

STUDIES IN NATIONAL EUGENICS*

It was stated in the *Times*, January, 26, 1905, that at a meeting of the Senate of the University of London, Mr. Edgar Schuster, M.A., of New College, Oxford, was appointed to the Francis Galton Research Fellowship in National Eugenics. "Mr. Schuster will in particular carry out investigations into the history of classes and families, and deliver lectures and publish memoirs on the subjects of his investigations."

Now that this appointment has been made, it seems well to publish a suitable list of subjects for eugenic inquiry. It will be a programme that binds no one, not even myself, for I have not yet had the advantage of discussing it with others, and may hereafter wish to largely revise and improve what is now provisionally sketched. The use of this paper lies in its giving a general outline of what, according to my present view, requires careful investigation, of course not all at once, but step by step, at possibly long intervals.

*Communicated at a meeting of the Sociological Society held in the School of Economics and Political Science (University of London), Clare Market, W.C., on Tuesday, February 14th, at 4 p.m.

I. Estimation of the average quality of the offspring of married couples, from their personal and ancestral data. This includes questions of fertility, and the determination of the "probable error" of the estimate for individuals, according to the data employed.

(a) "Biographical Index to Gifted Families," modern and recent, for publication. It might be drawn up on the same principle as my "Index to Achievements of Near Kinsfolk of some of the Fellows of the Royal Society" (see "Sociological Papers," Vol. I., p. 85). The Index refers only to facts creditable to the family, and to such of these as have already appeared in publications, which are quoted as authority for the statements. Other biographical facts that may be collected concerning these families are to be preserved for statistical use only.

(b) Biographies of capable families, who do not rank as "gifted," are to be collected, and kept in MS., for statistical use, but with option of publication.

(c) Biographies of families, who, as a whole, are distinctly below the average in health, mind, or physique, are to be collected. These include the families of persons in asylums of all kinds, hospitals, and prisons. To be kept for statistical use only.

(d) Parentage and progeny of representatives of each of the social classes of the community, to determine how far each class is derived from, and contributes to, its own and other classes. This inquiry must be carefully planned beforehand.

(e) Insurance Office data. An attempt to be made to carry out the suggestions of Mr. Palin Egerton, "Sociological Papers," Vol. I., p. 62, of obtaining material that the authorities would not object to give, and whose discussion might be advantageous to themselves as well as to Eugenics. The matter is now under consideration, so more cannot be said.

II. Effects of action by the State and by Public Institutions.

(f) Habitual criminals. Public opinion is beginning to regard with favour the project of a prolonged segregation of habitual criminals, for the purpose of restricting their opportunities for (1) continuing their depredations, and (2) producing low class offspring. The enquiries spoken of above (see c) will measure the importance of the latter object.

(g) Feeble minded. Aid given to Institutions for the feeble minded are open to the suspicions that they may eventually promote their marriage and the production of offspring like themselves. Inquiries are needed to test the truth of this suspicion.

(h) Grants towards higher education. Money spent in the higher education of those who are intellectually unable to profit by it lessens the sum available for those who can do so. It might be expected that aid systematically given on a large scale to the more capable would have considerable eugenic effect, but the subject is complex and needs investigation.

(i) Indiscriminate charity, including out-door relief. There is good reason to believe that the effects of indiscriminate charity are notably non-eugenic. This topic affords a wide field for inquiry.

III. Other influences that further or restrain particular classes of marriage.

The instances are numerous in recent times in which social influences have restrained or furthered freedom of marriage. A judicious selection of these would be useful, and might be undertaken as time admits. I have myself just communicated to the Sociological Society a memoir entitled "Restrictions in Marriage," in which remarkable instances are given of the dominant power of religion, law and custom. This will suggest the sort of work now in view, where less powerful influences have produced statistical effects of appreciable amount.

IV. Heredity.

The facts after being collected are to be discussed, for improving our knowledge of the laws both actuarial and of physiological heredity, the recent methods of advanced statistics being of course used. It is possible that a study of the effect on the offspring of differences in the parental qualities may prove important.

It is to be considered whether a study of Eurasians, that is, of the descendants of Hindoo and English parents, might not be advocated in proper quarters, both on its own merits as a topic of national importance and as a test of the applicability of the Mendelian hypotheses to men. Eurasians have by this time intermarried during three consecutive generations in sufficient numbers to yield trustworthy results.

V. Literature.

A vast amount of material that bears on Eugenics exists in print, much of which is valuable and should be hunted out and catalogued. Many scientific societies, medical, actuarial, and others, publish such material from time to time. The experiences of breeders of stock of all kinds, and those of horticulturists, fall within this category.

VI. Co-operation.

After good work shall have been done and become widely recognised, the influence of eugenic students in stimulating others to contribute to their inquiries may become powerful. It is too soon to speculate on this, but every good opportunity should be seized to further co-operation, as well as the knowledge and application of Eugenics.

VII. Certificates.

In some future time, dependent on circumstances, I look forward to a suitable authority issuing Eugenic certificates to candidates for them. They would imply a more than an average share of the several qualities of at least goodness of constitution, of physique, and of mental capacity. Examinations upon which such certi-

fications might be granted are already carried on, but separately; some by the medical advisers of insurance offices, some by medical men as to physical fitness for the army, navy and Indian services, and others in the ordinary scholastic examinations. Supposing constitution, physique and intellect to be three independent variables (which they are not), the men who rank among the upper third of each group would form only one twenty-seventh part of the population. Even allowing largely for the correlation of those qualities, it follows that a moderate severity of selection in each of a few particulars would lead to a severe all-round selection. It is not necessary to pursue this further.

The above brief memorandum does not profess to deal with more than the pressing problems in Eugenics. As that science becomes better known, and the bases on which it rests are more soundly established, new problems will arise, especially such as relate to its practical application. All this must bide its time; there is no good reason to anticipate it now. Of course useful suggestions in the present embryonic condition of Eugenic study would be timely, and might prove very helpful to students.

MR. GALTON'S REPLY

TO REMARKS MADE DURING THE DISCUSSION
THAT FOLLOWED.

This Society has cause to congratulate itself on the zeal and energy which has brought together so large a body of opinion. We have had verbal contributions from four eminent specialists in anthropology: Dr. Haddon, Dr. Mott, Mr. Crawley, and

Dr. Westermarck, and numerous written communications have been furnished by well known persons. At the time that I am revising and extending these words no less than twenty-six contributions to the discussion are in print. Want of space compels me to confine my reply to those remarks that seem more especially to require it, and to do so very briefly, for Eugenics is a wide study, with an uncounted number of side issues into which those who discuss it are tempted to stray. If, however, sure advance is to be made, these issues must be thoroughly explored, one by one, and partial discussion should as far as possible be avoided. To change the simile, we have to deal with a formidable chain of strongholds, which must be severally attacked in force, reduced, and disposed of, before we can proceed freely.

In the first place, it is a satisfaction to find that no one impugns the conclusion which my memoir was written to justify, that history tells how restrictions in marriage, even of an excessive kind, have been contentedly accepted very widely, under the guidance of what I called "immaterial motives." This is all I had in view when writing it.

Certificates.—One of the comments on which I will remark is that if certificates were now offered to those who passed certain examinations into health, physique, moral and intellectual powers, and hereditary gifts, great mistakes would be made by the examiners. I fully agree that it is too early to devise a satisfactory

system of marks for giving what might be styled "honour-certificates," because we do not yet possess sufficient data to go upon. On the other hand there are persons who are exceptionally and unquestionably unfit to contribute offspring to the nation, such as those mentioned in Dr. Mott's bold proposals. The best methods of dealing with these are now ripe for immediate consideration.

Breeding for points.—It is objected by many that there cannot be unanimity on the "points" that it is most desirable to breed for. I fully discussed this objection in my memoir read here last spring, showing that some qualities such as health and vigour were thought by all to be desirable, and the opposite undesirable, and that this sufficed to give a first direction to our aims. It is a safe starting point, though a great deal more has to be inquired into as we proceed on our way. I think that some contributors to this discussion have been needlessly alarmed. No question has been raised by me of breeding men like animals for particular points, to the disregard of all-round efficiency in physical, intellectual (including moral), and hereditary qualifications. Moreover, as statistics have shown, the best qualities are largely correlated. The youths who became judges, bishops, statesmen, and leaders of progress in England could have furnished formidable athletic teams in their times. There is a tale, I know not how far founded on fact, that Queen Elizabeth had an eye to the calves of the legs of those she selected for bishops. There is something to be said in favour of selecting men by their physical characteristics for other than physical purposes. It would decidedly be safer to do so than to trust to pure chance.

The residue.—It is also objected that if the inferior moiety of a race are left to intermarry, their produce will be increasingly inferior. This is certainly an error. The law of "regression towards mediocrity" insures that their offspring as a whole, will be superior to themselves, and if as I sincerely hope, a freer action will be hereafter allowed to selective agencies than hitherto, the

portion of the offspring so selected would be better still. The influences that now *withstand* the free action of selective agencies are numerous, they include indiscriminate charity.

Passion of love.—The argument has been repeated that love is too strong a passion to be restrained by such means as would be tolerated at the present time. I regret that I did not express the distinction that ought to have been made between its two stages, that of slight inclination and that of falling thoroughly into love, for it is the first of these rather than the second that I hope the popular feeling of the future will successfully resist. Every match-making mother appreciates the difference. If a girl is taught to look upon a class of men as tabooed, whether owing to rank, creed, connections, or other causes, she does not regard them as possible husbands and turns her thoughts elsewhere. The proverbial "Mrs. Grundy" has enormous influence in checking the marriages she considers indiscreet.

Eugenics as a factor in religion.—Remarks have been made concerning eugenics as a religion; this will be the subject of the brief memoir that follows these remarks.

It is much to be desired that competent persons would severally take up one or other of the many topics mentioned in my second memoir, or others of a similar kind, and work it thoroughly out as they would any ordinary scientific problem; in this way solid progress would be made. I must be allowed to re-emphasise my opinion that an immense amount of investigation has to be accomplished before a definite system of Eugenics can be safely framed.

EUGENICS AS A FACTOR IN RELIGION.

Eugenics strengthens the sense of social duty in so many important particulars that the conclusions derived from its study ought to find a welcome home in every tolerant religion. It promotes a far-sighted philanthropy, the acceptance of parentage as a serious responsibility, and a higher conception of patriotism. The creed of eugenics is founded upon the idea of evolution; not on a passive form of it, but on one that can to some extent direct its own course. Purely passive, or what may be styled mechanical evolution, displays the awe inspiring spectacle of a vast eddy of organic turmoil, originating we know not how, and travelling we know not whither. It forms a continuous whole from first to last, reaching backward beyond our earliest knowledge and stretching forward as far as we think we can foresee. But it is moulded by blind and wasteful processes, namely, by an extravagant production of raw material and the ruthless rejection of all that is superfluous, through the blundering steps of trial and error. The condition at each successive moment of this huge system, as it issues from the already quiet past and is about to invade the still undisturbed future, is one of violent internal commotion. Its elements are in constant

flux and change, though its general form alters but slowly. In this respect it resembles the curious stream of cloud that sometimes seems attached to a mountain top during the continuance of a strong breeze; its constituents are always changing, though its shape as a whole hardly varies. Evolution is in any case a grand phantasmagoria, but it assumes an infinitely more interesting aspect under the knowledge that the intelligent action of the human will is, in some small measure, capable of guiding its course. Man has the power of doing this largely so far as the evolution of humanity is concerned; he has already affected the quality and distribution of organic life so widely that the changes on the surface of the earth, merely through his disforestings and agriculture, would be recognisable from a distance as great as that of the moon.

As regards the practical side of eugenics, we need not linger to re-open the unending argument whether man possesses any creative power of will at all, or whether his will is not also predetermined by blind forces or by intelligent agencies behind the veil, and whether the belief that man can act independently is more than a mere illusion. This matters little in practice, because men, whether fatalists or not, work with equal vigour whenever they perceive they have the power to act effectively.

Eugenic belief extends the function of philanthropy to future generations, it renders its action more pervading than hitherto, by dealing with families and societies in their entirety, and it enforces the importance of the marriage covenant by directing serious attention to the probable quality of the future offspring. It sternly forbids all forms of sentimental charity that are harmful to the race, while it eagerly seeks opportunity for acts of personal kindness, as some equivalent to the loss of what it forbids. It brings the tie of kinship into prominence and strongly encourages love and interest in family and race. In brief, eugenics is a virile creed, full of hopefulness, and appealing to many of the noblest feelings of our nature.

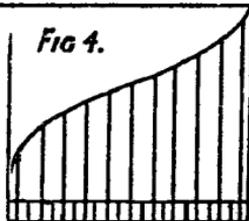
ILLUSTRATIONS OF THE HERBERT SPENCER LECTURE 1907.



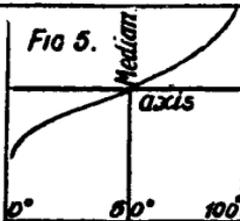
Fig 3.



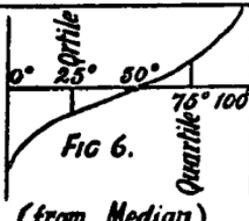
Size of Median Variate independent of the number in Array



Variates



Variates



(from Median) Deviates

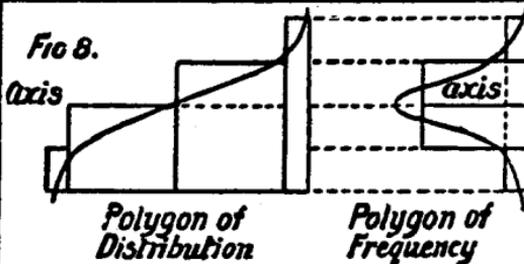
Distribution of Variates and Deviates as lines

Frequency of the several Deviations from the Mean

Fig 7.



Fig 8.



Conversion of one Polygon into the other

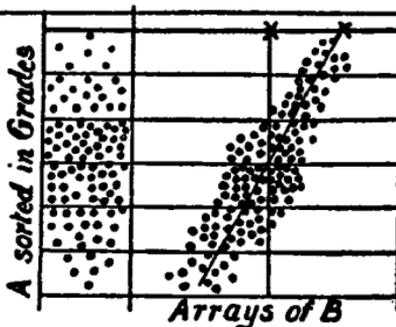


Fig 9.

Correlations between values of A and B

PROBABILITY, THE FOUNDATION OF EUGENICS.*

THE request so honourable to myself, to be the Herbert Spencer lecturer of this year, aroused a multitude of vivid recollections. Spencer's strong personality, his complete devotion to a self-imposed and life-long task, together with rare gleams of tenderness visible amidst a wilderness of abstract thought, have left a unique impression on my mind that years fail to weaken.

I do not propose to speak of his writings; they have been fully commented on elsewhere, but I desire to acknowledge my personal debt to him, which is large. It lies in what I gained through his readiness to discuss any ideas I happened to be full of at the time, with quick sympathy and keen criticism. It was his custom for many afternoons to spend an hour or two of rest in the old smoking room of the Athenaeum Club, strolling into an adjoining compartment for a game of billiards when the table was free. Day after day on those afternoons I enjoyed brief talks with him, which were often of

*The Herbert Spencer Lecture delivered before the University at Oxford, June 5th, 1907.

exceptional interest to myself. All that kind of comfort and pleasure has long ago passed from me. Among the many things of which age deprives us, I regret few more than the loss of contemporaries. When I was young I felt diffident in the presence of my seniors, partly owing to a sense that the ideas of the young cannot be in complete sympathy with those of the old. Now that I myself am old it seems to me that my much younger friends keenly perceive the same difference, and I lose much of that outspoken criticism which is an invaluable help to all who investigate.

HISTORY OF EUGENICS.

It must have surprised you as it did myself to find the new word 'Eugenics' in the title both of the Boyle Lecture, delivered in Oxford about a fortnight ago, and of this. It was an accident, not a deliberate concurrence, and I accept it as a happy omen. The field of Eugenics is so wide that there is no need for myself, the second lecturer, to plant my feet in the footsteps of the first; on the contrary, it gives freedom by absolving me from saying much that had to be said in one way or another. I fully concur in the views so ably presented by my friend and co-adjutor, Professor Karl Pearson, and am glad to be dispensed from further allusion to subjects that formed a large portion of his lecture, on which he is a far better guide and an infinitely higher authority than myself.

In giving the following sketch of the history of Eugenics I am obliged to be egotistical, because I kindled the feeble flame that struggled doubtfully for a time until it caught hold of adjacent stores of suitable material, and became a brisk fire, burning freely by itself, and again because I have had much to do with its progress quite recently.

The word 'Eugenics' was coined and used by me in my book *Human Faculty*, published as long ago as 1883, which has long been out of print; it is, however, soon to be re-published in a cheap form.* In it I emphasized the essential brotherhood of mankind, heredity being to my mind a very real thing; also the belief that we are born to act, and not to wait for help like able-bodied idlers, whining for doles. Individuals appear to me as finite detachments from an infinite ocean of being, temporarily endowed with executive powers. This is the only answer I can give to myself in reply to the perpetually recurring questions of 'Why? whence? and whither?' The immediate 'whither?' does not seem wholly dark, as some little information may be gleaned concerning the direction in which Nature, so far as we know of it, is now moving—Namely, towards the evolution of mind, body, and character in increasing energy and co-adaptation.

I have often wondered that the poem of *Hyperion*, by Keats—that magnificent torso of an incompleated work—has not been placed

*Dent's "Everyman's Library," price One Shilling.

in the very forefront of past speculations on evolution. Keats is so thorough that he makes the very Divinities to be its product. The earliest gods such as Coelus, born out of Chaos, are vague entities, they engender Saturn, Oceanus, Hyperion, and the Titan brood, who supersede them. These in their turn are ousted from dominion by their own issue, the Olympian Gods. A notable advance occurs at each successive stage in the quality of the Divinities. When Hyperion, newly terrified by signs of impending overthrow, lies prostrate on the earth 'his ancient mother, for some comfort yet,' the voice of Coelus from the universal space, thus 'whispered low and solemn in his ear . . . yet do thou strive, for thou art capable . . . my life is but the life of winds and tides, no more than winds and tides can I prevail, but thou canst.' I have quoted only disjointed fragments of this wonderful poem, enough to serve as a reminder to those who know it, but will add ten consecutive lines from the speech of the fallen Oceanus to his comrades, which give a summary of evolution as here described :

As Heaven and Earth are fairer, fairer far
 Than Chaos and black Darkness, though once chiefs,
 And as we show beyond that Heaven and Earth
 In form and shape compact and beautiful,
 In Will, in action free, companionship,
 And thousand other signs of purer life ;
 So on our heels a fresh perfection treads
 A power more strong in beauty, born of us
 And fated to excel us, as we pass
 In glory that old Darkness.

He ends with 'this is the truth, and let it be your balm.' The poem is a noble conception, founded on the crude cosmogony of the ancient Greeks.

The ideas have long held my fancy that we men may be the chief, and perhaps the only executives on earth. That we are detached on active service with, it may be only illusory, powers of free-will. Also that we are in some way accountable for our success or failure to further certain obscure ends, to be guessed as best we can. That though our instructions are obscure they are sufficiently clear to justify our interference with the pitiless course of Nature, whenever it seems possible to attain the goal towards which it moves, by gentler and kindlier ways. I expressed these views as forcibly as I then could in the above-mentioned book, with especial reference to improving the racial qualities of mankind, where the truest piety seems to me to reside in taking action, and not in submissive acquiescence to the routine of Nature. It was thought impious at one time to attach lightning conductors to churches, as showing a want of trust in the tutelary care of the Deity to whom they were dedicated; now I think most persons would be inclined to apply some contemptuous epithet to such as obstinately refused, on those grounds, to erect them.

The direct pursuit of studies in Eugenics, as to what could practically be done, and the amount of change in racial qualities that

could reasonably be anticipated, did not at first attract investigators. The idea of effecting an improvement in that direction was too much in advance of the march of popular imagination, so I had to wait. In the meantime I occupied myself with collateral problems, more especially with that of dealing measurably with faculties that are variously distributed in a large population. The results were published in my 'Natural Inheritance' in 1889, and I shall have occasion to utilize some of them later on, in this very lecture. The publication of that book proved to be more timely than the former. The methods were greatly elaborated by Professor Karl Pearson, and applied by him to Biometry. Professor Weldon, of this University, whose untimely death is widely deplored, aided powerfully. A new science was thus created primarily on behalf of Biometry, but equally applicable to Eugenics, because their provinces overlap.

The publication of *Biometrika*, in which I took little more than a nominal part, appeared in 1901.

Being myself appointed Huxley Lecturer before the Anthropological Institute in 1901 I took for my title 'The possible improvement of the Human Breed under the existing conditions of Law and Sentiment' (*Nature*, November 1, 1901, *Report of the Smithsonian Institute, Washington*, for the same year, and reprinted in this volume.)

The next and a very important step towards Eugenics was made by Professor Karl Pearson in his Huxley Lecture of 1903 entitled 'The Laws of Inheritance in Man' (*Biometrika*, vol. iii). It contains a most valuable compendium of work achieved and of objects in view; also the following passage (p. 159), which is preceded by forcible reasons for his conclusions:

We are ceasing as a nation to breed intelligence as we did fifty to a hundred years ago. The mentally better stock in the nation is not reproducing itself at the same rate as it did of old; the less able and the less energetic are more fertile than the better stocks. No scheme of wider or more thorough education will bring up, in the scale of intelligence, hereditary weakness to the level of hereditary strength. The only remedy, if one be possible at all, is to alter the relative fertility of the good and the bad stocks in the community.

Again in 1904, having been asked by the newly-formed Sociological Society to contribute a memoir, I did so on 'Eugenics, its definition, aim and scope.' This was followed up in 1905 by three memoirs, 'Restrictions in Marriage,' 'Studies in National Eugenics,' and 'Eugenics as a factor in Religion,' which were published in the *Memoirs of that Society with comments thereon by more than twenty different authorities* (*Sociological Papers*, published for the Sociological Society (Macmillan), vols. i and ii. These are re-published here). The subject of Eugenics being thus formally launched, and the time

appearing ripe, I offered a small endowment to the University of London, to found a Research Fellowship on its behalf. The offer was cordially accepted, so Eugenics gained the recognition of its importance by the University of London and a home for its study in University College. Mr. Edgar Schuster, of this University, became Research Fellow in 1905, and I am much indebted to his care in nurturing the young undertaking and for the memoirs he has contributed, part of which must still remain for a short time unpublished.

When the date for Mr. Schuster's retirement approached it was advisable to utilize the experience so far gained in reorganizing the Office. Professor Pearson and myself, in consultation with the authorities of the University of London, elaborated a scheme at the beginning of this year, which is a decided advance, and shows every sign of vitality and endurance. Mr. David Heron, a Mathematical Scholar of St. Andrew's, is now a Research Fellow; Miss Ethel Elderton, who has done excellent and expert work from the beginning, is deservedly raised to the position of Research Scholar; and the partial services of a trained Computer have been secured. An event of the highest importance to the future of the Office is that Professor Karl Pearson has undertaken, at my urgent request, that general supervision of its work which advancing age and infirmities preclude me from

giving. He will, I trust, treat it much as an *annexe* to his adjacent biometric laboratory, for many studies in Eugenics might, with equal propriety, be carried on in either of them, and the same methods of precise analysis which are due to the mathematical skill and untiring energy of Professor Pearson are used in both. The Office now bears the name of the Eugenics Laboratory, and its temporary home is in 88 Gower Street. (It is now, 1909, housed in the University buildings.) The phrase 'National Eugenics' is defined as 'the study of agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally.'

The Laboratory has already begun to publish memoirs on its own account, and I now rest satisfied in the belief that, with a fair share of good luck, this young Institution will prosper and grow into an important centre of research.

APPLICATION OF THEORIES OF PROBABILITY TO EUGENICS.

Eugenics seeks for quantitative results. It is not contented with such vague words as 'much' or 'little,' but endeavours to determine 'how much' or 'how little' in precise and trustworthy figures. A simple example will show the importance of this. Let us suppose a class of persons, called *A*, who are afflicted with some form and some specified

degree of degeneracy, as inferred from personal observations, and from family history, and let class B consist of the offspring of A . We already know only too well that when the grade of A is very low, that of the average B will be below par and mischievous to the community, but how mischievous will it probably be? This question is of a familiar kind, easily to be answered when a sufficiency of facts have been collected. But a second question arises, What will be the trustworthiness of the forecast derived from averages when it is applied to individuals? This is a kind of question that is not familiar, and rarely taken into account, although it too could be answered easily as follows. The average mischief done by each B individual to the community may for brevity be called M : the mischiefs done by the several individuals differ more or less from M by amounts whose average may be called D . In other words D is the average amount of the individual deviations from M . D thus becomes the measure of untrustworthiness. The smaller D is, the more precise the forecast, and the stronger the justification for taking such drastic measures against the propagation of class B as would be consonant to the feelings if the forecast were known to be infallible. On the other hand, a large D signifies a corresponding degree of uncertainty, and a risk that might be faced without reproach through a sentiment akin to that expressed in the maxim 'It

is better that many guilty should escape than that one innocent person should suffer.' But that is not the sentiment by which natural selection is guided, and it is dangerous to yield far to it.

There can be no doubt that a thorough investigation of the kind described, even if confined to a single grade and to a single form of degeneracy, would be a serious undertaking. Masses of trustworthy material must be collected, usually with great difficulty, and be afterwards treated with skill and labour by methods that few at present are competent to employ. An extended investigation into the good or evil done to the State by the offspring of many different classes of persons, some of civic value, others the reverse, implies a huge volume of work sufficient to occupy Eugenics laboratories for an indefinite time.

OBJECT LESSONS IN THE METHODS OF BIOMETRY.

I propose now to speak of those fundamental principles of the laws of Probability that are chiefly concerned in the newer methods of Biometry, and consequently of Eugenics. Most persons of ordinary education seem to know nothing about them, not even understanding their technical terms, much less appreciating the cogency of their results. This popular ignorance so obstructs the path of Eugenics that I venture to tax your attention by proposing a method of

partly dispelling it. Let me first say that no one can be more conscious than myself of the large amount of study that is required to qualify a man to deal adequately with the mathematical methods of Biometry, or that any man can hope for much success in that direction unless he is possessed of appropriate faculties and a strong brain. On the other hand, I hold an opinion likely at first sight to scandalize biometricians and which I must justify, that the fundamental ideas on which abstruse problems of Probability are based admit of being so presented to any intelligent person as to be grasped by him, even though he be quite ignorant of mathematics. The conditions of doing so are that the lessons shall be as far as possible 'Object lessons,' in which real objects shall be handled as in the Kindergarten system, and simple operations performed and not only talked about. I am anxious to make myself so far understood, that some teachers of science may be induced to elaborate the course that I present now only in outline. It seems to me suitably divisible into a course of five lessons of one hour each, which would be sufficient to introduce the learner into a new world of ideas, extraordinarily wide in their application. A proper notion of what is meant by Correlation requires some knowledge of the principal features of Variation, and will be the goal towards which the lessons lead.

To most persons Variability implies some-

thing indefinite and capricious. They require to be taught that it, like Proteus in the old fable, can be seized, securely bound, and utilized; that it can be defined and measured. It was disregarded by the old methods of statistics, that concerned themselves solely with Averages. The average amount of various measurable faculties or events in a multitude of persons was determined by simple methods, the individual variations being left out of account as too difficult to deal with. A population was treated by the old methods as a structureless atom, but the newer methods treat it as a compound unit. It will be a considerable intellectual gain to an otherwise educated person, to fully understand the way in which this can be done, and this and such like matters the proposed course of lessons is intended to make clear. It cannot be expected that in the few available minutes more than an outline can be given here of what is intended to be conveyed in perhaps thirty-fold as much time with the aid of profuse illustrations by objects and diagrams. At the risk of being wearisome, it is, however, necessary to offer the following syllabus of what is proposed, for an outline of what teachers might fill in.

The object of the first lesson would be to explain and illustrate Variability of Size, Weight, Number, &c., by exhibiting samples of specimens that have been marshalled at random (Fig. 1), or arrayed in order of their

magnitude (Fig. 2). Thus when variations of length were considered, objects of suitable size, such as chestnuts, acorns, hazel-nuts, stones of wall fruit, might be arrayed as beads on a string. It will be shown that an 'Array' of Variates of any kind falls into a continuous series. That each variate differs little from its neighbours about the middles of the Arrays, but that such differences increase rapidly towards their extremities. Abundant illustration would be required, and much handling of specimens.

Arrays of Variates of the same class strung together, differing considerably in the number of the objects they each contain, would be laid side by side and their middlemost variates or 'Medians' (Fig. 3) would be compared. It would be shown that as a rule the Medians become very similar to one another when the numbers in the Arrays are large. It must then be dogmatically explained that double accuracy usually accompanies a four-fold number, treble accuracy a nine-fold number, and so on.

(This concludes the first lesson, during which the words and significations of Variability, Variate, Array, and Median will have been learnt.)

The second lesson is intended to give more precision to the idea of an Array. The variates in any one of these strung loosely on a cord, should be disposed at equal distances apart in front of an equal number of com-

partments, like horses in the front of a row of stalls (Fig. 4), and their tops joined. There will be one more side to the row of stalls than there are horses, otherwise a side of one of the extreme stalls would be wanting. Thus there are two ways of indicating the position of a particular variate, either by its *serial number* as 'first,' 'second,' 'third,' or so on, or by *degrees* like those of a thermometer. In the latter case the sides of the stalls serve as degrees, counting the first of them as 0° , making one more graduation than the number of objects, as it should be. The difference between these two methods has to be made clear, and that while the serial position of the Median object is always the same in any two Arrays whatever be the number of variates, the serial position of their subdivisions cannot be the same, the ignored half interval at either end varying in width according to the number of variates, and becoming considerable when that number is small.

Lines of proportionate length will then be drawn on a blackboard, and the limits of the Array will be also drawn, at a half interval from either of its ends. The base is then to be divided centesimally.

Next join the tops of the lines with a smooth curve, and wipe out everything except the curve, the Limit at either side, and the Centesimally divided Base (Fig. 5). This figure forms a Scheme of Distribution of Variates. Explain clearly that its shape is

independent of the number of Variates, so long as they are sufficiently numerous to secure statistical constancy.

Show numerous schemes of variates of different kinds, and remark on the prevalent family likeness between the bounding curves. (Words and meanings learnt—Schemes of Distribution, Centesimal graduation of base.)

The third lesson passes from Variates, measured upwards from the base, to Deviates measured upwards or downwards from the Median, and treated as positive or negative values accordingly (Fig. 6).

Draw a Scheme of Variates on the black-board, and show that it consists of two parts; the median which represents a constant, and the curve which represents the variations from it. Draw a horizontal line from limit to limit, through the top of the Median to serve as Axis to the Curve. Divide the Axis centesimally, and wipe out everything except Curve, Axis, and Limits. This forms a Scheme of Distribution of Deviates. Draw ordinates from the axis to the curve at the 25th and 75th divisions. These are the 'Quartile' deviates.

At this stage the Genesis of the theoretical Normal curve might be briefly explained and the generality of its application; also some of its beautiful properties of reproduction. Many of the diagrams already shown would be again employed to show the prevalence of approximately normal distributions. Excep-

tions of strongly marked Skew curves would be exhibited and their genesis briefly described.

It will then be explained that while the ordinate at *any* specified centesimal division in two normal curves of deviation measures their relative variability, the Quartile is commonly employed as the unit of variability under the almost grotesque name of 'Probable Error,' which is intended to signify that the length of any Deviate in the system is as likely as not to exceed or to fall short of it. This, by construction, is the case of either Quartile.

(New words and meanings—Scheme of Distribution of Deviates, Axis, Normal, Skew, Quartile, and Probable Error.)

In the fourth lesson it has to be explained that the Curve of Normal Distribution is not a direct result of calculation, neither does the formula that expresses it lend itself so freely to further calculation, as the curve of Frequency. Their shapes differ; the first is an Ogive, the second (Fig. 7) is Bell-shaped. In the curve of Frequency the Deviations are reckoned from the Mean of all the Variates, and not from the Median. Mean and Median are the same in Normal Curves, but may differ much in others. Either of these normal curves can be transformed into the other, as is best exemplified by using a Polygon (Fig. 8) instead of the Curve, consisting of a series of rectangles differing in height by the same amounts, but having widths respectively representative of the

frequencies of 1, 3, 3, 1. (This is one of those known as a Binomial series, whose genesis might be briefly explained.) If these rectangles are arrayed in order of their widths, side by side, they become the equivalents of the ogival curve of Distribution. Now if each of these latter rectangles be slid parallel to itself up to either limit, their bases will overlap and they become equivalent to the bell-shaped curve of Frequency with its base vertical.

The curve of Frequency contains no easily perceived unit of variability like the Quartile of the Curve of Distribution. It is therefore not suited for and was not used as a first illustration, but the formula that expresses it is by far the more suitable of the two for calculation. Its unit of variability is what is called the 'Standard Deviation,' whose genesis will admit of illustration. How the calculations are made for finding its value is far beyond the reach of the present lessons. The calculated ordinates of the normal curve must be accepted by the learner much as the time of day by his watch, though he be ignorant of the principles of its construction. Much further beyond his reach are the formulae used to express quasi-normal and skew curves. They require a previous knowledge of rather advanced mathematics.

(New words and ideas—Curve of Frequency, Standard Deviation, Mean, Binomial Series).

The fifth and last lesson deals with the measurement of Correlation, that is, with the closeness of the relation between any two systems whose variations are due partly to causes common to both, and partly to causes special to each. It applies to nearly every social relation, as to environment and health, social position and fertility, the kinship of parent to child, of uncle to nephew, &c. It may be mechanically illustrated by the movements of two pulleys with weights attached, suspended from a cord held by one of the hands of three different persons, 1, 2, and 3. No. 2 holds the middle of the cord, one half of which then passes round one of the pulleys up to the hand of No. 1; the other half similarly round the other pulley up to the hand of No. 3. The hands of Nos. 1, 2, and 3 move up and down quite independently, but as the movements of both weights are simultaneously controlled in part by No. 2, they become 'correlated.'

The formation of a table of correlations on paper ruled in squares, is easily explained on the blackboard (Fig. 9). The pairs of correlated values A and B have to be expressed in units of their respective variabilities. They are then sorted into the squares of the paper, —vertically according to the magnitudes of A , horizontally according to those of B —, and the Mean of each partial array of B values, corresponding to each grade of A , has to be determined. It is found theoretically that

where variability is normal, the Means of *B* lie practically in a straight line on the face of the Table, and observation shows they do so in most other cases. It follows that the average deviation of a *B* value bears a constant ratio to the deviation of the corresponding *A* value. This ratio is called the 'Index of Correlation,' and is expressed by a single figure. For example: if the thigh-bone of many persons deviate 'very much' from the usual length of the thigh-bones of their race, the average of the lengths of the corresponding arm-bones will differ 'much,' but not 'very much,' from the usual length of arm-bones, and the ratio between this 'very much' and 'much' is constant and in the same direction, whatever be the numerical value attached to the word 'very much.' Lastly, the trustworthiness of the Index of Correlation, when applied to individual cases, is readily calculable. When the closeness of correlation is absolute, it is expressed by the number 1.0; and by 0.0, when the correlation is nil.

(New words and ideas—Correlation and Index of Correlation.)

This concludes what I have to say on these suggested Object lessons. It will have been tedious to follow in its necessarily much compressed form,—but will serve, I trust, to convey its main purpose of showing that a very brief course of lessons, copiously illustrated by diagrams and objects to handle,

would give an acceptable introduction to the newer methods employed in Biometry and in Eugenics. Further, that when read leisurely by experts in its printed form, it would give them sufficient guidance for elaborating details.

INFLUENCE OF COLLECTIVE TRUTHS UPON INDIVIDUAL CONDUCT.

We have thus far been concerned with Probability, determined by methods that take cognizance of Variations, and yield exact results, thereby affording a solid foundation for action. But the stage on which human action takes place is a superstructure into which emotion enters, we are guided on it less by Certainties and by Probabilities than by Assurance to a greater or lesser degree. The word Assurance is derived from *sure*, which itself is an abbreviation of *secure*, that is of *se-cura*, or without misgiving. It is a contented attitude of mind largely dependent on custom, prejudice, or other unreasonable influences which reformers have to overcome, and some of which they are apt to utilize on their own behalf. Human nature is such that we rarely find our way by the pure light of reason, but while peering through spectacles furnished with coloured and distorting glasses.

Locke seems to confound certainty with assurance in his forcible description of the way in which men are guided in their daily affairs (*Human Understanding*, iv. 14, par. 1) :

Man would be at a great loss if he had nothing to direct him but what has the certainty of true knowledge. For that being very short and scanty, he would be often utterly in the dark, and in most of the actions of his life, perfectly at a stand, had he nothing to guide him in the absence of clear and certain knowledge. He that will not eat till he has demonstration that it will nourish him, he that will not stir till he infallibly knows the business he goes about will succeed, will have little else to do than to sit still and perish.

A society may be considered as a highly complex organism, with a consciousness of its own, caring only for itself, establishing regulations and customs for its collective advantage, and creating a code of opinions to subserve that end. It is hard to over-rate its power over the individual in regard to any obvious particular on which it emphatically insists. I trust in some future time that one of those particulars will be the practice of Eugenics. Otherwise the influence of collective truths on individual conduct is deplorably weak, as expressed by the lines:—

For others' follies teach us not,
Nor much their wisdom teaches,
But chief of solid worth is what
Our own experience preaches.

Professor Westermarck, among many other remarks in which I fully concur, has aptly stated (*Sociological Papers*, published for the Sociological Society. Macmillan, 1906, vol. ii., p. 24), with reference to one obstacle which prevents individuals from perceiving the im-

portance of Eugenics, 'the prevalent opinion that almost anybody is good enough to marry is chiefly due to the fact that in this case, cause and effect, marriage and the feebleness of the offspring, are so distant from each other that the *near-sighted eye* does not distinctly perceive the connexion between them.' (The Italics are mine.)

The enlightenment of individuals is a necessary preamble to practical Eugenics, but social opinion is the tyrant by whose praise or blame the principles of Eugenics may be expected hereafter to influence individual conduct. Public opinion may, however, be easily directed into different channels by opportune pressure. A common conviction that change in the established order of some particular codes of conduct would be impossible, because of the shock that the idea of doing so gives to our present ideas, bears some resemblance to the conviction of lovers that their present sentiments will endure for ever. Conviction, which is that very Assurance of which mention has just been made, is proved by reiterated experience to be a highly fallacious guide. Love is notoriously fickle in despite of the fervent and genuine protestations of lovers, and so is public opinion. I gave a list of extraordinary variations of the latter in respect to restrictions it enforced on the freedom of marriage, at various times and places (*Sociological Papers*, quoted above). Much could be added to that list, but I will

not now discuss the effects of public opinion on such a serious question. I will take a much smaller instance which occurred before the time to which the recollections of most persons can now reach, but which I myself recall vividly. It is the simple matter of hair on the face of male adults. When I was young, it was an unpardonable offence for any English person other than a cavalry officer, or perhaps someone of high social rank, to wear a moustache. Foreigners did so and were tolerated, otherwise the assumption of a moustache was in popular opinion worse than wicked, for it was atrociously bad style. Then came the Crimean War and the winter of Balaclava, during which it was cruel to compel the infantry to shave themselves every morning. So their beards began to grow, and this broke a long established custom. On the return of the army to England the fashion of beards spread among the laity, but stopped short of the clergy. These, however, soon began to show dissatisfaction; they said the beard was a sign of manliness that ought not to be suppressed, and so forth, and at length the moment arrived. A distinguished clergyman, happily still living, 'bearded' his Bishop on a critical occasion, The Bishop yielded without protest, and forthwith hair began to sprout in a thousand pulpits where it had never appeared before within the memory of man.

It would be no small shock to public

sentiment if our athletes in running public races were to strip themselves stark naked, yet that custom was rather suddenly introduced into Greece. Plato says (Republic V, par. 452, Jowett's translation) :

Not long ago the Greeks were of the opinion, which is still generally received among the barbarians, that the sight of a naked man was ridiculous and improper, and when first the Cretans and the Lacedaemonians introduced naked exercises, the wits of that day might have ridiculed them. . . .

Thucydides (I. 6) also refers to the same change as occurring 'quite lately'.

Public opinion is commonly far in advance of private morality, because society as a whole keenly appreciates acts that tend to its advantage, and condemns those that do not. It applauds acts of heroism that perhaps not one of the applauders would be disposed to emulate. It is instructive to observe cases in which the benevolence of public opinion has out-stripped that of the Law—which, for example, takes no notice of such acts as are enshrined in the parable of the good Samaritan. A man on his journey was robbed, wounded and left by the wayside. A priest and a Levite successively pass by and take no heed of him. A Samaritan follows, takes pity, binds his wounds, and bears him to a place of safety. Public opinion keenly condemns the priest and the Levite, and praises the Samaritan, but our criminal law is indifferent to such acts. It is most severe on

misadventure due to the neglect of a definite duty, but careless about those due to the absence of common philanthropy. Its callousness in this respect is painfully shown in the following quotations (Kenny, *Outlines of Criminal Law*, 1902, p. 121, per Hawkins in *Reg. v. Paine*, *Times*, February 25, 1880):

If I saw a man who was not under my charge, taking up a tumbler of poison, I should not be guilty of any crime by not stopping him. I am under no legal obligation to protect a stranger.

That is probably what the priest and the Levite of the parable said to themselves.

A still more emphatic example is in the *Digest of Criminal Law*, by Justice Sir James Stephen, 1887, p. 154. *Reg. v. Smith*, 2 C and P., 449:

A sees *B* drowning and is able to help him by holding out his hand. *A* abstains from doing so in order that *B* may be drowned, and *B* is drowned. *A* has committed no offence.

It appears, from a footnote, that this case has been discussed in a striking manner by Lord Macaulay in his notes on the Indian Penal Code, which I have not yet been able to consult.

Enough has been written elsewhere by myself and others to show that whenever public opinion is strongly roused it will lead to action, however contradictory it may be to previous custom and sentiment. Considering that public opinion is guided by the sense of what best serves the interests of society as a

whole, it is reasonable to expect that it will be strongly exerted in favour of Eugenics when a sufficiency of evidence shall have been collected to make the truths on which it rests plain to all. That moment has not yet arrived. Enough is already known to those who have studied the question to leave no doubt in their minds about the general results, but not enough is quantitatively known to justify legislation or other action except in extreme cases. Continued studies will be required for some time to come, and the pace must not be hurried. When the desired fulness of information shall have been acquired then, and not till then, will be the fit moment to proclaim a 'Jehad,' or Holy War against customs and prejudices that impair the physical and moral qualities of our race.

LOCAL ASSOCIATIONS FOR PROMOTING EUGENICS*

I propose to take the present opportunity of submitting some views of my own relating to that large province of eugenics which is concerned with favouring the families of those who are exceptionally fit for citizenship. Consequently, little or nothing will be said relating to what has been well termed by Dr. Saleeby "negative" eugenics, namely, the hindrance of the marriages and the production of offspring by the exceptionally unfit. The latter is unquestionably the more pressing subject of the two, but it will soon be forced on the attention of the legislature by the recent report of the Royal Commission on the Feeble-minded. We may be content to await for awhile the discussions to which it will give rise, and which I am sure the members of this society will follow with keen interest, and with readiness to intervene when what may be advanced seems likely to result in actions of an anti-eugenic character.

The remarks I am about to make were suggested by hearing of a desire to further eugenics by means of local associations more or less affiliated to our own, combined with

* Address to a meeting of the Eugenics Education Society at the Grafton Galleries, on October 14th, 1908.

much doubt as to the most appropriate methods of establishing and conducting them. It is upon this very important branch of our wide subject that I propose to offer a few remarks.

It is difficult, while explaining what I have in view, to steer a course that shall keep clear of the mud flats of platitude on the one hand, and not come to grief against the rocks of over-precision on the other. There is no clear issue out of mere platitudes, while there is great danger in entering into details. A good scheme may be entirely compromised merely on account of public opinion not being ripe to receive it in the proposed form, or through a discovered flaw in some non-essential part of it. Experience shows that the safest course in a new undertaking is to proceed warily and tentatively towards the desired end, rather than freely and rashly along a predetermined route, however carefully it may have been elaborated on paper.

Again, whatever scheme of action is proposed for adoption must be neither Utopian nor extravagant, but accordant throughout with British sentiment and practice.

The successful establishment of any general system of constructive eugenics will, in my view (which I put forward with diffidence), depend largely upon the efforts of local associations acting in close harmony with a central society, like our own. A

prominent part of its business will then consist in affording opportunities for the interchange of ideas and for the registration and comparison of results. Such a central society would tend to bring about a general uniformity of administration the value of which is so obvious that I do not stop to insist on it.

Assuming, as I do, that the powers at the command of the local associations will be almost purely social, let us consider how those associations might be formed and conducted so as to become exceedingly influential.

It is necessary to be somewhat precise at the outset, so I will begin with the by no means improbable supposition that in a given district a few individuals, some of them of local importance, are keenly desirous of starting a local association or society, and are prepared to take trouble to that end. How should they set to work?

Their initial step would seem to be to form themselves into a provisional executive committee, and to nominate a president, council, and other officers of the new society. This done, the society in question, though it would have no legal corporate existence, may be taken as formed.

The committee would next provide, with the aid of the central society, for a few sane and sensible lectures to be given on eugenics, including the A B C of heredity, at some convenient spot, and they would exert themselves to arouse a wide interest in the subjects

by making it known in the district. They would seek the co-operation of the local medical men, clergy, and lawyers, of the sanitary authorities, and of all officials whose administrative duties bring them into contact with various classes of society, and they would endeavour to collect round this nucleus that portion of the local community which was likely to be brought into sympathy with the eugenic cause. Every political organisation, every philanthropic agency, proceeds on some such lines as I have just sketched out.

The committee might next issue, on the part of the president and council of the new society, a series of invitations to guests at their social gatherings, where differences of rank should be studiously ignored. The judicious management of these gatherings would, of course, require considerable tact, but there are abundant precedents for them, among which I need only mention the meetings of the Primrose League at one end of the scale, and those held in Toynbee Hall at the other end. Given a not inclement day, an hour suitable to the occasion, a park or large garden to meet in, these informal yet select reunions might be made exceedingly pleasant, and very helpful to the eugenic cause.

The inquiries made by the committee when they were considering the names of strangers to whom invitations ought to be sent, would put them in possession of a large

fund of information concerning the qualities of many notable individuals in their district, and their family histories. These family histories should be utilised for eugenic studies, and it should be the duty of the local council to cause them to be tabulated in an orderly way, and to communicate the more significant of them to the central society.

The chief of the notable qualities, to which I refer in the preceding paragraph, is the possession of what I will briefly call by the general term of "Worth." By this I mean the civic worthiness, or the value to the State, of a person, as it would probably be assessed by experts, or, say, by such of his fellow-workers as have earned the respect of the community in the midst of which they live. Thus the worth of soldiers would be such as it would be rated by respected soldiers, students by students, business men by business men, artists by artists, and so on. The State is a vastly complex organism, and the hope of obtaining a proportional representation of its best parts should be an avowed object of issuing invitations to these gatherings.

Speaking only for myself, if I had to classify persons according to worth, I should consider each of them under the three heads of physique, ability, and character, subject to the provision that inferiority in any one of the three should outweigh superiority in the other two. I rank physique first, because it is not only very valuable in itself and allied to many

other good qualities, but has the additional merit of being easily rated. Ability I should place second on similar grounds, and character third, though in real importance it stands first of all. It is very difficult to rate character justly; the tenure of a position of trust is only a partial test of it, though a good one so far as it goes. Again, I wish to say emphatically that in what I have thrown out I have no desire to impose my own judgment on others, especially as I feel persuaded that almost any intelligent committee would so distribute their invitations to strangers as to include most, though perhaps not all, of the notable persons in the district.

By the continued action of local associations as described thus far, a very large amount of good work in eugenics would be incidentally done. Family histories would become familiar topics, the existence of good stocks would be discovered, and many persons of "worth" would be appreciated and made acquainted with each other who were formerly known only to a very restricted circle. It is probable that these persons, in their struggle to obtain appointments, would often receive valuable help from local sympathisers with eugenic principles. If local societies did no more than this for many years to come, they would have fully justified their existence by their valuable services.

A danger to which these societies will be liable arises from the inadequate knowledge

joined to great zeal of some of the most active among their probable members. It may be said, without mincing words, with regard to much that has already been published, that the subject of eugenics is particularly attractive to "cranks." The councils of local societies will therefore be obliged to exercise great caution before accepting the memoirs offered to them, and much discretion in keeping discussions within the bounds of sobriety and common sense. The basis of eugenics is already firmly established, namely, that the offspring of "worthy" parents are, *on the whole*, more highly gifted by nature with faculties that conduce to "worthiness" than the offspring of less "worthy" parents. On the other hand, forecasts in respect to particular cases may be quite wrong. They have to be based on imperfect data. It cannot be too emphatically repeated that a great deal of careful statistical work has yet to be accomplished before the science of eugenics can make large advances.

I hesitate to speculate farther. A tree will have been planted; let it grow. Perhaps those who may thereafter feel themselves or be considered by others to be the possessors of notable eugenic qualities—let us for brevity call them "Eugenes"—will form their own clubs and look after their own interests. It is impossible to foresee what the state of public opinion will then be. Many elements of strength are needed, many dangers have to

be evaded or overcome, before associations of Eugenes could be formed that would be stable in themselves, useful as institutions, and approved of by the outside world.

The suggestion I made in the earlier part of this paper that the executive committee of local associations should co-operate, wherever practicable, with local administrative authorities, proceeded on the assumption that the inhabitants of the districts selected as the eugenic "field" had a public spirit of their own and a sense of common interest. This sense would be greatly strengthened by the enlargement of mutual acquaintanceship and the spread of the eugenic idea consequent on the tactful action of the committee. It ought not to be difficult to arouse in the inhabitants a just pride in their own civic worthiness, analogous to the pride which a soldier feels in the good reputation of his regiment or a lad in that of his school. By this means a strong local eugenic opinion might easily be formed. It would be silently assisted by local object lessons, in which the benefits derived through following eugenic rules and the bad effects of disregarding them were plainly to be discerned.

The power of social opinion is apt to be underrated rather than overrated. Like the atmosphere which we breathe and in which we move, social opinion operates powerfully without our being conscious of its weight. Everyone knows that governments, manners,

and beliefs which were thought to be right, decorous, and true at one period have been judged wrong, indecorous, and false at another ; and that views which we have heard expressed by those in authority over us in our childhood and early manhood tend to become axiomatic and unchangeable in mature life.

In circumscribed communities especially, social approval and disapproval exert a potent force. Its presence is only too easily read by those who are the object of either, in the countenances, bearing, and manner of persons whom they daily meet and converse with. Is it, then, I ask, too much to expect that when a public opinion in favour of eugenics has once taken sure hold of such communities and has been accepted by them as a quasi-religion, the result will be manifested in sundry and very effective modes of action which are as yet untried, and many of them even unforeseen ?

Speaking for myself only, I look forward to local eugenic action in numerous directions, of which I will now specify one. It is the accumulation of considerable funds to start young couples of "worthy" qualities in their married life, and to assist them and their families at critical times. The gifts to those who are the reverse of "worthy" are enormous in amount ; it is stated that the charitable donations or bequests in the year 1907 amounted to 4,868,050*l.* I am not prepared to say how much of this was judiciously spent,

or in what ways, but merely quote the figures to justify the inference that many of the thousands of persons who are willing to give freely at the prompting of a sentiment based upon compassion might be persuaded to give largely also in response to the more virile desire of promoting the natural gifts and the national efficiency of future generations.