

THE SOCIAL SELECTION OF HUMAN FERTILITY

WHEN the invitation was conveyed to me to deliver this year the Herbert Spencer lecture it was easy to accept with gratitude and alacrity the opportunity to address the distinguished audience which, I understood, would be gathered for the meeting. But I must confess to the misgivings, and difficulty, which I experienced in choosing a subject worthy at once of the occasion, and of that most versatile and prolific writer in whose honour these lectures have been established. In the end, considering that Spencer's unique position in the history of English thought was due to his consistent and unremitting efforts to unify the theoretical concepts underlying the two great branches of human knowledge—I mean those which are distinguished as the natural and the social sciences—I ventured to hope that a topic in which natural causation seems clearly to entail social consequences might be fitting for the occasion; and that it might combine for some of my audience the scientific and intellectual interest of an objective study of causal relations, with the concern which we feel, as citizens rather than as scientists, in the immediate

3

difficulties, and in the further destiny, of the society to which we belong.

The distinction between the natural and the social sciences is generally conceived in terms of the distinction between description and tentative, though perhaps probable, inference, on the one hand, and natural law with its certainty of causation on the other. Apart from quite recent speculations, and throughout the long history of scientific development, in the so-called exact sciences (of which physics is the central type), we have had the concept of complete determinism, governed by exact and necessary laws of causation; as contrasted with the uncertainty and, at best, reasonable expectation, in such domains as psychology, demography, history, and economics, in which are studied the human mind and its social reactions. In face of this contrast, it has been assumed, and I think very naturally assumed, that the element of uncertainty was to be ascribed, simply and merely, to the imperfection of our knowledge, relative to the complexity of the subjects under discussion. It might have seemed, indeed, that the human mind had no other resource than to apply the methods of experimental physics, and, by more and more detailed and intricate experimentation, to piece together the complexities of organic and finally of human

4

behaviour, in the hope that a man or a society could become as well understood, and perhaps as reliable, as a steam-engine. But the human mind, though it may not deserve the Linnean title of 'wise', is at least ingenious and resourceful, and from the earliest developments of applied mathematics we find a bifurcation very well adapted to the situations with which the different sciences are faced. The great body of applied mathematics, which, one must admit, is often mistaken for the whole, consists of mathematical physics, and is concerned with the elucidation of what are called the *laws of nature*, but a slender branch, almost equally ancient and sprung from the same root, is the theory of probability, or, in its later development, the theory of statistics, concerned only with the *laws of chance*. The presumption underlying this terminology is unmistakable. Chance is regarded as no part of nature, but rather as an illusion of causelessness, the mere product of human ignorance.

How deep-seated was this conviction may be seen in the slowness and caution with which the laws of chance came to be applied outside the very artificial realm of gentlemanly pastimes, in which they had been developed. During the eighteenth century chance was admitted to have at least an apparent place in the real world, as affecting human

5

mortality and involuntary misfortunes, such as fires and shipwrecks; but even writers on the theory of probability have shown themselves eager to assert that the appearance of uncertainty in natural causation is only subjective, due to the actual, or to the necessary, limitations of human knowledge; and one of the greatest of them, Laplace, goes out of his way to assert the exactitude of physical causation, in the extreme degree which would make the actions and choices of individual men, and the whole course of history, precisely predictable by a sufficiently intelligent calculator, supplied as data with the positions and movements of the particles in a primitive nebula. In saying this, Laplace was obviously going beyond his facts. His studies of the solar system could show no more than that the motions of the sun and planets had been very regular over very long periods.

Moreover, the regularity and predictability of the motions of the heavenly bodies must, time after time, have suggested the possibility of a like predestination in human affairs, which has been embodied, according to the taste of the time, either in a poetic image, or in a metaphysical dogma. Those of us who have followed the pronouncements of modern astronomers during the last fifteen years may even doubt whether Laplace felt any great

6

need to produce the scientific evidence for his theory. Enough, perhaps, that it was authoritative, it was sensational, it was extremely difficult to disprove; and no one, after all, need carry high philosophy so far into his private life as to doubt that he could still choose whether to drink tea or coffee at tomorrow's breakfast.

In one respect Laplace had a stronger reason for favouring the hypothesis of complete determinism than some of his earlier predecessors can have had; for the previous century had seen a more and more precise verification of the laws of physics. It is, of course, true that the experimental data on which these laws were established invariably showed discrepancies, that no two samples of any solid material were exactly alike in their physical properties, and that, in consequence, the actual working of any apparatus or machine could not be predicted with exactitude from the methods of its construction. But it was also true, and had been widely verified, that increasing refinement in the means of observation, and increased care in the elimination of irrelevant disturbances, and in assuring the purity and uniformity of the substances investigated, had been followed by an increasingly close conformity to physical laws, representable by mathematical equations; and

7

that it might be guessed, though by a somewhat bold extrapolation from the observational basis, that all outstanding irregularities were ascribable to causes analogous with those that had been removed. It might be guessed, in fact, not merely that the mathematical formulae were more accurate than the observations, as they had been often shown to be, but that they represented the absolute truth about physical causation; and, since their form tacitly excluded any fortuitous element, that therefore no such fortuitous element could exist in the world of physical phenomena.

The most reliable of the materials available in physics are the gases. Their properties appear to depend least on the unknown details of their physical history. It is therefore a striking fact that it is in the theory of gases that the laws of chance first found a place in physical theory. The development of that theory, and the general statistical mechanics to which it led, by Maxwell and Boltzmann, Willard Gibbs and Jeans, was not only a triumphant advance in human understanding of physical nature, but had a special reference to the theory of physical determinism, which seems, until recently, not to have been at all widely appreciated. Perhaps the most dramatic development was when Boltzmann restated the

8

second law of thermodynamics, the central physical principle with which so many of the laws of physics are interlocked, in the form that physical changes take place only from the less probable to the more probable conditions, a form of statement which seemed to transmute probability from a subjective concept derivable from human ignorance to one of the central concepts of physical reality. More concretely, perhaps, we may say that the reliability of physical material was found to flow, not necessarily from the reliability of its ultimate components, but simply from the fact that these components are very numerous and largely independent. The toss of a coin, the outcome of a game of chance, is in the highest degree insecure; and it is in the contrast between the state of eager uncertainty before the event, and the certainty of gain or loss after the dice are thrown, that the attraction of games of chance must consist. Nevertheless, though the outcome of a single throw is quite unpredictable, if 100 coins are tossed we have some measure of assurance in saying that the number of heads will be between forty and sixty; and if the number of independent chances were increased say to a billion billion, we should estimate the outcome with an error of the order of one part in a billion, equivalent to about 6 inches in

9

the distance of the sun. The principle is of very wide application and not restricted to the particular case of only two events occurring with equal frequency. The fate of a single ship comprises several possibilities between complete safety and total loss; no one who embarks can know what the outcome will be; but the aggregate events of ten thousand voyages is sufficiently regular and reliable to admit of the possibility of tolerably equitable insurance rates. The special reliability of gases is due to their particles being not only very numerous, but also in the highest degree independent. If we have a sample of hydrogen at standard temperature and pressure, the number of impacts of its particles per second on each square centimetre of the containing vessel is sufficiently near to 10^{24} for us to say that the pressure it exerts, averaged over this space and time, is determinate within a few parts in a billion. This degree of reliability may be sufficient for the physicist and the engineer. It would seem wholly inadequate to the requirements of Laplace's calculator, and if we retain the concept of physical determinism at all, we must retain it not on the strength of the verified increasing conformity of observation to physical laws, as the precision of our methods and instruments is increased, but upon a new postulate,

10

to which our experience of physical reliability can give no support, that, though the aggregates of particles which we can handle are slightly unreliable owing to their finite size, yet that the individual particles of which they are composed, do after all happen to conform to a rigid determinism. Such a postulate as to what lies behind the molecular chaos could only be examined scientifically in the light of the individual behaviour of the ultimate particles, and, though I should fear to dogmatize, where the forms of statement preferred by different physicists differ so widely, it is at least clear that researches into the nature of these ultimate particles, so far as they have been yet carried, do nothing to strengthen the deterministic position.

Humanly speaking, therefore, we are in a position to recognize only a single principle of regularity in the world—only a single reason why the behaviour of a system should be reliable—why it should, if it does, react to the circumstances in which it is placed, in a way that can be satisfactorily predicted from a knowledge of those circumstances. The only reason known to us for such reliability is that its properties are in some sort the average or total of a large number of independent items of behaviour. On this, so to speak, statistical view of the world, the meaning

11

of law, and the possibilities of the scientific application of ideas of natural causation, are the same in the physical and the social sciences. In both, we may be confident that with increased knowledge, with a keener attention to relevant details, we may acquire a clearer foresight of the results of our actions, a higher precision in the fulfilment of our plans. In neither, is there any cogent reason for the paralysing conviction, far more paralysing in the moral than in the physical sphere, that effort and striving produce no real, but only the hollow illusion of a seeming, effect upon the foreordained stream of events. In both, again, the same criterion is to be applied as to what systems can be relied upon to give calculable reactions, or, for a given system, in what particular respects are its reactions reliable. In physics the answer, roughly speaking, seems to be, *anything big enough, and not too highly organized*. A human body, under rigid constraints (I must ignore such internal motions as the beating of the heart), would serve as well as any other hundredweight of matter, in, let us say, the bob of a pendulum; on the other hand, a child on a swing, by coordinated and rhythmically timed movements of his body, will control the amplitude of the motion, as we say, at will. A clock treated as a pendulum weight would give an inter-

12

mediate result, causing a strange variation in the amplitude, but, of course, a mechanically calculable one.

Human societies of one to ten million households are certainly large enough to exhibit the phenomena of natural causation, with a highly respectable precision, in any matter in which the behaviour of these several households can be regarded as independent. The effect of *organization* in limiting this independence of behaviour is obvious. The ideal of battalion drill is that the whole body should move 'as one man', and it may seem strange that I should speak of this as detracting from the reliability of the battalion. It is necessary to remember that the reliability with which we have been concerned is reliability as an object of scientific study, in respect of the constancy of its reactions to outside circumstances. With respect to an organized system it is reliability to an outsider who has no hand in its organization. A hostile battalion would be a far less formidable affair than it is, if it possessed reliability in this sense; and we may well judge that early man won his supremacy over other dangerous animals by knowing more about their reactions, individual and social, than they knew about his. The fact of social organization, in so far as it limits the independent action of members of the society,

13

and to some extent prevents them from neutralizing one another, is the first circumstance which limits the applicability of natural law, and predictable causation, to the progress and development of human societies.

A second cause which deserves our attention is the tendency to the formation of what is called *public opinion*. Social men do not form their opinions as to what is desirable, as to what is feasible, or as to what is immediately necessary, in independence of one another; but, actuated largely by emotional sympathy, tend to interchange and pool their ideas and aims, in a way which tends greatly to facilitate concerted action. This tendency, which must be a much more ancient characteristic of human societies than any forms of explicit organization, and may be regarded as the first substitute for organization among primitive peoples, has continued with unabated importance, so that the means by which public opinion may be influenced, by eloquence and propaganda, have become inextricably interwoven with the organizations of modern States. We have not the least reason to treat as an illusion the feeling that, in so far as we may contribute to the formation, and guidance, of public opinion, we may bring about real effects on the sociological destiny of our people.

14

We may now turn our attention to two features of society in which natural causation is paramount, and which from their very nature appear to be free from the uncertainties which affect the direction of the organization of society and the vagaries of public opinion. The first of these features is the hereditary endowment which each generation receives from its progenitors. Here the laws of chance are firmly established. Each couple of parents is capable of producing children of many different genotypes, probably of many millions of different kinds; and which particular genotype is produced is, as far as social control is concerned, wholly a matter of chance. The probabilities of the different kinds, there is reason to think, are entirely independent of the state of social organization, and of public opinion; and the throw of the dice in one case is without influence on the event in other cases, even in the same family. In consequence, in a population numbering twenty millions or so to the generation, the quality of the output, and in so far as these are genetically determined, the social reactions of the population produced, are quite precisely determined by the circumstances which govern the incidence of parenthood. I do not suggest that these circumstances are beyond social control; indeed it is the point of my

15

perhaps too prolix approach to the subject that these circumstances may well be largely influenced by concerted effort, but I do insist that, whatever degree of success is achieved, in influencing the incidence of parenthood, will be followed, with a reliability which leaves little to be desired, by a corresponding success in improving the hereditary endowment which we leave to posterity.

It must be regarded as equally certain that, in so far as the incidence of births is consistently unequal, as between groups of persons of unlike genetical constitution, so far will the genetical composition of each generation differ from that of its predecessor. Whether this is a matter of sociological concern will depend, not on any doubts as to the applicability of natural law, but solely upon whether the magnitude of the differences in birth-rates is adequate to modify greatly the genetic constitution of a people, within relatively short historical periods. Much hesitation has been expressed in the past in regard to the applicability of the factor of differential survival and reproduction to the phenomena of social evolution. There are several different reasons for this hesitation. Most importantly, perhaps, because Natural Selection was introduced to the world as a means of the evolution of species, that is, of a process extremely slow

16

in relation to the periods of human history; partly, I believe, because it has been habitually thought of as acting rather through differential death-rates, than through differential rates of reproduction. In civilized man only a minority of deaths occur prior to, or during, the reproductive period, and no subsequent deaths can have any direct selective influence; moreover, the deaths which occur at ages prior to reproduction are largely non-selective or apparently selective only of resistance to disease, and so, with the possible exception of the deaths of combatants in war, are of very limited sociological interest. The differences in natality, however, both between members of the same class and between different occupational classes, are so great that, if they are substantially associated with genetical differences, they must inevitably produce material social effects, not merely in periods of thousands of years, but in a few generations. This circumstance appears to me to put the position of genetic evolution in sociological development in an entirely new light. We may perhaps associate with it the biological principle that the circumstance most conducive to intense selective action is a great and rapid change in the environmental conditions, such as has undoubtedly taken place in Man with the establishment and advance of civilization.

17

A second feature of civilized societies, in which it appears, on consideration, that reliable natural causation is guaranteed by the multiplicity, and, in particular, by the independence of the individual reactions, is the process which may be called social promotion, by which different individuals are assigned to different occupational grades. Here, again, it is important to notice that it is not asserted that the *conditions* of social promotion are not under social control; but only that, whatever conditions may be imposed, whatever the rules under which the game is played, by which more or less advantageous positions in society are won by different individuals, it is the individual reactions of the candidates themselves, and of their immediate associates, parents or friends, that determine exactly *who* gains the prize. Public opinion, from the mere fact that it is public, is indifferent on this question, however important it may be in deciding what qualities shall confer a social advantage, either directly through public approbation of these qualities, or indirectly, by assigning a social framework in which some sorts of men succeed and others fail. The detailed demographic facts as to the incidence and extent of social promotion in different occupations, and as to the influence upon it of changing institutions, such as Trade Unions,

18

competitive examinations, and compulsory education, seem to deserve a fuller elucidation than has so far been attempted. We may guess, for example, from an examination of middle-class pedigrees, and from other evidence, that an extremely important part was played in the eighteenth and the earlier half of the nineteenth century by the rise to affluence of shopkeepers, small traders, and the masters of small industries; and that the social promotion of this period was predominantly conditioned by the qualities of active attention to business, enterprise combined with prudence, good repute and credit with neighbours, and intelligent adaptation to the changing conditions of trade; as well as the other more special gifts and aptitudes which enable such a man to consolidate and enlarge his business. It is regrettable, I think, that we cannot be sure, on objective statistical evidence, whether similar qualifications are equally, or more, or less, active at the present day; but there can, I think, be little doubt that, with the establishment of a national system of education, and its progressive extension in the direction of higher education, a far stronger emphasis has been laid upon the promotion of scholastic and largely intellectual abilities. There is, at least, a presumption that the thousands of relatively able

19

children from the poorest homes who are now drafted into clerical and teaching occupations are more characterized by intellectual superiority, and less by enterprise, initiative, and responsible judgement, than were those who made equal social progress a hundred years ago.

On the other hand, it is perhaps easy to overrate the importance of a public institution, the workings of which are more or less obvious and familiar, in contrast to the processes imperceptibly at work in the ordinary course of industrial employment. It may be plausibly argued that the really important factors in sifting the great body of the people into occupational grades are typified by such steps as the appointment of a farm labourer to be farm foreman, and that the qualities of technical knowledge, manual skill, trustworthiness, sobriety, and self-respect which, in his own interests, must influence the employer, are much the same as they must have been for many centuries. However this may be—and I am concerned rather to emphasize our unnecessary ignorance on an important subject than to urge any particular opinion—what is of immediate importance is that, whatever may be the conditions of social promotion at any particular time, the regularity of their effect in segregating different

20

sorts of men into different occupations is guaranteed by the number of individuals exposed to their action, and by the fact that promotion is essentially competitive, so that one man's appointment must mean the disappointment of others.

We may further remark in this connexion that the process of social promotion has to serve two purposes of essential importance to the workings of an organized community. It must provide an incentive to the individual to make the best of his powers, and to prepare himself as far as possible to perform socially valuable services to his fellow men, and even if this were not necessary, it would still be necessary to find some means of allowing to those naturally gifted, whether highly or in only a slight degree, a proper scope and opportunity for the exercise of their powers. The more successfully society is organized with a view to providing equality of opportunity to the whole body of citizens, the more surely will those who make the most of the opportunities offered differ, from those who make less use of them, in their natural gifts, and the more surely will any class be exhausted of its more valuable qualities, its skill, independence, and self-respect, the more extensively and thoroughly these qualities are removed without replacement.

21

The process of social promotion would be of much less biological interest than it is, if it merely determined the standard of living or the degree of social influence, the personal power, of different individuals. What makes it important is the fact that it conditions, and to a large extent determines, the inter-marriage of different families, and therefore perpetuates in relatively permanent biological entities, or strains of the population, the differences produced by the selection for occupational status. No occupational class, indeed, is, in Western civilization, strictly isolated and endogamous. The activity of the processes of social promotion would alone prohibit that; and there must in addition always be a certain diffusion of blood due to persons of somewhat individual taste or temperament, or placed in somewhat exceptional circumstances. Broadly speaking, however, tastes, interests, and opportunities alike favour the free interchange of genetic qualities among families conceiving themselves to be socially equivalent, combined with a considerable degree of conservation, in the course of natural inheritance, of those qualities in which the different classes are already differentiated. This tendency is perhaps not a physical necessity of social organization, but does certainly seem to be deeply implanted in human nature,

22

and, to judge from the customs of other civilized peoples, class endogamy may be enjoined, but, I believe, is never prohibited by public opinion. We may perhaps take it to be a necessary feature of any social system in which personal liberty has any place.

The qualities we had occasion to pass in brief review, in considering the selective agencies which have controlled the formation of the professional and sub-professional occupations in England, were all of them gratifyingly favourable, and, though this is denied, and denied with a perfectly comprehensible emotion, it appears to be a necessary consequence, for societies at all even remotely resembling our own, that whatever qualities are admired will experience social promotion, just because they are thought to be admirable, and that the economic rewards of different types of social service must be roughly proportional to the need felt for, or the benefit derived from, such services. Naturally we are all conscious of exceptions, but I would suggest that this very consciousness, the readiness with which our sense of social injustice is aroused by disproportionate profits, or by successful roguery, is the best guarantee that we do not in our private experience find a moral chaos in which there is no incentive to useful work; and that public opinion will

23

always be prepared to check any extensive or apparent violation of its sense of social justice. The characters which make for successful citizenship, and enable us all to some extent to be of service to our fellow men, must usually benefit their possessors both by their direct effects and by the general approbation which they excite. Any explicit and intentional feature of social organization which was found to violate this principle would be exposed to immediate and decisive condemnation.

There is, however, one unintentional feature, arising automatically as a by-product of our economic system, which I believe deserves our closest attention. The standard of living of the individual depends not only upon what he can earn, that is, upon the monetary value set upon his social services, but also upon his family responsibilities. The cost of dependent children is not in itself a very heavy charge on the national income; in few, perhaps, if any occupational groups would as much as 15 per cent. of the total wages or salaries received be allotted to expenditure or savings incurred on behalf of children. But, during the period of dependence, the amount allocated for each child seems not to differ widely, at least for incomes not exceeding 2,000 a year, from a fixed proportion of about 12 per cent. of the

24

64

income needed to maintain a childless couple at the same standard of living. The percentage must vary considerably with the age of the children, or at least its allocation must, as between expenditure and savings, but I do not think that any careful estimate for the whole dependent period will differ widely from this figure. If we consider two couples, one childless, and the other supporting four children, receiving the same income for equivalent social services, we may consider their effective incomes, available for personal expenditure and savings, as being in the ratio of three to two; or, to put it in another way, that the childless couple receives a bonus, amounting to a third of their income, in consequence of the fact that they have not four children.

The recognition of this fact, and of its economic consequences, led a group of French industrialists, shortly after the war, to institute in their federation a system which is known as family allowances. Believing that their industry could not afford to pay sufficient wages, at a flat rate, to ensure a satisfactory standard of living, to those of their employees who had children, if their funds were at the same time saddled with the necessity of supporting the childless employees at a much higher standard, they instituted a system of additional

25

payments in respect of all children dependent on their wage-earners. To remove any temptation among employers to give employment preferentially to childless men, the cost of the allowance is pooled for the whole federation. The system spread in France with great rapidity. It is now universal for the wage-earning classes, who receive increments varying from about 6 to over 20 per cent. in respect of each dependent child, the increments paid for later children being generally greater than those paid for earlier children. In respect of its popularity with the work-people, and in allaying industrial discontent, the system seems to have been entirely successful, as indeed is evidenced by its rapid adoption in spite of the sharp opposition at first offered by the Trade Unions. So far, however, I believe it has been only very inadequately extended to the salaried occupations. The effect, in its economic aspect, of such a change in the remuneration of industrial workers has been forcibly developed by Miss Rathbone in her book entitled *The Disinherited Family*, in which she points out that if the industrial population of Great Britain were employed at wages sufficient to support a wife and three children—and, on a flat rate, it is difficult to see how the Trade Unions could ask for less—then industry

26

would be paying for the support of no less than 19,000,000 non-existent children, and at the same time leaving 50 per cent. of the real children insufficiently provided for, because they belong to families of four or more. We are not, however, concerned with the economic inconveniences of the difference in the standard of living, between parents and non-parents, performing, in other respects, equivalent social services, but with the effects of this inequality on social promotion. The most powerful argument for family limitation has always been the consideration that parents could confer greater social advantages, or a better 'start in life', to few children than to many. This is a factor that must act powerfully at every grade of affluence, whether the children are benefited by better food, by more care and cleanliness, and by warmer clothes in the poorer groups, or by more prolonged education, enlarged social opportunities, and a greater share of inherited capital, among the more affluent. It is equally effective, moreover, whether the paucity of children is voluntary or involuntary; whether it is due to physical defects, which render further reproduction impossible, or dangerous, or to temperamental attributes which favour late marriage, or an unwillingness to undertake the responsibilities of parenthood.

27

Francis Galton was the first to perceive the importance of this factor (as affecting hereditary wealth) when he pointed out the great difference between the numbers of children born to heiresses and non-heiresses, respectively, who had married Peers. And he perceived in the fact that Peers, or their sons, were particularly liable to marry heiresses, a principal cause of the high rate of extinction of the title in the English peerage. It was not realized, when Galton wrote in 1869, that the case of the peerage was far from being an isolated phenomenon; but that the differential birth-rate extended from top to bottom of the social scale, so that bricklayers' labourers have more children than bricklayers, and farm labourers more than farm foremen. Galton was, too, naturally preoccupied with involuntary infertility, rather than with the far more influential voluntary causes affecting celibacy, age at marriage, and contraception by married persons, throughout the great body of the population. When we consider, however, that in *all* ranks of society, *all* causes of net infertility, whether physiological merely or acting through voluntary choice, must in each generation be given a social advantage over the opposite qualities, borne by persons of equal natural ability, it is evident that the more affluent classes of society must have

28

become differentiated from the poorer, as much in their low innate fertility, as in their high natural abilities. The system of social promotion shows itself as a machine acting with the automatic certainty of natural law, uniting the highest forms of ability with relative sterility or defectiveness of the reproductive instincts, at one end of the social scale; and, at the other, the lowest grades of ability with all the genetic determinants of high fertility.

The process which I have tried to outline is certainly not confined to our own country or to our own civilization. Unless specially guarded against, it appears to be a necessary characteristic of every civilized society recognizing, as all do, and, I suppose all have done, differences of social class; in which wealth is a factor in social promotion, and in which children are an economic burden. I have developed elsewhere the opinion that the process does not apply, or rather that its action is positively reversed, in a certain class of uncivilized communities in the tribal condition. With respect to past civilizations, it is for historians and archaeologists to decide whether the elements of the process of the social promotion of infertility were present in the civilizations which they study; whether it appears that a depletion of the more affluent

29

classes did in fact take place; and whether a progressive diminution of the types of men who would rise to prosperity in those States would be sufficient to account for such changes in the character of the people, and in the prosperity of their civilization, as can be ascertained to have taken place. No one man, I feel, should do more than offer a preliminary opinion on so great a theme.

With respect to our own country, we can, I believe, be more explicit. In England and Scotland as a whole the current supply of children is sufficient to replace about four-fifths of the parental generation; and if we confine attention to that portion of the population, with incomes, let us say, of £300 per year or more, I do not think that any one would estimate the fraction at more than one-half. It may be smaller, and appears to be still falling. In a matter which involves social ideas and habits it would be chimerical to suppose that this fraction could be greatly increased, even by the most potent economic changes, within the next thirty years. It is difficult therefore to avoid the conclusion that a full half of whatever eugenic value this class contains may be counted as already lost. As regards the immediate functioning of society this loss will presumably be made good by the promotion of ability discoverable

30

in less affluent classes. If not only ability is promoted, but also, as in the past, an equal measure of congenital tendencies unfavourable to reproduction, then, it would seem, the process will be continued. The principal merit of a system of family allowances in this connexion lies in its tendency to ensure that the bulk of the promotion will be due only to socially valuable qualities. It has not, however, been proved by experience that they would not also produce some immediate effect in increasing the birth-rate in the existing middle class.

The consideration of an evil, widespread, automatic, and destructive of all that co-operative man can achieve or aspire to—destructive of the very powers of achievement or aspiration—is apt to induce a mood of fatalistic dejection. I hope I have made clear that I see no ground for fatalism, in the action of natural law, over much longer periods than the history of the human race. Your true fatalist, I suppose, would readily assent to the probability that our civilization should fall into a decadence as deep as that of the Islamic culture, or that it should suffer such a prolonged agony of dissolution as overtook the Roman dominion. To diagnose the causes of a threatening evil and set about the study of remedies would be contrary to his

31

philosophy. It is, as it seems to me, part of our business as scientists to distinguish between what is inevitable, and what is subject to control; but it is our business as citizens to see that the possible control is exercised.