

## EUGENICS: ITS DEFINITION, SCOPE AND AIMS

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Professor KARL PEARSON, F.R.S., in the chair.

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Eugenics is the science which deals with all influences that improve the inborn qualities of a race; also with those that develop them to the utmost advantage. The improvement of the inborn qualities, or stock, of some one human population, will alone be discussed here.

What is meant by improvement? What by the syllable *Eu* in Eugenics, whose English equivalent is *good*? There is considerable difference between goodness in the several qualities and in that of the character as a whole. The character depends largely on the *proportion* between qualities whose balance may be much influenced by education. We must therefore leave morals as far as possible out of the discussion, not entangling ourselves with the almost hopeless difficulties they raise as to whether a character as a whole is good or bad. Moreover, the goodness or badness of character is not absolute, but relative to the current form of civilisation. A fable will best explain what is meant. Let the scene be the Zoological Gardens in the quiet hours of the night, and suppose that, as in old fables, the animals are able

to converse, and that some very wise creature who had easy access to all the cages, say a philosophic sparrow or rat, was engaged in collecting the opinions of all sorts of animals with a view of elaborating a system of absolute morality. It is needless to enlarge on the contrariety of ideals between the beasts that prey and those they prey upon, between those of the animals that have to work hard for their food and the sedentary parasites that cling to their bodies and suck their blood, and so forth. A large number of suffrages in favour of maternal affection would be obtained, but most species of fish would repudiate it, while among the voices of birds would be heard the musical protest of the cuckoo. Though no agreement could be reached as to absolute morality, the essentials of Eugenics may be easily defined. All creatures would agree that it was better to be healthy than sick, vigorous than weak, well fitted than ill-fitted for their part in life. In short, that it was better to be good rather than bad specimens of their kind, whatever that kind might be. So with men. There are a vast number of conflicting ideals, of alternative characters, of incompatible civilisations; but they are wanted to give fulness and interest to life. Society would be very dull if every man resembled the highly estimable Marcus Aurelius or Adam Bede. The aim of Eugenics is to represent each class or sect by its best specimens; that done, to leave them to work out their common civilisation in their own way.

A considerable list of qualities can be easily compiled that nearly every one except "cranks" would take into account when picking out the best specimens of his class. It would include health, energy, ability, manliness and courteous disposition. Recollect that the natural differences between dogs are highly marked in all these respects, and that men are quite as variable by nature as other animals in their respective species. Special aptitudes would be assessed highly by those who possessed them, as the artistic faculties by artists, fearlessness of inquiry and veracity by scientists, religious absorption by mystics, and so on. There would be self-sacrificers, self-tormentors and other exceptional idealists, but the representatives of these would be better members of a community than the body of their electors.

They would have more of those qualities that are needed in a State, more vigour, more ability, and more consistency of purpose. The community might be trusted to refuse representatives of criminals, and of others whom it rates as undesirable.

Let us for a moment suppose that the practice of Eugenics should hereafter raise the average quality of our nation to that of its better moiety at the present day, and consider the gain. The general tone of domestic, social, and political life would be higher. The race as a whole would be less foolish, less frivolous, less excitable and politically more provident than now. Its demagogues who "played to the gallery" would play to a more sensible gallery than at present. We should be better fitted to fulfil our vast imperial opportunities. Lastly, men of an order of ability which is now very rare, would become more frequent, because the level out of which they rose would itself have risen.

The aim of Eugenics is to bring as many influences as can be reasonably employed, to cause the useful classes in the community to contribute *more* than their proportion to the next generation.

The course of procedure that lies within the functions of a learned and active Society such as the Sociological may become, would be somewhat as follows:—

1. Dissemination of a knowledge of the laws of heredity so far as they are surely known, and promotion of their farther study. Few seem to be aware how greatly the knowledge of what may be termed the *actuarial* side of heredity has advanced in recent years. The *average* closeness of kinship in each degree now admits of exact definition and of being treated mathematically, like birth and death-rates, and the other topics with which actuaries are concerned.

2. Historical inquiry into the rates with which the various classes of society (classified according to civic usefulness) have contributed to the population at various times, in ancient and modern nations. There is strong reason for believing that national rise and decline is closely connected with this influence. It seems to be the tendency of high civilisation to

check fertility in the upper classes, through numerous causes, some of which are well known, others are inferred, and others again are wholly obscure. The latter class are apparently analogous to those which bar the fertility of most species of wild animals in zoological gardens. Out of the hundreds and thousands of species that have been tamed, very few indeed are fertile when their liberty is restricted and their struggles for livelihood are abolished; those which are so and are otherwise useful to man becoming domesticated. There is perhaps some connection between this obscure action and the disappearance of most savage races when brought into contact with high civilisation, though there are other and well-known concomitant causes. But while most barbarous races disappear, some, like the negro, do not. It may therefore be expected that types of our race will be found to exist which can be highly civilised without losing fertility; nay, they may become more fertile under artificial conditions, as is the case with many domestic animals.

3. Systematic collection of facts showing the circumstances under which large and thriving families have most frequently originated; in other words, the *conditions* of Eugenics. The names of the thriving families in England have yet to be learnt, and the conditions under which they have arisen. We cannot hope to make much advance in the science of Eugenics without a careful study of facts that are now accessible with difficulty, if at all. The definition of a thriving family, that will pass muster for the moment at least, is one in which the children have gained distinctly superior positions to those who were their class-mates in early life. Families may be considered "large" that contain not less than three adult male children. It would be no great burden to a Society including many members who had Eugenics at heart, to initiate and to preserve a large collection of such records for the use of statistical students. The committee charged with the task would have to consider very carefully the form of their circular and the persons entrusted to distribute it. The circular should be simple, and as brief as possible, consistent with asking all questions that are likely to be answered truly, and which would be important to the inquiry.

They should ask, at least in the first instance, only for as much information as could be easily, and would be readily, supplied by any member of the family appealed to. The point to be ascertained is the *status* of the two parents at the time of their marriage, whence its more or less eugenic character might have been predicted, if the larger knowledge that we now hope to obtain had then existed. Some account would, of course, be wanted of their race, profession, and residence; also of their own respective parentages, and of their brothers and sisters. Finally, the reasons would be required why the children deserved to be entitled a "thriving" family, to distinguish worthy from unworthy success. This manuscript collection might hereafter develop into a "golden book" of thriving families. The Chinese, whose customs have often much sound sense, make their honours retrospective. We might learn from them to show that respect to the parents of noteworthy children, which the contributors of such valuable assets to the national wealth richly deserve. The act of systematically collecting records of thriving families would have the further advantage of familiarising the public with the fact that Eugenics had at length become a subject of serious scientific study by an energetic Society.

4. Influences affecting Marriage. The remarks of Lord Bacon in his essay on Death may appropriately be quoted here. He says, with the view of minimising its terrors:

"There is no passion in the mind of men so weak but it mates and masters the fear of death . . . Revenge triumphs over death; love slights it; honour aspireth to it; grief flyeth to it; fear pre-occupateth it."

Exactly the same kind of considerations apply to marriage. The passion of love seems so overpowering that it may be thought folly to try to direct its course. But plain facts do not confirm this view. Social influences of all kinds have immense power in the end, and they are very various. If unsuitable marriages from the Eugenic point of view were banned socially, or even regarded with the unreasonable disfavour which some attach to cousin-marriages, very few would be made. The multitude of

marriage restrictions that have proved prohibitive among uncivilised people would require a volume to describe.

5. Persistence in setting forth the national importance of Eugenics. There are three stages to be passed through. *Firstly* it must be made familiar as an academic question, until its exact importance has been understood and accepted as a fact; *Secondly* it must be recognised as a subject whose practical development deserves serious consideration; and *Thirdly* it must be introduced into the national conscience, like a new religion. It has, indeed, strong claims to become an orthodox religious tenet of the future, for Eugenics co-operate with the workings of Nature by securing that humanity shall be represented by the fittest races. What Nature does blindly, slowly, and ruthlessly, man may do providently, quickly, and kindly. As it lies within his power, so it becomes his duty to work in that direction; just as it is his duty to succour neighbours who suffer misfortune. The improvement of our stock seems to me one of the highest objects that we can reasonably attempt. We are ignorant of the ultimate destinies of humanity, but feel perfectly sure that it is as noble a work to raise its level in the sense already explained, as it would be disgraceful to abase it. I see no impossibility in Eugenics becoming a religious dogma among mankind, but its details must first be worked out sedulously in the study. Over-zeal leading to hasty action would do harm, by holding out expectations of a near golden age, which will certainly be falsified and cause the science to be discredited. The first and main point is to secure the general intellectual acceptance of Eugenics as a hopeful and most important study. Then let its principles work into the heart of the nation, who will gradually give practical effect to them in ways that we may not wholly foresee.

FRANCIS GALTON.

## APPENDIX.

### WORKS BY THE AUTHOR BEARING ON EUGENICS :

- Hereditary Genius* (Macmillan), 1869; 2nd Edition, 1892. See especially from p. 340 in the former edition to the end, and from p. 329 in the latter.
- Human Faculty* (Macmillan), 1883 (out of print). See especially pp. 305 to end.
- Natural Inheritance* (Macmillan), 1889. This bears on Inheritance generally, not particularly on Eugenics.
- Huxley Lecture of the Anthropol. Inst. on the Possible Improvement of the Human Breed under the existing Conditions of Law and Sentiment.* *Nature*, 1901, p. 659; "Smithsonian Report," Washington, 1901, p. 523.

## DISCUSSION

Professor KARL PEARSON, in opening the proceedings, said : \* —

My position here this afternoon requires possibly some explanation. I am not a member of the Sociological Society, and I must confess myself sceptical as to its power to do effective work. Frankly, I do not believe in groups of men and women who have each and all their allotted daily task creating a new branch of science. I believe it must be done by some one man who by force of knowledge, of method and of enthusiasm hews out, in rough outline it may be, but decisively, a new block and creates a school to carve out its details. I think you will find on inquiry that this is the history of each great branch of science. The initiative has been given by some one great thinker, a Descartes, a Newton, a Virchow, a Darwin or a Pasteur. A Sociological Society until we have found a great sociologist is a herd without its leader—there is no authority to set bounds to your science or to prescribe its functions. This you must realise is the view of that poor creature the doubting man, *in media vitæ*; it is a view which cannot stand for a moment against the youthful energy of your secretary, or the boyish hopefulness of Mr. Galton, who mentally is about half my age. Hence for a time I am carried away by their enthusiasm, and appear where I never anticipated being seen—in the chair at a meeting of the Sociological Society. If this Society thrives, and lives to do yeoman work in science, which, sceptic as I am, I sincerely hope it may do, then I believe its members in the distant future will look back on this occasion as perhaps the one of greatest historical interest in its babyhood. To those of us who have worked in fields adjacent to Mr. Galton's, he appears to us as something more than the discoverer of a new method of inquiry, we feel

[\* With regard to Professor Karl Pearson's remarks on Sociology, *vide* a "Note on the History of Sociology in reply to Professor Karl Pearson," appended to Mr. Branford's paper, printed in this volume, "On the origin and use of the word Sociology."—EDITORS.]

for him something more than we may do for the distinguished scientists in whose laboratories we have chanced to work. There is an indescribable atmosphere which spreads from him and which must influence all those who have come within reach of it. We realise it in his perpetual youth, in the instinct with which he reaches a great truth, where many of us plod on groping through endless analysis, in his absolute unselfishness, and in his continual receptivity for new ideas. I have often wondered if Mr. Galton ever quarrelled with anybody. And to the mind of one who is ever in controversy, it is one of the miracles associated with Mr. Galton, that I know of no controversy, scientific or literary, in which he has been engaged. Those who look up to him, as we do, as to a master and scientific leader feel for him as did the scholars for the grammarian.

"Our low life was the level's, and the night's;  
He 's for the morning."

It seems to me that it is precisely in this spirit that he attacks the gravest problem which lies before the Caucasian races "in the morning." Are we to make the whole doctrine of descent, of inheritance, and selection of the fitter, part of our everyday life, of our social customs, and conduct? It is the question of the study now, but to-morrow it will be the question of the market place of morality, and of politics.

If I wanted to know how to put a saddle on a camel's back without chafing him, I should go to Francis Galton; if I wanted to know how to manage the women of a treacherous African tribe, I should go to Francis Galton; if I wanted an instrument for measuring a snail, or an arc of latitude, I should appeal to Francis Galton. If I wanted advice on any mechanical, or any geographical, or any sociological problem, I should consult Francis Galton. In all these matters and many others I feel confident he would throw light on my difficulties, and I am firmly convinced that with his eternal youth, his elasticity of mind, and his keen insight, he can aid us in seeking an answer to one of the most vital of our national problems: How is the next generation of Englishmen to be mentally and physically equal to the past generation, which has provided us with the great Victorian statesmen, writers, and men of science?—most of whom are now no more—but which has not entirely ceased to be as long as we can see Francis Galton in the flesh.

DR. MAUDSLEY SAID :

The subject is difficult, not only from the complexity of the matter but also from the subtleties of the forces that we have to deal with. In considering

the question of hereditary influences as I have done for a long period of my life, one is met with the difficulty which must have occurred to every one here that in any family of which you take cognisance you may find one member, a son, like his mother or father, or like a mixture of the two, or more like his mother, or that he harks back to some distant ancestor ; and then, again, you will find one not in the least like father or mother or any relatives so far as we know. There is a variation, or whatever we may call it, of which in our present knowledge we cannot give the least explanation. Take, as a supreme instance, Shakespeare : he was born of parents not distinguished from their neighbours ; he had five brothers living, one of whom came to London and acted with him at Blackfriars Theatre ; yet while Shakespeare rose to the extraordinary eminence that he did, none of his brothers distinguished themselves in any way. And so it is in other families. From my long experience as a physician I could give instances in every department of human activity—in science, in literature, in art—in which one member of the family, born of the same parents and brought up in the same surroundings, has risen to extraordinary prominence, almost genius perhaps, and another has suffered from mental disorder. Now, how can we account for these facts on any of the known data on which we have at present to rely ? In my opinion we shall have to go far deeper down than we have been able to go by any present means of observation—to the germ-composing corpuscles, atoms, electrons, or whatever else there may be ; and we shall find these subjected to subtle and most potent influences of mind and body during their formations and combinations, of which we yet know nothing and hardly realise the importance. I believe that in these potent factors the solution of the problem is to be found why one member of a family rises above others, and others do not rise above the ordinary level, but perhaps sink below it. To me it seems, considering this matter in regard to these difficulties, that in making a comparison with the improvement of breeding of animal stock we may be apt to be misled. We are all organic machines, so to speak ; at the same time when we come to the human being there are complexities which arise from the mental state—its moods and passions—which entirely disturb any conclusions which we are able to form from our observation of the comparatively simple machines which animals are. In view of these difficulties of the subject I think that we must not be hasty in coming to conclusions and laying down any rules for the breeding of human beings and the development of a Eugenic conscience. In fact, we must be on our guard against the overzeal which Dr. Galton has very properly cautioned us against. For, after all, there is the passion of love and the forces referred to in his quotation from Bacon, and I am not sure but that Nature in its own blind impulsive way does not manage things better than we can by any light of reason or by any rules which we can at present lay down. I suspect, indeed, that as in the past, so in the future, it may be as Shakespeare said :—

“You may as well try to kindle snow by fire  
As quench the fire of love by words.”

DR. MERCIER SAID :

Mr. Galton speaks of the laws of heredity and of the value of a dissemination of a knowledge of the laws of heredity in so far as we know them, and the qualification is very necessary. For, in so far as we know these laws, they are so obscure and complex that to us they work out as chance. We cannot detect any practical difference in the working of the laws of heredity and the way in which dice may be taken out of a lucky bag. It is quite impossible to predict from the constitution of the parents what the constitution of the offspring is going to be, even in the remotest degree. I lay that down as emphatically as I can, and I think that much widely-prevailing erroneous doctrine on this head is due to the writings of Zola. I believe these writings are founded on a totally false conception as to what the laws of heredity are, and as to how they work out in the human race. He supposes that since the parents have certain mental and moral peculiarities the children will reproduce them with variations. It is not so. Look round among your acquaintances, look round among the people that you know, notice the intellectual and moral character of the parents and children ; and as my distinguished predecessor, Dr. Maudsley, has said, you will find that in the same family there are antithetic extremes. No doubt, the tendency of a high civilisation is to reduce the fertility of its worthier members. Undoubtedly, in any particular race of organisms, as in organisms in general, the more lowly organised multiplies more freely than the highly organised. Undoubtedly, we see that insects and bacteria increase and multiply exceedingly, until they become as the sands on the seashore for multitude. But the elephant produces only once in thirty years. And so it is with human beings of different grades of organisation. Those more highly-organised are less fertile than those lowly-organised. But that is not the whole history of the thing. I think we have to regard a civilised community somewhat in the light of a lamp, which burns away at the top, and is replenished from the bottom. It is true that the highest strata waste, and do not reproduce themselves ; and it is of necessity so, because the production of very high types of human nature is always sporadic. Broadly and generally and in practice it is so, that we cannot predict from the parentage what the offspring is going to be, and we cannot go back from the offspring and say what the parentage was. If we follow the custom of the Chinese and ennoble the parents for the achievements of their children, are we to hang the parents when the offspring commit murder ? And finally, I would say one word about suitable and unsuitable marriages. Most of what I have to say has been already said by Dr. Maudsley. What are suitable and unsuitable marriages ? How are we to decide ? In the light of our knowledge—I had better say ignorance, I think—he would be a very bold man who would undertake the duties that were entrusted to the family council among those wise and virtuous people of whom Dean Swift has given us a description, and who should determine who should be the father and who the mother, and make marriages without consulting the individuals most concerned. I think if that were done, it is doubtful if the result would be any better than it is at present.

DR. FRANCIS WARNER SAID :

When I had the pleasure of reading the proof of Mr. Galton's paper, I devoted some time to thinking carefully over what might be expected to be the practical outcome of the suggestions offered, in which he purposely deals with only a portion of the means of developing a good nation, viz., marriage selection. I also gather that the tendency of the paper is to advocate marriages between those who are most highly evolved in their respective families. But there is a point in this connexion which I think is apt to be overlooked, and that is the examples often met with of the dangers from intermarriage between the most highly evolved members of two families. A considerable number of degenerates come under my observation professionally; they are mostly children, and, as far as possible, I get what knowledge I can of their families both on the paternal and the maternal side. It happens in a very considerable proportion of these cases that the father and the mother are the best of the families from which they themselves have proceeded. Where a man has evolved from a humble class to a high degree of mental ability, and his life has attracted the feeling or affection of a lady who has also evolved rather higher mental faculties than the rest of her family, there is danger in such a marriage. It happens very often that the parents of degenerate children are the best of their respective families. I will not go into any details, but I could give you a number of cases to show how frequently it is found that among the families of men who have risen, the first-born child, if a male, is feeble-minded or degenerate. There is also the great question of the girls, as well as the boys, in their personal evolution. It has been constantly said that one reason why apparently the girl's capacity is less than the boy's capacity for many sorts of work is that their mothers have not been educated. I should like to ask Mr. Galton whether the girls inherit mostly through the mother or through the father.

PROFESSOR WELDON SAID :

Two sets of objections have been urged against the position taken up by Dr. Galton. The first set has been formulated by Dr. Mercier and by the authors of several papers which have been taken as read. Dr. Mercier, and those who think with him, object, first of all, that the actuarial method is faulty, because it does not account for the phenomena of inheritance. In the presence of the author of the "Grammar of Science" I am sorry to be obliged to point out that the actuarial method does not pretend to account for anything. It does pretend to describe a large number of complex phenomena with a very fair degree of accuracy, and for this reason it is admirably adapted for the purposes of Eugenic inquirers. As I conceive the matter, the essential object of Eugenics is not to put forward any theory of the causation of hereditary phenomena, but to obtain and diffuse a knowledge of what those phenomena really are. We may be unable by its means to account for the production of a Shakespeare, and we may so far fall short of Dr. Mercier's ideal, but we are certainly able to tabulate

a scheme of inheritance which will indicate with very fair accuracy the percentage of cases in which children of exceptional ability result from a particular type of marriage. If we can do no more than this, we shall have made a very great advance in knowledge, and my view of Mr. Galton's paper is that he wishes to point out to us the way in which such an advance may best be made.

Well, that is the answer I would give to the first class of objector. The business of the actuarial method is not to account for phenomena, but to describe them; and if Dr. Mercier will consult the studies on inheritance which have been made in consequence of Mr. Galton's labours, he will find that it is already possible to describe the distribution of characters in the children of parents of particular kinds with very considerable accuracy. I would refer the meeting to extensive series of such results contained in Professor Pearson's recent "Huxley Lecture."

The objections of another class of critics are summarised in the interesting series of remarks by Mr. Bateson. Carefully conducted breeding experiments, on the lines first indicated by the Austrian abbot Gregor Mendel, have yielded results of great interest, and in many cases of apparent simplicity; many such experiments have been carried out by Dr. Bateson himself, and by Professors De Vries, Correns and others in Europe and America. It has been too lightly assumed that by these experiments the need for actuarial work has been superseded. To this objection I would give two answers. I would say *first* that the actuarial method is an essential part of the equipment of any man who would make and understand such experiments. The question whether such numerical results as those obtained in Mendelian experiments are really in agreement with hypothesis is very often hard to answer, and the answer can only be obtained by the use of that very actuarial method which Mr. Galton has taught to apply to biological problems.

My second answer to these objections is this: That when you have obtained from a laboratory experiment a result which actuarial methods show you to be rightly inferred, you have not achieved all that is necessary for the establishment of a Eugenic maxim. Your laboratory experiment is purposely simplified: you deal with one set of phenomena at a time; and by that very fact, you establish a degree of unlikeness between your laboratory experiment and the infinitely more complex experiment which is being conducted all round you from generation to generation. Before you can be sure that in simplifying your laboratory conditions you have not neglected some important factor which affects the result under the complex conditions of Nature's experiments, you must view your own result in its proper relation to that which occurs under more complex conditions; you must compare the conclusions drawn from your laboratory experiment with those drawn from an actuarial study of the more complex natural experiment. If the two agree, you have realised at least as much of the truth as will suffice for a working generalisation; if they do not agree (and at present the results of Mendelian experiment have not led to a single conclusion which holds for masses of human populations), then in this

case there can be no doubt whatever that for the student of human Eugenics or of organic evolution generally, the conclusions drawn from the larger mass of complex material are far more valuable than those drawn from the simpler, smaller laboratory experiment.

DR. ROBERT HUTCHISON SAID :

My only claim to address a meeting on this subject is that not only in common with all physicians am I acquainted with the factors that make for physical deterioration, but I have devoted special attention to certain of these which I believe to play a large part in the process. I refer to feeding. I believe we have in treating this subject to consider two lines on which a society like this might work. It has to consider, first, the raw material of the race—and that I believe to be the view which commends itself specially to Dr. Galton—and, second, the conditions under which that raw material grows up. I believe, speaking as a physician, and judging from the cases which one sees, for example, in the children's hospitals, that it is not so necessary to improve the raw material—which is not really so very bad after all—as it is to improve the environment in which the children are brought up. Of all the factors in that environment, that which is of the greatest importance in promoting bad physical and bad mental development is, I believe, the food factor. If you would give me a free hand in feeding during infancy and from ten to eighteen years of age, I would guarantee to give you quite a satisfactory race as the result. And I think we would do more wisely in concentrating our attention on such practical questions as those, rather than in losing ourselves in a mass of scientific questions relating to heredity, about which it must be admitted, in regard to the human race, we are still profoundly ignorant.

MR. H. G. WELLS SAID :

We can do nothing but congratulate ourselves upon the presence of one of the great founders of sociology here to-day, and upon the admirable address he has given us. If there is any quality of that paper more than another upon which I would especially congratulate Dr. Galton and ourselves, it is upon its living and contemporary tone. One does not feel that it is the utterance of one who has retired from active participation in life, but of one who remains in contact with and contributing to the main current of thought. One remarks that even since his Huxley lecture in 1901, Dr. Galton has expanded and improved his propositions.

This is particularly the case in regard to his recognition of different *types* in the community, and of the need of a separate system of breeding in relation to each type. The Huxley Lecture had no recognition of that, and its admission does most profoundly modify the whole of this question of Eugenics. So long

as the consideration of types is not raised, the Eugenic proposition is very simple : superior persons must mate with superior persons, inferior persons must not have offspring at all ; and the only thing needful is some test that will infallibly detect superiority. Dr. Galton has resorted in the past to the device of inquiring how many judges and bishops and such-like eminent persons a family can boast, but that test has not gone without challenge in various quarters. Dr. Galton's inquiries in this direction in the past have always seemed to me to ignore the consideration of social advantage, of what Americans call the "pull" that follows any striking success. The fact that the sons and nephews of a distinguished judge or great scientific man are themselves eminent judges or successful scientific men, may after all be far more due to a special knowledge of the channels of professional advancement than to any distinctive family gift. I must confess that much of Dr. Galton's classical work in this direction seems to me to be premature. I have been impressed by the idea, and even now I remain under the sway of the idea, that our analysis of human faculties is entirely inadequate for the purpose of tracing hereditary influence. I think we want a much more elaborate analysis to give us the elements of heredity, an analysis of which we have at present only the first beginnings in the valuable work of the Abbé Mendel that Mr. Bateson has recently revived.

Even the generous recognition of types that Dr. Galton has now made does not altogether satisfy my inquiring mind. I believe there still remain further depths of concession for him. At the risk of being called a "crank," I must object that even that considerable list of qualities Dr. Galton tells us that every one would take into account, does not altogether satisfy me. Take health, for example. Are there not types of health? The mating of two quite healthy persons may result in disease. I am told it does so in the case of the interbreeding of healthy white men and healthy black women about the Tanganyka region ; the half-breed children are ugly, sickly, and rarely live. On the other hand, two not very healthy persons may have mutually corrective qualities, and may beget sound offspring. Then what right have we to assume that energy and ability are simple qualities? I am not even satisfied by the suggestion Dr. Galton seems to make that criminals should not breed. I am inclined to believe that a large proportion of our present-day criminals are the brightest and boldest members of families living under impossible conditions, and that in many desirable qualities the average criminal is above the average of the law-abiding poor, and probably of the average respectable person. Many eminent criminals appear to me to be persons superior in many respects, in intelligence, initiative, originality, to the average judge. I will confess I have never known either.

Let me suggest that Dr. Galton's concession to the fact that there are differences of type to consider, is only the beginning of a very big descent of concession, that may finally carry him very deep indeed. Eugenics, which is really only a new word for the popular American term stirpiculture, seems to me to be a term that is not without its misleading implications. It has in it something of that same lack of a fine appreciation of facts that enabled Herbert

Spencer to coin those two most unfortunate terms, *Evolution* and the *Survival of the Fittest*. The implication is that the *best* reproduces and survives. Now really it is the *better* that survives, and not the *best*. The real fact of the case is that in the all-round result the inferior usually perish, and the average of the species rises, but not that any exceptionally favourable variations get together and reproduce. I believe that now and always the conscious selection of the best for reproduction will be impossible, that to propose it is to display a fundamental misunderstanding of what individuality implies. The way of Nature has always been to slay the hindmost, and there is still no other way, unless we can prevent those who would become the hindmost being born. It is in the sterilisation of failures, and not in the selection of successes for breeding, that the possibility of an improvement of the human stock lies.

MRS. DR. DRYSDALE VICKERY SAID :

The speech which has interested me most is that of Dr. Hutchison. Important as is the quality of hereditary stock, yet at the present juncture I would say that of still greater importance is this—that we have such a vast number of our population growing up under bad conditions. The result is an artificial, a merely economic multiplication of inferior stocks. The question I wish to raise is this: Are we producing in this country, and in all civilised countries, a greater proportion of new individuals than can be favourably absorbed? In a country like Russia, the surplus of births over deaths amounts to two millions in the year; in Germany, the surplus is a million; in Britain, not quite half a million. Can we in an old state of society absorb that amount of new individuals and give them fair conditions of existence? I think not. Dr. Warner spoke of the importance of our teaching of girls. I hold very strongly that the question of heredity, as we study it at present, is very much a question of masculine heredity only, and that heredity in its feminine aspects is very much left out of account. Mr. Galton told us that a certain number of burgesses' names had absolutely disappeared, but what about the names of their wives, and how would that consideration affect his conclusions? In the future the question of population will, I hope, be considered very much from the feminine point of view, and if we wish to produce a well-developed race we must treat our women-kind a little better than we do at present. We must give them something more like the natural position which they should hold in society. Women's specialised powers must be utilised for the intellectual advancement of the race.

MR. BENJAMIN KIDD SAID :

It is, I am sure, a peculiar satisfaction to have from Mr. Galton this important and interesting paper. No man of science in England has done more to encourage the study of human faculty by exact methods, and I hope the

Sociological Society will endeavour to follow the example he has set us. The only item of criticism I would offer, would be to say that we must not, perhaps, be sanguine in expecting too much at present from Eugenics founded on statistical and actuarial methods in the study of Society. We must have a real science of Society before the science of Eugenics can hope to gain authority. The point of Mr. Galton's Paper is, I think, that however we may differ as to other standards, we are, at all events, all agreed as to what constitutes the fittest and most perfect individual. I am not quite convinced of this. Much obscurity at present exists in sociological studies from confusing two entirely different things, namely, individual efficiency and social efficiency. Mr. Galton's fable of the animals will help me to make my meaning clear. It will be observed that he has considered the animals as individuals. If, however, we took a social type like the social insects, a contradiction, which I think possibly underlies his example, might be visible. For instance, it is well known that all the qualities of the bees are devoted to attaining the highest possible efficiency of their societies. Yet these qualities are by no means the qualities which we would consider as contributing to a perfect individual. If the bees at some earlier stage of evolution understood Eugenics, as we now understand the subject, what peculiar condemnation, for instance, would they have visited on the queen bee, who devotes her life solely to breeding. I am afraid, too, that the interesting habits of the drones would have received special condemnation from the unctuous rectitude of the time. What would have been thought even of the workers as perfect individuals with their undeveloped bodies and aborted instincts? And yet all these things have contributed in a high degree to social efficiency, and have undoubtedly made the type a winning one in evolution.

The example will apply to human society. Statistical and actuarial methods alone in the study of individual faculty often carry us to very incomplete conclusions, if not corrected by larger and more scientific conceptions of the social good. I remember our chairman, in his earlier social essays, once depicted an ideally perfect state of society. I have a distinct recollection of my own sense of relief that my birth had occurred in the earlier ages of comparative barbarism. For Mr. Pearson, I think, proposed to give the kind of people who now scribble on our railway carriages no more than a short shrift and the nearest lamp-post. I hope we shall not seriously carry this spirit into Eugenics. It might renew, in the name of science, tyrannies that it took long ages of social evolution to emerge from. Judging from what one sometimes reads, many of our ardent reformers would often be willing to put us into lethal chambers if our minds and bodies did not conform to certain standards. We are apt to forget in these matters that that sense of responsibility to life which distinguishes the higher societies is itself an asset painfully acquired by the race, a social asset of such importance that the more immediate gain aimed at would count by the side of it as no more than dust in the balance. Our methods of knowledge are as yet admittedly very imperfect. Mr. Galton himself, I remember, as the result of his earlier researches into human faculty, put the intellectual calibre of what are called the lower races

many degrees below that of the European races. I ventured to point out, some years ago, that this assumption appeared to be premature, and the data upon which it was founded insufficient. So much is now generally admitted. Yet it would have been awkward had we proceeded to draw any large practical conclusion from it at the time. The deficiency of what have been called the lower races is now seen to be, not so much an intellectual deficiency, as a deficiency in social qualities and social history, and therefore in social inheritance.

Many examples of a similar kind might be given. It may be remembered, for instance, how a generation or two ago Malthusianism was urged upon us in the name of science, and almost with the zeal of a religion. We have lived to see the opposite view now beginning to be urged with much the same zeal and emphasis. A nation or a race cannot afford to make practical mistakes on a large scale in these matters.

I trust and believe that much that Mr. Galton anticipates will be realised. But I think we must go slowly with our science of Eugenics, and that we must take care, above all things, that it advances with, and does not precede a real science of our social evolution. We must come to the work in a humble spirit. Even the highest representatives of the various social sciences must realise that in the specialised study of sociology as a whole, they are scarcely more than distinguished amateurs. Otherwise, in few other departments of study would there be so much danger of incomplete knowledge, and even of downright quackery, clothing itself with the mantle and authority of science.

MR. ELDERTON SAID :

An important item in the study of heredity is the heredity of disease, and I think life assurance offices might be able to give useful statistics. When a person whose life is assured dies, a certificate of death is given to the office and is put away with the papers that were filled up when the assurance was taken out. These original papers state the causes of death of parents, brothers, and sisters, and their ages at death, or their ages if they were alive when the assurance was effected. These particulars give information for the study of heredity in relation to disease, and from the same source light might be thrown on a question of great importance—the correlation between specific disease and fertility. One point in conclusion. Dr. Hutchison spoke of the greater importance of environment, but in that he would hardly get actuaries to agree with him. Their observation, judged by life offices' experience and practice, would seem to show that environment operates merely as a modifying factor after heredity has done its work.

MR. L. T. HOBHOUSE SAID :

I feel a good deal of difficulty in intervening in this extremely interesting discussion at this stage. I, like many of you, am only a listener to what the

biologists have to tell us in this matter. Until we have very definite information as to what heredity can do, I think those of us who are only students of sociology, and who cannot lay any claim whatever to be biologists, ought to keep silence. We have this afternoon had extremely divergent views put before us as to the actual or probable operation of heredity, and it seems quite clear that before we begin to tackle this question, which deals with one of the most powerful of human passions, with a view to regulate it, we must have highly perfected knowledge.

As to the two factors, stock and environment, no one can doubt that both are of fundamental importance in relation to the welfare of society; no one can doubt that, if the kind of precise knowledge which I desiderate could be laid before us by the biologist, it would have considerable influence on our views not only of what is ethically right, but of what could be legislatively enforced. Of these two factors, stock and environment, which can we modify with the greater ease and certainty of not doing harm? It is fairly obvious that we can affect the environment of mankind in certain definite ways. We have the accumulation of considerable tradition as to the way in which a given act will affect the social environment. When we come to bring stock into consideration, we are dealing with that which is still very largely unknown. At the same time, we owe a great deal of thanks to Mr. Galton for raising this subject. The bare conception of a conscious selection as a way in which educated society would deal with stock is infinitely higher than that of natural selection with which biologists have confronted every proposal of sociology. If we are to take the problem of stock into consideration at all, it ought to be in the way of intelligently handling the question, rather than submitting to the blind forces of nature. But until we have far more knowledge and agreement as to criteria of conscious selection, I fear we cannot, as sociologists, expect to do much for society on these lines.

## WRITTEN COMMUNICATIONS

FROM MR. W. BATESON, F.R.S.

With the objects of the paper every one will sympathise, and there can be no doubt that this discussion will do something to promote the study of Heredity and the introduction of scientific method in the breeding of man and other animals. An exact knowledge of the laws of inheritance will be a factor in the destiny of mankind, as large, if not larger, than any yet brought to bear.

I notice that in the paper, stress is laid on the "actuarial side of heredity," and on the application of statistical methods of a comprehensive character to the solution of the problems involved. Students of the subject are well aware what interesting results have been attained by those methods, especially in the hands of Mr. Galton himself—work that did much to develop this branch of science at a time when it was almost abandoned by naturalists. It may, nevertheless, not be inopportune, on such an occasion, which may well prove to be a point of new departure, to recall the fact that though these "actuarial" methods were appropriate to an incipient stage of the inquiry, means of attacking the problem directly and with greater effect are now well developed.

In nearly every case to which the method of accurate experimental breeding has been applied, it has been possible to show that the phenomena of heredity follow precise laws of remarkable simplicity, which the grosser statistical methods had necessarily failed to reveal. Inquiries, therefore, pursued on those older lines are largely superfluous, and give ambiguous results, inasmuch as they serve to conceal an underlying physiological order which closer analysis would make readily evident. It is, therefore, doubtful whether the prodigious labour needed for the collection and reduction of comprehensive statistics as to the distribution of hereditary qualities, is well spent; in view of the probability that the significance of the deductions drawn will disappear so soon as it becomes possible to apply a more stringent method of research.

The "actuarial" method will perhaps continue to possess a certain

fascination in regions of the inquiry where experimental methods are at present inapplicable, but conclusions drawn from facts not capable of minute analysis, can at best be regarded as interim conclusions, awaiting a test which, in all likelihood, they will not endure.

I would, therefore, urge that those who really have such aims at heart will best further "Eugenics" by promoting the attainment of that solid and irrefragable knowledge of the physiology of heredity which experimental breeding can alone supply.

FROM PROFESSOR C. S. LOCH.

1. With regard to the study of Eugenics, and the possibility of the idea which the word represents becoming operative in the lower section of society, an intelligent regard to social welfare, beyond what is now prevalent in any class, is the first condition. Is it possible to promote the objects of the writer of the paper, except indirectly, so far as that section is concerned? As they learn at public elementary schools, or in other ways, the conditions of healthy life, they may realise the necessity of what in a broad sense may be called good breeding.

2. To carry out the suggestions of Dr. Galton for the other higher sections of society may possibly be easier; but propagandism of a certain kind during the last ten or fifteen years has tended rather to promote a reduction in the number of children born, and that amongst a good class, rather than what one may call the better breeding of a larger number of children.

3. It may be agreed that a scientific statement on the subject would touch the imagination of a large number of our people, and that steps towards increasing our knowledge might be more widely adopted; but unless definite laws are discovered which can be practically turned into social commandments, and can be so stated and preached with a kind of religious fervour, it seems hardly possible to make very much further progress on such a question. Are we near the time at which such laws can be formulated in a manner that would meet with general acceptance on the part of all scientific students of the subject?

FROM DR. W. LESLIE MACKENZIE, M.A., M.D.,

*Medical Inspector to the Local Government Board of Scotland.*

It is to me a great privilege to be permitted to say something in any discussion where Dr. Francis Galton is leader; because from early in my student days until now, I have felt that his method of handling sociological facts has always been at once scientific and practical. Whether the ideas he represents have had some sub-conscious effect in driving me into the public health service, I cannot tell; but since I entered that service fourteen years ago, I have been in a multitude of minor ways impressed with two things—first, that in every Scottish

community, rural and urban, a hygienic renaissance is in progress; second, that in the many forms it assumes it has no explicit basis in scientific theory. In attempting, some time ago, to penetrate to the root-idea of the public health movement, I concluded that, rightly or wrongly, we have all taken for granted certain postulates. The hygienic renaissance is the objective side of a movement whose ethical basis is the set effort after a richer, cleaner, intenser life in a highly organised society. The postulates of hygienics—whose administrative form constitutes the public health service—are such as these: that society or the social group is essentially organic; that the social organism, being as yet but little integrated, is capable of rapid and easy modification—that is, of variations secured by selection; that disease is a name for certain mal-adaptations of the social organism or of its organic units; that diseases are thus, in greater or lesser degrees, preventable; that the prevention of diseases promotes social evolution; that, by the organisation of representative agencies—county councils, town councils, district councils, parish councils and the like—the processes of natural selection may be indefinitely aided by artificial selections; that thus, by continuous modification of the social organism, of its organic units and of the compound environment of both, it is possible to further the production of better citizens—more energetic, more alert, more versatile, more individuated. Provisionally, public health may be defined as the systematic application of scientific ideas to the extirpation of diseases, and thereby to the direct or indirect establishment of beneficial variations both in the social organism and in its organic units. In more concrete form, it is an organised effort of the collective social energy to heighten the physiological normal of civilised living.

A science of hygienics might thus be regarded as almost equivalent to the science of eugenics; character is presupposed in both. The fundamental assumption of hygienics is that the human organism is capable of greater things than on the average it has anywhere shown, and that its potentialities can be elicited by the systematic improvement of the environment. From the practical side, hygienics aims at "preparing a place" for the highest average of faculty to develop in.

Take Heredity—one of Dr. Galton's points. The modern movement for the extirpation of tubercular phthisis began with the definite proof that the disease is due to a bacillus. But the movement did not become world-wide until the belief in the heredity of tuberculosis had been sapped. So long as the tubercular person was weighted by the superstition that tubercular parents must necessarily produce tubercular children, and that the parents of tubercular children must themselves have been tubercular, he had little motive to seek for cure, the fatalism being here supported by the alleged inheritance of disease. Now that he knows how to resist the invasion of a germ, he is proceeding in his multitudes to fortify himself. What is true of tuberculosis is true of many other infections. Consequently, every hygienist will agree with Dr. Galton that the dissemination of a true theory of heredity is of the first practical importance. Nor is the evil of a wrong theory of heredity confined to infectious disease. If the official

"nomenclature of diseases" be carefully scrutinised, it will be found that the vast majority of diseases are due either to the attacks of infective or parasitic organisms or to the functional stress of environment, which for this purpose is better named "nurture." This has recently been borne in upon me by the examination of school children. The conclusion inevitably arising out of the facts is that inherited capacities are in every class of society so masked by the effects of nurture, good or bad, that we have as yet no means of determining, in any individual case, how much is due to inheritance and how much to nurture. There is here an unlimited field for detailed study.

Next, Fertility. It is, I suppose, on the whole, true that the less opulent classes are more fertile than the more opulent. But I am not prepared to accept the assumption that the economically "upper classes" coincide with the biologically "upper classes." May it not rather be that the relatively infertile "upper classes" (economical) are only the biological limit of the "lower classes," from which the "upper" are continually recruited? Until the economically "lower classes" are analysed in such detail as will enable us to eliminate what is due to bad environment, we cannot come to final conclusions on the relative fertility or infertility of "upper" and "lower." Until such an analysis is made, we cannot well assume that the difference in fertility is in any degree due to fundamental *biological* differences or modifications. Dr. Noël Paton has recently shown that starved mothers produce starved offspring and that well-fed mothers produce well-fed offspring. In his particular experiment with guinea-pigs, the *numbers* of offspring were unaffected. If this experiment should be verified on the large scale, it would form some ground for doubting whether the mere increase of comfort directly produces biological infertility. The capacity to reproduce may remain; but reproduction may be limited by a different ethic. The universal fall in the birth-rate has been too rapid to justify *simpliciter* the conclusion that biological capacity has altered.

When the public health organisations have succeeded in extirpating the grosser evils of environment, they will, it is hoped, proceed to deal more intimately with the individual. In the present movement for the medical examination and supervision of school children, we have an indication of great developments. If to the relatively coarse methods of practical hygienics we could now add the precision of anthropometry, we should find ready to hand in the schools an unlimited quantity of raw material. We might even hope to add some pages to the "golden book" of "thriving families." Incidentally, one might suggest a minor inquiry. Of the large thriving families, do the older or the middle or the younger members show, on the average, the greater ultimate capacity for civic life? My impression is that, in our present social conditions, the middle children are likely to show the highest percentage of total capacity. This is a mere impression, but it is worth putting to the test of facts.

To the worker in the fighting line, as the public health officer must always regard himself, Dr. Galton's suggestions come with inspiration and light.

FROM DR. G. ARCHDALL REID, M.B., F.R.S.E.

I think it would be impossible to imagine a subject of greater importance or to name one of which the public is more ignorant. At the root of every moral and social question lies the problem of heredity. Until a knowledge of the laws of heredity is more widely diffused, the public will grope in the dark in its endeavours to solve many pressing difficulties.

How shall we bring about a "wide dissemination of a knowledge of the laws of heredity so far as they are surely known, and the promotion of their further study?" We shall not be able to reach the public until we are able to influence the education of a body of men whose studies naturally bring them into relation with the subject, and who, when united, are numerous enough and powerful enough to sway public opinion. Only one such body of men exists—the medical profession. When the study of heredity forms as regular a part of the medical curriculum as anatomy and physiology, then, and not till then, will the laws of heredity be brought to bear on the solution of social problems. At present, a specialist like Mr. Galton has a very limited audience. In effect, it is composed of specialists like himself. Until among medical men a systematic knowledge of heredity is substituted for a bundle of prejudices, and close and clear reasoning for wild guess-work, the influence of men of Mr. Galton's type, most unhappily, is not likely to extend much beyond the limits of a few learned societies.

The first essential is a clear grasp of the distinction which exists between what are known as inborn traits and what are known as acquired traits. Inborn traits are those with which the individual is "born," which come to him by nature, which form his natural inheritance from his parents. Acquired traits are alterations produced in inborn traits by influences to which they are exposed during the life of the individual. Thus a man's limbs are inborn traits, but the changes produced in his limbs by exercise, injury, and so forth, are acquired traits. All men know that the individual tends to transmit his inborn traits to his offspring. But it is now almost universally denied by students of heredity that he tends to transmit his acquired traits. The real, the burning question among students of heredity is whether changes in an individual caused by the action of the environment on him tend *in any way* to affect the offspring subsequently born to him. Thus, for example, does good health in an individual tend to benefit his offspring? Does his ill-health tend to enfeeble them?

It is generally assumed that changes in the parents do tend to influence the inborn traits of offspring. Thus we have heard much of the degeneracy which it is alleged is befalling our race owing to the bad hygienic conditions under which it dwells in our great growing cities. The assumption is made that the race is being so injured by the bad conditions that the descendant of a line of slum-dwellers, if removed during infancy to the country, would, on the average, be inferior physically to the descendant of a line of rustics, whereas, contrariwise, the descendant of a line of rustics, if removed during infancy to the

slums would be superior physically to the majority of the children he would meet there.

I believe this assumption to be a totally unwarrantable one. It is founded on a confusion between inborn and acquired traits. Of course the influences which act on a slum-bred child tend to injure him personally. But there is no certain evidence that the descendant of a line of slum-dwellers is on the average inferior to the descendant of a line of rustics whose parents migrated to the slums just after his birth. I believe, in fact, that while a life in the slums deteriorates the individual, it does not affect *directly* the hereditary tendencies of the race in the least. A vast mass of evidence may be adduced in support of this contention. Slums are not a creation of yesterday. They have existed in many countries from very ancient times. Races that have been most exposed to a slum life cannot be shewn to be inferior physically and mentally to those that have been less or not at all exposed. The Chinese, for example, who have been more exposed, and for a longer time, to such influences than any other people, are physically and mentally a very fine race, and certainly not inferior to the Dyacks of Borneo, for example.

There is also a mass of collateral evidence. Thus Africans and other races have been literally soaked in the extremely virulent and abundant poison of malaria for thousands of years. We know how greatly malaria damages the individual. But Africans have not deteriorated. Like the Chinese, physically, at any rate, they are a very fine race. Practically speaking, every negro child suffers from malaria, and may perish of it. But while the *sufferings* of the negroes from malaria have produced no effect on the race, the deaths of negroes from malaria have produced an immense effect. The continual weeding out, during many generations, of the unfittest has rendered the race pre-eminently resistant to malaria; so that negroes can now flourish in countries which we, who have suffered very little from malaria, find it impossible to colonise. Similarly, the inhabitants of Northern Europe have suffered greatly for thousands of years from consumption, especially in places where the population has been dense—where there have been many cities and towns, and therefore slums. They also have not deteriorated; they have merely grown pre-eminently strong against consumption. They are able to live, for example, in English cities, in which consumption is very rife, and which individuals of races which have been less exposed to the disease find as dangerous as Englishmen find the West Coast of Africa.

During the last four hundred years, consumption has spread very widely, and now no race is able to dwell in cities and towns, especially in cold and temperate climates, that has not undergone evolution against it. In other words, no race is capable of civilisation that has not undergone evolution against consumption, as well as against other diseases and influences, deteriorating to the individual, which civilisation brings in its train. Many biologists and most medical men believe that influences acting on parents tend directly to alter the hereditary tendencies of offspring. In technical terms, they believe that variations are caused by action of the environment. How they contrive to do

so in the face of the massive and conclusive evidence afforded by the natural history of human races in relation to disease is beyond my comprehension. How *could* a race undergo evolution against malaria (for example), if parental disease altered and injured the hereditary tendencies of the offspring? How could Natural Selection select if all the variations presented for selection were unfavourable? The observations on disease and injury published by Brown Séquard, Cossar Ewart, and many medical men, are capable of an interpretation different to that which they have given.

Mr. Galton speaks as if the causes which have brought about the disappearance of most savage races when brought in contact with high civilisation were obscure. I can assure him, however, that they have been worked out precisely and statistically by many medical observers on the spot. Apart from extermination by war, the only savage races which are disappearing are those of the New World, and in every instance they are perishing from the enormous mortality caused amongst them by introduced diseases against which their races have undergone no evolution. He will find these precise statistics in the tables of mortality issued by all the Public Health departments that exist in America, Polynesia, and Australasia. He will find also many accounts in the journals of travellers. If he will read the records of visits of parties of aborigines from the New World to the cities of Europe, he will find that their mortality, especially from consumption, was invariably high. There is nothing more mysterious about the disappearance of these races than there is about the disappearance of the dodo and the bison. They are perishing, not because, as Froude poetically puts it, they are like "caged eagles," incapable of domestication, but simply and solely because they are weak against certain diseases. If malaria instead of consumption were prevalent in cities, the English would be incapable of civilisation, whereas the negroes and the wild tribes about the Amazon, and in New Guinea and Borneo, would be particularly capable of it. Indeed, it may be taken as a general rule, to which there is no exception, that every race throughout the World is resistant to every disease precisely in proportion to its past experience of it, and that only those races are capable of civilisation which are resistant to the diseases of dense populations.

Before the voyage of Columbus, hardly a zymotic disease, with the exception of malaria, was known in the New World. The inhabitants of the Old World had slowly evolved against the diseases of civilised life under gradually worsening conditions, caused by the gradual increase of population, and therefore of disease. They introduced these maladies to the natives of the New World under the worst conditions then known. They built cities and towns, the natural breeding places of all zymotic diseases, except those of the malarial type. They gave the natives clothes, which are the best vehicles for the transport of microbes. They endeavoured to Christianise and civilise the natives, and so drew them into buildings where they were infected. They forced them to labour on plantations and in mines. In fact, they forced on them every facility for "catching" disease. As a result, they exterminated or almost exterminated them.

The natives of the Gilbert Islands lately petitioned our Government not to permit missionaries to settle among them, as they feared destruction. They were perfectly right. Clothes and churches and school-rooms are fatal to such people. The Tasmanians, before they were quite exterminated, had a saying that good people—that is, people who went frequently to church—died young. They also were perfectly right—that is as regards their own race.

It is a highly significant fact that, whereas every white man's city in Asia or Africa has its native quarter, no white man's city in the New World has a native quarter. To find the pure aborigines of the New World we must go to parts remote from cities and towns. They cannot accomplish in a few generations an evolution which the natives of the Old World accomplished only after hundreds, perhaps thousands of generations, and at the cost of thousands of millions of lives. The Negroes, who were introduced into America to fill the void created by the disappearing aborigines, have perhaps persisted, but they had already undergone some evolution against consumption—the chief disease of civilisation—and much evolution against measles and other diseases. Yet even the Negroes would not have persisted had they not been introduced under special conditions. They were taken to the warmer parts of America at a time when consumption was little rife as compared to its prevalence in the cities of Europe, and they were employed mainly in agricultural occupations. They had a special start, and were placed under conditions that worsened only slowly. As a result they underwent evolution, and are now able to persist in America. But African Negroes, as compared to the natives of the densely populated parts of Europe and Asia, have undergone little evolution against consumption. As a consequence, no African colony has ever succeeded in Europe or Asia. For instance, the Dutch and English imported about twelve thousand negroes into Ceylon a century ago. Within twenty years all except a mere handful had perished, mainly of consumption, and that in a country where the disease is not nearly so prevalent as in Northern Europe, or the more settled parts of Northern Asia.

There can be little doubt that the sterility of the New World races when brought into contact with civilisation is due mainly to ill-health. The sterility of our upper classes is mainly voluntary. It is due to the possession of special knowledge. The growing sterility of the lower classes is due to the spread of that knowledge; hence the general and continuous fall in the birth-rate. Until we are able to estimate the part played by this knowledge it would be vain to collect statistics of comparative sterility.

We have frequently been told that no city family can persist for four generations unless fortified by country blood. That I believe is a complete error. Country blood does not strengthen city blood. It weakens it, for country blood has been less thoroughly purged of weak elements. It is true, owing to the large mortality in cities and the great immigration from the country, it is difficult to find a city family which has had no infusion of country blood for four generations. But to suppose on that account that country blood strengthens city blood against the special conditions of city life is to confuse *post hoc* with *propter hoc*.

Slum life and the other evil influences of civilisation, including bad and insufficient food, vitiated air, and zymotic diseases, injure the individual. They make him acquire a bad set of traits. But they do not injure the hereditary tendencies of the race. Had they done so civilisation would have been impossible. Civilised man would have become extinct. On the contrary, by weeding out the unfittest, they make the race strong against those influences.

If, then, we wish to raise the standard of our race, we must do it in two ways. In the first place we must improve the conditions under which the individual develops, and so make him a finer animal. In the second place, we must endeavour to restrict, as much as possible, the marriage of the physically and mentally unfit. In other words, we must attend both to the acquired characters and to inborn characters. By merely improving the conditions under which people live we shall improve the individual, but not the race. The same measures will not achieve both objects. Medical men have done a good deal for the improvement of the acquired characters of the individual by improving sanitation. They have attempted nothing towards the second object, the improvement of the inborn traits of the race. Nor will they attempt anything until they have acquired a precise knowledge of heredity from biologists. On the other hand, before biologists are able to influence medical men they must bring to bear their exact methods of thought on the great changes produced in various races by their experience, during thousands of years, of disease. I am sure our knowledge of heredity will gain in precision and breadth by a consideration of these tremendous, long-continued, and drastic experiments conducted by nature. No experiments conducted by man can compare with them in magnitude and completeness. And as I have already intimated, the precise statistical information on which our conclusions may be based is already collected and tabulated. I am quite sure it is good neither for medicine nor biology that medical men and biologists should live as it were in separate and closed compartments, each body ignoring the splendid mass of data collected by the other. Much of medicine should be a part of biology, and much of biology a part of medicine.

FROM MR. J. M. ROBERTSON.

1. A difficulty at once arises on the proposition that "The aim of Eugenics is that each class or sect should be represented by its best specimens." What does this mean? Apparently (judging from the context), that the average of each recognisable type should be raised, that those who are now "best" should be the standard for the future averages. If that be the idea, the formula had better run simply: "The aim of Eugenics is to promote such calculation or choice in marriage as shall maximise the number of efficient individuals." There will always be some "best," and it is a contradiction in terms to say that they "represent their class."

2. It seems, again, an oversight to make a multiplication of "large and thriving families" the ostensible ideal. If all families were "large," they certainly could not all be "thriving." A great increase of population would make thriving a harder matter: the struggle would be intensified on new lines. Further, "thriving" is often a matter of the possession of unsocial or anti-social qualities—unscrupulousness and acquisitiveness—and a vulgar idea of achievement. Given a family of morally and intellectually superior types, all contented with simple conditions, and averse to commercial struggle, are they to be classed as ill-born, or failures? If, finally, it should be shown that a common condition of thriving for large or other families is the possession of capital for a start in business, we are brought to no conclusion in Eugenics, but set asking for one in terms of politics.

3. It is indeed highly important to set up such common standards as shall preclude replication of morbid stocks, including in these those seen to tend to insanity, dumbness, suicide, dipsomania, erotism, violence, etc. Mr. Galton's past work has done much to bring the importance of heredity home to thinking people. But there is a danger of seeming to ask too much. For one thing, we must not overlook the fact that mere high physical stamina is not necessarily, or even very probably, a condition of high brain power. Merely "delicate" people, therefore, are not to be warned off marriage. Many great men (e.g., Newton and Voltaire) were extremely fragile in infancy. Some (e.g., Calvin, Pope, Spencer, Heine, Stevenson) were chronic invalids. For another thing, though it seems clear that high capacity in one parent is often neutralised by the lack of it in the other, it is vain to think to eliminate the factor of love or instinctive preference in marriage.

4. It seems impossible, finally, to separate Eugenics from Politics, inasmuch as the bad physical and moral conditions set up by poverty—i.e., ill-feeding, ill-housing, ill-clothing, and early prolificacy on the one hand, and ignorance in child-rearing and begetting on the other—are the great forces of "Kakogenics." Mr. Galton says "There is strong reason for believing that the rise and decline of nations is closely connected with" the rate of reproduction in the "upper" or other classes. I respectfully suggest that an effect is here put for a cause. The true causation of the rise and decline of nations, surely, is proximately a general economic process, depending primarily on physical environment (that is, natural resources) and secondarily on political direction, which is conditioned by political environment. That is to say, Rome did not rise through the fecundity or fall through the infecundity of her ruling or other classes. In the early period they were normally fecund. In the period of empire they appear to have become infecund, as a result of the bad relation to life set up by their imperialistic economics. But mere fecundity on their part would not have made that economics healthy, or rectified their relation to life. Saracen society has often presented fecund aristocracies, without any arrest of social decline. The depopulation of imperial Italy and of post-Alexandrian Greece, on the other hand, was not a physiological but an economic process. The Greeks went to the new and more

facile economic conditions. For Rome, the import of grain as tribute from rich soils killed the competition of Italian soil, and slave labour was rather a result than a cause of the elimination of the old peasantry.

Perhaps, indeed, Mr. Galton would not dissent from the general proposition that Eugenics involves Politics. But it seems to me that the necessary regression is obscured when it is suggested that Eugenics is mainly a matter of the right adjustment of individual conduct, in a social system politically fixed. If this be meant, I submit that it is a form of the fallacy of prescribing "a new heart" as the sufficient means to social regeneration. Nations can only very gradually change their hearts, and part of the process consists in changing their houses, their clothes, their alimentation, their economic position, and their institutions as a means to the rest.

FROM MR. G. BERNARD SHAW.

I agree with the paper, and go so far as to say that there is now no reasonable excuse for refusing to face the fact that nothing but a eugenic religion can save our civilisation from the fate that has overtaken all previous civilisations.

It is worth pointing out that we never hesitate to carry out the negative side of eugenics with considerable zest, both on the scaffold and on the battlefield. We have never deliberately called a human being into existence for the sake of civilisation; but we have wiped out millions. We kill a Tibetan regardless of expense, and in defiance of our religion, to clear the way to Lhasa for the Englishman; but we take no really scientific steps to secure that the Englishman, when he gets there, will be able to live up to our assumption of his superiority.

It is quite true, as the lecturer suggests, that the violent personal preferences on which most plays and novels are founded, are practically negligible forces in society. They can be, and are, circumscribed by political and social institutions as successfully as the equally violent antipathies which lead to murder. In spite of all the romancers, men and women are amazingly indiscriminate and promiscuous in their attachments: they select their wives and husbands far less carefully than they select their cashiers and cooks. In the countries where they are not allowed to select at all, but have their marriages arranged for them wholly by their parents, the average result seems to be much the same as that of our own more promiscuous plan of letting people marry according to their fancies. In short, for all sociological purposes, it may safely be assumed that people are not particular as to whom they marry, provided they do not lose caste by the alliance. But we must not infer from this that they will tolerate any interference with their domestic life once they are married. Political marriages are perfectly practicable as far as the church door; but once the register is signed there is an end of all public considerations. If the selection is eugenically erroneous, there is no remedy. If it is so brilliantly successful

that it seems a national loss to limit the husband's progenerative capacity to the breeding capacity of one woman, or the wife's to an experiment with one father only, our marriage customs and prejudices will stand as sternly in the way as if no selection had been exercised at all in the first instance. Eugenics under such limitations lose their interest, and relapse into mere Platonic speculation.

I am afraid we must make up our minds either to face a considerable shock to vulgar opinion in this matter or to let eugenics alone. Christianity began by attacking marriage; and though the attack utterly failed, the Catholic Church still regards the marriage of a priest as an abomination. Luther would never have dared to marry a nun if his opinions on the question had not gone much further than any Protestant community now dares to hint. But a merely negative attitude towards marriage is foredoomed to failure. Celibacy is so clearly an impossibilist doctrine that even St. Paul could not press it to its logical conclusion. Luther's views are anarchic, and suggest mere profligacy to the ordinary Philistine. Now, marriage is profligate enough in all conscience; but it is not anarchic. Consequently, marriage holds its own in spite of the revulsions of the higher sexual conscience against the open claim of married people to be exempt from all social obligation and even self-respect in their relations with one another. And as this very licentiousness serves the all-important purpose of keeping the race recruited, it has never been possible to challenge it seriously until the popularisation, about thirty-five years ago, of the sterilisation of marriage. This practice had, for decency's sake, to justify itself as a eugenic one: it was said that when there were fewer children each child would receive more care and nourishment, and have a better chance of surviving to maturity. But a mere reduction in the severity of the struggle for existence is no substitute for positive steps for the improvement of such a deplorable piece of work as man. We may even allow, without countenancing for a moment the crudities of Neo-Darwinism, that it may conceivably do more harm than good. What we must fight for is freedom to breed the race without being hampered by the mass of irrelevant conditions implied in the institution of marriage. If our morality is attacked, we can carry the war into the enemy's country by reminding the public that the real objection to breeding by marriage is that marriage places no restraint on debauchery so long as it is monogamic; whereas eugenic breeding would effectually protect the mothers and fathers of the race from any abuse of their relations. As to the domestic and sympathetic function of marriage, or even its selfishly sexual function, we need not interfere with that. What we need is freedom for people who have never seen each other before and never intend to see one another again to produce children under certain definite public conditions, without loss of honour. That freedom once secured, and the conditions defined, we have nothing further to say in the matter until the necessarily distant time when the results of our alternative method of recruiting will be able to take the matter in hand themselves, and invite the world to reconsider its institutions in the light of experiments which must, of course, in the meantime run concurrently with the promiscuity of ordinary marriage.

FROM V. LADY WELBY.

The science of Eugenics is not only dealing with "all influences that improve the inborn qualities of a race," but also "with those that develop them to the utmost advantage," must have the most pressing interest for women. And one of the first things to do—pending regulative reform—is to prepare the minds of women to take a truer view of their dominant natural impulse towards service and self-sacrifice. They need to realise more clearly the significance of their mission to conceive, to develop, to cherish and to train—in short, in all senses to mother the next, and through that the succeeding generations of Man.

As things are, they have almost entirely missed the very point both of their special function and of their strongest yearnings. They have lost that discerning guidance of eugenic instinct and that inerrancy of eugenic preference which, broadly speaking, in both sexes have given us the highest type of man yet developed. The refined and educated woman of this day is brought up to countenance, *and to see moral and religious authority countenance*, social standards which practically take no account of the destinies and the welfare of the race. It is thus hardly wonderful that she should be failing more and more to fulfil her true mission, should indeed too often be unfaithful to it, spending her instinct of devotion in unworthy, or at least barren, directions. Yet, once she realises what the results will be that she can help to bring about, she will be even more ready than the man to give herself, not for that vague empty abstraction, the "Future," but for the coming generations among which her own descendants may be reckoned. For her natural devotion to her babe—the representative of the generations yet to come—is even more complete than that to her husband, which indeed is biologically, though she knows it not, her recognition in him of the means to a supreme end.

But it is not only thus that women are concerned with the profound obligation to the race which the founder of the science of Eugenics is bringing home to the social conscience. At present, anyhow, a large proportion of civilised women find themselves from one or another cause debarred from this social service in the direct sense.

There is another kind of race-motherhood open to, and calling for, the intelligent recognition of and intelligent fulfilment by, all women. There are kinds of natural and instinctive knowledge of the highest value which the artificial social conditions of civilisation tend to efface. There are powers of swift insight and penetration—powers also of unerring judgment—which are actually atrophied by the ease and safety secured in highly organised communities. These, indeed, are often found in humble forms, which might be called in-sense and fore-sense.

While I would lay stress on the common heritage of humanity which gives the man a certain motherhood and the woman a certain fatherhood in outlook, perhaps also in intellectual function, we are here mainly concerned with the specialised mental activities of women as distinguished from those of men.

It has long been a commonplace that women have, as a rule, a larger share of so-called "intuition" than men. But the reasons for this, its true nature and its true work and worth, have never, so far as I know, been adequately set forth. It is obvious that these reasons cannot be properly dealt with—indeed can but barely be indicated—in these few words. They involve a reference to an extensive range of facts which anthropology, archæology, history, psychology and physiology, as well as philology, have brought to our knowledge. They mean a review of these facts in a new light—that which, in many cases, the woman who has preserved or recovered her earlier, more primitive racial prerogative, can alone throw upon them.

I will only here mention such facts as the part primitively borne by women in the evolution of crafts and arts, including the important one of healing; and point out the absolute necessity, since an original parity of muscular development in the animal world was lost, of their meeting physical coercion by the help of keen, penetrative, resourceful wits, and the "conning" which (from the temptation of weakness to serve by deception) became what we now mean by "cunning." To these I think we may add the woman's leading part in the evolution of language. While her husband was the "man of action," and in the heat of the chase and of battle, or the labour of building huts, making stockades, weapons, etc., the "man of few words," she was necessarily the talker, necessarily the provider or suggester of symbolic sounds and with them of pictorial signs, by which to describe the ever-growing products of human energy, intelligence and constructiveness, and the ever-growing needs and interests of the race—in short, the ever-widening range of social experience.

We are all, men and women, apt to be satisfied now—as we have recently been told, for instance, in the Faraday Lecture—with things as they are. But that is just what we all came into the world to be *dissatisfied* with. And while it may now be said that women are more conservative than men, they still tend to be more adaptive. If the fear of losing by violent change what has been gained *for the children* were removed, women would be found, as of old, in the van of all social advance.

Lastly, I would ask attention to the fact that throughout history, and I believe in every part of the world, we find the elderly woman credited with wisdom and acting as the trusted adviser of the man. It is only in very recent times, and in highly artificial societies, that we have begun to describe the dense, even the imbecile man as an "old woman." Here we have a notable evidence indeed of the disastrous atrophy of the intellectual heritage of woman, of the partial paralysis of that racial motherhood out of which she naturally speaks! Of course, as in all such cases, the inherited wisdom became associated with magic and wonder-working and sybilline gifts of all kinds. The always shrewd and often really originaive, predictive and wide-reaching qualities of the woman's mind (especially after the climacteric had been passed) were mistaken for the uncanny and devil-derived powers of the sorceress and the witch. Like the thinker, the moralist, and the healer, she was tempted

to have recourse to the short cut of the "black arts," and to appeal to the supernatural and miraculous, as science would now define these. We still see, alas, that the special insight and intelligence of women tends to spend itself at best on such absurd misrepresentations of her own instincts and powers as "Christian Science"; or worse, on clairvoyance and fortune-telling, and the like. Then it may be, elaborate theories of personality—mostly wide of the mark—are constructed upon phenomena which we could learn to analyse and interpret on strictly scientific and really philosophical principles, and thus to utilise at every point. We are, in short, failing to enlist for true social service a natural reserve of intelligence which, mostly lying unrecognised and unused in any healthy form, forces its way out in morbid ones. And let us here remember that we are not merely considering a question of sex. No mental function is entirely unrepresented on either side.

The question then arises, How is civilised man to avail himself fully of this reserve of power? The provisional answer seems to be, by making the most of it through the training of all girls for the resumption of a lost power of race-motherhood which shall make for their own happiness and well-being, in using these for the benefit of humanity. In short, by making the most of it through truer methods in education than any which have yet, except in rare cases, been applied. Certainly until we do this many social problems of the highest importance will needlessly continue to baffle and defeat us.

#### MR. GALTON'S REPLY.

Mr. Galton, in the course of his reply, said that much of what had been said might have been appropriately urged forty years ago, before accurate measurement of the statistical effects of heredity had been commenced, but it was quite obsolete now. Under these circumstances he felt unable to deal with the large amount of material, partly spoken, partly printed or written, that was now before the Society. Mr. Galton went on to say: "All I propose to do is to briefly comment on three or four points that have caught my attention:

"Mr. Wells spoke of 'stirpiculture' as a term that had been used by others and was preferable to 'eugenics.' I may be permitted to say that I myself coined that word and deliberately changed it for eugenics. Dr. Hutchison states his belief that environment is far more important than stock, but we know perfectly how enormously one baby, dog, or horse differs from another by nature; and surely it cannot be denied

by any one acquainted with stock breeding that it is well to take pains to increase the multiplication of the best variants. Mr. Elderton in his too few remarks touched on an important point—that the insurance offices might give a great deal of information. I quite agree with him in that, and also on the correlation of certain diseases and fertility. It used to be said that consumptive mothers were prolific. At one time I took great pains to get certain results, but was appalled and deterred by the want of precision in the data. The facts brought forward by one set of medical authorities did not agree with those brought forward by another. I went to the Consumption Hospital at Brompton, and to the Victoria Hospital, and found a total divergence of opinion as to what consumption was. My primary object then was to obtain typical specimens of consumptive patients for the purpose of composite photographs. The results, I may add, appeared in the 'Guy's Hospital Reports' nearly twenty years ago. I do not attach much importance to Mr. Kidd's points. His population of drones would have selected the best drones, and each would have selected the best of its kind and worked out their own salvation in their own way."

## PRESS COMMENTS.

PALL MALL GAZETTE (November 11, 1904).

In the very first stage of its existence the Sociological Society did a notable piece of work, by enabling Mr. Francis Galton to develop and further promulgate his new study of *eugenics*.

In pursuance of this purpose, Mr. Galton is giving not only his time and his great intellectual powers—great as ever, we may note, in their ninth decade—but has just given fifteen hundred pounds to the University of London to form a Francis Galton Fellowship in National Eugenics. This initial sum is to be spent in three years. It is to be hoped that the University will obtain the services of a thoroughly competent man. He will need to be uncommonly competent and uncommonly active if he is to keep even approximate pace with Mr. Galton himself, who has done a huge amount of valuable work since he read his paper before the Sociological Society in the summer.

We may observe the modesty of Mr. Galton in this matter. The founder of eugenics is under no delusion that he has yet done more than well and truly lay the foundations of the new science. The architect may be yet to seek. We are not yet in the position of being able dogmatically to dictate a series of imperatives to Society, even assuming public opinion—that “chaos of prejudices” as Huxley called it—to be ripe for them. Eugenics, of course, is entirely at the mercy of heredity. It is indeed no more than an application of the laws of that branch of biology, than which none is more recondite, inchoate, or obscure. Men are not yet agreed as to the facts or data of heredity, upon which, of course, its inductions depend. The facts, however, are slowly but certainly emerging. That last adverb is used advisedly: for the instrument by which these facts are being ascertained is the mathematical method—and mathematics alone can claim to possess certainty. This application of mathematics to the study of heredity and of biology generally, marks an epoch in the history of the science. It already has great achievements to its credit. This kind of biological study is now known as biometrics or biometry, excellent terms which we owe to Prof. Karl Pearson. The reader will very properly inquire the name of the man who founded biometry, and perhaps it will not surprise him to learn that that name is Francis Galton. It is not often that the man of imagination and of broad and lofty projects in the realm of practice, such as eugenics, is also the man who can discern and introduce the rigidly scientific instrument which alone makes these projects possible.

One other subject was specially dealt with by the Sociological Society last summer; and that was *civics*. Students of many different aims, and as diverse as the philanthropist, the psychologist, and the medical man, are coming to see that problems of city life are of immeasurable importance in many various directions. Poverty, the national physique, sex relations, hygiene, the evolution of ethical ideals—even the future of many branches of art—are all concerned with the study of civics, so admirably discussed by Prof. Patrick Geddes last summer. Now, it is an immediate need for the welfare of science and of society that money should be forthcoming for the prosecution of scientific research in civics as in eugenics. Who will follow Mr. Galton's lead?

THE NATION (New York), June 9, 1904:

We do not imagine that Francis Galton has read President Roosevelt's letter on “race suicide,” but a recent address of his before the Sociological Society is a good corrective of it, and of the whole order of ill-considered ideas lying behind it. That a nation or a stock should simply multiply is by no means the highest good—is not necessarily a good at all. It is a military conception, to be sure, that there should always be plenty of “food for powder.” Napoleon, who asked what were the lives of a million soldiers to a man like him, was anxious that French mothers should make good his ravages. Such barbarous notions still persist. But Mr. Galton brushes them all aside with the statement that the real problem of civilisation is how to improve the race, not merely to give it a cheap numerosity.

What eugenics aims at is to put every class at its finest: to make each sort more and more conform to its best specimens. Only so can the general tone be made better. And social salvation lies in improving the average quality. As Mr. Galton says, if public leaders will insist upon “playing to the gallery,” we must give them a better gallery to play to—one that will hiss vulgarities and savagery off the stage, instead of frantically applauding them. In this view the social philosopher is at one with the poet whose prayer was

“O God, make no more giants,  
Elevate the race!”

The subject is one of tremendous importance, and the first thing is to get people to believe it so. Mr. Galton is under no illusions. He is well aware of the common ideas and practices related to what John Fiske termed “that stupendous process of breeding which we call civilisation.” Better conceptions must begin with the educated and the serious. Eugenics must be an academic question before it can come to be a matter of intense and general practical interest, or be finally, as Mr. Galton hopes it will, “introduced into the national conscience like a new religion.” If it is a noble thing to produce a race in which sound physiques, strong minds, and good morals are in widest commonality spread, to debase the stock is surely a national disgrace. There is, however, no surer way to debase it than to follow rash counsels looking to number rather than quality.

The aim throughout is to give richness to life. And here those who hold to the rabbit theory of national well-being have to face the fact that

it is precisely the most intelligent and conscientious parents of our time who think so much of the happiness of the coming generation that they will not improbably bring children into the world. They would hotly resent Mr. Roosevelt's implication that unwillingness to have large families is a kind of race treason. The real traitors to race are those who would degrade and weaken it by so diminishing the opportunities of a swarming population that discontent and a fiercer struggle for existence will bring the bestial qualities uppermost. What has been called the "apologetic attitude" of the modern father in the presence of his child goes well with the more serious weighing of the responsibilities of parenthood. It is really a wholesome, not an alarming, thing if people are thinking with deeper intentness about the desirable restrictions on marriage and about the laws of health and happiness as related to the bearing and rearing of children. To give one well-born and correctly brought-up son to the commonwealth is to serve it better than by burdening it with a half-dozen ill-conditioned boys. What the ultimate destiny of the human race may be we do not know; but the duty which lies next at hand for this generation is to study and disseminate the laws of heredity, and to so act upon the knowledge of them, with a due regard to the environment in which children are to be placed, that the level of health, intelligence, and morality shall be at least a little raised.

DR. C. W. SALEEBY (in *THE WORLD'S WORK* of December, 1904), writing under the title, "EUGENICS: THE NEW SCIENTIFIC PATRIOTISM," said:—

Like his immortal first cousin, Charles Darwin, Mr. Francis Galton "does not advertise." The public therefore knows this octogenarian leader of science only as the student of finger-prints. It is not aware of the great advances in biology which we owe to Mr. Galton's application of mathematics to that science, founding the new study called biometry; it is hardly aware of his great work on the inheritance of genius; nor is it acquainted with "Galton's law" in heredity.

Lately, however, Mr. Galton *did* advertise, in a sense. That is to say, the University of London is seeking applicants for the post of Francis Galton Research Scholar in National Eugenics. Mr. Galton has given £1,500 for this purpose by way of a beginning. Now, what is all this about?

Many years ago Mr. Galton invented the word stirpiculture, which many of us have heard, but latterly he has substituted for it the word eugenics—*good reproduction*. His argument is that (1) heredity is a fact; (2) some people are fitter than others to be the parents of posterity; (3) education can only repress or develop hereditary potentialities; (4) it is well to begin at the beginning.

As every one knows, Mr. Galton's illustrious kinsman propounded the theory which usually goes by Herbert Spencer's phrase, the *survival of the fittest*, to account for the evolution of higher from lower living things. We recognise that, on the whole, "natural selection"—to use Darwin's own term—is a beneficent process. The fittest are the happiest; the unfit mercifully die out, leaving no progeny, or but few. Thus—other factors

doubtless aiding—has been so far accomplished what Tennyson called *the making of man*.

This process, I have no doubt, is still tending slowly to elevate the average of our race—but how slowly! Now Mr. Galton steps in with some such argument as this: Here is a great beneficent principle which has been at work, by land and sea, in the animal and the vegetable world, for tens of hundreds of millions of years. It is indisputably one of the laws of that "Power, not ourselves, which makes for righteousness." By its agency there has been developed, in its latest product—Man—an intelligence to which its working has been revealed. Is it not, then, the duty of the human intelligence, having discovered this law, to utilise, aid and abet it?

Eugenics, then, is the science which deals with the conditions by which the human race may be physically, mentally and morally improved. But the reader need not fancy that Mr. Galton's eighty years in any way interfere with his active prosecution and development of his own idea. He has lately sent to every member of the Royal Society a request for precise and specified information as to mental achievement on the part of relatives; and the result is to prove that talented families do indisputably exist whose brains are a precious asset to humanity, and whose stock is beyond price. Mr. Galton himself, of course, is a case in point. He is first cousin to Charles Darwin, whose grandfather was the famous Erasmus Darwin, poet and physician, one of the forerunners of the doctrine of organic evolution. In Charles Darwin's veins flowed some of the blood of Josiah Wedgwood. Three of Darwin's sons are now Fellows of the Royal Society, and one of them is the President-Elect of the British Association. It is plain that any circumstances interfering with the marriage of Erasmus Darwin's father would have robbed the world of much which the bankers cannot estimate.

Generally speaking, then, the facts of heredity are facts, despite the hopelessly inaccurate popular conception of them—a conception derived in the main from the novels of Zola. It is true, that, according to the Galtonian law of "regression towards mediocrity," the children of the genius, whilst above the average, tend to descend to it, whilst the children of the criminal, though morally inferior, are yet not quite as black sheep as their parents. But still it is well worth society's while that the genius and the saint, the athlete and the artist, should provide posterity, rather than the idiot, the criminal, the weakling, and the Philistine.

If now the reader asks how this consummation so devoutly to be wished may be reached without any loss or injury to those institutions which society has evolved through much effort, and which are not carelessly to be let go, Mr. Galton will answer him. First, I am sure—and I may note that this article is written entirely on my own responsibility—Mr. Galton would observe that, having only lately discerned a goal, he can hardly be expected already to have paved a smooth highway thereto. If there were nothing more to learn, Mr. Galton would not be spending his money in the high and generous fashion lately noticed. But this is not to say that he has no ideas on the subject. Already, unless I am much mistaken, he has the cardinal idea, and it is this:—

Sneer at it as you or I may, in the last analysis it is public opinion that determines the doings of human society. A serious magazine is entitled to call itself an engine of progress, precisely because of its influence on the factor which determines all progress. What, then, if Eugenics, as Mr. Galton suggests, were incorporated—as who can doubt it will be—in

our national *religion*? Suppose that people come to recognise the appalling amount of misery induced by the marriages of people whom society is perfectly willing to let live, but who in return owe it to society not to burden it with any more of their kind. Social approval and disapproval are already most potent, even in connection with the tender passion, which is supposed to admit of no criticism or external dictation. Every one knows that social disapproval prevents all but a very few marriages between people of very unequal social status. Still more obvious is it that under certain conditions of close relationship, marriage is never even contemplated by young persons who might otherwise easily fall in love with one another. Already the marriages of first cousins are often interfered with, in deference to a belief the evidence for which is very far from convincing. Beyond question the present century will not be out before public opinion and the unwritten laws of society will effectively interfere with the marriages of unsuitable persons. No legal enactment is necessary. The risk of social ostracism will be a powerful deterrent. You ask why such and such an one should be deprived of the privileges of life. But public opinion, obviously, will be cruel to be kind. In time to come, the number of people unfit to play their part in the great task of continuing man's mysterious pilgrimage on this dying planet will be practically negligible. If for two generations there were none but eugenic marriages, the failures of the third generation would be practically nil.

So much for one side of the question—the discouragement of the unworthy. Equally important is the encouragement of the worthy. We must have a national roll of distinguished families, says Mr. Galton. Men must learn to be as proud of being inscribed, and of having their children inscribed, on that roll as of having had an ancestor, probably worthless, who came over with the Conqueror.

In truth, a new ideal of patriotism will arise from the practicable dream of this great biologist of the nineteenth century, who has been spared to preach a new gospel to the youth of the twentieth. It will come to be seen that one can do better things than *die* for one's country, and that one does not need to wear a uniform or cross the seas in order to serve her. The real patriots will number those—not that many sonnets will be written to them—who renounce the satisfaction of even such noble desires as that of parenthood, because they regard themselves as unlikely to father worthy children. Thus, though they will not die in their own persons, they will die in their race. Similarly, family pride will take a new aspect. The man or woman whose name is enrolled as member of a family already distinguished for intellectual achievement will seek, for the sake of the family honour, a partner whose mental equipment is higher than the average; and so the Eugenic cause will be served. The man who knows himself to be intellectually superior will, if he be a patriot, make many sacrifices in order that he leave as many children like himself as possible.

Mr. Galton's proposals may seem timid in comparison with some others; but they do not always shout the loudest who see furthest.

## A EUGENIC INVESTIGATION.\*

INDEX TO ACHIEVEMENTS OF NEAR KINSFOLK OF SOME OF THE FELLOWS OF THE ROYAL SOCIETY.

By FRANCIS GALTON, F.R.S.

### PREFACE.

It is now practically certain, from wide and exact observation, that the physical characters of all living beings, whether men, other animals, or plants, are subject approximately to the same hereditary laws. Also, that mental qualities, such as ability and character, which are only partially measurable, follow the same laws as the physical and measurable ones.

The obvious result of this is that the experience gained in establishing improved breeds of domestic animals and plants

[\* This additional paper of Mr. Galton's is, by his kind permission, included here. It appropriately follows his Eugenic address, for it is a type of one of several orders of investigation arising out of that address. It has always been characteristic of Mr. Galton's work that, like all initiating advances, it opens up to scientific research many new lines of investigation. One of the questions immediately springing from his statement of the Eugenic position is the problem of determining the functional groups in a given community, and classifying them on a cultural basis. It would belong to the same investigation to ascertain by observation of family achievements, the main cultural stocks in each group. In this particular paper, Mr. Galton takes the Royal Society as a type of the higher cultural groups, and gives examples of hereditary strains of talent conspicuously illustrated therein. By extending the investigation to other groups it is clear that data would accumulate towards the compilation of the "Golden Book of Thriving Families," which Mr. Galton counsels the Sociological Society to undertake. In point of theoretical consideration, some of the larger questions to be kept in view throughout eugenic investigations would include the following:—(1) what in any given community are the hereditary sources of progressive culture, physical and psychical; (2) by what criteria may the relative cultural worth of different human stocks be estimated; (3) under what conditions do the higher cultural varieties of stock originate and develop; and (4) how may existing selective agencies be relatively modified with a view to the encouragement of the higher types.—EDITORS.]

is a safe guide to speculations on the theoretical possibility of establishing improved breeds of the human race.

It is not intended to enter here into such speculations, but to emphasise the undoubted fact that members of gifted families are, on the whole, appreciably more likely than the generality of their countrymen to produce gifted offspring.

No extensive collection exists of the biographies of Gifted Families, as distinguished from biographies of Individuals; we are therefore without means of obtaining an idea of the distribution of ability in our very mixed race, incomparably more mixed than that of any domestic animal, where some conscious selection is always at work. We cannot tell, *a priori*, how far ability is sporadic at the present time, and how far it clusters in families. As a first attempt to supply the deficiency, both as to matter and form, I submit the present paper, the result of inquiries made through a circular letter to all Fellows of the Royal Society as to the "noteworthy" achievements of their near relatives. The standard of "noteworthiness" was defined as achievement in any occupation which was judged by the writer to be at least equal in dignity, among the fellows of the relative, to that of F.R.S. among men of science. It was the best standard I could think of; no one has as yet suggested a better, and notwithstanding its obvious faults it has served well. About half of the 454 fellows, or thereabouts, replied to my circular. Many of the replies were extremely interesting, while not a few were very jejune; still, I have collected enough material to be serviceable in many ways. I wrote a brief statistical article upon those I had received up to a certain date, in *Nature* on August 11. Evidence was there given that ability, as measured by achievement, tended in a marked degree to be a family characteristic. Besides the families so distinguished, there were others reputed to have a high level of ability, whose members had nevertheless failed to achieve anything noteworthy; again, there were others in whom the ability was, in the language of horticulturists, a "sport"; it was shared by none of the collaterals or ancestry, but, presumably like all sports, may be highly capable of producing its like in descent.

The difficulty of estimating the ability of women, who

have few opportunities of displaying it in a measurable way, was partly met by asking for the achievements of the brothers of the females, which are comparable on equal terms with those of the brothers of males.

Having collected and discussed my material, the question arose how best to present the results so as to bring out the fact that ability, as measured by achievement, is really clustered to a remarkable degree in certain families. Something more vivid was required than statistical figures; something in the nature of those Family Biographies above mentioned. It was, however, difficult to give them, because, although no stipulation whatever was made in the circular letter of inquiry that the replies should be treated as private documents, I found that a feeling existed that such restriction was implied. I could not disregard this view without risking the accusation of breach of trust. At length I thought of the course that has been adopted here. It is to take the replies as *guides* only, and rarely to quote from them, restricting the mention of achievements to those that have *already been published*; to extract the account of them, as a general rule, from publications where they appeared, and to give references as far as seemed reasonably desirable. The publications might be official or only local, but, as a matter of convenience, the references are in almost all cases either to the "Dictionary of National Biography" for deceased persons, and to the "Encyclopædia Britannica" or to "Who's Who" of 1904 for living ones. A biography in either of the first two is in itself a mark of distinction; it is so, but in a much less degree, in "Who's Who." They all have the merit of giving detailed accounts of the achievements of the person in question, while the "Dict. N. Biog." gives full references to the memoirs and other sources whence the information in each article was derived.

The present paper is styled an "Index," because it falls far short of being a collection of biographies, and contains no account of failures. On the other hand, it does more than indicate families deserving of minute study, for it gives a fair idea of the quality of ability that dominates in each. This would be sufficient, if the collection were largely added to, to enable families to be sorted into different groups, according to

their prevailing characteristic, each group being convenient for separate study. I could add other remarkable pedigrees from the same source, but these few will serve as a preliminary attempt to show the quality of material that exists, and a convenient form of treating it, which is the primary purpose of this small paper.

The average number of kinsfolk in each degree should be borne in mind when reading the "Index." This was discussed by me in a paper in *Nature*, September 29. From that discussion I now conclude that the average numbers of near kinsmen who attain an age at which they would have achieved something noteworthy, if they possessed the necessary qualifications, would be roughly as follows:—grandfathers, 2 (1 *father's father* and 1 *mother's father*); father, 1; uncles, 2 (1 *father's brother* and 1 *mother's brother*); brothers, 1; first cousins, 4 (*see Table of Abbreviations*); making 10 altogether. Sons and nephews are rarely taken into account here, because they usually had not attained a sufficient age to enable them to do justice to their potentialities.

Persons who have earned a place, by virtue of their achievements, in the "Dict. N. Biog.," in the "Ency. Brit.," or even in "Who's Who," are so far rarer than one in ten, that the appearance of one of them within the inner degrees of kinship of Fellows of the Royal Society, would give a presumption of hereditary ability; but when, as in the families who are indexed here, an average of four of these noteworthy persons fall within those near degrees, the presumption grows into certainty.

The connection between achievement and ability is technically known as Correlation, though it be of a complex, entangled, and discontinuous kind. Still, it must be governed by the law that links every pair of systems of correlated variables. Let the members of one of the two systems be called "Subjects," and those of the other "Relatives"; then, although we can never guess beforehand what Relative will be associated with any particular Subject, we can tell something about the group of Relatives that will be associated with any considerable number of *similar* Subjects; namely, that the *average* of those Relatives will always be less exceptional than those

Subjects. In other words, *very high* achievement will, on the average, be associated with only *high* ability; *high* achievement with *moderately high* ability; *average* with *average*; *low* with *moderately low*; *very low* with *low*. It is as yet impossible to say much more than this in respect to achievement and ability.

Arrangements are in progress for an inquiry into the Biographies of Modern Families, of every social grade, each of these families being distinguished, *as a whole*, for Ability, Character, or Physique. Chief among these is the following, as extracted from the *Times* of October 27:—

*London, October 26.*—At their meeting this afternoon the Senate had before them, and on the recommendation of the Academic Council accepted, an offer from Mr. Francis Galton, F.R.S., to endow a Fellowship in the University for the promotion of the study of "National Eugenics," defined as "the study of the agencies under social control that may improve or impair the racial qualities of future generations either physically or mentally." The person appointed to this Fellowship will be required to devote the whole of his time to the study of the subject, and in particular to carry out investigations into the history of classes and families, and to deliver lectures and publish memoirs on the subject of his investigations. The endowment is sufficient to provide not only for the Fellowship, but also for the salary of an assistant, and for the general expenses of the contemplated work, which it is intended to place in one of the colleges or other institutions connected with the University. Full particulars of the post will be published shortly.

Many persons have expressed interest in the progress of inquiries of this character. I hope, therefore, that some may be disposed to assist actively in procuring and sending information. Blank forms to receive the entries will be sent on application.

It will be assumed that free use may be made of the information that is furnished, unless otherwise stated.

FRANCIS GALTON.

42, RUTLAND GATE, S.W.  
October, 1904.

TABLE OF ABBREVIATIONS.

Males.		Females.	
Grandfather paternal . . .	<i>fa fa</i>	Grandmother paternal . . .	<i>fa me</i>
" maternal . . .	<i>me fa</i>	" maternal . . .	<i>me me</i>
Father . . .	<i>fa</i>	Mother . . .	<i>me</i>
Uncle paternal . . .	<i>fa bro</i>	Aunt paternal . . .	<i>fa si</i>
" maternal . . .	<i>me bro</i>	" maternal . . .	<i>me si</i>
Brother . . .	<i>bro</i>	Sister . . .	<i>si</i>
Son . . .	<i>son</i>	Daughter . . .	<i>da</i>
Nephew brother's side . . .	<i>bro son</i>	Niece brother's side . . .	<i>bro da</i>
" sister's side . . .	<i>si son</i>	" sister's " . . .	<i>si da</i>
Male first cousins—		Female first cousins—	
1 son of paternal uncle . . .	<i>fa bro son</i>	1 dau. of paternal uncle . . .	<i>fa bro da</i>
2 " maternal " . . .	<i>me bro son</i>	2 " maternal " . . .	<i>me bro da</i>
3 " paternal aunt . . .	<i>fa si son</i>	3 " paternal aunt . . .	<i>fa si da</i>
4 " maternal " . . .	<i>me si son</i>	4 " maternal " . . .	<i>me si da</i>

The kinships are reckoned from the person mentioned in the heading to the list, whom we may call P. Then *fa bro* means "P's father's brother is"; *me si son* means "P's mother's sister's son is."

INDEX OF ACHIEVEMENTS OF NEAR KINSFOLK OF SOME OF THE FELLOWS OF THE ROYAL SOCIETY.

Rt. Hon. Charles **Booth**, P.C., F.R.S. (*b.* 1840, economist and statistician; president of the R. Statistical Society, 1892-4. Originated and carried through a co-operative inquiry in minute detail into the houses and occupations of the inhabitants of London, which resulted in the volumes "Life and Labour of the People of London"; author of memoirs on allied subjects.—["Ency. Brit.," 26, 306; "Who's Who."]

*fa fa*, Thomas **Booth**, successful merchant and shipowner at Liverpool.

*fa bro*, Henry **Booth** (1788-1869), railway projector, co-operated with Stephenson in applying steam to locomotion, published much relating to railways, and invented mechanical contrivances still in use on railways; secretary and then railway director.—["Dict. N. Biog.," 5, 382.]

*fa bro*, James **Booth**, C.B. (1796-1880), Parliamentary draughtsman; became permanent secretary to the Board of Trade.

*me si son*, Charles **Crompton**, fourth wrangler, Q.C., and for some years M.P. for the Leek Division of Staffordshire (see **Roscoe**).

*me si son*, Henry **Crompton**, a leader in the Positivist Community; authority on Trades Union law, and author of "Industrial Conciliation" (see **Roscoe**).

*me si son*, Sir Henry Enfield **Roscoe**, F.R.S., *q.v.*

Sir John Scott **Burdon-Sanderson**, Bart., *cr.* 1899, M.D., D.C.L., LL.D., D.Sc., F.R.S.; held a succession of important offices, beginning with Inspector med. dep. Privy Council, 1860-65; superintendent Brown Institution, 1871-78; professor of physiology University Coll., London, 1874-82; in Oxford, 1882-95; president Brit. Assoc., 1893; regius professor of medicine at Oxford, 1895-1904; served on three Royal Commissions; author of many physiological memoirs.—["Ency. Brit.," 26, 464; "Who's Who."]

*fa fa*, Sir Thomas **Burdon**, Kt., several times Mayor of Newcastle, knighted for his services in quelling a riot.

*me fa*, Sir James **Sanderson**, Bart., M.P., Lord Mayor of London; a successful merchant.

*fa*, Richard **Burdon-Sanderson**, fellow of Oriel College, Oxford; graduated first-class and gained Newdigate prize; was secretary to Lord Chancellor Eldon.

*bro*, Richard **Burdon-Sanderson**, the first promoter of the "conciliation board" of coal-owners and colliers at Newcastle-on-Tyne, and of the first reformatory in Northumberland.

*si son*, Rt. Hon. Richard Burdon **Haldane**, P.C., M.P., high honours at Edinburgh and three other Scotch universities. Author of "Life of Adam Smith" and of memoirs on education.—["Who's Who."]

*si son*, John Scott **Haldane**, M.D., F.R.S. (*b.* 1860), university lecturer on Physiology at Oxford; joint editor and founder of "Journal of Hygiene."—["Who's Who."]

*si da*, Elisabeth Sanderson **Haldane**, "Life of Professor Ferrier" and other works; promoter of education and of reforms in Scotland.

More distant kinsmen and connections.

*fa me bro*, John **Scott**, first Earl of **Eldon** (1751-1838), famous Lord Chancellor of England.—["Dict. N. Biog.," 51, 49.]

*fa me bro*, William **Scott**, first Baron **Stowell** (1745-1836), eminent maritime and international lawyer; judge of High Court of Admiralty, 1798-1828.—["Dict. N. Biog.," 51, 108.]

*wife's bro*, **Farrer**, first Lord **Herschell**, Lord Chancellor of England.

Charles Robert **Darwin**, F.R.S. (1809-1882), the celebrated naturalist. The dates of his works are "Voyage of the *Beagle*," 1840; "Origin of Species," 1859; followed by a succession of eight important volumes, ranging from 1862 to 1881, each of which confirmed and extended his theory of descent. Among the very numerous biographical memoirs it must suffice here to mention "Life and Letters," by Francis Darwin; and "Dict. N. Biog.," 14, 72.

*fa fa*, Erasmus **Darwin**, M.D., F.R.S. (1731-1802), physician, poet and philosopher. Author of "Botanic Garden," "Zoonomia," and other works, in which he maintained a view of evolution subsequently expounded by Lamarck.—["Life," by Ch. Darwin, "Dict. N. Biog.," 14, 84.]

*fa*, Robert Waring **Darwin**, M.D., F.R.S. (1766-1848), sagacious and distinguished physician, described by his son, Charles R. Darwin, as "the wisest man I ever knew."—"Life and Letters of Charles Darwin," 1, 10-20.]

*fa bro*, Charles **Darwin** (1758-1778), of extraordinary promise, gained first gold medal of Æsculapian Society for experimental research; died from a dissection wound, aged twenty, many obituary notices.—["Life and Letters of Charles Darwin," 1, 7.]

*bro*, Erasmus **Darwin**; see Carlyle's inexact description and the appreciations of him by his brother and others, in "Life and Letters of Charles Darwin," 1, 21-25.

*fa*,  $\frac{1}{2}$  *si son*, Francis **Galton**, F.R.S. (b. 1822), traveller and biometrician; gold medal R. Geograph. Soc., 1853; Royal medal, 1886, and Darwin medal, 1902, of the Royal Society.—["Ency. Brit.," 28, 578; "Who's Who."]

*me fa*, Josiah **Wedgwood**, F.R.S. (1730-1795), the famous founder of the pottery works.—["Dict. N. Biog.," 60, 140.]

*me bro*, Thomas **Wedgwood** (1771-1805), an experimenter in early life, and in one sense the first to create photography; a martyr to ill-health later. Sydney Smith knew "no man who appeared to have made such an impression on his friends," and his friends included many of the leading intellects of the day.—["Dict. N. Biog.," 60, 146.]

*wife's fa fa* (she was her husband's *fa bro dau*), Josiah **Wedgwood**, F.R.S.; see above.

*wife's bro*, Hensleigh **Wedgwood** (1803-1891), author of "Etymological Dictionary," and other works, partly mathematical.—["Dict. N. Biog.," 60, 140.]

*wife's bro dau*, Julia **Wedgwood**, essayist.

*son*, Francis **Darwin**, F.R.S. (b. 1848), botanist; biographer of his father; reader in botany at Cambridge, 1876-1903; foreign sec. Royal Society. Author of botanical works and memoirs.—["Who's Who."]

*son*, George **Darwin**, F.R.S. (b. 1845), second wrangler, 1868; Plumian professor of astronomy and experimental philosophy, Cambridge. Author of many papers in the "Philosophical Transactions," relating to tides, physical astronomy, and cognate subjects; president elect of British Association in 1905 at Cape Town.—["Who's Who."]

*son*, Horace **Darwin**, F.R.S. (b. 1851), engineer and mechanician; joint founder of the Cambridge Scientific Instrument Company and its proprietor, but now a limited company, of which he is chairman.—["Who's Who."]

*son*, Major Leonard **Darwin**, late R.E., second in the examination of his year for Woolwich; served on several scientific expeditions, including transit of Venus of 1874 and 1882; Staff Intelligence Dep. War Office, 1885-90; M.P. for Lichfield, 1892-95. Author of "Bimetallism," "Municipal Trade."—"Who's Who."]

Sir Victor A. Haden **Horsley**, F.R.S., M.D. (b. 1857), eminent surgeon and operator; professor-superintendent of Brown Institution, 1884-90; professor of pathology University College, 1893-96.

*fa fa*, William **Horsley**, Mus. Bac., Oxford (1774-1858), musical composer, especially of glees, and writer on musical topics.—["Dict. N. Biog.," and Grove's "Dict. of Music."]

*me fa*, Charles Thomas **Haden**, a rising London physician, who initiated a treatment for gout, much noted at the time; *d. young* in 1823.—[Unpublished information.]

*fa*, John Calcott **Horsley**, R.A., distinguished painter.—["Who's Who."]

*fa bro*, Charles Edward **Horsley** (1822-1876), musical composer of oratorios; best known in America. Author of "Text-book of Harmony."—"Dict. N. Biog.," 27, 381, and Grove's "Dict. of Music."]

*me bro*, Sir F. Seymour **Haden** (b. 1818), surgeon; a well-known sanitarian, especially in respect to the disposal of the dead, and artist in respect to etching; founder and president of the R. Society of Painter Etchers; Grand Prix, Paris, 1899 and 1900; many publications.—["Who's Who."]

*fa si son*, Isambard **Brunel**, Chancellor to the Diocese of Ely; ecclesiastical barrister.

*Ancestors in more remote degrees.*

*fa me fa*, John Wall **Callcott** (1766-1821), composer, mainly of glees and catches; published "Musical Grammar," 1806.—["Dict. N. Biog.," 8, 256, and Grove's "Dict. of Music."]

*fa me fa bro*, Sir Augustus Wall **Callcott**, R.A. (1779-1884), distinguished painter, mainly of landscapes; knighted, 1837.—["Dict. N. Biog.," 8, 256.]

*me fa fa*, Thomas **Haden**, the principal Doctor in Derby, and of great influence in the town; was three times mayor.—[Unpublished information.]

*wife, nee* **Bramwell**.

*wife's fa*, Sir Frederick **Bramwell**, Bart., F.R.S. (1818-1903), eminent engineer; president British Association, 1888; of Institution of Civil Engineers, 1884-5; hon. sec. Royal Institution.—["Who's Who."]

*wife's fa bro*, Lord **Bramwell** (1808-1892), Judge, 1850; Lord Justice, 1876-81; raised to peerage, 1882.—["Dict. N. Biog.," Supp. 1, 256.]

*me si son*, Sir Joseph Dalton **Hooker**, G.C.S.I., F.R.S., and pres. R.S., 1872-77 (*b.* 1817), eminent botanist and traveller; director of the Royal Gardens, Kew, 1855-65; naturalist to H.M.S. *Erebus* in Antarctic expedition, 1839-43; botanical travels in the Himalaya, 1847-51; Morocco and Atlas in 1871; California and Rocky Mts., 1877; many botanical publications.—["Ency. Brit.," 29, 324; "Who's Who."]

*me fa*, Dawson **Turner**, F.R.S. (1775-1858), see **Palgrave**.

*fa*, Sir William Jackson **Hooker**, F.R.S. (1785-1865), eminent botanist; director of Kew Gardens, which he greatly extended and threw open to the public, and where he founded the museum of economic botany; was regius professor of botany at Glasgow, 1820; knighted in 1847; many botanical publications.—["Dict. N. Biog.," 27, 296.]

*me si sons*, the four brothers **Palgrave** (see **Palgrave**).

Sir Clements R. **Markham**, K.C.B., F.R.S. (*b.* 1830), president for many years of the R. Geograph. Society; served in Arctic expedition, 1850-51; travelled in Peru, 1852-4, bringing thence cinchona-bearing trees for cultivation in India; Geographer to the Abyssinian expedition; author and editor of numerous geographical works.—["Ency. Brit.," 30, 544; "Who's Who."]

*fa fa*, William **Markham** (1760-1815), scholar; secretary to Warren Hastings in India.

*fa bro son*, Lieut.-General Sir Edwin **Markham**, R.E., K.C.B. (*b.* 1833), constant active service.—["Who's Who."]

*fa bro son*, Admiral Sir Albert **Markham**, K.C.B. (*b.* 1841), commander of the *Alert* in Arctic Expedition, 1875-6; various high naval appointments, besides unprofessional work when unemployed on naval duties.—["Who's Who."]

*me bro son*, Rt. Hon. Sir Frederick **Milner**, Bart., P.C. (*b.* 1849), politician.—["Who's Who."]

*me si son*, Rt. Hon. Francis **Foljambe**, P.C. (*b.* 1830), politician.—["Who's Who."]

*me si son*, Rt. Hon. Sir Edwin **Egerton**, P.C., G.C.M.G. (*b.* 1841), Ambassador at Madrid, recently transferred to Rome.—["Who's Who."]

*More distant kinsmen.*

*fa fa fa*, William **Markham**, P.C. (1719-1807), Archbishop of York; one of the best scholars of the day; headmaster of Westminster School, 1753-65; Dean of Christ Church; preceptor to the Royal Princes, 1771; Archbishop and Lord High Almoner, 1777.—["Dict. N. Biog.," 36, 172.]

*fa fa bro*, Admiral John **Markham** (1761-1827), many services at sea; twice on Admiralty Board; M.P. for Portsmouth during seventeen years; proposed and carried appointment of Commission on dockyard abuses, 1806.—["Dict. N. Biog.," 36, 171.]

*fa fa bro*, George **Markham** (1763-1823), Dean of York; scholar and numismatist.

Robert Harris Inglis **Palgrave**, F.R.S. (*b.* 1827), economist and statistician; editor of the "Economist," also of "Dictionary of Political Economy."—["Who's Who."]

*me fa*, Dawson **Turner**, F.R.S. (1775-1858), botanist and antiquary.—["Dict. N. Biog.," 57, 334.] His *fa bro*, Joseph **Turner**, was senior wrangler, 1768.

*fa*, Sir Francis **Palgrave** (1788-1861) (son of Meyer **Cohen**, adopted the name Palgrave in 1823), historian; deputy keeper H.M. Records; assisted in their publication. Author of the "Rise and Progress of the English Commonwealth," 1832; "History of England and Normandy," 1851; and other works; greatly promoted study of mediæval history; knighted, 1832.—["Dict. N. Biog.," 43, 107.]

*me*, Elizabeth, *née* Dawson **Turner**, greatly assisted her husband in his literary work.—[Unpublished information.]

*me bro*, Dawson William **Turner** (1815-1885), philanthropist and educational writer; Demy of Magdalen College, Oxford, D.C.L., 1862.

*bro*, Francis Turner **Palgrave** (1824-1897), poet and art critic; first class *lit. hum.*; prof. of poetry at Oxford; editor of "Golden Treasury"; author of many critical essays and other publications.—["Dict. N. Biog.," Supp. 3, 242.]

*bro*, W. Gifford **Palgrave** (1826-1888), traveller and diplomatist; at twenty years of age gained first class *lit. hum.* at Oxford, and second class *math.*; became Roman Catholic, and travelled as Jesuit missionary in Syria and Arabia, assuming disguise for the purpose. Author of "A Year's Journey through Eastern and Central Arabia." Severed his connection with the Jesuits in 1865, and thenceforward served as English diplomatist in various distant countries.—["Dict. N. Biog.," 43, 109.]

*bro*, Sir Reginald F. D. **Palgrave**, K.C.B. (1829-1904), Clerk of the House of Commons. Author of "Oliver Cromwell the Protector," etc.—["Who's Who."]

*me si son*, Sir Joseph Dalton **Hooker**, F.R.S. [see separate genealogy above].

Sir Henry Enfield **Roscoe**, F.R.S., Ph.D., LL.D., D.C.L., professor of chemistry Owens College, Manchester, 1857-87; president Society of Chemical Industry, 1881; of Chemical Society, 1882; M.P. for S. division of Manchester, 1885-95; president of Brit. Assoc., 1887; Vice-Chancellor of the University of London, 1896-1902; knighted, 1884; author of many memoirs and works on chemistry.—["Who's Who."]

*fa fa*, William **Roscoe** (1753-1831), historian, poet, and philanthropist; author of "Lives of Lorenzo de' Medici and of Leo X.," and of several volumes of verse; M.P. for Liverpool, 1806-7; promoter and first president of its Royal Institution.—["Dict. N. Biog.," 49, 222.]

*fa*, Henry **Roscoe** (1800-1836), biographer, including life of his father.—["Dict. N. Biog.," 49, 221.]

*fa bro*, Thomas **Roscoe** (1791-1871), miscellaneous writer and translator.—["Dict. N. Biog.," 49, 222.]

*fa bro*, William Stanley **Roscoe**, poet.—["Dict. N. Biog.," 49, 225.]

*fa bro*, Robert **Roscoe**, poet, "King Alfred."

*me*, Maria, *née* **Fletcher**, artist and authoress of "Life of Victoria Colonna."

*me si*, Harriet **Fletcher**, authoress of "Tales for Children."

*fa bro son*, William Caldwell **Roscoe** (1822-59), poet and essayist.—["Dict. N. Biog.," 49, 225.]

*fa si son*, William Stanley **Jevons**, F.R.S. (1835-1882), economist and

logician; professor of logic and political economy at Owens College, 1866-79; at University College, London, 1876-80; influential writer.—["Dict. N. Biog.," 29, 374.]

*me si son*, Rt. Hon. Charles **Booth**, P.C., F.R.S., *q.v.*

*me si son*, Charles **Crompton** (*see* **Booth**).

*me si son*, Henry **Crompton** (*see* **Booth**).

Lieut.-General Sir Richard **Strachey**, R.E. (retired 1875), G.C.S.I., F.R.S., LL.D. Camb. Sec. Govt. Central Provinces of India during mutiny, 1857-8; public-works Sec. to Govt. of India, 1862; legislative member of Gov.-Gen.'s Council, 1869-70; Member of Council of India, 1875-89; acting financial member of Gov.-Gen.'s Council, 1878; chairman of East Indian Rly. from 1889; chairman of Meteorol. Council from 1883; pres. R. Geograph. Soc., 1888-90; royal medal of Royal Society, 1897. *Publications*.—"Lectures on Geography"; "Finances and Public Works of India" (jointly with his brother, Sir John S.); various scientific memoirs.—["Ency. Brit.," 33, 1; "Who's Who."]

*fa fa*, Sir Henry **Strachey** (1736-1810), private sec. to Lord Clive in India; joint under-sec. of state for the Home department, 1782; *cr.* baronet, 1801; F.S.A.—["Dict. N. Biog.," Supp. 3, 364.]

*me fa*, Lieut.-Gen. **Kirkpatrick** (1754-1812), orientalist; military sec. to Marquess Wellesley; Resident at Poona; translated Persian works, expert in Oriental tongues and in manners, customs and laws of India.—["Dict. N. Biog.," 31, 222.]

*fa*, Edward **Strachey** (1774-1832), chief examiner of correspondence to the India House, the other two being Peacock and James Mill (secretaries' work, writing despatches, &c.).

*fa bro*, Sir Henry **Strachey**, Bart. (1772-1858), distinguished Indian civilian, described by James Mill ["Hist. Brit. India," 6, ch. 6] as "the most intelligent of the Company's servants."

*fa bro*, Richard **Strachey**, Resident at Lucknow and Gwalior.

*me si*, Isabella Barbara **Buller**, well known in her day as a centre of literary and political society.

*bro*, Sir John **Strachey**, G.C.S.I., eminent Indian statesman; Lieut.-Governor of the N.W. Provinces; financial member of Gov. Gen.'s council; Member of Council of India. *Publications*.—"Finance and Public Works of India," 1882 (jointly with his brother, Sir Richard S.); "Hastings and

the Rohilla War," 1892; "India," 1888, third ed., 1903.—["Ency. Brit.," 33, 1; "Who's Who," 1904.]

*bro*, Colonel Henry **Strachey**, Thibetan explorer, gold medal of R. Geograph. Soc., 1852.

*bro*, Sir Edward **Strachey**, Bart. (*d.* 1904), author of "Hebrew Politics in the Time of Sargon and Sennacherib."

*bro*, George **Strachey** (1873-90), Charge d'Affaires and Minister Resident at Dresden.

*bro son*, Sir Arthur **Strachey** (1858-1901) (son of Sir John **S.** and of Katherine, dau. of George **Batten**), Chief Justice Allahabad, *æt.* 39; *d.* *æt.* 43.

*bro son*, John St. Loe **Strachey** (*b.* 1860) (son of Sir Edward **S.** and Mary, sister of John Addington **Symonds**, writer and critic), editor of the *Spectator*.—["Who's Who."]

*me si son*, Charles **Buller** (1806-1848), distinguished politician, sent as secretary with Lord Durham to Canada, 1838, Chief Poor-law Commissioner.—["Dict. N. Biog.," 7, 246.]

*me si son*, Sir Arthur **Buller**, judge of the Supreme Court, Calcutta.

*Noteworthy kinsfolk in more remote degrees of ancestry.*

*fa fa bro*, John **Strachey**, Archdeacon of Suffolk, Prebendary of Llandaff, preacher at the Rolls, LL.D. Camb., F.S.A.

*fa fa fa fa*, John **Strachey**, F.R.S. (1641-1743), geologist, said to have first suggested theory of stratification in his work "Observations on Different Strata of Earths and Minerals," 1727.—["Dict. N. Biog.," Supp. 3, 364.]

*Wife, and her kinsfolk, ascending and collateral.*

*wife*, Jane Maria, *née* **Grant**, 2nd wife, authoress of "Lay Texts," "Poets on Poets," "Memoirs of a Highland Lady," etc.—["Who's Who," 1904.]

*wife's fa fa*, Sir J. P. **Grant** (1774-1848), Chief Justice of Supreme Court of Calcutta.—["Dict. N. Biog.," 22, 398.]

*wife's fa*, Sir J. P. **Grant**, G.C.M.G., K.C.B. (1807-1893), Indian and Colonial Governor; Member of Council; Lieut.-Governor of Central Provinces of India; Lieut.-Governor of Bengal; Governor of Jamaica (1866-1873).—["Dict. N. Biog.," Supp. 3, 341.]

*wife's me bro son*, Sir Trevor Chichele **Plowden**, K.C.S.I., Resident at Kashmir, Hyderabad and Baghdad.

*wife's me bro son*, Sir Henry Meredith **Plowden**, Senior Judge of chief court, Punjab (1880-94).—["Who's Who," 1904.]

*Descendants.*

*son*, Giles Lytton **Strachey**, scholar Trin. Coll., Cambridge, Chancellor's medal for English verse.

*son*, Oliver **Strachey**, Eton scholarship.

*son*, James Beaumont **Strachey**, scholarship at St. Paul's School.

*da*, Joan Pernel **Strachey**, lecturer on old French at Royal Holloway College.

*da*, Marjorie Colville **Strachey**, prize offered in 1904 by the British Ambassador in Paris to all undergraduates, male and female, of all Colleges in Great Britain for examination in French; scholarship Royal Holloway College in 1904.