls now mostly in poor grass, or the thinner soils of the Oolites and the Chalk on which a good deal of arable persists. Even more requiring attention are the wet pastures in the Vale of Aylesbury and the broad stretch of Oxford Clay that runs across the South Midlands, where even in the present war-time one may travel for miles and not count a dozen arable fields. Much of this second-class land has gone to grass because the labour upon it can then be reduced to a minimum and a little profit can be skimmed off it by raising stock or sheep. On the heavier soils one might have traced the gradual decline of the cultivation, the abandonment of one ploughed field after another, the shallowness of the cultivation as the farmer became more impoverished and his team weaker; by the time tractors had become effective the tradition had been established that the land would not pay under the plough. In one sense it cannot. If we consider a 200-acre farm employing 5 men, we can put the farm earnings per man at £130, or £650 in all, from which wages at 36*s.* a week would take £468, thus leaving only £182 to pay the farmer for management and interest on the capital, say £1,600, that he had embarked in the business. But on a 4,000-acre farm of the same kind with the same density of employment there would be £3,640 left after labour had been paid, sufficient to pay 6% on the capital and leave £1,720 for management, even assuming that no economies in management nor increase of production had accrued from the large-scale working. Of course we know that a 200-acre farmer would not be content with an income of £182, he would begin to cut his labour bill or ask for a reduction of rent. His representatives demand subsidies that would double his net returns to yield him £4 a week for management and interest on his capital. The hard fact is that we have much land which, if it is to be kept in production, i.e. largely in arable cultivation, cannot be expected to make a net return of 20*s.* per acre, out of which management and interest on capital have to be found. Management can be adequately paid by 10*s.* an acre on an estate of upwards of 4,000 acres, leaving 10*s.* wherewith to pay 5% on the working capital. It may be said

that merging twenty 200-acre farms into one 4,000-acre estate means exchanging twenty farmers for one head and three assistant managers, but the latter would be adequately paid whereas the twenty farmers would be little better off than their men and would regard themselves as losing money. In practice such occupiers have cut their labour bill and gone in for cheap farming, so that the number of workers lost more than balances the number of farmers remaining on the land, while the country has lost the additional output from the higher farming. I have known a 650-acre farm of this type in the Midlands on which the farmer was employing only one man and a boy. The above argument indeed has presupposed that the 200-acre farms will be as efficient as the big farm, whereas the prime motive for the larger unit is not its saving in management costs but its capacity for cheaper production by means of organisation and power machines.

It is not to be supposed that the task of making a new lay-out would be a mere matter of marking out blocks of some standard size. The district under consideration would require a survey of the soils, the contours, the water-courses and the roads, even the existing buildings must be taken into account, and the plan would be designed for economic working. The farming units would inevitably be of various sizes, there would be opportunities for some small farms and even small-holdings. The planning would take little account of the previous farm or estate boundaries; indeed, in many cases the boundary between estates is arbitrary and accidental, cutting across the economy of large-scale working. We can see that in many cases the original layout of English land was carefully planned; the parishes bordering the South Downs, for example, are strips stretching from the high Down to the good cultivable Chalk soil below, then across the Upper Greensand shelf and the Gault Clay valley to the Lower Greensand heath beyond, thus giving to each parish arable land, building stone, water and woodland. The Wiltshire farms on the chalk show a similar sequence of water meadow, arable land and sheep-walk; even on the Midland clay soils the persisting ridges and furrows demonstrate that what once were the "open fields" were laid out in accordance with the contours of the land for ease of working. Subsequent divisions of the land by inheritance or sale have far too often ignored these natural boundaries.

Lord Addison gives the following examples:

The first example was of mixed farming in Lincolnshire. It comprised more than 6,000 acres of what had originally been twenty-five separate farms. The farms had been gradually acquired and, in nearly all cases, the purchases had been made possible because the former owners were not making a success of it. Capital had been expended generously but carefully. In many cases fields had been combined to make sufficiently large cultivation units. A main farm road had been constructed with central buildings for stores, machinery and various operations, including workshops for different

farm purposes. The records available covered a series of years up to 1930 during every one of which 5% had been paid on the capital employed and a salary of £1,000 a year to the manager. In addition to this there had been a profit in every year but one.

It was manifest that these results had only been obtained through a much more intense use of the land, and many more livestock were carried than existed on the previous farms; much of the grassland had become permanent arable; more had been ploughed for alternate husbandry, or for re-seeding, and a rotation of crops had been adopted, mainly in two groups, covering respectively periods of four and six years. The scale of operations naturally afforded opportunity for full use of the machinery, and the costing methods that had been adopted gave a clear picture of the whole plan of operations and of the respective importance of the different parts of it. One of the most significant things in this case, as in others of a similar kind, was that, contrary perhaps to expectations, the full use of machinery had not involved a decrease in the amount of labour employed. The more intense cropping and the increase in the number of livestock have involved additional labour. There was an increase of 34% in the number of men employed full-time as compared with the total on the previous twenty-five farms and an increase of no less than 80% in seasonal casual labour, particularly on the pea, potato, and beet crops. Moreover the system adopted had resulted in an average wage paid of 42*s.* 3*d.* per week, or 10*s.* more than the county rate at that time.

The other case was that of a number of similarly amalgamated farms totalling a little over 3,000 acres in Essex. In this case a larger proportion than in Lincolnshire was devoted to market-garden produce of various kinds, but the other results were similar. An increase in the number of livestock, a greatly increased food production per acre, had led to the employment of more men than before at better wages, although there was a full use made of machinery.

We find in these cases, as in all other similar cases with which I am acquainted, that plenty of capital wisely expended, combined with good management and the use of modern knowledge and methods, have led to success whilst often enough farmers in the same neighbourhood have had a hard struggle to make both ends meet or have given up. The secret of the success is that there has been a much increased food production per acre—in other words under-farming has been eliminated.[1]

To isolate the farmer in our modern world is as impossible as to set the Thames on fire. Consequently, co-operation is needed in all fields where it is feasible. We must not imagine that State ownership of the land would imply State farming. The role of the farmer as individual entrepreneur will be of still greater importance if he can work under more stable and more modern conditions. Large re-sized farm units could be run by co-operatives, and the mechanical equipment could be supplied

[1] *Programme for Agriculture.* Ibid.

by central farms as the nuclei of such co-operative enterprises. They would serve a similar purpose to that of the tractor stations in U.S.S.R.

> The collective farms on territory served by a machine-tractor station enter into contracts with the latter regarding the conditions under which the machine-tractor station will help cultivate the fields of the collective farms. The agricultural aid rendered by the machine-tractor stations, the combination of tractor and horse power, and the utilisation of the peasants' means of production to the utmost, have greatly increased the productivity of labour on the collective farms served by these stations.[1]

After all, co-operation in farming is nothing new; the three-field or strip system asked for a considerable degree of co-operation, and the village community was the natural result. If we envisage that the land of Great Britain can be worked as one unit, subdivided into farms of varying size and character, new village communities will be the manifest outcome. The already existing marketing organisations will be complemented by some sort of farming organisation. The farmer, working on a smaller-sized farm, will join these co-operatives and have the advantage of the supply of modern equipment and advice from the central farm. Sir Daniel Hall remarks that "a productive and progressive national agriculture cannot be built up on a small-holding basis." This disadvantage could be overcome by co-operative societies, specially organised for small holders. It seems that there is a certain amount of opposition to co-operation, possibly owing to the mixed character of farming; but it should be possible to overcome these inhibitions by persuasion and education. The strongest point that can be made is obviously that co-operative farming gives a far greater security and chance of survival to the small farmer than his adherence to outworn methods and dependence on economic fluctuations. The responsibility for cultivation must rest with the farmer; the responsibility for the provision of an appropriate share in the land, and for modern tools, must rest with the State and the co-operative agencies. Individual initiative and collective help must and can work in complete harmony. It has been mentioned already that co-operatives can play an important part in the planning and the realisation of definite schemes. But, besides this, they have a definite educational value. They can be made the medium through which the farmer gains more understanding of social and economic factors, and of their direct bearing upon agriculture.

There is, however, a type of co-operation which needs, at

[1] A. Gayster at the World Social Economic Congress, 1931.

least, a brief reference, because it might be a valuable link between town and country. It appears to have gained some importance in the U.S.A.; it is called Farm-City Co-operative Association and serves consumers in cities as well as on farms, i.e. it serves farmers not only in their capacity as producers, but it also meets the consumer needs of farmers and their families, and of city families as well. It is destined to bridge "the gap that existed for many years between two types of purchasing co-operatives".[1] Of course there was much opposition to this town-country co-operation, till it was removed by some farm leaders who pointed out "that both farmers and city people were consumers and therefore had a common interest in reducing living costs by co-operative action . . . and that the average farmer spends more each year for food, clothing, house furnishing and other goods used in the farm home than he spends for feed, seed, fertilisers and other supplies used in farm production." It might well be that the marketing end of a re-organised agriculture turns out to be the more important factor in the integration of town and country. Although doubts may exist as to why the family unit should remain the "basis of agriculture" while it is not so in industry—obviously a sentimental and rather foggy motive; co-operative associations can exert a great influence in protecting the small-holder and linking him efficiently to the outer world.

Successful decentralisation of the towns and hopeful revivification of the country entails tackling both ends of this problem at once. The infiltration of urban forms of organisation is dissolving the family unit as an economic element, and is replacing it by a voluntary group-organisation, serving a definite purpose. Individual initiative and co-operative spirit must be integrated so that neither part can exist and work apart from the whole, nor the whole without the parts. The future of agriculture and of any progressive development may depend on this mutual understanding and responsibility.

THE SETTLEMENT.

On the basis of the facts we have outlined, the structure of settlement in rural areas will be reshaped during the next decades within the framework of national planning. No political compromise should distract us from this course, or discourage us from giving full weight to the requirements dictated by these facts. "The robots are moving into the field"; and the crushing impact of modern industrialism is disintegrating the old rural structure. Rural settlements will change their size and

[1] *Farmers in a Changing World.* Ibid.

type, their functional relationship to each other, their lay-out, and their farms and houses. These transformations will affect not only the rural areas proper, but the intermediate zones between town and country and the towns themselves. We must examine, therefore, the conditions in the region and balance each district with its surrounding districts as well as with the region as a whole. The social problems are the determinants binding the other factors together; they are the bases of rural reconstruction. There is no fundamental difference, in this respect, between the planning of the towns and the planning of the country. But there is an enormous difference in so far as the rural population has gained very little from architectural progress.

In general, the capacity of rural settlement must be increased, and the distribution of rural dwellings must be concentrated as far as the type of farming and the configuration of the land permits. The countryside should be cleared of the scattered buildings spoiling its beauty by their bad design and haphazard location. The agricultural population alone cannot determine the capacity of settlement in rural areas; increasing mechanisation of agriculture, slowness of the increase and a possible standstill of the growth of population in general, decline of the power of consumption, all might tend towards an early saturation point of the agricultural labour market. It is, moreover, very doubtful whether under the influence of these forces the agricultural population could even be sustained at its present rate with regard to numbers and opportunities of work. Consequently, the structure of settlement in rural areas must be adapted to the reception of the infiltrating non-agricultural population; while, at the same time, the concentration of settlement makes the efficient provision of social and economic services possible. Both increased capability of absorption and concentration are parts of the same development.

The size of rural settlements depends on what new industries can be introduced. It is, therefore, not a mere revivification of the old village community, we advocate, but a totally different approach. Part-time employment in agriculture and in industry will not increase the size of settlements as much as would full-time employment in one or the other; for less people would be needed for the former. Part-time employment in local agriculture or horticulture and in industries outside the native community will result in a still more restricted increase of its size. The same holds true if primarily distributive activities are introduced which need, in general, less workers than manufacturing processes. Decentralisation of commercial activities will develop considerably more slowly than industrial and dis-

tributive decentralisation. While part-time employment, if directed systematically, will spread rapidly, intensive horticultural and dairy enterprises will also increase. Dairy and poultry farms are relatively free from topographical restrictions and so are fruit and vegetable production; they do not require level or especially fertile land. Thus, the time and the space factor are closely interrelated in their effect on the changing size of rural settlement. By far the greatest number of parishes in Great Britain have less than 300 inhabitants; in Eastern England, the villages themselves have rarely more than 100 to 200 inhabitants. These are the purely agricultural villages. The addition of some public services and specialised shops may increase this number up to 700 inhabitants. These villages become " urbanised ", to a certain degree, as centres for a narrow hinterland including some other minor villages; in East Anglia, for example, there is the proportion of about one to five. However, the size of these settlements differs according to the density of settlement in their respective areas. In this way a pyramid of settlements has been growing up, each stratum of which has different functions; but, in general, the less the number of settlements in each category the greater is the number of functions; i.e. small agricultural villages are more numerous; the number of villages with some functions other than agricultural ones is less than those in the first category; if more functions are added, the number decreases; and so on till the top of the pyramid is occupied only by the Metropolis with the greatest diversification of functions. The greater the specialisation of a settlement, the greater is the importance of the next centres in the pyramid as the places of supply for the various necessities of life. The following figures give an idea of what changes will be involved in a regrouping of the population. 74·8% of the population of Great Britain live in places of over 5,000 inhabitants (1931). The distribution in detail is the following:

In thousands.

5–10	10–25	25–50	50–100	Over 100
4·7%	8·9%	11·1%	9·9%	40·2%

Fishery and forestry are more agglomerating than agriculture because the " working space " cannot be subdivided for the use of settlements; they are, in this respect, more like industries. Horticulture tends also towards agglomeration; while agriculture can result in compact as well as in dispersed settlements, the

latter is significant especially for a pastoral country. The actual problem is to find a rational solution between these factors, which are first of all dictated by the type of work and the physical conditions and, secondly, by the social needs of man as a gregarious being. It has been suggested that the unit rural community area should be large enough to support a school, a church, village clubs, and some retail services. It should contain a minimum population of 1,000 to 1,500 people. Three to five parishes should be grouped together, comprising an area of about nine square miles, so that the geometrical centre would be only one and a half to two miles from the furthest parts. This would result—as it does in fact to-day in some regions—in intervals of four to six miles between the " urbanised " villages with some special services. Well—all this sounds quite all right; but it is hardly compatible with the new structure of settlement envisaged in the National Plan. This existing or suggested pattern is based on conditions of the past; it rejects the changes which will be brought about by the introduction of industries and the needs for an integrated social life. Is it not rather modest to satisfy the social needs by some clubs, a church and a school? There appears to be some confusion between a neighbourhood unit and a unit rural community stretching out over nine square miles. True, the rural unit, as has been suggested, comprises about the same number of people, very likely even less, than a neighbourhood unit efficiently laid-out; but the very idea of proximity and neighbourliness has been thoroughly eliminated. Life is too comprehensive an affair to be pressed forcibly into some pattern, however attractive it might be—on paper. The functional relationship between settlements, and their functional spacing, will be determined by new forces which will supersede the shortcomings of the past and the present, and the relative isolation of the peasant.

The introduction of industries to rural areas does not mean urbanisation at all. A rural area will remain rural, provided that the changes are directed carefully and far-sightedly. But the size of the various settlements, as well as their types, will depend upon the character, the number, the unit-size of the new establishments. Again it must be stressed that the structure of the region as a whole is the determining factor, and not the relation of two, or even a group of, settlements. It is for this reason that a classification of settlements according to their internal structure in concentrated and scattered settlements does not convey very much. Settlements which are concentrated to-day might be loosened up by additional new groups surrounding them; and scattered hamlets or even isolated homesteads might become concentrated by filling the interspace between them. It is much

more reasonable to base any structural changes on the industrial basis of rural communities, such as A. W. Ashby suggests:

(1) Agricultural (Size Organisation).
  (*a*) Large farms, with attendant cottages, and high proportion of employees.
  (*b*) Small farms, with mainly family labour.
  (*c*) Large farms, with recently established small-holdings, or old-established small farms.
(2) Agricultural (with enterprise specialisation).
  (*a*) Agriculture, mainly traditional systems.
  (*b*) With some development of modern market crops or enterprises—such as market vegetables, fruit or forcing industry, specialised poultry, etc.
(3) Agricultural with Extractive Industries.
  Mixture of agriculture and quarrying (or mining): (*a*) With the extractive workers operating as small holders, (*b*) Extractive workers having no agricultural interests.
(4) Agricultural with Manufacturing.
  Mixture of agriculture and manufacturing industries, in case of older industries with some workers having agricultural interests, in newer industries generally with workers having no such interests.
(5) Agricultural with Trading.
  Mixture of agriculture and trading.
  (*a*) With some traders having agricultural, or more commonly pastoral interests.
  (*b*) Traders having little or no direct interest in land occupation and use.
(6) Agricultural and Fishing.
  (*a*) Fishermen with small holdings.
  (*b*) Fishing and agriculture occupationally separate.[1]

The size of a settlement is a relative affair. A different approach will be needed according as we develop a colony grouped around a nucleus or if, for instance, several co-ordinated settlements form a homogeneous group. If the principle holds true that compactness of settlement is to be aimed at as far as possible, some other factors will become important. We should avoid rigidity and not stare at the existing map or stick to some pattern fixed in advance. Let us rely on the facts which the new conception of rural life demands, and let us trust our vision of the future.

Functional spacing of rural settlements must be considered in connection with urban areas; it will be dealt with fully, there-

[1] *The Sociological Background of Adult Education in Rural Districts*, by A. W. Ashby. British Institute of Adult Education.

fore, in the chapter on "Decentralisation and Dispersal". Here, only a few remarks are needed.

First, every community in a rural area can be the centre for a special purpose. Consequently, there is a definite range of "centres" each with definite functions. Looking at this scale from the rural end, there is the satisfaction of daily needs such as is given by post office, doctor, cobbler, etc. Then there follow the somewhat rarer needs which are met by the cinema, solicitor, dispensary, law courts, education and specialised shops. The next stage consists in such amenities as the theatre, administrative activities of a higher order, department stores, luxury goods. Each higher grade means a longer distance from the rural community. It is, of course, not possible to dispense with this system completely; but national and regional planning can alter it considerably in favour of the rural dwellers. Moreover, the location of these various services varies, and is not entirely determined by physical factors. Just as rural settlements depend partly upon urban settlements for their existence, these latter cannot exist without the former. The incoming and outgoing of services and persons, of material and spiritual goods, are dependent on the respective types of settlement and on the means of distributing them. A. W. Ashby has listed some distance values which are of special significance.

Commodity	Source.	Common distance (miles) up to :—
Sweets, tobacco	Village, small town	3
Food, necessaries: Bread, meat, common groceries	Village, small town	8
Household equipment	Small town	10
	Large town	30
Working clothes	Small town	10
Children's clothes	Large town	10–30
Better clothing	Larger town if possible	15–30
Display clothing	Provincial centre, regional metropolis	50–100
Jewellery: cheap	Small town	10
Expensive	Large town, metropolis	150
Cheap furniture	Small town	15
	Large town	50
Better furniture	Larger town or provincial centre	50–100

Secondly, it has been suggested, as already mentioned above, that there is a certain connection between size and spacing. The following tentative table has been worked out: [1]

[1] Association for Planning and Regional Reconstruction.

	Smallest advisable population	Largest advisable population.	Nearest convenient distance apart in miles.	Furthest convenient distance apart in miles.
Villages	500	2,000	2	5
District centres . .	5,000	15,000	10	15
Provincial centres .	30,000	—	30	40

It appears that the distance factor has not been based on fast traffic possibilities, and that the re-sizing which will take place in the future has been disregarded. A new functional relation may develop. And this does not depend primarily on "the conditions of local geography" but on the social-economic functionalism of the region. Rather will it be advisable to mark some villages for elimination and to develop those which are better "fit for living". This would be more in line with the tendency towards concentration. However, more detailed research is needed before definite principles of social and economic functionalism can be developed.

Thirdly, after all, social relationships and cultural services are, to put it briefly, only a matter of excellent communication and distribution. What we need, therefore, is first of all a detailed knowledge of the spheres of influence of the various services. We must know (*a*) the number and categories of people which can efficiently be supplied from a service centre according to its capacity; (*b*) the space and time extent of its hinterland; (*c*) the complementary working of the various services; (*d*) the special conditions of their location with regard to the type of the potential settlements; (*e*) their time and distance limit.

Fourthly, if in such a changed structure of settlement many more places than hitherto assume a special significance as a centre the notion "hinterland" will disappear. The functions relating them are so interwoven that there will be hardly any "passive" space left.

Fifthly, we shall need a new terminology. Hitherto, we have been working with the conception "town" and "country" on the understanding that the latter means "agricultural" and the former "industrial". There will be new types of settlement, of a mixed character in rural areas; and there will be modified types of urban settlements based, for instance, on commerce, or ruralised urban settlements, etc. It is true some suggestions for a new classification of settlements have been made but they are adapted to existing and not to new conditions. We need new terms in order to define exactly the functional significance of each type of settlement.

The lay-out of rural settlements, be it of a purely agricultural or mixed agricultural-industrial character, is dictated by the same balance of the four functions—housing, working, distributing and recreating—as in the towns. Consequently, principles which have been developed in connection with town planning and have been accepted as sound, should also be applied to the planning of rural settlements, with due modification for the special conditions of the countryside. We shall have to deal with these problems in detail in the chapter " Decentralisation and Dispersal ". It is sufficient, therefore, to restrict the following remarks to those points which are of particular significance in rural planning.

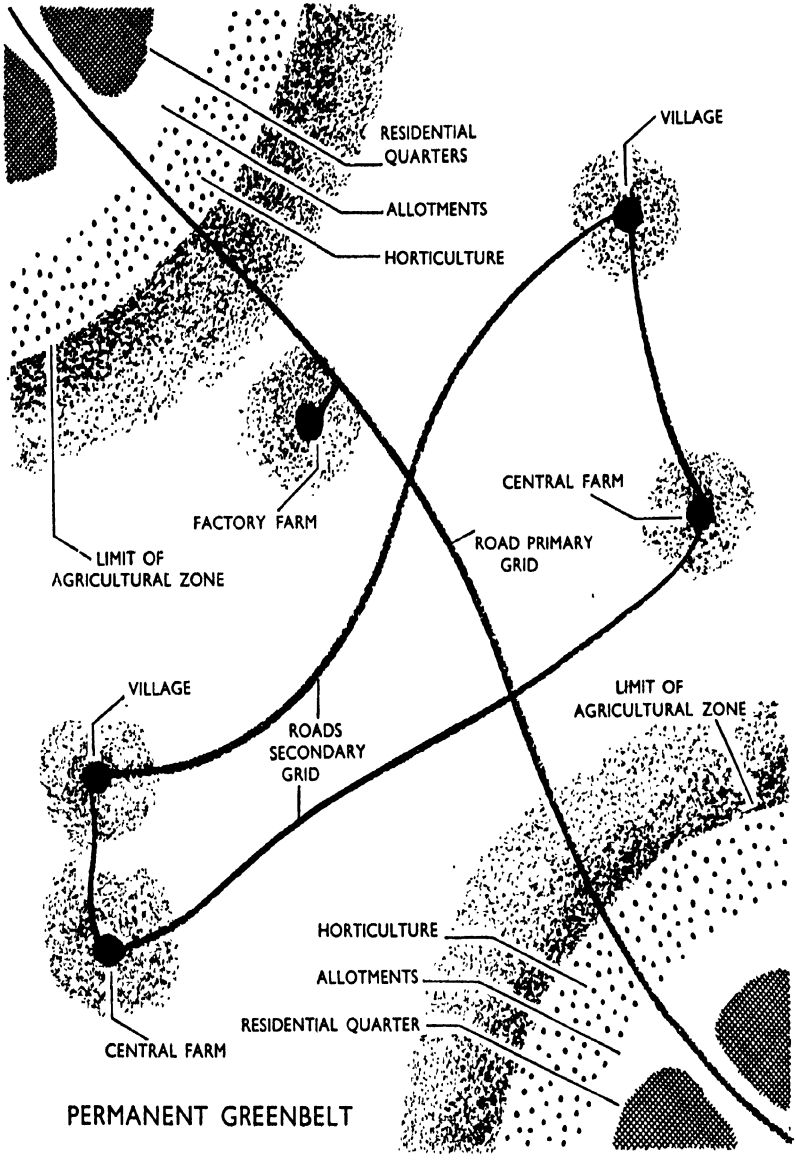
Some principles stand out as fundamental prerequisites because they have a direct bearing on the lay-out of rural settlements. They can be grouped under the following headlines: the green belt; zoning; the highwayless community.

(1) The green belt has different functions: (*a*) being permanent it should keep the settlement within definite limits; (*b*) it should also influence its internal structure by preventing too spacious a lay-out; (*c*) it is the recreation ground of the community and from it green wedges should radiate into the settlement so that one could walk from one end to the other through these parkways; (*d*) it is the obvious place for some " Central Farms " and " Factory Farms " as well as for at least part of the fields and of the allotments.

(*a*) The restriction of the settlement to definite limits is not only important for the planner but also for the inhabitants. They are within reach of the open country; social and economic services can be much better provided for if their potential extent is known from the beginning; the same holds true for the various shops. On the other hand, the green belt prevents the encroachment of the built-up area on the open country; and the agricultural and horticultural activities can be developed on a firmer basis if they have to serve a definite number of customers.

(*b*) If houses for a fixed number of people and a fixed number of public services of all kinds are placed within this modern " city wall ", this is in itself a cogent reason for making the most rational use of the space within this boundary. It is obvious that this cannot be achieved by so simple a formula as twelve to the acre. The principles applied must be much more elastic. We will deal with them in a later chapter.

(*c*) Open-air recreation must be near the homes. The green belt may harbour the playing fields, the park, and the circular or any other kind of high road. The parkways converging on the centre of the settlement bring the open country to the


RESIDENTIAL QUARTERS
ALLOTMENTS
HORTICULTURE
VILLAGE
CENTRAL FARM
FACTORY FARM
ROAD PRIMARY GRID
LIMIT OF AGRICULTURAL ZONE
VILLAGE
ROADS SECONDARY GRID
LIMIT OF AGRICULTURAL ZONE
HORTICULTURE
ALLOTMENTS
RESIDENTIAL QUARTER
CENTRAL FARM
PERMANENT GREENBELT

immediate neighbourhood of the residential as well as the industrial and commercial quarters.

(*d*) The green belt has also an eminent agricultural and horticultural value. Its extent is limited by the next settlement. While those institutions which are of immediate importance to the inhabitants, mentioned under (*c*), must be, of course, in the zone nearest to the settlement, the whole of the rest remains available for market gardening and agriculture. A part of the allotments may be located in this nearest zone stretching further on along the parkway, leading into the settlement. Market-gardening could be carried on with the assistance and under the co-ordinating influence of a Central Farm. The economic organisation determines the lay-out of such a colony. Certain general principles have been suggested; they apply to market-gardening as well as to farming.[1] Some of them follow:

The land must be of suitable quality for the purpose in mind, and there must be an adequate water supply.

The settlement should be intersected by good roads.

Where market-gardening is to be practised the settlement should be situated in an area where there is little danger from spring frosts and where the climate is mild.

Any market-garden holdings should be placed on the best soil in the settlement and the poorer land allocated to poultry and pigs.

Co-operative purchase of requirements and/or marketing of produce should be a condition of tenure.

Settlers should be advised and directed as to the type and quantity of the crops they should grow.

Can the small holdings of a 3- to 5-acre type " be organised to enjoy some of the advantages of large-scale production? Can this organisation overcome their inherent lack of stability? At the outset it may be said that although the impact of adverse economic forces on holdings of this type can be reduced as a result of certain forms of organisation, it is impossible to protect them completely from sudden changes in the price of their products and requirements, and in this respect they will always be liable to failure.

" There are, however, certain lines along which they can be assisted, such as

(*a*) the provision of facilities, on a co-operative basis, for the orderly marketing, grading and standardisation of produce;

(*b*) the bulk purchase of requirements;

(*c*) the elimination of waste in production through the provision of certain services, viz. tractor power, haulage, day-old chicks, pedigree bulls and pigs, etc.;

(*d*) increasing the capacity of the settler to live off his holding.

" The problem therefore is to find a technique of settlement capable of fulfilling the above conditions.

[1] A. W. Menzies-Kitchin. Ibid.

" While the marketing of pigs is relatively simple, the marketing of vegetables and fruit, complicated by their variety and their perishable nature, requires some form of co-operative organisation. If vegetables are to be graded and marketed co-operatively, the aggregate unit of production must be sufficiently large to maintain throughout the season regular and adequate supplies. Here again, therefore, the colony method of settlement is indicated.

" At the same time the settlers might be assisted by a central farm which would provide the services mentioned above, and would also supply milk and butter, etc., for consumption on the colony, thus reducing the handicap of the small unit. The sale of cereals by the central farm will, however, be negligible : it will therefore be incapable of lessening the dependence of settlers on the open market by supplying home-grown feeding stuffs." [1]

The unit of production must be large enough to carry the overheads of a central organisation. The size of the area to be settled depends on the potential output of the colony. " Adopting the unit of 100 settlers, the next point is to determine : (*a*) the unit of land to be given to each member of the group, and (*b*) the area to be set aside for the central farm." In general, we may assume that " apart from glasshouse production, the area of market garden needed to support a family is steadily increasing. In view of the fact, however, that a number of the settlers will be growing glasshouse produce, for which the area required will not be more than an acre, an overall average of 5 acres per holding would seem sufficient. This would allow a range of holdings of from 1 acre with glass, to 4 to 5 acres of market garden or of 7 acres for pigs and poultry."

The main functions of the Central Farm are to : supply power for cultivation and transport ; maintain a herd of breeding pigs, a free range of poultry flock, and a dairy herd to supply milk to the colony ; operate a central organisation for the co-operative sale and purchase of produce and requirements, and undertake where necessary the grading and standardisation of produce.

To fulfil adequately the above functions and several other activities, it will be " necessary for the central farm to carry a stock of approximately 20 dairy cows, 40 breeding sows and 1,000 laying hens. Run as an intensive mixed arable farm, such a basic stock would probably require an area of 500 acres. For the total colony, therefore, an area of approximately 1,000 acres will be required, of which about 500 acres would be in the possession of 100 settlers and the remainder operated as an ' intensive ' mixed arable farm."

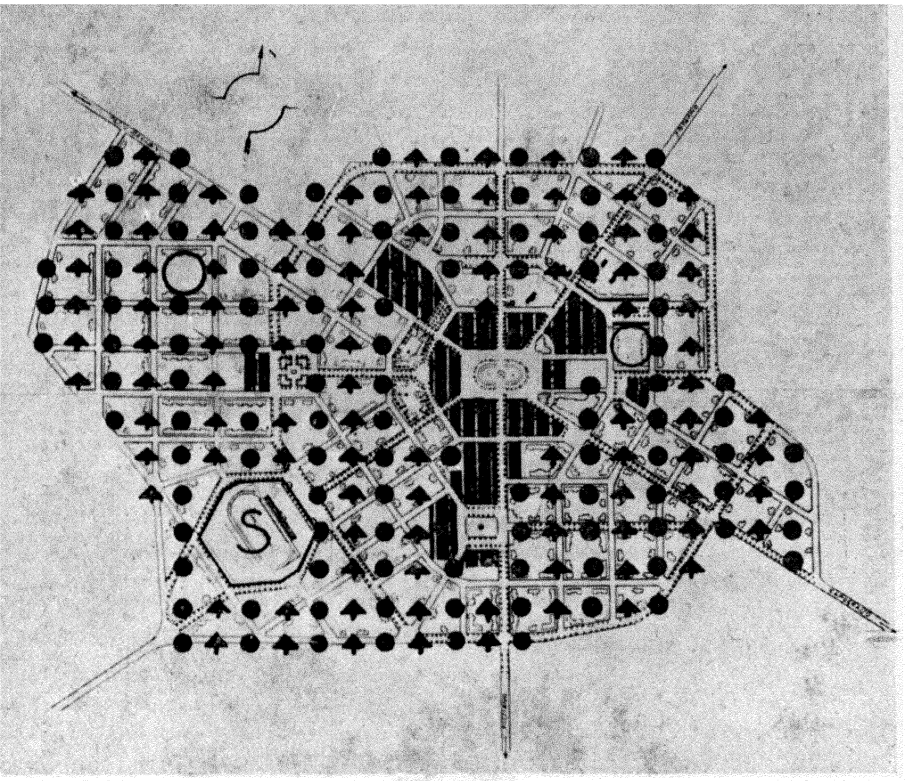
Adopting this type of settlement and locating it within the green belt would result in a compact village forming a residential unit with the Central Farm as the nucleus. However, there are some difficulties inherent in this type, as the settlers should be near to their pigs and poultry. But it has been assumed that half of the settlers of such a colony grow vegetables and glasshouse produce. They could be housed easily around the Central

[1] A. W. Menzies-Kitchin. Ibid., also for the following quotations.

Farm while a similar solution might also be possible for the rest if a central organisation could be accordingly adapted. In any case it is preferable to seek a solution which brings the settlers together and near to the mother settlement, in order to take part conveniently in its social and economic life. It might even be possible to develop the above principle still further; the settlers might be housed in the main community and the number of those living outside might be restricted still more.

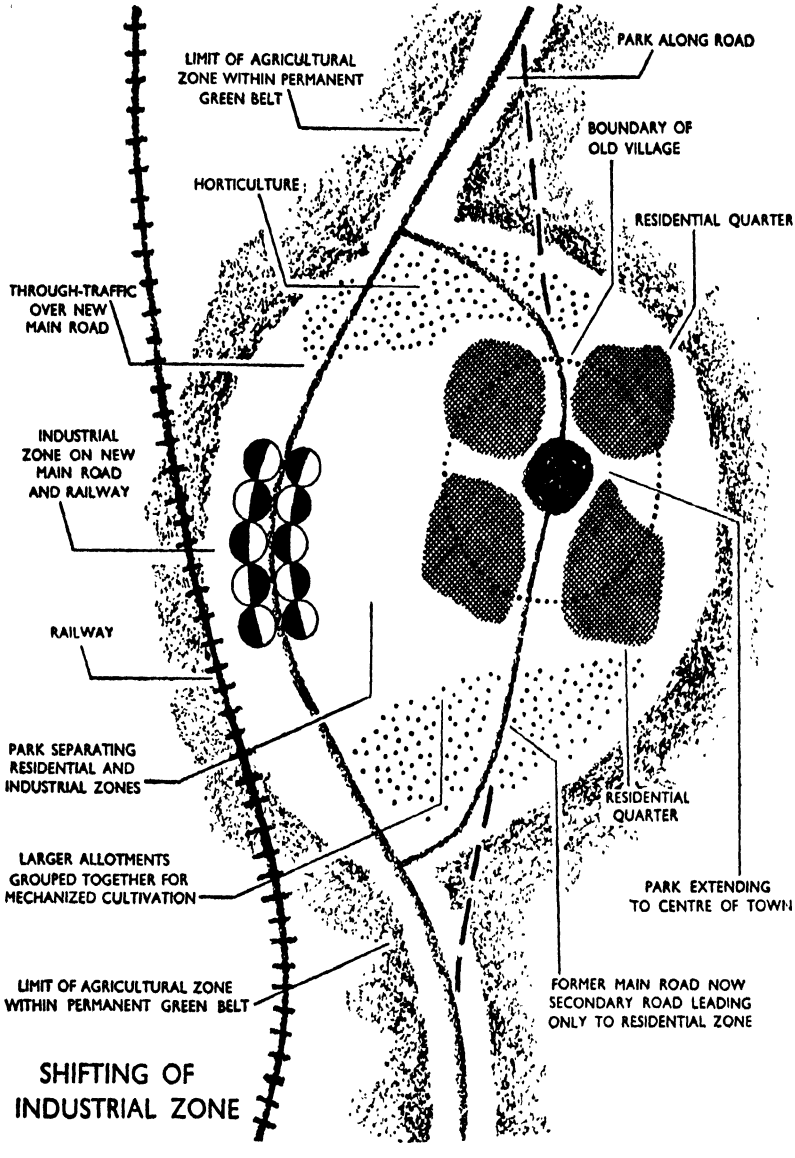
The other type of activity within the green belt is farming. In the main it will be carried on in the outer zone, although it is feasible that it should reach the outskirts of the settlement at some places. Here again, there is a chance of developing a group settlement on a co-operative basis. Taking an area of about 5,000 acres, a stretch of country of about 2½ by 3 miles would be covered. This area is sufficiently large to support a central organisation. 136 holdings of 36·6 acres in extent could be provided. A Factory Farm would be the nucleus around which the houses of the 136 families could be built, unless it is preferable to house them in the main settlement. In this latter case it is merely a question of good communications. The distances are not too long and could be covered in a short time. If this is not possible, although it would be very desirable in order to diversify the economic and social structure of the main settlement, the former solution should be aimed at. People and their families employed on the Factory Farm, together with 136 families, would form a small community of about 700–800 or even more inhabitants. If this settlement were linked to the mother settlement by good communications, it might still be a useful solution for both. Czechoslovakia, Germany and Hungary have developed such Factory Farms with general processing factories which are supplied with the raw products from the surrounding farms. They have from about 6,000 to 20,000 acres, and even more. There are factories for bacon, butter, cheese, flour mills, breweries, etc. These Factory Farms have proved to be an important element in the modernisation of agriculture and exert a concentrating influence upon the surrounding holdings.

There is still another possibility, the centre of such an agricultural settlement is a large agricultural farm run on a co-operative basis in the interest of all the members. All activities which demand a relatively small amount of intensive work, but rather extensive capital expenditure, e.g. mechanised farming, are carried out by the Central Farm on behalf of and with the labour of its members. Around this Central Farm there are grouped the small holdings of the members, which need less capital but more intensive work, these individual farms are

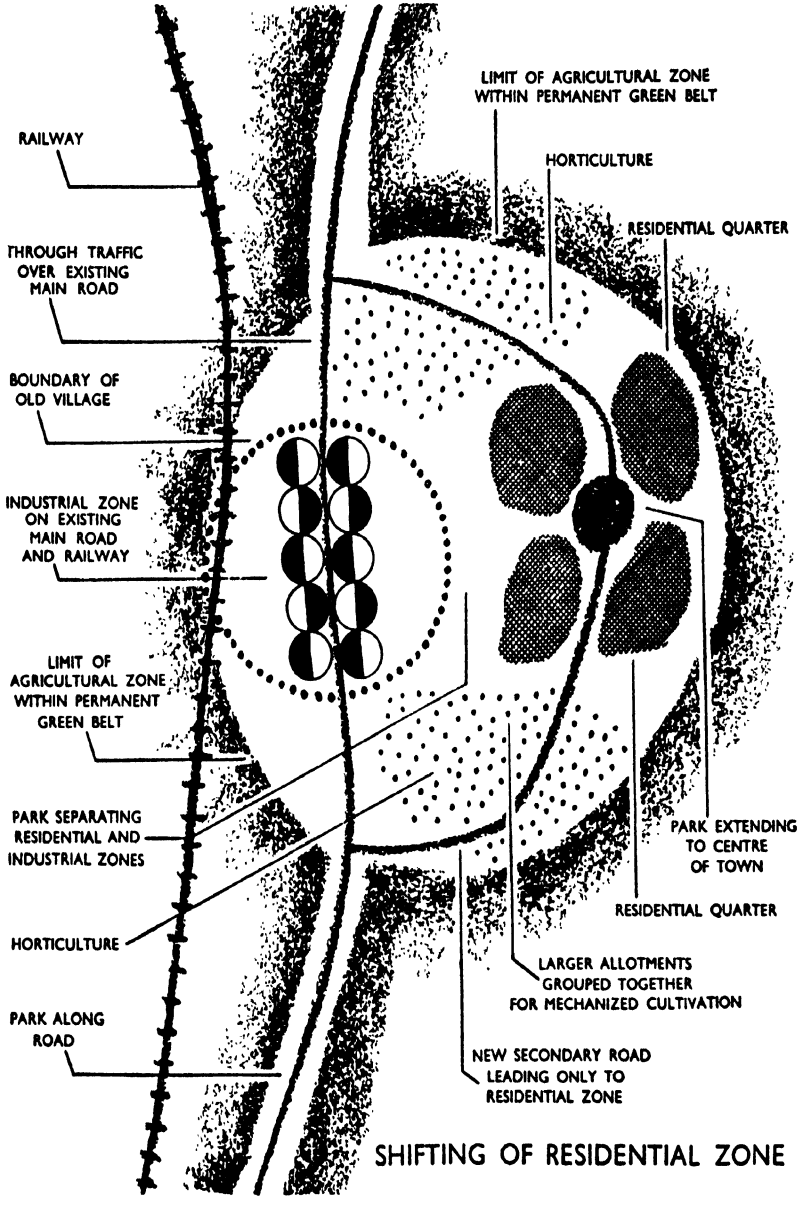


LITTORIA.

[*To face p.* 176



SHIFTING OF INDUSTRIAL ZONE



SHIFTING OF RESIDENTIAL ZONE

beginning on the social needs of the population and on a diversified structure offering a healthy and creative stimulus to all inhabitants, the child will have a full share in the life of the community. The sex and age composition might be influenced for the better and the incentive to have more children might be positively encouraged. Rightly, Dr. Enid Charles remarks:

> Children have ceased to be a form of old-age insurance. Urbanisation and increased mobility have helped to break up the family as an economic unit. Old-age pensions and social provisions for the physically unfit have decreased the interdependence of the members of a family upon one another. Housing is possibly the most striking example of the difficulty which children place in the way of attaining an acceptable standard of life. Landlords play no small part in promoting family limitation. The evidence given before the Commission on the Declining Birth Rate brought out clearly that necessitous parents of large families find suitable accommodation almost impossible to obtain; a vicious cycle results. Owing to the scarcity of large families fewer and fewer new houses or flats are erected to accommodate them. So the tradition which favours the family of two is built into the structure of contemporary civilisation.[1] And she adds, pointing indirectly to the necessity of a systematic and orderly pattern of social and other amenities: We may attribute our low fertility to the spread of large-scale industry with its resultant changes in methods of living. We may attribute it to the tradition created by an acquisitive society which appeals to the incentive of private profit coexistent with large inequalities of wealth. Industrialism has increased the number of amenities and amusements, more particularly greater ease of travel, thus providing distractions alternative to parenthood. The individual desire for a more varied life is bound to restrain the production of children. It might even do so to a greater extent, if a more equitable social distribution of amenities is attained. A wider field of occupation for women competing with men for the same distinctions and responsibilities can hardly fail to curb reproductive activity in any type of society. The existence of large cities which are definitely unpropitious to reproduction does not seem to be necessarily a concomitant of any particular method of production or distribution but of the chaotic way in which industrialism has developed. The unequal distribution of the economic burdens of parenthood and the lack of security which makes people unwilling to undertake them are consequences of our arrangements for the distribution of wealth. Most important of all is the tradition of sterility to which the industrial revolution gave birth. The conclusion which emerges most clearly is that the *laisser-faire* economy is a biologically self-destructive arrangement of man's social life. It puts a price upon parenthood. It confers social prestige upon sterility by ensuring the social promotion of persons with low reproductive vitality. The less prosperous incur

[1] *The Menace of Under-Population*, 1936.

the stigma of thriftlessness for the discharge of their racial responsibilities. The facts conclusively show that they too have now succumbed to the suicidal prudence of their betters.

The child is the exponent and the guarantor of the future. Planning must first take its directions from the needs of the child. This will enable us better to get a clear vision of the future. O. E. Baker stresses the same when he says:

> The possibility of national planning is only now awakening interest. But it is not yet realised, even by the leaders of the planning movement, so far as I am aware, that if this movement is to be more than a passing whim of the people there must be a change in the national psychology. This change must consist, essentially, of a shift in emphasis from the present to the future.[1]

(3) *The highwayless community.* There is no need to repeat what has already been explained, that there must be a clear-cut segregation of the through traffic from the main body of the settlement. This can be done in principle by having a number of subsidiary roads all opening on to a circular road, or by a highway passing the settlement at a tangent and connected with it through a secondary road, or, it will be necessary to shift the main road or to exchange and adapt the utilisation of two roads to the new conditions, in order to keep the settlement itself free from through traffic. The railway station and the industrial district should be centred around the highway, and the outlying agricultural colonies and the Factory Farms, if there are any, should be within easy reach of this main transport system, in order to make the best use of it for the distribution of products, and for their own supplies.

One other problem should at least be hinted at. War-time factories located in rural surroundings will need special attention. In some cases, they might be useful nuclei for a new settlement or the extension of settlements already developed in connection with their erection; in other cases they will not fit into a systematic pattern of settlement and will have to be removed. Their suitability for peace-time purposes, their location in regard to functional space-time relations, their linkages to other industries and the possibility of part-time work, all these points will have to be investigated.

The plans which a new agricultural life requires will be drastic if they are to be efficient in the interest of the Nation. Reforms of a minor character will not do, even though they may be attractive and appear to be based on "successful" experience in other countries, as, for instance, "*Subsistence Holdings*". It would be nothing short of a catastrophe if, under the pressure of

[1] Presidential address. Ibid.

demobilisation, the cry " Back to the Land " were revived to absorb men released from the Services and from other war work. Every chance of a systematic redistribution of population and of a successful integration of agriculture would be spoilt.

> Great Britain does not possess land enough to absorb any considerable number of unemployed. The present cultivated land amounts to about 30 million acres ; if the whole of it were carved into small holdings averaging 20 acres (the average size of all the holdings between 5 and 50 acres in 1925), the number of holdings thus created would amount to a million and a half, or but half a million more than the men now employed on the land. And this number would be still less, for most of the " cultivable " land is unfit for intensive cultivation in small holdings.[1]

The phrase has been coined : " Rational planning must supplement emergency psychosis." The underlying idea of the promotion of " Subsistence Holdings " is not one of real decentralisation, but only of an internal de-congestion. It is, therefore, very significant and valuable that there are voices coming from U.S.A., the country where this type has been propagated most by the various " resettlement programmes ", which condemn this " solution ".

> Can it be seriously contended, for example, that we can solve the problem of intermittent employment in industry and in agriculture, with its resulting insecurity and inadequacy of earning-power, by settling eight or ten million people on part-time subsistence homesteads ? This type of planning accepts at face value the major assumptions made by the apologists for our existing industrial order, namely, that employment must necessarily be intermittent in industry and that employment in agriculture must be necessarily insecure. This type of approach is tantamount to building hostels for the victims of a system while the maladjustments worked by the system itself are permitted to continue without abatement. ' The hostels may be quite all right in themselves, but it is the system that needs overhauling. We are told, from still another quarter, that we should resettle, that is decentralise, industry. The implication of this statement seems to be that what is needed to make our industrial order function efficiently is merely to relocate population and resettle industrial sites. Here, again, reconstruction, rather than resettlement, is indicated ; or, to phrase it differently, resettlement without reconstruction is not enough.[2]

Agriculture Integrated.

We need a clear conception of what agriculture as one of the basic industries can be and should be in the future. We need a clear programme for its revivification within the framework of

[1] Sir Daniel Hall. Ibid.
[2] National Conference. Ibid.

the National Plan, as a complementary factor to industry but of equal importance. Without this it is impossible to develop a sound internal balance and diversification of community life, either in the towns or in the country. The problem is the same the whole world over, though there are differences of degree. It has been recognised by some of the best thinkers and promoters of social evolution. I consider the necessity for understanding this problem in its true implications and in its international importance as so urgent for this country, for Great Britain, that the British public should be acquainted with the attitude of other countries.

Prince P. Kropotkin in *Fields, Factories and Workshops*:

> The more rational outcome would be a society in which men, with the work of their own hands and intelligence and by the aid of the machinery already invented and to be invented, should themselves create all imaginable riches. Have the factory and the workshop at the gates of your fields and gardens, and work in them. Not those large establishments, of course, in which huge masses of metals have to be dealt with and which are better placed at certain spots indicated by Nature, but the countless variety of workshops and of factories which are required to satisfy the infinite diversity of tastes amongst civilised men. Not those factories in which children lose all the appearance of children in the atmosphere of an industrial hell, but those airy and hygienic, and consequently, economical, factories in which human life is of more account than machinery and the making of extra profits. Factories and workshops into which men, women and children will not be driven by hunger, but will be attracted by the desire of finding an activity suited to their tastes. Let those factories and workshops be erected, not for making profits by selling shoddy or useless and noxious things to enslave Africans, but to satisfy the unsatisfied needs of millions of Europeans. . . . The scattering of industries over the country—so as to bring the factory amidst the fields, to make agriculture derive all those profits which it always finds in being combined with industry and to produce a combination of industrial with agricultural work—is surely the next step to be made, as soon as a reorganisation of our present conditions is possible. This step is imposed by the very necessity of producing for the producers themselves; it is imposed by the necessity for each healthy man and woman to spend a part of their lives in manual work in the free air; and it will be rendered the more necessary when the great social movements, which have now become unavoidable, come to disturb the present international trade, and compel each nation to revert to her own resources for her own maintenance. Humanity as a whole, as well as each separate individual, will be gainers by the change, and the change will take place. . . . The two sister arts of agriculture and industry were not always so estranged from one another as they are now. There was a time, and that time is not so far back, when both were thoroughly com-

bined ; the villages were then the seats of a variety of industries, and the artisans in the cities did not abandon agriculture ; many towns were nothing else but industrial villages. If the mediæval city was the cradle of those industries which bordered upon art and were intended to supply the wants of the richer classes, still it was the rural manufacturer which supplied the wants of the million, as it does until the present day in Russia and to a very great extent in Germany and France. But then came the water motors, steam, the development of machinery, and they broke the link which formerly connected the farm with the workshop. Factories grew up, and they abandoned the fields. They gathered where the sale for their produce was easiest, or the raw materials and fuel could be obtained with the greatest advantage. New cities rose, and the old ones rapidly enlarged ; the fields were deserted. Millions of labourers, driven away by sheer force from the land, gathered in the cities in search of labour, and soon forgot the bonds which formerly attached them to the soil. And we, in admiration of the prodigies achieved under the new factory system, overlooked the advantages of the old system under which the tiller of the soil was an industrial worker at the same time. We doomed to disappearance all those branches of industry which formerly used to prosper in the villages ; we condemned in industry all that was not a big factory. True, the results were grand as regards the increase of the productive powers of man. But they proved terrible as regards the millions of human beings who were plunged into misery and had to rely upon precarious means of living in our cities. We were thus driven into a corner ; and while a thorough change in the present relations between labour and capital is becoming an imperious necessity, a thorough remodelling of the whole of our industrial organisation has also become unavoidable. The industrial nations are bound to revert to agriculture, they are compelled to find out the best means of combining with industry. There is no better means than to study that immense but overlooked and underrated branch of industries which are described under names of rural industries.

U.S.A. :

The development of home industry on the farm is, however, an affair of the rather distant future. There is also the less remote possibility that in many sections, owing to the decentralisation of industry, the factory workers will be part-time farmers and the farmers will be part-time factory workers. This movement is progressing more rapidly than many imagine, for the unemployment in the large industrial centres has sent many ex-farmers back to the land again. It may be that out of all this will come a permanent change in our economic structure and that a considerable number of people will have one foot in industry and another foot in agriculture and be wholly dependent on neither. But, although this result will be desirable it will not of itself solve either the problems of agriculture or the problems of industry but merely add to the insurance of the livelihood of the individual by spreading his risk.

Everything that the farm needs to do or needs to have done for it will hold, regardless of the status of the individual. For instance, it would not solve the factory unemployment problem for all workers' wives to take in washing. Highly specialised farming may be a part-time job and may require a complement of some other sort of work, but balanced farming is a full-time job.[1]

We are continuing the idea of the State-wide plan by studying the whole future population trend ; here is where there is a definite connection between the rural dweller and the population engaged in industry, between the rural dweller and the city dweller, between the farmer and the people engaged in industry. Experiments have already been made in some states looking to a closer relationship between industry and agriculture. These take two forms—first what may be called the bringing of rural life to industry ; second, the bringing of industry to agriculture by the establishment of small industrial plants in areas which are now wholly given over to farming. In this particular connection the State of Vermont, through a splendid commission, seems to be taking the lead in seeking to bring industry to the agricultural regions. For example, in a valley in Vermont a wood turning factory for the making of knobs for the lids of kettles has already been so successful that the trend of the rural population to the city has been definitely stopped, and the population of the valley finds that it can profitably engage in agriculture during the summer with a definite wage-earning capacity in the local factory during the winter months.[2]

In an interview Mr. Ford says : " Science will some day solve the surplus problems of farm and factory. As we industrialise agriculture, we can also ruralise industry, for there is no end to the processes of scientific refinements."

U.S.S.R. :

The U.S.S.R. is striving to abolish the contrast between the town and the village, but this does not mean that the towns of the U.S.S.R. will be abolished. On the contrary, the industrialisation of rural districts, formerly backward, neglected and uncivilised, is giving birth to a large number of new towns. Agricultural labour is becoming a form of industrial labour, and the village is aspiring towards the level of advanced urban culture. New towns are springing up and helping to overcome the violent opposition between the old town and the old village which impeded productive development—new towns with a different complexion, a different significance, a different destiny and a different national geography.[3]

India :

The development of a co-operative marketing system on national lines must be accompanied by a constructive policy of regional

[1] S. Crowther, M. C. Taylor, A. T. Sloan, H. Ford, *A Basis for Stability*, 1932.
[2] F. D. Roosevelt, *Looking Forward*, 1933.
[3] N. Mikhaylov, *Soviet Geography*.

planning with its business and industrial zones and belts of farms and playgrounds which constitutes the only solution of the problem of food supply along with that of urban congestion. A scientifically planned city community and a scientifically planned rural community in India alone can restore the balance between the rural and the urban economy. The Gangetic locations may become almost one continuous series of garden cities with their tributary farms, while the plains in the interior may carry on an intensive-extensive agriculture with only enough manufacturing to meet some local needs and to occupy that part of the population which is dependent upon agriculture but not directly engaged in it. The advantage in transport afforded by waterways should be utilised in the redistribution of industrial and manufacturing cities to ensure our living with the least waste of effort. Nor should our factories and industrial establishments be segregated in a few huge cities. They should meet surplus labour of the overcrowded plains half-way in towns and small cities, and facilities of land and water transport should be opened out for them to secure a more economical distribution of the population. The early distribution of electric power and the use of motor trucks bring with them social and agricultural benefits which we can perceive with difficulty in the present era of steam and iron, rail and factory concentration. With increased use of electricity as a motive power of industry, industrial establishments will be decentralised.[1]

Japan :

Farmers are intensively busy during certain seasons and are idle in other seasons. One way of relieving this state of affairs in the past was to provide farmers with by-industries. The small industries which once existed in the country should be revived. The work of the rural district will be a mixture of agriculture and industry, and the wealth of the rural people will be greatly increased. In old times there were many rural industries, but they were all taken over into the cities with the growth of modern large-scale industry. But the revival of small-scale industries in the country must mean the industrialisation of the country, which in turn must mean, in the final analysis, the extension of large-scale industries into the country. At present commerce and industry are undertaken for lucrative purposes. For this reason commerce inevitably is concentrated in cities, and industries also centre around cities, chiefly because they can offer convenience for the sale of products. All this has the effect of transferring all industries except agriculture from the country to the cities. If industries can be extended into the country it will have the effect of relieving the farmers and of dealing a blow to the commercialism of the present economy. If large-scale industry is extended into the country farmers will receive numerous economic benefits therefrom. At present, capital, men, convenience of communication and transportation, and the opportunity of deriving profits are all concentrated in cities ; and

[1] R. Mukerjee, *The Rural Economy of India.*

this makes the concentration of industries in and near cities inevitable. If all these factors are altered the necessity of concentrating industries in and near cities will largely disappear. Thus the extension of large-scale industry into the country will prove beneficial both to agriculture and to industry; and at the same time will decrease the difference between cities and the country with regard to matters of productive economy as well as the difference of opportunity.[1]

The following resolution was adopted at the Fifth International Congress of Modern Architecture—C.I.A.M.—held in Paris, 1937:

> Les méthodes de constructivisme et de fonctionalisme que nous voulons appliquer à la réorganisation des villes par les moyens de la technique moderne, serviront à rétablir le contact intime du citadin avec la nature, à lui fournir les joies essentielles — espace, soleil, verdure. C'est une face du problème. Mais il y en a l'autre —non moins urgente, non moins actuelle : élever le niveau de civilisation de la population rurale, figé depuis des siècles, jusqu'au standard nouveau de la population urbaine. Ce n'est pas la ville qu'il faut ruraliser en abaissant son niveau de civilisation — c'est la campagne qu'il faut urbaniser, civiliser, mécaniser, en sauvegardant ce qu'il y a de précieux dans son ancienne culture.

The power of seeing general and abstract implications in particular events must be developed in the countryman to counterbalance his characteristic tendency to reason from the concrete instance. The farmer cannot accept passively the changes which are impinging upon him all the time if his attitude towards life does not change. All over the world we find the same problem of the rise and fall of cities. And all over the world we find the antagonism between town and country dividing mankind into the two categories of townspeople and countrypeople. Both these categories represent the two poles of our life. The farmer represents the life where the desire for simplification is dominant, where the inclination is great to take events in their clear succession, and where the world of thought does not become a tempest of problems because all that happens is of an emphatic directness. Urban man does not relate the multitude of problems confronting him directly to himself. He asks why and for what purpose they are arising; and thus he passes over the threshold where life becomes abstract and speculative. In every human being both these streams are latent. It is this fact that will lead us towards an adjustment of our attitude towards life, and towards a new unified structure of society and of settlement, in town and country alike.

[1] S. Kawada, *Agricultural Problems and their Solution in Japan.*

THE INDUSTRIAL PENDULUM

REDISTRIBUTION of industry as such is nothing new. During European history the industrial pendulum was swinging between town and country with a certain regularity. It was the symbol of the antagonism between town and country. To-day there is the chance, for the first time, that the town versus country complex can be replaced by the integration of town and country, and that the pendulum will come to rest.

The pendulum is beginning to swing back from the towns. Industry is spreading over the country and is losing its devastating grip on the structure of the urban areas. It seems that we are afraid of the coming changes and dare not to touch the hot iron of industrial redistribution. A short review of this historical evolution will help to dispel the almost magical illusions whereby we allow industry to play the role of dictator in our lives.

(1) Our modern economy begins with the village economy of the early Middle Ages. Every rural unit is self-supporting; industries are dispersed, therefore, over the whole country. Every unit contains all categories of industry with the exception of those which are fixed, as ore-extracting industries. The artisans produce only for a small and limited group. No problem of present-day "localisation" exists; however, the first rudimentary beginnings of industrial localisation are developing: industries are located in the central village, around which fields and pastures form an agricultural belt.

(2) The manor economy contains all industries and all types of agriculture which are necessary for a complex and self-supporting organisation. The lord of the manor has to travel to his various domains in order to consume their products, which are distributed over the whole territory. The essential character of the manor economy is its industrial diversification. First, the main industries are localised in the central manor, but gradually a certain dispersal sets in, the more the area of the domain extends and the more general security increases. The needs are still modest, and combination between agriculture and industry is the normal case.

(3) Urban economy, the next stage, develops similar principles on a broader basis, although with the marked difference that industries are concentrated in the towns. But the area as a whole, comprising the town and its hinterland, is a more or less self-supporting unit with a great diversification of industries. The industrial pendulum swings from the country to the towns and from a relatively dispersed industrial structure to industrial

concentration. The contrast is growing sharper between the centre, the town, and the periphery, the surrounding country. The town tends to produce as much as possible and to suppress industries outside its walls, permitting only a few to be pursued by the peasants. The whole situation is very similar to the present relations between Great Britain and the Dominions; the Mother Country dictates and prevents the establishment of industries in the Dominions as far as possible. There is also industrial concentration in the centre as opposed to the outlying districts, which are mainly agricultural. Within the town of the Middle Ages industries are distributed almost over the whole walled-in area, while commerce is mostly concentrated in the market-place and the adjacent streets. Only gradually are the commercial activities dispersed over the town, and only gradually do they get localised in special streets.

(4) The next stage sees the development of a national economy superseding the numerous urban self-contained units. With the extension of the market area the industrial pendulum swings partly back to the countryside: home industries in the country and manufactures in the towns working side by side. Here, the complicated development of modern industrial location sets in: concentration in the towns and dispersal over the countryside. Alongside this process industries tend to be concentrated in certain districts of the area of the State. Industry and commerce, hitherto combined in the towns, are becoming, to a certain degree, more separate, when urban manufacture and country home industry break apart. Production on the one hand, and sale and demand on the other hand, take place in different places, which is a new development. The cheaper cost of production in the countryside is attractive; from the fifteenth to the eighteenth century there is a marked exodus of industry from the towns in spite of their resistance. First, the textile industry, especially the woollen industry, emigrates, leading to a combination of agriculture and home industry. The commercial centre remains in the town. Further, as long as water is used as power the factories remain decentralised. Steam reconcentrates industry in the towns at the cost of the rural home industries. Thus, the industrial pendulum swings between town and country.

High rents and urban growth force the industries from the central district to the periphery of the town, in the first place along the railway lines. In the beginning of urban economy towns try to develop a sound diversification of industry within their walls. In the period of national economy industries tend to specialise locally as the result of an improved system of distribution. In the period of world economy this trend is going

on although under modified conditions: some industries are distributed over the whole area of the State and, at the same time, are especially strongly represented in one region; e.g. Manchester, which in the sixteenth century is a large village, the centre of a rural weaving district, has about 10,000 inhabitants in 1727 and is market for the rural home industry of its surroundings.

Industry has been very mobile for about 2,000 years. There is no reason whatever to suspect that this mobility has come to an end. Industry, concentrated in the village or the manor, was dispersed over the rural district; then wandered to the towns together with the rural population; and back again to the country in the form of reorganised home industries; and then concentrated again in the towns with the rise of the factory system. There, it shifted from the centre to the periphery, and, to-day, it is on the point of decentralising over the countryside with the help of electricity. More and more does industry become independent of factors of location which were considered essential only a few decades ago. Industrial production needs, in general, a great variety of materials which have to come from many different parts of the world. It does not matter a great deal where the finishing process takes place. Production is thus still more adaptable to the distribution of consumption and to the splitting up into smaller units.

Industry must be planned. Like the shifting of industry between town and country the planning of industry is nothing new. The guilds of the Middle Ages, the planners of those days, controlled the industries of their towns, and regulated the number of people employed in each industry, they "located" the individual industries, in certain streets and quarters, and they prevented the undesirable influx of industries which might destroy the social and economic balance of the community. In short, they used to watch over their town and took active steps in order to guard it against becoming an ill-balanced community. It is true they achieved this result at the cost of the strongest antagonism to the countryside and of the unification of the whole country by a sovereign power. Yet they acted intelligently and in accordance with the ideas and requirements of their time. We, to-day, not only can avoid this antagonism but we can find a new and productive solution for the unity of town and country within the state machinery providing the framework for the redistribution of industry on a national scale.

As an example of the internal regional distribution we may refer to the cotton industry. Has there been a contraction in the boundaries of the Lancashire region practising the cotton industry?

It might be expected that a contracting industry would withdraw its outposts and would contract on to its nucleus. There is, however, no evidence of such contraction. . . . As there is no clearly defined geographical contraction of the limits of the industrial region, contraction has taken the form of a lesser density of premises within the existing industrial area. But, while there is no certain evidence of larger regional changes, there is abundant evidence of shifts in distribution *within* the cotton region, of changes in relative density between different parts of the region and between different types of site. The shifts within the regions are :—

(1) The differences which have arisen as between town and country.
(2) The further definition of the spinning and of the weaving districts.
(3) The greater differential decline in the " coarse " districts than in the " fine " districts.
(4) The lesser relative importance of river-side and canal-side sites.[1]

There have been important changes in the local siting of premises. These local sites are determined by access to communications, whether canal, rail or road, and by access to supplies of water, whether from river, from canal, or pipe supplies from public water undertakings. A close study of the working sheets enabled me to form the impression that a large proportion of the premises closed down had riverine and canal-side sites and that only a small proportion had sites removed from river and canal.

We should distinguish between the effects of location of old and of new industries. As to the former the following five factors are important :

(1) The branching of existing plants into other regions, (2) the establishment in some regions of new firms competing with old firms of other regions, (3) the expansion of the business of existing firms at the expense of existing firms in other regions—that is, the normal effects of inter-regional competition, (4) the physical migration of a few plants and their managements through closing down in one region and re-opening in another, and (5) the displacement of the products of old firms by entirely new products made in other regions by new industries.[2]

As to new industries much depends on whether the new industries make new or old products, and to what degree the former replace the latter. Other factors which influence shifts of industry within a region can be lack of foresight and knowledge on the side of the manufacturer or on the side of the regional agencies

[1] W. Smith, " Trends in the Geographical Distribution of the Lancashire Cotton Industry," *Geography*, 1941.
[2] National Conference. Ibid.

responsible for propaganda to attract industries to their district, or the conflicting interests of competing groups, etc.

The movement of industry from the central district towards the periphery has already been mentioned. This trend is not desirable; first, it is a haphazard movement entirely dependent on the decision of the individual manufacturer; secondly, it bars the way towards a systematic re-development of the towns by enclosing them with an "industrial belt" and by splitting them up through "industrial wedges" along the main lines of communication converging on the town.

To-day a dangerous situation has arisen which has only one advantage; it proves the mobility of industry and the impossibility of *laisser faire* in the location of industry. The personal contact between worker and work has gone; the personal home industry of the countryside has given way to the impersonal manufacturing process of the towns. This in itself is a normal evolution; but it is not in accord with the fact that, in most cases, an industrial establishment is considered as the private property of its owner, be it an individual person or a group of persons. It is, therefore, not easy to convince industrialists of the necessity of planning; they consider it as an undue interference with their private interests. However, it is a good sign to see the growth in number of those industrialists who are prepared to accept a national control the more easily if it is a positive contribution towards a systematic redistribution of industry and not merely a restrictive interference. Yet, it would be entirely wrong to lay the blame for the present conditions on the industrialists. It is much more the failure of the administrative machinery to create a unified framework within which the growth of the towns could take place systematically. It is inevitable that changes in urban areas must produce an unbalanced growth if there is a multiplicity of political units and of administrative influences working without sufficient co-ordination; and this is mostly the case in any metropolitan area. Now the time has come to pause and to bring order into chaos. There will be no question of a continued growth of our cities; the war and the standstill in the increase of the population alone would make this impossible, not to mention the necessity for limiting urban growth for reasons of sound town and country planning.

Planning, especially industrial planning, has not yet passed the stage where generalities dominate most discussions and, unfortunately, also most of the "practical" work. It is a rather amusing spectacle to see how just those people who preach that "one must keep one's feet on the ground" lose their head if they leave the non-committal sphere of general talk on planning and come down to hard facts. Should there be anything wrong

with their feet; should they stick too fast in the ground so that they cannot move and cannot even look around? However, it might help to point out that economic planning, and not even industrial planning in the narrower sense, can provide definite rules for the regional distribution of industry, for the size of plants or the lay-out of industrial establishments. It is worth while repeating what has been said at the World Social Economic Congress in 1931 on the inter-relationship of social and economic planning, for it puts the problem in its right perspective:

> The character and purpose of a planned economy thus depend on larger social planning in the wider sense of the term which tries to supply an answer to these questions. The two are inter-related in the sense that economic planning can become a conscious method of operation only when used in relation to a clear plan of social purpose and development, and when it operates through mechanisms and institutions which promote its fundamental principle, the conscious co-ordination of productive resources to the needs of the people. If economic planning implied that it must be combined only with one social plan or one scheme of institutions, there could be but one kind of economic planning. This, however, is not inherent in the idea. As a method, economic planning affects social purpose and organisation, but it lends itself to various social uses and institutional forms.[1]

Thus, industrial planning cannot be separated from social planning; it must take its orders from the social needs of the population. It would be foolish not to admit that the changes are enormous if this principle is to be applied sincerely and fully. It means the end of industry as an economic dictator; and it means the emergence of industry as the social servant of the Nation. It would go far beyond the scope of this book to dwell at length on these problems; but even a superficial survey of what these changes imply must make it manifest that economic planning, even in its mildest form, has to put some restraint on the profit-making motive. And this means to interfere with one of the most outspoken human habits and qualities. Moreover, mere "control"—a word now very much favoured by those who want to lay a smoke screen around their so-called planning activities behind which they can escape a distinct attitude—mere "control" is not enough. Positive direction is needed if a redistribution of industry shall serve its true purpose, namely, a better distribution of the population. The task before us is not easy, because it touches directly a human attitude towards life which has assumed something of the character of an "established fact", although it is hardly believable that life would be really poorer if the profit-making motive were converted into

[1] Lewis L. Lorwin. Ibid.

a responsibility-towards-the-community motive. It is, however, significant to read what the Report of the Royal Commission has to say about the "Aspects of Government Control". Among other points it states:

> Any measure of Government control of location of industry may be regarded from two possibly divergent points of view, viz., (i) that of industry itself, (ii) that of the nation.
>
> The point of view of industry. The general attitude of modern industry in relation to the activities of Government is apt to be uncertain and to vary according to circumstances. In times of depression industrialists are prone to welcome and indeed demand Government co-operation; in times of prosperity to reject Government activities as interference. . . . It is very doubtful whether industry would be willing to accept in its own interest, as is sometimes proposed, anything in the nature of general Governmental prompting. . . . Even if there were at any given moment an optimum location, either for industry as a whole or for given industries, that optimum is subject to considerations that are continually shifting; the picture is not static but kaleidoscopic, dissolving and re-forming with extreme and increasing rapidity. In this quickly moving panorama of economic change there is no reason to suppose that, so far as the profitability of industrial enterprise is concerned, the State, if it should take on itself unduly wide and autocratic powers of regulation and control of industrial location, will be likely in general to prove any wiser, or to make more far-sighted and enlightened choice, from the point of view of industry, than the generality of those who guide individual undertakings.

This gives fairly correctly the point of view of industry. The decisive point, however, is not that the State "will be likely in general to prove any wiser", but that it is more likely that the State will act in the interest of the Nation as a whole than "the generality of those who guide individual undertakings".

National and regional planning cannot be separated from a conscious direction of the economic system and of the location of industry in particular. The various forces which have brought about the morbid conditions of our cities are too closely interwoven with economic life in general to be tackled independently. Individual initiative needs a revaluation; it needs a new and appropriate place in a reorganised social and economic structure. The price we have paid for individual freedom is so high that it demands the greatest effort over a long period to accumulate new "capital" and to pay the "interests" more equally to all members of the community. Roughly, we may identify industry with the big cities and the towns under present conditions. National planning cannot stop, therefore, before the city boundaries and leave it to the City Council to decide whether a further

or a re-development shall be envisaged. There is no such thing as a self-contained urban area, and too readily paid a lipservice to national and regional planning by municipal authorities should make us suspicious. Industry is a national affair and can be handled efficiently only on a national scale within the National Plan. Only then can we hope to adapt industrial capacity to the social needs and to the changes in the structure of population, or to balance industry and agriculture, or to direct systematically the trend from the producing to the distributing industries, or to develop a sound community life in general. The industrial pendulum is swinging back from the towns slowly but irrevocably; it will come to rest if we understand the community of interests of town and country, a fact that has been excellently called "a common adventure in pioneering on the frontiers of a new social world".[1]

Two factors stand out clearly as guiding principles: decentralisation and diversification. The word "decentralisation" is a rather general term; it does not express explicitly the various degrees of decentralisation nor does it *per se* distinguish between decentralisation and dispersal of industry. In this connection it may be sufficient to define decentralisation as a movement of industries within or between industrial areas; and dispersal as a movement of industries to scattered towns and villages outside the areas of industrial concentration. We follow with this definition—although quite independently—the distinction which the Report of the National Resources Committee, "The Problems of a Changing Population", makes and which it sums up in the form of the following classification in regard to

> an analysis of the trend in the dispersion of industries into places outside areas of high concentration, and their diffusion to the periphery of large congested cities and into newer industrial areas:
> (*a*) Principal city of an industrial area.
> (*b*) Large satellite cities in the industrial area.
> (*c*) Remainder of the industrial area.
> (*d*) Cities of 100,000 or more inhabitants outside an industrial area.
> (*e*) Remainder of counties in which these cities are located.
> (*f*) Important industrial counties without a city as large as 100,000 inhabitants.
> (*g*) Remainder of the Country.
>
> It adds: "Groups (*a*) through (*f*) represent areas of concentration and diffusion while group (*g*) represents the area of dispersion." And it remarks that "the belief has been expressed that this newer development—the spread of industry to localities outside the main

[1] "Our Cities." Report of the Urbanism Committee to the National Resources Committee, 1937.

centres—will gradually distribute industry much more widely and more evenly over the country, with corresponding effects on the distribution of population. Some even look toward a sort of ruralisation of manufactures, with many industrial plants located in the smaller towns. The workers would then combine factory labour with part-time farming to give them a buffer against fluctuations in industrial employment."

Both decentralisation and diversification are complementary to each other. We will see later what steps are necessary in order to balance these factors with the structure of a community and reconcile trends which are likely to persist after the war with those which are desirable and must, therefore, be newly produced or especially encouraged. In any case, national planning in general, and industrial planning in particular, cannot be content with taking up trends which are likely to persist after the war; they might be just the wrong ones. A survey conducted on these lines is, therefore, most valuable, for it will enable us to avoid mistakes and to prepare a positive programme at the right time. This problem is very serious, and as far as one can foresee it will be the subject of much debate. Plainly it asks whether we shall follow the line of least resistance or the line of imperative needs. Very much will depend, of course, on the outcome of the war; but the principle of following the line of least resistance has proved in the past to be a rather costly business. The present situation demands something more than such an easy way out. Moreover, national planning is only one of the means of applying scientific knowledge systematically and of arriving at a state of dynamic equilibrium.

The industrial pendulum will come to rest in such a state of dynamic equilibrium after a more even and more equal redistribution of industry has been accomplished. How can this be realised?

Two Possibilities?

We can approach the problem of industrial redistribution from two ends. Either we start with a detailed investigation of every industry as regards its economic and technical structure and especially its potential adaptability to new conditions; or we can start with a detailed investigation of those categories of settlement which are potential "reception areas" for industries, on the one hand, and, on the other hand, of those which are potential "evacuation areas". If we follow our principle that community life and social values must direct national planning, it seems evident that the second approach must provide the keystone of the redistribution of industry, and that the first approach, though essential, must be subordinated to it. Both

are necessary and should be undertaken at the same time. It makes all the difference in the world if an investigation can be conducted with a definite aim; this brings out new points of view which otherwise might be overlooked and which encourage objectivity in research. Further, we may assume that considerable numbers of industries are mobile; relevant evidence is abundant. Yet there should be no mistake as to the number of industries which can be moved "at any given moment". This number is not too great. The redistribution of industry is a long-term affair, and we should aim at a fully reorganised industrial structure in the end. Although, on the other hand, the National Plan must provide the framework for a long-term industrial policy and, therefore, for the shifting of all those industries which, being mobile, might be liable to a redistribution from crowded areas. It is very likely that by far the greater number of all mobile industries will be affected in one way or the other, i.e. that they will be moved to other places or within the same place or the same area to better locations. Some suggestions have been made for the first stage of industrial relocation.[1] The following categories would be affected:

(1) All new plants, extensions to existing factories, and rebuilding or reconstruction. This is a much larger proportion of the total than is generally recognised. We have no precise figures, though the Board of Trade surveys of Industrial Development showed that in 1932–4 there were 470 net additions to factories in Greater London alone. There are probably not many factories existing which are over forty years old. It has been officially stated that 42% of the rateable value of commercial buildings in the City of London were rebuilt in the thirty-two years between 1905 and 1937, and factory buildings become obsolete more rapidly than offices.

(2) The factories to which the slum clearance principle should and could be applied. This is a new idea as far as industrial premises are concerned, and one which has very fruitful possibilities. Large parts of the industrial quarters of our cities should be declared to be clearance and demolition areas, and new workshops and factory premises offered to their occupiers on favourable terms.

(3) Factories and plants constructed or aided by the State for the rehabilitation of special areas.

(4) Industrial establishments required in connection with satellite towns or garden cities to be constructed after the war.

No doubt, if these principles should be applied a good many industries could be relocated during the initial stage. But it must be emphasised that the process of redistribution will have to comprise a much greater number of industries in the long

[1] W..A. Robson at the Oxford Conference of the Town and Country Planning Association, 1941.

run, if a sound diversification and an efficient decentralisation is to be the mainstay of a new community life.

Conscious control is, therefore, essential. Nobody is so foolish as to assume that industries should be " moved about the country like pawns on a chessboard ". The practical issue is to offer a great choice of suitable places to which industries can go, and to lay down certain principles according to which suitable industries can be admitted. Clearly, this means that we must have, first of all, a definite conception of what constitutes a sound community and of what an ill-balanced community. Some ways and means to this end have been discussed in the respective memoranda of the second part. Yet, even beyond this some fundamental problems are at stake. It would be sheer escapism and an ill-service to national planning if we were not to take them into due consideration. They may be summarised in the words of E. Staley :

> As one moves from the free market co-ordination towards this central planning and control, one seems to move also from private property rights in productive instruments towards collective ownership ; from governmental functions confined to policing, and maintaining the framework within which the market system operates, towards governmental management of the whole industrial system ; from relatively distinct political and economic systems connected by a thousand more or less devious ties, towards a merging of economics and politics ; from great decisions that are totalled up from small decisions in an impersonal market, and hence appear as the automatic unwilled result of " blind forces ", towards great decisions that are deliberate, direct, conscious, personal and willed. Where the amount of conscious control over economic life is increasing, which means everywhere in the world to-day, the kind of conscious control and the purposes to which they are put are extremely significant for such important problems as the fate of democratic political institutions.

A rough and tentative classification of industry might be undertaken on the following lines :

(1) Industries fixed or limited in mobility, e.g. coal and iron.
(2) Industries wide-spread, e.g. agriculture and fisheries.
(3) Local industries, e.g. public services and transport.
(4) Industries mobile but depending on ports, e.g. rubber and tobacco.
(5) Industries mobile.

The present pattern of industrial location has grown up over a long period. Thus, it appears as a logical and inevitable development which could not be altered without detrimental consequences. This is, however, not the case, although many factors which have contributed towards the present structure can

be satisfactorily explained. To give only one example; the Board of Trade stated before the Royal Commission regarding the cotton industry that the industry first "settled in Lancashire for no particular reason, except perhaps that the woollen industry was already there, that foreigners were kindly received, and that Manchester was not a Corporation." Indeed this is not the only case where chance played a more important part than is generally assumed. A redistribution of industry must take into account factors which have grown up over a long period and have gained some considerable measure of traditional justification; but it need not be too timid in changing them if other considerations make this necessary, especially not if one thinks of such examples as the above mentioned.

To put the problem in a nutshell: the vicious circle must be broken within which the ever-recurring interaction between production and consumption is taking place: industry is agglomerating; consumption is increasing in the same place as consequence of this agglomeration; and because consumption is increasing the growth of industry makes further progress. Or, the other way round: as far as possible one refrains from locating new industries in depressed areas—at least without special financial assistance—because the power of consumption is too limited; but consumption cannot be increased because no sufficient opportunity of work is being created. This vicious circle cannot be broken by some minor reforms, for the causes are too deep-set. They are to be found partly in technological innovations and partly in economic and social reasons which originate in the world market and are beyond the reach of British influence, as would be the case for every other country. Industrial redistribution must be the secondary factor in the process of redistribution of population. If this latter is considered to be of primary importance it means that, according to the rules of modern town and country planning, the places of consumption —in other words every community—will be limited in size; the growth cannot extend beyond a previously established number of consumers. This limitation, which imposes, of course, also a limit upon the number and size of industries in every community, implies in reality that the undesirable and reciprocal stimulation between industry and agglomeration of population can be avoided. Yet it demands, at the same time, a definite social programme for every type of community.

In order to safeguard the vital requirements of industry and not to repeat all the old mistakes the other way round, the various factors which influence the location of industry must be clearly distinguished and their interaction reasonably balanced. Location depends—as far as the major factors are concerned—on:

(1) Natural resources.
(2) The supply of raw materials.
(3) The supply of motive power.
(4) The means of communication.
(5) The perishable nature of the products.
(6) The nature of the products: consumer's or producer's goods.
(7) The labour market.
(8) Irrational motives, e.g. tradition.

Except where natural resources fix the location, each of the other factors is in no way an obstacle to the mobility of industry, though it makes it dependent upon certain qualifications. Let us not deceive ourselves, it will not be possible to put each of them to equally good account. One or the other might be more difficult to fulfil under certain conditions; but in the main, a reasonable balance will be possible. These are only the factors reacting directly on the location of industry. Space does not permit us to go into detail. Some of them, however, have been discussed already in other connections. A limited number of publications exist which should be consulted if detailed information is needed. Yet, excellent as some of them are, the author is not aware of a single one which deals with the problem of industrial relocation from the social point of view in the national planning sense. A wide field of research is still open in this respect, and a great gap remains to be filled. Strange as it might be at the first glance, much more valuable direction can be found in works which treat these problems theoretically than in those which are concerned in the first place with practical investigations. The reason might be that the latter deal more with the existing conditions of the various industries than with the potential development under changed economic and social conditions, while the former endeavour to lay down certain principles the application of which might be justified under any conditions.

While the choice of location is relatively restricted in the case of industries which serve a comparatively clearly defined and limited area, it is much freer in regard to those industries which supply the national and/or the world market. But it would be wrong to assume that the former are not liable to national control because there is less or no competition in their case. This is only one side of the picture; right location will almost inevitably demand some guidance, not only with regard to the choice of a region, but also with regard to the more suitable district within the region once it has been chosen. Here, regional and local planning have their great chance. Nevertheless, there will still remain a fairly considerable variety of regions between which industries can make their choice, although two criteria should

exert a certain limiting influence. First, the negative one: industries should not remain within the industrial "coffin", in general, and far less still within one of the overcrowded conurbations in particular, if their requirements can be fulfilled just as well or even better elsewhere. Secondly, the positive one: those regions should be preferred which are relatively "empty", e.g. the West Country, Gloucestershire, Middle and North Wales, Cumberland, Westmorland, the Highlands, East Anglia. There is definite proof that this is possible if a long term policy is envisaged with a far-reaching reorganisation of the transport system and a systematic extension of the electric grid. The memorandum on Wales tries to show the way to this end. Or, for the Highlands, the Scottish Economic Committee have made some definite suggestions the essence of which can be summarised as follows [1]:

With a view to providing the essential elements of reconstruction, the following matters require consideration:

(1) The conditions of life in which work will be carried out in the Highlands must be made to approximate so far as possible to conditions obtainable elsewhere.

(2) Inequalities due to distance from centres of consumption must be minimised by attention to Communications and Freight Charges.

(3) The application of modern methods, and the utilisation of scientific discovery must be energetically pursued and demonstrated in the interests of Agriculture, Fishing and Forestry.

(4) Industries appropriate to the area, and in harmony with the Highland temperament, must be established, and the great part which Water Power can take in this development must be examined to the full.

If the land is to be developed agriculturally to its fullest extent, and a young population re-established, further measures are necessary.

These must aim at permitting the development of local industries and providing travelling facilities to the inhabitants. To attain these ends we make the following recommendations:

(1) The reconstruction of all unclassified roads on the list of highways except in cases where the continued existence of a stretch of road is considered unnecessary by the County Highway Authority.

(2) The reconstruction of Parish and Township roads not on the list of Highways, where this is necessary.

(3) The construction of roads to communities living in isolated districts where no road service exists.

(4) The construction of certain development roads.

[1] Scottish Economic Committee Publication, 1938, *The Highlands and Islands of Scotland.*

We feel that, in order to meet the position, two lines of action are called for:

(1) To arrange that crofts and holdings shall be made into economic units wherever possible and where this is not feasible, to provide auxiliary employment.

(2) To improve the general conditions of life in these rural areas in such a manner that the rising generation may be offered reasonable inducement to remain there.

Industries suitable to Highland requirements may be roughly classed under two heads:

(*a*) those affording full-time employment, of which advantage could be taken by the younger members of crofting groups;

(*b*) those providing part-time, but regular employment which crofters could undertake in addition to their work on the crofts.

It is clearly not possible to dissolve the crowding of people in the Midland Valley stretching from Glasgow to Edinburgh efficiently by the development of one or even more satellites within this region—and it is very doubtful that more than two or three new towns can be developed, through lack of suitable space. If one of the aims of national planning is to spread industry more evenly over the country this needs more drastic measures than the mere loosening of the internal structure of the highly urbanised regions. Let us look at this problem from the other end. Shall the undeveloped and "empty" areas remain as they are? Shall people living there remain excluded from improvement and from taking an active part in the progress of life? It is a moral and an economic necessity to bring industries, and with them, fresh blood and a fresh spirit, to these districts. No romantic excuses must gain the upper hand; the beauty of these parts will not be spoilt if the transference of industry proceeds systematically. Only "private initiative" could destroy it; planned development will increase it.

The Report of the Royal Commission states: "The cost of power and transport is relatively low", when it points to the fact that "industries tend to be located within easy reach of the market" (No. 102). While one can agree with this statement, it is somewhat difficult to bring it into line with the other statement: "where the manufacturing units depend largely for the sale of their products on the local market their relatively close proximity to the retailers who are their customers may be expected to have the effect of keeping down the costs of transport and distribution of the finished goods" (No. 182). This is true in itself; but in this general form it is open to criticism. If the costs of transport are low they cannot exert a decisive influence on the location of industry in close proximity to the market. If they are, however, supposed to be decisive enough to induce

industries to settle in relatively close proximity to the retailers, i.e. the market, they must be, nevertheless, high enough to work in this direction. One may be inclined, therefore, to attach greater significance to other factors bringing about industrial concentrations. In any case, proximity to large markets and the subsequent agglomeration of industries would not be justifiable owing to costs of transport. Distribution in all its aspects is a problem no longer; and if production tends to follow consumption it would lead rather to a splitting up of industrial units in smaller elements than to a massing of industries and to large units. This is another case of the vicious circle and another stimulus to look for new and socially more adequate solutions. An additional reason is, moreover, the fact that hardly any of the large and even middle-sized industrial units supplies only the near-by local market; it tries to expand its supply area as much as possible. "Proximity to market" is, therefore, more or less fictitious; it is true only in regard to some large centres of population as chief markets, but it can be rather unfavourable in regard to the rest of the country. This argument should be considered merely as another way of discussing the relativity and qualified values of the conditions by which we are accustomed to gauge factors of industrial location. National planning will have to develop its own standards and its own conditions. We should try to become more independent of directions derived from the past and to rely more on our understanding of the principles which the future demands.

In this respect, we must admit that the results are still rather unsatisfactory. In spite of the enormous amount of work of many students we are still in the dark and do not see our way clearly. There are no absolute economic values on which to base the redistribution of industry. Hitherto, we were much more concerned with discussing the possibility of planning in general and with devising a machinery for a National Industrial Board than with how and what should be planned. It is only fair to assume that the social planners must have the first word, unless economic planning, and especially industrial planning, is to land in an impasse. This seems, in general, to be the main prerequisite. The other one is the need for plasticity in the industrial structure, so that it can be adapted to social conditions.

How shall we answer the query: are there two possibilities? Yes; there are two possibilities of approaching the problem of industrial redistribution, and both must be applied: industrial research, technological and economic, must go hand in hand with investigations into the social requirements of a sound community life, although the former must be subject to the primary demands of the latter.

TWO PRINCIPLES.

Decentralisation and diversification are the two principles which should govern the practical procedure of industrial redistribution. There is general agreement that both are essential and that both form a coherent whole. We need not discuss, therefore, their significance as the determinants of industrial planning. Only a few factors which seem to be especially important from the point of view of national planning shall be mentioned.

Decentralisation is, in the first instance, a problem of physical spacing. It affects two communities: the one from which industries are to be transferred, and the other which must receive them. In the first case, space becomes available, in the second place space is needed. It is obvious that decentralisation can only be carried through inefficiently if the industrial structure of the " evacuated area " consists mainly of large factory units.

(1) The unit size is, therefore, an important factor. In general, we may say that the larger the number of smaller units available, the better and more easily decentralisation can proceed. H. Ford remarked in an interview:

> There is no point in centralising manufacturing unless it results in economies. A product that is used all over the country ought to be made all over the country, in order to distribute buying power more easily. For many years we have followed the policy of making in our branches whatever parts they were able to make for the area they served. As we grew in understanding, we learned that the making of each part was a separate business in itself, and that the final assembly line could be anywhere. This gave us the first evidence of the flexibility of modern production, as well as indication of the savings that might be made in cutting down necessary shipping.

This statement is the more significant as Ford is usually looked upon as the most outspoken advocate of large-scale units. Of course, there will always be some big industries with a manufacturing process which makes large units imperative; but there is a great number of other industries, especially the light industries, which can be run on a relatively small scale. One cannot refute the contention that the optimum size has been overstepped in many cases, and that growth of the individual establishment was sometimes more a " point of honour " than an economic necessity. A certain degree of redevelopment and of splitting up into smaller units will be indispensable and will also be possible. Smaller units have the advantage of being more easily adaptable to a diversified structure than larger ones. This does not mean that dwarf-units should be created; rather it means that large units

should be restricted as far as possible to those industries which cannot work efficiently or at all without concentrating production in one coherent process. If these special conditions do not exist it seems that the average-sized establishment need not employ a number of workers which could influence the social and economic structure of a community disadvantageously. Although the material is far from being anything like complete, the answers from some industries to a questionnaire, sent out some time ago, appear to indicate that the number of persons employed in the average factory is something like 300–500, and this type would constitute in reality only a relatively small percentage. Moreover, war-time experience may produce interesting results when they can be examined. It might prove that the splitting-up into small dispersed units is not only desirable in a state of emergency but is economically and technically advantageous in the long run.

To quote the report of a County Planning Committee:

> The Director explained that for three years he had been dispersing his industry and that his Company has no intention of collecting 4,000 to 5,000 workers under one roof. He was satisfied that dispersal to small towns was desirable not only from the safety point of view, but in his considered opinion, it ensured greater production and more economical management. He was emphatic on those points, and he offered his services to convince anyone doubting the wisdom of dispersal. He was sure that large employers of labour, particularly in the engineering trade, would not countenance 20,000 or more workers in one factory in the future. Five hundred is the limit. This policy has been followed by the Company, and they have a complete ring of factories with their main works (which in future will house not more than 500 workmen) as the centre.

The problem is, of course, very complicated and full of intrinsic difficulties. There is still need for a lot of detailed research before some tangible results can be achieved. What will happen, e.g. in cases where large units are inevitable and do already exist but where it is difficult or even impossible to add a sufficient number of small units of various types in order to bring about a diversified structure of the community? Is the solution in such a case only combination with agriculture? Yet if this is not possible how can one avoid the drawbacks of economic crises which might hit just the predominant industry? To what degree will it be possible to reduce the influence of localising factors, e.g. by changing over to alternative fuels in an industry like the pottery industry, as a prerequisite of the first order for a redistribution of this industry? It would be very helpful if a definite programme of research could be drawn up together with the

Industrial Research Stations especially in accordance with the needs of national planning. Such a programme would have to consider how the small units of production can best be fitted in a rationalised industrial structure; how the results of research can be rendered accessible to the small producer; how the advantages of concentration can be secured by these small producers without introducing large productive units; and whether it is advisable to group them together in co-operatives on the lines of those of the farmers. These points seem to be of considerable importance, unless decentralisation is only to thin out overcrowded regions or only to produce, at the other end, a sound diversification. The more the small unit can be promoted the better the results of both decentralisation and diversification will be.

On the other hand, it is a fact to be reckoned with that concentration of industrial enterprise is going on; and that this development is something of a necessity. However, we should not make the mistake of mixing up centralised administration and decentralised achievements in the production units. If this distinction can be upheld it will not be difficult to combine the good sides of concentration and decentralisation. The National Resources Committee state in their Report "Our Cities":

> A significant trend . . . is that toward larger corporate units of manufacturing, merchandising, and management. These larger units reflect the swing toward centralisation of financial control, the growth of large corporations, and the development of holding companies. This has introduced centralised and absentee control over local industrial activities, and has made industry more detached from the interest of local communities than was true in an earlier period of greater local self-sufficiency and indigenous enterprise. While on the one hand monopoly to some extent limits the mobility of capital and so hinders efficient and desirable relocations, on the other hand centralised control is likely to influence industrial location to some extent in a more rational direction on a national scale by tending toward a more exclusive emphasis of pecuniary factors and the minimisation of local pride, traditional attachment, and sentiment.

2. Scientific management should play a much greater role than hitherto in the considerations which should lead to decentralisation and diversification. It concerns the regularisation at the unit work place, in the shop as a whole, in the factory, in distribution and administration; and, finally, it finds its expression in the budget as the gear controlling multi-plant enterprises. Scientific management is part of industrial planning on a national scale in so far as it is a problem of "transferring this technique from the plane of the economics of the individual enterprise to

the plane of social economics ".[1] It has proved to be an ever-expanding force which is creating new situations over " ever-wider areas of industrial relationship ". It is a means of industrial stabilisation and, therefore, of social stabilisation and progress; and it can contribute considerably towards adjustment and balance in the midst of change and a lessening of changes caused by unknown forces and towards a conscious control of known factors.

> In bringing any lesser area of industrial relationships under control, it is discovered that control over this lesser area cannot be complete until the environment affecting that area has been brought under a similar control; and second, the technology which establishes control in any particular area so affects relationships with and throughout the environing area as to intensify forces which tend to upset equilibrium.

Thus, scientific management cannot stop—if it is to be really efficient—before it has permeated the whole pattern of industry, for the interaction between the numerous industrial categories has become almost totally complete and very subtle. It is obvious, therefore, that it is not much use advocating industrial decentralisation on a nation-wide scale without trying to bring the various branches of industry up to a corresponding technological standard where they work harmoniously together. The result would be that

> technological unemployment would tend to be reduced to that caused by periodic basic and revolutionary discoveries and inventions, and thus brought to a humanly irreducible minimum. Technological unemployment appears to be caused generally by periodic sudden adaptations and utilisations, stimulated by changes in economic conditions, of well-known rather than new basic discoveries and inventions. Most enterprises follow the line of least resistance and manage to get along with equipment and methods which gradually become too obsolete to be operated in the face of the competition of new progressive plants. This situation forces periodic sudden widespread and radical technical changes. Technologically too many employees are released at one time to be reabsorbed economically.

And as decentralisation and diversification are expected to reduce economic insecurity, these considerations should be made part and parcel of the redistribution of industry.

> Control in scientific management means exactly the opposite to what it means under the ordinary form of management. In the latter instance arbitrary power over—" authority " and individually determined " orders ". In scientific management, to accomplish

[1] H. S. Person, Director of the Taylor Society, Address to the World Social Economic Congress, 1931; also for the following.

a given purpose, the laws of the situation specified in the standards must be commonly observed ; i.e., each co-operator must perform his function in the manner, at the time, to the degree and in the relationship prescribed by the research-discovered best system of joint effort to accomplish the common purpose. " Responsibility " replaces " authority ". Executives as well as workers are subject to the laws of their responsibility. Instead of one looking to another for an " order ", one looks to another for the performance of his responsibility.

National planning has been defined in the first chapter as providing the framework within which the individual can develop a free initiative and a full responsibility towards the community and as rejecting coercion of any kind. If we are sincerely determined to bring about social progress not by dictatorial methods, we can do it only on the foundations of accepted and clearly defined purposes and ends and in an atmosphere of responsibility. Yet this is precisely what scientific management can do in the field of industrial planning, the more so, as it " does not proceed to mechanical engineering until sociological and economic facts have been determined and mechanical and industrial engineering requirements derived therefrom."

There is no limit to the manageable size of enterprises, if scientific management in the workshop and in the administration is fully developed ; but there is a definite point where an effective balance between centralisation and decentralisation does exist. And this is the reason why scientific management has its decisive bearings on industrial decentralisation. One may be allowed still another quotation from the address mentioned above because of its outstanding importance for national planning :

So long as managerial customs, especially absence of standards, compelled the chief executive to make every decision, whether relating to the policy or to specific performance, there was a limit to the effectiveness of central control. But the progressive widening of the area of scientific management points the way toward a solution of the problems. On the one hand planning of research-determined purpose, policies and specific results, and provision of standard, research-determined facilities, can be centralised for any number of unit plants. The planning department of the general administrative offices of a group of integrated enterprises can establish standards of policy, purpose and specific results for the constituent enterprises considered as units, just as the planning department of the general administration of any of the unit enterprises establishes co-ordinating standards for its sales, production, finance, purchasing and personnel departments, and just as the planning department of the shop establishes co-ordinating standards for the unit workplaces in the shop. It should be noted—a fact of transcending importance—that the ability to control huge multi-plant enterprises

through harmonising of centralisation and decentralisation is possible only where there is a preceding progressive development of scientific management in every lesser area of an enterprise ; in unit operations, production in general, merchandising, general administration and human relations. It is the splendid fruit of these basic developments, control of such huge enterprises is dependent on controls throughout every unit of the enterprise ; the larger an area of control, the more essential is control in every constituent unit. Therefore effective rationalisation of an entire industry, or of all industry in a nation, is possible only to the degree that constituent plants are scientific management plants.

It follows from these arguments that central control on the basis of scientific management permits decentralisation of industry within large-scale industrial enterprises ; and that decentralisation need not be restricted to small industrial units which do exist already under the present conditions. It follows further, that small easily adaptable units can be successfully developed and decentralised as parts of a unified organisation run on a scientifically managed basis. Thus, decentralisation and diversification, the latter finding its practical expression in small units, can be successfully promoted by the application of scientific principles, and mass production can be carried through with a relatively small number of workers. To mention only one case which, though being an extreme one, demonstrates the line of potential development very clearly : a plant in Milwaukee produces 10,000 automobile chassis frames per day, 3,000,000 per year, with about 200 workers of whom only fifty touch the product. This small number of workers is being made possible by a staff of 1,000 research engineers ; only a portion of the latter needs, however, to be in the same place as the actual workers. Here there is a practical example of the splitting up of the manufacturing process into small units which would efficiently help towards the diversified structure of a community.

A further argument in favour of decentralised and scientifically run industrial units is the reduction of competitive conditions ; this is important, as it tends to eliminate the race for " a place in the sun ", i.e. it reduces the agglomeration of industry within one region which might, as it actually has done, offer some alleged advantages over competitors who remain outside this particular region. A redistribution of industry integrated on a scientific and, therefore, on an objective basis, and exchanging experiences, would promote uniformity of productive technology and commercial practice ; it would reduce the " routing and scheduling of operations to individual enterprises " and would spread the understanding of the fact that individual management " cannot make an individual enterprise reasonably stable without

regularisation of the environment represented by the industry of which it is a competitive unit." "Routing" in this sense means the analysis of the sequence of operations on a job; and "scheduling" means the assignment of operations to various work-places in accordance with routing.

Thus, one can arrive at certain final conclusions which promise that the operations of industrial society are "yielding the greatest possible good to the greatest number of industrial citizens". This has not been the case hitherto "because of an inconsistency between the basic principle of business enterprise—*individual self-interest and intuition*—and the basic principle of the production technology which that enterprise has come to use—*co-operative integration*". Consequently, in order to carry out a sound decentralisation and to arrive at a well-balanced diversification, the following principles are involved:

(*a*) Research in its various forms as the basic approach to a solution of the multiple problems of management.
(*b*) Standardisation—the specification of purposes, policies, plans, projects, facilities and methods, as the relatively constant factors in terms of which plans may be made and their execution directed, measured and appraised.
(*c*) Planning and control—the organisation and direction of the application of facilities along predetermined lines for the accomplishment of purposes, policies, plans and projects.
(*d*) Co-operation—recognition and acceptance of the laws governing managerial situations discovered by research, formulated in standards and utilised in planning and control.

However, it should be noted, the internal stability of an enterprise established by scientific management is frequently nullified by the impact of forces of the industrial environment outside the control of the management. During the past century, and with rapid acceleration during the past quarter-century, production technology has developed along the lines of increasing mechanisation, and of specialisation and division of labour not only as between individuals in a particular enterprise but also between enterprises and functional groups of enterprises. This has created an increasing interdependence among individuals, enterprises and groups. These organic inter-relationships are so intricate and delicate in their adjustments as to expose the industrial organism at any one of numerous points to maladjustment which is reflected all along the line of inter-relationships. These maladjustments occur periodically, and take the form of a serious stoppage of productive processes and of the distribution of social income, with serious consequences to numerous individuals who are dependent upon that income for maintenance of their standard of living, and in some instances for their subsistence; and with serious consequences also to enterprises which are dependent for maintenance of stability upon continuous transformation of material goods into free capital for reinvestment.

And lastly:

This lack of harmony between the processes of business enterprise and the technological processes of production of utilities may be removed, or at least measurably reduced, by deliberate efforts of industrial society to bring them into harmony; efforts which presumably must proceed along the following lines:

(*a*) Common recognition of the problem and analysis of its causes and consequences.

(*b*) Voluntary establishment of some form of self-government in industry dependent for its effectiveness on the acceptance by individual enterprises, for the common good, of the necessity for greater limitation to individual freedom in business activities than is at present assumed to be desirable.

(*c*) Application of the principles of scientific management developed and validated in the individual enterprise to industry conceived as one vast enterprise in which all members of industrial society are workers and shareholders in common.

3. The driving force which will make decentralisation a reality is electricity. Its effects become evident in the expansion of existing and in the creation of new industries wherever the new structure of settlement makes it desirable. Neither is there any need to concentrate industries nor any justification for developing industries haphazardly where it might suit private interests and without regard to the special kind of community which it is intended to develop; provided, of course, electric power supply is not regarded as being incapacitated by the same restrictions as steam, and that every plant can get it at the same price.

It is sufficient to refer to what has been said in this respect in the previous chapters.

4. The same holds true regarding the need for an efficient organisation of distribution.

Diversification is first of all a social and economic problem. Like decentralisation, it affects, in most cases at least, two communities; it can make the already diversified structure of a place more rational and balanced by moving some industries to other places and/or by bringing in more appropriate ones; and it concerns especially those places which have hitherto grown up lop-sidedly around one predominant industry.

Some notes on diversification of industry follow. They have been drafted by the Demographic Survey and Plan as a first tentative approach to this problem.[1]

It is clearly not possible to lay down any hard-and-fast rules which if observed would produce the required balance and diversification. Every region of the country and every town has its own

[1] Prepared by D. B. Williamson, B.Sc.

special characteristics, its own actual and potential resources, and should have its own pattern of diversification. It is possible, however, to lay down a few guiding principles to which a reasonably balanced region or an appropriately diversified region or settlement should conform. Beyond this, it will be necessary to consider each region and each settlement within the region as a special case whose balance and diversification will depend on its own special characteristics and resources and on its relationships to other settlements and regions.

The important points relating to good balance and diversification may be summarised as follows:

(1) BASIC INDUSTRIES.

Basic industries are those which for purposes of exchange send all or part of their products to markets outside the area (region) of production.

A region and its settlements should have many well-diversified basic industries, e.g. coal, shipbuilding, general and electrical engineering, woollen manufacture, pottery, plastics, certain food stuffs, aircraft, etc.

(2) LOCAL INDUSTRIES.

Local industries are those that are essentially local in character and are therefore found in all communities, e.g. public services, laundries, bakeries, hotels and catering, contracting, building and decorating, etc.

Provision must be made for a due proportion of these industries.

(3) LINKAGES.

The attraction of certain regions for certain classes of industry has sometimes lain in the multiplicity of inter-related industries already existing in those regions. The linkages that bind such regions together are very strong and give such regions marked resilience against depression and marked resistance to disintegration. The linkages may take the form of direct financial and technical association between firms, specialisation on component parts, quick delivery, rapid servicing, etc., but other less easily assessable linkages may be of equal importance, e.g. versatile labour, diversification of business and social opportunity and contacts, family occupation and interest in several industries, etc.

It is the existence of these linkages that makes possible the synthesis of the industries and community into a sound settlement structure. The diversification pattern of a settlement should therefore be built up with such linkages in mind, and also provision should be made in whatever ways are possible for the tenuous linkages in science, art, recreation, agriculture, transport, etc. It should, however, be borne in mind that whereas in the past such linkages have been mainly apparent in the prosperous conurbations, and have served to enmesh new industries into existing concentrations; in the future, linkages, in addition to unifying the structure within the settlement, should be devised to link the settlement into

its agricultural environment and into the diversification pattern of the region.

(4) Relation of Industry to Agriculture.

Certain of the industries in a settlement should derive their raw materials from home agriculture, and conversely certain industries should make products having an agricultural market, e.g. farm machinery, fertilisers, etc.

The distributive services for dairy and horticultural produce should be supplied so far as is possible by the nearest dairy farms of the region, and by local market-gardens, and these should be supplied with adequate water supplies, irrigation, electricity, and other urban services. These measures and the personal interchanges involved will knit the settlement into its agricultural environment.

The possibilities of establishing workers in some form of industry and agriculture worked conjointly should be considered.

(5) Seasonal Balance.

In the past, little or no care has been taken to ensure to workers in seasonal industries alternative employment during their off season. This has resulted in hardship and general insecurity which has resulted in the best workers leaving such employment. A combination of occupations should be arranged to give security and continuity of work. Certain specialised combinations of industry and agriculture should be considered, e.g. workers in certain industrial occupations known to result in impaired health could work part-time in a seasonal agricultural occupation.

(Seasonal industries: canning, sugar beet, hops, etc., building, decorating, etc.)

(6) Shift Work.

A valuable result of diversification will be to eliminate universal shift work in a settlement. This has seriously limited social intercourse in one-industry (e.g. coal-mining) towns in the past. A minimum shift-working population should be aimed at.

(7) Sex Composition of Working Population.

The labour requirements of existing or projected industries must be studied so that due proportions of industries employing predominantly men and/or women may be provided to give good intersex occupational balance in the settlement and region.

(8) Age Composition of Working Population.

Similarly the age composition of the workers required for various existing or projected industries must be known and the industries chosen to give the best occupational and social balance.

(9) Imports and Exports.

Past experience and the present speeding up of national self-sufficiency, e.g. in cotton spinning, make it clear that no settlement

or region should depend to any large extent on any one industry depending for its existence on imports and/or exports. The main import and export industries of the nation should, so far as possible, be fairly evenly distributed between those regions that are adequately served with suitable ports.

(10) EXPANDING AND CONTRACTING INDUSTRIES.

One of the functions of the regional office of the Central Authority envisaged by the Royal Commission will be to study the expansion and contraction of all industries, to ensure a good balance of expanding and contracting industries, and to provide warning of potential depressions.

(11) NEW INDUSTRIES.

Each region should encourage the development of new industries emerging from the laboratory or invention stage, by providing research facilities, " nest " factories in suitable locations, and by other means. The new industries of to-day are the expanding industries of to-morrow.

(12) STRATEGIC SUB-DIVISION.

For strategic reasons various plants are being split up into many parts, e.g. in Parliament it has been referred to one plant which formerly occupied a single site which is now scattered over five counties in 42 separate production units. Such splitting obviously interferes seriously with production, and normally would not be desired on so extensive a scale. But there is no doubt that vital production should be sub-divided, and in any case such a policy automatically tends towards producing diversification in settlements and regions.

(13) LARGE *v.* SMALL PRODUCTION UNITS.

Apart from strategic reasons there are social reasons which favour smaller rather than larger factory units. These social reasons must be given full weight against the short term economic advantages that may result from rapid rationalisation and concentration into very large units.

(14) INTERCHANGE OF TECHNICAL SKILL AND INFORMATION.

Both for the manual worker and the technician it is important that good diversification be obtained with provision for adult educational facilities by means of which skill and experience can be widened, and technical thought " cross-fertilised " by contacts with technicians in dissimilar industries.

(15) INFLUENCE OF SOCIAL CHANGE.

The emancipation of women will certainly be greatly forwarded by the war. It will no doubt be very much commoner for both husbands and wives to work outside the home, making use of nursery schools for the care of children. Should there be marked changes in such direction as this, the sex composition of the potential working population might be appreciably altered.

(16) A Limit to Diversification.

There must be a limit to diversification. Some empirical knowledge of this limit may be obtainable by studying the industrial structure of certain diversified settlements and regions which have been shown to have economic and social resilience in times of stress.

(17) The Diversification Pattern.

From the study of the many general, technical and local factors involved, it will become possible to synthesise a soundly diversified industrial structure for an existing one-industry town or for a new settlement. Such a settlement will be the microcosm of the very obviously diversified world in which we live. The human pattern will be formed by well-designed and well-diversified settlements; such settlements and their rural complements will form the diversified pattern of a region, the nation is the next larger unit, and each nation will bring its talents to the wider pattern of the world.

A few supplementary remarks may be added. The human factor will play an important part in a pattern of diversification; coming changes in the population structure make it imperative that the new pattern is sufficiently adaptable to a changing age composition. The rate of population growth is decreasing until it comes to a standstill in about one generation's time. This means that the number of older people will increase during and especially after this period. This raises the problem of finding opportunities for the employment of older workers still able and willing to work. Consequently, diversification of industry should take this trend into account by providing for industries in every community which offer suitable opportunities for older workers. Further, no social and economic structure of a community rests on firm foundations if it does not also provide all those institutions which are especially needed for the higher age groups, for instance homes for the aged, hostels and hospitals, as parts of a comprehensive social security programme.

There is still another trend which deserves consideration. It is a characteristic of metropolitan civilisation that a certain shift from productive to distributive occupations is going on. This factor has also to be taken into account in establishing diversification in a region or in a town. Finally, diversification of a region as a whole and diversification of each community within this region should be intelligently integrated, for the whole cannot be soundly balanced without a corresponding balance of all its parts and vice versa.

Two New Maps.

Two new maps are needed as itineraries of industrial decentralisation and diversification.

(1) The map of the " reception areas " should comprise existing

towns and villages suitable for further development as well as suitable new and hitherto unoccupied sites. A tentative map is included showing the former category up to 50,000 inhabitants. It does not presume to be complete; it leaves out rural settlements altogether and it does not indicate new potential sites. Yet it might serve as a suitable starting-point for further investigations which should be conducted systematically along the following lines for each potential settlement:

(*a*) What are the main features of the existing structure in regard to the sex and age composition of the population; the occupational composition of the population; the number and types of industries; the unit size of industries; the sphere of influence of the service industries; the relation between built-up and available space.

(*b*) What are the main features of a potential structure in regard to the number and types of new additional industries; the number and categories of people employed in these industries; the diversified balance between the old and the new industries; the possible extension of the service industries; the space needed for the new industries.

Correspondingly modified investigations are needed for settlements in rural areas.

The selection of new sites depends—as already pointed out—on the availability of suitable land, on the systematic fitting in of these new communities in the envisaged pattern of settlement, and on the categories of industries and the number of people to be brought to them.

The ratio of extension and diversification of existing places is dictated, in general, by their functional relationship to all other ones within the same region; the same holds true for the size and diversification of new places.

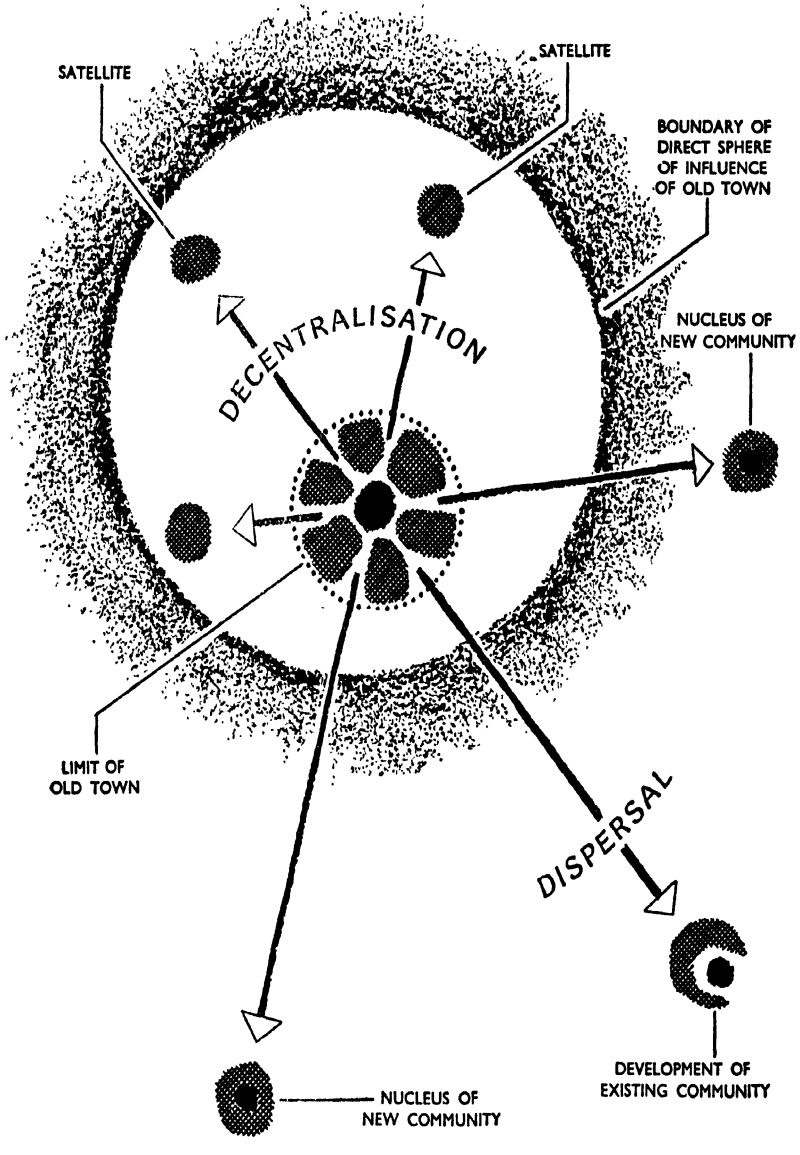
Thus, local diversification must be considered together with regional diversification; and the trend of decentralisation from over-urbanised or lop-sided districts and places to new ones must be directed in accordance with the allocation of people and industries to the respective regions.

(2) The map of the " evacuation areas " should show ill-balanced communities and overcrowded districts and urban places. In some cases both categories will overlap, but it should be noted that decentralisation and diversification are two entirely different factors, even though they are sometimes working in the same direction. Decentralisation might be necessary in places where an adequate diversification does exist because they are too crowded

or too badly laid-out, or for still other reasons. Diversification might be necessary in places where there is no need for any decentralisation, i.e. in single-industry towns. Nevertheless, a map of the "evacuation areas" should clearly distinguish between both trends. There are those communities which are ill-balanced because their industries, though numerous, are too much of the same type, and those which are ill-balanced because they are single-industry towns; both need different remedies. The former type will need some "evacuation" alongside with the "reception" of some industries making for diversification; the latter type may need, in the first instance, the "reception" of additional industries and/or the "evacuation" of parts of the "single-industrial-population" to other areas. The problem is very complex, and is full of latent snags; it needs careful and independent research. A solution must, on no account, be conceived from a local viewpoint; otherwise one is bound to come to conclusions like the following: "The removal of the large factories out of the city has been advocated in some quarters. It presents great difficulties. True, it could be fitted into a long-term regional and national replanning scheme; but considered from the local viewpoint we see in the foreground the dangers of so radical a redistribution of industry and private life, and one that would drag in its wake a great new rehousing problem." It is hard to imagine rebuilding Great Britain without a great and far-reaching redistribution of population and industry; to look at this problem as a "rehousing" scheme, even on the largest scale, is a debasing and dangerous assumption which would, if it came true, greatly help to lose the peace.

The attached map of ill-balanced communities, i.e. communities where more than about 30% of the workers are engaged in a single industry, is the first step towards the compilation of the relevant material. It is merely a suggestive map and still needs many additions.

The industrial pendulum will swing back from the overcrowded districts to better suited urban and rural areas. There is nothing in this change that should frighten us if we carry it through in accordance with a clear plan, with clear principles and a clear vision. Just as the interests of an individual enterprise must be subordinated to those of the industry as a whole, the local viewpoint can be productive only if it is subject to the direction of national planning. Nothing will stop this swing of the pendulum; its first symptoms are evident already to-day. And history should teach us that this evolution is conditioned by forces which are inherent in the relationship of town and country. The redistribution of industry is one, indeed perhaps the most important, means of ending the antagonism between them.



The old over-concentrated town is loosened up by the driving in of green wedges resulting in a considerable loss of dwelling space. This can be replaced either by decentralisation within the direct sphere of influence of the town, creating satellites, or by dispersal beyond the area thereby forming new communities or developing existing ones.

DECENTRALISATION AND DISPERSAL

The Indivisible Plan.

Decentralisation and dispersal are interdependent. They affect town and country alike. Decentralisation should be understood not in the narrower sense of decentralisation of industry but in its broader meaning of decentralisation of settlement—the loosening up of too densely populated urban districts by the development of new, or by the further development of existing, places within the direct sphere of influence of the urban centre which is to be redeveloped. Dispersal, on the other hand, can be defined as the same process but spreading beyond the confines of the area from which the overflow is to be drained. Thus decentralisation proceeds within a narrower space than dispersal; and dispersal begins only where decentralisation ends. Decentralisation is focused on a centre within the compass of which a redistribution of population takes place; it is a decentralising procedure not diminishing the importance of the centre as such, but changing the spatial and actual functions radiating from it. Dispersal, though originating from similar conditions, affects more or less widely separated places; it is a segregating procedure which separates a portion of the population from its old place and creates new mental and material relations to a new environment. Dispersal does not mean that these new or changed existing settlements are dispersed, i.e. in this sense scattered in themselves; only their location in relation to the place from which these new inhabitants come is dispersed. A clear distinction is essential between both these methods of town and country planning if the domain of national, regional and local planning is not to be confused.

Decentralisation and dispersal each have a dual effect; they influence the places, districts and regions from which people go, and those to which they move. Consequently, both concern, in the former respect urbanised, and in the latter respect urbanised and ruralised conditions. It is hardly conceivable that a rural area, in this country, should need redevelopment. On the other hand, decentralisation and dispersal change the structure of settlement in rural and urban areas as far as the outward trends are concerned. It is obvious that these movements, whether decentralisation or dispersal or both, are interrelated, affecting urban and rural areas at the same time, if the redistribution of population cannot be efficiently and exclusively carried through within the boundaries of the urban sphere of influence, i.e. by decentralisation. Thus, the number of new-

comers who can be usefully absorbed in a rural area by dispersal reacts on the number of people who can be redistributed in an urban area by decentralisation, and vice versa. To give an example: a city of about one million inhabitants needs a regrouping of its population which would involve about 200,000 people. Little land is, however, available within a radius of about 30 miles. Only two new satellites can suitably be developed for about 80,000 to 100,000 people. Further, we may assume that only a fraction of the remaining 100,000 can adequately be rehoused within the city itself by internal rebuilding. On the other hand, a certain number of industries intend to move to other and more suitable places, taking with them a corresponding number of workers. For these people there is need to find accommodation elsewhere, outside the immediate sphere of influence of their old mother city. They will have to be dispersed to other regions and especially to rural areas. It might then be possible to settle, say, 70,000 in hitherto not essentially, or not at all, industrialised areas. They would be the core of industrial infiltration into certain rural and semi-rural areas; they would either go to existing places, small towns and/or villages, or they would form the nucleus for one or two new communities. In any case they would contribute towards revivifying and integrating these areas on the lines discussed in the previous chapters. This would be an example of interdependent decentralisation and dispersal.

There are other possibilities: there may be enough space available for the development of even three satellites within a reasonable distance from the mother city, whereas the rest of about 50,000 persons can be distributed under good conditions among some existing places within the urbanised area. This would be an example of pure decentralisation.

Again, there may not be enough space available for new satellites, or at the utmost only for one, and there is no chance of dispersal to the adjacent regions because they are already heavily in demand as "dispersal areas" for other urban districts. In such an instance, a serious situation might arise. Let us assume that only 30,000 people can be accommodated in a new satellite; a further 50,000 can be apportioned to existing places within the conurbation. What about the rest? Shall the programme of redistribution be curtailed? And is it at all desirable to extend existing communities even if their individual structure would not be unfavourably affected except to maintain the overpopulation of the area as a whole? We may even assume that a drastic rebuilding of the city may provide for the accommodation of an additional number of about 20,000; but all this together would cover only 50%. The programme of

redistribution should under no account be curtailed if it has been based on thorough and objective investigations; and it should not be allowed to deteriorate to a substitution of something less bad for something extraordinarily bad, i.e. enlarging the subcentres surrounding the main centre. This situation is obviously a case which can be successfully handled only within the framework of the National Plan, which alone can balance the rival claims of cities on the same regions, or influence the City Council to take a less parochial view.

The two D's—decentralisation and dispersal—are dependent upon the two R's—redevelopment of the urban and reconcentration of the rural structure of settlement. Urban redevelopment means a thinning out, and rural reconcentration means the abolition of scattered buildings which threaten the countryside. The degree of urban redevelopment determines the number of people who are to be moved; the degree of rural reconcentration determines the number of people who can be absorbed. In the first case, space is made available for parks, green wedges and, in general, for a better relation between built-up and open space; in the second case, space is gained by the lay-out of compact settlements, according to the rules of modern town and country planning, for the housing of more people. Both procedures are interrelated like communicating pipes—or at least, they should be so. Planning town and country is an indivisible action; it comprises redevelopment and further development of existing places and development of new ones. All three operations must, therefore, be dealt with together and reciprocally.

It has been suggested above that decentralisation proceeds within a limited space, surrounding the centre which is to be decentralised. In this connection a figure of 30 miles has been mentioned. It should, however, be clearly understood that the spatial extension of decentralisation cannot be determined by so simple a figure, or by figures at all. It depends rather on the functional relationship between the centre and its subcentres, as well as between these subcentres in regard to the whole region of which the decentralised area is a part. Still less can dispersal be determined by some average distance values. The decisive determinant is the configuration of the functions as a whole; and from this point of view it is evident that their extension covers very different distances. For instance, to give two extremes: the distance between home and work should be as short as possible; the distance between home and recreation area may be up to 50 miles or even more in the case of a big city or the metropolis:

An area equal to that occupied by urban development should be

accessible for public recreational activities within 100 miles of each great city.[1]

The patterns of decentralisation and dispersal overlap each other. This is another reason why it is important to base every plan on a clear definition of the various functions, of their interdependence and their sphere of influence. Once the fundamental qualities of each of them are distinctly defined, they can be successfully interwoven if we do it systematically and looking always at the problem as a whole.

The term " decentralisation " is being much used to-day. It confuses the issues involved by mixing up garden suburbs with garden cities, and by " 12 to the acre " with flexible and comprehensive density figures. This kind of decentralisation means further extension of existing cities and suburbias with a little useless garden space. It is just another way of " transforming the urbanite into a suburbanite ". The problem is, however, so important that we must be clear as to its deeper significance. Decentralisation, in general the systematic loosening up of the overcrowded urban areas, is the true expression of our conception of the universe. It is the natural reaction to our changed relation to space and time; and like the rhythmic shifting of industry between town and country it is the inevitable consequence of the previous stages. It is more than just an economic, or even a social necessity. Its discussion might appear rather far-fetched, especially to those who believe in " hard facts "; who are interested only in the " what " and not in the " why ". But the understanding of the forces which produce these facts enables us to deal with the problem with more insight and certainty, and thus to avoid mistakes. While it is not possible to dwell exhaustively on the evolution of this new outlook and on its relation to the changing conception of the universe, it appears equally impossible not to give, at least, a very condensed explanation. Practice and theory share in determining our actions; as Bacon put it: " The roads to human power and to human knowledge lie close together, and are nearly the same; nevertheless, on account of the pernicious and inveterate habit of dwelling on abstractions, it is safer to begin and raise the sciences from those foundations which have relation to practice and let the active part be as the seal which prints and determines the contemplative counterpart."

The evolution of the relation of the town to the surrounding country runs parallel with the evolution of our ideas as to the shape and working of the universe. It begins with the enor-

[1] National Resources Board, " Report on National Planning and Public Works in Relation to Natural Resources ", 1934.

mous walled-in territories like Babylon, within which the area of the State is concentrated, whereas the surrounding country is more like a glacis which can be easily evacuated in times of war. The Greek City State is the first example of a concentrated space, consciously conceived for one definite purpose. As Ortega y Gasset says in his *Revolt of the Masses*: "The rebellious little space of land has been eliminated as 'land', it is a space *sui generis*; it has been separated from its mother and maintains its own rights against her. Within it man, cut loose from every solidarity with plant and animal, creates a realm of his own restricted to itself. It is for this reason that one day the great townsman in whom the sap of the *polis* is flowing with a sevenfold intensity, that Socrates will say one day: I have nothing in common with the trees in the fields, I have only to do with men in the town. The plant-like dissemination all over the land is followed by the concentration of the citizens in the town. The town is the super-house, it is superseding the house and the subhuman nest; it is a more abstract and higher form than the *oikos* of the family. It is the *res publica*, the *politeia*, made up not by men and women but by citizens. A new dimension irreducible to any dimension of Nature, always so much nearer to the animal, is thrown open to human life; and for it these new citizens will give the utmost of their powers. Thus the city originates from its very beginning as a state." The image of the world is likewise limited. It is surrounded by a "wall", in this case a stream. The city is the centre of its surrounding land just as the homeland is conceived as the centre of the world. And what matters still more than the actual city wall is the deliberate limitation of the size of the city and the conscious negation of an unrestricted growth.

In principle, nothing changes till the Middle Ages. The towns remain "rebellious little spaces of land", rationally limited in size and dotted over the country, each with its own hinterland. And the image of the world remains also the same. The Copernican system is the expression of a profoundly changed outlook. Goethe remarks on this phenomenon: "Of all discoveries and conceptions none could have produced a greater effect upon the human mind than the theory of Copernicus. No sooner had the world been recognised as spherical and limited in itself, than it had to renounce the tremendous prerogative of being the centre of the universe. Perhaps no greater demand has ever been made on mankind, for it meant so many cherished illusions were blown away like smoke: a second paradise; a world of innocence; poetry and piety, the expressions of sense; the conviction of a poetic-religious belief. No wonder that no one wanted to abandon all this; that men obstructed in every

way a theory which justified and asked for an unheard-of freedom of thought and magnanimity of conviction of everyone who accepted it." The towns are beginning to sprawl; the city wall loses its importance; the authority of the State is ascending. Within its developing organisation the towns are becoming specialised. Not every one needs to be a fortress of its own; only a few take over this protective function for the whole territory of the State. The town, like the Earth, loses its position as the centre. The perspective view becomes an element of town planning; we should approach it as we look at the sun, now we realise the Earth is not the centre of the universe. Christopher Wren's plan for London is an example of such an approach. To-day, our towns are flowing over into the country, unsystematically, as the expression of the utter confusion of our thinking; for the old is not yet entirely dead and the new has not yet clearly taken shape. The centre of our town has lost all meaning; it is unimportant as a symbolic as well as a spatial centre. Even our biggest cities are essentially nothing else than overgrown small towns, so to speak the elephantiasis of them. They are, therefore, morbid internally and in their outer appearance. They are built as though a provincial had to remodel his mother town into a metropolis without getting rid of his old provincial mentality.

The modern conception of the universe as an unlimited and yet systematic space, and the dethronement of absolute values and their replacement by relative valuations, are leading us away from a world where the balancing power of a centre was dominant. "An Einstein universe is in equilibrium, but its equilibrium is unstable", as Sir Arthur Eddington says, and "the picture of the universe now in the minds of those who have been engaged in practical exploration of its large-scale features . . . is the picture of an expanding universe . . . In a general dispersal or expansion every individual observes every other individual to be moving away from him. . . . It is a general scattering apart, having no particular centre of dispersal." [1] We are living in a centreless time and all our works bear the mark of this fact. In a re-shaped structure of settlement the towns will lose their importance as the exclusive centres on which practically all functions are focused. They cannot expand on the old lines by advancing their boundaries, which are only imaginary and exist merely in the files of town clerks; nor can they extend their sphere of influence *ad libitum*. Other places will take over some of their functions; their growth will be stopped and ultimately redressed. Organised quality will substitute quantitative growth. A far-reaching decentralisation of

[1] *The Expanding Universe.*

the population will result in a systematic unity of the whole area of the Country, without the predominance of one district over the other. And this decentralisation will be "a general scattering apart, having no particular centre of dispersal". An equilibrium will develop, based not on a stable but on a dynamic relationship between the various places and regions, finding its expression in an increased mobility of men, ideas and goods. This, of course, will be a long-term process; but we should think of the long periods during which the towns acquired their distinctive shape when we envisage the picture of the final results whose foundations are being laid to-day. The changes have been immense. Over autonomous cities spreads the authority of the State. Over States is spreading the unity of continents; and over continents is spreading the unity of the world. We are moving away from a world of isolated centres towards a higher centre-less unity. On a smaller scale the same conditions prevail in this country as in all other countries of the world. The ultimate goal of national planning and of decentralisation and dispersal, as its most momentous means, is the unity of the whole country built up on the integration of local, regional and national plans. Both decentralisation and dispersal must be conceived, not with a view towards a centre which appears still to be important to-day, but towards this unity of to-morrow.

One point, however, needs clarification. How many people will be involved in the process of decentralisation and dispersal? In the long run everybody will be affected, directly or indirectly. But what about the more immediate period of, say, thirty to fifty years hence? A number of 5,000,000 to 10,000,000 has been suggested. It is a guess, but it might fall not too short of the actual figures. These will depend on the number of people who are to be regrouped in order to develop well-balanced communities and regions all over the Country. Consequently, this number can be worked out in the course of the necessary preliminary investigations. It is a complicated and comprehensive work, but it is one of the most essential tasks of national planning, for no systematic procedure is imaginable without a detailed knowledge of the number of people involved. This is the general problem; in particular we must know how many will be affected by decentralisation and dispersal respectively; and further how the whole procedure is to be scheduled in regard to time and space. Finally, we must have an adequate knowledge, though it can be based only on estimates, of the future trends of population, i.e. of their numbers, their sex and age composition, the number of households, and the like. It is of no use to muddle through and to develop here and there

a new town or to replace slums by open spaces or to restrict the growth of cities. This would produce only a patchwork of reformative and minor changes; but it would destroy the very foundations of a long term and successful policy.

Regionalism or Administrative Boundaries?

"Regionalism as usually understood involves primarily issues relating to the reform of local government" has been stated in the Report of the Royal Commission. We may take it then, on the authority of this prominent body, that regionalism is a means (1) to be applied to local, not to regional administration; and (2) through which a regional division of the Country is not to develop. The Royal Commission are likely to be right if they assume that the above-mentioned attitude towards this problem is the usual one. But this attitude is a contradiction in itself. Regionalism, rightly understood, aims at the setting up of more comprehensive units than local boundaries can ever provide; it does not consider administrative needs as ends in themselves but only as means to an end; it does not and cannot wait for legislative initiative, which is bound to be "the subject of local pressure and appeals that tend to nullify each other, leaving action itself a dead centre",[1] the more so as no regional representation does exist at the moment which could efficiently counteract local influences. Regionalism need not imply that the unifying power at the centre should be lessened; rather it should mean a creative balance between the central authority and the regional administrations. On no account, however, should regionalism lead to a rivalry between regional interests, thus repeating on another plane the old and detrimental game of local rivalries. It is, therefore, absurd to identify regionalism with provincialism and to praise provincial patriotism as "a necessary factor in the well-being of humanity". Provincialism, in its usual sense, is just one of those qualities we must get rid of as a deadening force; regionalism, in its true meaning, is something we must develop as a creative force. Regionalism is a means *and* an end of the process of decentralisation and dispersal. It is a natural growth from inside; but it cannot be created artificially by imposing the pattern of provinces from outside and from above. A new administrative division should not be attempted before a certain consolidation of the new forces released by a redistribution of population has taken place. Hence, regionalism cannot be framed on the basis of the present distribution of population.

However, there seems to be some confusion as regards the true meaning of regionalism. This might partially result from

[1] L. Mumford, *Regional Planning in the Pacific North-west*, 1939.

the simple fact that the size of the countries where regionalism has been applied or discussed is larger than that of Great Britain, i.e. U.S.A. and France. It is obvious that a country like U.S.A. must apply a somewhat different conception to the term regionalism, for one region might be as large or even larger than the whole of this country. And further, as one of the criteria of regionalism is homogeneity, and as geographical conditions in U.S.A. are homogeneous over larger areas than here, this is an additional reason for some discrepancy in the concept of regionalism. But these differences do not affect the basic problems; they are more a matter of approach. Nevertheless, the relatively small spatial relations of Britain must affect regionalism in a specific way as far as its practical realisation is concerned. For the time being the Civil Defence Regions have been accepted as a suitable basis of a regional division for planning purposes. They have at least the advantage of being not too small. Their areas vary greatly in size and number of people.

These regions might ultimately become the regional division of a new pattern of settlement, although they will need some adjusting to the needs of national and regional planning; but for the time being they should be considered only as an expediency measure and not as a rigid system. They must on no account impede the redistribution of population. They have an entirely fictitious value, the more so as about forty regional divisions exist at the moment which have been adopted by official and private bodies for their respective purposes. This alone shows the implications of regionalism, for it is the expression of the manifoldness and of the different extensions of the sphere of influence of the various functions which make up a regional entity. As long as the relations between town and country have been relatively simple, it has not been too difficult to find a workable size for a region. So it was in mediæval Europe; and so it is still to-day in China, where the towns are centres of a hinterland, one day's journey in distance to and from the town. It was similar, too, in the Colonial Period of the U.S.A., when Philadelphia was the largest city because its hinterland was then the largest, with the most fertile farmland. To-day these simple relations, and with them the easy fixation of a well-defined region, have ceased to exist. Modern means of transport make all boundaries illusory and bind regions together, economically, which are actually separated. The question, therefore, arises as to what is a region. It is evident that administrative boundaries are not often a suitable basis, for they were developed, for the most part, in a time with quite different social and economic conditions from those of to-day. In most cases, the relations between these boundaries and the

Region.	Counties comprised.	Approx. area in sq. miles.	Approx. population, 1931.
1. Northern . . .	Durham, Northumberland, Yorks, (North Riding).	5,109	2,800,000
2. North-Eastern . .	Yorks, (East and West Ridings).	3,697	3,921,000
3. North Midland .	Derby (part) Leicester, Lincs, Notts, Rutland.	5,400	2,614,000
4. Eastern	Beds, Herts, Cambs, Essex (part) Hunts, Norfolk, Suffolk.	6,908	2,303,000
5. London	London, Essex (part), Kent (part), Surrey (part), Herts (part) Middlesex.	1,920	9,336,000
6. Southern . . .	Berks, Bucks, Oxford, Hants, Dorset.	3,801	1,900,000
7. South-Western . .	Gloucester, Somerset, Wilts, Devon, Cornwall.	9,066	2,860,000
8. Wales	Wales and Monmouth.	8,006	2,594,000
9. Midland	Hereford, Salop, Staffs, Warwick, Worcester.	4,818	3,740,000
10. North-Western . .	Chester, Lancs, Cumberland, Westmorland, Derby (part).	5,415	6,714,000
11. Scotland. . . .	All Scotland.	30,410	4,843,000
12. South-Eastern . .	Kent (part), Sussex, Surrey (part).	2,620	1,171,000
		87,170	44,796,000

central town of the region have now become somewhat distorted. If one is to fix new administrative boundaries, one has to face again the problem of how to draw them up. Shall they follow the geographical, or the economic, or the political conditions? As regards geographical—what might be to-day still a geographical obstacle, and as such useful as a boundary, is not necessarily the same to-morrow; or, agricultural districts which hitherto could be marked out very clearly from adjacent industrial districts may change their character fundamentally in the future. Further, the old idea of the hinterland of a town as a sound basis is altogether unworkable. Every regional demarcation is dependent upon the prevailing opinions and the human faculties of the period.

To put the problem in a nutshell, regionalism is the result of functional spacing within a certain area. It is a process of gradual growth from inside this area; but it stretches out over the regional sphere towards other regions establishing manifold contacts with them. Regionalism is a combining force co-ordinating consciously all activities which make up the life of a region. It can be described in the words of P. Geddes as " an experimental problem, that of starting a re-adaptation ". It is instructive to know some of the guiding thoughts on regionalism which direct the approach to this problem in U.S.A.; the experiences gained there in connection with the work for the National Resources Committee will be extremely valuable for this country.

> Of great significance is the culture economy of regionalism through which the decentralisation of people, of culture, and of pathology may be attained in the new frontiers of American life. Here are involved the dilemmas of megapolitan culture emphasised by Geddes and Spengler and the more immediate crises of unemployment and relief in great cities. Yet, again, such decentralisation does not apply only to the metropolitan regions or the planned towns and communities round about the great cities. It takes into account the whole phenomenon of the new mobility of people, the migrations to and from cities. It comprehends movements to and from farms, providing technical ways for the reintegration of agrarian culture. . . . It points to the development of new frontiers of . . . culture, which may provide new centres of health and recreation, of opportunity of urban decentralisation where surplus wealth may be expanded or normal cultures develop. . . . Yet, in the second place, the region differs from the mere locality or pure geographic area in that it is characterised not so much by boundary lines and actual limits as it is by flexibility of limits, by extension from a centre, and by fringe or border margins which separate one area from another. A key attribute of the region is, therefore, that it must be a *constituent unit in an aggregate whole or*

totality. Inherent in the region as opposed to the mere locality or the isolated section is the essence of unity of which it can exist only as a part. Thus, " the regionalist sees the region as a unit, a microcosm of society, a set of factors combining to form a regional pattern ; and believes that these elements can be understood only when conceived as a part of the whole." In this more vital sense urbanism or metropolitanism is not regionalism in so far as urban centres seek their own ends regardless of relationship to other great centres or in opposition to national or rural ends. In agreement with this view, Lewis Mumford points out that " regionalism is the antithesis of false cosmopolitanism." [1]

Lewis Mumford, who can be regarded as the outstanding interpreter and advocate of regionalism, writes in a personal letter :

First, the period of expansion (colonial, capitalist, industrial) is now coming to an end : we are living through a crisis that marks the end of the megalopolitan régime. We have the task during the next few centuries of building up a world order based upon co-operation and reciprocal interests, instead of upon one-sided domination. This fact applies both to national and international relations : resettlement and intensive cultivation of a balanced human existence must take the place of expansion, overspecialisation, and the one-sided pursuit of profits at the expense of life. The passing period of exploitation ignored the fundamental realities of region and community : our planning for the future must recover these essential elements, no longer on the level of habit and instinct, as in the natural divisions of shires and provinces in the past, but on the level of rational insight based on scientific observation and deliberate art. Planning is partly a matter of discovering the actual elements that are at work in a region, creating its special character, modifying its activities, helping or obstructing human desires ; and it is partly a matter of modifying this underlying pattern in the interest of a fuller and wider life that binds local area with a wider world. Just as there is a danger in regional planning of stopping abruptly at some historical or political boundary, and failing to make provision for inter-regional co-operations, so there is the same difficulty in national planning. Hence a national plan for Britain which did not take into account its continental and world-wide relationships will be inadequate. The overgrowth and over-expansion of London, which was originally deliberate, can only be rectified ultimately by changing the goals of living : what I have called the replacement of a power economy by a life economy. The present war has made a very powerful contribution here ; and the financial poverty that will follow it gives an opportunity to plan permanently in terms of better conditions of living for every stratum of the population. A regional plan, in other words, is a focus of local forces, moving outwards, and of world forces, moving inward upon the local region. The second large point

[1] H. W. Odum and H. E. Moore, *American Regionalism*.

I would make is that every plan is both a summation of what already exists and a plan of further action: hence, to be realised, it must meet the needs of the people affected and bring to its fulfilment their willing co-operation. This is not just a matter of good technical organisation or adroit political leadership: it is a matter of education. Individual acts must be conceived as parts of a common pattern; and the knowledge of regional history and regional geography, as well as the habit of working together for a common local objective, must be established in the life of the youngest school-child if larger designs are to be effectively accomplished. How much capitalism owed in its development to the educational system that accompanied it: the narrower, abstract, life-denying curriculum of the three R's, supplemented by the drill and discipline of the dead languages for the upper classes! The planning of a common life, based on cultivation instead of exploitation, on co-operation rather than on predatory methods and class-domination, requires an education equally wide—and equally in conformity with our new designs of living. A civilisation going through such a crisis as our present one is will not be saved by little, half-hearted changes: the difference between the twenty-first century and the eighteenth will be as radical as that between the sixth century and the second A.D. in the history of Rome. The more boldly we face that fact the more likely it is that we will have a fresh resurgence of life, rather than a continued disintegration.

These explanations give, of course, only a very condensed idea of his thoughts expounded in his book, *The Culture of Cities*; but they help to put the problem of regionalism in its right proportion to the greater issues of our situation in general.

The National Resources Committee have outlined the acknowledged factors in regionality as follows: [1]

Present accepted definition of region.
Decentralisation of national planning and governmental functions.
Political divisions.
Administrative convenience.
Functional divisions.
Physiographic conditions.
Development plans and programmes.
Economic structure.
Metropolitan influence.
Cultural structure.

The concept of a region should be determined, first of all, by social considerations. This postulate has not yet been accepted as the principal basis of regional planning; but this fact should not prevent us from making the social point of view the keystone of it. Professor F. Boas, the eminent anthropologist, gives a clear critique of this previous phase of regionalism:

[1] "Regional Factors in National Planning and Development", 1935.

> Political theories have also been built upon the assumption that single forces determine the course of cultural history. Most important among these are the theories of geographical and economic determinism. Geographical determinism means that geographical environment controls the development of culture; economic determinism that the economic conditions of life shape all the manifestations of early culture and of complex civilisation. It is easy to show that both theories ascribe an exaggerated importance to factors that do play an important part in the life of man, but that are each only one of many determinant elements. The study of the cultural history of any particular area shows clearly that geographical conditions by themselves have no creative force and are certainly no absolute determinants of culture.

Planners must understand the manifoldness of a regional intertexture, the factual meaning of which is embodied in the human beings who are living together in a region. They alone can give the answer, and they alone can balance the divergent interests which are operating in the reshaping of their environment.

The following is based on the Staff Report to the Pacific Northwest Regional Planning Commission, which in their turn had to report to the National Resources Committee. This Staff Report may be considered as by far the best practical approach to regionalism and regional planning applied to an individual case. It is of general as well as of special value for national and regional planning over here, particularly in connection with some of the regional reports and schemes which have been prepared before the war. These, however, will need an adequate adjustment to the conditions which the National Plan intends to develop; and these adjustments will have to be drastic in some cases.

> It seems that three fields of problems exist to which integrated social science may make a regional approach. (1) Political science is interested in the problem of administrative control and regional autonomy, of government in business and the regional economies of national policy and sectional interests, in the whole question of centralisation, federation, and political regionalism. (2) The study of the interaction of man and nature, the erection of the regional economy within the scaffolding of nature and material culture demands the best efforts of geographers and economists alike. Here regionalism implies the test of human adequacy to master the resources of its region and develop thereon a distinctive and competent culture. (3) In its sociological aspects regionalism derives from the study of society as folk phenomenon. In such case the delimitation of the regional society will be shown by its folkways and its extra-organisational and extra-legal patterns, regarded not as survivals but as functioning units in an on-going provincial culture. Here the nearest analogy is that of the anthro-

pologists' culture area. The sociological region is regarded as definitive of living, autonomous cultures subsumed within universal western technology. Regional studies as here envisaged afford backgrounds against which general social theory may be tested.[1]

The specifications for planning a region have been outlined as follows:

First, it should embody those characteristics which are the requisite of true regionality in general, e.g.:

(1) The area should possess the maximum degree of unity, homogeneity, and cohesion.
(2) Its territory should be contiguous and as compact in outline as possible.
(3) It should be large enough to embrace all territory containing generally similar problems and resources.

Second, it should be so constituted as to meet the specific needs of planning, as follows:

(1) It should include all territory containing a major combination of resources, i.e. it should be an economic-natural unit in general terms.
(2) It should include whole problem areas and not partial areas.
(3) It should include a total areal pattern of culture and works and should not cut across such patterns.
(4) It should be so delineated as to conform to existing regional consciousness and sentiments.
(5) It should possess regional identity.

Homogeneity can be regarded as the primary characteristic of a region although complete homogeneity hardly exists in any region. No region of Great Britain is economically and socially self-sufficient; the web of contacts spreads from centre to centre all over the country.

Always there are radial lines of intercourse from any given population centre which thrust out long filaments to distant centres far away in the heart of other regions. . . . On this account the problem of delimiting regions, especially when linked with the question of political agencies through which regional interests must be expressed, defies precision.

The following quotation is given in full length because it has its special bearings on the problems which are under investigation in this country, and because it appears that research in the social implications of national planning is not keeping pace to a desirable degree with the work of the geographers.

To the geographer the term seems particularly to mean sameness in character of land and physiographic features. Behind this idea

[1] R. B. Vance, "Region and Regional Planning"; in the *Human Side of Social Planning*, edited by E. W. Burgess-Herbert Blumer.

lies the belief that sameness in land characteristics requires similarity of use and cultural habits growing out of land use. The ultimate test of homogeneity, even from the geographer's point of view, is therefore, a psychic quality. That quality is expressed in the range of knowledge, skill, and habits required to exploit the land, and to carry on the supplemental economic activities which the area requires, that grow out of the particular types of agriculture, or mining, etc. Men in a region of physical similarities will understand one another, since their way of life, their difficulties and the possible escape from difficulties will be very much the same. There is a common universe of discourse which is basic to co-operation in economic activity, in government, and in the many social situations, requiring the pooling of many minds. So runs the implied thesis of the geographic concept of regionalism, stated rather baldly. Few geographers would put it so baldly to-day, because they are aware that geographic facts do not fully determine human behaviour.—Let us notice certain qualifications to this perhaps oversimplified geographic view, which we must keep in mind as we look for determinants of regional boundaries. Here we find the economist's notion that homogeneity tends to develop where there is intensity of economic intercourse. Constant contact between people living in areas quite distinct in the character of land and its use may develop because of economic specialisation. This requires reciprocity between the areas. One furnishes a market for the other. One fabricates the raw materials of the other or acts as a collecting agency for export to distant regions. Banking and credit relations develop out of these economic facts that constitute a nexus of great strength—however irksome at times. The artificial creations in transport and communication break through the natural barriers that in a simpler civilisation made regions much more clear cut and closely tied to land use differences. . . . A further limitation to the geographic approach to regionalism is suggested by the sociologists. Two dissimilar land areas that are adjacent may be given a feeling of oneness by elements of culture transcending economic facts or overlaying economic ties. Commonness of religious outlook is such a tie. The intellectual influence of metropolitan centres penetrates into a wide hinterland. If the large cities are in one area, with their daily press, their institutions of a higher learning, medical centres, musical and artistic institutions, there may yet radiate an influence that penetrates long distances into adjacent but physically dissimilar sister regions. It should be borne in mind that the test of homogeneity for regional determination, from whatever angle we approach it, is in final analysis the behaviour of people. We need therefore to look for similarities of living habits and standards, similarities of knowledges and skills required to solve their economic difficulties (in which the conservation and utilisation of natural resources loom very large), unity of religious outlooks, and expressions of feelings of regional unity. As incidental clues to some of these elements we shall look for physical (e.g. transportation) and institutional (e.g. banking) ties that act as canals for an intense social intercourse.

Several tests of regional homogeneity may be applied " by examining a few factors which would give a clue to the economic similarities or dissimilarities, to political cleavages or cohesion, and to the general cultural likenesses and differences ". They concern activities of different kinds within the test region, which must, however, be valued in their totality and not as being juxtaposed. Among them are agriculture and industry, of course. As pointed out in the previous chapters the unity of the agricultural-industrial pattern of a region will depend on the redistribution of industry in general, and, in particular, on the linkages between the various industries, on the one hand, and to agriculture, on the other hand. Further, three kinds of direct-trade relationships are investigated as tests: the movement of motor vehicles, the most important banking ties, and the areas served by branches of two large mail-order houses. All three, correspondingly applied, can serve here also as a good basis. Maps should be prepared showing the relevant data. These economic tests can usefully be supplemented by corresponding evidence of cultural relationship, also presented in map form. Among them are the sphere of influence of educational institutions, especially of higher learning, measured by the geographical distribution of their students. Another test is the variation in religious affiliations. Still another one, relevant to cultural as well as commercial relationships, is the number of long-distance telephone conversations. The circulation of daily newspapers can serve as a measurement of the influence of metropolitan areas on the surrounding territory.

Regional planning as a political function needs data relevant to regional political cohesion. This can be supplied by an analysis of the votes of Parliament over a period of, say, one generation, although a very careful scrutiny is essential, especially with regard to the urban and the rural electorates. It might be corroborated by a mass-observation test and a Gallup poll. Finally, traditional bonds and customs might provide a suitable field for a test, although we should not over-value them, for the past is, after all, something which must give way to the present and the future. The Staff Report concludes " that the foundations of homogeneity or cleavage between sections " of the same region " cannot be adequately discovered without going beyond physiographic, climatic, and economic criteria "; and that the planning boards concerned " with fortifying the tendencies that make for a wider sense of community feeling might profitably explore the cultural facts more fully."

Regionalism understood in this broader meaning is a vitalising factor of first importance and, being the connecting link between national and local planning, has to play a decisive role in the

process of decentralisation and dispersal. Its factual expression is the regional structure of settlement as produced by functional spacing. Functional spacing leads to two different though closely interdependent results: it assigns certain functions to every individual community, thus giving it a special character; and it balances this distribution of functions among the individual settlements of the region. In this way, every local authority will know its place in the National Plan, i.e. whether they have to plan for further development, or for re-development, or for stationary conditions, each possibility according to the number of people who are to be the object of these plans respectively. It has been obvious for some time that local plans were held up, and rightly so, because clear guidance was lacking in this respect. This practical issue illustrates once more the necessity of a concerted effort to proceed with all phases of national planning simultaneously. The slightest neglect of the connecting link, "regionalism", must lead to the breakdown of the whole apparatus. It is sufficient to ask: how can the functions of a town be clearly defined and allotted if one does not know the extent of the region which they must serve? This principle is, in reality, a complete break with the past, for it implies that the number of people we *want* to apportion to a locality or to a whole region under the best possible conditions is the determinant, but not the number of people we *can* or *must* allocate in order to extract the highest returns from the land. Thus, a flexible gradation of the settlements within a region is possible, which should be laid down in a detailed density map for each region as one of the basic requirements of national planning.

In the chapter on agriculture reference has been made to a tentative table of space relations between settlements up to 30,000. Certain criticism has been expressed as regards the distance factor. However, it may be regarded as an attempt to arrive at some theoretical conclusions on the basis of which a system of functional spacing could be developed. Except for some very limited purposes this simple method of "spacing" is not in accordance with genuine functional spacing. It is pertinent to point out that neither the size of a settlement nor its number of inhabitants nor its distance from the next settlements can determine the functions which it must exert. On the contrary, the functions are the factors which determine size, distance and number. The distance between settlements, even between such of a similar type, cannot be regulated by so primitive a criterion as the time needed for covering the way between them. Such an assumption belongs to the age of palæotechnics and neglects the intricacy of the social and economic structure of to-day. I even have great doubts that settlements

with the same functions, especially with the same central services, can be equally spaced from each other. This suggestion might appeal in theory, but the dynamics of life interfere with such schemes worked out on the drawing-board. Moreover, an area may have been held together as a unit through small local public utility services such as gas, electricity and water undertakings: where these services become part of a wider regional public utility organisation, the self-consciousness of the smaller area decreases. There is some propaganda going on in favour of a theory which reflects these ideas of hierarchical gradation where each rank controls those below it. Applied to the structure of settlement such a hierarchy of communities would be just the opposite of everything national planning stands for. Co-ordination would be replaced by subordination; and some "ranks" of settlement would be excluded for ever from a lot of vital facilities, for no other reason than because they are just not in the assigned "rank". Such an approach appears to run counter to all essentials of democratic planning. It has something of totalitarian organisation which tries to press life into a strait-jacket. If only one single community deviated from this rigid system the whole edifice would break down, for the functional inter-relationship between the various settlements would be de-balanced. We must look at the region as a whole and lift as many services as possible on to a regional basis. This would mean an equal distribution of some basic services among all settlements of the region. It would also alter the relationship of some other functions, and it would provide a flexible framework for the complicated interblending of the many expressions and needs of modern life. The range of the distribution of goods and of the mobility of man will increase considerably, especially in a systematically planned structure of settlement. This results automatically in a disintegration of the whole theory, as most of the settlements of "lower rank" would disappear and others would be "promoted". In general, it is impossible to base the new regional pattern of settlement on several networks each representing one "settlement rank", i.e. each scale of mesh differing from the others according to the higher or lower ranks to which it appertains so that the network of the highest ranks, so to speak, of the generals among the communities, has the largest scale of mesh. What is wrong with this theory is that it has been built up on the assumption that settlements with the same degree of central services can be equally spaced from each other. In the previous chapters it has been suggested that investigations are needed into the sphere of influence of the various functions of a planned environment. The application of these findings will provide a sounder foundation for a new

structure of settlement. There is no such thing as an absolute standard for the extension of functions; the potential and the relative extensions are important as two extremes between which different types, but not hierarchical ranks, of settlement can develop in accordance with the physiographical, the social, the economic and the distributional influences.

In conclusion, regionalism aims at a new inter-regional balance of internally homogeneous regions. It intends to do away with the over-specialisation of a region, with the dictatorship and the imperialism of the big cities, and with the conception of a region as the mere hinterland of the megalopolis. Sound regionalism would reject the idea that only the linking together of the urban communities is important, whereas the countryside lying between them is just a passive interspace and can be treated under the heading of "rural preservation". Regionalism is a living force which cannot be fettered by some administrative boundaries. The changing extent of decentralisation and dispersal might break all limitations. Administrative boundaries should be considered as what they are in reality, as mere appliances of the administrative machinery. And this machinery of the State is, after all, needed only for keeping the wheels of society running. It does not and must not create a community if planning is to be democratic planning. It is the task of regionalism to promote a community. Thus, in regional planning boundaries should be imaginary. For some practical purposes we must make use of them, but as instruments only, not as ends in themselves. Professor Luther Gulick ended his address to the British Association on "Large-scale Planning as illustrated by the Tennessee Valley Authority" with the following observations:

> (1) Definable regional problems requiring novel and integrated treatment yield more readily to regional agencies of planning and execution than to central governmental agencies. (2) The purposes of a regional authority require clear but broad definition and broad grants of power from the central political authorities. Selection of methods, the co-ordination of details, the subdivision of budgets, must be left in the broadest terms to the regional authority so that it may have a free hand in experimentation, invention, and the full use of technology and science. (3) Planning, i.e. the co-ordinated development of policy within the objective set, is the foundation of success in such an enterprise and must be woven into the process of administration. (4) Such planning is not only compatible with a democratic system of multiple parties, free elections, free criticism, free discussion, free enterprise and private capitalism, but it is essential in releasing the energies of freely co-operating individuals and governmental and private corporations in fulfilment of plans and objectives. (5) The greatest contribution of such a regional agency

is in planning, co-ordination and leadership. Its powers, organisation and personnel should be chosen to fit these concepts.

THE FUNDAMENTALS OF PLANNING TOWN AND COUNTRY.

This part deals with planning in town and country; but it does so only as far as planning on a national scale is concerned, and as the problems involved find their factual expression in a creative demobilisation as the initial stage in the National Plan. It has been suggested that something like a textbook of town and country planning should be written. Standard rules should be worked out according to which local authorities could draw up their plans in detail. As a very enthusiastic expert put it: you should tell them exactly how to lay out their streets, where to place this and that building, where to place monuments, etc.; the best would be a grammar or a manual of an elementary character. It appeared that he had something in mind like a ration book from which it would be easy merely to cut out the right coupons and every local authority would get what it wanted, and this would make a direct approach to national planning. He was labouring under a slight misunderstanding. However, this attitude is unfortunately typical. It proves that national planning is still being looked on as a kind of town planning, and that even town planning is being considered rather as a jig-saw puzzle where a lot of details need only to be put together in order to get the whole picture. In other words: first the details, and then the whole! But such an empirical approach, based on detailed "facts", without any regard to the conception of the configuration in its entirety, is more than useless; it is dangerous. It leads to a mere multiplication of details and never to anything like a whole. We will, therefore, desist from compiling such a textbook and stick to our original intention, i.e. the approach from the top as the more promising approach to national planning.

England was one of the first countries to recognise the necessity for some administrative influence upon the housing conditions. The actual result was, however, not satisfactory because the regulations were too timid and left too many loopholes. On the other hand, the early Town Planning Act was also only a very restrictive beginning which did not alleviate, much less improve, the existing conditions. Three periods can be distinguished since about 1800. Till about 1840 bad conditions are allowed to develop; from 1840 to 1890 some reforms through sanitary and housing acts are attempted. From 1890 onwards a certain trend towards influencing local authorities to work out suitable plans for their towns can be seen. It has to be admitted that England, as the first country that became indus-

trialised, had also to bear the brunt of these experiments. Quite apart from the ruthless neglect of human needs, the industrial revolution and the following period were not yet capable of developing a machinery which could cope with the problems produced by the crowding together of great numbers of people. This legacy of the past cannot be removed by trifling reforms. Only the boldest actions can create a new Britain, where no longer " the drab surroundings of the dwellings of the workers contrast harshly with the brighter aspect of those pleasanter places where the profits and the mining royalties are spent ", as Hugh Dalton put it.[1] All housing and town and country planning acts are bound to be ineffective if " private initiative " is not made an obedient servant of the commonwealth. Christopher Wren had the same experience when working out his plans for a better London : " Practicability of the whole Scheme without loss to any man, or the Infringement of any Property, was at that time demonstrated, and all material objections fully weighed and answered ; the only, as it happened, insurmountable difficulty remaining, was the obstinate averseness of great part of the Citizens to alter the old Properties and to receed from building their Houses again on the old ground and Foundations, as also the distrust in many, and unwillingness to give up their Properties, though for a time only, into the hands of Public Trustees, or Commissioners, till they might be Dispensed to them again with more advantage to themselves than otherwise was possible to be effected . . . and although few Proprietors should happen to have been seated again, directly upon the very same Ground they had possessed before the Fire, yet no man would have been thrust any considerable distance from it, but been placed at least as conveniently, and sometimes more so, to their Trades, than before. By these means the opportunity was lost of making the new City the most magnificent, as well as Commodious for Health and Trade, of any on Earth." [2]

But let us be honest. This failure of town planning—country planning was practically non-existent—is a symptom of our time. Town planning, like architecture, pretended to be, and was as a matter of fact, " realistic ". But this " reality " meant nothing else than the development of some sort of a plan out of individual parts. It was far from producing a real unity in which every part had its proper and clearly defined place. It is an amorphous higgledy-piggledy. And though there is general agreement as far as these negative facts are concerned, the positive way-out is still obscure. If one looks at recent town planning schemes the black-out seems still to be total. Mostly, they

[1] In Th. Sharp, *A Derelict Area*, 1935.
[2] Christopher Wren (Son), *Parentalia*, 1750.

represent the overflowing sentiments of a Don Quixote dreaming over his drawing board. Some " semi-circular treatment should form a pleasant feature " ! It will need a hard bump to bring these people down to earth. Such a bumping shock might be a surrealistic picture. Very far-fetched ? No ! Not in the least. Let us read carefully the following sentences and apply them to town and country planning correspondingly :

> Any division of the total human personality is equally arbitrary and therefore an idealistic preference. If reality is to be our aim, then we must include all aspects of human experience. The super-realist is profoundly conscious of that lack of organic connection between art and society which is characteristic of the modern world. He sees that fundamentally the fault lies in the economic structure of society, and he believes that no satisfactory basis for art can be found within the existing form of society. Surrealism possesses the capacity to pass from the static to the dynamic, from a system of logic to a system of action. When we use phrases like the totality of a social system, the integral pattern of culture, we are apt to deceive ourselves and to falsify our logic by imagining an abstract stable structure. But in its concrete reality this body is a bundle of co-ordinated activities—limbs, muscles, cells—all of which are in movement, and not one of which can move without affecting immediately or somewhere in a line of successive movements, the rest. The notion of an art, then, divorced from the general process of social development is an illusion ; and since the artist cannot escape the transformation of life which is always in progress, he had better take stock of his position and play his part in the process. If he believes in the reality and the importance of artistic activity in itself, he must see that that activity is integrated with the other social activities which constitute the active totality of social development.[1]

Even if academicians and their followers do not understand the meaning and the truth of these implications, the fact remains that ideas about town and country planning are changing, and that new fundamental principles are taking shape all over the world. The attitude of some people reminds one somewhat of the stand of the Church against Galileo's insistence that the earth was revolving around the sun. Although it is not known as yet that the Church revoked its enforced dogma, " it moves all the same ". Neither can town planning be defined as the art of building, of transforming and of laying out the towns to the best of their convenience according to the rules of æsthetics and sanitation—what a poor conception !—as the Académie Française defines it and as it has been only too generally accepted. Nor can country planning be summed up as " rural preserva-

[1] H. Read, *Art and Society*, 1937.

inertia prevented us from leaving this beaten track. Density, the apportionment of a given number of people to a given space, must be conceived in three dimensions.

Now, let us look at the fundamentals of town and country planning in practice and in the light of these aspects. Three lines of action are instrumental in the planning of new and in the reshaping of existing settlements. They are:

1. *The splitting up of the whole area into sections.*
   The method: *a system of* **linear** *arteries.*
   The result: *the primary grid of green belts and roads.*
   The functions: *recreating and distributing.*
2. *The differentiating of these sections among the main categories of use.*
   The method: *a system of* **spatial** *zoning.*
   The result: *the organism of residential and non-residential districts.*
   The functions: *housing and working.*
3. *The subdividing of these districts into units.*
   The method: *a system of functional* **spotting.**
   The result: *the secondary grid of open spaces and streets. The grouping, lay-out and internal structure of the units.*
   The functions: *recreating, distributing, housing and working.*

The main characteristic of this procedure is progressive subdividing as a means of obtaining the greatest possible distinctness between the different parts of a settlement, and consequently between the different functions. This is in sharp contrast to the hitherto prevailing approach, which produced the lamentable mess of our towns just for this lack of clarity and for the general predilection for "syntheses". All three methods must, of course, be dovetailed if the final result is not to fall short of an ideal solution; and all three must be applied to urban and rural settlements correspondingly.

What do these fundamentals mean in practice?

1. The grid of the *main parks and parkways* is the first step towards a rational tidying up by cutting the whole amorphous mass into clearly separated sections. The flight from the central districts to the periphery has resulted in the mushroom growth of suburbs which, in spite of all their disadvantages, can offer, at least, a little sun, fresh air and open space. If municipal authorities want to prevent the internal decay of their communities, especially in the face of an approaching population standstill, they must give them pleasanter places to live in. Their foremost concern should not be the extension but the improvement and thinning out of their localities. The *continuous* park system is one of the means towards these ends.

But it must be continuous, it must be comprehensive, and it must form the backbone of a long-term urban improvement. It must do away with the suburban mentality, either by abolishing these undesirable appendices, or by integrating them into the reorganised structure of the whole urban area. The park system can bring the good sides of the suburbs to the inner wards and induce people to move nearer to the centre of urban life. It is, methodically applied, an essential factor in reducing travelling and eliminating its detrimental effects upon safety and health.

The park and transport systems, as far as the main arteries are concerned, belong together. Bearing in mind what has been said on this subject in previous chapters, here are one or two additional points.

A continuous and spacious park system cannot be developed as a green belt which affects only the peripheral circuit of a community. The term "green belt" must, therefore, not be applied to any other form of open space. The green belt is the "invisible wall" surrounding our settlements and limiting their growth. It is a "wall" also against encroachment by speculative builders. L. Mumford mentions the example of a garden suburb where no green belt was established. This failure invited "the speculative builder to creep up to the very door of the community and fatten himself on the values created by good planning, whilst lowering the values of the neighbouring property." [1] On the other hand, green wedges seem to imply a radial lay-out focused on the centre of the town. It might be appropriate to drop this terminology altogether. Despite its obvious advantages, the green-wedge principle is a remnant of the old conception of a town where the centre had still a real significance as the seat and symbol of the Church, the Guilds or the prince. To-day the centre has lost its meaning; and it will lose it still more when the splitting up of the urban concentrations into clearly defined districts and units becomes a reality. To-day, money is the symbol of the central district of a city with its banks and commercial buildings. But unlike all former powers it runs through a narrow network of channels to every house, to every flat and to every workshop of the community. To the old centre belonged the fictitious or actual circumscription which endowed its inhabitants with a feeling of steadiness and unsophisticatedness. This limitation has been overcome. The attractive power of the centre has lost its hold over the other parts of the city, which flow over into the surrounding country unchecked and unsystematically.

In our time this process has been reversed. The country, and with it sunshine, fresh air, trees, flowers and open spaces,

[1] *Whither Honolulu?*, 1938.

does not only penetrate into the urban districts but it must pierce through the whole of the urban area right up to the other side of the permanent belt. It must not be checked by the denser building of the interior parts nor be restricted in its spaciousness. Nor would it be desirable to modify it into some discontinued squares with some trees and much pavement. In any case it will be more appropriate not to stick to the radial lay-out of the park system but to use it according to the special conditions of the individual community.

For the moment we are dealing with the primary arteries in the hierarchy of the parks, parkways and open spaces of all kinds. There is no reason whatever to treat the units of the business district in any other way than the residential and industrial units. Their internal structure will be traversed by the secondary park system. The first one has the task of separating the different zoned districts. It passes along the district boundaries surrounding them like a frame. If we agree to this principle we should not speak of green wedges but of green arteries, thus expressing the flexibility of the whole system.

Parks are public utilities. The acquisition of the necessary land must not be impeded by considerations such as " will it pay ", or by unjustifiable compensations. Here again the imperative need for public ownership or an efficient control of the land must be stressed.

> Expenditure on these new items in the municipal budgets has gained wide public approval : they represent an individual demand which the unaided individual is quite unable to make economically effective. The increasing part played by these collective utilities of culture is due to the fact that goods which were once—like parks themselves—considered the luxuries of a ruling minority have now become the necessities of daily life for the mass of the population. This change represents, not the passing caprice of fashion, but a profound re-orientation of life : it comes about as the result of high taste and intelligence. Such collective consumption is a true index of the culture of a country. In general, one may look to relatively less capital going into profitable productive enterprise and more going into permanent civic goods : one may look toward a narrowing of individual demands and toward greater opportunities for collective enjoyments and satisfactions. Instead of an automatic expansion of the productive mechanism, one may count upon a steady expansion of the consumptive mechanism, as population approaches stability.[1]

I deem it important to emphasise the ideal side of this problem because it has hitherto been underrated. I must ask the reader not to be impatient. The following sentences will throw more

[1] L. Mumford, *Whither Honolulu ?*, 1938.

light on the indispensability of planning the park system on a large scale. Every settlement is an organism which satisfies the material as well as the ideal needs of the population. The atmosphere, the mental and sentimental influence of our environment, can create conditions which are as essential to our well-being, even more essential than the satisfaction of our material needs. Verdure interspersing the town and within easy reach, and, if possible, within direct view, of every inhabitant resembles the keynote of a polyphony. It binds the whole structure together; it vitalises the atmosphere of the town with a new spirit; it blends the rhythm of town and country; it brings the eternal change of Nature to the townsman and the experience of Nature's birth, growth, renewal and death. This "de-urbanisation", affecting the whole area of an urban settlement, will make the townsman feel that there are still other values than the suffocating smell of the motor-car and the speed of the traffic, or the stone walls of the cañons—called streets. If intelligently used, verdure is a new and creative element of town planning; in combination with other possibilities—which will be discussed later—it helps to loosen up the lifeless rigidity of the endless rows of houses, and to replace it by the lively contrast of the houses and the green. The uninterrupted fronts of houses are also a legacy of the past. The modern architect will operate with smaller elements and use them more freely and with greater diversification. Houses of various kinds can thus be co-ordinated: higher houses surrounded by open space can alternate with small houses; short and long rows of houses can be arranged parallel to and at right angles with the main streets; or they can be laid out in echelon or like a saw in order to get the highest degree of air and sunlight. All this leads to a kind of "atomization" of the compact masses of houses. The old appearance of the street will disappear. It becomes a mere traffic *ribbon*. The houses detached from, though related to, this traffic ribbon, make room for open spaces and trees coalescing with the verdure-lined streets. Thus, the system of parks, parkways, open spaces, trees, bushes and flowers has a dynamic influence on the existing structure. It creates a new and spirited atmosphere; it helps to improve housing conditions; it separates the restless function of traffic from those of housing and recreating whose main requirements are quietness and good air. "The cult of the street" which has dominated town planning in the past will come to an end. The discovery of the third dimension and its practical application will result in a considerable gain of open spaces, which can be used almost entirely for parks, gardens, playgrounds, in short for recreation. Every urban settlement of the future can be a garden city.

Some brief extracts follow from L. Mumford's *Whither Honolulu?*, which deals especially with Park Planning.

A weakness of a vague programme of park development is that, with each area crying for special attention, with each recreation purpose demanding its special tribute, it is difficult to put through any single job systematically. One of the weaknesses in urban psychology is that the city man, in our day, has accustomed himself to dealing only in finished products, ignorant of the long period of growing and processing that must take place before the can or the package or the machine reaches him. He often displays a certain impatience over the unfinished, based upon ignorance and the failure to understand nature's slow processes. While much can be done, perhaps, by way of public education to make the urban intelligence appreciate the need for time in perfecting a park or any other structure, it is advisable to meet the city man's impatience at least half-way. A scattering of half-developed parks is not so impressive as a single park that has been brought to a state of completion. While such a development must not sacrifice real efficiency to effect, the demonstrative value of a perfected work, in arousing popular demand, must not be overlooked.

No adequate park programme can be laid down until certain necessary statistical information has been collected. What is needed is a block-by-block canvass of neighbourhoods to establish the number of families, the number of people per block, the number of children, the age distribution of all the people surveyed, and finally their present recreational preferences. The reason for such a survey becomes plain as soon as one sets out the requirements of a broadly organised park system, as contrasted with a mere collection of publicly owned open spaces. As Olmsted pointed out two generations ago, park areas should grade upward from the immediate patch of open space around the individual house or group of houses to the widest and most comprehensive regional recreational uses, drawing upon the inhabitants of many communities. The core of such a development is obviously the individual garden. Within the residential block there should be small enclosed play areas for the play of little children directly under the eyes of their mothers: a sand pile, a board, a few sturdy boxes are almost all that is needed by way of equipment. The proper design of residential blocks involves the correct placing and hedging of such a play area.

The provision of intra-urban parks in long strips has the excellent effect of spreading park services over a wider area; while, at the same time, it avoids the vice of parks like Central Park in New York, of taking too large a chunk out of the urban building area and more or less blocking its articulated development. The provision of a master plan which will not merely record the existing development of the city but which will indicate the lines of future development, both in space and time, is a further step in arriving at an effective scheme of city development. Such a plan is not to be regarded as a monument, for ever fixed and inflexible. It is rather to be looked upon as an instrument of orderly thought, open

to revision as need dictates from year to year and from generation to generation. The treatment of the Master Plan as if it existed only in space includes under this term nothing that cannot be located on a map. This seems to be a very partial view of the functions of a plan; and it rests upon an old-fashioned and now untenable separation of space and time. Buildings and structure and avenues and open spaces do not merely exist in space; they enter into the civic picture, they take place at some time; and to achieve a timely and orderly sequence of such building is as essential a part of a plan as to secure their correct location and disposition. Time plays a part in the matters of allotment, building, opening, amortising, repairing, renewing, and destruction of all the visible structures in a city; hence a time-chart of public works, in order to secure at the most advantageous moment the land needed and the public funds to develop it in correct relationship to need and demand, should be an essential complement to every Master Plan: without it the plan is only half-done.

Not merely must there be a systematic study of the timely arrangement of urban projects, but there must be a priority schedule in terms of social value. Without such a priority schedule, public moneys are for ever in danger of being quickly expended upon the simpler and more obvious forms of urban reconstruction, while more important ones, because of their difficulty or because of the total cost involved, are indefinitely postponed while evils pile up and grievances become more deep-seated.

There are in most urban patterns unoccupied holes as the result of an unsystematic and premature lay-out of streets.

Whereas intelligent city planning is always concerned to reduce the number of streets to the lowest possible level, half-baked city planning, lacking in sound social objective usually distinguishes itself by adding streets and traffic thoroughfares to areas where they are not needed. The cure for such erratic projects lies not so much in a master plan by itself as in a master policy: a programme of civic action, formulated by minds that are capable of holding in view the good of the city as a whole and who are not afraid to go contrary to prevailing practices when those practices have proved to be obsolete and inefficient and wasteful.

These holes might usefully serve, in many cases, as starting points for the development of a park system. As long as they are lying idle they are a heavy burden on the budget, for public services must be carried across these no-man's-lands. The park system can integrate them as productive parts in the urban pattern. Or there are sometimes urban areas approaching each other closely but still leaving some inter-areas between them. If these inter-areas are not large enough to be cultivated intensively for the supply of the adjacent populations, they might also be usefully included in the park system. Finally, it goes without saying that the sporadic open spaces, squares and existing

parks are to be made parts of the green grid if especially unsuitable conditions do not prevent it.

In order to arrive at workable figures for space requirements we must distinguish between the three major types of recreational areas. First, there are the playing fields, usually part of the sites of schools. Secondly, there is the neighbourhood park. And thirdly, there is the large park serving a wider area. While there must be a clear distinction between these types of area for the purpose of working out the space requirements, they might overlap in reality. Parks may include schools with their playing fields; they may also contain public playing fields; or they may be partly combined with neighbourhood parks. These latter will have their own playing fields, and so on. Let us admit from the outset that there is no general agreement regarding a definite area either for each individual type separately or, consequently, for all recreational facilities together. A wide field of research is still open. We know somewhat more about the area needed for playing fields, because this can be worked out on the basis of the space requirements for the various games. But in general our answer is a confession of ignorance. The American assumption is that every hundred of the population in larger urban communities should have one acre of recreational area of which 30% to 50% should be reserved for playing fields. Of these latter about 12% should serve as children's playing ground in units of three to eight acres, while 15% to 18% are to be used as neighbourhood playing fields. The rest remains free for parks, etc. The British National Playing Fields Association states:

> " The Association advocates that as a general principle, in order to provide reasonable recreational facilities for both sexes and all ages, the *minimum* area per 1,000 of the population of the borough, district or parish should be not less than six acres permanently preserved for the playing of team and other games. This six acres per 1,000 of the population may include up to two acres per 1,000 of the population of *privately owned land permanently preserved* to provide recreation for schools and for sports clubs, whether or not connected with commercial companies. The balance, which may therefore be anything between four and six acres, should be permanently preserved *public* playing fields." It goes on: " It should be observed that this standard for playing fields, which is now generally accepted, is exclusive of any standard for other public open spaces such as commons, woodland and ornamental grounds, where games cannot be played. It is also a minimum standard which would have to be increased in certain cases of which the following are examples:
>
> (1) Where a rural district or rural parish covers a large area and the population lies in widely scattered villages or hamlets,

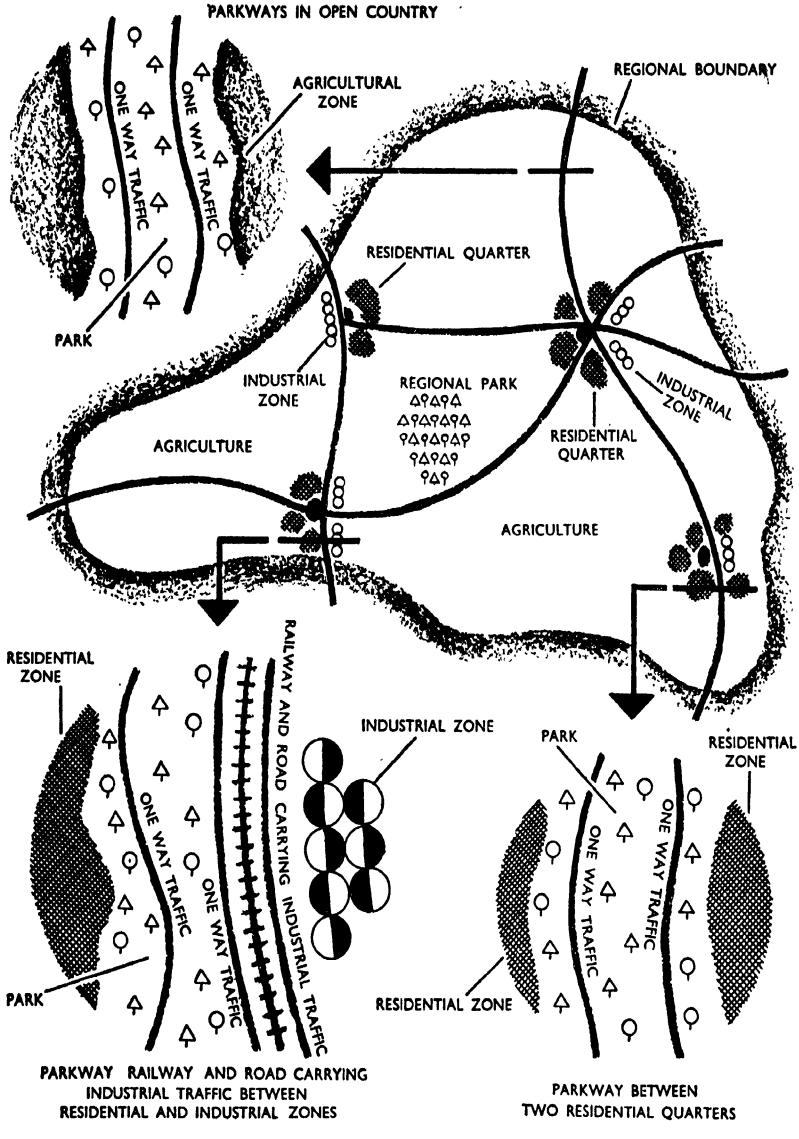
more than one playing field with facilities for children, or even with facilities for adults also, would be needed.

(2) Where the minimum standard acreage of a rural parish works out to less than six acres of public playing fields, and the nature of the population is such as to justify the provision of facilities for all the usual games for adults and children of both sexes, the area of *public* playing fields should be increased *at least* to that figure, as it is not possible to provide such facilities on a field of less than six acres, even if its shape and configuration are ideal for the purpose."

Workable figures should be arrived at only by a scientific method based on the biological needs of the population. However, it will not be easy to develop such a standard of the recreational requirements, for the human factor is, especially in this respect, a rather uncertain basis to start from. In any case, a preliminary to such investigations must be the estimate of the future distribution of population according to the various districts of the community. Too much depends on size, location and character of development; and these will be, in most cases, quite different from what they are now and might change from one district to the other. Figures, giving the amount of open space per 1,000 population under the existing conditions should be treated with reservation. They do not supply sufficient information of the actual value of these open spaces, as they do not provide data as to location, size, continuity, etc. But, in spite of the obvious difficulties of obtaining scientifically worked-out figures, research should be undertaken at the earliest possible moment, for lack of sound information must not be an excuse for local authorities to spoil the improvement schemes of their communities.

The grid of the *main roads* should be made part and parcel of the system of the main parks. Both have the same function, i.e. to divide the urban area up into sections, and both are, therefore, arteries from which the secondary systems branch off to the adjacent districts. Correspondingly, we will speak of the transport arteries. Here again a clear distinction must be drawn between those arteries opening up the urban area proper and the highways only skirting it at either side and, in so far, resembling more the green belt which also skirts the periphery. No highway must pass directly through any urban or rural settlement. They must be intercepted somewhere before or within the green belt and diverted around or along the settled area. They are the fast traffic ribbons connecting towns and villages like the railway lines, and they might also be the means of access to the airports.

The existing highways for high-speed travelling are not wholly



Parkways in Open Country.

adequate as regards their capacity and design. They must be adapted to the special needs of a transit system which forms one of the foremost means of national planning in general and, in particular, of decentralisation and dispersal. Typical improvements, consisting of construction items and items of regulation and control are : [1]

1. Redesign of hazardous and complicated intersections—such as by reshaping the intersection and providing traffic islands to channelise auto movements and reduce lengths of cross walks. Corner curb roundings to free right turns may be all that is needed.
   Benefits : (*a*) Reduce vehicular and pedestrian hazard. (*b*) Increase traffic capacity of intersections. (*c*) Increase vehicular and transit speeds by reducing delays. (*d*) Reduce the necessity for traffic signals.
2. Revision of arterial street system, signing certain through routes for certain purposes.
   Benefits : (*a*) Facilitate all traffic movement. (*b*) Keep through traffic out of congested areas. (*c*) Keep commercial traffic primarily on specific routes. (*d*) Reduce over-all accidents.
3. Improvement of traffic signal operations—such as by timing signal operations for progressive movement, catering to transit operations when necessary.
   Benefits : (*a*) Increase street capacity for automobiles and transit units. (*b*) Increase over-all speed by reducing delays. (*c*) Decrease accidents.
4. Removal of unnecessary signs and signals.
   Benefits : (*a*) Increase over-all speed by reducing delays. (*b*) Reduce the motorists' contempt for traffic regulations, which is occasioned by unnecessary regulations.
5. Lane striping of all lanes on heavily travelled streets for their entire length ; also all lanes approaching major intersections.
   Benefits : (*a*) Increase traffic capacity. (*b*) Increase speed. (*c*) Decrease hazard due to crowding and sideswiping. (*d*) Secure better kerb parking. (*e*) Decrease delays from improper intersection turning.

And : " There can be no fixed rule covering the width and design features of highways ; designs that are applicable in one case will prove unsatisfactory in others. It cannot be arbitrarily stated that highways shall be depressed, that they shall be elevated, or that they shall have certain widths. The problem resolves itself into the determination of just what each highway is to accomplish and the specification of those accomplishments in minimum terms." These will include such things as :

1. The planned capacity of the highway in terms of vehicles per hour and day, average and peak loads.

[1] National Conference. Ibid.

2. The rate of speed at which traffic is to be moved. (This will be a determining factor in estimating capacity.)
3. The character of the traffic to be carried; trucks and freight traffic, passenger cars only, mixed traffic.
4. The present and future character of the region traversed by the highway and the degree of protection necessary for the region and for the highway (each may detract from the value of efficiency of the other).
5. The type and frequency of access points.
6. Intersections requiring grade separations in the first instance, and ultimately.
7. The provision of service streets for abutting property, where required or desirable.
8. The closing of existing intersecting streets, where feasible or necessary.
9. The provision of extra width permitting redesign of abutting properties to provide usable sites in harmony with the character of the surrounding district.
10. The use of accelerating and decelerating lanes, centre dividing strips, traffic islands, etc.

Some of the points mentioned above relate also to the system of the transport arteries within the area of the settlement proper. As already said, they should be combined with the park system. The main parks separating two adjacent districts must have a width sufficient enough (*a*) to keep away noise and smoke and to ventilate the built-up area by bringing fresh air into the inner zones, and (*b*) to fulfil their original purpose as recreational grounds. In any case they should be wide enough to hold one transport artery on either side each as a " one way street " without impeding the interjacent park space. Crossings by pedestrians can be avoided either by building bridges or tunnels. The traffic lanes could be kept somewhat apart by hedges alternating with bushes and trees so that the view from the cars is relatively free. If two residential districts adjoin this separating zone on both sides the solution is simple. It is, however, different if the one side is a residential and the other one an industrial district, and this will be a rather common case. Then provision must be made for a further subdivision, at least, of sections of the traffic lane for freight and other traffic bound for the industrial district. If a combination with the railway line is achievable so much the better. The latter should run at the outer edge of these park arteries immediately along the industrial zone. But this is a problem that needs very detailed local investigations if the great disadvantages of the present conditions are to be changed for permanent advantages.

Such a system of primary parks and roads should be applied

to all our large cities and to any other type of settlement correspondingly. The principle as such can remain the same, but its modifications will depend largely on the extent of the area to be served. The grid of open spaces and roads is the first step towards a methodical disentanglement of the existing chaos, and the best way towards order in the development of the residential and industrial districts.

2. The differentiation of these sections among the main categories of use is the next objective. The method is spatial zoning, and the result is the organism of residential and non-residential districts. Thus, each district serves a special function. These functions determine its lay-out and its relation to the other districts of the community. These inter-district functions cannot be determined by mere zoning regulations, important though they are. Here, the general conception which must dominate the whole plan finds its proper field of action. Size, shape and subdivision of each district into units are interdependent. Zoning provides, therefore, the framework within which the structure of the different districts must be worked out in detail. On the other hand, zoning can fulfil this purpose only if it is applied as an integral part of regional and national and, last but not least, of local planning.

In this instance, we are concerned with the zoning of the interspaces between the main arteries in general. Zoning as a means of density control will be dealt with under the next heading No. 3. We may speak then of primary and secondary zoning. Primary zoning has already been discussed in the previous chapters to which reference should be made. We can confine ourselves, therefore, to a few further remarks.

The various districts are to be classified as residential, industrial, agricultural and horticultural. Reverting to what has been said under the heading No. 1 we may also include the zoning for purpose of recreational spaces and traffic ribbons as well as of airports. While it is unavoidable that a certain number of small workshops will be needed in residential, and some dwellings in non-residential, districts, the principle should be to aim at the clearest distinction possible between the different categories of districts. No compromise whatever should be allowed; and the long term policy making for this differentiation should on no account be frustrated by measures which can be justified only in the light of short-term reforms. An example will explain what is meant. The older part of a city is congested. Small factories and houses and gardens are hopelessly mixed up. The local authorities, proud of the prosperity of their city, do not want to lose these small factories, still less to create a serious displacement of labour. They deem it essential to keep these

trades within the boundaries of their community. Something must be done. So the idea develops, in other instances entirely sound, of erecting " flatted " factories or factory centres throughout the city, in the central and outer districts. The workers would live near to their work and the traffic problem would be, at least partially, solved. There are also a number of large factories which are considered as not mobile—on a short-term basis. Here again something must be done to improve the conditions of these congested districts. The way out appears to be to make more room round them for recreation grounds and the improvement of traffic. In this latter case, as obviously also in the former one, part of the population has to be rehoused elsewhere. This would be a typical case of a short-term policy preventing, or at least delaying the execution of, comprehensive and long-term planning. It might be excusable under present conditions where local rating and other local considerations are forcing the hands of the City Council. But the fact remains that these " improvements " will stand in the way of a really efficient rebuilding of the city, for new capital has to be sunk, new buildings and new streets have to be constructed, new parks to be planted which need a long time before they can be perfected. The old argument which prevents a more drastic solution to-day would crop up again after two or three generations' time. If such considerations, however understandable they might be, prevail, no useful zoning of a primary character can be carried through. The whole city would be interspersed with industrial units surrounded by flats or houses, and the great disadvantage arising out of such a mix-up could never be properly removed. In general, local zoning can be productive, as stated above, only as an instrument of regional and national planning. A " self-contained " community is an absurdity. City boundaries must not exist in reality. City development or redevelopment cannot be separated from the general plans of decentralisation and dispersal. The assumption that the replanning of an urban community can stop at its political boundaries belongs to the age of palæotechnics. It discards all the possibilities which science offers us to-day; and it shows a profound lack of understanding of one of the most fundamental cognitions of our time, namely that it is not enough to move boundaries, they must also be abolished.

The principle must be kept pure and simple: districts, and especially those of a different character, must be separated by a sufficiently wide park artery; and the districts themselves, the spaces between these arteries, must be homogeneous. The need for bringing homes and workplaces near together must not be "solved" by intermixing both within the same district, but by

intelligent planning of the interrelationship of the residential and industrial zones.

The other side of this problem, the relation between central and outer districts, has already been mentioned. If a community grows, this growth must not develop like the annual rings of a tree, whereby the texture of the community fabric loses its density gradually from the centre to the periphery. Rather it must be like the budding of a tree where a new bud does not stunt the very life of the already existing parts. Circular zoning leads to an enhancement of one ring at the cost of the other and to a mix-up of industrial, business and residential quarters. It results in slums and in the depreciation of whole quarters. It tends to drain the industries along the main radial lines of communication or to the periphery, thus cutting off the town from the country. Zoning, as we understand it, is a systematic side by side development of well-shaped districts which, though not "self-contained", offer a great variety of public services and facilities to their inhabitants. They are not restricted to one kind of buildings only. High buildings, small houses, long and short rows, individual houses, all may alternate with one another. Their attractive and sound arrangement is exclusively a problem of a density and of a three-dimensional conception of the lay-out. The old idea that higher buildings should be erected only in the centre and small houses only in the outer zones belongs to the past. It is not compatible with the new idea of district zoning.

Airport zoning is a new feature which will demand a great deal of investigation if it is to be made a systematic element of planning. It does not affect the urban area proper; but it does affect its immediate neighbourhood. Modern 'planes require at least a three-directional runway lay-out; each runway should have not less than 3,500 feet in length and 150 feet in width. They must have clear approaches within gliding angle of not less than 15 to 1.

It seems obviously unfair to say that private property adjacent to an inadequate airport must without compensation provide an easement for the landing and taking off of aeroplanes. In other words, if the airport or landing field is inadequate in shape or in size to begin with, the owners have no right to insist that private property owners make up for that deficiency. If an airport has been improperly or badly located with respect to surrounding property, the owners of that airport have no right to insist that private property owners make up for the deficiency. Zoning can do its part in protecting the areas surrounding airports, but before zoning can be effective standards must be adopted for airports, and airports must be of adequate size for ordinary and reasonable use. Zoning

cannot compensate for these important deficiencies.[1] Interesting experiments have recently been made in U.S.A. with "flight strips", i.e. short sections of wide, paved highways for take-off and landing of 'planes. If these tests are successful they may lead to a greater independence of the airports.[2]

This conception of zoning applies not only to urban but also to country areas. The significance of the green belt as an agricultural and/or horticultural zone has already been discussed in the chapter on agriculture. Horticulture might extend into the urban area in connection with the park system; this would have a considerable influence on the structure of the respective districts. One of the leading advocates of a modernised horticulture, L. Migge, wrote already in 1919:

> Our problem is the scientifically developed settlement. Cultivation of the land as its integral part is a problem of science and organisation. Houses should be fabricated en masse. The same principle should be applied to gardens. Modern gardens should be developed rationally with common walls, fences, entrances, drainage, water supply, and so on. Such a collective organisation reduces the costs of installation and upkeep and increases the output considerably, so that the cultivated area is a kind of self-supporting unit as regards labour, interests, and amortisation. This principle, generally and efficiently applied, would reform our ways of living. It would remodel the townsfolk. It would bring them in direct contact with the country surrounding their town as a productive green belt. Here potatoes, cereals, etc., would be cultivated whereas the great number of gardens and nurseries would produce fruit and vegetables. The necessary intensification of this new urban agriculture would be guaranteed through the sewage disposal from the town. In this way we would return, on a modern economic basis, to the system of self-supporting communities. Thus, structure and character of our towns would be changed fundamentally. Miles of colonies, of avenues planted with fruit trees, and gardens and allotments would be surrounded by large zones of urban agriculture and horticulture developed on scientific principles. New town planning and new horticulture are closely linked together.[3]

One might object that such a development would be contrary to the principle of clear differentiation between the various districts. I do not think this is the case. First, the colonies can be situated, as already suggested, near or in direct connection with the parks. Secondly, the gardens laid out as large co-operative groups, would provide part of the required open space. Neither of these alternatives is as offensive to the neighbourhood as industries are. The whole system would contribute

[1] American Society of Planning Officials, News Letter, 1941. No. 2.
[2] The New York Trust Company, *The Index*, 1942. *Highways in America.*
[3] In E. A. Gutkind, *Neues Bauen*, 1919.

considerably towards the loosening up of an urban community, if it is made an integral and well organised part of the whole structure.

There is no need to underline the significance of zoning for country areas. Urban and country zoning are supplementary. Both together are instruments of decentralisation and dispersal and as such, fundamentals of town and country planning.

3. The lines of the park and road grid and the spaces of the districts zoned according to their special functions, call for a further subdivision by "functional spotting" before a well-knit and systematic system can emerge. Thus, the structure of each district consists of a number of units. It is a "polynucleated" aggregate while each unit is a "mononucleated" organism. The same principle which shapes the structure of the community as a whole can be applied to individual districts. "A cluster of communities, adequately spaced and bounded, shall do duty for the badly organised mass city." [1] It is just the opposite of the hitherto practised accretion, a mere external addition of quarters. It is an organic growth from within which alone can produce a homogeneous whole. It is the logical result of a rightly understood decentralisation which heretofore meant only a spatial separation; for instance the development of a satellite detached from, though dependent on the mother city. More accurately it should be described as methodical differentiation of functions. Decentralisation begins "at home", i.e. within the city or town or even the large village. It is a qualitative and a quantitative concatenation of carefully graded functions. It is comparable to the smashing of atoms which releases new forces by a process of "decentralisation". Thus, every unit of the district becomes a "city in itself" serving the daily needs of its inhabitants. It embraces as many functions as possible, centred around its own nucleus, the communal centre of the neighbourhood units, in order to create the right environment for a full and diversified social relationship. L. Mumford has called this process very aptly "unity by apportioned distribution" as opposed to "unity by centralisation"; and contrasts this "functional spotting" to a mere "physical spreading". Planning supplants the arbitrary division by administrative boundaries, and nullifies these invisible walls in favour of the framework of useful parks and open spaces.

In this way the gradual process of subdividing arises out of the national and regional plan. It proceeds from the large to the small. It takes its directives from the conception of a community as a polynucleated organism and from a qualitative and quantitative decentralisation.

[1] L. Mumford, *Culture of Cities*.

The internal structure of the different units and their lay-out and size varies according to their special purpose. Residential, shopping, commercial, industrial and recreational units, each of them needs its specific manipulation. Here, secondary zoning sets in. It defines the built up areas, their density, the type of houses, their height and distances, the angle of light interference and the requirements of fresh air. It regulates the orientation of buildings in accordance with the best aspect for sunlight; it allots the right place to offending industries and it fixes the recreational space around industrial establishments; it apportions the shopping area to each unit as well as the extension and distribution of educational institutions. It establishes rules for the traffic and buildings of the business district by means of height and bulk regulations; and it influences the appearance of buildings. In brief, it is the more momentous instrument of planning in detail; but it is also a two-edged instrument. In the hand of compromise-ridden and modern-georgian nincompoops it would certainly be used against all those striving with vigour and enthusiasm for progress on a broad front.

How these measures should be used will be discussed in the next chapter.

It might appear that too much emphasis has been put on the importance of the primary and secondary park system as an instrument of planning in town and country. However, I believe that this is not the case. Let us put this problem in its right perspective. The park system, in all its grades, is a multi-potent agent in shaping our urban and rural settlements as well as a whole region. Its parkways connect communities and traverse the country as useful and beautifying lanes of transport and recreation grounds. They lay a new chequered pattern over the English landscape on a grander scale than the existing field squares. The park system provides the framework for creating order by differentiation. It dissociates districts and units according to their functional significance. It associates town and country. It restricts the morbid extension of urban settlements and imbues them with a new and concentrated vitality. Its separating grid is plastic and adaptable to the many-sided purposes of recreation, education and open-air work. It loosens the congested structure of a city and it gives coherence and privacy to the individual neighbourhood unit. It creates a feeling of order and of changeableness animated by the cycle of natural growth and decay. It stimulates a feeling of unlimited space as the true expression of our image of the world and as the reverberating symbol of the functional architecture of the future, thereby re-instating planning and building as a three-dimensional art.

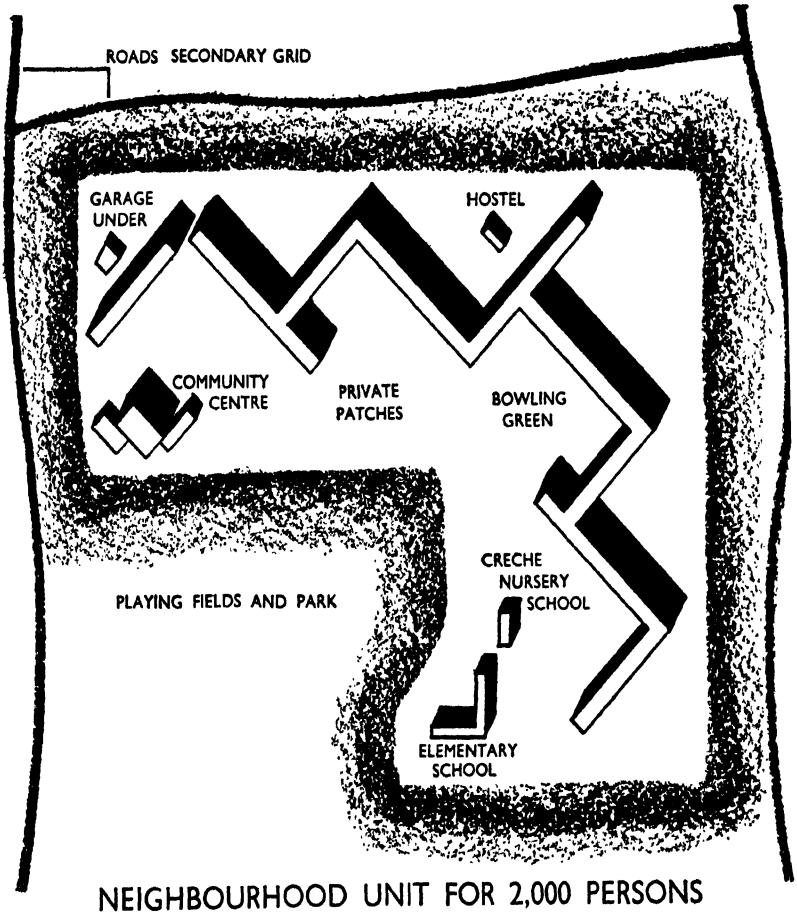
The three instrumentalities of *linear* articulation, of *spatial* zoning and of functional *spotting* are the fundamentals of town and country planning.

The Neighbourhood Unit and the Physical Embodiment.

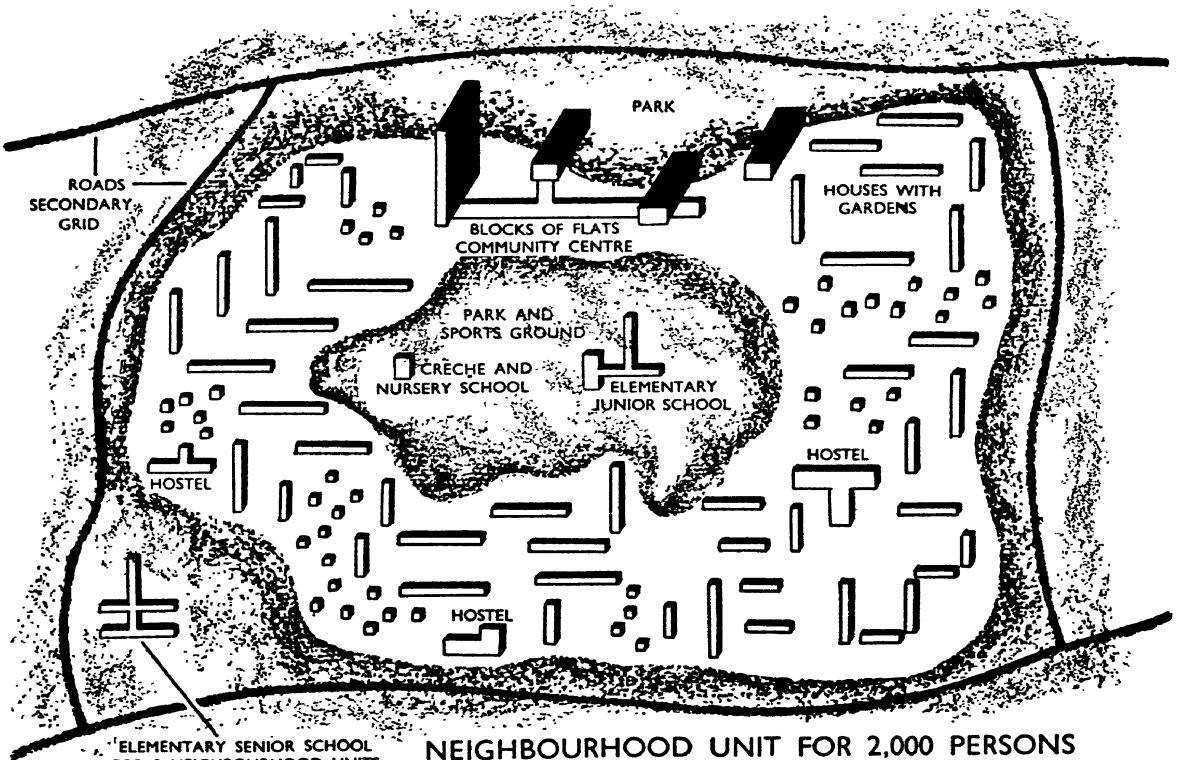
Only the *neighbourhood* unit can be dealt with. Space forbids the investigation of the industrial, the business-district and the purely recreational unit. Their treatment must be reserved for another occasion. But the neighbourhood unit is a microcosm reflecting features of all the other types. It is, therefore, particularly suitable as a representative example. It has been suggested that the dwelling-house is the focus of modern life and as such it is now more important than other buildings. While it is certainly true that housing problems have assumed a prominent place in the hierarchy of human needs, and while it is likewise true that modern architecture has achieved its greatest results in this field, it would be misleading to regard the dwelling-house and the neighbourhood unit as the primary exponents of a new pattern of living. We should merely repeat the old mistake of overrating one single function at the expense of the others, thus destroying the dynamic equilibrium which must exist between housing and working, recreating and distributing.

The whole, the aggregate of all districts together, in brief the community, provides the technical system of public utility services such as electricity, gas, water, roads, etc., and the framework of communal services, i.e. the *organisation* of libraries, of exhibitions, of communal centres, of schools, etc. The unit provides the transformers and receivers through which this general system of services is being adapted to the needs of the daily consumers. In its turn it creates the environment within which social relationship can be cultivated. Here the seed of community feeling can be sown and nursed while the apparatus of the administration furnishes the instruments for the smooth working of the system of the local society as a whole. It is the same division of pursuits as in a huge industrial combine : central management and decentralised achievements. And in both cases the capacity of the individual unit must be distinct, i.e. number of people, age groups, family composition, professional structure must result in a clearly defined social structure which determines, in its turn, the character and number of the various requirements embodied in the form of housing, educational, recreational and other facilities.

The neighbourhood unit is a mononucleated social compound. On what nucleus is it to be focused ? This question implies the further problem as to what is the new pattern of living we are



NEIGHBOURHOOD UNIT FOR 2,000 PERSONS



NEIGHBOURHOOD UNIT FOR 2,000 PERSONS
BLOCKS OF FLATS AND HOUSES WITH GARDENS

working for. We must have a clear conception of our changing attitude towards life or we run the risk of nipping all our efforts in the bud. It is clearly impossible to say anything definite in this respect—everything is in the melting pot—and we cannot tackle so vast a problem in a short book like this. However, it seems essential to explain, at least, those implications of a new view of life which have a direct bearing on lay-out and appearance of a neighbourhood unit.

The relationship between members of a family has been subject to great changes. The patrilinear has superseded the matrilinear structure of society and the " realm of motherhood ", the sphere of protection and maternal love and of the instinctive moulding of the family is disintegrating. This evolution has gained a strong impetus from the increasing equality of wife and husband. We are only at the beginning of this process, but it is already evident how greatly it will affect the position of the child. It might not be beyond the bounds of possibility that a filial-linear social structure emerges. The deeper sense of this revolution would be the substitution of an attitude towards life which takes its guidance and inspiration from the future, instead of listening predominantly to the past and present. We cannot tell what will happen, but we can draw our conclusions from latent and manifest trends. These trends seem to point to the direction of such a development. The future is gaining in momentum, and the importance of the present is viewed more and more in the light of the future. A common programme for the future can unite us whereas the all-too-often-misused evocation of the past invokes and treasures just those of our affections and traditional values which are a stumbling block in the way to the future. A life which accepts present reality and is animated by a programme for the future, will create dynamic tensions which are bound to revolutionise our society fundamentally. The child, as the vanguard of this evolution, will set new standards for our life. The fulfilment of his mental and material needs will profoundly change the structure of our settlements in general and in detail.

Industry and urbanisation have been disintegrating the family as an economic as well as a spiritual unit because the general massification absorbed the individual member as a nameless number of an organisation or a shop or a social class.

Our present housing conditions are directed against the child. They are almost a preventive of the first order against the rearing of more children. Neither the flat nor the individual house with garden will alter this situation if they are not fundamentally changed. The house can even be the more serious handicap, for it imposes, in many cases, a heavier burden on the mother

as housewife than does the flat. It is, moreover, sheer nonsense to denounce the flat as an undesirable contribution towards the solution of the housing problem. Such a stubborn adherence to unfounded assumptions is both unimaginative and stupid. The flat has come to stay, and has proved itself successful on the Continent when intelligently laid out and constructed. Blocks of flats will have to be used in this country if wishful thinking is not to be considered as more important than realities. One is getting nearer to the kernel of this problem if one takes the labour saving qualities of a household as the standard. As Sir William Beveridge said:

> If you do not want a smaller population you will have to consider means of preventing this concentration of population. If you consider the relationship of population to housing, you must consider not only the size of the house, but also the quality of the house. When a woman is considering whether she will have another child, she wonders whether she can cope with the addition plus the care of running the house. It is possible that the population problem will be solved by the all-electric and labour-saving house.

The changing structure of our society leads to a combination of the individual care of the child, as exerted by the family, and communal welfare institutions. This does not mean that the child should be subservient to political influences of the State or a group, nor that it should be anything like a "communalised" child, alienated from his family. It is just this depersonalisation which has to be resisted in order to make the child a regenerating factor of family life. Rather, this combination should result in relieving the mother and housewife and in fostering a sound communal feeling in the youth. Then the child will be neither the guardian of a retrospective family cult as in China, nor an economic problem as in Europe. It will be a stimulus for adults to develop their own personality in order to reinstate their children as creative members of society.

It is for these reasons that the neighbourhood unit must be focused on the educational institutions for the child. This fact as such has been recognised; but the deeper understanding of its underlying causes, and their significance in practice, is still lacking. We need this insight, for it is not enough to erect some school buildings and a community centre and to group the dwelling-houses around them. We must infuse the whole organism with a spirit of futurity if it is to be something more than just another playing field for architects and town planners. It is, therefore, a somewhat pathetic under-statement to speak in this connection of the school as at least one of the primary social organs. It is *the* social heart from which the life-blood is being propelled to all parts of this microcosm.

Situation, size, lay-out, type of school and its outdoor facilities determine the corresponding characteristics of the neighbourhood unit in general and in detail. We will, therefore, work our way upwards from the school as basis to the other elements of the neighbourhood unit. It should be noted, however, that the following data give only approximate standards. Opinions differ, though not greatly, from each other. Scientifically based research is still lacking and practical experience has not yet been classified systematically. Moreover, we may expect a reform of the educational system after the war which would affect the structure of schools. Finally, it is hardly possible to lay down hard and fast rules for every type and for every situation. It is hoped, therefore, that the suggestions made below provide sufficient material from which can be derived reasonable principles for the organisation of a neighbourhood unit.

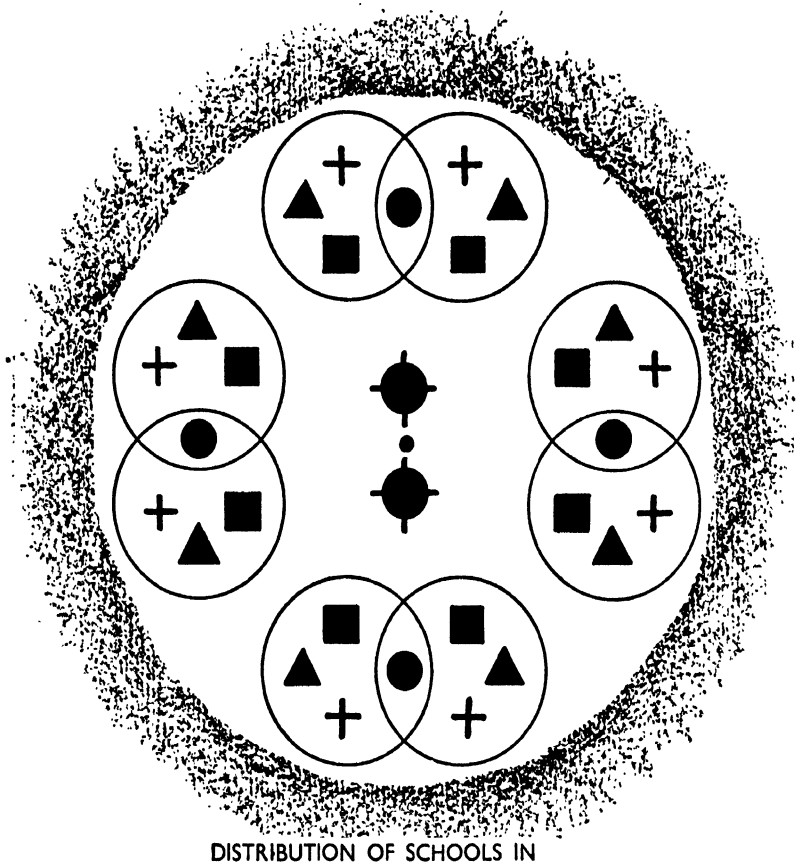
(1) The school aggregate consists of crèches, nursery, infant and junior schools for each unit while three units should share a senior school.

Age groups.	Number in each class.	Walking distance in miles.		Size (acre).
		Desirable max.	Absolute max.	
Nursery (2–4) . . .	20	¼	½	½
Infant (5–7) . . .	40 +	½	¾	4–5
Junior (7–11) . . .	40 +	½	¾	5–6
Senior (12–17) . .	40 +	¾	1	10

+ = 2 stream class.

These figures exclude data for cycling or bus services. But we are here concerned only with the compact neighbourhood unit. Infant, junior and senior schools should have a playing field of not less than 2 to 3 acres. They should be attached to the school and for each school separately, though combined grounds facilitate efficient supervision and easier upkeep. Detailed information can be found in pamphlets published by the Board of Education.

On the basis of these figures the number of members of a neighbourhood unit works out as about 2,000. We assume that the average age at death is near 60 years and that the total numbers remain nearly stationary, and that about one-sixtieth would be in each age group. This is, of course, a rather rough estimate but it might serve its purpose for the shaping of the general principle. If a class, i.e. one age group of children, is


DISTRIBUTION OF SCHOOLS IN
8 NEIGHBOURHOOD UNITS OF 2,000 PERSONS EACH
1 CRECHE
1 NEIGHBOURHOOD UNIT
1 NURSERY SCHOOL
ELEMENTARY JUNIOR SCHOOL
2 NEIGHBOURHOOD UNITS
1 ELEMENTARY SENIOR SCHOOL
8 NEIGHBOURHOOD UNITS
2 SECONDARY OR TECHNICAL SCHOOLS

Schools.

about one-sixtieth of the population, and if the number of children is 30 to 40 in each class the total number of inhabitants of the neighbourhood unit ranges between 1,800 and 2,400.

(2) The Community Centre and shopping facilities are two other elements which must be provided for. The former may contain, a meeting hall, a restaurant, the library, a club, the administration, health and medical, and other institutions. The latter will consist of a group of shops or one larger store for daily shopping. The spatial needs of these buildings should not be overestimated. They will be one or two storeys high and should be situated near the main access to the unit where people have mostly to pass by.

(3) Flats and houses. We may assume that something like 500 families have to be housed, possibly somewhat more, for provision should be made for childless families and single persons. One- or two-room flats would be a suitable solution in addition to a hostel.

It is possible to arrive at relatively definite figures for the number and size of rooms according to the number of inhabitants. But it is more difficult to work out definite figures for the relation of (*a*) flats to houses and (*b*) the various sizes, i.e. number of rooms per flat or house desirable for one unit. We do not know how many people are potential gardeners, how many prefer flats, how many want to have a greater number of smaller rooms or one or two large rooms and only one small room and so on. The best solution is, therefore, to build neighbourhood units of different character, one with more small houses, one with more flats, or one with one type only, and to provide a sufficient diversification of one-, two-, three- and four-room dwelling units in each neighbourhood unit.

The range of possible solutions is very wide. But experience has shown that a number of optimum solutions can be worked out on the basis of established facts as regards space requirements per person, household facilities, light, sun and air, sound insulation, etc. Much valuable information has been collected in other countries which should be made available over here. The leading principle must be: more light, less work, more space, more privacy, and, in general, a movement away from the fossilised construction of our houses which is, in principle, still the same as at the times of the Pharaohs.

(4) The lay-out is a problem (*a*) of density and (*b*) of architectural economy and differentiation.

Density figures will serve the purpose of a rational intensification of land uses and of the best access of air, sun, and light. These are the broad principles; if they are systematically applied the results are far-reaching. Density figures must be flexible.

Hitherto they have been rigid and, therefore, merely preventive. We must distinguish between the old method of fixing a figure for the number of dwellings per space unit, e.g. 12 houses to the acre, and the method of figures for population per area unit. The old approach—which should entirely and as soon as possible be abandoned—neglects the fact that building is a three-dimensional affair and that houses can contain a different number of persons even if a restriction like 12 to the acre has an indirect though rather vague bearing on the size and number of rooms of each house. It is a lifeless instrument. The new method, the relations between persons and indoor and outdoor space requirements is just the opposite procedure. As I said before, instead of basing the lay-out of a town, a district or a neighbourhood unit upon a fictitious parcelling-out of blocks and upon certain limitations concerning the height of buildings—instead of starting with details—one is beginning with the most momentous reality, how many people do I *want* to house as well as possible. The valuation and the use of the area in question are then dependent upon objective points of view dictated by scientific experience of the amount of outdoor and indoor space needed for the individual resident. By proceeding in this way an adequate open space, in close proximity to the house, is guaranteed, and the whole housing space on which the calculation has been based can be used either for small houses or for flats, according to the various needs and intentions, or for both types side by side.

If density figures are to be flexible the obvious method is to work with different figures for different units. It has been suggested that density figures for the smaller units, e.g. the neighbourhood unit, should be based on the space unit of one acre, and larger space units should be used for the larger areas. This appears to be a very sound principle; it allows one to dispose of the over-all densities in a much more rational manner and to leave more room for an elastic balancing within the individual unit. If this principle is accepted it should logically be extended to the individual house or flat. While the principle itself must be maintained throughout the whole range of categories—from the dwelling to the town—its application in detail must be plastic, for the space requirements of individuals and groups are different and changing.

Such flexible density figures foment the general tendency towards decompagination and recomposition into smaller and less compact units. One of the most important results of this process—not a mere though desirable by-product as many assume—is the improved access of natural light and fresh air. Another result which is often confused with these advantages is

the introduction of the maximum amount of sunshine by an expedient orientation of the buildings. The former factors, light and air, primarily concern the fenestration while the latter, the access of sun, affects the placing of the whole building.

Fenestration was considered as a matter of external appearance with complete disregard for the size, shape and arrangement of the interior of a building. The architectural turncoats were absorbed in sorting out the most "impressive" designs from pattern books of bygone styles. They had no interest in the investigation of the scientific conditions of fenestration. To-day we can base our designs on a firm basis of objective research which is the more important as it is part of the process of a general reorientation of our whole architectural conception. A system of measurement has been tested and standardised which

> expresses the natural illumination at any internal position in terms of the more or less constant ratio between the indoor and outdoor light from skies of uniform brightness, especially on those grey days when the problem of adequate natural illumination is most acute, thus avoiding the difficulty of fluctuations in intensity.[1]

It is evident that the height and corresponding width of the windows and their relation to the remaining parts of the outer wall are the essential factors.

> The conclusion that a window reaches its maximum efficiency as regards useful lighting only when its head subtends 45 deg. at a point illuminated is of no small practical importance.

Window heads should, therefore, be as high as possible. Modern architecture and modern materials make this easily possible. Window heads can practically touch the ceiling without any discomfort. This will have a desirable influence on adapting the storey height to the floor space which would result in better proportions for the room than are usual to-day. An increased width, however, does not add much to the efficiency of the window. Yet, there are other considerations in favour of reducing the window walls almost completely. It is the changing feeling of space which is working in this direction and which will ultimately rid us of our claustrophobia.

The access of sunlight and of more light in general influences the orientation as well as the height of the buildings. The Department of Scientific and Industrial Research, Building Research Division, has issued a pamphlet on *Population Density and the Heights of Buildings* by H. E. Beckett. It states the following case:

[1] P. J. Waldram, "The Lost Art of Fenestration", *The Builder*, 1942.

For a given population density rehousing in higher and more widely spaced buildings is likely to result in improved natural lighting conditions.

It goes on to explain that " more people can be housed on a given site without making the lighting conditions worse ", if blocks of flats are arranged in parallel rows " accompanied by an increase in the amount of open space per person ". Or if " conditions on the site are improved by the provision of higher buildings, keeping the population density constant ". The " lighting conditions are determined by the angle of obstruction at the ground-floor windows ". Distinction is made between the floor-space index (I_F) and the open-space index (I_O). The former is " the ratio of the total floor area on the site (treating each storey of a building separately) " ; the latter is " the proportion of the site area which remains open and which is available for roads and play-ground space ". It is obvious that " for constant ground-floor lighting conditions the proportion of windows enjoying better conditions is greater in a multi-storeyed block than in one of few storeys ". According to the First Report of the Council for Research on Housing Construction (1934) a block of flats as specimen comprising three 3 bedroom flats and three 4 bedroom flats on each floor provided the following data :

Average floor area per flat, including walls and staircase	702 sq. ft.
Length of block	166 ft.
Assumed road opening	50 ft.
Width of block	25 ft. 3 in.
Storey height	8 ft. 7½ in.
Height of centres of ground floor windows as ratio of storey height	0·58

Thus the following figures could be worked out :

Number of storeys.	Floor space. (Index I_F.)	Number of flats per acre.	Open space. (Index I_O).	Open space per flat (sq. yard).
5	1·27	79	0·74	45·4
10	1·45	90	0·85	45·8

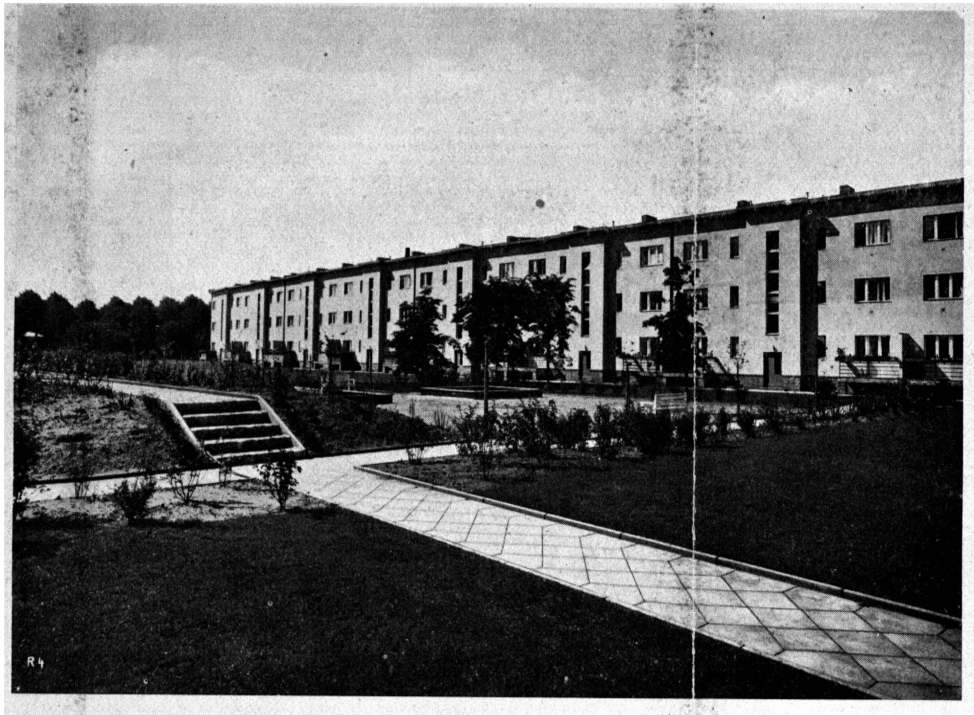
An increase in the number of storeys from 5 to 10 gives an increase of about 12½% in the number of flats per acre, with a slight increase in the amount of open space available per flat " ; and " in densely populated areas substantial improvements both in natural lighting conditions and in the proportion of ground space left open can result from a substitution of 10 storey blocks for 5 storey blocks."

As regards the amount of sunshine available investigations show that

" so long as the axes of the blocks do not deviate by more than $22\frac{1}{2}°$ from the north-south direction appreciable amounts of sunshine are receivable at midwinter with comparatively high values of $h/_w$ " (h = height of the building from the centre of the ground floor; w = width between two blocks).

If we draw unprejudiced and logical conclusions from these findings what are the cold facts? First, the compact arrangement of buildings must give way to a wider spaced lay-out. Secondly, the orientation of the buildings must be made independent of the lay-out of the traffic streets which is subject to different conditions. As lines of communication their direction will deviate in many cases from the front line of the buildings. The first problem has already been dealt with; the second one needs further explanation.

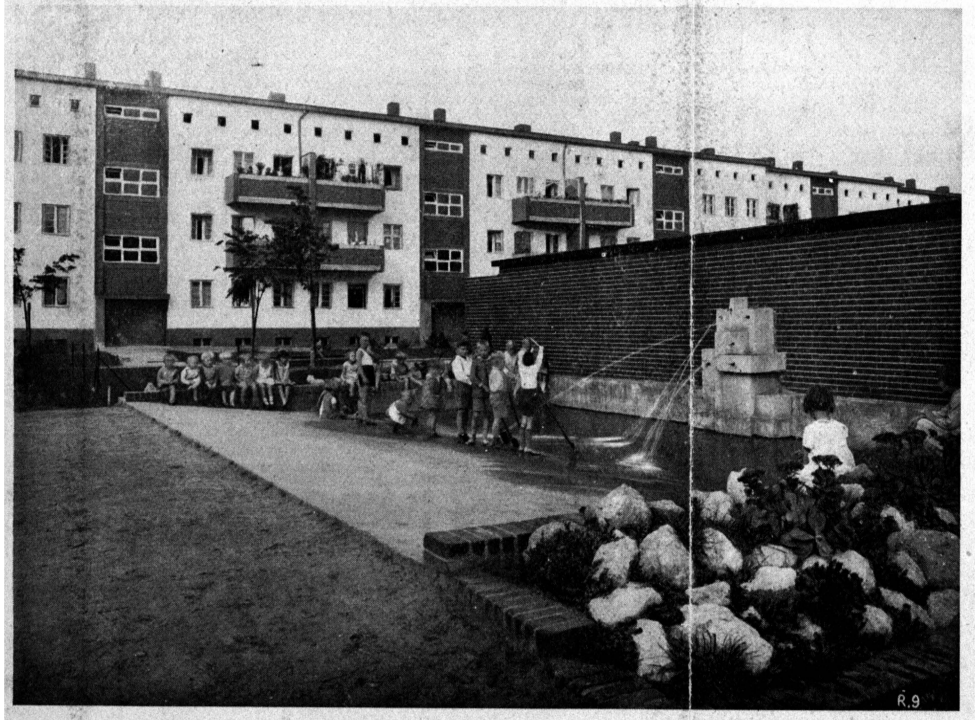
The " cult of the street " led to a uniform lay-out of regular block units and to a compact building along the streets intersecting this unimaginative system. The space between the streets, the " residue " graciously left over by the æsthetic quacks of the drawing board, was considered as appropriate for the housing of human beings. This is the contribution of a period in the course of which the State was being degraded to a kind of sleeping partner of private interests. The Middle Ages and the Renaissance had a clear understanding of the relationship between house and street. Already Leon Baptista Alberti, the great architect and theorist of the Renaissance remarked: " Small side streets are needed. They should not be long and should extend only to the next traversing street. They should not be open to the general public but should merely offer a better access to the abutting houses and ampler natural lighting." The first reaction to the predominance of the street and to the detrimental effects of overbuilding in order to extract higher rents from the estate, was the introduction of a building line for the rear of the houses. This principle has widely been used on the Continent and produced tangible success in its time. Buildings could be erected only along the streets to a depth of about 45 feet. Large open spaces, sometimes of considerable dimensions—300 feet wide and 800 to 900 feet long were not exceptional—remained within this quadrangle. These enclosures were admirably suitable for gardens. They were planted with trees, bushes and flowers, the lawn was intersected by some paths; kindergartens for the children of the tenants were supplied and playing grounds were attached to them. All this was certainly a great step forward, for the flats could be sufficiently ventilated from the front and from the back. The improvement of the lighting conditions was noticeable. But one disadvantage remained. Only a small part of the flats could get a moderate amount of



Inner Courtyard. [*E.A.G.*



Kindergarten in the Inner Courtyard. [*E.A.G.*

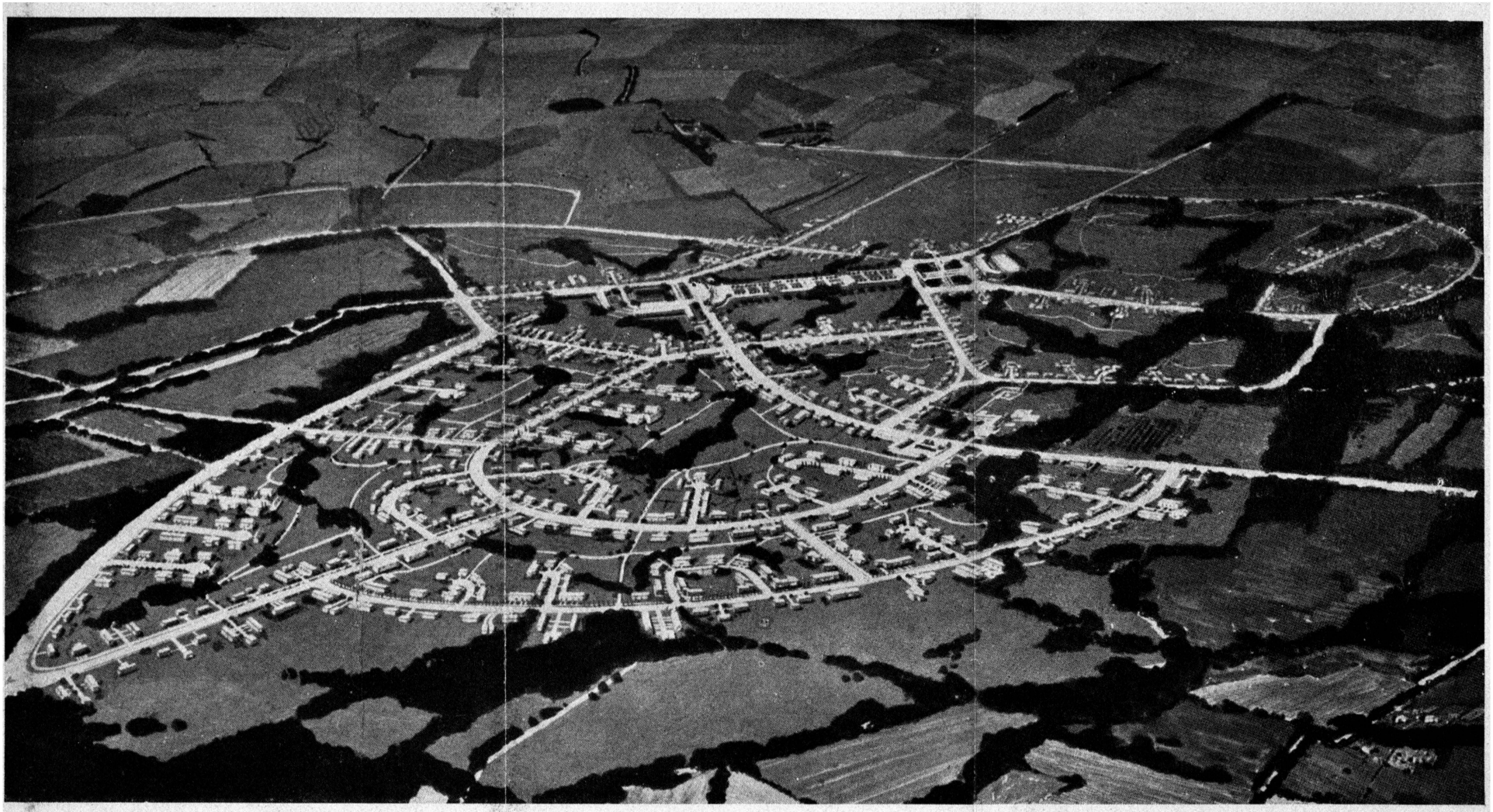


Splashing Fountain in the Inner Courtyard. [*E.A.G.*



Interior of the Kindergarten. [*E.A.G.*

[*To face p.* 272.



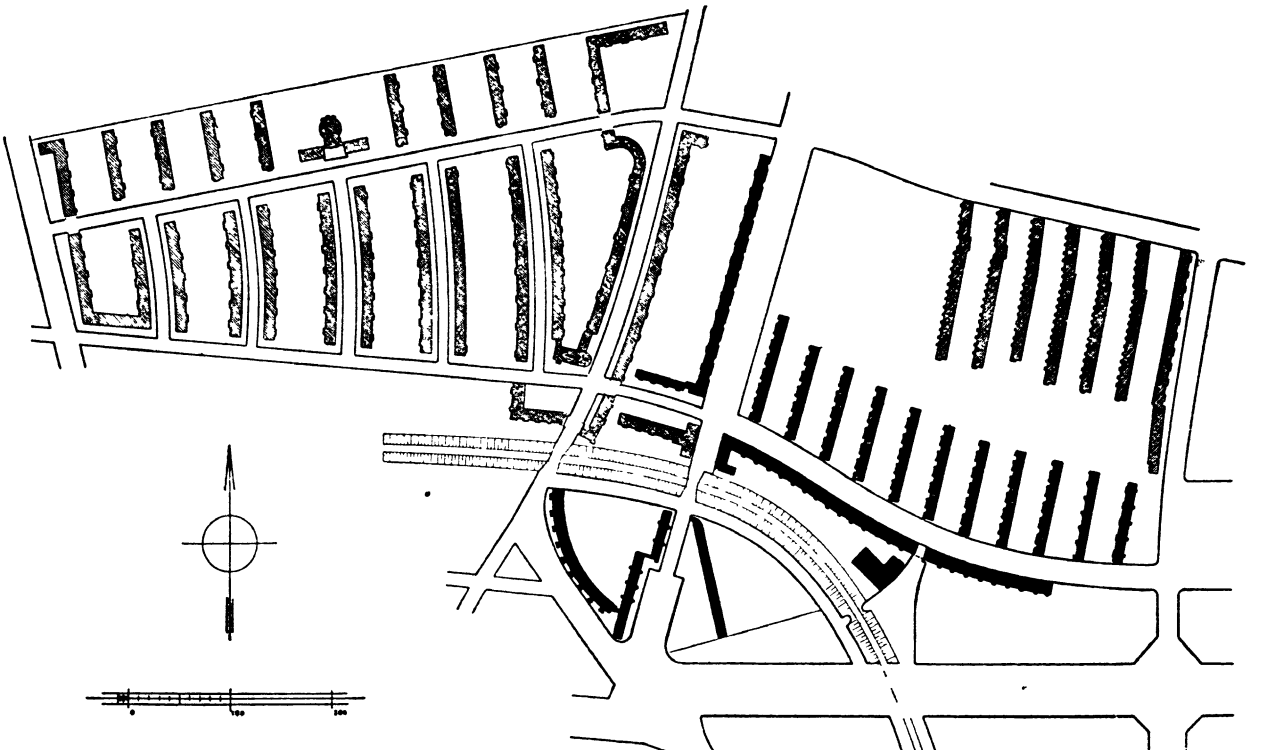
This Plan shows how the Houses at Greenbelt are laid out on a Curved Ridge encircling the Community Buildings and Recreational Facilities. The Road System, designed for Greatest Economy, follows the Lines of this Ridge, creating large Super-Blocks of Residences. Paths as well as Roads lead to the Town Centre and to the Recreation Areas adjoining the Lake. On the Outskirts Allotment Gardens are provided for and, beyond the Confines of this Photograph, Small Farms which will serve the Community.

To face p. 273.]

sunshine because the whole lay-out was still fixed on the pattern of the streets.

This development led consistently to the abandonment of the rigid " agglutination " of houses and streets. Although this step appears to be almost a return to the old principle of distinguishing between residential and traffic streets, it is in reality one of the turning-points of modern town and country planning. It affects blocks of flats and individual houses alike. The actual result is the decomposition of the uniform and continuous rows of houses bordering the streets. But the more far-reaching consequence is the underlying meaning of this process. The primacy of the dwelling over the street can be accomplished and the " cult of the street " is coming to an end. A street serves the functions of the moving traffic; a dwelling serves the functions of a stationary home. Both are not compatible with each other if the maximum effect of each is to be achieved. The arrangement of the dwellings at right angle to the lines of traffic fulfils some of these postulates. The flat or the house is detached from the traffic although it remains within its range of influence. The open spaces between the flats or houses can be used as private or public gardens. The green of the trees, of the bushes and hedges and the lawn gives a refreshing rhythm to the main street, and the rigidity and dullness of the street-cañons yields to the vigorous contrast of the individual groups of buildings. Houses and blocks of flats can be so arranged that their lines extend from north to south, thus avoiding the unfavourable north orientation.

However, this loosening up and the separation of traffic and residential streets is not yet sufficient to put the dwelling in its appropriate place. The system is still too rigid and does not permit the assignment of all those advantages to the flat or house which they need if they are to fulfil their specific functions within the organism of the community. Sanitary, social and economic requirements, privacy and quietness, all exert a disintegrating influence upon the compact grouping of flats and houses, as it can arise within even an improved system of block lay-out. It will be necessary, therefore, to break up the direct relationship between street and house. This means that the orientation of the houses must be independent of the direction of the street; that houses can be put at any angle to the street, and that the rectangular principle should be abandoned. The space between the traffic streets should be treated as an independent unit and its internal lay-out should be determined exclusively by considerations of how to provide the maximum degree of social and economic facilities to the inhabitants. The size and shape of these units will differ considerably from the



Block of flats arranged at right angle to the main streets.

previous block unit. They will be larger and their proportions will be better balanced. Thus, forces from within are the determinants, and not the external circumscription. It is a parallel to the region and its boundaries; a region must grow from within, and the fixation of its boundaries is merely a matter of expediency. The architectural impression of a town as we are used to it to-day will be quite different from what it will be to-morrow. Every one building and every part of it will play its direct part as a spatial element. Rear buildings will practically cease to exist. There will be no front and no back. This disastrous legacy of the past century will go and with it the disadvantages which prevented a rational arrangement of the interior of flats and houses. The cañon-like street becomes a simple two-dimensional ribbon, a mere surface loosing its quality as a limited space. The greater extension of the individual unit results in practice in a reduced number of traffic streets and, therefore, in certainly not inconsiderable saving for the community.

These principles can be applied, as indeed they should, to residential and non-residential units in town and country. But they can be put to their best use in the neighbourhood unit. They will bring the humbug of "open development" and its "privacy" to an end. Let us look now, after our survey of the whole park system as the ground work of planning, at its character within and its influence upon the neighbourhood unit. Here, almost all its features are crystallised. It girdles the whole residential compound isolating it and, at the same time, joining it to the other units of the community and beyond it to the surrounding country. It gives coherence without a feeling of confinement. It is a permanent limit to an indefinite expansion and, as such, enforces a rational use of the unit area.

> Planning for indefinite expansion is now wasteful and obsolete. The city of the future will have a better sense of its natural limits: it will attempt to make the most of what it has, rather than to evade its actual difficulties and its actual deterioration by encouraging its population to move out to the outskirts.[1]

Private and public garden space must be integrated and immediately accessible. Private gardens should be made an indispensable part of the ground floor plan and the "extension" of the interior space.

> The size of such outdoor rooms should probably not be less than half the total floor space of the house. An alternative way of assessing the needs of a family, would be to allow about 12 square yards (108 sq. ft.) per person taking 24 square yards (216 sq. ft.) as the minimum for one or two people. This applies only if the aspect

[1] L. Mumford, *Whither Honolulu?*.

is good, and if there is in addition ample public garden space connected with the housing group.[1]

Three groups might be distinguished: "Private open space comprising 'outdoor room' only; private open space comprising 'outdoor room' plus lawn, flower borders (and fruit trees); private open space comprising 'outdoor room', lawn, flower borders, fruit and vegetables."

That allotments should be provided for each neighbourhood unit has already been mentioned. They may be a useful addition to the extension of the surrounding park frame.

In the old city or town the park was a more or less isolated area, interspersed among the built-up block units. In the town of the future this situation will be reversed. The open spaces of the neighbourhood units will be interspersed with buildings. Their lay-out and internal arrangement will be determined by the intimate connection between indoor and outdoor life and by the communal needs and the collective consciousness of each of these small communities within the community.

Conception, methods and *physical embodiment* must be inspired with the same spirit. It is, therefore, essential to say at least a few words about architecture.

Fundamentally, this spirit can be defined as a new feeling of space and as a deeper insight into the relation between space and matter. If the rebuilding of Great Britain is to fulfil our expectations it must be imbued with these qualities. It must find not only the plans ready but also the will and the faculty to express these plans in architectural forms which are the true reflection of our changing attitude towards life and environment. The principle underlying all plans for reconstruction can be defined as functionalism. Consequently, architecture must be functional architecture. It must be a purposive adaptation to the manifold practical needs and mental aspirations of our time. Architecture, among all arts, appears to have developed at least the foundations of a new style. Of course, the philistines do not recognise these facts. They still preach that buildings must be "beautiful". But what is "beautiful"? Beauty is a purely individual gauge. And outward appearance is no substitute for inward clarity and reality. After all, how many men have decent suits without having a decent character? "Everything external is given to a gradual and early death while underneath life weaves its creative fabric." These last words, written by Goethe in the introduction to the *Metamorphosis of the Plants*, mean, applied to architecture, that the essential is man for whom the houses are built. Not their outward appearance must be

[1] Association for Planning and Regional Reconstruction, Report No. 7.

the primary aim but their internal functions. The modern architect should, therefore, not aim at creating eternal values, but should work for a limited period. His buildings should be like a membrane, transferring and transforming the oscillations of life from inside to outside and vice versa. Architecture is no luxury, it is one of the necessities of life, like food and clothing, and as such its products, the buildings, are short lived.

Architecture, as the art of creating space and space relations, works with two very dissimilar " materials ", with space and matter; and yet both are realities. May we turn to Lao-tse for a better understanding of this ostensible incompatibility ? [1]

> We put thirty spokes together and call it a wheel;
> But it is on the space where is nothing that the utility of the wheel depends.
> We turn clay to make a vessel;
> But it is on the space where there is nothing that the utility of the vessel depends.
> We pierce doors and windows to make a house;
> But it is on these spaces where there is nothing that the utility of the house depends.
> Therefore, just as we take advantage of what is, we should recognise the utility of what is not.

And we may add, in order to create this utility we must first divide the building into the individual elements of the different rooms according to their specific functions. This new feeling of space and its relation to matter is leading us from the separation of inner and outer space through massive and supporting walls to a light skeleton structure on which the building rests while the walls have lost their supporting functions and serve only as a covering skin or as partitions. Now, for the first time we are able to construct a building from within, practically unhampered by any structural rigidity and any special considerations in regard to the importance of the outer walls. Thus, long horizontal windows, the easy subdivision of the building, according even to varying needs, and the sober simplicity of its appearance are only the natural consequences. The modern house, the house of the masses, will be impersonal, straightforward in its conception and form, distinct in the choice of modern materials, and flexible in its use. I am aware that romantic people will be shocked by this description of the home as a kind of impersonal " living machine ". But let us be honest; are the jerry-built houses or the older-patterned ones " individual homes " ? Standardisation is inevitable and has always been inevitable, if shelters for the masses are to be provided for. Real beauty lies in the vitalised arrangement of groups of houses, in their space

[1] Translation by A. Waley.

relations, in the diversity of different types and different materials, and in their functional organisation in detail and in general. The dwelling is the smallest but also the most numerous element of community organism. It is, therefore, essential to make it a smoothly running machine which serves its purpose with the highest degree of precision and facility. The dwelling can only fulfil these prerequisites if it is equipped with modern labour-saving devices and if the individual household can be relieved by collective institutions such as kindergartens, central laundries, central purchase of food, central kitchens, etc. The floor space of a flat or a house should be "zoned"; and number, size and shape of the rooms should be much more adapted to the special functions they shall serve than it has been done hitherto.

The Emergence of New Settlement Types.

The widening of one mile of relatively unimportant streets in London costs about two million pounds, for the simple reason that the prices of the abutting sites are unjustifiably inflated.[1] Nevertheless, one is going on to think of the redevelopment of a central district in terms of a mere "loosening out" and "reforming". Here, the dissonance between inertia and necessity is especially visible. The modern business man who drives his modern motor-car through these congested streets grumbles about the inconsistency and mediævalism of town planning, but he is neither consistent nor modern enough himself to understand the true reasons for this state of affairs. On the contrary, as sentiments are stronger than logic, he would be shocked at the suggestion that some historical buildings would have to be demolished if he wants to spend less time for his daily journey to and from his office. Yet this is the usual and almost general attitude. Reforms will not lead us anywhere if they are not part and parcel of the general plan of the redistribution of population. Internal redevelopment and decentralisation and dispersal belong together. The former should not be started before definite schemes for the latter have been worked out. We may assume that all cities and some of the larger towns have to be relieved of an appropriate number of their populations and industries. It is to be hoped that the Central Planning Authority will override parochial attitudes which lend themselves only too easily to the out-of-date aspirations of an infinite extension or, at least, to keeping their population and industry stationary in numbers. The recommendations of the Central

[1] The procedure of widening a street in China is just the opposite. Every owner of a house abutting on the street has to contribute proportionately towards the cost of the new road, and besides that he has to bear the expense of pulling down the respective part of his house as well as all necessary alterations.

Planning Authority will carry the more weight if they are accompanied by positive suggestions. They should tell them: your community is not only over-populated. Its lay-out is bad, and only drastic measures can remedy both these disadvantages. Here are our plans showing the new regional apportionment which will be the result of our long-term policy in regard to the redistribution of population. We will assist you with subsidies and in any other way you want. But we can do so only if the replanning of your city proceeds in the framework of the National Plan and in accordance with the interests of the country as a whole. These interests are paramount, and we shall feel unable to help you if you consider your city as something like a "self-contained" community. We are convinced that redevelopment is not a compromise; and we are determined that it shall not be debased to a mere housing problem or to the clearance of some blighted areas. We want you, therefore, to replan your community in accordance with the fundamental and far-reaching principles of modern town and country planning and to subordinate all your reforms which you deem important, even in detail, to these principles. Will the Central Authority act in this manner?

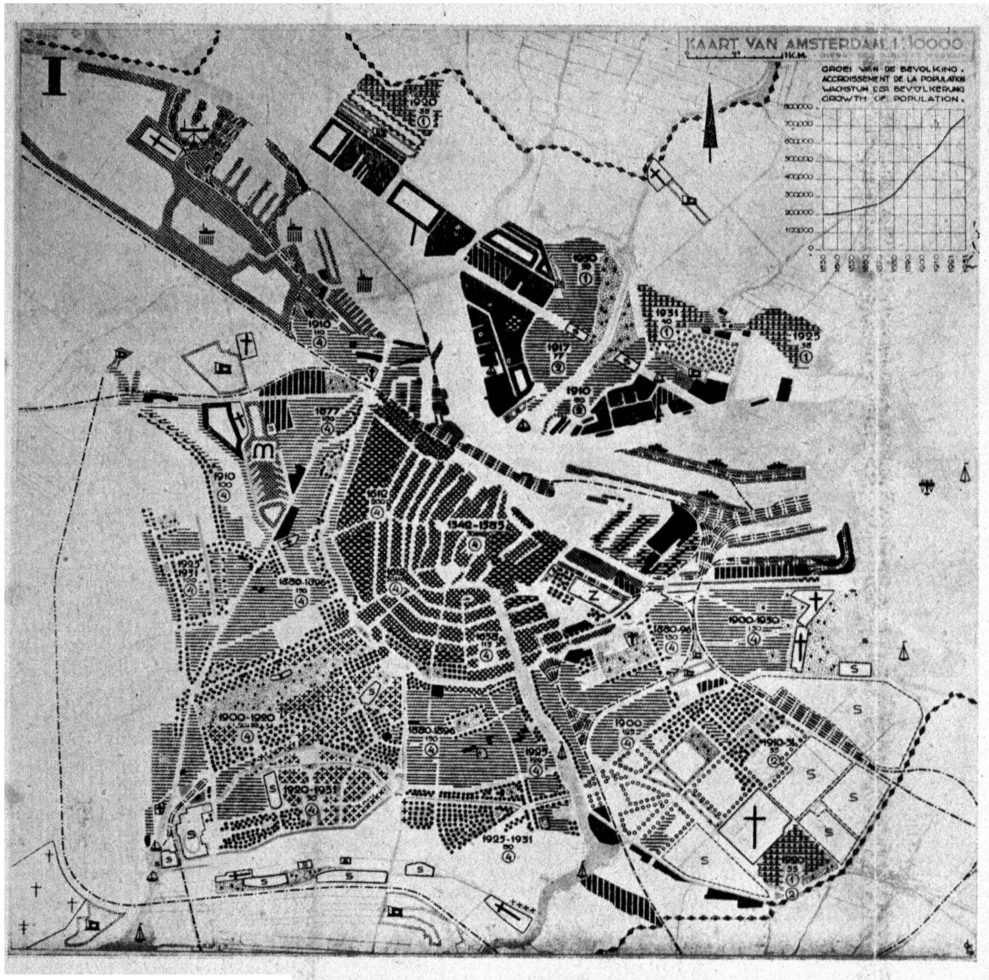
Local authorities should have the greatest interest in far-reaching replanning, for it would not only result in an improved lay-out and in a healthier structure, but it would also be a positive contribution towards the population problem. The recommendations which L. Mumford has worked out on the invitation of the City and County of Honolulu Park Board especially stress this point. They are of general significance.

> If the existing city is not to go downhill in population, it must make itself over into the sort of environment in which having children will not be a burdensome liability. This calls for the systematic improvement of housing, the prevention of overcrowding, the establishment of healthy standards of density, the creation of necessary public open spaces. Such measures should be framed and applied to all undeveloped areas at once, to keep them from turning into slums and blighted districts: it calls likewise for their early application to older parts of the city, and in particular to those ripe for demolition as pestilential slums. Finally, it calls for the provision of gardens, parks, and recreation grounds on a scale that will give to the city all the advantages that the suburb usually has at the beginning of its existence—before the suburb itself becomes a prey to speculative disorder and congestion. Ultimately, every well-administered municipality, in order to save itself from bankruptcy and hopeless arrears, must offset the tendency toward reckless suburban growth by taking substantial measures toward its own renovation. Not merely must the municipality discourage such uneconomic growth by resisting premature subdivision, by with-

holding assent from ill-advised express highways, bridges, or tunnels that open up cheap land outside the municipality's area of control: what is much more important is that it will seek to make the city itself permanently attractive as a human home by slum clearance, large-scale housing, neighbourhood planning, and park development. *On any priority schedule for cities, these things come first: and other municipal improvements are acceptable only to the extent that they directly further the movement toward urban rehabilitation.*

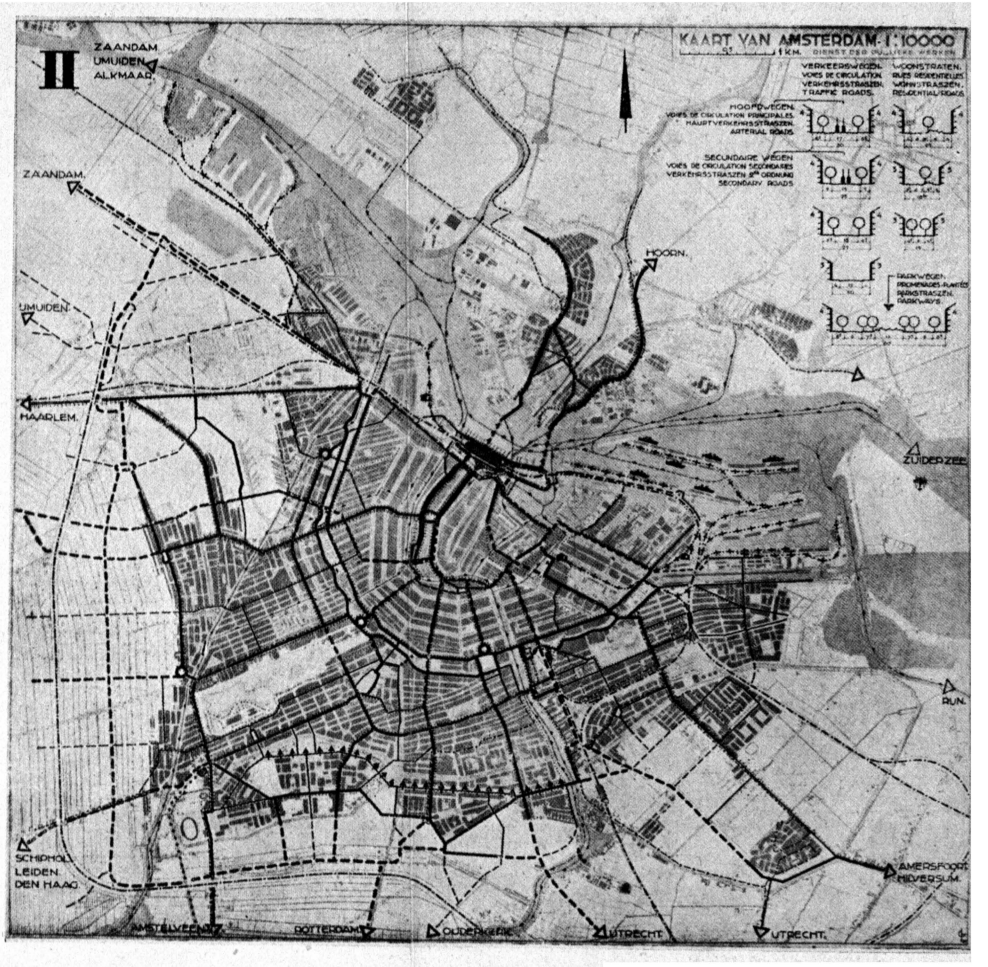
For these reasons we will not deal with the redevelopment of existing cities and towns, and especially not with slum clearance and other detailed problems. The necessary reforms should be the natural by-products of the execution of the general plan; but they should not be the starting points in *conceiving* it. Moreover, a treatment of these problems in detail would need too much local information which, even if it were available, could not be divulged. In any case, sporadic improvements would be the greatest danger to national and regional planning. They might even forestall them, thus making their realisation almost impossible.

In order to co-ordinate the replanning of the existing cities and towns and to get serviceable material for regional and national planning, the preparatory work of the local authorities should be standardised; i.e. they should conduct the survey of the existing conditions and the outline of their needs and activities —both are obviously the first stages of any planning—on corresponding lines. On the basis of such material, the work of the Central Planning Authority would be considerably easier and could be carried through in less time. This method has been applied successfully to a number of cities and towns at the instigation of the International Congress of Modern Architecture, e.g. Barcelona, Madrid, Berlin, Amsterdam, Zurich, Zagreb, Athens, Los Angeles. Each of the local authorities prepared a set of three plans on the same scale using the same symbols. The first plan shows situation, density and average age of the industrial, commercial and business zones as well as of the residential quarters, well-to-do, middle- and working-class districts; open spaces, public and private. The second plan shows lines and means of communications. The third plan demonstrates the relation of the urban area proper to the hinterland. It provides data on the number of people living outside but travelling daily to town, the transport system, agricultural and horticultural zones, industry, recreation grounds, etc. These plans are accompanied by a memorandum which, on the basis of a questionnaire, gives data relevant to the geological and climatic conditions, the history of the town, the economic functions, the tendencies of centralisation and decentralisation, the



AMSTERDAM.

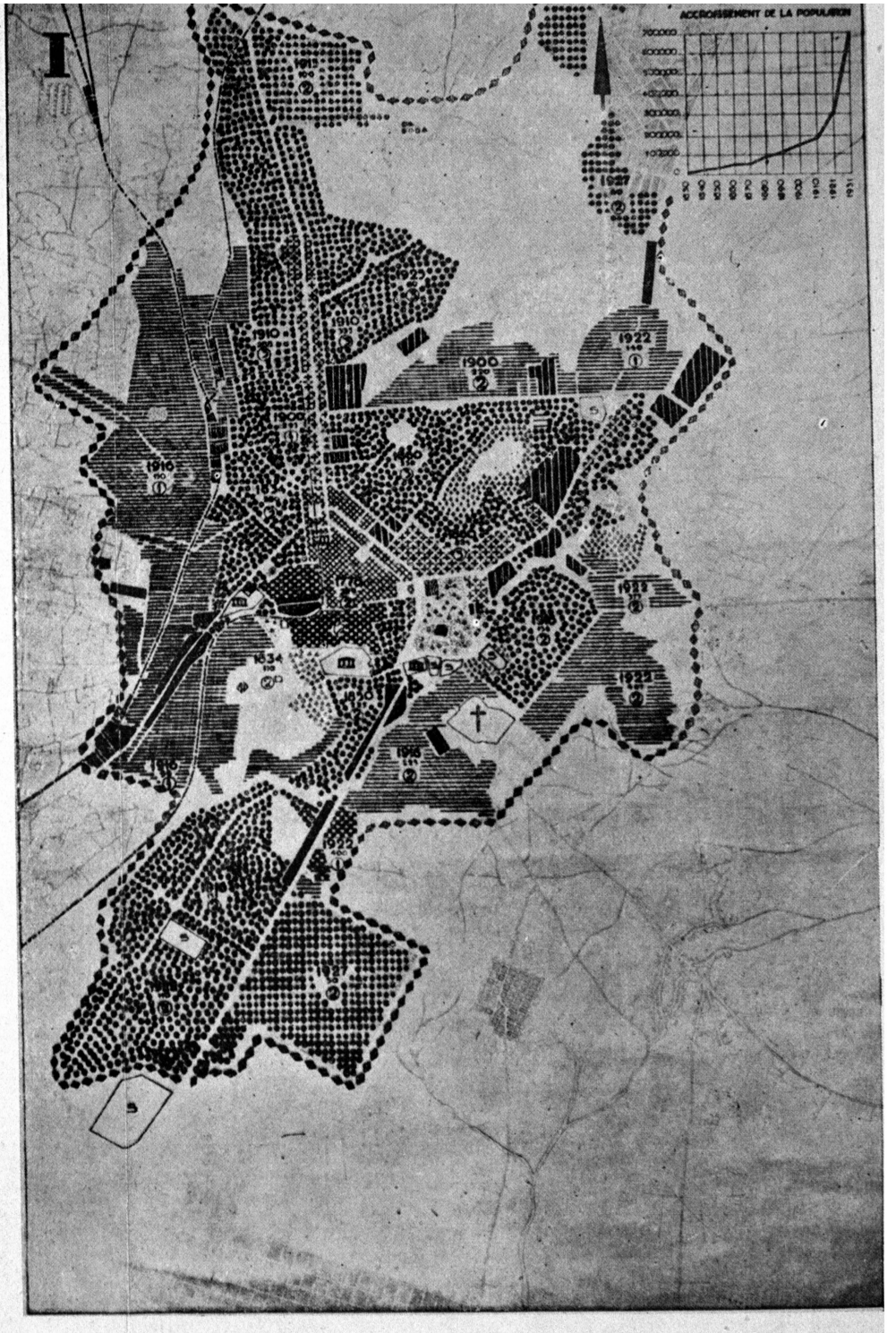
Residential working and recreational zone.



Amsterdam Traffic.

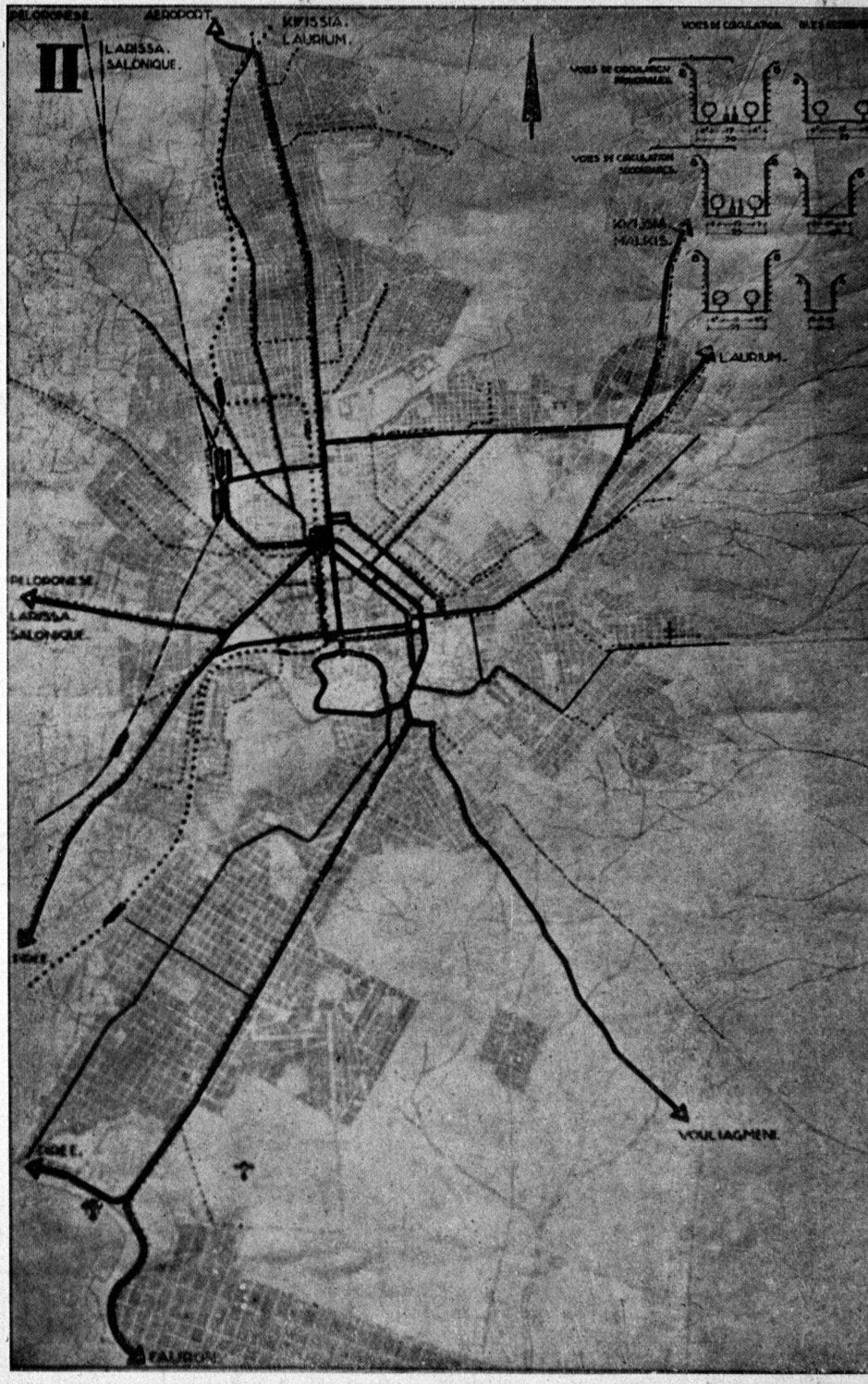


AMSTERDAM.
Zone of Influences.



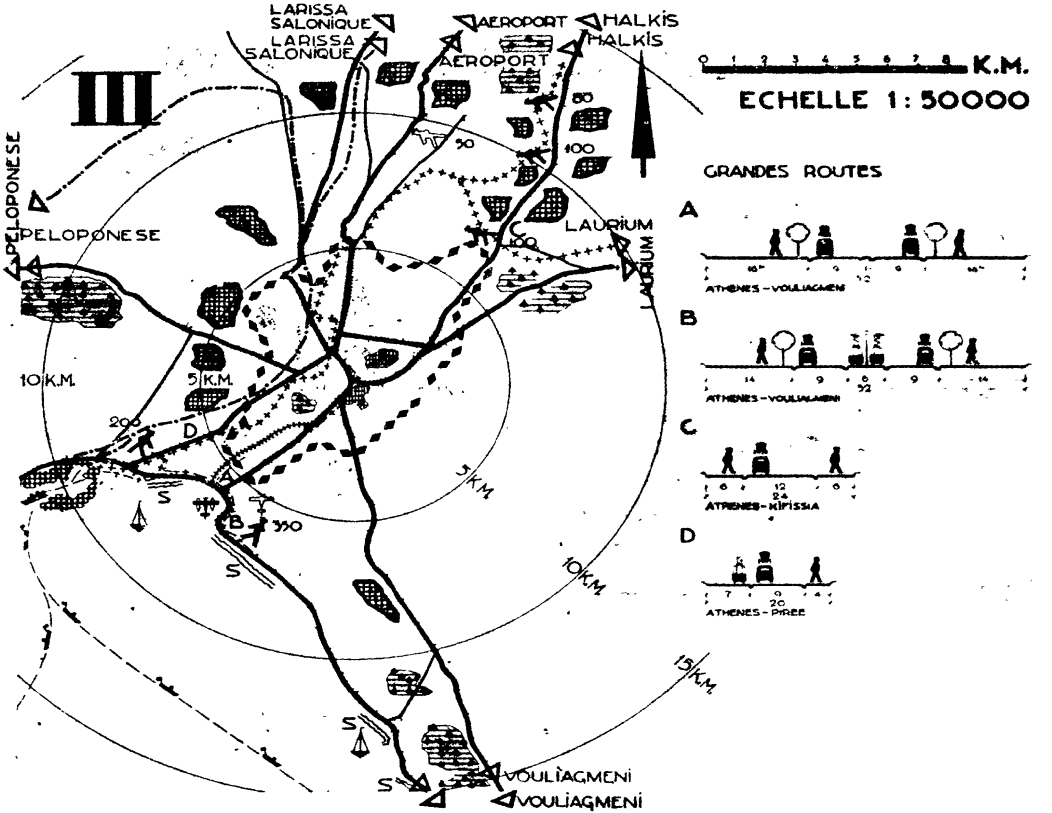
ATHENS.
Residential working and recreational zones.

{*To face p.* 281.



ATHENS.

Traffic.



ATHENS.
Zones of Influences.

[*To face p.* 281.

administration and ownership of the land, the structure of population and settlement, and the special difficulties which would have to be solved if improvement schemes are to be carried out.

The co-ordination of the initial stages of local planning is evidently an indispensable prerequisite of planning on a regional and national scale. It is a safety-valve for local parochialism as well as hypertrophy; and it can certainly be very useful—if applied in time and systematically—in directing urban redevelopment towards the broader aims of regional and national conception and effectuation.

The most thorough and by far the best application in actual practice of principles similar to those outlined above is the case of Amsterdam. Preparatory work was carried out on the lines suggested by the International Congress of Modern Architecture, whose president was in final control of the plan.

> It was decided to plan for a limited area and for a definite number of inhabitants and to adopt the form of a concentrated layout but providing a high degree of spaciousness. The Amsterdam plan assumes a population maximum of 1,100,000 in the year 2,000. It is this maximum figure which serves as the basis, and all plans have been worked out according to this assumption. It is the first time in the history of modern town planning—not in previous periods of course—that a city has intentionally restricted its growth in numbers and area. The positive influence on the plan and its effect on the life of the city and on its budget can hardly be overestimated. It is a conscious turning away from *laisser faire* and expansionalism towards a systematic and qualitative evaluation and individuation. It was decided that Amsterdam should not be decentralised because " with a proper plan, there was no need for Amsterdam, although centralised, to develop into the confusion of other capitals. And as it was this confusion that first evoked the idea of Garden Cities, the Garden City idea was automatically invalidated: . . . though there may, in the future, be the possibility of satellite towns in the surrounding villages, following the tendency of some industries to move to the open country." [1] An ideal form of housing was established. " It was found possible to allot the necessary area for housing, work and leisure in such a way that a beautiful city could be developed within local boundaries. The different neighbourhood units could be planned close to the working centres, and the city divided up by means of recreation grounds so that each of them formed a complete independent town planning unit. Thus it was possible to create a centralised development, combining the advantage of the Garden City, its spaciousness, but avoiding its disadvantages from a practical and economic point of view, namely its remote and isolated situation. As the Garden City Commission rightly points out, a Garden City in the conventional sense is less suitable because it is bound to need superfluous

[1] A. Korn, " A New Plan for Amsterdam ", *Architectural Review*, 1938.

transport arrangements to enable it to retain contact with the centre, involving unnecessary expenses." And as regards satellite towns the Amsterdam Report remarks—and it is fully justified in doing so—that " the uneconomic transport of working population over the intervening rural space " should be avoided.

The main roads form a network of radial and circular lines. Closely connected with it proceeds the disposition of the different zones. Five categories of industrial sites are provided for :

(1) Gardening, horticulture and agriculture.
(2) Industries preferring the city or old parts of the town.
(3) Sites which must be away from housing areas.
(4) Industries preferring inland water.
(5) Industries preferring the deep water of the sea or the Rhine.

After detailed enquiries the required space was fixed at 120–145 square yards per operative, providing a minimum of 160 square miles of new site and a maximum of 580 square miles.

The density figure of the main two residential districts was fixed at between 175 and 275 dwellings and between 135 and 210 dwellings per square mile respectively. A park of 2,125 acres lies between the city and one of these new development areas.

" Until definite detail plans are complete, smaller suburbs are not allowed to be built, except of the same rural type as previously."

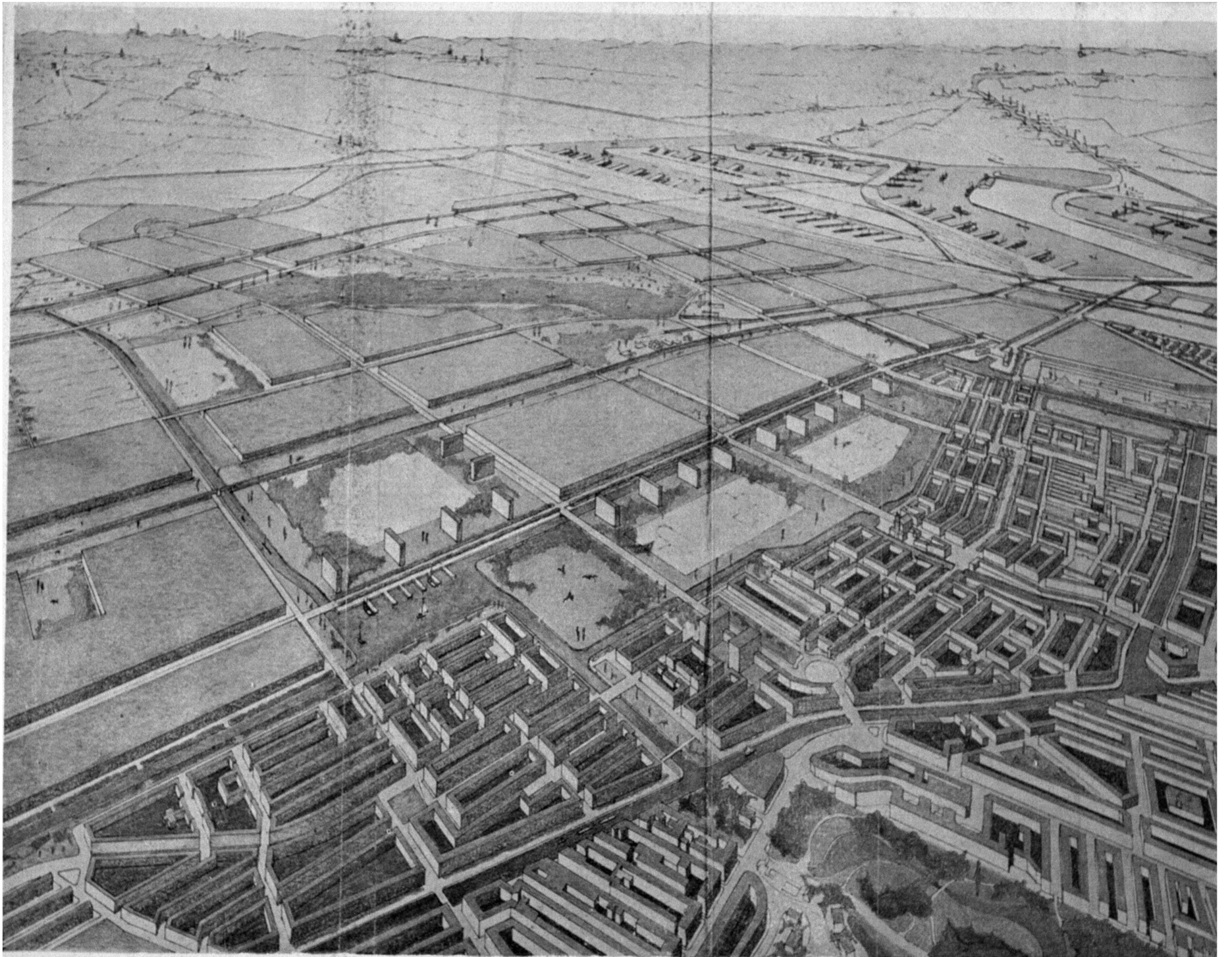
The plan for the first section provides for 85,000 inhabitants. It is planned as a workers' settlement and situated near the harbour and an industrial area. It consists mainly of four-storey flat buildings, usually less than 200 cubic metres in size and spaced 20 metres apart, with gardens and recreation grounds. Dwellings for aged people, orientated to the south, as also are the former, are situated in close proximity to the open space. These two-storey houses contrast impressively with the normal four-storey buildings. Shops, small industrial undertakings, an appropriate number of houses for doctors, tradesmen, etc., are provided. The centre of this district consists of a block of flats eight storeys high, and a two-storey-high shop building. Here are also the theatre, cinema, hostels, the market and the town hall.

It is assumed that 75 shops per 1,000 dwellings are an adequate number for the new districts of the outer ring, while 105 are considered as appropriate for those of the inner ring. These shops are distributed at a ratio of 260 for the main roads while 200 are spread over the district.

It is obvious that these projects need time for their execution and that variations of the original plan will be inevitable. But the framework will remain. " Modern town planning has discovered that it is not only problems of space that are involved. Besides the three dimensions, van Eesteren—the originator and the architect of the plan—may said to have used time as a fourth, and with the same importance." What will happen if a tendency towards a marked population growth becomes visible when the period of 65 years for which the population estimates have been made is drawing to its end ? The answer to this query is : not extension of Amsterdam but intelligent distribution of the increasing population over the region.



AMSTERDAM: View to the south, showing the main part of the future developments; sports and playing fields with gardens on the banks of the Amstel. [*To face p.* 282.



AMSTERDAM: View to the north-west, showing the various elements alongside the circular railway lines with the projected great park and playing fields.

To face p. 283.]

Cities change more rapidly than it is commonly imagined. Moscow, Ankara, Los Angeles and London are only a few examples. The plan for Amsterdam is a prototype of far-sighted and modern town planning, and especially of an imaginative and broad-minded "redevelopment". It rejects petty reforms and it does not confuse the conception of "the limited city" with the misconception of "the self-contained community". The problems of Amsterdam are very similar to those of the London, Birmingham, Manchester, Liverpool, Glasgow and to some other areas. All of them need long-term and large-scale plans *within* the framework of the National Plan. They should abstain from mere amelioration, correcting and mending only the most obvious defects; they should do so even at the cost of a temporary continuation of unfavourable conditions.

Now, before we finish this part with an outline of the two main types of settlement, it is appropriate to summarise the main principles of town and country planning. The systematic application of these principles leads to the "ideal" lay-out, either immediately, as in the case of new settlements, or in the long run, as in the case of existing settlements.

STATEMENT OF PRINCIPLES

The first and foremost objective of town and country planning is the creation of an inspiring and diversified environment. Man's personal life is the axis around which the activities of his functional life revolve. Hence, the very essence of the work of architects and planners is the establishment of such a balance between personal and functional values and aspirations that neither of them can be undermined and ultimately destroyed.

The second objective of town and country planning is the creation of the actual framework within which the various activities can best be performed. The daily cycle of home life, work, recreation, and of the intermediate journeys linking them in time and space, must move smoothly and rationally. Thus, town and country planning is a problem of time and space.

The age of the machine has offered an overwhelming though unco-ordinated number of technical possibilities to an eclectic and moribund architecture, town planning being still in its infancy. Our towns grew into joyless and shapeless monstrosities. The forgotten men of the countryside were mere bystanders of this process.

The age of science offers a systematised and co-ordinated knowledge to the maturing art of town and country planning. It brings order into the chaos. It stops the ambitious and confused growth of the towns by the invisible wall of

reorganisation and differentiation. It qualifies them as clearly defined elements of a nationally conceived structure of settlement in which a revivified countryside can play its full part.

Like science town and country planning knows no rigid boundaries. The country as a whole is its planning unit, and regions and communities are but individual though essential parts of this planning organism. The replanning of Britain is a readjustment to new ideas, to new experiences and to new ways of living, towards which all communities are contributing. The uniting power of speed nullifies distances. New inventions and discoveries brush aside difficulties which seemed to be unsurmountable. Neglect of these forces means stagnation. Only the Fellowship of Architects, Planners and Scientists is able to fructify the vast amount of scientific and technological knowledge and to embody it in plans for the rebuilding of Britain.

This Fellowship does not assume the continuation of forces which were operative during the pre-war period. Fully aware of its own responsibility and the newness of its task, it demands the courage of a new conception and of a re-invigorated attitude towards life from all who are devoted to the future. The Community Great Britain, with the manifold aspirations and interests of modern life, must be planned with a clear vision and a bold facing of facts.

In consequence, the following principles are considered as the essential factors of town and country planning.

1. National, regional and local planning must be integrated. They must proceed simultaneously and according to similar principles in urban and rural areas.

2. Re-development, further development and development of existing and new communities respectively must be conceived and executed as one coherent whole and as a matter of regional concern.

3. Urgent reforms and short-term plans must be carried out as the initial stage of a long-term policy. They are means to this end but not ends in themselves.

4. The interests of the community must govern every scheme in general and in detail. Private interests must be subordinated to this principle without impeding personal freedom and without undue hardship.

5. Town and country planning is a three-dimensional art. Full recognition must be given to this fact in regard to the lay-out, in general and in detail, to the architectural form of the buildings and to the inter-relationship between built-up and open spaces.

6. The method of linear articulation, spatial zoning and functional spotting must be applied to national, regional and local planning alike. It creates and preserves a dynamic homogeneity of the country, of the regions and of the communities; and it evolves a diversified structure of the individual units.

7. The grid of the park and transport system links community to community. It frames the residential and non-residential zones and units. The park grid extends into the neighbourhood unit. The transport grid stops at its boundaries.

8. Within this framework the spreading of decentralisation and dispersal can proceed systematically, resulting in the functional inter-relationship of villages, towns, cities and regions.

9. Decentralisation loosens up congested areas within their immediate sphere of influence, while dispersal stretches out over the whole region and even beyond it. Both are complementary to each other.

10. The neighbourhood unit, a community within the community, is centred on the school and communal institutions. It is essentially part of a continuous belt of open spaces. It is a park of its own, interspersed with public and private buildings divorced from the traffic and noise of the streets.

11. The lay-out must conform, in general and in detail, to the highest standards of lighting, air- and sunlight-conditions. The rational application of this principle makes a loose grouping of buildings possible. It departs from the cañon street lined with houses, thus establishing a flexible interdependence of the street pattern and the arrangement of the houses.

12. In accordance with these principles apparently incompatible requirements can be fulfilled. The lay-out can combine

compactness and openness,
order and flexibility,
differentiation and homogeneity,
privacy and social intercourse.

The Centrical Type.

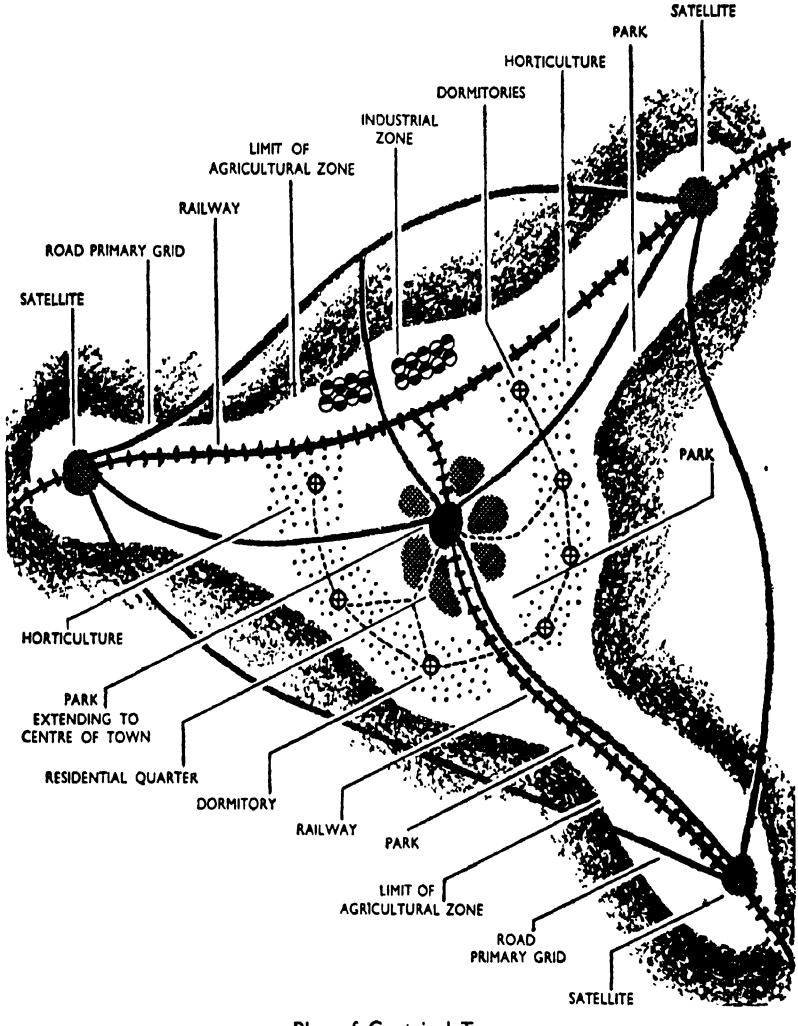
This type is developed around a centre and its shape approximates to a circular or more oval form. In the case of a larger settlement or a settlement group the inner districts, loosely surrounding the central business district, are separated from each other by the main arteries of the park and transport grid. The

situation of the industrial district or districts will largely be determined by the transport system, especially by the railways, and, of course, by other factors such as good accessibility from the workers' quarters, the prevailing winds, etc. Different solutions are possible. Industrial can alternate with non-industrial districts if they are sufficiently separated by a green belt, thus forming a more compact grouping around the central area. They can be situated outside the group of the inner districts as a unilateral extension, they can be split up into several smaller sections by green belts, roads and railway branchings. In the case of smaller towns and rural settlements the same principles can be applied correspondingly, sometimes with the additional advantage of a still more outspoken separation of residential and non-residential districts without the disadvantage of long intervals. The necessary shifting of roads, or the development of new quarters is generally easier and less expensive in smaller communities, a fact which will be of considerable importance if they should become " reception areas " after the war.

Detached from the inner districts which form the settlement proper, though related to it, are the sub-centres or satellites. They are situated at a distance of 10 to, say, 25 miles from the mother-city. It is on this distance that their status more or less depends. The shorter it is the more they are subject to influences from outside, i.e. the more pronounced is their character as a satellite. These sub-centres can be relatively uniformly distributed around the central settlement, they can be situated unilaterally, they may even form groups among themselves. They are connected by rail or road with the centre and among each other. They are the outer approaches tending to relieve the pressure of population and industry upon the inner districts.

The relationship between these outer elements and the inner group of districts is a problem of primary importance. There is no general agreement as to what constitutes the most desirable solution. We must look at this problem in its right perspective and consider it under the broader aspect of regional planning before we can arrive at a clear decision.

We should distinguish, on the one hand, between satellites which are " detached suburbs " and those which are of a more ambitious character and want to develop some sort of an individual life of their own, and, on the other hand, those which consider themselves as more or less " self-contained " although this has been, so far, a purely imaginary self-deception. The first type is comparable to a dormitory town, sometimes with a few light industries. The second type is, under present conditions, a mongrelised *je-ne-sais-quoi* combining the disadvantages of a small and a large town and the further inconvenience of daily



Plan of Centrical Type.

or, at least, frequent journeys "up to town". The third type is very much the same, for in reality there are always a great number of people working elsewhere and, up to now, it has proved to be impossible to provide for adequate social amenities and a diversified environment without relying on the central city. The requirements of a satellite of the second type have been formulated as follows:—

(1) The area should be large enough for a population of from 40,000 to 100,000.

(2) It should be planned as a complete community centre, so that while it is subsidiary to the city it has, by reason of its structure and the facilities provided, a life of its own.

(3) It should be so planned in conjunction with transport facilities that the community should have easy and cheap access to the city for those cultural, economic and other advantages which the city alone can supply.

(4) It should be physically separated from the city, and from other development by a permanent agricultural or park belt so that its form should be kept distinct.

(5) The plan should provide for shops, schools, churches, halls, cinemas, playing fields, parks, etc.

(6) The plan should provide for houses of all classes, so that it should have the character of a mixed residential area.

(7) There should be an industrial area within the satellite town, or the satellite should be planned in relation to existing or separately developed industrial areas. To carry out satellite town development, an area of agricultural land should be secured in a ring fence. The area should be from 1,000 to 5,000 acres, depending upon the size of the town proposed to be built. An area of 5,000 acres might be allocated somewhat as follows:

	Acres.
Residential	2,500
Shopping and commercial	200
Industrial	500
Schools, playing fields, open spaces, allotments, agricultural belt	1,800
	5,000

This would provide for a population of from 100,000 to 120,000 persons.

If we envisage a region as one functional unit in which every community "may become for a special purpose the centre of the region", it seems almost impossible that the old relations between centre and satellites should avoid undergoing a drastic revision. There is a certain law of the interaction of centre and periphery according to which the peripheral parts tend to become more independent in the course of time, assuming new

functions and establishing new contacts with other places. And further, if we also envisage that the towns of the future will be built according to the needs of future generations and that their structure will combine compactness and openness, is it then at all necessary to think in terms of " satellites " and to plan accordingly ? In spite of the fact that satellites are mostly situated nearer to the open country, or even in direct contact with it, and in spite of better air and some breezy winds, it is hardly possible to find breeziness in their way of life. Satellites of all types came into being in opposition to the big city as dependent accretions, and not so much as new elements with a life of their own. However, living in opposition to something else, deliberately renouncing an independent existence, is not stimulating. One of the main instruments of national planning is the diversification of industry. Let us imagine that this process goes on successfully so that every community and every region can be based on a sound and diversified structure ; what is the use then of planning for " subordination " ? The true meaning of this changed structure of settlement is the co-ordination of communities striving for self-realisation within a carefully graded system of functional inter-relationship.

If we admit this principle we should also admit that it is better to rebuild our cities so efficiently that they can house their population and their industry in the best possible way. There will be no need for " satellites " in the old sense, because there will be no lack of spaciousness. Systematic decentralisation and dispersal will create a balanced structure of settlement and reduce the influence of the central city. We may go even so far as to assume that the size of the big cities will decrease, if for no other reason than because their lay-out will be rational and the number of their inhabitants will drop as the outcome of the redistribution of population and industry as well as of the approaching standstill and later decrease in population. Consequently, in the National Plan there should be no place for the old type of satellites ; and no plans for " city states " surrounded by their own " colonies " should be allowed. The struggle between the " haves " and the " have-nots " should not be transferred to the level of urban empires. If it is anywhere justified to demand planning from the top it is in such cases. The regional plan must decide size, rank, functions of the individual communities, as well as the distances between them. The conception of satellites of all kinds, including those buoyed up with vain hopes of their " independence ", belongs to the past. They are make-beliefs and stopgaps of the age of *laisser faire.*

L. Mumford summarises these problems in his *Culture of Cities* in the following words :

What is important in this emerging conception is not expressed in the notion of satellite cities—not even of satellite garden cities. For, as the very word indicates, it assumes that one particular city will retain planetary proportions ; whereas, from the standpoint of social relativity and social integration, one must conceive that each unit, though ranging in size from five thousand to fifty thousand, will have equal " valence " in the regional scheme. Before the metropolis can achieve a healthy, orderly life, it must boldly rebuild its own internal structure as well as its outlying areas on similar lines. And for any particular function, the largest city in the group will often be subordinate to a smaller unit : what is significant is not the quantity of inhabitants but the quality of service.

Accordingly, the centrical type of settlement is composed of a number of " intraverted " *zones of influence*, encompassing but not hemming in, the central district. There should be no mistake : *zones of influence are not the same as definite districts zoned for a definite purpose.* Zone of influence, in this sense, indicates merely the range within which certain activities may best be carried on. Thus, a certain sequence of the zones of influence is evident, although the different zones intersect each other, sometimes even to a degree of actual coalescence. The business district can be regarded as the innermost zone of influence. Then follow the residential, the industrial, the horticultural and the agricultural zones, each framed by its park zone. It would obviously be nonsense to assume that the horticultural zone could be the centre or that the industrial zone should be situated between the business and the residential zone. While the park zone is ubiquitous, each of the others has its definite place in the whole system. In this way, the possibility of a rigid pattern and of a ring fence strangling the very life of the community is excluded. The old idea of a circular extension, in reality a senseless impossibility, is being replaced by a systematic differentiation and sequence of the various functions which make up the life of a community. This principle will carry us farther even than the otherwise good idea of combining green radial wedges with a green belt.

No such towns exist yet. That they do not is only a further proof of our failure to grasp the situation and to act on it. It is already manifest that the trend goes definitely in this direction. No examples of existing towns can, therefore, be presented. There are only plans available which demonstrate some aspects of the whole problem.

The Linear Type.

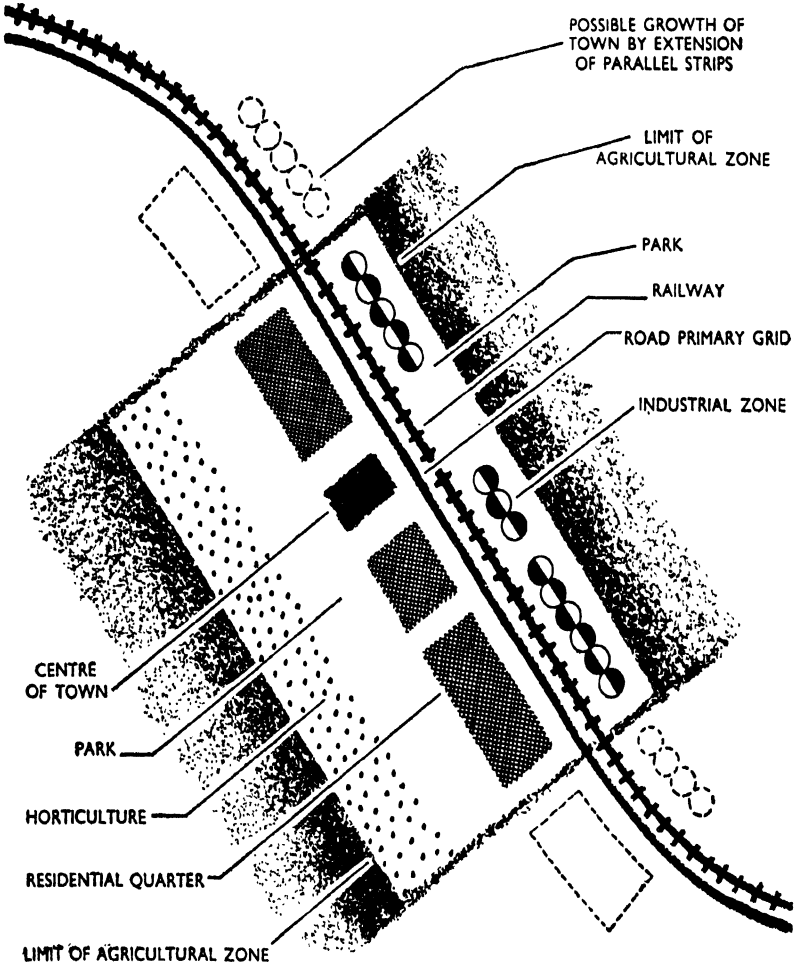
Before explaining what the linear type actually is, it is appropriate to state what it is not. " Linear " development has acquired notoriety, because it is too easily identified with ribbon

development. But the linear type has nothing whatever to do with this dull principle which can be easily applied *ad infinitum* without thinking. And something that works without this arduous activity can be sure, in any case, of a certain success.

The early plans of linear towns should be regarded in a somewhat different light, although they are also based on the close connection between houses and highways. But these schemes were the sincere attempt to bring certain experiences into a working order. D. Arturo Soria y Mata developed a " ciudad lineal " near Madrid in the 'eighties. It was planned for a length of about 30 miles and a width of 550 yards. One-fifth of its area was reserved for houses, the rest for gardens and open spaces. By far the greater part of the houses was situated in the side streets. Another solution was suggested by E. Chambles. His " road town " " . . . is a line of city projected throughout the country. This line of a city will be in the form of a continuous house. In the basement of the house are to be placed means of transporting passengers, freight, parcels and all utilities which can be carried by pipe or wire." [1] This scheme was intended as " a new plan for agricultural colonisation in the West ". Both these types are purely residential, and, especially in the former case, the inhabitants are conveyed to their work-places by means of the tramway route along which the houses are lined up.

These plans have in common with the linear type, as we understand it, merely the linear extension. The principle of a modern linear settlement is based on concentration and on a highwayless lay-out as far as the area proper of the community is concerned. Both dimensions, length and width, are equally important as regards the internal traffic, a possible longitudinal extension without impeding the nearness, and the inter-communications between the different zones in the other direction. This principle is exactly the opposite of a centralised settlement. It leads consequently to the subdivision into units, arranged side by side and focused on their own social centres. These individual elements are held together by the rational application of the linear principle. The zones run parallel, separated by green belts. The residential and the non-residential units can be easily inter-connected and the distances between home and work can be considerably reduced. A start has been made with this type in U.S.S.R. But unfortunately unfavourable circumstances prevented the full execution of these plans which are the combined work of Russian and German architects. The principle has been described as follows [2] :—

[1] M. Hastings, *The Continuous House*, 1914. Sunset.
[2] Miljutin, *Socialist Towns*.


POSSIBLE GROWTH OF TOWN BY EXTENSION OF PARALLEL STRIPS
LIMIT OF AGRICULTURAL ZONE
PARK
RAILWAY
ROAD PRIMARY GRID
INDUSTRIAL ZONE
CENTRE OF TOWN
PARK
HORTICULTURE
RESIDENTIAL QUARTER
LIMIT OF AGRICULTURAL ZONE

LINEAR TYPE

(1) A rational combination between the units of production and the means of transport must be created. In this connection the economic coherence of the whole " combinate " and the necessary connections between it and the communal buildings and dwelling houses of the town must be provided.

(2) The dwelling area of a settlement (dwellings, public institutions and buildings) must be separated from the production area by a wide strip of land (neutral zone), which must not be narrower than 500 metres and which should be widened as the particular industry or local conditions demand. Only in this way will it be possible, without going to considerable expense for the organisation of the city traffic, for the worker living at a walking distance from his work of 10 to 20 minutes to enjoy all the benefits of country life (fresh air, forest, meadow).

(3) The best situation for the railway line is behind the line of production. The main thoroughfare would come in the belt of green. This would facilitate the unhindered development of factories and traffic arteries in the opposite direction to the dwelling area, on the one hand, and on the other hand, of communication within the settlement and between the various settlements by means of motor traffic on the main thoroughfare. The goods and passenger stations will lie between the rail and motor routes, thereby facilitating quick service for both industrial and dwelling areas.

(4) The best situation for the agricultural district is behind the dwelling zone. This offers the following advantages ; the workers on the Soviet estate will live in the same dwelling area as the industrial workers ; the drainage of the dwelling area will convey the fertilisers to the fields by the shortest possible route, and the agricultural products will also be conveyed by the shortest possible route to the consumer in the dwelling area or to the station or other places of storage.

(5) Provision must be made in the vicinity of the relative industrial and agricultural centres of production for the necessary building plots for technical and agricultural high or middle schools.

(6) Only by means of such an arrangement of the educational institutions will it be possible to realise the consolidation of work and education. The merging together of educational and practical laboratories, workshops, libraries, archives, etc. constitutes not only an enormous economy materially, but is also the realisation of the great idea of fusing the centres of production for purposes of training.

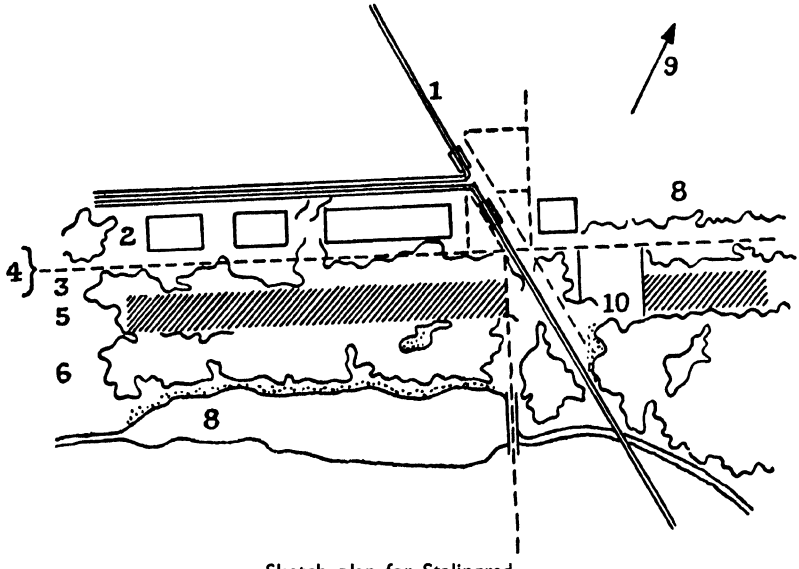
(7) The communal production plants must be located in the production area with facilities for the most practical form of administration and the best means of delivery to the settlement and its various sections.

These zones must be in the following order of succession :

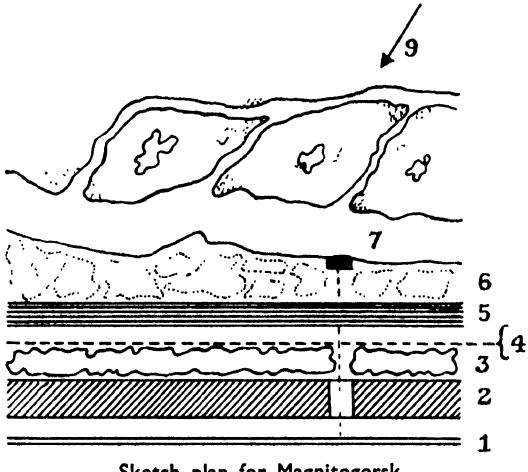
The railway zone.

Zone for factories and communal plants, warehouses, railway stations and their respective institutions.

The green zone (neutral zone) with the high road passing through it.

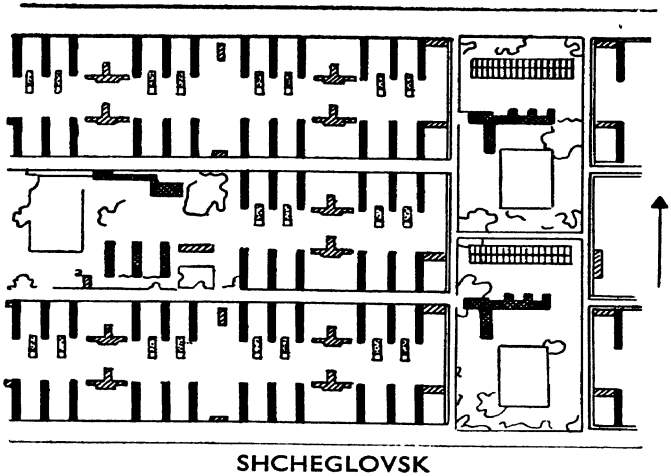


Sketch plan for Stalingrad.

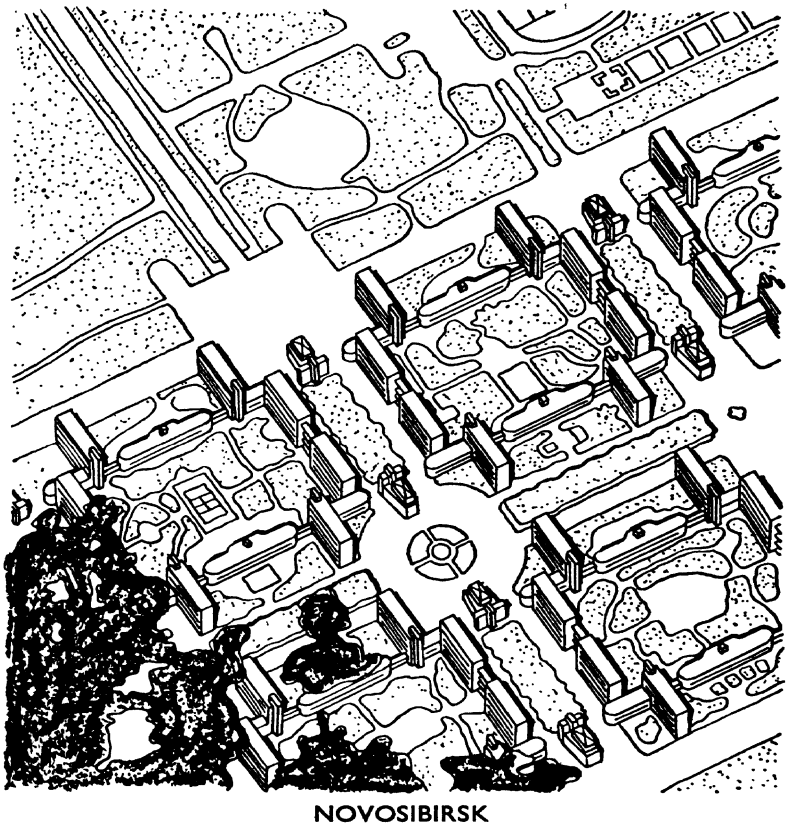


Sketch plan for Magnitogorsk.

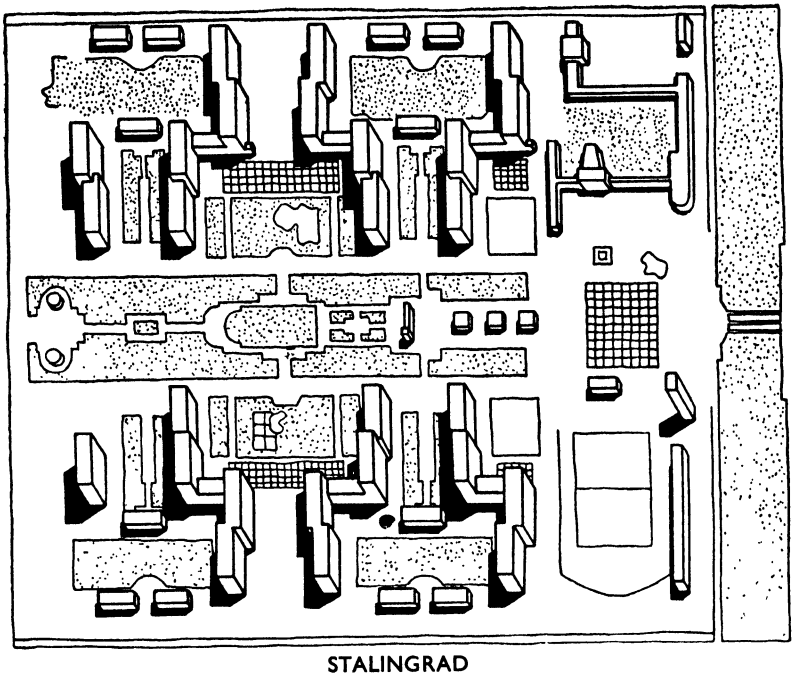
1 *Railway*
2 *Industrial Belt*
3 *Green Zone*
4 *Thoroughfare*
5 *Residential Belt*
6 *Park*
7 *Ural River*
8 *Volga River*
9 *Prevailing Winds*
10 *Communal Works*



SHCHEGLOVSK
Plan of the residential quarter.

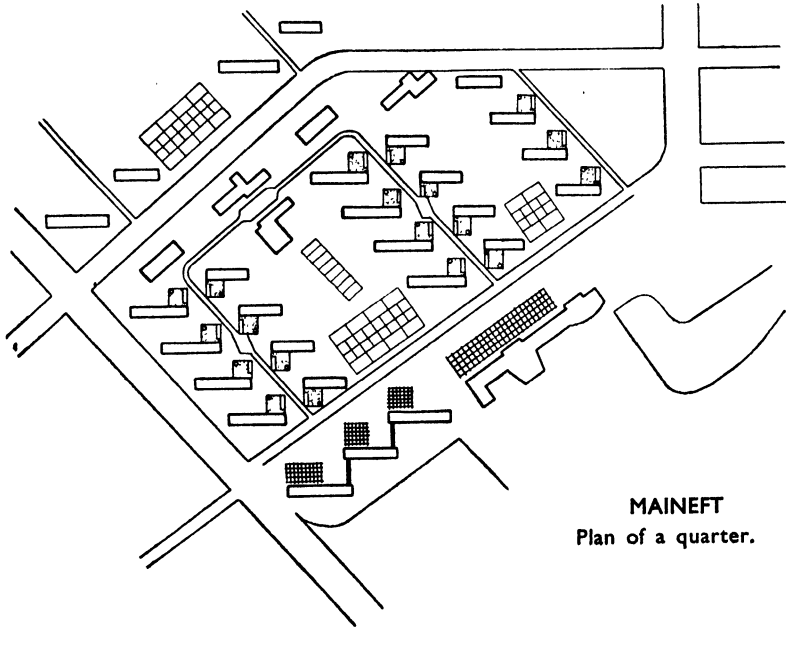


NOVOSIBIRSK
Plan of the residential quarter.



STALINGRAD

Quarter containing 4-storeyed dwelling houses, 2-storeyed community houses, green spaces, playgrounds, etc.



MAINEFT

Plan of a quarter.

The dwelling zone with the following units in parallel formation: public institutions, dwelling houses, the juvenile town (children's retreats, kindergartens, infant homes, etc.).

Park zone with facilities for recreation, playing grounds, swimming pools, etc.

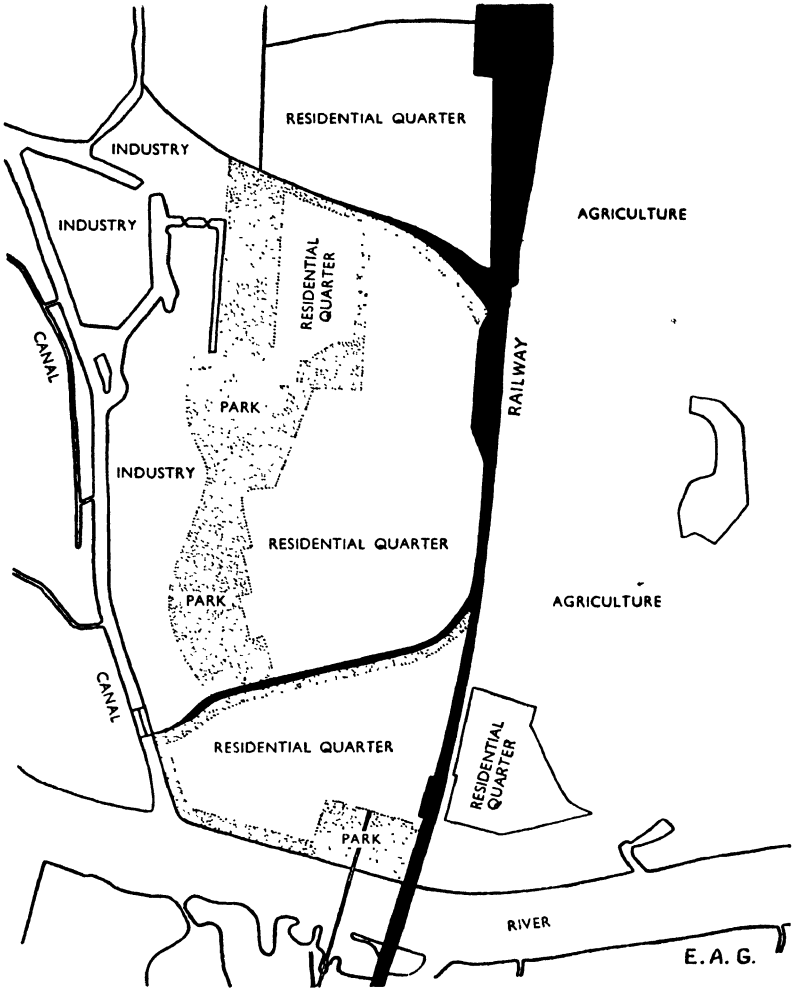
The agricultural zone.

"There must be no departure from the sequence of these six zones, as this would not only upset the whole plan, but would make the development and extension of each individual unit impossible, create unhealthy living conditions and completely nullify the important advantages in respect of production which our functionary linear system embodies."

A number of 100,000 to 200,000 was considered as appropriate for each of these new towns. In a town near Novosibirsk the industrial zone is separated from the residential quarters by a green belt of about 830 yards. Groups of four-storey flats, so-called "commune houses", alternate with parks about 600 yards wide. Public institutions, as kindergartens, infant school, restaurant, club gymnasium, laundry with modern mechanical equipment, etc. are attached to each group. From 800 to 1,000 people form such a community. The buildings cover only 15 to 20% of the residential zone; the rest is reserved for gardens. Thirty % of the whole area of the town is given over to green open spaces not including the tree-planted intervals between the houses.

Finally, another example of a linear city may be mentioned. It has been planned as a connecting link between two existing cities and is situated on an island formed by two arms of a river. The main traffic lines, the railway and the highway, could not be changed. They were to be considered as fixed. The same held true of the canal as an important waterway for the adjoining industries. The industrial zone is separated from the residential quarters by a green belt. All open spaces are inter-connected. The traffic zone, accompanied by a park artery, isolates the residential from the agricultural zone. There are plenty of transversal connections running at right angles to the main extension of the city. The public buildings and the shopping centre are concentrated on the banks of the southern arm of the river. The plan provides for the accommodation of well over 100,000 persons. The individual units are laid out as neighbourhood units with the respective communal institutions. The population is occupied in industry and agriculture. The linear lay-out recommended itself as the natural solution. It was conditioned by the local situation, the existing transport system and the economic professional structure.

The emergence of new settlement types is of great significance. If they are used intelligently they will contribute towards a better community life and a more rational consummation of our natural



A linear town as the connecting link between two existing cities.

resources. They will promote the understanding that it is not the size of a community that matters but the diversity and number of its public services and other facilities and amenities. They will make us conscious of the fact that we are living actually within the relatively narrow circle of our neighbourhood and do not care very much about other districts provided we do not have to work there. A sound regional allocation of the manifold functions which make up the complicated pattern of modern life will end the idolisation of " size " and will pave the way for a new structure of settlement.

The forces of decentralisation and dispersal affect every stage of the process of redistribution of population and industry. They will reshape the pattern of settlement all over the country, and their effect will be felt even in the smallest element, the cell of the individual household. Both belong together; they are complementary. They are prime movers transmitting the social and economic powers into new channels. They will burst asunder the congested structure of our towns and integrate and reinvigorate the countryside. They will force us not to stop half-way and not to be satisfied with the check of the further growth of large cities and over-populated regions. Their task is to reverse this process drastically.

If it is true that good examples are sometimes less convincing than bad ones, we should look at the recommendations of the Regional Survey of New York, produced between 1927 and 1931. It fills ten volumes with statistics and statements of known facts, with assumptions which pay the greatest honour to all men with a super-traditional outlook—but it does not bring to the conception of urban development the stimulus of new ideas. The essence of this " famous " and painstaking work is: " It is estimated that by the year 1965 the population of the Region will be about double the present population, or, say, 20,000,000." One can safely say that the principal attitude towards this whole problem is fundamentally wrong, for it has been dictated by a retrospective view, rather than by a prospective possibility of a profoundly changed future development. Because New York has grown in the past, is it really bound to go on growing for ever? There is a profound lack of imagination, and a profound cowardice, too, which prevents us from relying on our own liberated thinking and on our own will! As long as one " wants " only what one can achieve easily according to superficial experiences of the past, one must not pretend to build a new order of life. One must dare to live *against* facts! One must dare to live *against* so-called recognised truisms.

What are the arguments put forward in the case of New York in favour of a further concentration of population?

"First, the unique extent of the undeveloped natural opportunities for expansion of the Port of New York to serve the needs of any conceivable growth of industry and population, together with the impetus towards further expansion which already exists because of unparalleled concentration of transportation facilities, and which requires only intelligent planning and development to maintain its force."

Why "any conceivable growth", and not any conceivable dispersal and decentralisation? Why "to maintain", why not to change? Why "further expansion" and not organic diversion?

"Second: the existing concentration of great financial institutions and commercial and industrial activities, with their power to expand further and thereby attract additional business and industry."

Why "attract additional business and industry", why not power to decentralise their activities?

"Third: the extent and variety of business and cultural opportunities incident to the high degree of concentration of wealth and commerce and providing attractions for increased migration from smaller cities and rural districts."

Why not to smaller cities and rural districts?

The general answer is that the standard of morale is, for our time, success and business, and that we believe in the maxim, "it will continue". The case of New York can be generalised without any hesitation. These very ideas have to be abolished if the way to national planning is to be cleared.

If the replanning of Britain is to be successful, and if we sincerely aim at a new pattern of life, work and settlement, we must, first of all, rid ourselves of the idea that the stream of events is always running in the same direction. We must rise above the assumption of our own infallibility. We must not be impressed by idols which we ourselves have erected and which only our self-complacency and slothfulness make us believe to be permanent. Nothing is permanent but change; and it is in our power alone to bring progressive changes about. In *Les Nouvelles Nourritures* André Gide says: ". . . But see what Man has made of the Promised Land, a land bestowed on him

as a priceless heritage. . . . Surely even the Gods would blush for shame. The child who breaks a toy is not more stupid; nor the animal which ravages the pasture-land where it finds provender, and makes muddy the water which it is going to drink; nor the bird which defiles its nest. . . . I picture the dreary approaches to towns! Ugliness, discord, smell. . . . And I dream of the gardens they might have been, children of understanding love; girdles of cities and guardians of the most tender and luxuriant greenness . . . the smallest outrage checked in a universal joy . . . I dream, too, of what leisure might have been! Spiritual recreation in the benediction of joy! And work, work even, redeemed and saved from an impious curse . . . Yet the certain knowledge that Man has not always been what he is makes one hope that he will not forever remain in his present state. . . . Men talk of progress . . . of the progress of commerce and industry and especially of that of the fine arts: what nonsense it all is! Progress in knowledge there certainly is. But what seems to me to be the most vital is the progress of Man himself. . . . It is not only a question of changing the World, but also of changing Man. Friend, believe nothing; do not accept anything for which you have no proof. Desire for knowledge engenders doubt. End credulity. Teach yourself. Do not accept life as Men offer it to you. Rather ceaselessly persuade yourself that your life and that of others might be more beautiful; as soon as you realise that it is not God but Man who is responsible for almost all the evils of life, you will have no share in them. Do not make sacrifices to false Gods."

THE DEMOGRAPHIC PROBLEM

THE demographers should be able to furnish the planners with much basic information on which to develop their schemes. We will only " state a case ", therefore, and abstain from a detailed examination of this problem.

Sir William Beveridge stated at a meeting of the Geographical Association in 1937: " For the last seventeen years economists have been talking about nothing but banking policy and the Gold Standard, but the centre of the social sciences is going to be the problem of population." Serious consideration should be given to this aspect of national planning. It is the human factor that counts more than anything else. The structure of population determines the structure of the National Plan, and its execution in time and space. But the National Plan can also, as it is hoped it will, influence the structure of population. Indeed, it would be of no use to plan a redistribution of the population unless it was going to lead to the provision of a new population. It should be borne in mind that we must *now* do everything possible to prevent a decrease of the population in the future. To say that there is no likelihood of increase in the population in the near future is probably right; but this fact cannot prevent us from paving the way for a possible increase, say, after the year 1970. In this sense, the National Plan *is* a plan for providing for a new population, for it should aim at conditions of living which will insure against crises and will make people desire to have children. To-day the choice between a Ford car and a child is usually made in favour of a Ford—as it has been put; then, the choice will be in favour of the child who will be genuinely desired—the Ford will come later. Moreover, it should not be forgotten that a standstill, and even later a decrease, in the number of persons does not mean that the number of households is decreasing in the same ratio; and these are the principal measures for the lay-out and size of settlements. It had been estimated that population units requiring accommodation by 1941 would be about 11,000,000. More recent investigations have brought to light the fact that the number of household-units was approaching the 12,000,000 mark already in 1938 and that in addition there exists a reservoir of arrears of possibly more than a million.

What factors do influence the trend of population? Broadly speaking, they are psychological, social, economic and biological. The resolute will to build a better future and to think in terms of times to come may lead to an increased number of children.

A more stimulating and diversified environment and a shielding social relationship dispelling the feeling of fear and solitariness among the masses—they may also work in the same direction. Economic fluctuations and changing conditions of production and consumption have their bearings upon the structure of population. Different occupations, housing conditions, concentration or dispersion of settlement, in brief income level, type of community, security of work and a sufficient choice of economic opportunities, all of them exert their characteristic influence. Health, medical, educational services and biological factors affect population trends decisively. We must know, therefore, numbers and composition of age groups, of families, of households; further, the sex composition and the occupational structure; and finally we must have estimates of the future population. These data will supply us with the necessary information regarding scope and character of the National Plan in general and in detail as far as the population as such is concerned. They will tell us for how many people, for what categories, and for what periods the various stages of the National Plan should prepare. And these figures, in their turn, are essential for getting a clear picture of the amount of different materials and the number of people needed for the execution of local and regional plans.

It has been said that England under Queen Elizabeth, with a much smaller population, experienced one of the happiest periods of her history, and that a decrease of population in the future might produce similar results. This assumption is, of course, contrary to all reasonable expectation. It does not take into account the manifold and complicated pattern of modern life which needs a corresponding number of people if we want not only to maintain existing values but to create new ones. A greatly reduced number of people would definitely lead to a lowering of the standard of living and would enforce conditions where individual self-expression could not find its proper outlet. As Margaret Mead says: "If we are to achieve a richer culture, rich in contrasting values, we must recognise the whole gamut of human potentialities, and so weave a less arbitrary social fabric, one in which each diverse human gift will find a fitting place." [1]

But quite apart from these considerations it is dangerous to play with ideas of a merry England with a decreasing population. Professor Carr-Saunders made the immediate dangers of such an attitude candidly clear in an article published several years ago.

> Most of the discussions quite rightly take note of Dr. Enid Charles's calculations. She has shown that, if there is no gain or loss by migration, and if fertility (which means, roughly, average

[1] M. Mead, *Sex and Temperament in Three Primitive Societies*, 1935.

size of family) and mortality (which means, roughly, expectation of life) remain as they were in 1933, the population of England and Wales, which is now about 41,000,000 will be about 37,000,000 in 1970, about 28,000,000 in 2000 and about 20,000,000, that is half its present size, in 2035. She has made other calculations, and one of them has been widely noticed. She has shown that if there is no migration and if mortality continues to fall until 1965 and fertility to 1985 in the manner in which they have recently been falling, the population will be about 34,000,000 in 1970, about 18,000,000 in 2000, and between 4,000,000 and 5,000,000 in 2035. Though it is not possible to look far into the future of fertility it seems most improbable that in the near future the professional classes will increase the size of their families, whereas it is highly probable that the less well-off will continue to bring down the size of their families until they are somewhere near that of the former. Therefore the likely change in fertility in the near future will be in the direction of reducing the average size of family in the nation as a whole. But this is not the whole story or even the most important part of it. Her calculation also shows that, if present trends continue, even without any further decline in fertility, the fall will become sharp after 1970. The reason for this may be roughly indicated by the analogy of a reservoir. If only half as much water is being pumped into a reservoir as is flowing out, the outflow will keep up well for a time until a point is reached where, unless the inflow is suddenly doubled, the outflow will drop in catastrophic fashion. If a very sharp drop after 1970 is to be avoided, factors must soon begin to change in a direction favourable to population; for no one can suppose that we could suddenly double the inflow, that is to say that we could suddenly replace small families by larger families, since all experience shows that habits in these matters change slowly. Our anticipation for the next two decades is a weakening and not a strengthening of the relevant factors. This is a matter for serious concern, not because it points to a reduction of some 5,000,000 or 6,000,000 in thirty years, which in the opinion of some might not matter very much, but because it paves the way for the setting in of an almost inevitable fall after 1970 of so drastic a kind that it can scarcely be regarded with favour on any grounds. Some people may be inclined to say that our present problems are enough and that 1970 can be left to look after itself. But to say that is to fail to understand that future population is determined, more or less definitely, years beforehand. Therefore in an important sense the population of 1970 and after is a present problem, since, unless the trend of population changes soon, it will be too late to prevent a fall in numbers so heavy that our civilisation will be in danger.[1]

The undercurrents of our civilisation are partly neutralising each other. Dr. Enid Charles says in her book, *The Menace of Under-Population*:

Two views concerning the economic and psychological factors

[1] *Britain's Dwindling Population.*

which inhibit reproductive vitality in contemporary civilisation must now be distinguished. One is that they depend on the productive character of industrial civilisation. The other is that they arise from the distributive arrangements which have hitherto prevailed in the industrial era. The two possibilities are not mutually exclusive. We may attribute our low fertility to the spread of large-scale industry with its resultant changes in methods of living. We may attribute it to the tradition created by an acquisitive society which appeals to the incentive of private profit co-existent with large inequalities of wealth. Industrialism has increased the number of amenities and amusements, more particularly greater ease of travel, thus providing distractions alternative to parenthood. The individual desire for a more varied life is bound to restrain the production of children. It might even do so to a greater extent if a more equitable social distribution of amenities is attained. A wider field of occupation for women competing with men for the same distinctions and responsibilities can hardly fail to curb reproductive activity in any type of society. The existence of large cities which are definitely unpropitious to reproduction does not seem to be necessarily a concomitant of any particular method of production or distribution but of the chaotic way in which industrialism has developed. The unequal distribution of the economic burdens of parenthood and the lack of security which makes people unwilling to undertake them are consequences of our arrangements for the distribution of wealth. Most important of all is the tradition of sterility to which the industrial revolution gave birth. The conclusion which emerges most clearly is that the *laisser-faire* economy is a biologically self-destructive arrangement of man's social life. It puts a price upon parenthood. It confers social prestige upon sterility by ensuring the social promotion of persons with low reproductive vitality. The less prosperous incur the stigma of thriftlessness for the discharge of their racial responsibilities. The facts conclusively show that they too have now succumbed to the suicidal prudence of their betters.

What matters is the Net Reproduction Rate; it alone can effect the trend of population. "The problem before us can be put briefly by asking how we are to obtain a sufficient number of four- or five-child families." If a population shall maintain itself at a stationary level it is necessary that "every woman bears on the average about three children, and this is only likely to happen when many women bear four or five children." [1] The usual answer to such statements is that improved health conditions will save more lives.

But the only saving of life [as Carr-Saunders points out] which can affect the trend of population is the saving of the lives of women before the end of the child-bearing period. The saving of lives above this age will make the population larger at any one time but

[1] E. Charles, *Menace of Under-Population*, 1936.

it will have no effect upon population trend. From the point of view of trend of population it does not matter whether women all die on reaching the end of the child-bearing period or live to be a hundred years old. What matters is whether 1,000 women leave another 1,000 women behind them, and the only improvement which can help here is the decrease in the mortality of women before they reach the age of 45 or thereabouts.[1]

What does this mean in reality?

Let us begin with 1,000 girl babies. Before they reach the age of 15, that is before they enter the child-bearing period, some 200 have died. We may say that 800 of them will live through from 15 to 19 and 750 from 20 to 24. If we follow the slowly reduced group, which originally numbered 1,000, we find that little over 500 live through the child-bearing period. We know that 1,000 women aged 15 to 19 bear 100 girl babies, whence it follows that 800 will bear 80; we know that 1,000 women aged 20 to 24 bear 400 girl babies, whence it follows that 750 will bear 300. In fact we can easily calculate that the original 1,000 reduced to nearly one-half in forty-five years will bear 705 girl babies. These 1,000 women are therefore not replacing themselves.—This description, based on imaginary figures, of a method whence it may be ascertained whether a population is replacing itself, is a very simplified description of the Gross and Net Reproduction Rates elaborated and used by Mr. Kuczynski. When fertility alone is taken into account, we obtain the former. In the imaginary case, since 1,000 women leave 1,000 girls, that is 1,000 potential mothers, behind them, we say the rate is 1. If the Gross Reproduction Rate is as low as 1, the population cannot be replacing itself, because some of the original 1,000 must die before the end of the child-bearing period. But since we want to know how the population does stand in relation to replacement we must take the effect of mortality into account. When this is done in the imaginary case, we find that 1,000 women leave 705 girl babies behind them, and we say that the Net Reproduction Rate is 0·705. When this rate is below unity, the population is not replacing itself.

However, these factors throw light only on one side of the problem. The other set of conditions—or shall we rather say misinterpretations—concern the alleged over-population of Britain. Of course, the figure of 685 per square mile for England and Wales is rather impressive. But what does it actually mean? It shows merely the ratio of the entire population to the entire area. It does not say anything about the distribution of settlements and the ratio of the number of places to the various regions. It is evident that regions with a high density of settlements need not necessarily be identical with those having a high density of population. On the contrary, it can often be found that regions

[1] A. M. Carr-Saunders, *World Population*, 1936.

with a high density of settlements, i.e. with a relatively even distribution of settlements, have a lower density of population; whereas the density of settlements may decrease in regions with larger and more compact agglomerations of settlement. But it is mostly the density of population in general, making no allowance for the other factors, which gives rise to the belief that this country is " over-populated ". The term " over-population " should be excluded from all serious examinations of population problems. It should be left to those political busybodies and scandalmongers who tell us that their country is over-populated but, at the same time, stop emigration and demand a bigger population as an excuse for expanding their State boundaries. For example, Mario de Vergottini expresses this self-created vicious circle quite frankly:

> Situated in the southern part of Central Europe, with an area small as compared even with that of the other European States, but with a densely settled population lagging behind that of only few European States, with a soil poor in minerals which is but little suited to intensive agricultural exploitation, Italy, in order to preserve her position as a Great European Power and to increase her importance in Europe and in the world, had to aim above all at an increase of her population so as to create through her demographic expansion the basis for the territorial expansion which is necessary to enable her to maintain within the State the natural population increase which otherwise, as in the past, would have to overflow abroad.[1]

Statements of this kind should make us very sceptical of the word " over-population " and its true meaning.

What then can " over-population " express? Is it the ratio between the number of inhabitants and the food-producing capacity of the country, or between them and their standard of living, or between the working population and the opportunities of employment? The standard of living is certainly an important factor, but as the one and only measure it gives a wrong picture. The food-producing capacity is also unsuitable as a determinant of " over-population " for two reasons. First, science and the rationalisation of cultivation as well as a changing diet might considerably alter present conditions. And secondly, insufficiency of the internal capacity can always be balanced by imports. War conditions cannot be regarded as a normal state of affairs. The standard of employment, finally, cannot serve as a useful yard-stick of " over-population ". The curve of unemployment is rather fluctuating, in any case much more than the trend of population. Increasing unemployment is, at least not in this

[1] *Die Bevölkerungspolitik des Faschismus und ihre Grundlagen. Archiv fur Bevölkerungswissenschaft und Bevölkerungspolitik*, 1938.

country, not the consequence of too great a number of people, but is dependent on the internal and external economic situation. Indeed, it is astonishing that one factor has been largely overlooked; it is the distribution of the population in relation to the available space. This side of the problem is usually restricted to the relation of cultivated and cultivable areas and the potential density within them. But such an approach is again bound up with the food-producing capacity.

The only and genuine problem facing this country is the redistribution of population. There is no justification whatever for assuming that there is the slightest possibility of " over-population ". It is rather a question of " the optimum density ".

> In speaking of the optimum density for any one country or population we must, therefore, insist on the interdependence of that standard we speak of as the optimum with the distribution of internal densities as well as external densities of populations in the same economic system. The optimum density, therefore, for a whole country at any one time is to be represented by a mean to be determined after adding the surplus urban to the rural shortage of population. The most favourable regional density will again largely depend on the optimum occupational density wherein man-power is balanced by the natural resources and the technical means at the disposal of the community for developing them, and for exploiting physical power in relation to the needs and capacity for consumption in the producing region and in all other regions with which it trades.[1]

There is no such thing as " over-population ". It exists only in very few cases, and certainly not in Britain. But there is definitely an unsound distribution of population and settlement. It is the pivotal task of the National Plan to remedy disadvantages arising from these conditions and replace them by a systematic redistribution.

Density of settlement and density of population tend to be more corresponding in rural than in industrial areas. Industrial development leads to a greater concentration; rural conditions lead to a more even distribution. Industry goes mostly together with many-storeyed buildings; rural settlement with small houses. Over-population in agricultural districts can exist if the farms are small, if the standard of living is low in spite of great laboriousness and if the returns of the land are insufficient for these reasons. Such conditions do not, however, exist in Britain, and it is unlikely that they ever will.

In face of the many factors which make a definite forecast difficult on which the fabric of national planning can be based,

[1] G. H. L. F. Pitt-Rivers, " The Urgency of Population Study from the Bio-anthropological Approach ", *Population Journal*, 1933.

it is imperative that all plans must be plastic and be worked out for several possibilities. On the basis of estimates of future population three different possibilities should be envisaged: a stationary, a decreasing, and an increasing population. The National Plan should take these three ways of development into account if it is to be adaptable to changing conditions. While it is true that relatively definite assumptions can be made up to a period of about twenty to thirty years hence, it should be borne in mind that planning on a national scale is a long-term and a continuous process which must not bar the way to even far-reaching changes in the future.

This is one consequence that should be drawn from the material with which demographers must supply us. The other one is of a more general nature but not less important. It is the necessity of creating conditions which guarantee security, work and a healthy environment; all of them are essential prerequisites if the "retreat from parenthood" shall be stopped. In so far as the National Plan is a plan for providing for a new population, this aspect should find a leading place in all discussions of a planned post-war reconstruction. It should silence all those who believe that some "reforms" can solve this problem, however great the flourish of trumpets with which they are announced. It can be foreseen that many people will be taken in by the argument that a population which is coming to a standstill and might later on decrease needs no new houses. They should be told

> that it is not a quartette of newly born children who take a flat; that it is not the death of four soldiers which leaves a dwelling vacant; that the demand for lodgings depends mainly on the excess of newly created over dissolved households; and that the number of births and the number of dying soldiers have practically no influence upon the number of households created or dissolved.

And in regard to unemployment:

> It is not the newly born children who crowd the labour market and it is only a small proportion of the deceased who create occupational openings by their death. I even venture to say that if one set out to increase unemployment in a given country for the next fifteen years, one could find no more efficient means than birth-restriction on a very large scale. Let us assume, for the sake of argument, that birth-restriction should go so far that no child would be born in that country during the next fifteen years. What would be the effect upon the labour market? Certainly, not a single man would find work more easily merely because no more children were being born. As a matter of fact the number of persons looking for a job would increase in the next fifteen years as in the past, because there would be more boys and girls reaching the bread-winning

age than men and women leaving their jobs on account of old age, death, etc. The number of job-hunters might increase even more than before, because many young women who, if they had children, would not work might be looking for work if they had no children. What is still worse, the number of people thrown out of employment would increase at a terrific speed. The industries catering for the needs of the youngest children would be the first to be ruined. They would be followed by those supplying the wants of the older children, and so on. Teachers would lose employment, and so forth. It may seem at first sight as if the lack of children could not possibly reduce the national income and that, if the total purchasing power remained the same, industry as a whole would not be worse off. But with the increasing number of unemployed, wages and salaries would necessarily drop so that the national income and the demand for goods would decrease after all.[1]

And further

It is an easy matter to convince the man in the street that since those who have only one child are better off than those who have three or more children it must mean general economic relief if there are fewer children. But this does not imply that the arguments against population growth are sounder than the arguments in favour of population growth. Unemployment may be the result of under-population and not of over-population. Birth-control may be beneficial for the individual and at the same time detrimental to society.—I may be asked at this point: how is it possible that fewer children would not mean general economic relief when we see in daily life that those who have only, say, one child can afford to live better than those who have three or more children? My answer to this question is very simple. Mr. Smith, the real estate agent, is economically better off with one child than with more children as long as other people have more children. But if the rest of the community had one child per family, Mr. Smith would starve because there would be much less demand for new buildings. A man may live comfortably from a business which depends mainly on the increase of population even if he himself does not contribute to that increase. But he can do this only as long as others do not follow his example. It may seem at first sight as if real estate were an exceptional case. But is there any line of business in such countries as England or the United States that is not carried on on the assumption that population will continue to increase?—Birth-control and immigration restriction have been applied, for instance, in the United States with ever-increasing intensity. The result has been a slowing down of population increase which, if fertility and mortality remain what they are, will lead finally to a decrease in numbers.

Thus again two conclusions can be drawn from these statements, the truth of which can hardly be denied. First, the

[1] R. R. Kuczynski, *Population Movements*, 1936.

National Plan is, in fact, the most efficient source of absorbing labour systematically. It should aim at nothing less than a complete abolition of unemployment. Secondly, immigration should be encouraged and the immigrants who are already in this country should be encouraged likewise to make Britain their permanent home. They should be given every help to this end if for no other reason than because a " dwindling population " should welcome every opportunity of additional growth.

Of the many problems which need thorough research work Kuczynski mentions only a few as examples with regard to the financial consequences of the present population trend :

> To what extent will the decrease in the proportion of children increase the adults' capacity to pay taxes ? To what extent will it reduce public expenses (for schools, welfare institutions, etc.) ?
>
> To what extent will the increase in the proportion of old people unable to earn a living increase public expenses (for old-age pensions, etc.) ? To what extent will additional public expenses be caused by the fact that with the decrease of fertility old people unable to earn a living will, in fewer cases than in the past, have children to support them ?
>
> To what extent will the changes in the demand for various goods (fewer " cradles ", more " coffins ") affect tax receipts ? To what extent will the reduction of house-building activity and the slackening of speculation in urban real estate affect receipts ?
>
> To what extent will the capacity to meet obligations contracted in the past be affected (civil and military pensions, long-term loans) ? To what extent has the present population trend to be taken into account when issuing new long-term loans and fixing the terms of amortisation ? "

He concludes :

> If fertility and mortality remain constant or decrease to the same extent and if no conspicuous immigration takes place, we shall soon witness in England, as in most other countries of Western civilisation, a steady decrease in the population as a whole. At the same time, every branch of industry is still carried on on the assumption that the population will continue to increase. This does not, of course, imply that every branch of industry will suffer from a reduction in the total number of consumers. But people should realise that a change in the population trend is, under any circumstances, a serious matter with far-reaching consequences, good and bad. If leading men and women continue to talk and act as if such a change had not occurred, or welcome it naïvely as an all-round blessing, the frictions caused by unavoidable displacements and shifts will be most painful. If readjustment takes place in time, the detrimental effects of the change in population trends may be minimised.

How many houses are to be built during the next decade ? It has been suggested that about 2,700,000 new constructions

are needed, including slum clearance programmes with about 750,000 and war damage with about 200,000, and that families with children and newly married couples should best be accommodated with a house and garden. But it can safely be said that this number will be insufficient for the redistribution of population, and industry must create an additional demand and new types of dwellings. It is, therefore, better to avoid too detailed a forecast. The following table showing the composition of 100 persons in families in 1950 is not only a useful illustration of the population trend as such, but it gives also valuable data with regard to educational and other requirements.[1]

	Number of persons in families with young children.	Number of persons in families without young children.	Totals.
Children under 14 . . .	18·2		18·2
" Children " 14–17 . . .	2·0		2 0
" Children " 14–21 . . .		7·3	7·3
" Children " over 21 . . .		6·2	6·2
Parents	17·3	31·7	49·0
	37·5	45·2	82·7
Adults living singly 21–65 .			12·3
" " " over 65.			5·0
			100·0

As already pointed out, it must be left to the demographers to supply the necessary material and to draw attention to facts which have a bearing on national planning. Only one point may suitably be referred to. It was mentioned at the National Conference on Planning, held in San Francisco in 1940, and can be summarised in the following sentences:

> As median age advances there is a definite social trend towards security, as there is a readiness for the acceptance of the doctrine of social security for people in the advanced age brackets. In support of this theory, we may quote from Howard Loeb in the August, 1936, *Common Sense*. . . . America has been transformed from a society in which 75% of the population were free enterprisers into a social body in which 80% work for wages or salaries, in the pay, for most part, of corporations: 14% consists of farmers striving to recover cost of production, and some 6% only devote themselves to entrepreneurial activities.—In short, this means that populations are becoming more and more interested in security and are placing

[1] Association for Planning and Regional Reconstruction.

less and less future upon enterprise. No matter how eloquently the politician may declaim, no matter how many wishful-thinking planks may be contained in party platforms, we are not returning to the good old days of yesteryear when private enterprise was the long-sought goal of the young man.

The conditions are similar in this country; and they might be worse still after the cessation of hostilities. There will be a general fatigue after the strain of the war and it will not be easy to rekindle the flame of enthusiasm and energy. Instead of talking in general terms of " the needs of the people " which should be satisfied, it is more appropriate to ask what *are* the needs of the people, and to act accordingly to a clear programme. Instead of talking of " inherited freedom " all nerves should be strained to create an environment where men and women can live their free life and children can grow up under healthy and inspiring conditions. Instead of talking of " the glorious past " as the uniting bond, more concrete facts are needed if the demobilisation is to be the creative beginning of a new epoch. A common future and common work for the future weld men more together than anything else.

CREATIVE DEMOBILISATION

LET us face cold facts. What will happen after the armistice? Men and women will stream back from the armies and from the factories. They not only want work but they also want to know what has been done at home while they have been fighting the battles in the field and in the factory, on the sea and in the air. They ask: have these fellows whose job it was to prepare Post-War Britain fought with the same energy as we have done? We do not want paper chains and festoons, flagstaffs and banners, or other tawdry tributes. These odds and ends can go to the devil. We want facts. We do not want to be put off with high-sounding half-sincerities. We are ready for a new, for a peaceful fight, but we need a lead from those who had time to think out how a better Britain could be built. This is the true peace aim we were fighting for. It is all to the good to fight against something and somebody. But now we are back and do want productive work. Where are the plans? Where are the tools? Where shall we begin?

Let us be sincere and hope that the powers that be do understand the necessity of well-meaning criticism. It is the indispensable and constructive means of co-operation in a Democracy. Will the Master Plan be ready in time so that the Demobilisation is a creative mobilisation of the peace effort? Is there really not a danger that precipitated works, conceived under pre-war conditions, must be thrown "on the market"; and is it absolutely certain that this great chance will not be debased to unemployment relief? Has everything possible been done to prevent haphazard works: there slum clearance, here work on the road system; there reconditioning of houses, here extension of a suburb, and so on? There are tendencies which are, unfortunately, somewhat discouraging. Will the Central Authority have enough powers to carry out planning on a national scale without getting lost in the jungle of vested interests, local government prejudices, and the whole lot of purely imaginary obstacles such as precedents, existing regulations, "established" facts, and so on? For the time being no regional organisation does exist which could successfully cope with physical reconstruction. Consequently, regional plans do not exist yet, at least not as suitable groundwork for the National Plan, and local plans are unco-ordinated and, in some cases hopelessly insufficient. If there is still more delay, will it be possible to bring the various aspects of agriculture, industry, transport, social services, etc. to a common denominator early enough to serve as a sound

basis of the National Plan? Are the planners aware that the intelligent public considers their work as a "family affair" in which the same people, the elders, have almost always the only say? And do they know that the population is sceptical of their so-called propaganda which is mainly circulating among the "family", and that a few pamphlets and conferences are not regarded as sufficient to arouse enthusiasm and understanding? The uneasy impression prevails that many of those who rush from one committee meeting to another might be excellent experts in their own field but do not look beyond their sectional interests. Public opinion appreciates their contribution, but the feeling is growing that something more is needed than reports, broadsheets, statements and counter-statements, and manuals which accumulate in this committee-ridden atmosphere. Grave doubts exist as to whether all these laboriously prepared but isolated utterances will ever make a coherent whole, will ever produce the National Plan of Great Britain. To be an expert is not to be a planner, whose task it is to co-ordinate expert advice and to weld it together into a workable entity. In brief, it is the old story that it is not easy to see the wood for the trees if the mind is bent on one special problem only. Thus the public doubt whether the policy pursued heretofore is a real help to those who are actually directing the preparation of the National Plan.

Can all these activities lead to a creative demobilisation, and will they not be paralysed by their own inherent weakness? Let us sincerely hope that the red light which can already be seen not too far ahead will stop this course. "Too late and too little" are words which should not exist in the vocabulary of those responsible for national planning. While we should not be too sceptical in this respect, we should remember the inter-war period and the uncreative demobilisation in practically all countries after the last war. Failure to identify the demobilisation with the creative beginning of a new era will be tantamount to a new declaration of war. And another war there will be if we acquiesce in the belief that it is sufficient to change the surface and leave the substance beneath it untouched. Quite apart from the fact that such attempts are utterly superficial, they must lead, in the end, to tensions which would destroy any prospect of a peaceful development. To-day we are witnessing what unpreparedness for war means, and what sufferings it entailed. We have got to understand that unpreparedness for peace is not less dangerous. Every country has the responsibility towards itself and the whole world to do its utmost to prevent the repetition of such events. This time there will be no excuse for evading actions, for the experiences will be still

too fresh and too cruel. Only the hopelessly blockheaded traditionalists can deny that the inter-war period was an armed peace, a war of nerves, and that the reason for this state of affairs was not the lack of imagination, civil courage nor of the indomitable will to create a new and better world out of the crumbling structure of a civilisation whose doom should now be apparent to everyone. National planning is one, and possibly the most important expression of this will, of the will to do away with values which have lost their meaning, and to build a Britain in which generations to come can live their free and peaceful life. It is, as a matter of fact, identical with a peaceful revolution.

Work undertaken at the time of the demobilisation must be the initial stage of the National Plan. What kind of work is needed, therefore, to promote decentralisation and dispersal as the main trends of national planning? In this context we are concerned solely with the immediate tasks after the war which are essential as the basis for the long-term policy whose principles have been discussed in the previous chapters. The works of this first stage must be of such a nature that they not only do remove the obstacles which stand in the way of anything which the long-term policy demands, but that they can serve as the starting-points from which this policy can efficiently be developed. This means that we must know where to direct labour and material and in what quantities, in order to have concrete plans and concrete work ready at the right time.

A number of Planning Officers and other persons actively engaged in the preparation of post-war planning have been asked to supply information on what they would consider as essential and initial works. The enquiry was conducted according to the conclusions of the Royal Commission that

> the objectives of national action should be: (*a*) Continued and further redevelopment of congested urban areas; (*b*) Decentralisation or dispersal both of industries and industrial population from such areas; and (*c*) Encouragement of a reasonable balance of industrial development coupled with appropriate diversification of industry.

In addition to these points it was suggested that rural conditions should be included, as decentralisation and dispersal from urban districts exert an immediate and direct influence on rural areas. The answers, together with other experiences, provided sufficient material for useful conclusions, especially if local and regional conditions were taken into account. Four main categories of work emerged as essential tasks of the initial stage. They are:

1. Preparatory work.
2. Clearance.

3. Reconditioning.
4. New works.

The following suggestions are purely tentative and are intended to give but an enumeration of a general character. They can, therefore, not be considered as anything like complete.

1. Preparatory work.
   (*a*) Priority should be given to research which is important for the initial stage of the National Plan as well as of regional and local plans. For example:
      national: the main park and highway system;
      communities suitable for further development;
      conversion of shadow factories to peace time use.
      regional: extension of social and public utility services;
      choice of suitable sites for new settlements;
      inter-regional co-operation.
      local: re-siting of wrongly placed factories;
      desirable diversification of industries;
      priority schedule of new buildings.
   (*b*) The national and regional as well as the inter-regional organisation should be framed and the necessary powers should be delegated to the respective authorities.
   (*c*) Legal and administrative measures to put certain functions on a regional basis such as electricity supply, other public services, rating, etc.
   (*d*) Acquisition and allocation of land for the various purposes of building, transport, open spaces, etc.
   (*e*) Scheme for bringing the capacity of the Building Industry to the scale required for post-war reconstruction.

This last point is of special significance, as the Building Industry is one of the key industries on which the whole work of reconstruction depends. Everything possible should be done to prepare a good start for the building activities, i.e. plans must be ready, material must be available, trained labour must be at hand. Fluctuations, as the result either of unsystematic preparations or of bad weather conditions, can be avoided if the various stages of the building programme are efficiently dovetailed. In this respect a decisive influence can be exerted by means of financial subsidies from the Government. They can have a stabilising effect, especially if work is guaranteed for a long period, and if large and continuous building schemes are carried out instead of building small and discontinued sections in too many places. Thus, for example, new towns should be built

without a break; or a road and park system should be developed at one stretch; or the building process should be so scheduled that appropriate work can be done during unfavourable weather conditions. Modern "dry" materials will greatly help to eliminate loss of time. Standardisation and rationalisation of the building process have a similar effect. It would be possible to draw up one-year and, say, five-year plans which would provide a solid framework for reconditioning and new works respectively. In both respects the demand will be great, far in excess of the requirements of the actual reconstruction programme. Houses are consumers' goods and their lifetime should be restricted correspondingly. It is of no use to recondition a building in order to extend its lifetime for another three or five years, though it might have some artistic value. Even a thing of beauty is not a joy for ever.

2. Clearance.
   It is obvious that clearance of bomb-damaged houses and whole districts, of slums and unsuitable factories and other constructions stands first on the priority schedule, although it must go hand in hand with reconditioning and new building.

3. Reconditioning.
   This category comprises work on houses, the conversion of shadow and other factories to peace use partly in connection with the reconditioning of houses, the provision of temporary accommodation, re-establishment and improvement of public services, reconstruction of ports and other installations, restoration of parks and open spaces, etc.

4. New works.
   Before people and work can be moved to other places means of communication and access, houses and services of various kinds must be available if the elements of community life are to be preserved.

Means of distribution: traffic.
   Extension of the traffic system. Circular roads. By-passes. Parkways. Electrification of the railways. Re-development of unsuitable rail and road installations.

Means of community life: services.
   Rural social services. Urban social services. Regional supply of electricity and water. Drainage, sewage disposal. Schools, hospitals, health services.

Means of loosening out: open spaces.
   Green belt and green wedges. Local, regional and national parks. Parkways. Allotments. Afforestation.

Means of dwelling: houses.
Houses in new and in existing places.
Means of work: other buildings.
Industrial buildings. Industrial estates. Shops. Offices.
Means of various activities: various works.
Road tunnels. Cross river bridges. River tunnels. River widening. Electrification of industry. Reclamation of land. Extension of existing settlements. New settlements.

Works must be prepared and carried out in all three categories at the same time, as they are interdependent on each other. They belong to the sphere of national planning, as do the electrification of the railways, and the main highway and park system; or they are to be carried out regionally as is the extension of the electric grid and social and public services; or they are the concern of local authorities as are green belts and wedges.

A few examples may be useful to explain the effect of some of the works on decentralisation and dispersal.

Clearance of residential or industrial districts should lead to a loosening-out of built-up spaces and to a reduction of population numbers. Wherever possible such parts should not be rebuilt. They should be reserved for open spaces and integrated as sections of the park system. It should be laid down as a general rule that houses thus demolished should be replaced building for building, and within the communal boundaries only where there are momentous reasons against the decentralisation of population. Clearance, in this sense, promotes decentralisation and dispersal. It is a wedge producing a double effect: it drives people and industries out of congested towns to more suitable places, and it drives the other, the green wedge in, introducing spaciousness and fresh air to hitherto neglected areas. The same principle should be applied, on a smaller scale, to individual industrial sites. They would, when cleared, provide "packets" of open spaces in areas where they may be of considerable value. As one Corporation points out: "As sites are indiscriminately dotted about the town, the great problem is in rebuilding so that a unified whole can emerge. Approximately 13 acres of the Central Area in two distinct parts have been razed to the ground. Arising out of this, very great opportunities exist if legislation (which is not cumbersome) can be introduced for the Corporation to acquire extensive blocks of land, and, in addition, some system of financial provision should be introduced to make the work to proceed." In connection with these works the optimum size of the respective community will need consideration.

The development of a *green belt* and the local *park system*

has similar effects. On the one hand it restricts the size of the settlement and the number of its inhabitants and, on the other hand it opens up congested areas, thus thinning out the population and promoting their moving to other places. Although these works do not require much labour as compared with building, they are not less important parts of the initial plan.

One city remarks: "A great improvement could be effected with *compulsory electrification of industry*. Smoke contributes 100% of the nuisance of industry." It is obvious that there would be a far greater freedom in the siting of industries in particular, and in the lay-out of a settlement in general if no, or at least less, consideration need be given to the development of smoke and, therefore, to the direction of the prevailing winds. Heretofore these factors had a considerable restricting influence and in numerous cases made impossible the rational arrangement of the residential quarters at a convenient distance from the industrial districts. Together with district and central heating, it would result in a great advantage to the open spaces and trees lining the streets, whose verdure would not be detrimentally affected by pollution of the air.

Rail and road facilities are the first fundamentals of decentralisation and dispersal as well as of redevelopment. They open up new areas and they make more accessible and homogeneous areas already developed. Arterial parkways, by-passes, and circular roads skirting the settlements remove traffic congestions from central districts and divert the traffic to outlying parts. They bring the green belt and its settlements within easy reach of the mother-community and in many cases make unnecessary the expensive widening of streets in central areas. River tunnels and bridges make it possible to avoid long detours, especially where the inlets are deep. On the other hand, they establish effective contacts between sometimes rather secluded areas, thus promoting the development of new and/or the further development of existing places. In any case they should be built at some distance from the outskirts of the main centres, as they could not otherwise effectively divert the traffic from the built-up parts. All big cities should have circular roads. In the light of the new requirements the road schemes already approved by the Minister of Transport as part of the five-year programme should be reviewed and adapted correspondingly.

Further development of suitable settlements as "reception areas" is the integral counterpart of redevelopment. One County Council suggests "that several of the smaller towns could with advantage serve as focal points for the re-development, say in each case for a further 10,000 persons, and in some cases these towns afford facilities for industry. Such a scheme would take

advantage of the existing ' civic tradition ', and by wise planning these towns could be improved if the redevelopment was carefully fitted into the lineal and peripheral unplanned development which has taken place during the last decade. The scheme too, would take advantage of existing public services." The spill-over from the " evacuation areas " could partly be absorbed by such extensions.

The systematic reconditioning, extension and development of *public services* of all kinds make the country ready for the influx of newcomers. They are the essential prerequisites of a revivification of rural areas and of a healthy community life. No development in " reception areas " should occur before at least the framework of these services has taken shape. " The electrification of rural areas is, no doubt, a step in the right direction, as the nearer modern domestic conveniences can be brought to the rural home the less will be the tendency for countryfolk to drift to the town ", remarks one County Planning Committee. And it adds : " It is also desirable to fix a rural supply charge at a lower rate than the urban charge. In other words, dwellers in urban areas should appreciate their dependence upon rural workers and help to provide them with amenities now principally employed by the former. As long as the present basis of charges lasts, two obstacles which will obstruct adequate rural development are :

(1) Industry dependent on electric power *cannot* be located in rural areas if electricity is not available.

(2) Industry *will not* be induced to rural areas, if the supply charges are the same as in urban areas, unless they are compelled to do so by geological or natural conditions essential to their operations.

It is generally agreed that agriculture and industry should operate more closely together in the future ; this can be assisted materially by an adjustment on the lines indicated above."

Corresponding provision should be made for water supply, sewage disposal, etc. Drainage facilities are likewise important works to be undertaken before or together with the erection of new buildings or the lay-out of new roads. One Regional Planning Officer states : " It will be appreciated that the provision of amenities, such as green belts and wedges of open spaces both around the town and leading to its centre, will materially affect the drainage question on account of the lower percentage of impervious area. The problem will be an especial one in localities that are well drained and equally well provided with such other services as gas, electricity, etc., which will have to be considered in relation to the additional cost of extending these facilities to meet the requirements of the displaced popula-

tion on the one hand and the value of the amenities offered by the selected site, on the other."

It is self-evident that due consideration should be given to social services.

There is no need to explain the importance of the development of *new settlements* in the initial stage of the National Plan.

Schemes for the *reclamation of land* and for *afforestation* should also be included in the early stage of post-war reconstruction. Although they do not provide for the employment of a great number of workers they will widen the economic opportunities and contribute towards (1) the extension of cultivable areas; (2) the development of new settlements therein; (3) the embellishment of the countryside. Moreover, the periods are long before such schemes are really perfected and can serve their purpose. The experiences gained in Holland in connection with the Zuider Zee Reclamation should be made use of.

In general there should be a priority schedule with special reference to the social values, and to the best ways and means of promoting decentralisation and dispersal.

What operates *against* these tendencies? And what should therefore *not* be included in the reconstruction programme? Here again, a few hints are sufficient.

We read, for instance: "Every endeavour is being made to encourage the establishment of modern industrial sites on the outskirts of the city"; or "Towns have been built up by the gradual expansion of industry which has taken place during the latter half of the past century, and to try to disperse or move certain industries would cause chaos from a rating point of view and no doubt render general business unstable"; or "City Councils are naturally reluctant to build new housing sites outside their own boundaries, both from the rating point of view and the problem of sewage disposal"; or "Under the first stage will be included the widening of existing and construction of new roads" in the centre. The answer to these remarks should be: the widening of existing roads and the lay-out of new ones in a centre of a town should be postponed at least till it has been definitely proved that even decentralisation or dispersal are no remedies. If such schemes were carried out they would be rather an encouragement to build new houses, offices or even an attraction to industries and would certainly not help towards an efficient thinning out. Further, all roads with a centralising tendency focused on the central district should be excluded from an improvement programme, or should only be considered in connection with a comprehensive new plan for the whole community taking into full account the regional aspect and all it implies. Radial roads further con-

gestion, especially together with the development of industrial sites on the periphery. The spatial extension of the town by such mostly haphazard accretions can be a new encroachment on valuable land especially suitable for the green belt or the arterial parks. It moves the open country still farther away. If industrial sites cannot be satisfactorily provided within the districts clearly defined for this purpose they should be liable to be moved to other places. But " City Councils are reluctant " to promote such an emigration because of the rating values they might lose. One does not go too far if one says that this is one of the factors which acts especially strongly and persistently against the recommendations of the Royal Commission. Discouragement of these tendencies is not enough ; it must be accompanied by a reform of the rating policy.

Other schemes which should be discouraged are the rebuilding of the cleared sites. They are mostly in central districts, and their rebuilding, even under better conditions, does certainly not lead to a de-congestion.

Considerations of this kind are natural as long as the " cul-de-sac-complex " of the larger towns, and especially of the big cities, prevails. This complex is the embodiment of the idea " the more we have, the more we want ". What we once get into our sac, we will not let out again. It is the parish pump spirit on a larger scale. It goes so far that even obvious disadvantages are being put up with.

Although the scale of regional activities in U.S.A. cannot be compared with the possibilities in this country—the work of the Tennessee Valley Authority, for instance, goes on in an area almost as large as Great Britain—the basic problems are not too different. It is, therefore, instructive to refer to the general tendencies which govern the activities of a body as the T.V.A. In an address at Columbia University in 1940 the Director of the T.V.A. defined the scope and purpose of his organisation.

> What is meant by the " economic opportunity " which the methods of the T.V.A. will broaden and strengthen ? Briefly put, it is the opportunity for a continuous and major expansion in the production and the use of goods and services—in short, a constantly rising standard of living for the whole people. By economic opportunity is meant, further, that these increasing material benefits shall be enjoyed under a democratic régime. Under this conception the average man and woman must not be forced to pay for a rising standard of living by the sacrifice of his civil liberties to the demands of a remote and over-centralised government over which he can exercise little effective control. Neither must he in exchange for a rising standard of living yield up his economic destiny to a concentration of business groups so powerful that the small business man or farmer must submit to the conditions they impose or

> perish. And finally, let it be made clear that in discussing the expanding economic opportunity in this country I do not refer to the opportunity for the relatively limited number of already powerful business or governmental institutions to add to their strength; but rather the economic liberty of the average man, of human beings rather than institutions.

And further:

> It is in the integration and the correlation on a regional basis of these various activities under a single, unified management that the Tennessee Valley Authority represents a pioneer undertaking of government. *Without the successful fusing and harmonising of the forces that strengthen our economic institutions, we may find increased governmental activity a confusing and disintegrating rather than a building force.* The need for integration is plain for all to see. Skilful and imaginative co-ordination into a single working arrangement can add a surplus over and above the sum total of the same activities carried on without this intense concern for their relation one to the other.

It is this need for integration coupled with imagination and bold doings on which the chance of a Creative Demobilisation depends. The task of a Central Authority is a hopeless undertaking from the very beginning if it attempts to rely directly on the work of local authorities without the connecting and integrating link of a regional organisation. It is not enough to encourage regional schemes and regional research; nor can any tangible results be expected from the setting up of Joint Advisory Committees. Although much valuable work has been done by such bodies, their activities can be considered at best only as preparatory. Admittedly they have done a lot to remove "the dotted lines on the Ordnance Maps" from the minds of local administrators; they have made them "region-conscious" and they have promoted regional thinking. But the great and swiftly moving events of the last decades have reduced distances to such a degree, and have established such a close inter-relationship between the various communities, that most of the regions of Britain are already a thoroughly integrated whole. The obvious consequence of this fact should be to go a step farther and to set up regional authorities with sufficient powers not only to co-ordinate the various activities within their region but to develop a regional programme and to carry it out. What matters is that things are done; not that they are "suggested". The regional authority must plan from the top and act accordingly, just as the Central Authority does in the field of national planning. This might involve a considerable adjustment of the administrative machinery to new conditions; but this "decentralisation" is part and parcel of the other decentralisation, of the

redistribution of population and industry. Regional representatives whose work would be predominantly advisory and restricted to town and country planning could not cope with the problems which the Demobilisation and the following period will create. Quick decisions are needed in many fields which do not belong to town and country planning, even in its broader sense, but which are integral parts of planning in general. " Referring back to Whitehall " should be reduced to a minimum. And this is possible if regional and local authorities can act " according to plan ", in this case the National Plan ; and if they know where they stand. Once again it must be emphasised that a Creative Demobilisation is more, infinitely more, than the creation of opportunities of work. It is the foundation upon which the very life of the next generation rests. And like the foundations of a building it must be laid systematically and with due regard to *all* parts of the superstructure.

An administrative policy of " safety first " will not win the peace. It will not arouse the unbounded energy, the new fervour, and the spirit-stirring enthusiasm which is even more needed in peace than in war. The people want a lead. They want to go ahead and to build a better world. And they do understand that this cannot be done by dragging along and waiting for " what the public want ". They are ready for great changes which must take place if the war and the innumerable sufferings are not to be in vain.

More ! More ! is the cry of a mistaken soul :
Less than all cannot satisfy Man.

These words of William Blake are like a clarion call inspiring the peaceful army which Britain will put in the fields and in the factories, in the offices and in the laboratories, after the war. They mean in reality that the highest aims are just good enough and that putting up with less is not always a virtue. And they mean also that these ultimate goals must not be frustrated by evading compromises which might be " truly democratic " and appealing at the first glance. Events will follow each other in peace-time just as rapidly as in war-time, and they will govern our actions in the same way as the enemy does if we are behind them. Only a grand strategy aiming at far-reaching results can weld the manifold individual actions into one coherent whole and make them productive steps towards the realisation of the ideals embodied in the National Plan. We must not disperse our forces in isolated and minor actions for the sake of local successes. We must concentrate their whole might on the last goal of making Britain one good house. Britain was the first

country which had to feel the unfavourable impact of the Industrial Revolution on social conditions. Now she can be the first country to put social achievements first. Propaganda by achievements at home is a thousandfold more efficient than even the best broadcasting programmes and a lot of propaganda abroad.

The whole determines its parts. And thus the point of departure is from the whole, from the general conception to which the National Plan of Great Britain gives a concrete form. It is not an adventure into the unknown, though an adventure it is—but along a path we are building ourselves. Its terminus is the creation of an environment within which the undivided totality of Man's personality can express itself fully and freely. This path cannot be paved with compromises which are, after all, merely another expression of traditional inhibitions. We have lived much too long on the past; and we should understand that it is not impossible to perish through the past if one clings too persistently to it. Let me quote some passages from an inspiring pamphlet by Herbert Read, *To Hell with Culture*. He says: "To-day we are bound hand and foot to the past. Because property is a sacred thing and land values a source of untold wealth, our houses must be crowded together and our streets must follow their ancient illogical meanderings. Because houses must be built at the lowest possible cost to allow the highest possible profit, they are denied the art and science of the architect. Because everything we buy for use must be sold for profit, and because there must always be this profitable margin between cost and price, our pots and our pans, our furniture and our clothes, have the same shoddy consistency, the same competitive cheapness. You know what a veneer is: a paper-thin layer of rosewood or walnut glued to a framework of pine or deal. The whole of our capitalistic culture is one immense veneer: a surface refinement hiding the cheapness and shoddiness at the heart of things.—To hell with such a culture! To the rubbish-heap and furnace with it all! Let us celebrate the democratic revolution with the biggest holocaust in the history of the world. When Hitler has finished bombing our cities, let the demolition squads complete the good work. Then let us go out into the wide open spaces and build anew.—Let us build cities that are not too big, but spacious, with traffic flowing freely through their leafy avenues, with children playing safely in their green and flowery parks, with people living happily in bright efficient houses. Let us place our factories and workshops where natural conditions of supply make their location most convenient—the necessary electric power can be laid on anywhere. Let us balance agriculture and industry, town and

country—let us do all these sensible and elementary things and *then* let us talk about our culture."

The sceptics doubt whether anything can be done without coercion. Their argument can easily be countered by the fact that Man is only too readily inclined to exchange something which cannot mean much to him for something better. There will be no difficulty in convincing people that the National Plan is, in fact, a continuous process of improvement and that its foremost aim is the raising of the standard of living. But such a repudiation of coercion implies the obligation to create facts, facts in the form of new settlements, new houses, new schools and new social conditions and values in the shortest time possible. And it implies also that the people must be satisfied that there is a clear lead from the very beginning.

What we are witnessing to-day looks like the fall of the civilisations which have grown up during the course of known history into a great nothing. But in reality the thread of historical evolution never breaks. Only the surface structure is collapsing. We cannot foretell of the course of events in detail. We can only say that Man, and Man alone, will give the answer by his own attitude towards the coming changes. We believe in a better understanding of the true meaning of life; and we believe also in the increasing capability of Man to shape his environment. If we did not do so life would be hopeless. Behind all our doings there is a deeper sense gleaming than our actual deeds convey. The melting process through which we are passing will restore this deeper sense to our life. It will free us from economic and political dictatorship; and it will endow us with a new responsibility towards the community. This process will have a profound influence upon the structure of settlement as the expression of a sovereign will to plan and to act on a large scale and to subordinate the many details which suppress the free activities of Man to-day to this grand principle.

Britain's future settlements will be built upon vigorous community units and upon the efficient organisation of society in which the child will find its rightful place. Homogeneity of the country and the regions will become a factual reality through the increasing reductions of distance and time. The tentacles of urban settlements will not sprawl over the countryside. Cities and towns will be merely nodal points in the settlement mesh; and their growth will be limited by a green belt and by a balanced functional relationship to the region.

Flexibility, movability and integration are the three fundamental characteristics of this new pattern of settlement.

The last century has proved that we are capable of great achievements. Shall we be less daring than the past generations?

The secret of an everlasting youth is alacrity in attuning ourselves to changing conditions, and in conquering, consciously and systematically, the vast province of possibilities. We are the shapers of our own destiny and the trustees of the natural resources of this Island. If we honour this trusteeship a Creative Demobilisation will be our noblest obligation.

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