

CHAPTER XVI

EUGENICS AS A CREED AND THE LAST DECADE OF GALTON'S LIFE

"No custom can be considered seriously repugnant to human feelings that has ever prevailed extensively in a contented nation, whether barbarous or civilised. Any custom established by a powerful authority soon becomes looked upon as a duty, and before long as an axiom of conduct which is rarely questioned." Francis Galton, 1894.

(1) *Introductory.* The careful reader of this work will have realised how deeply impressed Galton was by the idea that with man himself lies the possibility of improving his race; and this impression existed long before Galton initiated active propaganda for Eugenics as a social and political creed. Indeed, although Galton's earlier writings reached a limited and partly prepared audience, it was not till the beginning of the present century that he considered the time ripe for a more general public appeal, or sought proselytes to the new faith. There are some creeds, and more sciences, of which it is nearly impossible to name a single individual as the creator. When we speak of Christianity we forget, or wilfully disregard, Paul; Einstein was not the first to see material phenomena in the curvature of space; nor did Darwin stand alone when he propounded evolution through natural selection. But what student of evolution before Galton, realising the past ascent of man, grasped that his future lies with himself, if he be willing to study and control his own breeding? It is given to few men to name a new branch of science and lay down the broad lines of its development; it is the lot of fewer still to forecast its future as a creed of social conduct. In the thirty years which have elapsed, since Galton started his public teaching, what gratifying progress has been made, not only in establishing institutes and laboratories for research in Eugenics*, but also in familiarising the people at large with the code of conduct which an acceptance of eugenic principles involves! It is as if the Great War had so thoroughly demonstrated the pitiable failure of humanity, that its thinkers and leaders felt that the old man must be replaced by a new-born Apollo†, the worn-out creed which had failed him by a more adequate

* Institutes primarily for Eugenics research exist to my knowledge in England, America, Sweden, Norway, Russia, Switzerland, Germany, Poland and probably elsewhere. Popular Journals or Eugenics Societies have been started in England, America, Germany, France, Italy and Russia.

†

..... "Grief overcame,
" And I was stopping up my frantic ears,
" When, past all hindrance of my trembling hands,
" A voice came, sweeter, sweeter than all tune,
" And still it cried, 'Apollo! young Apollo!
" The morning-bright Apollo! young Apollo!'
" I fled, it follow'd me, and cried 'Apollo!'" Keats, *Hyperion*.

faith. We know little of how it came about that Aurignacian man replaced Mousterian man; but the ascent was a steep one, and man needs once more some such rapid elevating. With our present acquaintance with the laws of heredity, with our present knowledge of how customs and creeds have changed, can we not hasten the evolutionary process of fitting man to the needs of his present environment? It is indeed a great task because it involves control of the most imperious instinct of living beings, so imperious that Nature's method of improvement has been to provide quantity and seek therein for quality. The new creed bids us seek quality and restrict quantity; separate, where race demands it, the scarce controllable instinct of mating from the parental instinct, and teach nations to pride themselves on the superior type of their citizens, rather than on their material resources. The eugenic dreamer sees in the distant future a rivalry of nations in the task of bringing to greater perfection their human stocks, and this by an intensive study of biological law applied to man, and its incorporation, it may be gradually, but surely, in a revised moral or social code.

(2) *Address to the Demographers.* A paper which bridges the gulf between the *Inquiry into Human Faculty* of 1883 and the Huxley Lecture of 1901 is Galton's "Presidential Address" of August 11, 1891, to the Division of Demography of the *Seventh International Congress of Hygiene and Demography**. The word "Eugenics" does not occur in the address, it has no topical title, and yet it is an insistent demand for the study of eugenic problems. The paper has escaped and is likely to escape attention, it is not as far as I am aware included in any list of Galton's published papers, nor are copies of it among his offprints or in the bound volumes of his memoirs. Yet the address is of very great interest, not only for its intrinsic suggestiveness, but because it shows how during twenty years Eugenics had retained a foremost place in Galton's mind. His appeal, however, produced as little effect on the demographers as it did later on the anthropologists.

The topics with which the address deals are the relative fertility of various classes within a nation, and the relative fertility of nations among themselves—intranational and international fertilities—whereby tendencies arise for one class or one race to supplant another. Referring to the hypothesis of Malthus, Galton asks:

"Is it true that misery, in any justifiable sense of that word, provides the only check which acts automatically, or are other causes in existence, active, though as yet obscure, that assist in restraining the overgrowth of population? It is certain that the productiveness of different marriages differs greatly in consequence of unexplained conditions... One of the many evidences of our great ignorance of the laws that govern fertility, is seen in the behaviour of bees, who have somehow discovered that by merely modifying the diet and the size of the nursery of any female grub, they can at will cause it to develop, either into a naturally sterile worker, or into the potential mother of a huge hive." (p. 8.)

Galton is here foreshadowing the sterilisation of those sections of the community of small civic worth, which has since become a pressing question of practical politics. He suggests that if persons are graded in a nation on

* *Transactions* of that Congress, pp. 7-12, London, 1892.

physical, intellectual and moral grounds, there must essentially be a least efficient as there will be a most efficient class. If inheritance holds for these characteristics then the relative fertility of these classes is of the utmost national importance. The same is true of the relative fertility of races and nations :

“The frequency in history with which one race has supplanted another over wide geographical areas is one of the most striking [incidents] in the evolution of mankind. The denizens of the world at the present day form a very different human stock from that which inhabited it a dozen generations ago, and to all appearance a no less difference will be found in our successors a dozen generations hence.” (p. 10.)

Galton notes the Europeans who have swarmed over all the temperate regions of the globe, forming the nuclei of many future nations, the disappearance of the American Indian and the appearance of 8,000,000 negroes in America. He might have added many other instances even within Europe itself. It is indeed true that we hardly allow our thoughts to rest on the startling racial changes which have occurred in Europe in the last three or four thousand years, and on the still more significant changes in dominant races all over the world during the last few hundred years. Those who fully realise the marvellous evolution of certain types of humanity at the expense of others will smile—sadly, it may be—and wonder whether it is feasible for any League of Nations, however strong, to fix and maintain national and racial boundaries, unless it shall have first fixed the relative fertility of all the tribes of man and, what is more, internationalised all the world's resources! As interclass struggle finds its hope of solution only in the socialism which teaches the nationalisation of the materials and means of production, so international struggle can only reach its conclusion by the universalism which demands internationalisation of the world's wealth. In the first case, national eugenics is the only means left to provide any nation with men strong in mind and body; in the second case, international eugenics is the sole possibility of producing finer races of mankind. The men or group of men who can say to a nation large or small: “This is your frontier and you must keep to it,” will be forced ultimately and logically to the point, not only of internationalising the world's wealth and its means of transport, but also of saying: “This is your appropriate fertility and you must keep to it.” New modes of transport are rapidly making the world too small for mankind. Any plant or animal that overcrowds its proper region ends by destroying its fellows. The domesticated herd can alone thrive and progress on a limited pasture because the breeder stringently restricts its numbers, and picks from them those best fitted to their environment. Man, if he is to be freed from class struggle and from racial contests—that is to say, if he is to become thoroughly domesticated—can only thrive and progress if he breeds himself; in other words he must replace the harsh processes of Nature, which in the long run grant survival solely to the physically and mentally strong—to brain and muscle—by the milder practice of eugenics studied from the national and even the international standpoint. In the dimmest of distant futures we may see man fitting man to each region of his earth, and not

Nature very slowly developing man, or man hoping to mould Nature to his present self. But such knowledge is far from us at present. As Galton puts it :

“Much more care is taken to select appropriate varieties of plants and animals for plantation in foreign settlements, than to select appropriate types of men. Discrimination and foresight are shown in the one case, an indifference born of ignorance is shown in the other.” (p. 11.)

But Galton was not pressing for immediate action, only for early study, because these great questions of civic and racial worth

“may unexpectedly acquire importance as falling within the sphere of practical politics, and if so, many demographic data that require forethought and time to collect, and a dispassionate and leisurely judgment to discuss, will be hurriedly and sorely needed.” (p. 7.)

In conclusion he emphasised the fact that

“the improvement of the natural gifts of future generations of the human race is largely, though indirectly, under our control. We may not be able to originate, but we can guide. The processes of evolution are in constant and spontaneous activity, some pushing towards the bad, some towards the good. Our part is to watch for opportunities to intervene by checking the former and giving free play to the latter. I wish to distinguish clearly between our power in this fundamental respect and that which we also possess of ameliorating education and hygiene. It is earnestly to be hoped that demographers will increasingly direct their inquiries into historical facts, with the view of estimating the possible effects of reasonable political action in the future, in gradually raising the present miserably low standard of the human race to one in which the Utopias* in the dreamland of philanthropists may become practical possibilities.” (p. 12.)

The garden of humanity is very full of weeds, nurture will never transform them into flowers ; the eugenist calls upon the rulers of mankind to see that there shall be space in the garden, freed of weeds, for individuals and races of finer growth to develop with the full bloom possible to their species. I believe I am justified in the interpretation I have placed on Galton's address, and if there be a “national” eugenics, those words in themselves connote—as he himself indicates in his discussion of relative racial values—that there is also a science of “international” eugenics. This, if as we all trust the League of Nations survives, is bound to be the League's helpmate in the treatment of the most difficult problem with which its future is threatened.

I may indicate here what I think Galton planned as the course to be run by his new science. Laboratories were to be created where man should be studied from the standpoints of heredity, anthropology and medicine ; journals and lectures were to be provided whereby the results reached should be popularised and a new morality inculcated. He had in view Eugenics not only as a science, not only as an art, but also as a national creed, amounting, indeed, to a religious faith. He never to my knowledge underestimated the difficulties, nor the slowness of its probable progress. A letter to William Bateson written in 1904 will indicate how Galton at that date visualised eugenic progress † :

42, RUTLAND GATE, S.W. *June 12, 1904.*

DEAR MR BATESON, Your letter of May 28 should have been answered earlier, had I not delayed in hope of receiving your promised answers to my “Ability in Families” circular ‡, and replying to both at once.

* For Galton's own “Utopia in the dreamland of philanthropists” see later in this chapter.

† I am permitted to publish this letter by the courtesy of Mrs William Bateson.

‡ See p. 121 of this volume.

I quite understand now (I think) your point, and to a great extent agree with it. But what are we humans to do, if any "eugenic" progress is attempted? We can't mate men and women as we please, like cocks and hens, but we could I think gradually evolve some plan by which there would be a steady though slow amelioration of the human breed; the aim being to increase the contributions of the more valuable classes of the population and to diminish the converse. We now want better criteria than we have of which is which.

Do what we can (within reasonable limits as regards mankind), fraternal *variability* will never be much lessened; but I do think that the fraternal *means* might on the whole be raised.

That is the problem, as it seems to me, to be held in view; also that an exact knowledge of the true principles of heredity would hardly help us in its practical solution.

I do indeed fervently hope that exact knowledge may be gradually attained and established beyond question, and I wish you and your collaborators all success in your attempts to obtain it.

Very faithfully yours, FRANCIS GALTON.

Do you want your cobs of maize back?

This letter is of great importance; it indicates that Galton had in view only a "steady though slow amelioration of the human breed"; but it further shows that in his opinion the exact mechanism of heredity, even if we could find it out, was not of the highest importance. As an evolutionist he saw mass-changes taking place, and he recognised that the statistical solution is the one that has most importance for the eugenicist. His statement that fraternal variability—by which he certainly meant heritable variability—will never be much lessened, is one with which I should personally agree, but the reader must remember that it cuts at the root of the "pure line" hypothesis*, and must not pass over its significance for Galton's own views. His remark also that the fraternal means might on the whole be raised suggests that the work of the biometricians had convinced him before 1904 that there was not a continuous regression of a selected group to the population mean; and that sports were not essential to progress.

(3) *Definition of Eugenics.* We have already seen that the term "Eugenics" was introduced by Galton in 1883 into his *Inquiry into Human Faculty*. See our Vol. II, pp. 249 ftn., 251, 252. Romanes in a review in *Nature*† of Galton's *Record of Family Faculties and Life History Album* in the following year (1884) uses the term "Eugenics" thrice and in one case speaks of the "science of Eugenics." "Mr Galton," he also tells us, "is indefatigable in his zeal to promote the cause of Eugenics." Thus born in 1883, the term had come into an accepted use in 1884.

Before we turn to Galton's propagandist lectures it is well to consider the definition of Eugenics. In 1883 Galton had defined Eugenics as the science of improving stock, not only by judicious mating, but by all the influences which give the more suitable strains a better chance. In 1904 Galton determined to take a step forward in his purpose by founding a research fellowship in National Eugenics, and addressed the following letter to the Principal of the University of London, Sir Arthur Rucker. This letter

* The reader may consult "A New Theory of Progressive Evolution" by the present biographer in the recently issued Vol. IV, Part I, of the *Annals of Eugenics*, published by the Galton Laboratory; it contains a discussion of the present position of the "pure line" hypothesis.

† Vol. XXIX, p. 257, January 17, 1884.

contains his own first definition of Eugenics, and whereas in the *Inquiry* we find the term may be applied to animals as well as man, it is now implicitly limited to mankind:

UNIVERSITY OF LONDON. *October 10, 1904**.

DEAR SIR ARTHUR, I desire to forward the *exact* study of what may be called *National Eugenics*, by which I mean the influences that are socially controllable, on which the *status* of the nation depends. These are of two classes: (1) those which affect the race itself and (2) those which affect its health. It is the numerous influences comprised in (1), whose several strengths are as yet only vaguely surmised, that I especially want to have submitted to exact study. Class (2) is already the subject of much research, but I fear that here also the results arrived at require much more exact analysis by the higher methods of statistics than they have yet received.

If a scheme can be worked out that, on the one hand, fits in with the arrangements of the University of London and, on the other hand, is satisfactory to myself, I am prepared as a first instalment to give £1500 to serve for three years to carry out my purposes. If, but only if, the working of the proposed plan proves as satisfactory as I hope, I will reconsider the question with the view of making the endowment permanent of about £500 a year.

I presume that the University will supply accommodation for the person appointed at, say, £200 to £250 a year, and for a clerk, say, at £80 to £100 a year, leaving £150 to £200 for expenses. Also that the stamped official writing paper of the University may be used.

One part of his [the Fellow's] duties would be to establish a collection of records relating to those families of England who are remarkable for the number of near kinsfolk whose deeds have been noteworthy.

I feel some hesitation in drafting a statement of proposed duties for the "Research Fellow," or whatever his title may be, as they ought to fit into, and not overlap, what is already well done. Be that what it may, I think that "National Eugenics" would be good, as it is an exact title for what I wish to see done.

Yours very faithfully, FRANCIS GALTON.

This letter is important with regard to the definition of Eugenics, as it clearly indicates when and why the term "National" was introduced. The University appointed a committee to consider the offer and draft a scheme for the Research Fellowship in National Eugenics. It consisted of Sir Edward Busk (Chairman of Convocation), Francis Galton, the Principal of the University, Mr Mackinder and myself. This committee met on Oct. 14th and drew up a scheme for the Fellowship. My recollection of the meeting is that most of the time was spent in drafting a definition, which ultimately differed somewhat widely from that of Galton's letter of Oct. 10th, but which he finally approved. It heads the Draft Scheme and runs:

"The term National Eugenics is here 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 scheme itself contains the usual regulations as to manner of appointment, the constitution of a special recommending Committee, Galton reserving a right of veto on the first nomination, the salary of the Fellow and his assistant, who if suitable was to be termed the Francis Galton Scholar. The duties of the Fellow are of more permanent interest: he was to devote all his time to Eugenics, in particular he was required:

"(a) To acquaint himself with statistical methods of inquiry, and with the principal researches that have been made in Eugenics, and to plan and carry out further investigations thereon.

* I do not know whether this is a clerk's error in printing Galton's letter or whether he actually wrote it in the precincts of the University.

"(b) To institute and carry on such investigations into the history of classes and families as may be calculated to promote the knowledge of Eugenics.

"(c) To prepare and present to the Committee, though not necessarily for publication, an annual Report on his work [to be done under general direction of the Committee]. To give from time to time, if required or approved by the Committee, short Courses of Lectures on Eugenics, and in particular on his own investigations thereon.

"(d) To prepare for publication at such times and in such manner as may be approved by the Committee (and at least at the end of his tenure of the Fellowship), a Memoir or Memoirs on the investigations which he has carried out."

The origin of the trend on which the Galton Laboratory of National Eugenics was developed later will be found in this Draft Scheme.

The University Senate on October 17th accepted the Draft Scheme without emendation, voted its cordial thanks to Francis Galton for his gift, and appointed as a Special Committee to recommend a Fellow and afterwards direct him*, Sir Edward Busk, Mr Mackinder, Francis Galton and myself. It also directed the Principal to issue an advertisement of the Fellowship and its conditions. This Sir Arthur Rücker did, but either out of sheer perversity, or through some clerical error, the word "morally" was substituted for "mentally" in the definition, and National Eugenics appeared in the advertisement as "the study of agencies under social control that may improve or impair the racial qualities of future generations either physically or *morally*." Quite recently this absurd definition was communicated to me by a member of the executive of the University as the work of the Special Committee! It has, I believe, no standing whatever, except that of an advertisement issued by the executive†, for which neither Galton, nor the Special Committee, had any responsibility. Galton, in his Herbert Spencer Lecture at Oxford in 1907, cites the definition correctly, and in his *Memories of my Life*, 1908 (p. 321), he writes that Eugenics is officially defined in the Minutes of the University of London as "the study of agencies under social control that may improve or impair the racial qualities of future generations either physically or mentally." I do not know whether this definition fully covered his original views or not. I only know of one occasion on which during his life he departed in public from it. This was during a talk with an interviewer from the *Jewish Chronicle*, July 20, 1910. He then defined Eugenics with a slight difference as "the study of the conditions under human control which improve or impair the inborn characteristics of the race‡." It

* There was too much "direction" about the scheme as originally planned. Galton, as I have previously remarked (see p. 135 above), was in my judgment too fond of working through committees. Beside the University Special Committee, which on the whole did little more than leave the first Research Fellow and Galton to their own devices, there was an "Advisory Committee" nominated by Galton, which met at the Eugenics Record Office and achieved little beyond hampering the Fellow. On this point the reader will find further remarks later.

† It is to be noted that in an announcement of the Fellowship in *The Times* of Oct. 26, 1904, the word "mentally" occurs in its proper place.

‡ In this interview Galton stated that it is one part of Eugenics to encourage the idea of parental responsibility, the other part is to see that the children born are well born. Galton considered that the Mosaic code had enjoined the multiplication of the human species, but it was really more important to prescribe that the children should be born from the fit and not

is clear from this wording that Francis Galton was not wholly satisfied with the term "qualities." When did he change it? In the Codicil, dated May 25, 1909, of his Will of October 20, 1908, and in the cancelled clause, Galton defined the purpose of his foundation to be:

"to pursue the study and further the knowledge of National Eugenics, that is of the agencies under social control that may improve or impair the racial faculties of future generations physically or mentally."

He thus cast his vote for "mentally." And this was undoubtedly well, for the term "mental" is wider than "moral," and the latter does not include the former, while at least many will be content to consider morality a mental characteristic. Galton was less fortunate, I think, in replacing "qualities" by "faculties." There seem to me many characteristics or qualities of the mind or body which it is desirable for the Eugenist to study, and which it is difficult to force into the category of "faculties." Perhaps they may be admitted to our studies as often associated with the faculties of mind or body to which the definition appears to limit eugenic research. It is worth noting that Galton's *Memories* citing the Committee's definition of Eugenics appeared in October, 1908—I got my copy on the 9th—and that on October 20th Galton signed a will in which "qualities" is replaced by "faculties." It might be thought that "faculties" was a word handed down from an earlier will, but this is not so. It was in the autumn of 1906 that Galton first told me of his plan to found a professorship of Eugenics in the University of London. I find that his letters to me of November and December, 1906, deal largely with the wording of the clauses in his Will as to his foundation for the study of Eugenics; they also deal with the proposed Weldon memorial and of his own desire to free himself from the direction of the *University Eugenics Record Office*, which was becoming too much for his strength. To these matters I shall refer later, but I think the reader will pardon me for taking one letter here out of its natural order in the history of Galton's plans for Eugenics; it demonstrates that even in his testamentary deposition of 1906 he fully accepted the definition of 1904. The letter runs as follows:

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Nov. 15, 1906.

MY DEAR KARL PEARSON, Enclosed is Mr Hartog's reply (1695. 11) to my "semi-private" letter. Please ultimately return it to me. It is quite satisfactory from my point of view, how would it be from yours?—Could you be persuaded to take control of the Eugenics Office as a branch of the Biometric Laboratory, working it in your way on "secular" biometric problems that have a distinct bearing on Eugenics? It cannot be under two heads or guidances so I willingly resign mine, perhaps keeping a nominal connection with it as "consultative*." It

the unfit. He did not allow that this latter principle was inculcated by the Jewish code. The *Jewish Chronicle* in a leader on the interview endeavoured to magnify the eugenic influence of the Mosaic code, in particular quoting the warning words spoken from Sinai about "visiting the sins of the fathers upon the children unto the third and fourth generations." But surely these words had no relation to physically or mentally feeble parents refraining from parenthood, but were a threat of the law-giver to induce his race to be faithful to their tribal deity, and prevent them worshipping (should their god fail them) at the altars of other gods! It is only in modern days that we have adopted them as appropriate to heredity in disease.

* Galton was a "consultative" editor of *Biometrika*, see below, p. 245.

would enlarge your means of work and from that point of view would be agreeable, I think and hope.

It is, perhaps, well that I should copy out the paragraph in my Will, which refers to the residue after paying various legacies, the amount of which residue will be fully what I told you and somewhat more.

"I devise and bequeath all the residue of my estate and effects both real and personal unto the University of London to be held, assigned and disposed of by the Senate of that University in the furtherance of the study of National Eugenics, that is of the agencies under social control that may improve the racial qualities of future generations either physically or mentally. Provided always that it shall be lawful for the Senate by a majority of not less than two-thirds of all its members at any time after ten years shall have elapsed from the date [1906] of this my Will to divert part or the whole of the then remaining sum to the study of such other branch or branches of Biometry, Statistics or of Sociology as they may then think more worthy of support."

If you think this could be amended by a Codicil, pray tell me.

Mr Heron comes to see me tomorrow till, I believe, Monday morning; I will write the results of what I may learn from him, etc.

I *hope* that your reply to this may justify my telling Hartog that all the arrangements for filling up the Eugenics vacancy and its future control will be in *your* hands, and no longer in mine, that I wish to retire wholly and that in all matters concerning its management, except financial, he must henceforth communicate with you—May it be so!

Affectionately yours, FRANCIS GALTON.

I shall think of you on the 24th*.

Plymouth is a success in all essentials as warmth, cooking and comfort, but the sky and air are somewhat depressing.

This letter shows that in 1906 Galton preferred "qualities" to "faculties" in his definition of Eugenics. In the wording of both the Will of 1908 and the Codicil of May 25, 1909, the latter term replaces the former. I find from letters that passed between Galton and myself between May 4 and May 18, 1909, that he consulted me as to the drafting of this later Codicil, actually putting a copy (returned to him) before me for my suggestions, which turned solely on the desirability of granting power to the University to delay the appointment of a Galton professor, if no suitable man was at once available. If the word "faculties" replaced "qualities" in this draft, probably Galton, and certainly I, overlooked its introduction.

Historically the origin of the definition of Eugenics is of interest; its three forms, that in the Minutes of the University as to the duties of the first Galton Research Fellow, which has been invariably used by the Galton Laboratory; the unsanctioned change in Sir Arthur Rücker's advertisement; and finally that of the Codicil defining the bequest to the University, have already been the subject of inquiry from America. If the University were ever to insist in practice on a rigid interpretation of the phrasing of the bequest, the word "faculties" might hamper a future† occupant of the Galton Chair. It would be most undesirable that he should be precluded from studying any characteristic quality—iris pigmentation, constitution

* I was probably giving a public lecture on that date, but do not remember topic or place.

† Hardly in the case of the present Galton professor, as the Will permits him to associate the Biometric Laboratory with the Galton Laboratory, and biometry at least covers the "qualities" as well as the "faculties" of man!

of blood or size of thyroid gland, etc.—which, without being a “faculty,” might tend to throw light on hereditary processes in man. I have therefore ventured to place on record here that to the best of my knowledge and belief Galton, by the use of the term “faculties” in the Codicil of 1909, in no wise wished to set any limitation on the definition of Eugenics which he fully accepted in his *Memories* of 1908 (p. 321).

(4) *The Huxley Lecture of 1901, and Allied Matters.* Before entering into more detail as to the steps Galton took to develop the research side and the popular side of Eugenics, it may be convenient to pass under review the publications which he issued in this last period of his life. It is true that they were written more from the popular standpoint than his earlier papers on statistics and heredity, but they lacked little of the old fire, and were eminently suited to his purpose, viz. that of creating a national movement in favour of a eugenic policy. His work may best be reviewed in chronological order, thus forming a history of the last eleven years of his life, 1901 to 1911, from his 79th to 89th year. We have seen* that in the winter of 1900 Galton was in Egypt and spoke before the Khedivial Society for Geography on the Egypt of 1846 † and of 1900. On his return in 1901, he was invited to give the Huxley Lecture and receive the Huxley medal of the Royal Anthropological Institute. These events took place on October 29th ‡, and the lecture, entitled “The possible Improvement of the Human Breed under the existing Conditions of Law and Sentiment,” was published in *Nature*, Nov. 1, 1901, and again in the *Report of the Smithsonian Institution*, pp. 523–538. It seems to have been published only in abstract by the Anthropological Institute. It is noteworthy that Galton in his early days tried to induce the physical anthropologists of that Institute to adopt a scientific technique. In his old age he endeavoured to prove to them that a study of racial characters finds its practical outcome in the art of Eugenics. In neither case was he really successful. It is the Eugenics Laboratories springing up over Europe which are adopting anthropology as an auxiliary science and revivifying its technique and aims; it is the older institutes of anthropology which have not grasped that their study of the evolution of man’s past has for its main purpose the direction of man’s future—therein alone it finds its full justification.

Galton opened his Huxley Lecture by stating that he proposed to treat broadly a new topic belonging to a class in which Huxley himself would have felt a keen interest. He had accordingly selected a topic, which had occupied his thoughts for many years, and to which a large part of his published inquiries had borne a direct though silent reference. His remarks would serve as an additional chapter to his books on *Hereditary Genius* and *Natural Inheritance*, and we may add also to his *Inquiry into Human Faculty*, wherein he first defined and used the term “Eugenics,” and talked of the possible purposeful improvement of the human breed §.

* See the present volume, p. 158.

† Actually 1845–6: see our Vol. I, pp. 198–205.

‡ With Lord Avebury (formerly Sir John Lubbock) in the chair, a very fit choice.

§ See our Vol. II, pp. 252, 264 *et seq.*

The topic, he stated, had not hitherto been approached along the path that recent knowledge has laid open, and as a result the subject had not held as dignified a position in scientific estimation as it ought to do. "It is smiled at as most desirable in itself and possibly worthy of academic discussion, but absolutely out of the question as a practical problem" (p. 523*). The object of the lecture was to show cause for a different opinion.

"Indeed I hope to induce anthropologists to regard human improvement as a subject that should be kept openly and squarely in view, not only on account of its transcendent importance, but also because it affords excellent but neglected fields for investigation. I shall show that our knowledge is already sufficient to justify the pursuit of this, perhaps the grandest of all objects, but that we know less of the conditions upon which success depends than we might and ought to ascertain. The limits of our knowledge and of our ignorance will become clearer as we proceed." (p. 523.)

Thus Galton attempted to introduce the science of Eugenics to anthropologists, cautiously screening the label on his draught!

He first pointed out that the natural characters and faculties of human beings differ at least as widely as those of domesticated animals, such as dogs and horses:

"In disposition some are gentle and good-tempered, others surly and vicious; some are courageous, others timid; some are eager, others sluggish; some have large powers of endurance, others are quickly fatigued; some are muscular and powerful, others are weak; some are intelligent, others stupid; some have tenacious memories of places and persons, others frequently stray and are slow at recognizing. The number and variety of aptitudes, especially in dogs, is truly remarkable; among the most notable being the tendency to herd sheep, to point and to retrieve. So it is with the various natural qualities which go towards the making of the civic worth in man. Whether it be in character, disposition, energy, intellect or physical power, we each receive at our birth a definite endowment, allegorized by the parable related in St Matthew, some receiving many talents, others few." (p. 524.)

It is to be noted how artfully Galton chose the very characteristics of the dog which correspond to those of man, and led up his artless listeners without direct statement to the inference that what you can certainly breed for in the dog, you might equally well breed for in man! Galton realised to the full that the best method of making converts is to allow the average man an opportunity of independently discovering your truth. In the pride of himself finding a nugget (conveniently placed), he is far less inclined to assert without examination that the whole field is non-auriferous.

Pushing the parable of the talents further, Galton, rather quaintly, proceeds to put it into numbers, taking the quartile deviation ("probable error") to represent one talent, and using the normal frequency distribution to express the frequency of the various grades of qualities in a nation. He justifies the use of the normal distribution on the ground that experience has shown that it is a fair approximation in the case of a number of qualities.

* My references are to the pages of the *Smithsonian Report*.

He thus obtains the following distribution for 10,000 individuals of any character in a nation :

Defect talents					Excess talents						
Under -4	-4	-3	-2	-1	Mean	1	2	3	4	Over 4	Total
35	180	672	1613	2500	2500	1613	672	180	35	10,000	
<i>v</i>	<i>u</i>	<i>t</i>	<i>s</i>	<i>r</i>	<i>R</i>	<i>S</i>	<i>T</i>	<i>U</i>	<i>V</i>		

The letters below mark the particular classes for purposes of reference, the small letters denoting classes with the corresponding range of defect of talents below mediocrity and the capital letters the classes with excess of talents above mediocrity. The reader will note that with a different nomenclature the distribution is one very familiar to statisticians. Beyond *V* and *v* Galton supposes classes *W*, *X*, etc., *w*, *x*, etc., each corresponding to a range of one talent. He illustrates this scheme from his own data for male stature where the mean was 5' 8", the "talent" $1\frac{3}{4}$ " nearly, and where accordingly class *U* would contain men over 6' $1\frac{1}{4}$ ", "quite tall enough to overlook a hatless mob." Then he continues :

"So the civic worth (however the term may be defined) of *U*-class men, and still more of *V*-class, are notably superior to the crowd; though they are far below the heroic order." (p. 526.)

In round numbers about one man in 300 belongs to the *V*-class.

In the next place Galton proceeds to compare his normal distribution scale with the classes *A*, *B*,...*H*, into which Mr Charles Booth divided the population of London in his noteworthy survey. He concludes that Mr Booth's class *H* corresponds to his own *T*, *U*, *V* and above. Further, his own *t*, *u*, *v* and below correspond to Mr Booth's class *A*, criminals, semi-criminals, loafers, and a few others, and to his class *B*, very poor persons who subsist on casual earnings, many of whom are inevitably poor from shiftlessness, idleness or drink. Galton rightly considers that, from the standpoint of civic worth, classes *t*, *u*, *v* and below are undesirables.

The next section of the lecture is entitled *Worth of Children*. The lecturer points out that the brains of the nation lie in the *W*- and *X*-classes, and if the people, who would be placed in them as adults, could be distinguished as children, were procurable by money, and could be reared as Englishmen, it would be a cheap bargain for the nation to buy them at the rate of several hundreds or even thousands of pounds per head. He refers to Dr Farr's estimate of the value of the baby of an Essex* labourer's wife at £5 and says he believes that on the same actuarial principles an *X*-class baby might be reckoned in thousands of pounds. While some such "talented" folk fail, most succeed and many succeed greatly:

* Dr Farr's analysis seems based on the wages of agricultural labourers in Norfolk, not Essex: see *Journal of R. Statistical Society*, Vol. xvi, pp. 38-44.

"They found great industries, establish vast undertakings, increase the wealth of multitudes, and amass large fortunes for themselves. Others, whether they be rich or poor, are the guides and light of the nation, raising its tone, enlightening its difficulties, and imposing its ideals. The great gain that England received through the immigration of the Huguenots* would be insignificant to what she would derive from an annual addition of a few hundred children of the classes *W* and *X*. I have tried but not yet succeeded to my satisfaction, to make an approximate estimate of the worth of a child at birth according to the class he is destined to occupy when adult. It is an eminently important subject for future investigators, for the amount of care and cost that might profitably be expended in improving the race clearly depends on its result." (p. 528.)

Thus far it will be clear to the reader that all that Galton does is to assert and assert with truth that in any scale of civic worth, whether it be one of brains or energy, artistic power or skill, the classes *W* and *X* are of the highest value to a nation, and should be multiplied if possible, the classes *t*, *u*, *v* and below are undesirable, and should be decreased if feasible. It is difficult to see how anyone can deny this, for by the very definitions of those classes they are the best and the worst in the community.

Galton now passes to "the descent of qualities in a population." Here he makes use of the conception of regression as he has discussed it in his *Natural Inheritance*, and makes the parental correlation one-third. As in that work he indicates with a diagram how a population reproduces itself. The same criticism may be made here as earlier on our pp. 18, 23 and 65, namely in the first place the parental correlation is actually much higher than he assumes it, and secondly he supposes the ancestors of the parents in all cases to be mediocre, whereas these ancestors will most probably deviate from mediocrity in the same direction as the parents themselves do. Luckily these slips do not invalidate his conclusions, for, if corrected, his case for obtaining *V*-class offspring most economically by encouraging parentage in *V*-, *U*-, or *T*-class individuals is greatly strengthened. If the reader will bear in mind that Galton's statements owing to the above reasons give results far less favourable than they should be to *V*-class parents, we need not hesitate to cite his sentences on p. 531:

"Of its [the *V*-class in new generations] 34 or 35 sons, 6 come from *V* parentage, 10 from *U*, 10 from *T*, 5 from *S*, 3 from *R*, and none from any class below *R*; but the number of the contributing parentages has also to be taken into account. When this is done, we see that the lower classes make their scores owing to their quantity not to their quality, for while 35 *V*-class parents suffice to produce 6 sons of the *V*-class, it takes 2500 *R*-class fathers to produce 3 of them. Consequently, the richness in produce of *V*-class parentages is to that of the *R*-class in an inverse ratio, or as 143 to 1. Similarly the richness in produce of *V*-class children from parentages of the classes *U*, *T*, *S*, respectively, is as 3, 11.5 and 55 to 1. Moreover nearly one-half of the produce of *V*-class parentages are *V* or *U* taken together, and nearly three-quarters of them are either *V*, *U*, or *T*. If, then, we desire to increase the output of *V*-class offspring, by far the most profitable parents to work upon would be those of the *V*-class, and in a three-fold less degree those of the *U*-class." (p. 531.)

Here we see Galton fully cognizant of the solution of the paradox which nearly thirty years later was still troubling the non-statistical mind of Professor Leonard Hill †.

* This is an illustration often used by Galton, e.g. in his Presidential Address to the Demographic Congress, 1891, and in the *Jewish Chronicle*, July 30, 1910.

† See this volume, p. 27.

STANDARD SCHEME OF DESCENT

	-3Q	-2Q	-Q	0	+Q	+2Q	+3Q	
Either Parent's Grade	u & under	t	s	r	R	S	T	U & over
Number in each	21.5	67.2	161.3	250	250	161.3	67.2	21.5
Distribution of Mid-parents for 1000 pairs with assortative mating 2804 and midparental correlation .7907 as for stature in Man. Each pair one male child.								
Regression of Midparental to Filial Centres.								
Scale of Total Filial Variability.	-3Q	-2Q	-Q	0	+Q	+2Q	+3Q	
21.5 Children of u	9.0	8.5	3.5	0.5	0.0	0.0	0.0	0.0
67.2 Children of t	7.6	23.1	25.7	9.6	1.2	0.0	0.0	0.0
161.3 Children of s	3.3	24.5	62.9	53.8	15.3	1.4	0.1	0.0
250 Children of r	0.5	8.8	52.6	103.8	68.3	14.9	1.1	0.0
250 Children of R	0.0	1.1	14.9	68.3	103.8	52.6	8.8	0.5
161.3 Children of S	0.0	0.1	1.4	15.3	53.8	62.9	24.5	3.3
67.2 Children of T	0.0	0.0	0.0	1.2	9.6	25.7	23.1	7.6
21.5 Children of U	0.0	0.0	0.0	0.0	0.5	3.5	8.5	9.0
SUMS	20.4	66.1	161.0	252.5	252.5	161.0	66.1	20.4

Modified from Galton's original scheme by taking better numerical values for stature in Man, and the assortative mating not perfect.

Fig. 43.

Next Galton refers to the important fact that in each class of a community there is a strong tendency to intermarriage; this not only produces a "marked effect in the richness of brain-power of the more cultured families" but further an effect of another kind in the lowest stratum of civic worth. After citing Charles Booth on this "handful of barbarians*," Galton proceeds as follows:

"Many who are familiar with the habits of these people do not hesitate to say that it would be an economy and a great benefit to the country if all habitual criminals were resolutely segregated under merciful surveillance and peremptorily denied opportunities for producing offspring. It would abolish a source of suffering and misery to a future generation, and would cause no unwarrantable hardship in this." (p. 532.)

Galton, in his scheme of Standard Descent on p. 529, makes the assortative mating coefficient perfect. I have replaced it by one [see the opposite page] in which that coefficient has the observed value for stature. He has also supposed his filial arrays to regress from the midpoints of the parental blocks instead of from their means, and used a value lower than I have adopted for the filial regression. I think my diagram emphasises the conclusions he has drawn above. The fact that the population does not reproduce itself absolutely is due to grouping into blocks instead of dealing with a continuous distribution.

The following section is headed *Diplomas* †. Galton considers, and probably correctly, that there would not be a serious difficulty, if a strong enough desire were felt, in picking out young men whose grade was of the *V*, *W* or *X* order. He points out that at any great university the students are in continual competition in studies, in athletics and in public meetings, and that thus their faculties are well known to their tutors and associates; he remarks that civic worth may take various forms, and a considerably high level both intellectually and *physically* should be required as a qualification for candidature. Galton considers that when a limited number had thus been selected they "might be submitted in some way to the independent votes of fellow students on the one hand and tutors on the other whose ideals of character and merit necessarily differ." Finally he would have an independent committee, who would examine the candidates personally and consider the favourable points of their family histories, making less of the unfavourable points, unless they were "notorious and flagrant," because of the difficulty of ascertaining the real truth about them—a view which is perhaps not wholly to be commended. As examples of successful working of such committees Galton cites the selections made by scientific societies, including, perhaps, the award of their medals, "which the fortunate recipients at least are tempted to consider judicious‡" (p. 533).

* Of this *A*-class Charles Booth wrote very curiously: "It is much to be desired and it is to be hoped that this class may become less hereditary in its character; there appears to be no doubt that it is now hereditary to a very considerable extent." This seems to be a misuse of the word "hereditary."

† The proposal for diplomas or certificates for eugenically fit young people was first made by Galton in 1873; see our Vol. II, pp. 120-1.

‡ The reader may be reminded that Galton was to receive the Huxley medal at the conclusion of this lecture before the Institute.

Galton next turns to the selection of women which he apparently considers harder than that of men students, because they are fewer. He would lay stress on their athletic proficiency and on their capacity to pass a careful medical examination, and he would pay more attention to their hereditary family qualities, under which he includes those of fertility and prepotency.

This idea of diplomas may raise a smile, but experience has shown the present writer its feasibility, when public opinion is ripe for it. In any university the anthropometric laboratory which tests some 25 or 30 physiological, mental and physical characters, the eugenics laboratory which studies family pedigrees, the academic examinations and the numerous athletic competitions could in combination, if guided wisely, place university students into classes graded sufficiently finely for Galton's aims. I believe there would be no greater difficulty and considerably more accuracy than was reached during the Great War in grading conscripts into *A*, *B* and *C* classes and their subdivisions. But having admitted the possibility of at least approximately selecting our promising youths* can we be certain of their subsequent performance? This is the subject of Galton's next section.

He remarks on the real difficulty of the problem whether a classification in youth would be a trustworthy forecast of qualities in later life, but states that for eugenic purposes this classification of the relatively young is essential:

"The accidents that make or mar a career do not enter into the scope of this difficulty. It resides entirely in the fact that the development does not cease at the time of youth, especially in the higher natures, but that faculties and capabilities which were then latent subsequently unfold and become prominent. Putting aside the effect of serious illness, I do not suppose there is any risk of retrogression in capacity before old age comes on. The mental powers that a youth possesses continue with him as a man, but other faculties and new dispositions may arise and alter the balance of his character. He may cease to be efficient in the way of which he gave promise, and he may perhaps become efficient in unexpected directions.

The correlation between youthful promise and performance in mature life has never been properly investigated †. Its measurement presents no greater difficulty, so far as I can foresee, than in other problems which have been successfully attacked....Let me add that I think its neglect by the vast army of highly educated persons who are connected with the present huge system of competitive examinations to be gross and unpardonable. Neither schoolmasters, tutors, officials of the universities, nor of the State department of education ‡, have ever to

* It will be seen that the lecturer does not deal with the equally, perhaps more, important classification of other social grades, for example craftsmen and factory workers.

† E. Schuster, the first Galton Research Fellow, broke ground in this direction in his paper in the *Eugenics Laboratory Memoirs*, No. III, "The Promise of Youth and the Performance of Manhood," but the subject demands the treatment of still ampler material.

‡ Some years ago our Civil Service Examinations—the most elaborate system of State marking—were analysed in the Biometric Laboratory, not only with a view to testing the very empirical system of marking therein adopted, but also of ascertaining whether the marks thus settled were a real criterion of relative ability. The sole additional data needed were appreciations of success in State service after a period of 20 or 25 years. At first one believed salary might be such a test, but it was soon clear that other factors than ability were liable to determine salary. A control which I proposed, namely a classification in five classes of success, the judgment to be made by those acquainted with the inner working of the several offices (and to be treated as strictly confidential as to the individual), was at first accepted, but later rejected. Meanwhile the Government appears to have no proof—which must of course be statistical—either that its system of marking is a real measure of relative ability, or that the individuals thus selected fulfil in manhood the promise of their youth.

my knowledge taken any serious step to solve this important problem, though the value of the present elaborate system of examinations cannot be rightly estimated until it is solved." (pp. 533-4.)

Here Galton's judgment must appeal to every thoughtful man. Educational methods both in teaching and examination are put into practice on the balance of opinion in committees, or even by the arbitrary will of particular headmasters, and when the system is developed no attempt is made to determine statistically whether it really achieves what it professes to do. The preparatory schools prepare for the public schools' examinations, the public schools are again in their teaching controlled by the examinations on which the universities distribute their prizes, and finally distinction in the academic graduation examinations is an all-important factor in many lucrative appointments. Our educational system may be the very best available, as apparently its administrators believe it to be; but public confidence in it would be based on a firmer footing if those administrators would occasionally take stock and prove to us that the promise of youth has been fulfilled in adult performance. We debate and we legislate, we educate and we examine—and never take the trouble to inquire after a few years whether the results we aimed at have been achieved!

Galton next turns to the question of the augmentation of favoured stock. It is clear that the improvement of the stock of a nation depends on our power of increasing the productivity of its best members. He considers this of more importance than repressing the productivity of the worst stock; he does not give his reasons for this view, possibly he holds the production of one superman to be in the long run more profitable to a nation than the repression of fifty subhumans; it is better to spend all available funds in the production of men of outstanding civic worth, rather than in the reduction of the number of undesirables. Galton's main proposal certainly would involve considerable expense; it is that his youths and maidens, selected for all types of outstanding civic worth, should be put under conditions where early marriage is feasible and large families are not detrimental to success. He holds that with able and cultured women in particular there might be a reduction in the age at marriage from 28 or 29 to 21 or 22, thus prolonging marriage by seven years. This would not only save from barrenness the earlier part of the childbearing period of these women, but would shorten each generation by some seven years. Galton considers that it is no absurd idea that outside influences should hasten the age of marriage or lead the best to marry the best. "A superficial objection is sure to be urged that the fancies of young people are so incalculable and so irresistible that they cannot be guided." So they are—in the exceptional case which only proves the contrary rule*. But the anthropologist is only too familiar with the fact that marriage is the most custom-ridden institution of humanity, and the variations in its customs are as wide as the races of mankind. At least 95% of men and women marry not only according to the custom of their nation, but according to the habits of

* Galton cites as such the lady who scandalised her domestic circle by falling in love with the undertaker at her father's funeral and insisting on marrying him!

the small section of it to which they belong; the agricultural lad and lass early and within their district; the cultured man and woman late and yet within their own circle.

"An enthusiasm to improve the race would probably express itself by granting diplomas to a select class of young men and women, by encouraging their intermarriages, by hastening the time of marriage of women of that high class, and by provision for rearing children healthily. The means that might be employed to compass these ends are dowries, especially for those to whom moderate sums are important, assured help in emergencies during the early years of married life, healthy homes, the pressure of public opinion, honours, and above all the introduction of motives of a religious or quasi-religious character.

"Indeed an enthusiasm to improve the race is so noble in its aim that it might well rise to the sense of a religious obligation. In other lands there are abundant instances in which religious motives make early marriages a matter of custom and continued celibacy to be regarded as a disgrace, if not a crime. The customs of the Hindoos, also of the Jews, especially in ancient times, bear this out. In all costly civilizations there is a tendency to shrink from marriage on prudential grounds. It would, however, be possible so to alter the conditions of life that the most prudent course for an X-class person should lie exactly opposite to its present direction, for he or she might find that there were advantages, and not disadvantages in early marriage, and that the most prudent course was to follow their natural instincts."

When Galton comes to the consideration of "Existing Agencies," we are bound to admit how few endowments of real eugenic value exist at present. Galton suggests what might be done rather than what is already available. With an annual expenditure of £14,000,000 on charities might not more be achieved in producing the healthy fit than in tending the unhealthy weak? How much of this huge charitable expenditure may not really be opposed to eugenic doctrine in its effects? Galton refers to endowments by scholarships and fellowships, but does not say that their present length of tenure is inadequate for his purpose; he thinks that wealthy men might be proud to befriend poor but promising lads without the patron being "a wretch who supports with insolence and is repaid by flattery." He commends the wise landlord of a large estate who builds healthy cottages and prides himself upon having them occupied by a class of men markedly superior to those in similar positions elsewhere.

"It might well become a point of honor, and as much an avowed object, for noble families to gather fine specimens of humanity around them as it is to procure and maintain fine breeds of cattle, etc., which are costly but repay in satisfaction." (p. 537.)

Our author has his Utopias, as many men have had with less scientific insight behind them. He dreams of settlements or colleges where promising young couples might be provided with healthy and convenient quarters. "The tone of the place would be higher than elsewhere on account of the high quality of the inmates, and it would be distinguished by an air of energy, intelligence, health and self-respect, and by mutual helpfulness." He dreams again his dream of 1873* of a great society with ample funds recording the abler of every social class, seeing to their intermarriage, and establishing personal relations between them.

But while he dreams he realises that the first thing is to justify a crusade in favour of race-improvement; to show step by step that it is both from the

* See our Vol. II, pp. 119-122. He dreamt it again in the Utopia he described in the last few months of his life: see the letters of the autumn of 1910 below.

scientific and the practical standpoint possible; to fill up by research the gaps in our ignorance and make every stepping-stone safe and secure. He would be content if his lecture justified men "in following every path in a resolute and hopeful spirit that seems to lead towards that end." And he concludes:

"The magnitude of the inquiry is enormous, but its object is one of the highest man can accomplish.... We cannot doubt the existence of a great power ready to hand and capable of being directed with vast benefit as soon as we shall have learned to understand and apply it. To no nation is a high human breed more necessary than to our own, for we plant our stock all over the world and lay the foundation of the dispositions and capacities of future millions of the human race." (p. 538.)

Thus Galton concludes the second Huxley Lecture of the Anthropological Institute; it is possibly the only one of the series which is destined to live, for it founded a new science, which in truth carried with it the germs of a great future social movement. But the seed fell on barren soil, it found no echo in the researches of British anthropologists, and the lecture, perhaps the most weighty paper their Institute had heard, was never fully published in their Journal. It attracted more attention and bore ampler fruit in America than in this country.

Nothing daunted Galton determined to appeal to a wider public and another class of mind. From now on he made it his chief purpose to spend his remaining years and energies in teaching the public that they had to take Eugenics as seriously as any other branch of science with practical applications.

It must not be supposed, however, that Galton's devotion of his remaining years to Eugenics cut him off entirely from other interests and from his habitual helpfulness to other allied causes. I find that the letters interchanged between us during the years 1900 to 1902 turn largely on the foundation of *Biometrika*, and it is pleasing to recall the sympathy expressed and the help which the Master's letters in those days of stress were to Weldon and myself, his disciples. Unfortunately it is not possible to understand the setting of Galton's letters or the frank and generous relationship between the older man and his lieutenants without publishing certain letters of the latter, which maintain the thread of the narrative. My own correspondence with Francis Galton is scattered over nineteen years, and only small portions of it can be published in this chapter. I shall select here a portion from the correspondence for the years 1900-1902, which, we must remember, were marked for Galton by (i) the foundation of *Biometrika*, (ii) the delivery of the Huxley Lecture, (iii) the award of the Darwin Medal, and (iv) the election to an Honorary Fellowship at Trinity College, Cambridge.

The following letters bearing on these points may first be cited as throwing light on parts of that correspondence:

INNISFAIL, HILLS ROAD, CAMBRIDGE. 24 June 1901.

MY DEAR MR GALTON, I have been commissioned by the Council of the Anthropological Institute to ask whether you would do us the honour to deliver the Huxley Lecture this autumn or early winter, and at the same time to receive the Huxley Medal.

We would like in this way to emphasise our appreciation of the value of your researches, which have placed biological data on a prime mathematical basis. You have been the pioneer in the Mathematical School of Evolution, and Anthropology has benefitted enormously, not only by your investigations, but by those which you have directly or indirectly instigated and inspired. Who then is better fitted to discourse to us than a Pioneer Investigator in one corner of that field of which in other departments Huxley was a brilliant exponent?

We sincerely trust that you will add another self-denying good deed for the sake of Anthropology, and will favour the Institute, and benefit our Science, by acceding to our urgent request.

Believe me, my dear Mr Galton,

Yours most faithfully, ALFRED C. HADDON.

This letter shows a real appreciation of Galton's services to Anthropology, but, as I have indicated, his lecture found no response in the writings of English anthropologists.

In announcing the award of the Darwin Medal to Francis Galton on Dec. 1, 1902, Sir William Huggins said it was conferred

"for his numerous contributions to the exact study of heredity and variation contained in *Hereditary Genius*, *Natural Inheritance* and other writings. The work of Mr Galton has long occupied a unique position in evolutionary studies. His treatise on *Hereditary Genius* (1869) was not only what it claimed to be the first attempt to investigate the special subject of the inheritance of human faculty in a statistical manner and to arrive at numerical results, but in it exact methods were for the first time applied to the general problem of heredity on a comprehensive scale. It may safely be declared that no one living had contributed more definitely to the progress of evolutionary study, whether by actual discovery or by the fruitful direction of thought, than Mr Galton."

And, now the letter which Francis Galton valued more than all! It runs:

TRINITY COLLEGE, CAMBRIDGE. Nov. 14, 1902.

MY DEAR FRANK, Many happy duties have come to me in my life, but few happier than that of now informing you, by the direction of our Council, that we have today elected you an Honorary Fellow of the College under the provisions of our Statute XIX, as a "person distinguished for literary and scientific merits."

We are electing at the same time Mr Balfour, Sir William Harcourt, Lord Macnaghten and Professor Maitland. Our other Honorary Fellows, since the deaths of Bishop Westcott and Lord Acton, are Lord Rayleigh and Sir George Trevelyan.

Need I say how it delights me to think that all your long and brilliant services in the cause of many a science should again link you in the later years of your life with the College to which, as I know, you have always been so loyal?

Believe me, very affectionately yours, H. MONTAGU BUTLER.

Can you kindly let me know by Telegraph whether you accept? I should like, if possible, to announce the five Fellowships *together*.

Since writing the above I have just seen the award of the Darwin Medal! Very delightful.

When a man is young, honours are a powerful incentive to further work, and as the years go by they test the judgment of those who conferred them. When a man is old—Galton was 80 years of age, and the wider world had long pronounced its judgment—honours mean far less to him, and need little exercise of judgment on the part of the givers*. There is a form of honour,

* Putting aside membership of learned societies at home and abroad and the holding of offices therein, I may note the following honours conferred on Galton: Gold Medal, Royal Geographical Society, 1853; Silver Medal, French Geographical Society, 1854; Royal Medal of Royal Society, 1886; Officier de l'Instruction publique de France, 1891; D.C.L. Oxford, 1894;

however, which gives most Englishmen intense pleasure. They feel bound, in a way that many foreigners find it difficult to understand, to their school, college, or university. These institutions have in many cases fascinating traditions, stately buildings and beautiful environment; they act on their students and inmates at a period when their minds are most impressionable, when they are learning to understand the value of friendship; when they first begin to realise all that life may mean for them. This is peculiarly true in the case of youths like Francis Galton who reach the free atmosphere of a University without the background of a great public school behind them. Too many public school boys miss half the joy of their undergraduate days by holding too tightly to their school traditions and friends, so that the College or University appears to them chiefly as a club where they can strengthen old associations. With Galton it was different, like Columbus he discovered the wonders of a new world, and what was largely due to his own mental growth he attributed to his College, to the intellectual and physical environments it provided; and, as so many have done, he felt a love for it, instinctive, like that we feel for the mother who reared us, or for our country. Such love is difficult to defend on rational grounds; the personnel of a college may be as "dull as the pictures which adorn their halls," our fellow-students may be mediocre—but blessed be the man unknown who put those two words together, *Alma Mater*, and applied them to the communal homes of our youth, those ever-verdant pastures, that we always look back to from the dusty highways of later life! Their honours are what we value most, even if their worth be little esteemed by the outer world;—an emotion no doubt of the heart, not a demand of the head, yet there are times when Rousseau gives greater delight than Voltaire. And the octogenarian was moved as he had scarcely been by other honours, much as his simple modest nature always rejoiced in any recognition, however long, as it seemed to us outsiders, postponed. Thus Galton wrote to his sister Emma about the Darwin Medal:

HÔTEL DES ANGLAIS, VALESCURE (VAR), FRANCE. Nov. 14, 1902.

You are so sympathetic that you will be glad to know that the Royal Society has awarded me the Darwin Medal for my "numerous contributions to the exact study of Heredity and Variation." It was established some few years ago, and is awarded biennially (or is it triennially) without regard to nationality. Grassi, the Italian, got it last time for his discovery of the life history of eels, whose early life had puzzled zoologists from before the days of Aristotle onwards. He found that some creatures that were fished up from the Straits of Messina (Sicily) were young eels and that eels always go to *deep sea* waters to breed.—Well, I am very pleased except that I stand in the way of younger men. All well, except that my cough plagues me at night, a little before daybreak. No mosquitoes here. We are the only people in the hotel.

Ever affectionately, FRANCIS GALTON.

Wallace, Hooker, I think, and Karl Pearson are, besides Grassi, the previous medallists.

Hon. Sc.D. Cambridge, 1895; Linnean Society Medal (Darwin-Wallace Celebration), 1908; Knighthood, 1909; Royal Society, Copley Medal, 1910; and those recorded above. All, with the exception of the Geographical Medals, were conferred when Galton was well over 60 years, and in some cases over 80!

But about his *Alma Mater* he wrote:

HÔTEL DES ANGLAIS, VALESCURE, PRÈS ST RAPHAEL (VAR), FRANCE. Nov. 16, 1902.

DEAREST EMMA, Your letter has just come with the 2 extracts. Thank you much; I was sure that you and Bessy and Erasmus would all be glad to hear of the Darwin Medal. But there is even more to tell, of even yet more value to myself. They have elected me Honorary Fellow of Trinity College, Cambridge, which is a rare distinction for a man who has not been previously an ordinary fellow, or who is not a professor resident in Cambridge. The beautifully conceived and worded letter of Montagu Butler, the Master of Trinity, of which Eva has made a copy for you to keep, will explain much of this. Mr Balfour was, I think, a fellow, anyhow he was one of the most brilliant men of his year. Sir W. Harcourt and Lord Macnaghten were fellows, so I presume was Maitland who is a resident professor. Lord Acton was a professor. Sir G. Trevelyan was 2nd classic of his year, but did not wait long enough in England to gain his fellowship. It was given him after his successful administration as Irish Secretary. Bishop Westcott was of pre-eminent reputation as a theologian and as a classic, and had been an ordinary fellow. So had been Lord Rayleigh.

So I am in very good company indeed. Is it not pleasant? This is a sort of recognition I value *most* highly. All the more so, as I did so little *academically* at Cambridge, in large part owing to ill health. But I seem to owe almost everything to Cambridge. The high tone of thought, the thoroughness of its work, and the very high level of ability, gave me an ideal which I have never lost.

So much egotistically. I am getting much stronger here, and have made the discovery that much of my asthma has been due to warm and overcarpeted rooms. Mine here I have now had cleared of carpet and *underlying straw*. It feels so much purer and wholesomer. The first night after it was done I had no asthma at all. Looking to past experiences, I now see how commonly warm and carpeted rooms have been associated with my asthma, notably the drawing room of the Athenaeum Club, where I can rarely sit 10 minutes without beginning to cough. I am planning the taking up of carpets in my drawing, dining, bed and dressing rooms at home, and varnishing and staining the floors. I have two uncarpeted rooms there already where I have long noticed that I cough less than elsewhere (the bathroom and my workroom*).

The weather has been delicious here this morning. I took a good 4 miles walk without being tired, which is far in advance of what my powers were during the past summer. How I wish you† could get up and take walks too! We have a few friends already come back....

Bessy's journeyings for meals on account of kitchen repairs at her own house are amusing. So is V... B... 's consignment of *beetles*!

Loves to Bessy, Erasmus and all. What are Erasmus' walking powers now when at his best? How many miles does he think he could manage†?

Eva sends her love [here the handwriting changes]—and you will be glad to hear that Uncle Frank is looking remarkably well; this place has done a great deal for him mentally and physically; he can walk and eat and sleep like any ordinary person, but he does not present a very handsome appearance having a head still spotted with about 36 remaining bites from the mosquitoes of Hyères. We are so happy here, yr. affect. EVA. [Galton concludes] So much from Eva, who sketches and paints assiduously.

Ever affectionately, FRANCIS GALTON.

A characteristic letter showing two sides of Francis Galton's feelings, towards his *Alma Mater* and towards his "sibship." One further letter

* The "workroom" at Rutland Gate was a very depressing room, with a single window looking into a well or high-walled court. On deal shelves were placed boxes of pamphlets and papers; it gave one the impression of a store-room rather than a study. I think Galton chiefly worked, when on the ground floor at a writing table at the dining-room front window and when on the first floor at an oak bureau in the drawing-room.

† Francis was now 80, Erasmus 87, Emma 91 and Bessie 94!

concerning these matters may be printed here. It bears witness to the widespread admiration and affection felt for Francis Galton*.

TRINITY COLLEGE, CAMBRIDGE. 19 November, 1902.

MY DEAR MR GALTON, It was only today I heard, with very great pleasure, that your old College has done itself the honour of asking you to become one of its Honorary Fellows. We are proud of the distinction which you confer on the College, and we trust that you will not refuse to accept this mark of our sense of the great services you have rendered to science. To me the act of the College gives a personal pleasure, for I shall never forget your kindness to me at a critical time of my life, and I am happy and proud to think that I have enjoyed the privilege of your friendship ever since.

Let me take this opportunity of congratulating you on receiving the Darwin Medal. It is a high distinction, and I am sure you have richly deserved it.

Believe me, dear Mr Galton,

Yours most sincerely, J. G. FRAZER.

As I have said on p. 235 the current of Galton's thoughts in these years and his strong affection will be best made clear to the reader if I print here a small selection of the correspondence which passed between us in the years 1900-1902. The letters indicate Galton's essential generosity of mind, the close terms of intimacy he was on with Weldon and myself,—who were proud to feel ourselves in some measure his lieutenants,—and the keen interest he had in the early struggles of *Biometrika*. The feeling of the younger men among us, who got into close touch with Francis Galton, was something like that of Aristides to Socrates:

"I always made progress whenever I was in your neighbourhood, even if it were only in the same house, without being in the same room; but my advancement was greater if I were in the same room, and greater still if I could keep my eyes fixed upon you." It was not Galton's power of solving problems: suggestive as he was, his analysis often lacked power to cope with them. It was the atmosphere he cast round every scientific question; he carried his intimates into a rarefied air, where the one aim was to reach the goal of truth, not heeding who should get there first, or who should tell the tale of its discovery. I think the like conception expressed in different words is provided by Mrs Sidney Webb†:

"Owing to our [the 'Potter girls'] intimacy with Herbert Spencer we were friendly with the group of distinguished scientific men who met together at the monthly dinner of the famous 'X-Club.' And here I should like to recall that among these scientists, the one who stays in my mind as the ideal man of science is, not Huxley or Tyndall, Hooker or Lubbock, still less my guide, philosopher and friend Herbert Spencer, but Francis Galton whom I used to observe

* Sir James Frazer in kindly granting me permission to print his letter remarks "that the 'critical time of my life' referred to in my letter was in 1885, when my Trinity Fellowship would in the ordinary course have expired and the question of renewal came before the College Council. In the same year, shortly before, at Mr Galton's suggestion, I had read my first anthropological paper ('On some burial customs as illustrative of the primitive theory of the soul') before the Anthropological Institute, with Mr Galton as President in the chair, and when the question of the renewal of my Fellowship was raised shortly afterwards, I believe that Francis Galton and my ever-lamented friend Robertson Smith used their powerful influence to ensure the renewal and were successful. It was indeed a turning point in my life, and I shall never cease to be grateful to the two friends who stood by me at that critical time.....
...He [Galton] was indeed an admirable and lovable man from every point of view."

† Beatrice Webb, *My Apprenticeship*, pp. 134-5, 1926.

and listen to—I regret to say without the least reciprocity—with wrapt attention. Even to-day I can conjure up from memory's misty deep, that tall figure with its attitude of perfect physical and mental poise, the clean shaven face, the thin compressed mouth with its enigmatical smile, the long upper-lip and firm chin, and as if presiding over the whole personality of the man the prominent dark eyebrows from beneath which gleamed with penetrating humour, contemplative grey eyes. Fascinating to me was Francis Galton's all-embracing, but apparently impersonal beneficence. But to a recent and enthusiastic convert to the scientific method, the most relevant of Galton's many gifts was the unique contribution of three separate and distinct processes of the intellect: a continuous curiosity about and rapid apprehension of individual facts, whether common or uncommon; the faculty for ingenious trains of reasoning; and more admirable than either of these, because the talent was wholly beyond my reach, the capacity for correcting and verifying his own hypotheses by the statistical handling of masses of data, whether collected by himself or supplied by other students of the problem."

The following letters may serve to illustrate and deepen the above very admirable characterisation by a skilful artist in words!

(5) *Selected Correspondence between Galton and his biographer, illustrating the years 1900–1902.*

TEWFIK PALACE HOTEL, HELOUAN, CAIRO. *February, 1900.*

DEAR PROF. K. PEARSON, Thank you heartily for letting me see, as a New Year's gift, the important proof sheets. By much hammering, the bad part of the "law*" will be knocked out of it and the good, if any, will remain. You know probably that India ink (1) in water and common ink (2) may look alike, but if you pass the former through a filter of blotting paper the water alone comes through; not so with regard to ink. Now a mixture of (1) with water is not properly a blend, but a mixture with (2) is. When the particles in any case of "particulate" inheritance are small and *independent*, I do not see any sensible difference (within reasonable limits) between the behaviour of the two. But now comes in the consideration which I take to be the great problem, and that which as I conceive lies at the bottom of *stability of type*, viz.: regarding the imperfectly explored facts of group-correlation. Let, in a given "stirp," a, b, c, \dots be *classes* of elements which develop in that order, the several classes consisting of $a_1, a_2, \dots, b_1, b_2, \dots, \&c.$ varieties. Now we find that a certain lineament, or trait, $a_r, b_s, c_t, \&c.$ tends to be inherited. If $a, b, c, \&c.$ were independent, the probability against the above particular combination would be enormous, whereas it is found to be frequent. What then is the cause? or, in default of knowing the cause, how can we represent to ourselves the character of the correlation? If a, b, c are developed in that order of succession, the particular and not improbable sequence of a_r, b_s must make the next step to c_t far more probable than if b_s had been preceded by say a_n or some other variety of a .

There must be an accumulating correlation of some kind. But how if $a, b, c, \&c.$ are simultaneously developed? Here I fail to make any picture to my mind of the way in which the needed group-correlation acts. I often watch the family traits in a party at church, trying to find out the beginnings and the ends in each inherited lineament of resemblance whether to the parents or to one another. They are usually indefinite, I think. My servant writes me word that your "Grammar of Science" has just arrived at Rutland Gate. Thank you sincerely. I must wait till my return, to read it.

We have had a very interesting and healthful journey to Wady Halfa and back, including a week's stay with Flinders Petrie at his diggings. The climate here near Cairo is far from being always benign. There are days of stormy wind with dust, and occasional down-pours of rain. I can't make up my mind as to the best places for an invalid—certainly neither Cairo nor Luxor. I have had two pleasant days in the desert with Prof. Schweinfurth the famous traveller.

I trust you have pulled through the wretched English winter fairly well.

Very sincerely yours, FRANCIS GALTON.

I hope to be back about Mid May.

* The Law of Ancestral Heredity, especially its application to alternative inheritance.

42, RUTLAND GATE, S.W. June 6, 1900.

DEAR PROF. KARL PEARSON, On returning from a six months absence in Egypt and Greece, I found your valuable *Grammar of Science* on my table, and am reading it straight through at the rate of about an hour a day, with admiration at your thoroughness. It takes some time, as I find, to pick up dropped threads, so I have as yet little leisure.

I wonder if you have worked out the relationship between those who are cousins in a *double degree*, I mean the issue of the marriages in which 2 brothers have married 2 sisters. Their ancestry from Grandparents upwards, is identical. I should be very curious to learn what value you would assign to it in your "table of collateral heredity," p. 481 of the book.

I hope the past cruel winter in England has not hurt you. Weldon, whom I saw last week, spoke favourably of your health.

My tour has done me a world of good, besides being extremely interesting and pleasant.

Very sincerely yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. Dec. 13, 1900.

MY DEAR MR GALTON, Your kind letter was very welcome tonight. I tried some year ago to sound people with regard to a journal of pure and applied statistics, but found a feeling pretty general that it might injure the R. S. S. Journal, although the sort of memoirs I had in view would I think not find a place in that journal. On the other hand I know a good many papers for which I hardly see a place and there is increasing material being gathered in Germany and America which is lost among masses of purely zoological papers or published in inaccessible proceedings. I think if a journal could survive its first two or three years there is a future for it of great service.

The thing came to an issue just now owing to doings at the Royal. My paper on Homotyposis was sent for some reason to Bateson as referee—he chose to tell me so himself, and also to tell me that he had written an unfavourable report. He came to the R.S. at the reading and said there was nothing in the paper—that it was a fundamental error to suppose that number had any real existence in living forms. That this criticism did not apply to this memoir only but to all my work, that all variability was differentiation, etc., etc.

Now all this may be quite fair criticism, but what is clear is that if the R.S. people send my papers to Bateson, one cannot hope to get them printed. It is a practical notice to quit. This notice applies not only to *my* work, but to most work on similar statistical lines. It seems needful that there should be some organ for publication of this sort of work and talking it over with Weldon, he drew up the prospectus, I gave a name,—the "K" was mine (K. P. not C. P.),—and we determined to see what amount of cork was forthcoming to float such a project. I don't think much can be done if we don't get 150 to 200 promises. But can we?—I fear not.

Yours always sincerely, KARL PEARSON.

42, RUTLAND GATE, S.W. Jan. 2, 1901.

MY DEAR PROF. K. PEARSON, Here is the MS. on Eye Colour, which I am delighted is of use to you still. I hope not to go abroad yet awhile, but it would be safer to write on the parcel when you send it back, "To await return." Tell me please, in time, whether the answers you have received relating to the new magazine or journal, are encouraging enough for a probable start.

Bateson's adverse views cannot be finally effective, being opposed to those of many other no less worthy authorities. But I presume from what you said, that they *are* effective as against the particular memoir on Homotyposis? Very sincerely yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. Jan. 7, 1901.

DEAR PROF. KARL PEARSON, Thank you much for the "Lecture." It fits in with much that I habitually think about.—I wonder if this strikes you as reasonable:—

Probably zeal for military usefulness will cause many men to be physically examined as to fitness to serve. There are also medico-physical examinations for other services. Could any sort of *Degrees* be given to those (a) who simply pass the required standard for the particular purpose, (b) to those who pass as valid for purposes of hereditary transmission.

Two other examinations exist, that might be included in the (b) set :

1. That of a Life-Insurance Co. to certify a first-class life, which includes some facts about parents and brothers, together with local inquiries by their agents. I don't know what the cost of this may be in each case, but certainly the fact of being accepted as a first-class life by any notable Life Insurance Co. is an important fact, worthy of recognition.

2. Ordinary literary examination, to show that the man is not a real stupid.

Now fancy that Degrees are offered of a V. H. T. (valid for hereditary transmission of qualities suitable to a citizen of an Imperial Country) would they meet a want, and would they help in forwarding marriages of the fittest and discouraging others in any notable degree? If a well considered answer be "yes" I suppose the action would be to write an article upon it, with plenty of solid stuff in it and then if the idea should *take*, to follow mainly the direction in which "the cat may jump." If tried, it ought to be tried at first on a small scale, that is in a small community by a self-constituted board, laying down their own conditions and giving their certificate as a "Degree." One great question is that of self maintenance when once fully started and running. I should think the cost of the mere medical and physical examination would not be beyond the powers of, say, Cambridge Undergraduates and I fancy that (always supposing the idea to catch) it might be possible to get some help from the present examining authorities in respect to the (b) condition. I mean that arrangements might be made by which an Examination by one of these should be accepted by the Certificate or Degree-giving board.

I have thought over the subject a good deal and have more to say, but unless what *has* been said above seems reasonable to persons like yourself, the supplementary remarks would be useless. Will you kindly think this over at odd times during the next 2 or 3 days? I have written about it to no one else.

There is another important point of "what severity of selection should be aimed at." A very moderate one would, I think, meet the need. Say that $\frac{2}{3}$ pass and $\frac{1}{3}$ fail. The effect on the hypothesis that the successes alone intermarry and keep up the population would roughly put the output of children in the hands of the best half of all possible married couples— $\frac{4}{9}$ ths of them. (Of course this is the rudest way of putting it; but it will do for present purposes.) If men, like cattle or Mormons, were polygamous a much severer selection would be wanted.

Very sincerely yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. Jan. 10, 1901.

MY DEAR MR GALTON, It would be a very great pleasure to me to know you were going to take the field with regard to what I am convinced is of the greatest national importance—the breeding from the fitter stocks. If one could only get some one to awaken the nation with regard to its future!—The statesmen, who really have the ear of the populace, never think of the future. They will not touch the question of coal supply nor that of fertility, and yet I am convinced these are far more important for the future existence of the nation than any question of local government, church discipline, or even technical education!—I think I told you we had nearly completed the reduction of our measurements on 1100 families, and one after another of the results confirm the higher series of values, about .5 for parental correlation, that I found from the eye and horse colour data. I shall probably not publish these results for some time, as I have half made up my mind to accept an invitation to lecture at the Lowell Institute in Boston this year and these materials would be a good basis for lectures on Heredity. But they emphasise even more emphatically than your earlier value of $\frac{1}{3}$, the opinions you have expressed on the great part played by good stock in the community. Heredity is really more intense than we supposed it to be 10 years ago. Cannot this be brought forcibly home to our rulers and social reformers?

Now the difficulty in this case seems to me to be twofold. How can you (i) stop the fertility of the poor stock and (ii) multiply that of the good? The middle classes are I take it the result of a pretty long process of selection in this country, and I believe that they alone are the classes who largely insure. Your scheme therefore would at first apply only to them, and indeed to the best of them, for the others would not care a rap for a good bill of health, any more than they do for any moral suasion. You might influence by your health degree a small percentage of the whole community, say 4 per cent., but this percentage is probably identical with those you could equally well influence by moral suasion. I mean by preaching the gospel that the stability of the nation depends upon the good stocks breeding fully and the weak exhibiting

restraint. But how are you going to get the better class workman to see that his checking the size of his family may make matters easier for him, but is at the expense of the nation's future? He is really unreachable by an assurance scheme, *unless you could attach your health degree to the proposals for old age pensions**. That appears to me a point worth thinking about. As I have said elsewhere it seems to me that only socialistic measures can touch this population question. Even if you can by moral suasion lead the better class artisans and the middle classes to see that limitation of the family may be anti-social (and I believe it might be possible) how are you going to check the unlimited production of the worse stocks? The "Neomalthusians"—as I know from sad experience—abuse any one who like myself ventures to criticise their doctrine of limitation, unless it be accompanied by the words "of the poor stocks *first*"; but this abuse is nothing to what one will arouse, if one ventures to assert that the huge charities providing for the children of the incapable are a national curse and not a blessing; that the "widow with seven children all dependent upon her, husband a clerk who died of consumption aged 35," and who seeks your aid to get her children into Reedham, is really a moral criminal and not an object for pity.

How can a health degree affect this source of rottenness? I fear hardly at all. Your only hope is to impress upon the few who really lead the nation, that the matter is one for legislation, that although we have got rid of Gilbert's Act, the workhouse and charity systems can still be sapping our national vigour, when coupled with a wide-spread neomalthusianism—due in the main to Bradlaugh—among the better working classes.

What then it seems to me we mostly need at the present time, is some word in season, something that will bring home to thinking men the urgency of the fertility question in this country. There is no man who would be listened to in this matter in the same way as yourself. You are known as one who set the whole scientific treatment of heredity going; no one has ever suspected you of being in the least a "crank," or having "views" to air. You will be listened to and it will be recognised that you write out of a spirit of pure patriotism. There is no one else, I believe, of whom this could be said, certainly no one who would be listened to in the same way. Let us have (a) known facts of heredity, (b) influence of relative fertility on national vigour, (c) actual statistics of birth rates of different stocks, and (d) proposed remedies (only, if they include the health degree, tack it on to old age pensions) brought home to those who think for the nation. Always sincerely yours, K. PEARSON.

If *Biometrika* be started Weldon and I want badly a paper however brief from you for No. 1.

7, WELL ROAD, HAMPSTEAD, N.W. *February 1, 1901.*

MY DEAR MR GALTON, I have several times planned to write and ask if I might come and see you, and now you are off before I have done so! I have been "crawling" through my work since December somehow, feeling mentally too tired to do more than get through my routine teaching and making no attempt beyond the day's necessary doings. My helpers go forward but I can only look on. I suppose one must pay eventually for all overwork, only one longs for a few more years to "finish up." Yes, I have settled on the American Lectures on Heredity and Variation for October. If any ideas on diagram-illustration occur to you, I should be very glad of suggestions. I have found a Genometer based on a suggestion of yours very useful at more than one popular lecture. It contains a gigantic lifeguardsman, a diminutive sailor and a "mean" man and illustrates the effect of any number of ancestors or collaterals of these types by means of a string working up and down. It always amuses people.

You will share my pleasure in the acceptance of the Homotyposis paper for the *Phil. Trans.* I hope we may float *Biometrika* so that one could to some extent relieve the pressure on the R.S. space, which I think is to some extent grudged. We had however only about 12 English acceptances, and we cannot venture even a first number without something like 100. We are now circularising everybody in America, Germany and Italy, but I am not very hopeful.

I suppose the Riviera is hardly a place where birds' eggs abound? I want to measure another 100 clutches of some species but hardly know which to select or where to go for it.

* [Galton wanted a medical examination such as the better insurance offices insist on extended to all classes of the nation. My suggestion was that a grading of lives was essential to a really sound national provision for sickness and old age pensions, proposals for which were then creating some stir. K. P.]

I fear that to ask for 100 thrushes or blackbirds nests in England would raise a scandal. I got much reproved for my 200 house sparrow nests last year. I trust that your journey may be a pleasant one and that you may escape the horrors of February and March, which my Wife tells me occasionally reach the South of France. You know Miss Shaen is at San Remo?—May I still keep the eye colour MS.? If you would prefer its return before you leave, just say so on a postcard. Always yours sincerely, KARL PEARSON.

7, WELL ROAD, HAMPSTEAD, N.W. *April 18, 1901.*

MY DEAR MR GALTON, I wonder if you are back from your winter journeyings. I want to tell you about the present state of *Biometrika*. We have about 60 promises of subscription, and we shall hardly get more now until the journal is definitely announced as coming out or until it has come. We have been talking over the matter with various publishers and printers, and so far the most reasonable terms seem to be those of the X— Press. Now it would be a great point to have the advertisement of this Press and the goodness of its get up, if we can. They are willing to take the journal on the same terms as they do the *Annals of Y*, which, with more expensive plates than we should think of, pays its way with some 270 subscribers. But they require a guarantee fund of £200. This they had in the case of the *Annals* and drew on pretty largely at first, but it is now refunded to the extent of £160. Whether we shall be equally successful is of course a very different matter, but I think there is no doubt that such a journal as *Biometrika* is wanted, and if we tide over the first few years, the journal will live. Weldon who was staying a few days with me this week wanted to take the whole risk on himself. This does not seem to me right. The natural thing would be for him and for me to share the risk, but with our very precarious condition at University College, this is out of the question. I can only guarantee a very modest sum. My view was that we should try and distribute the £200 about. Of course any one who subscribes may stand a very poor chance of seeing his money again, and to those to whom I have written I have said it must be looked upon as a loss until it reappears (if ever it does) as a stroke of fortune. I take it that the money would be banked and could be drawn only by joint order of Editors and Secretary of the X— Press.

Now I am writing to ask if you will aid to any extent in this proposal. I feel the less hesitation in frankly asking you because you are one of the men who I think can frankly say no, and the “no” would not affect our mutual relations.

Quite apart from this question, and I am sorry to refer to it in this letter, Weldon and I discussed two points: (1) The desirability, if you do not feel it involves you in worry and work, of getting you to join *in any way* the editorial committee. This consists at present of Weldon, myself and Davenport of Chicago, as American editor to collect material there. Of course we should be glad of any suggestion or aid you may care to give, but on the other hand we don't want to bother you with the hard work of the journal, and still less to make you in any way responsible for matter or method you might not sympathise with. (2) We want very badly to have a paper by you however long or short for our first number, a “send off” of some kind. Will you promise us this? You hardly know perhaps how much of weight your sympathy expressed in some form will carry with it, especially in America; it will be an uphill battle for some time with the biologists. Anyhow please let me know *first* your views as to my last two questions (1) and (2) and then rather more at your leisure whether you care to aid in the guarantee fund? I trust you have had a pleasant sojourn in the South. We are now having beautiful weather in Surrey. Yours always sincerely, KARL PEARSON.

HÔTEL BELLA VISTA, BORDIGHERA, N. ITALY. *April 23, 1901.*

MY DEAR PROF. KARL PEARSON, The straight-forwardness of your letter as to the probable total loss of the guarantee fund for *Biometrika*, is much more attractive to me than an enticing programme, for I like “forlorn hopes” in a good cause. I can just now spare the whole £200 and you shall have it, and I enclose the cheque, so you will be no longer bothered with that matter, and can give your spare energies wholly to starting the Journal.

As regards joining the Editorial Committee, if it could be done in a way that carried both in reality and in the eyes of the public no more responsibility and work than the position of “Consulting Physician” does in respect to a Hospital, I should be pleased to do so. Would

"Consulting Editor" *after* the names of yourself and Weldon as Editors do? Of other titles, "Referee" is almost the only one that occurs to me; probably you can suggest something. Of course a good-looking and well-printed title-page (not heavy-looking) is commercially helpful.

About writing a *short* "sending off" paper I think I could manage one on "Biometry,"—on its general aspect and principles. I have nothing serious enough in the way of original inquiry to give. Please send me a couple of copies (by return of post) of the programme, that I may better understand what may remain to be said. I trust you will see your way to make a considerable part of the contents of the Journal intelligible to those scientific men who are not mathematicians. It ought to be attractive to medical men and such like; also to statisticians of the better kind. Short notices of original work abroad always attract.

We stay here for a full week longer, I think,—and will leave address for letters that may arrive shortly after leaving. But 42, Rutland Gate will always find me in time.

Very sincerely yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *April 27, 1901.*

MY DEAR MR. GALTON, Your letter met me on my return home an hour ago. We have not any further programme printed at present than the circular I sent you some months ago of which I enclose two copies. Your letter made me very happy, partly because you so readily consented to my proposals as to editorship and giving us a "send off," partly because of the generally kind tone and sympathy it exhibited for our endeavours. As to your name as "Consulting Editor" and your proposed paper on the Aims of Biometry, these we may consider as settled, but I must consult Weldon before I reply fully as to your liberal offer. I think that he feels very much that you have done a great deal from the monetary side for biometry and that he would be unwilling to allow you to take so much of this burden on your shoulders. My view was to spread what I am unwilling until we have made trial to look upon as anything but a loss, over a number of guarantors, for I cannot carry my share of a moiety myself. But about all this I will write in a day or two when I have had an opportunity of considering the matter with Weldon. I don't propose to say what I personally feel about your readiness to aid, because it would be making into a personal kindness what I know is enthusiasm for the study of your life. I can only hope *Biometrika* will forward that, but it will have an uphill fight. Always yours sincerely, KARL PEARSON.

7, WELL ROAD, HAMPSTEAD, N.W. *April 30, 1901.*

MY DEAR MR. GALTON, I have considered the matter of the *Biometrika* guarantee fund with Weldon and his view is that we should as frankly accept your offered aid as it is frankly given. It places us in a position to survive for at least four years and I think if we can survive the risk of infantile mortality we shall live on. At any rate we shall do our best to make the thing run and supply what we are sure is a real need. We want to make the science into a really great organ of discovery. It is almost pitiable to see how good material is wasted. I was reading a few days ago a paper by an American on colonies of statoblasts in which he had measured the variability in the general population and in the fraternity or colony. He introduced what he called a coefficient of heredity = (variability in population - variability in fraternity) ÷ (variability in population), and found this to be what he called small. Then he went into long reasons why heredity should be small in a colony of statoblasts. I found on working from his own data that the fraternal correlation came out .44 or nearly *exactly what it is for stature of brothers in man*, or for their eye colour or anything else! In other words he had really demonstrated heredity in these lowly organisms to agree with its value in man and was yet searching about to show why it was so small! This is only one sample of dozens of like papers now being issued, and which must ultimately cast discredit on biometric processes, if we cannot indicate how these things ought to be worked out properly. Half the Editors' work will be to show authors *gently* how to use their own data! We will send you specimens of title-page as soon as we can. Also can you let us have your paper at a fairly early date—say before June 30—so that we may not cover in any other part of the number the same sort of ground. Further any "Notes" that occur to you on possible biometric work, or notices of books or ideas you may come across, would be very welcome. Yours always sincerely, KARL PEARSON.

7, WELL ROAD, HAMPSTEAD, N.W. *June 29, 1901.*

MY DEAR MR GALTON, I am sending you the first proof of title-page and prospectus, etc. of *Biometrika*. You see it will be a capital size for tables and plates. The Syndics of the Press, Mr Wright told us, are keen on their own shield appearing, and he added, what I think is undoubtedly true, that it is effective as an advertisement. I felt in the face of this that it was not desirable to press for our own device. Will you let me have the proof back with any suggestions that occur to you? I hope you don't object to the Quaker-like simplicity of the names on the title-page.

I should have come to talk the whole matter over with you but this is my worst time—examinations etc. Yours always sincerely, KARL PEARSON.

42, RUTLAND GATE, S.W. *Monday.*

MY DEAR PROF. PEARSON, You have arranged a capital title-page, severe in its simplicity, and the Cambridge Press symbol gives it additional weight. I quite approve. There is no note that I can see my way to contribute now. Very sincerely yours, FRANCIS GALTON.

I am just back from Cambridge, so excuse the few hours delay in reply.

7, WELL ROAD, HAMPSTEAD, N.W. *July 3, 1901.*

MY DEAR MR GALTON, I have been looking at one or two of Darwin's books to see if he anywhere emphasises *the value* of statistical inquiry. I can find nothing; and yet I feel quite certain he realised that value by undertaking, as he did, the long series of experiments in Cross and Self-Fertilisation of Plants. In his book he states that he has appealed to you for an examination of his data from the statistical standpoint and for a report. It has struck me that although that letter is not in the *Life and Letters* it might possibly have survived. Do you think you have preserved it, and if so is there any apt remark as to the need of statistical method in solving such evolution problems?—I should be very glad, if you would let me know if there is. My address after tomorrow will be Manor House, Througham, Miserden, Cirencester, Glosers. Yours always sincerely, KARL PEARSON.

42, RUTLAND GATE, S.W. *July 4, 1901.*

MY DEAR PROF. K. PEARSON, Darwin's letter has not I think survived but I recollect its terms well. They would not have helped in what you want. He began in his usual kindly and appealing way, apologising for the trouble, and implying that he had not confidence in his own power of making the best of the few "ipomaea" statistics, and then asked me to try what I could do with them. I doubt if he ever thought very much or depended much on statistical inquiry in his own work, in the sense that most members of the Statistical Society would have given to it;—though, as you know, he quotes statistical results that others had arrived at, not infrequently. Probably, or rather certainly, Frank Darwin would be the best authority on this. I am glad you have got away for a little into the country.

Very sincerely yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *July 8, 1901.*

MY DEAR PROF. KARL PEARSON, I have just spoken to Frank and to Leonard Darwin, first separately and then together. Their views about their father's attitude towards statistics are the same as mine, except that Frank's was more strongly expressed. I fear you must take it as a fact, that Darwin had no liking for statistics. They even thought he had a "non-statistical" mind, rather than a statistical one. Very sincerely yours, FRANCIS GALTON.

I have temporarily mislaid your address, so send this via Hampstead.

42, RUTLAND GATE, S.W. *Oct. 25, 1901.*

MY DEAR PROF. K. PEARSON, *Biometrika* has just come, and seems *most* appropriate in general get-up. The printing is beautiful and the size of page excellent. I heartily congratulate you. One small matter of great comfort to the possessors of a pamphlet, is to have its name printed along the back: Vol. 1. Part 1. *Biometrika* Oct. 1901. Do kindly have this done in future numbers. I have already had to write this along the back of mine as well as I could.

Herewith I send the Abstract of my Huxley Lecture—Oh! the trouble that the preparation of the lecture has given! It was so difficult to make a track free from bogholes, and to keep the stages in proportion. I hope it will further investigations by others.

I have one in view now, that I began upon some years ago, but found that enough years had not elapsed since the experiment begun to draw useful conclusions, but every year since has brought a fresh crop of data, and there ought to be enough now. It is the correlation in the Indian Civil Service between the examination place of the candidate and the value of the appointment held by him ? 20 (I forget the figure I used) years afterwards. It seems that the value of an Indian appointment is a very fair test of a man's estimated ability. Mr Tuppy, or some such odd name, wrote a capital analysis of the careers of Indian Civil Servants. I made great use of his book and could soon pick up the long-dropped threads. Nothing however could be successfully done without the cordial and confidential help of the authorities at the India Office. I dare say I may persuade them to help me again, as they did before.

I wish next Tuesday was well over. The paper will appear in full in *Nature* on Thursday.

Very sincerely yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. Oct. 25, 1901.

MY DEAR MR GALTON, Very many thanks for your kind letter. Certainly the back of *Biometrika* ought to have been and shall in future be stamped. I hope No. II may be a little more varied. Macdonell's article on "Criminal Anthropometry" will be a contrast to Garson's in the *Anthropological Journal*!—Latter's on Cuckoos' Eggs will be interesting I think. He has measured and examined nearly 300. I hope to get also the Naqada Skull measurements in, and a good many more *Miscellanea*. Still I fear we shall not be popular enough for a wide range of subscribers.

I am quite sure your lecture has been a heavy piece of work. I know nothing which tries one so much as endeavouring to put scientific results in a form that the intelligent layman can grasp. I am just in the throes of producing two popular lectures for Newcastle—one on Natural Selection, and the other on Homotyposis—and I can appreciate from your abstract what yours has cost you.

Please remember *Biometrika* for the Indian Civil paper.

I have just been dealing with the Cambridge Graduates, correlating their degree with the shape and dimensions etc. of their head and physique generally. We have the full examination record of upwards of 1000 measured individuals. So far the relationship between size or shape of head and intellectual ability seems very slight, but the work is not yet completed. It appears to confirm the view I got from skull measurements, that size has very little to do with intellectual grade.

Next we have reduced the results for pairs of brothers measured in schools, and we find that vivacity, shyness, conscientiousness etc., are correlated precisely as stature, forearm, eye colour. I think this will be when finished as complete a quantitative demonstration of the inheritance of the mental qualities at the same rate as the physical as could be required. I fancy our method of using very simple classification (Memoir VII) would suit your Indian Civil data. Yours always sincerely, KARL PEARSON.

42, RUTLAND GATE, S.W. Oct. 31, 1901.

MY DEAR PROF. K. PEARSON, It would be very pleasant if we could meet and have a talk. On Sunday our routine is Lunch-dinner at 1; Tea at 4.30; Dinner-supper at 6.45. Could you come next Sunday for 2 or more of these meals and the intermediate time? If so, please say what you would prefer.

I should doubt whether the exchange of *Biometrika* on equal terms for the Anth. Inst. Journal would be a gain to *Biometrika*, as so very few of the members of the Institute would be likely to use it intelligently.

Quere defer the matter. But do as you think best. Very sincerely yours, FRANCIS GALTON.

5, BERTIE TERRACE, LEAMINGTON. Nov. 17, 1901.

MY DEAR PROF. K. PEARSON, Bravis-is-is-imo *re* like inheritance of physical and mental!! You have made a firm foot-hold here, well worthy of all the elaboration that you have and are giving to it. What a blessed feeling it is to come to solid rock, when floundering in yielding mud. I congratulate you most heartily. I write from the country but return by Friday, if not Thursday.

There is much to be talked over, amongst the rest the possibility of giving a summary of the contents of each No. of *Biometrika*, in language that a newspaper could copy, giving the net results obtained in the papers it contains, distinguishing between statement of facts that for the present go no further, and deductions from them. If you thought this feasible, the existence of such a résumé would greatly aid the reader.

You will have before long to give a glossary and definitions of technical words, and references to the places where they were first employed. Also, a very compact account of the chief processes used would be of great service to many (with references of course). Doubtless you have in view the eventual publication of a regular text-book on statistical operations.

I wish we could meet somehow. I could easily be at home next Saturday or Sunday if you cared to fix an hour and a meal, or meals. Dinner-supper on Sunday is always 6.45 to let the cook have time to put on her best bonnet for church. Such is the sex.

Ever sincerely yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. Dec. 26, 1901.

MY DEAR MR GALTON, I have been intending for some days to send you a line of sympathy on being laid up, but I wanted to enclose a New Year's Greeting from the workers in my statistical laboratory, and I could not get it finished until this morning. I have always felt we must go into the point more fully, since you laid stress on the view that ability was correlated with the size of the head in your criticism of Dr Lee's paper. There is still a chance that extreme genius may exhibit something *abnormal* in the size of head, but I think it is now pretty clear, if we are to look upon ability as normally distributed in the population, there is only a very small, practically negligible correlation between it and either the size or shape of the head.

We propose next to find out whether there is a higher relationship between ability and health, strength and general physique, and then to test its relation to temper and moral characters, from the school data schedules.

It is a shame to send a gift and then ask for it back!—But I have not had the chance of making a copy, and I might possibly find an abiding place for it in *Biometrika* or elsewhere. Please let me have also your criticisms and suggestions.

I am sending you besides a paper by Macdonell to appear in the next number of *Biometrika*. It is rather long and full of tables, but it involves nearly 18 months stiff work and the material is of value for a number of purposes. I think it shows that for many purposes the fourfold classifications we are now making can safely replace the old laborious tables of correlation.

With the best wishes for the New Year and with the hope that *Biometrika* may not during its first year of life disappoint you badly, I am, Yours always sincerely, KARL PEARSON.

42, RUTLAND GATE, S.W. Dec. 31, 1901.

MY DEAR PROF. K. PEARSON, The New-Year gift is indeed acceptable both in itself and as evidence of your continued zeal and power of influencing others to work with you. Hearty thanks and best New-Year wishes.

The non-correlation of ability and size of head continues to puzzle me the more I recall my own measurements and observations of the most eminent men of the day. It was a treat to watch the great dome of Sylvester's head. William Spottiswoode was another of the 5 or 6 largest; so was that encyclopaedic physiologist Prof. Sharpey. That most accomplished & many-sided official, Sir John Lefevre (formerly a senior wrangler), was the largest of all. Gladstone's head, which I myself measured, was very large. Again, comparatively the other day, I was one of a deputation of physicists to the Treasury about the National Physical Laboratory and sitting behind the front row I marvelled at their skulls. Lord Rayleigh, Stokes, Lord Lister, Lord Kelvin were all remarkable partly perhaps owing to the powerful moulding of their heads, irrespective of size. A Frenchman collected the recorded weight of brains of many eminent people and published them in one of the French anthropological periodicals many years ago. They contained remarkable weights. However I can say nothing against the validity of your results.

One thing ought to be remembered, that bigness of head and sturdiness of build go together. A judge (the late Sir Wm Grove), whose large head I often measured, told me that it came



Francis Galton, about the age of 80.

before him on evidence that the hats of stablemen were markedly smaller than those of other people. He inferred that they were less intelligent; I, that stablemen are always light weights (in youth). A heavy boy would not do to exercise horses. Another of my 5 or 6 large heads was Admiral Sherard Osborn. He was very broadset. Also he was considered generally to be the ablest man of his day in the Navy and the accepted mouth-piece of reform. (He died of heart spasm while still young.)

I have been quite bad, this is by far the longest letter I have been up to for many days. I went to Brighton to shake off remains of bronchitis and brought it back increased 7-fold. What with phlegm and spasm I had a fight for it on Xmas Day, but am now mending fast. I dare not write more now or would have said something on Macdonell's paper. I wish he had seen his way to express the *magnitude* of the advantages of scattering the arrangement of the Register. One good reason for beginning with the head is that a criminal *must* have a head, but he need not have a finger or an arm—and these may be contracted.

E. R. Henry, who is now supreme over the identification department in Scotland Yard, is reclassifying the whole collection, primarily by finger-prints and secondarily only by measurements. He looks forward to abolishing measurements entirely in England, as he did in Bengal, stating that errors are more frequent than Garson thought and that they shield the culprit, whereas finger-prints cannot err. I think he overdoes the view, rather, but this is his attitude and he has the *power* to carry out his views. I was much pleased with the order and smartness he has imposed on the office. Garson's connection with it has entirely closed. He, unluckily for himself, took up a critical position towards Henry, who being his superior and a smart disciplinarian, would have none of it. If Dr Macdonell induces that vainest of men, Alphonse Bertillon, to remodel his cabinet it will indeed be a marvel.

I must rest now, with every good wish for you this coming year and for *Biometrika*.

Very sincerely yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *Nov. 2 (Sunday), 1902.*

MY DEAR KARL PEARSON, I am just off to France, arriving on Wed. the 5th at Hôtel Continental—Hyères (Var) France and staying there a week certain, afterwards according to health and weather. I will thence write again. Don't post any thing to me there later than on Saturday next the 8th. I fear it would be too risky to send Beddoe's paper, of which you spoke. Your proof, that of your latest paper which you kindly sent me, goes with me. What fertility of mathematical invention you have!

I have recently attacked the finger-print problem (of natural relationship between the various patterns) in quite a new way (no mathematics in it, however), with most promising results thus far. It would be tedious to explain, but it will give me a couple of months happy occupation while abroad at the rate of 3 hrs. a day which is now my maximum of safe performance. Good-bye, Very sincerely yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *November 21, 1902.*

MY DEAR FRANCIS GALTON, I have been hoping to hear your address so that I might send you a line of satisfaction with regard to the Darwin Medal. But as you must have left Hyères, and as I do not know how to reach you in Sicily, I send this via Rutland Gate.

It seems absurd for me to congratulate you! I can only just say what I said to Weldon when he announced the gift of the medal to me four years ago: "Francis Galton ought to have been given it, not I." To which he replied: "To you it means encouragement to go on, to him recognition of the achieved, which everybody already recognises."... "You get honour from the medal, he would give it honour"—or words to that effect. So it seems also to me that your receiving the medal will make it of greater value to younger recipients, but hardly give you that recognition which helps younger men with their work little known. I may write this now, for the fact that I received the medal four years ago has always had the feeling associated with it, that you ought to have received it long before I did. I trust, however, it may still give you pleasure, and for myself I can only say how it enhances the value of my own. I hope you have been having fair weather and maintained your health. You will have been lucky to escape the last ten days—the worst November I remember. Dr Beddoe has not yet sent me his article. I hope to have Vol. I. Part II wholly in type soon. Please remember me to Miss Biggs, and Believe me, Yours always sincerely, KARL PEARSON.

(Postcard)

HÔTEL DES ANGLAIS, VALESCURE PRÈS ST RAPHAEL (VAR), FRANCE.
Nov. 27/1902.

Thanks, hearty thanks, for your very nice letter. My pleasure at the award is and was a little embittered by the thought of standing in the way of younger men. Of course I value the honour *very highly*. Also another most unexpected one of being just elected Honorary Fellow of Trinity, Cambridge, my old College. Thanks to the pure air here, I have wholly thrown off first the asthma and then the chronic cough! I never expected such good luck as this. We shall stay here a little longer and then to Italy. Very sincerely yours, FRANCIS GALTON.

Glad that the next No. of *Biometrika* is in type. You are making a success of it, to all appearance.

Address: HOTEL BRISTOL, PIAZZA BARBERINI, ROME.

I shall be there for about 2 months beginning with Dec. 22d.

Dec. 8, 1902.

MY DEAR KARL PEARSON, To my surprise the enclosed big cheque reached me this morning. I had quite forgotten it was part of the award. I cannot think of applying it to my personal use (as I have as much income as I want), but to some object in accordance with that for which the Darwin Fund was established, and can think of none more suitable than *Biometrika*. Please therefore take it as a sum to be paid in *relief*, so to speak, of the Guarantee Fund; not intended, even if it could be, ever to be repaid but to be swallowed up in the initial expenses. I am *very* glad to have the opportunity of thus contributing.

The pure air of Valescure has taken away the whole both of my asthma and of my cough, at least for the time, and I feel more *fit*, than for 2 or 3 years past. We leave Valescure to-morrow, reach Bordighera (Hôtel de Londres) next Monday, and Rome the Monday after.

I have no news that you would care about. The finger-prints give daily occupation. It is curious how many "blind alleys" one strays into, during any new course of inquiry. This one *seems* worth a good deal of trouble, but its merits may be more specious than real. Do please send me *Biometrika* news to Rome. Ever very sincerely, FRANCIS GALTON.

UNIVERSITY COLLEGE, LONDON. Dec. 10, 1902.

MY DEAR FRANCIS GALTON, Your letter and its enclosure reached me this morning. I cannot tell you how I appreciate your kindness and thought in the matter. I am communicating with Weldon by this post. I know it will give him as much pleasure as it gives me. I think you know that finally we collected a fund of £400 to start *Biometrika* with, and that the total call on that fund as a result of initial expenses was under £70. Against this we have about 250 copies of Vol. I, which ought to be sold some day*, and which when sold ought really to recoup the Guarantee Fund as well as the smaller loss of the Press Syndics. What I would therefore propose to do, if it meets with your approval, would be to recoup the Guarantee Fund, so that we start the second year again with our £400 balance, and reserve the remaining £30 to help in the publication of any special memoir which is expensive on account of large tables or plates. I am not indeed at all sure that to devote the whole sum to one or two important memoirs as they come in, might not meet your wishes and the purport of the fund best. If so please let me know. The guarantors were besides yourself—Mr R. J. Parker†—the Attorney General's "Devil,"—Dr W. R. Macdonell, Weldon and myself, and I don't think any of us are very keen on seeing our money back again, if the Journal can be thoroughly established by its use. Hence, I think, we should look upon the recouping of the original Guarantee Fund rather as an omen that we had a longer definite life, than as a personal satisfaction. If we devoted £30, or any further sum to the publication of some extensive paper, please allow us to make a little note stating that help in the publication of that particular memoir has been obtained from your kindness with regard to the Darwin Fund.

I am so glad the change has suited you. I have not sent proofs because I thought your address so uncertain but I will write a "biometric" letter soon.

Yours very sincerely, K. PEARSON.

* A prophecy fulfilled as several parts of these volumes have had to be reprinted.

† Afterwards he sat in the House of Lords, as Lord Parker of Waddington.

(Address) HOTEL BRISTOL, ROME. Dec. 13, 1902.

MY DEAR KARL PEARSON, Your letter awaited me here at Bordighera, on arriving this afternoon. The plan that most commends itself to me is that of paying off the £70, so as to leave the Guarantee Fund untouched up to the present time, and to use the £30, as you suggest, for getting good work done especially in plates, that would otherwise be left undone. But please use your *full* discretion.

I rather shrink from my name being used as you kindly propose. It is difficult to express what is wanted without any appearance of glorification, viz.: that I feel that the £100 could not be bestowed more appropriately than on *Biometrika*. It is especially difficult to express this without provoking the rejoinder that that is precisely the view that a Consultative Editor of the periodical might be expected to take! Don't put anything in type to the above effect without my seeing it first, please.

This blessed Riviera air! There ought to be a Goddess of that name and many temples to her, all along the coast.

I was amused to read long quotations from you, in the largest of type, impressed into doing duty as a puff for the Encyclopaedia Britannica, by the "Times." It was about the advantage of science to modern civilisation and consequently the advantage to everybody of buying that scientific encyclopaedia. Anyhow they found your weighty words very suitable to their own commercial object.

We stay 4 days here, 2 at Alassio, 2 at Pisa, and reach Rome on the 22nd. Wishing you all well through the horrid wintry weather. Ever very sincerely, FRANCIS GALTON.

I wrote the above in bad light, when I find both spelling and grammatic composition difficult on paper. Please on these grounds excuse the many corrections.

7, WELL ROAD, HAMPSTEAD, N.W. Dec. 27, 1902.

MY DEAR FRANCIS GALTON, It is with a feeling of shame that I take up my pen, for I had fully intended to write you a letter to await your arrival in Rome. But a slight attack of influenza and a general feeling of inertia following on it have made me reluctant to do ought but the most necessary things. Now your letter comes to reproach me for not having bestirred myself to send you a Christmas greeting. I forward with this some *Biometrika* proofs for Part II of Vol. II. I expect you will have received Part I ere this. It is very late, but I sent the MS. to Press in August last! They are very dilatory. I have asked Yule to modify his article by giving a general popular account of association to start with. I think Lutz's paper is interesting as strengthening at least for one character the effect of a change of sex. The mouse paper in Part I is not quite definite enough, but I hope to get a second paper in Part II, on further results. The Shirley Poppy paper contains a great deal of work, and I wish it were more definite, but until we get a Biometric Farm where secular experiments of this kind can be carried out *under uniform conditions*, I don't think we can do much better. So far as it goes, it is quite in favour of plants obeying laws of inheritance very like those known to hold for man and horse. I hope to have a paper on the Law of Ancestral Heredity showing really what it assumes and how far we can at present assert it to hold.

It is pleasant to hear of breakfast out of doors in Alassio, and of the sun too hot to sit in at Baliano! I have just received 200 ants from Petrie's settlement and hear of 100 hornets in spirit coming. Please don't forget the celandines, if you get further south and find the collecting not too irksome. I shall hope to get the paper on the first series out in the next *Biometrika*.

Pray send me any point in the finger-print investigation which you think I might elucidate. I am much interested in its possibilities, and think it ought to be rendered available for heredity. Weldon is now in Sicily, most happy over snail finds. Yours very sincerely, KARL PEARSON.

(6) *Work and Correspondence of 1903*. In 1903, largely as a result, if indirectly, of Galton's influence, a Royal Commission was suggested for the purpose of inquiring into the asserted deterioration of the British race owing to bad environmental conditions. Galton grasped at once that a report of such a commission dealing only with possible degeneration would be of small service unless a larger object were kept in view in the course of the inquiry

itself, namely, the means by which any race can be improved, and these means were for him undoubtedly selective breeding. Accordingly he contributed an article to *The Daily Chronicle* of July 29, 1903, with the aim of propounding his views in a popular form. The article was headed (probably in the editorial office) "Our National Physique—Prospects of the British Race—Are, We Degenerating?" As a matter of fact Galton in this article is more concerned with increasing our racial efficiency than with emphasising alarming reports of its deterioration, with regeneration rather than with degeneration. He states that he has no intention of confining his remarks to the wastrels and the slums :

"The questions I keep before me are whether or no the British race as a whole is, or is not, equal to its Imperial responsibilities, and again how far is it feasible to make it more capable of the high destinies that are within its reach, if it possesses the will and power to pursue them. I wish that each one of us should stand aloof from ourselves as a whole, and should watch the conditions and doings of our race, much as an authority of the Royal Agricultural Society might criticise the stock of his neighbour over the hedge. If we do so we may learn in what ways our own stock and its rearing are open to improvement and we may perhaps ensue it."

Galton has no doubt that the *pick* of the British race are as capable human animals as the world at present produces. He holds that their chief defects are to be found in their want of grace and of sympathy,

"but they are strong in mind and body, truthful and purposive, excellent leaders of the people of lower races. I speak more particularly of those who are selected to go abroad in various high capacities, whether by Government or by firms to carry out large undertakings under circumstances where they have to depend much on themselves."

The term "lower races" is very unfashionable at the present time, but it is a pleasing and emotional sentiment rather than real anthropological acumen which asserts that all men are of equal value at birth, or that all races are, physically, mentally and socially, of one standard of fitness. The distinctions between man and man, and race and race, are in the main inborn and not "innurtured"—I would say "inbred," but for the double meaning of that word*.

Of the "lower middle classes" Galton's judgment was very unfavourable. He finds the average holiday-maker and cheap-excursion tourist unprepossessing as compared with the like section of other European races. We may superficially, perhaps, but nevertheless with some justification, sum them up as mentally and physically litter-scatterers.

"As regards the physique of Britons, I think we brag or have bragged more than is right. Moreover we are not as well formed as might be. It is difficult to get opportunities of studying the nude figures of our countrymen in mass, but I have often watched crowds bathe, as in the Serpentine, with a critical eye, and have always come to the conclusion that they were less shapely than many of the dark-coloured people whom I have seen."

* Few teachers who have had to instruct young men of many races—and usually the best of the "lower races"—would deny that mentally at least they can be graded. Exceptional men may possibly arise in any race, but it is the averages we have to regard. It was greed that introduced the negro into North America; it was lack of insight which did not push him northwards in South Africa. In both cases the "lower race" now forms a grave and almost unsolvable problem for the future.

Galton gives an account of the Sandow competition in which the three best specimens were selected out of some eighty of Sandow's pupils. Galton was present when the trio was selected and thus states his impressions:

"I did not think these best specimens of the British race to be ideally well-made men. They did not bear comparison with Greek statues of Hercules and of other athletes, being somewhat ill-proportioned and too heavily built. I must say that I was disappointed with them from the aesthetic point of view, though in respect to muscular power they seemed prodigies. Sandow afterwards exhibited himself in a pose that brought out his chest and arms to full advantage, and in that statuesque position I placed him as far superior to all the competitors."

What Galton says about British physique and about the physical beauty of our trunk and limbs is probably very true. We have recently seen the foreigner our equal or even our superior at most of our national sports; he only needed the proper training to defeat us. Nor is the somewhat low standard of physical beauty confined to trunk and limbs—anyone who makes an extensive study of the English skull must be forced to the conclusion that aesthetically at least it is not of a high type. The stock-breeder "looking over the hedge" must conclude that these are not directions in which much can easily be achieved. Yet he would affirm emphatically and

"with justice that the whole of a race which was able to furnish the large supply which is produced in Great Britain of men who are sound in body, capable in mind, energetic and of high character, has the capacity (speaking as a rearer of stock) of being raised to at least the same high level."

This, Galton believes, could be attained by making use of both Nature and Nurture. Of the former Galton holds that if a strong and intelligent public opinion can ever be roused in favour of improving our racial breed, then there are a number of small influences which even now operate under existing sentiment and law and which are capable by co-operation and development of producing great results. He admits, however, that we have yet much to learn that lies well within the province of anthropology, before it would be justifiable to attempt a crusade; otherwise grave mistakes will be made and the movement will be discredited.

"My attitude, which has usually been misrepresented, is to urge serious inquiry into specific matters which still require investigation in the well-justified hope that a material improvement in our British breed is not so Utopian an object as it may seem, but is quite feasible under the conditions just named. But whatever agencies may be brought to bear on the improvement of the British stock, whether it be in its Nature or in its Nurture, they will be costly, and it cannot be too strongly hammered into popular recognition that a well-developed human being, capable in body and mind, is an expensive animal to rear."

It will be seen that here as elsewhere Galton places the acquirement of eugenic knowledge before eugenic action—Eugenics Research Laboratories must be developed before Eugenics can be safely preached as a popular creed. He illustrates this by propounding a problem concerning nurture: If a dole be available to help in the rearing of a child, at what period will assistance be most effective? Is it when it is growing most rapidly and most needs good feeding, or may irremediable mischief be done by withholding it until that

itself, namely, the means by which any race can be improved, and these means were for him undoubtedly selective breeding. Accordingly he contributed an article to *The Daily Chronicle* of July 29, 1903, with the aim of propounding his views in a popular form. The article was headed (probably in the editorial office) "Our National Physique—Prospects of the British Race—Are, We Degenerating?" As a matter of fact Galton in this article is more concerned with increasing our racial efficiency than with emphasising alarming reports of its deterioration, with regeneration rather than with degeneration. He states that he has no intention of confining his remarks to the wastrels and the slums :

"The questions I keep before me are whether or no the British race as a whole is, or is not, equal to its Imperial responsibilities, and again how far is it feasible to make it more capable of the high destinies that are within its reach, if it possesses the will and power to pursue them. I wish that each one of us should stand aloof from ourselves as a whole, and should watch the conditions and doings of our race, much as an authority of the Royal Agricultural Society might criticise the stock of his neighbour over the hedge. If we do so we may learn in what ways our own stock and its rearing are open to improvement and we may perhaps ensue it."

Galton has no doubt that the *pick* of the British race are as capable human animals as the world at present produces. He holds that their chief defects are to be found in their want of grace and of sympathy,

"but they are strong in mind and body, truthful and purposive, excellent leaders of the people of lower races. I speak more particularly of those who are selected to go abroad in various high capacities, whether by Government or by firms to carry out large undertakings under circumstances where they have to depend much on themselves."

The term "lower races" is very unfashionable at the present time, but it is a pleasing and emotional sentiment rather than real anthropological acumen which asserts that all men are of equal value at birth, or that all races are, physically, mentally and socially, of one standard of fitness. The distinctions between man and man, and race and race, are in the main inborn and not "innurtured"—I would say "inbred," but for the double meaning of that word*.

Of the "lower middle classes" Galton's judgment was very unfavourable. He finds the average holiday-maker and cheap-excursion tourist unprepossessing as compared with the like section of other European races. We may superficially, perhaps, but nevertheless with some justification, sum them up as mentally and physically litter-scatterers.

"As regards the physique of Britons, I think we brag or have bragged more than is right. Moreover we are not as well formed as might be. It is difficult to get opportunities of studying the nude figures of our countrymen in mass, but I have often watched crowds bathe, as in the Serpentine, with a critical eye, and have always come to the conclusion that they were less shapely than many of the dark-coloured people whom I have seen."

* Few teachers who have had to instruct young men of many races—and usually the best of the "lower races"—would deny that mentally at least they can be graded. Exceptional men may possibly arise in any race, but it is the averages we have to regard. It was greed that introduced the negro into North America; it was lack of insight which did not push him northwards in South Africa. In both cases the "lower race" now forms a grave and almost unsolvable problem for the future.

Galton gives an account of the Sandow competition in which the three best specimens were selected out of some eighty of Sandow's pupils. Galton was present when the trio was selected and thus states his impressions:

"I did not think these best specimens of the British race to be ideally well-made men. They did not bear comparison with Greek statues of Hercules and of other athletes, being somewhat ill-proportioned and too heavily built. I must say that I was disappointed with them from the aesthetic point of view, though in respect to muscular power they seemed prodigies. Sandow afterwards exhibited himself in a pose that brought out his chest and arms to full advantage, and in that statuesque position I placed him as far superior to all the competitors."

What Galton says about British physique and about the physical beauty of our trunk and limbs is probably very true. We have recently seen the foreigner our equal or even our superior at most of our national sports; he only needed the proper training to defeat us. Nor is the somewhat low standard of physical beauty confined to trunk and limbs—anyone who makes an extensive study of the English skull must be forced to the conclusion that aesthetically at least it is not of a high type. The stock-breeder "looking over the hedge" must conclude that these are not directions in which much can easily be achieved. Yet he would affirm emphatically and

"with justice that the whole of a race which was able to furnish the large supply which is produced in Great Britain of men who are sound in body, capable in mind, energetic and of high character, has the capacity (speaking as a rearer of stock) of being raised to at least the same high level."

This, Galton believes, could be attained by making use of both Nature and Nurture. Of the former Galton holds that if a strong and intelligent public opinion can ever be roused in favour of improving our racial breed, then there are a number of small influences which even now operate under existing sentiment and law and which are capable by co-operation and development of producing great results. He admits, however, that we have yet much to learn that lies well within the province of anthropology, before it would be justifiable to attempt a crusade; otherwise grave mistakes will be made and the movement will be discredited.

"My attitude, which has usually been misrepresented, is to urge serious inquiry into specific matters which still require investigation in the well-justified hope that a material improvement in our British breed is not so Utopian an object as it may seem, but is quite feasible under the conditions just named. But whatever agencies may be brought to bear on the improvement of the British stock, whether it be in its Nature or in its Nurture, they will be costly, and it cannot be too strongly hammered into popular recognition that a well-developed human being, capable in body and mind, is an expensive animal to rear."

It will be seen that here as elsewhere Galton places the acquirement of eugenic knowledge before eugenic action—Eugenics Research Laboratories must be developed before Eugenics can be safely preached as a popular creed. He illustrates this by propounding a problem concerning nurture: If a dole be available to help in the rearing of a child, at what period will assistance be most effective? Is it when it is growing most rapidly and most needs good feeding, or may irremediable mischief be done by withholding it until that

age is reached? If the State has only a limited amount of money to spend on its children, let it investigate first when it is of most use in improving the breed—whether in infancy, at school age, or during the rapid development of youth.

The reader may think I have given too much space to an ephemeral newspaper article. It is not because of the suggestions it contains, but rather because it exhibits the cautious statements and the moderate proposals to which Galton gave expression even on a topic about which, as those who knew him well can testify, he felt with almost religious fervour.

During this year (1903) Galton had turned to finger-prints again, and was very busy trying to find a measurable character common to all patterns. He endeavoured to obtain this by what he termed the "interspace"—a diameter drawn across the core (of loops or whorls) so as to be perpendicular to both its upper and lower borders. The interspace was to be measured in a mean ridge interval of the core as unit, this mean ridge interval being obtained as the average of ten ridges taken along the interspace. The arches were a serious difficulty, for Galton concluded that they had no interspace, and they tended to lump up at one end of his frequency distributions. Galton's views are given in the accompanying letters; they were never published, although for the remainder of his life he occasionally returned to finger-print studies. As they may be suggestive to other workers, I reproduce them.

GRAND HOTEL, NAPLES. *March 2, 1903.*

DEAR KARL PEARSON, Your card of the 26th came all right yesterday, but the previous one which you mention, in reply to my letter enclosing Bicknell's, had and has miscarried. Hence my eagerness for tidings. You say that subscriptions are falling off—here however you will find one and probably two new subscriptions. I have written to Mr H. to say that I am forwarding his letter to you for reply and that I am ordering his book...to be forwarded to you also. Please answer to him his quere about the way of remitting his subscription. I know nothing of him.

It is to be regretted that biologists do not welcome *Biometrika*, but the welcome cannot yet be expected. Would it be possible to give a summary of work *done*, that *must* prove useful to biology and which without biometric methods could not have been done? We seem to need something of that kind more and more; something so free from technical language that newspapers could copy it, and their readers could understand and *like* it. Of course it could only contain cream and be in no way exhaustive, but it ought to be so far mentally digestible by the average biological intelligence as to leave some conviction upon it of the utility of biometry....

As regards the finger-prints I am in a little doubt, being not sure how far my collection of Bengal Criminals may be thought suitable, or even whether they are *strictly* non-selected. From the comparative absence of transitional patterns I fear that many of these may have been sorted out of the collection, which is one of a few hundred duplicates of some of the main collection of about 6000. They were used to enable Mr Henry (now Assistant-Commissioner at Scotland Yard) to show off the rapidity with which the original of any selected duplicate might be traced. It is possible that his clerks may have avoided troublesome transitional cases sometimes, but Mr Henry seems not to be cognizant of this. At all events I should prefer to work on my own collection, but that, alas, is *classified*, so I should have to go through the whole of it, 2600 odd in number, if I touched it at all. This would be a very tedious job, for I must not draw outlines on the patterns themselves,—which is easy but might spoil them,—but must *trace* them, which is very troublesome even with the best tracing paper and the best light. Would you however look at the enclosed table and tell me how it strikes you? Perhaps you might even get some one to work out the correlation index.

[Enclosure in Galton's Letter of March 2, 1903.]

Width of a Mean Ridge Interval in millimetres	N ^o of cases
(omit Arches*)	7
.30 - .34	1
.35 - .39	10
.40 - .44	42
.45 - .49	67
.50 - .54	60
.55 - .59	13
	200

* There is no single interspace in an arch, as there is in all other patterns.

Arch	Loop	Single Spiral	Double Spiral

The Height of Interspace is measured between the dots

Height of Interspace in units of a Mean-Ridge-Interval

Left fore finger	Right fore finger												Totals		
	.0-.40	.40-.80	.80-1.2	1.2-1.6	1.6-2.0	2.0-2.4	2.4-2.8	2.8-3.2	3.2-3.6	3.6-4.0	4.0-4.4	4.4-4.8			
.30-.70	.11	.15	.19	.23	.27	.31	.35	.39	.43	.47					
0 to .30	10	2													12
.40 " .70	1	1													2
.80 " .11	1	1	3	3	2										11
.12 " .15		2	3	1	3	1									11
.16 " .19	2	3	2	4	6	6		1							24
.20 " .23			3	2	2	8	10	3	1						29
.24 " .27			1	2	3	4	12	2	4						28
.28 " .31	1			1	1	4	9	10	3	1					30
.32 " .35					1		7	8	6	2					24
.36 " .39					1		1	2	7	5	2	1			19
.40 " .43								1	2		2				5
.44 " .47									1		2	1			4
.48 " .51												1			1
Totals	15	7	14	13	17	25	41	26	25	8	6	3			200

Francis Galton March 1903

I am quite sure that my way of working on the 2 forefingers is the best for getting at the relations between the various patterns, and I have already learnt much that is new, but I shrink from more work on my present material. Finger patterns seem to me an ideally good subject, not only for heredity work, but for much else of evolutionary interest. If you think the enclosed table of 200 cases *full* enough, or nearly so, I should take pains to get that number, or double that number, printed off at some school or elsewhere, especially for this inquiry. They would have to be *rolled* impressions printed in *triplicate* at least. Such impressions are rapidly taken. I easily take 12 of my own fingers carefully in one minute, when all is ready, or in five minutes counting from the time of sitting down to the table with my apparatus in my pocket to that of rising with everything cleaned and packed in my pocket again....

Very sincerely yours, FRANCIS GALTON.

The weather is becoming cold, not good for travel further.

[Postcard]

UNIVERSITY COLLEGE, LONDON. *March 6, 1903.*

I have just had time to work out your correlation table. I find :

Mean, Left forefinger	.244	mean ridge interval.
S.D. " "	.1047	" " "
Mean, Right "	.229	" " "
S.D. " "	.1048	" " "

Correlation = .8203.

The correlation of the distal phalanges of the R. and L. forefingers as given by Lewenz and Whiteley in *Biometrika* is .79, i.e. within probable error of your result. KARL PEARSON.

I wrote further to Galton asking for information upon the "interspace" and upon the want of continuity due to the Arches being treated as of zero "interspace." One of the main difficulties in his restriction of the data to the two forefingers was that a rare type of print that appears on one forefinger may not appear on the other forefinger but on some other finger of that hand, and experience seems to show that the prints of all *ten* digits must be taken into consideration when judging the resemblance of relatives by means of finger-prints. I received the following illustrative letter from Capri :

March 16, 1903.

MY DEAR KARL PEARSON, I have at last got your long letter of March 5 and enclosures at Capri, where we have been 9 days. After a very little more touring we turn homewards. The loss of 20 subscribers is bad, and so is the attitude of both biologists and mathematicians to *Biometrika*, but the second year of a new venture is always the most trying time*. The first flush of expectation is over, and the solid merits have not had time to assert themselves. It seems to me to want some cheery writing in good reviews to show in an intelligible form a few definite blunders into which biologists have fallen for want of biometric methods. I expect craniology would furnish topics. I recollect once that kindest of men, Sir W^m Flower, being on the verge of wrath because I pointed out the insufficiency of evidence drawn from the mean values of a few skulls of some savage race (I forget which) in determining the race to which a particular unknown skull belonged. Craniological literature would contain, I should think, many rash statements which could be assailed triumphantly by a facile writer and sharp critic. Dear old Beddoe is the most rambling of thinkers and writers as well as one of the most industrious of workers. I am not surprised to hear that his paper is far below the occasion, wrong in its criticism and wrong even in its arithmetic and generally slipshod. The photo-

* [Those were anxious days for the Editors of *Biometrika* as they watched the slipping away of their funds. Nowadays several parts of those early years have been reprinted, and complete series sell at very high prices !]

PLATE XXXIII

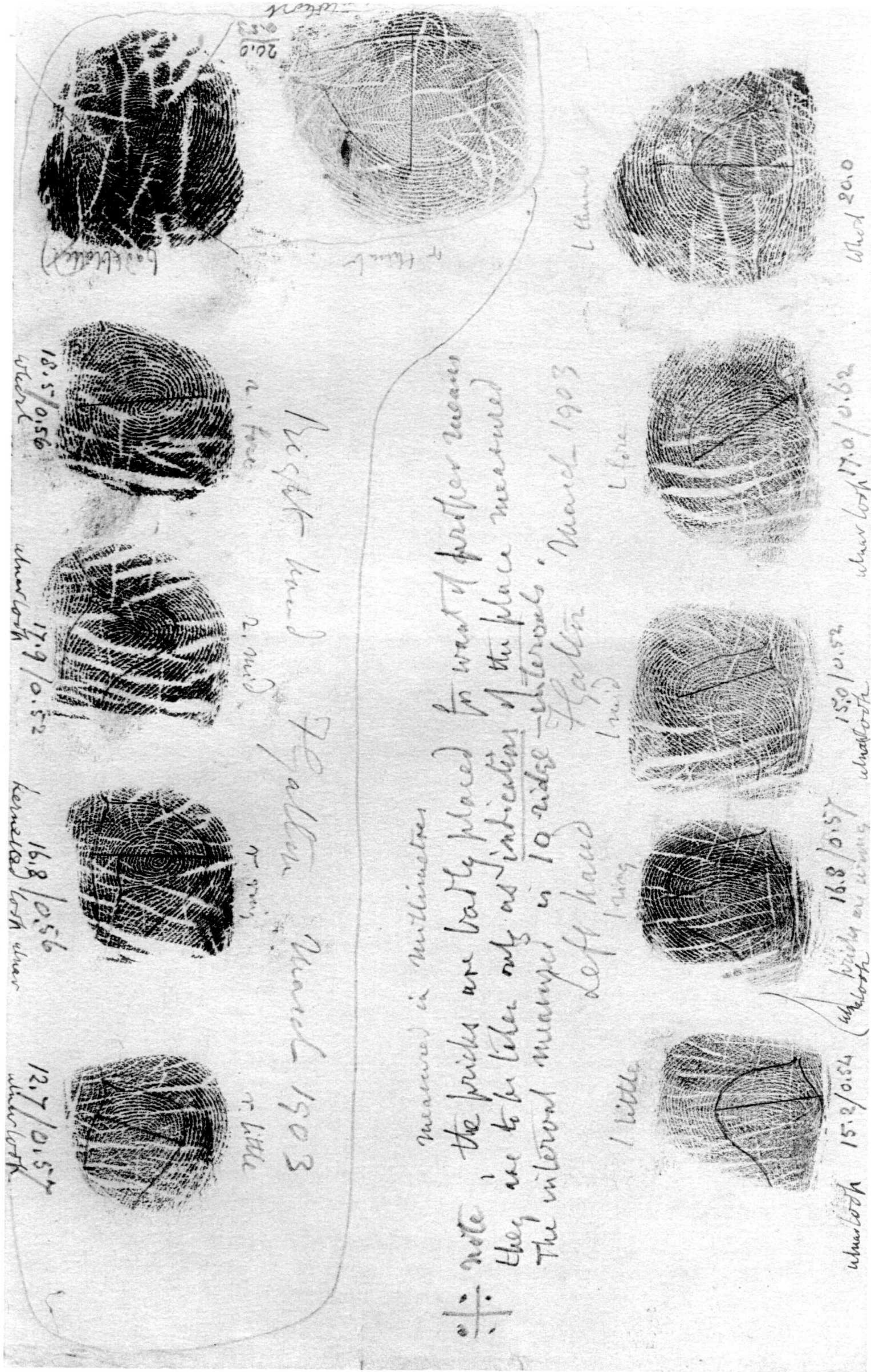


Illustration of Galton's method of measuring "interspaces" in terms of "mean ridge interval." From Letter of March 16, 1903. The "pricks," needle-pointed through the letter paper, are not visible in the reproduction; the original had to be held up to the light to see them.

graph of the skull that you send is exceedingly good, and is I presume (together with the rest) taken under standard conditions, and selected in some way free from bias, other than what may be clearly stated about them as intended to be conveyed by the word "English." English unless narrowly limited includes so great a diversity of type:—dark and fair, Cornish, Sussex, Midlands, Yorkshire, Welsh, Scotch, Irish, &c. &c.—ill-fed and well-fed, educated and uneducated, etc. etc.—that it is very difficult to deal with English as a whole, except by taking homogeneous subgroups*. I found this emphatically the case with my S. Kensington anthropometric data. Out of many thousand cases I failed to form a single homogeneous (quasi-homogeneous) group that satisfied me. If you think that your collection is fairly free from this difficulty, please tell me what you think the cost of printing them would be, and I will see if it be possible for me to afford it. It is most desirable that some standard and unquestionably useful work—obviously useful to biologists—should appear in *Biometrika*.

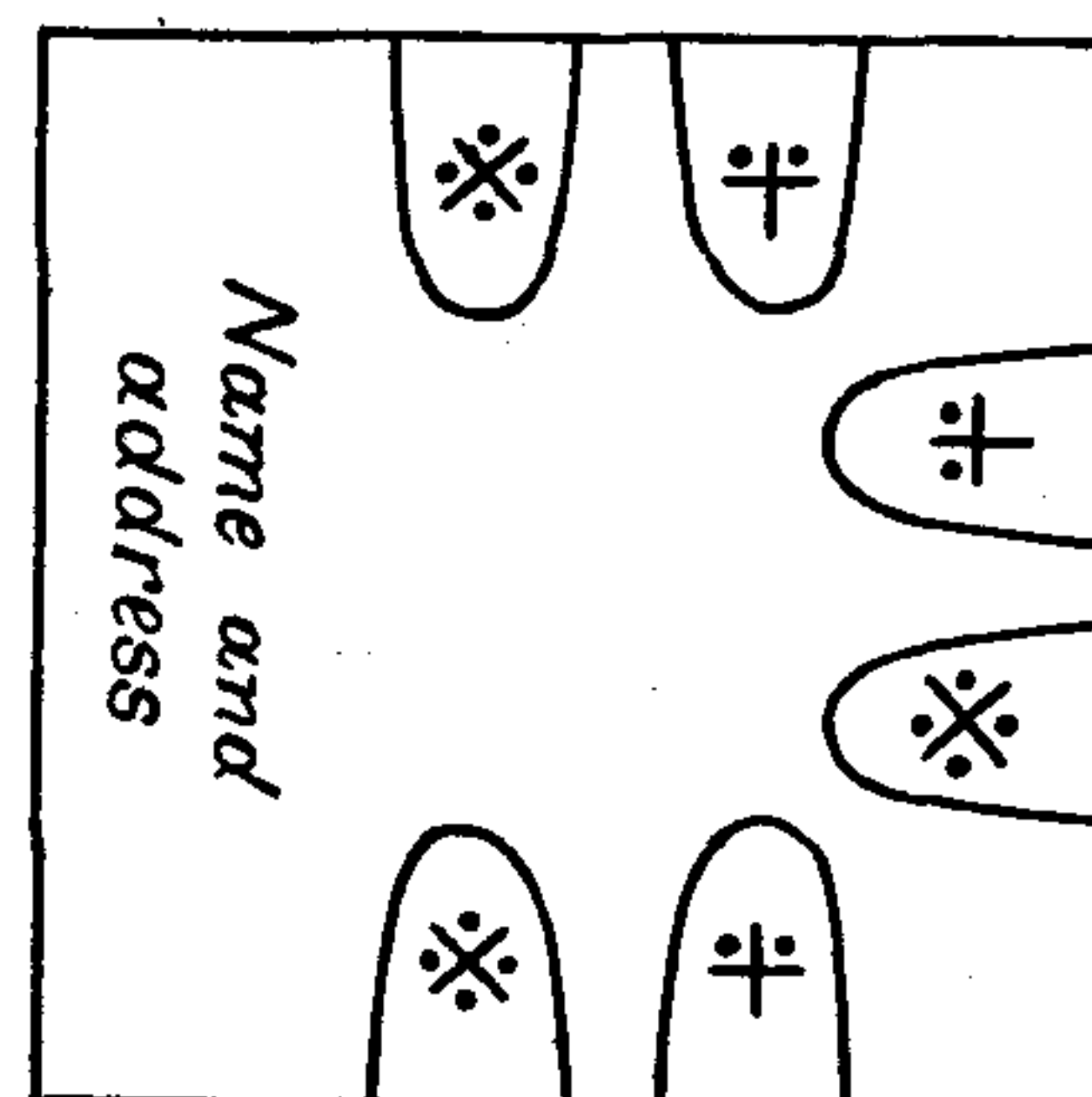
About the finger-prints, what I sent was a mere scrap and would require a great deal both of explanation and of collateral conclusions. The lump at the commencement of the series is to me of the greatest interest, for it emphasises the fact that the patterns do *not* form a continuous series, but a group or order composed of many sub-groups or species; each of these has a curve of frequency of its own. They are in some sense convertible, and they form hybrids, but the arches are far more "pure blooded" (so to speak) than any of the others. They are antipathetic to whorls. An arch on one forefinger is associated with a whorl on the other only once or twice in a hundred cases, and then only imperfectly. Then there is the case of radial and ulnar slopes, and their connection with whorls. We have in fact a menagerie of different creatures, breeding promiscuously, and yet at all times divisible into a limited number of definite types, each with its own law of frequency, whose statistical proportions between themselves seem to be constant. Its study has therefore a very close bearing on the evolution of species (as indeed I pointed out in my first paper on Finger-Prints in *Phil. Trans.*). This study has the great advantages (1) that age has no effect on the patterns, when the ridge interval is taken as unit of measurement, and consequently (2) that it would be easy to get and to use family prints to 3 and even 4 generations, (3) that the data when once obtained are free from all error of measurement, for they are themselves the things to be measured †. I send prints of my own fingers, which are a *worse* example by far than the generality of those one might get, chiefly because the wrinkles of age leave numerous gaps in the form of white streaks, and also because I have smeared them by manipulations immediately after they were made, but they will serve to explain the dimension measured in the table I sent. The loops are troublesome only in the sense that the *very best* dimension is hard to define; on the other hand many reasonably alternative dimensions give practically the same result. The measure desired

* [The skulls in question all came from a single 17th century pit in Whitechapel, and were reasonably homogeneous and close to similar series from Liverpool Street and Farringdon Street. The photographs were the first of the series of standardly orientated crania on a large scale which have since then continuously appeared in *Biometrika*. Galton's offer was spontaneous like several others, but not accepted. "Of course I could not think of your aiding us further at present. We made up the loss to the reserve fund with your Darwin Medal grant, and it left £30 to the good which might be reasonably expended on illustration if you approved. ...The photographs were all taken the same distance from the objective and in the same manner for each aspect, but different aspects had to be treated rather differently—a profile on a smaller scale than a frontal view, etc. The difficulty of getting a 'mean' focus on a solid body must cause some variation, however, even in the distance. On the whole, I think, photographs of skulls must be taken to represent qualitative characters, which are after all, if indescribable, realities. I have tried a good deal, but do not believe that cranial photographs will ever serve usefully purposes of measurement....I hope you will come back fit and well for climbing 'May hill,' which an old medical friend always describes as the great task of the year. I am going to Newbury to meet Weldon to-morrow to talk over Part III, while I hunt for Easter quarters. We want to be near Oxford, Weldon for the mice and I for Weldon." K. P. to F. G., March 20, 1903.]

† [I think Galton must mean here that the *stored* data are free from error of measurement. Whether we take head measurements or finger-print measurements (and Galton is speaking of quantitative not qualitative classification) the measurement must be taken *once*.]

is the magnitude of disturbance caused by the finger nail. When the disturbance is great compound patterns tend to appear as the "kernelled loop" (right ring-finger). [Galton gives sketch: see our Plate XI, Fig. 19.]

In the Arches the disturbance does not occur at any one place, but is distributed. [Sketch: see our Plate XXIII (1-6).] When I come back I must begin to collect data: viz. *triplicates*, rolled impressions of two forefingers, using a separate half-sheet of note paper for each person. I now understand quite what I want, and can use a clerk, working with comparatively slight supervision after he is well trained and started. The outlining is very distinct when done with the very black ink used by artists who draw for "process-work." I have contrived a wonderfully neat pocket-apparatus for printing, only the size of a *small* lucifer match box and value under 1^d. Very sincerely yours, FRANCIS GALTON.

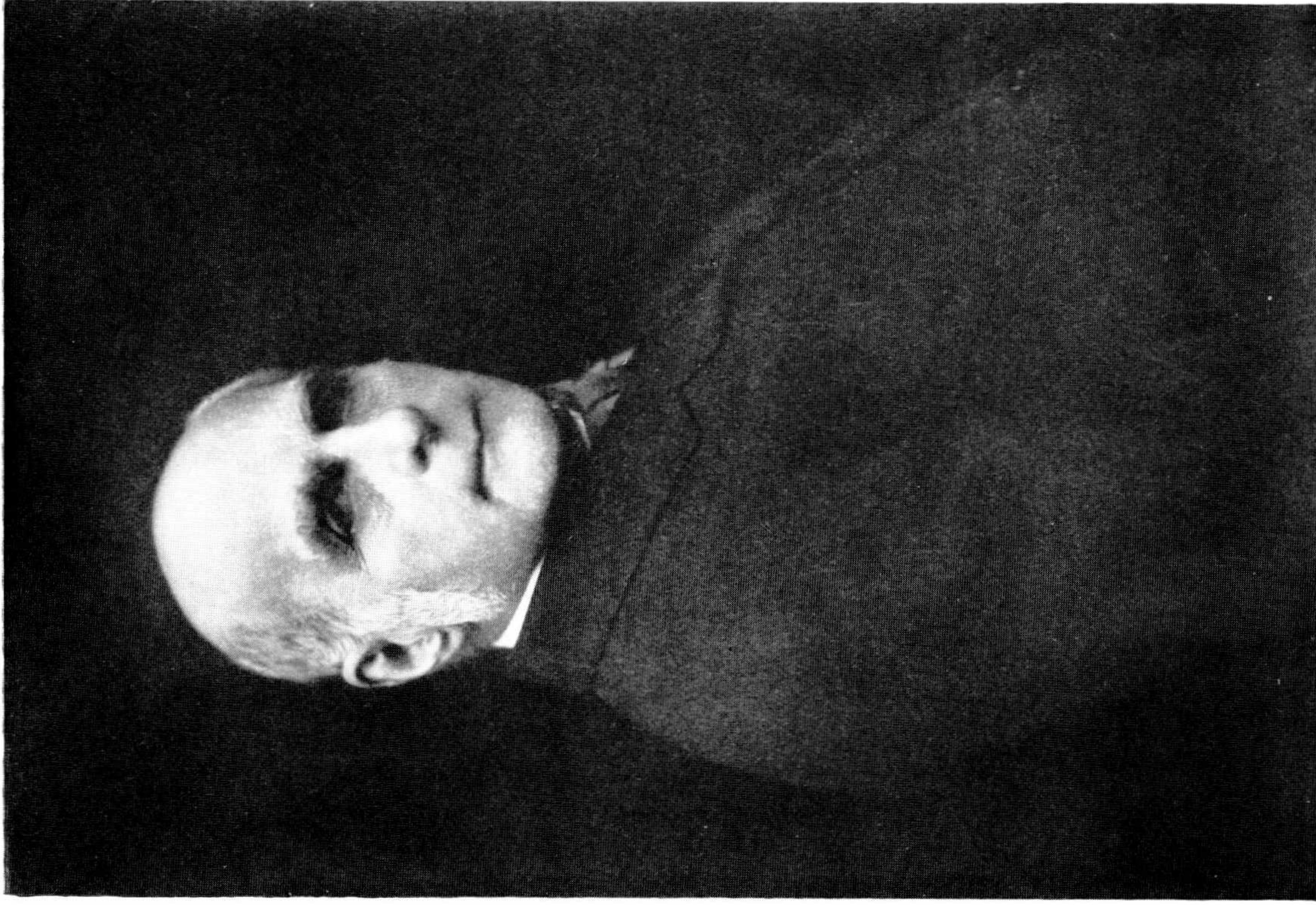


* † Prints of two forefingers in triplicate.

Galton, when he returned to England, circularised many folk, issuing small finger-printing apparatus, and asking for the prints of the two forefingers of as many relatives to be taken as possible. To aid him in the reduction of these and other data Galton desired to find an assistant. On the advice of Dr Alice Lee, he selected Miss Ethel M. Elderton—a most happy choice. She received her first training from Francis Galton, then became successively Secretary to the Eugenics Record Office, Galton Research Scholar in the Eugenics Laboratory, then Galton Fellow, and is now Assistant-Professor in that Laboratory. Perhaps this was the best result that flowed from the forefingers-print collection!

(7) *Work and Correspondence of 1904.* Two events of this year had importance in relation to Eugenics, the one dealing with scientific research and the other with popularisation. The first was Galton's gift of £1500 to the University of London for the furtherance during three years of the scientific study of Eugenics. I have already referred to the Galton Research Fellowship when discussing the definition of Eugenics. Our correspondence for the latter end of the year chiefly dealt with the various candidates for the Fellowship with some of whom I was acquainted as well as with their work. The selection committee ultimately recommended Mr Edgar Schuster, an Oxford student of Weldon's, who had already done good biometric work, and Miss E. M. Elderton was appointed as his assistant. University College provided rooms at 50, Gower Street, which at Galton's request were entitled the "Eugenics Record Office." In the same house were lodged for working purposes two or three post-graduates, an overflow from the Biometric Laboratory, but there was no other link between that Laboratory and the Office. Galton himself was in control, and the main scheme in hand was to form a register of "Able Families," of which only the portion dealing with Fellows of the Royal Society reached completion*. Schuster during his tenure of the Fellowship also wrote two memoirs, one on "The Inheritance of Ability" in conjunction with Miss Elderton and a second entitled "The Promise of Youth and the Performance of Manhood." These two memoirs

* See the present volume, pp. 113-121.



Francis Galton in 1904, aged 82.

were excellent pieces of work*, and I am the more willing to praise them as I had no connection whatever with the Eugenics Record Office. I was not on its Advisory Committee, and Galton, knowing how pressed I was at that time with work, did not as far as I can recollect ever consult me as to the research in his Office; once or twice only Schuster asked for aid in dealing with statistical matters. In the main it was Galton, with some aid from Weldon, who developed this first attempt at a Eugenics Laboratory. When two years later Galton asked me to take charge of the Office I was only too glad to publish Schuster's memoirs as the first and third of the new Eugenics Laboratory publications. These writings and a couple of papers on the inheritance of psychical characters and of deaf-mutism demonstrated that Galton's proposals for eugenic research were feasible, and that his endowment was not being wasted. If in the future the question arises when and where did Eugenics as an academic branch of study take its origin, the answer can only be: In the autumn of 1904 in the two rooms at No. 50, Gower Street under the direction of Francis Galton, within a few yards of the house on the same side of the street where Charles Darwin started his married life when he returned from his voyage in the "Beagle." When Eugenics becomes a great factor of academic and political life—as important as State Medicine,—which I have no doubt it will be in the future, then that house will deserve to be commemorated!

The second important event for Galton and Eugenics in the year 1904 was really anterior to the foundation of the Eugenics Record Office. I have already noted that Galton had endeavoured, although not very successfully, to interest English anthropologists in Eugenics. He now turned with a somewhat greater degree of success to the Sociologists, and in particular to the newly founded Sociological Society. A lecture was given by him at a meeting of that Society held on May 16, 1904. It was exceedingly well-staged except in one unfortunate respect, the choice of a chairman. There was a reasonably well-directed discussion and there were written expressions of opinion upon Eugenics as science and art from a number of men with familiar names. Maudsley and Mercier were doubters and apparently ignorant of the knowledge already obtained; Francis Warner generalised on impressions; Weldon preached the sound doctrine "that there can be no doubt whatever that for the student of 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"; H. G. Wells† was of the opinion that more can be achieved in the way of improving the human race by the sterilisation of failures than by the selection of successes for breeding; Benjamin Kidd was dogmatic without being convincing; Palin Elderton

* Both now unfortunately out of print.

† This popular author set an absurd myth on foot by saying: "Eugenics which is really only a new word for the popular American term stirpiculture." "I wish," said the German Professor, "that Lord Rayleigh would more frequently acknowledge his indebtedness to Mr Strutt." Galton himself actually invented the word "stirpiculture" and changed it advisedly to eugenics!

considered that actuaries as a body hold that environment operates merely as a modifying factor after heredity has done its work; L. T. Hobhouse maintained that if the problem of stock is to be taken into consideration at all, then it ought to be by intelligently handling the question rather than submitting to the blind forces of nature, but until there is more knowledge and agreement as to criteria of conscious selection, "we cannot, as sociologists, expect to do much for society on these lines"; William Bateson held that "the 'actuarial method' will perhaps continue to possess a certain fascination in regions of inquiry where experimental methods are at present inapplicable," but urged that those who have such aims at heart (as Galton) would best further Eugenics by promoting "the attainment of that solid and irrefragable knowledge of the physiology of heredity which experimental breeding can alone supply"; he did not state the touchstone—faith in the research and the actuarial treatment—by which we can alone know that the knowledge is "solid and irrefragable"*; C. S. Lock obviously thought the proposals premature; W. Leslie Mackenzie thought that the effects of inheritance were so masked by nurture that in no individual case could we determine what was due to the former, and cited as an illustration that the modern movement for extirpation of tubercular phthisis could not become world-wide until the belief in the "heredity of tuberculosis" had been sapped; a view contradicted promptly by Archdall Reid who held that it was selection by consumption that made the Northern Races pre-eminently strong against consumption; J. M. Robertson evidently laid more stress on environment than heredity, and considered ill-feeding, ill-housing, ill-clothing and early profligacy on the one hand, and ignorance in child-bearing and begetting on the other, as the great forces of "Kakogenics"; Bernard Shaw agreed with the paper and went so far as to say "that there was now no reasonable excuse for refusing to face the fact that nothing but a eugenic religion can save our civilisation from the fate which has overtaken all previous civilisations." He held that "what we must fight for is freedom to build the race without being hampered by the mass of irrelevant conditions implied in marriage," and asserted that "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." Shaw cleared away a good deal of the fog of previous contributors, but went further † than Galton certainly approved, and indicated methods of improving the race, for which, however biologically fitting, the time will not be ripe until the less drastic proposals of Galton have bred "under the existing conditions of law and sentiment ‡" a more highly socialised race. Galton's suggestions may seem very limited as compared with Bernard Shaw's attitude to race improvement, but he who would practically

* I can remember the day when certain so-called "Laws of Motion" were considered "solid and irrefragable"! Most of the progress in science consists in the passage from one "solid and irrefragable" law to a second.

† If a marriage is from the eugenic standpoint brilliantly successful "it seems a national loss to limit the husband's progenerative capacity to the breeding capacity of one woman," etc. etc.

‡ See the title to Galton's Huxley Lecture on our p. 226.

reform mankind must not begin by alarming it. We may remind the Editor of "Fabian Essays" that the doctrines of Eugenics will be best served, like those of socialism, by a slow process of impenetration.

The drift of the discussion as above indicated was to reveal clearly the past history, the narrow field of experience, the particular method of experiment or observation of the individual contributors. Impressions rapidly formed on a subject, which they had not thought over for years, like Galton, were produced without any foundation of facts or figures; my anticipations of what would flow from the various heterogeneous elements classed together as sociologists were realised. But Galton got an excellent advertisement for Eugenics, which he proceeded to follow up. The paper and the discussion on it were widely mentioned in the daily press. Sociology for the present biographer must be a study of man in the mass, the facts on which the science must be based depend upon averages, variations, associations and correlations—in short, sociology to become a science must be based upon the collection of data and the statistical treatment of those data. Such treatment I had found almost wholly missing in sociological memoirs. Sociology appeared to me to be like psychology before the introduction of the experimental method, like what physics would be without a mathematical handling, or insurance before there was an actuarial science; in the words of Galton, "Until the phenomena of any branch of knowledge have been submitted to measurement and number it cannot assume the status and dignity of a science." Until some sociologist should arise and grasp this fact and apply it to his studies, sociology in my opinion had not yet its founder*. Holding such a view I was somewhat astonished to receive a letter from Francis Galton dated April 12, 1904, running as follows:

MY DEAR KARL PEARSON, I hear they have been bothering you to take the chair at a Sociological meeting on Monday, May 16th, when I read a paper on Eugenics at 5 p.m.—However agreeable it might be to myself that you should do so, I beg that you will consult your own inclinations *entirely* in the matter, without the slightest regard to mine. I have just had a talk with Mr Branford who favourably impressed me with the idea that he had clear views of what the Society might do scientifically, and that he saw his way to give effect to them. The result is to ease my own mind in respect to offering the paper, or rather acceding to the request to send it.

What a slashing you administer to Professor Castle. He deserves it.

A book by Havelock Ellis "A study of British Genius" interests me. He has taken the "National Biography" as his store house, and shows forcibly the great contribution by English clergy to the ability of the next generation. That is a Eugenic fact for me, not unforeseen, however.

I trust you are all having a happy Easter at Rotherfield Greys. I fear addressing this so, therefore I send it to Hampstead. Kindest remembrances. Very sincerely, FRANCIS GALTON.

The actual meeting took place in the large hall of the London School of Economics, and the audience which the veteran of eighty-two years addressed was numerous and distinguished. The Chairman, 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

* The reader will appreciate my amusement when the Secretary of the Sociological Society, Mr V. V. Branford, spent much paper and energy in endeavouring to prove that Vico, Comte and Herbert Spencer were architects of a *science* of sociology!

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 vita*; 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 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 provided us with the great Victorian statesmen, writers and men of science—most of whom are now no more—but which generation has not entirely ceased to be as long as we can see Francis Galton in the flesh.”

The Chairman then called upon Mr Francis Galton to read his paper on “Eugenics, its Definition, Scope and Aims*.” The theme of the lecturer was very similar to that of the address to the demographers of 1891, only there was no screening of the guns, and the word eugenics was freely used. Eugenics was defined as the science which deals with all influences which improve

* It will be found printed in *Sociological Papers*, published by Macmillan & Co. for the Sociological Society, 1905, pp. 45–50.

the inborn qualities of a race, also with those that develop them to the utmost advantage. Galton also limited himself to the inborn qualities of some one human population, i.e. to "national" eugenics. It will be seen that the definition is much looser than that of the University Committee of the following year, which limited the science to the "study of agencies under social control." The word "qualities" is used, but the study of "impairment" of racial qualities is only implicit, not expressed. The second paragraph of the address emphasises the fact that Galton would be utterly opposed to the word "moral" coming into the definition of his science; morality, goodness or badness of character, he tells us, is not absolute but relative to the current form of civilisation; the moment we begin to talk about a character as good or bad hopeless difficulty is raised. We must leave morals as far as possible out of the discussion. The essentials of eugenics may be easily determined; all would agree that it is better to be healthy than sick, vigorous than weak, well-fitted than ill-fitted for our part in life.

"There are a vast number of conflicting ideals, of alternative characters, of incompatible civilisations; but they are wanted to give fullness 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 everyone 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 the 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." (pp. 46-7.)

Galton then goes on to state what would happen if we could raise the average quality of our nation to that of its better moiety:

"The race as a whole would be less foolish, less frivolous, less excitable and politically more provident than now. Its demagogues who 'play 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 reasonably be employed to cause the useful classes in the community to contribute *more* than their proportion to the next generation†." (p. 47.)

* Some formal objection was taken to the use of the word "best," e.g. J. M. Robertson suggested that "the aim of Eugenics is to promote such calculation or choice in marriage as shall maximise the number of efficient individuals." There would, he said, always be *some* best and it was a contradiction in terms to say they represented their class. Possibly, but not certainly, "efficient" is easier to define than "best."

† Mr Robertson (see the previous footnote) seems to have overlooked this last sentence, it covers with greater generality his suggested aim of Eugenics. Under (2) above Galton actually speaks of civic *efficiency*.

Galton next sketches out what procedure an active society promoting Eugenics might adopt. It might, he considers:

(1) Disseminate knowledge of the laws of heredity as far as known and encourage their further investigation.

Incidentally he emphasises the importance for Eugenics of the *actuarial* side of heredity, and remarks on its advance in recent years, and how the *average* degree of resemblance—the measure of kinship in each grade—is now obtainable, so that in the mass the effects of blood relationship can be dealt with even as actuaries deal with the birth- and death-rates. This actuarial side of heredity was ever present in Galton's mind, and was the topic of his Herbert Spencer lecture on Eugenics.

(2) Inquire into the present and the past rates of fertility of various social groups—classified according to their civic efficiency. Galton says that there is strong reason for believing from the history of ancient and modern nations that their rise and fall depends upon changes in this relative fertility. He considers that while there are causes at work which tend to check fertility in the classes of higher civic worth, nevertheless types of our race may be found which can be highly civilised without losing fertility, even as some animals become more fertile the more they are domesticated.

(3) Collect data as to large and thriving families. Galton considers that a "large" family may be taken as one in which there are at least three *male* children. His definition of a "thriving" family is important, and it seemed to me overlooked in the discussion; it is one in which the children have gained distinctly superior positions to those achieved by the average of their classmates in early life. It is clear that such a list of "thriving" families—a "Golden Book," of really noble stirps—must precede any attempt to encourage fertility in the classes of higher civic worth. But the formation of such a "Golden Book," even for a single social group such as the clerical, legal or academic professions, is a matter of extraordinary difficulty. Galton soon dropped the idea of making it depend on the children reaching "superior positions." He saw that it must depend upon the achievements of the stirp or stock as a *whole*. It was from the standpoint of this idea that Galton set Schuster to work on *Noteworthy Families* in modern science; that was to form the first section of the "Golden Book." Further portions of it were in part prepared and the "Register of Able Families*" was an offshoot from the same idea. Judged from the aim of the "Golden Book," *Noteworthy Families* (Modern Science) gains more meaning, if we cannot overlook its defects.

What Eugenics needs is a book of "Noble Families" in a modern sense; it could at first only apply to the upper classes, and there would certainly be numerous omissions and erroneous inclusions in the early issues. It would contain, just as a peerage does, a list of all families within which, inside a given range of ancestry and collaterals, a certain percentage of members had reached posts falling into a carefully selected list, or achieved results in politics, art, literature or science of a certain degree of worth. New families would

* See our present volume, p. 121.

always be coming in, old families dropping out, as the one reached, or the other fell short of the required percentage. Ultimately the book would be able to base itself upon its own inclusions. It could only be successful, if prepared by trained genealogists, eugenists and statisticians, working on pre-arranged rules. It would need an energetic and enterprising publisher, but it might in the end become as valuable a property as a peerage, the *Medical Directory*, or *Who's Who*. Such would be the final development of Galton's "Golden Book of Thriving Families," and to be recorded in it would be a higher patent of nobility than could be marked by any other directory or roll in the land.

"The Chinese, whose customs have often 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." (p. 49.)

Achievements of their offspring would bring parents into the "Book of Noble Families."

(4) Study the influences which affect marriage. Galton discarded entirely the notion that the passion of love is so overpowering that it is folly to determine its course. Social influences and customs have immense power in the long run. If marriages which were unsuitable from the eugenic standpoint were socially banned, as marriages between near-kin have often been, such marriages would very seldom be made. From the origin of human marriage, and even before, restrictions and prohibitions have existed concerning the mating of human beings. Let us study how these customs have originated and what are their sanctions.

(5) Urge persistently the national importance of Eugenics. According to Galton there are three stages to be passed through: *First*, it must be made familiar as a branch of academic study. *Secondly*, it must be recognised that the subject demands serious consideration as an art. And *Thirdly*, it must be introduced into the national conscience, like a new religion.

Then follow what, in the biographer's judgment, are the most impressive sentences Galton ever wrote on the subject of Eugenics:

"It has indeed strong claims to become an orthodox religious tenet of the future, for Eugenics co-operates 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 it is as noble a work to raise its level in the sense already explained as it would be disgraceful to abuse 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 would 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, which will gradually give practical effect to them in ways that we may not wholly foresee." (p. 50.)

Galton stressed here as he always did the essential need to have a science of Eugenics before we make propaganda for its principles—the study is to come before the market-place.

A second paper by Galton is published in this volume of *Sociological Studies* (pp. 85–99). It is entitled: “A Eugenic Investigation, Index to Achievements of Near Kinsfolk of some of the Fellows of the Royal Society.” It is a preliminary notice of the material later dealt with by Galton and Schuster in *Noteworthy Families**. As we have already very fully considered the latter work, discussion of this preliminary study is unnecessary. A few lines from the “Preface” indicating how confident Galton had become on certain points may, however, be cited here:

“It is now practically certain from wide and exact observations, that the physical characters of all living beings, whether men, other animals or plants, are subject approximately to the same laws of heredity. 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 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.” (pp. 85–6.)

Two more letters of this year—out of many others—may be printed here because they show not only the affection Galton bore to his lieutenants but also the encouragement he was continually giving them.

42, RUTLAND GATE, S.W. *May 30, 1904.*

MY DEAR KARL PEARSON, What an admirable paper you have just sent me. Such literature will help to unite many scattered forces of a higher order than journalists in the good cause. They *exist* and want to be found out and incorporated. I have been staying some days in a country house with Sir John Gorst, who is very keen and earnest about the degeneracy of the Board School Children. He thinks the Scotch Commissioners’ Report, which I have not yet read, a very good one, but doubts the adequacy of the forthcoming (probably in July) report of the English Commission. When it is out he thinks that strong action of any or all kinds would be peculiarly effective. He does not seem to know much about heredity. I will send him your paper after re-reading it comfortably. He is or was a mathematician.

I never congratulated you on your wonderful show of skull photos at the R. Soc.

Very sincerely yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *May 31, 1904.*

MY DEAR KARL PEARSON, Your remarks before the Eugenics lecture have just reached me in print. I had no idea at the time (owing to deafness) that you were saying such very kind—such over-kind things of me. I write at once fearing you may have thought my silence on the subject since, due to apathy; which it was not, but purely to ignorance.

Ever sincerely yours, FRANCIS GALTON.

(8) *Work and Correspondence of 1905.* The meeting at the Sociological Society in the previous year had undoubtedly been a success, it attracted a really widespread attention to Eugenics, and this among a circle less rigidly specialist and academically scientific than Galton’s two earlier audiences. So pleased was he with the result that early in this year (February 14) he read a further paper on “Restrictions in Marriage†” before the Sociological Society with Dr E. Westermarck in the chair.

* See our pp. 113–121.

† *Sociological Papers*, Vol. II, 1905, pp. 1–53.

Galton considered that the public conscience as represented by tribal custom, law or current moral opinion had a powerful influence on conduct. This public conscience is usually reflected in sanctions enforced by the religion of the tribe or nation, often by appeal to the super-rational consequences of "sin," i.e. disobedience to the current social code. Occasionally social needs develop the public conscience more rapidly than the guardians of orthodox belief are able or willing to expand their religious creed, and there is friction, slight or grave, between what the forerunners call "progress" and the priests term "heresy." Somehow religion moulds itself to the developed public conscience, and all ends happily with the progressive "sinners" being canonised as saints. Noting the remarks of the speakers and correspondents which followed or resulted from Galton's paper, we may find the same type of statement unsupported by the only possible proof—that of statistics—again occurring. For example: "the defects of a quality seem sometimes scarcely less valuable than the quality itself," "it is highly probable that a very slight taint may benefit rather than injure a good stock," "marry Hercules with Juno, and Apollo with Venus and put them in slums, their children will be stunted in growth, rickety and consumptive," "in a low state of civilisation the masses obey traditional laws without questioning their authority. Highly differentiated cultured persons have a strong critical sense, they ask of everything the reason why, and they have an irrepressible tendency to be their own lawgivers. These persons would not submit to laws restricting marriage for the sake of vague Eugenics*," "at present the care for future man, the love and respect of the race, are quite beyond the pale of the morals of even the best," "the rise of intellectual qualities also involves under given conditions a danger of further decay of moral feeling, nay of sympathetic affections generally.... Under existing social conditions it would mean a cruelty to raise the average intellectual capacity of a nation to that of its better moiety at the present day," with much more half-baked thought.

Some few speakers were more helpful; it may be that Galton, perhaps purposely, did not sufficiently emphasise the distinction between procreation and marriage, or indeed note that most primitive taboos concern mating rather than marriage; yet the distinction was in the minds of some of his supporters. Dr A. C. Haddon held that marriage customs among primitive peoples are not in any way hidebound, and that social evolution can take place. "When circumstances demand a change, then a change takes place, perhaps more or less automatically, being due to a sort of natural selection. There are thinking people among savages, and we have evidence that they do consider and discuss social customs, and even definitely modify them; but, on the whole, there appears to be a definite trend of social factors that cause this evolution. There is no reason why social evolution should continue to take place among ourselves in a blind sort of way, for we are intelligent creatures, and we ought to use rational means to direct our own evolution.

* Why should the precepts of Eugenics be "vague," if they start from scientific knowledge? Other critics asserted on the contrary that the more cultivated classes would reach eugenic conclusions, but the uneducated would pay no attention, and so the movement be idle!

Further, with the resources of modern civilisation, we are in a favourable position to accelerate this evolution. The world is gradually becoming self-conscious, and I think Mr Galton has made a very strong plea for a determined effort to attempt a conscious evolution of the race" (pp. 18-19). Dr F. W. Mott was strongly in favour of the segregation of defective children, and would encourage the State to set up registry offices, which could give a bill of health to persons contracting marriage, and these bills would have actuarial value not only for the possessors but for their children, and should enable them to obtain insurance at a lower rate*. Mr A. E. Crawley said that Galton's remarkable and suggestive paper indicated how anthropological studies can be made of service in practical politics. He considered that the science of Eugenics should be founded on anthropology, psychology and physiology—thus leaving out genetics, actuarial science and medicine, all equally if not more important! The part that Galton suggested religion might play in Eugenics seemed to the speaker excellent. "Religion can have no higher duty than to insist upon the sacredness of marriage, but just as the meaning and content of that sacredness were the result of primitive science, so modern science must advise as to what this sacredness involves for us in our vastly changed conditions, complicated needs and increased responsibilities" (p. 21).

Dr Westermarck thoroughly approved of Galton's programme, and said that Galton had appealed to historical facts to show how restrictions in marriage have occurred; he saw no reason why the restrictions should not be extended far beyond the existing laws of any civilised nation of to-day. He drew attention to tribes which made an exhibition of courage essential to the permission granted a man to marry, to German and Austrian laws prohibiting the marriage of paupers, and he saw no reason why similar laws should not be extended to persons who would "in all probability" become parents of feeble or diseased offspring. "We cannot wait till biology has said its last word on heredity. We do not allow lunatics to walk freely about even though there may be merely a suspicion that they may be dangerous. I think that the doctor ought to have a voice in every marriage which is contracted...men are not generally allowed to do mischief in order to gratify their own appetites."

Besides increased legal restriction Dr Westermarck thought that moral education would help to promote Eugenics †. Dr Westermarck concluded with

* This corresponds to the idea on p. 243 above of attaching medical certificates to the State sickness and old-age pensions scheme.

† This has, owing chiefly to the efforts of Galton, progressed largely during the past 25 years. Quite a number of persons have developed the eugenic conscience, and *A* seeks advice as to whether it is social to marry *B*; or *C*, having married *D*, as to whether it is anti-social to have further children who may turn out like *E*. The Galton Laboratory is not at present organised on a scale to answer such problems, although it does its best to do so; but the time is rapidly approaching when an institution above reproach from the medical standpoint, and equipped with a staff conversant with the various branches of human heredity and of genealogical study, might issue case-opinions and certificates. In the distant future it might hope to be self-supporting.

the following words, which could hardly have been better expressed by Galton himself:

“It seems that the prevalent opinion that almost anybody is good enough to marry is chiefly due to the fact that in this case the cause and the effect, marriage and the feebleness of the offspring, are so distant from each other that the near-sighted eye does not distinctly perceive the connection between them. Hence no censure is passed on him who marries from want of foresight or want of self-restraint, and by so doing produces offspring doomed to misery. But this can never be right. Indeed there is hardly any other point in which the moral consciousness of civilised man still stands in greater need of intellectual training than in its judgments on cases which display want of care or foresight. Much progress has in this respect been made in the course of evolution, and it would be absurd to believe that men would for ever leave to individual caprice the performance of the most important and, in its consequences, the most far-reaching function which has fallen to the lot of mankind.” (pp. 24-5.)

It is worth while giving these expressions of opinion, because they indicate that Galton was beginning to make an impression, and on those whom it was worth while to impress. The purpose of Galton's lecture was to combat the objection often raised against Eugenics*, that human nature would never brook interference with the freedom of marriage. Galton wished to appeal from armchair criticism to actual facts. He stated that it is no unreasonable assumption to suppose that, when Eugenics is so well understood that its lofty objects become generally appreciated, they will meet with some recognition both from the religious sense of the people and from its laws. “The question to be considered is how far have marriage restrictions proved effective when sanctified by the religion of the time, by custom and by law.” Galton next proceeds to show how monogamy and polygamy have each received religious sanction and religious condemnation in their place and turn; how celibacy has been a sin and a state of holiness †. If such customs do not arise from any natural instinct but from considerations of social well-being, may we not conclude that under pressure of worthy motives, limitations to freedom of marriage may hereafter be enacted by law or custom for eugenic purposes? Galton then turns to endogamy and exogamy, which in multitudes of communities have been enforced even under the severest penalties; he refers to the Levirate with its limitation on the widow's choice—he might have referred to the funeral pyre of the Hindoo widow—and to the strange custom adumbrated by the tale of Ruth and Boaz.

* To this word in the opening section is a footnote: “Eugenics may be defined as the science which deals with those social agencies that influence mentally or physically the racial qualities of future generations.” This is not yet the definition of the University Committee, and a singular history attaches to the footnote. Mr Howard Collins read this paper in manuscript, and criticised the wording of the definition of the term “Eugenics”; and in a letter to Galton of Jan. 15, 1905, he proposed that it should read as follows: “Eugenics is defined as the science of those social agencies which influence mentally, morally and physically, the racial qualities of future generations.” Galton adopted this wording, striking out, however, the word “morally.” This indicates how far he was from accepting Sir Arthur Rücker's modification of the University Committee's definition.

† Galton enlarges a good deal on the celibacy of mediaeval Christianity and opines that pious efforts as great as those which founded monasteries and nunneries might under religious influence be directed so as to fulfil an exactly opposite purpose, thus homes or colleges might be endowed for young married couples from stock of high civic worth: see our p. 78 and the account of “Kantsaywhere” later in this chapter.

Marriage within the clan may be considered unmanly—a wife must be *captured*. Customs like these are not instincts, they have arisen from ideas of social profit. Yet they, like the complicated Australian marriage system, have religious sanction, nay, may be enforced by the penalty of death.

“Eugenics deals with what is more valuable than money or lands, namely the heritage of a high character, capable brains, fine physique, and vigour; in short, with all that is most desirable for a family to possess as a birthright. It aims at the evolution and preservation of high races of men, and it as well deserves to be as strictly enforced as a religious duty as the Levirate law ever was.” (pp. 6–7.)

Next Galton refers to the influence of *taboo*.

“A vast complex of motives can be brought to bear upon the naturally susceptible minds of children, and of uneducated adults who are mentally little more than big children. The constituents of this complex are not sharply distinguishable, but they form a recognisable whole that has not yet received an appropriate name, in which religion, superstition, custom, tradition, law and authority all have part. This group of motives will for the present purpose be entitled ‘immaterial’ in contrast to material ones. My contention is that the experience of all ages and all nations shows that the immaterial motives are frequently far stronger than the material ones, the relative power of the two being well illustrated by the tyranny of taboo in many instances, called as it is by different names in different places.” (pp. 8–9.)

The mere terror of having unwittingly broken a taboo may fill a man with the deepest remorse, or even kill him.

Under our own “civilised” law also and with religious sanctification, we meet the taboos of the prohibited degrees of marriage. They are in many cases not questions of instinct, but are primarily designed to preserve family life.

“The marriage of a brother and sister would excite a feeling of loathing among us that seems implanted by nature, but which further inquiry will show has mainly arisen from tradition and custom.” (p. 9.)

Galton holds that a repugnance to inbreeding may have arisen from harm arising from too close inbreeding, but biologically the evil appears—when the stock is good—to have been much exaggerated. He thinks therefore that desire not to infringe the sanctity and freedom of the social relations of a family group has led to the taboo. “It is quite conceivable that a non-eugenic marriage should hereafter excite no less loathing than that of a brother and sister would do now.” (p. 11.) Personally the biographer would consider the marriage of two individuals both members of unrelated stocks tainted with insanity as more heinous than the marriage of a brother and sister of sound stock—the risk of the latter to offspring depends on the existence of unrecognised and undesirable latent characters; there is almost certainty in the former case that a definite percentage of the children will either exhibit or transmit the taint. The thorough conviction by a nation that no worthier object can exist for man than the improvement of his own race is for Galton in itself the acceptance of Eugenics as a national religion. If we examine the reasons for such irresistible streams of popular emotion as are vaguely symbolised in respect for the national flag, in the King as personifying our country, indeed in all phases of patriotism, we shall discover that their springs lie in Galton’s “immaterial motives,” and it

is in precisely such almost instinctive motives that he hoped to find ultimately a foundation for that highest form of patriotism, eugenic morality. Several of the contributors to the discussion emphasised the difference between "barbarous" and "civilised" peoples, suggesting that what anthropology tells of the former cannot be applied to the latter. To the careful student of mankind there are no rigid categories such as barbarism and civilisation; to him the civilisation of to-day is the barbarism of to-morrow, and he can only smile when he is told that civilisation was born in and spread from Egypt. The man of to-day believes, of course, that his religions and his institutions are products of his "high" civilisation; he does not see their growth through the ages and their roots in the fertile mud of what he terms "barbarism." He believes that the basal laws of his own psychic growth differ in some undefined way from those which controlled that of his far-distant ancestor. Galton thought otherwise:

"The subservience of civilised races to their several religious superstitions, customs, authority and the rest, is frequently as abject as that of barbarians. The same classes of motives that direct other races direct ours, so a knowledge of their customs helps us to realise the wide range of what we may ourselves hereafter adopt, for reasons as satisfactory to us in those future times, as they are or were to them at the time when they prevailed." (p. 12.)

I have had several times to refer to Galton's views on religion in the course of this biography. The study of evolution had brought him freedom from the traditional faiths; like many of the leading men of science of his day he was an agnostic. But he was not an iconoclastic freethinker, he was willing that old faiths should remould themselves to new ideas, where some would have felt that it was futile to pour new wine into old skins. Even the ancient faiths in their old skins might help certain natures to-day. I well remember what he said to me when one of his closest relatives was received into the Catholic Church: "It may be a stable guide for emotional natures, it would be of no service to you or me." He was not only tolerant of others' views, but his sympathy induced him to satisfy where it lay in his power their religious cravings, even at the risk of his action being misinterpreted*.

* I venture to quote here a very characteristic and beautiful letter to his niece dated from 42, Rutland Gate, July 30, 1907:

"I should be *glad* to have family prayers as of old. The household needs a few minutes of daily companionship in reverent thought and ritual. The first morning when I had returned home after dear Louisa's death, we the remainder of the household reassembled as usual, but—oh the pitifulness of it—when half-way through the prayers, I lost all control of my voice, and fairly broke down, and dismissed the household. I never recommenced the custom; partly shrinking from its memories; largely because I felt that at least one of the heads should be able to join in the prayers *without any reservation*. This as I understand from your letter you would do now.

"I have again looked at the old and well-remembered prayer-book. It is sadly dilapidated and when last used required caution in handling. I will bring it with me. It might be replaced with advantage. Both Louisa and I felt that the psalms became monotonous, and that it would be well to read alternatively or otherwise parts of the rest of the Bible. I will get a Bible for the purpose of marking out suitable passages, also a prayer book. (It interested me much to find that the published list of Mr Gladstone's favourite psalms was almost identical with my own selection.) It would also be well to increase the variety of the prayers. Mine were 14 collects, two for each week day. We will consider all this at Hindhead. You know and will respect *my* limitations in selecting passages. I *must* be true to my own convictions as you will be to yours."

Galton's conviction was that prayer is subjective in its influence and should be an inspiration, not a petition. I may quote extracts from three letters to his nieces, which support this statement. April 9, 1907: "I think in earnest prayer of you and poor Fred, for I *can* pray

Galton had in reality a deeply religious nature, and in this sense we must read the concluding sentences of this memoir in which he again emphasises the conception that Eugenics will hereafter receive the sanction of religion, even of the present Christian doctrine.

“It may be asked ‘how it can be shown that Eugenics falls within the purview of our own faith.’ It cannot, any more than the duty of making provision for the future needs of oneself and family, which is a cardinal feature of modern civilisation, can be deduced from the Sermon on the Mount. Religious precepts founded on the ethics and practice of olden days require to be reinterpreted to make them conform to the needs of progressive nations. Ours are already so far behind modern requirements that much of our practice and our profession cannot be reconciled without illegitimate casuistry. It seems to me that few things are more needed by us in England than a revision of our religion, to adapt it to the intelligence and needs of the present time. A form of it is wanted that shall be founded on reasonable bases, and enforced by reasonable hopes and fears, and that preaches honest morals in unambiguous language, which good men who take their part in the work of the world and who know the dangers of sentimentalism may pursue without reservation.” (pp. 12–13.)

Such was Galton’s view on the need for the reform of religion. There are several addenda to this paper which I will briefly note here.

In his Reply to speakers (pp. 49–51) Galton remarked that Eugenics is a wide study with an excessive number of side paths into which those that discuss it are apt to stray. Such was essentially the case in the present instance where Galton in his paper had limited himself to the question of whether communities will submit to restriction in marriage. The subjects dealt with in the reply were:

(i) *Certificates*. These were to be of *mens sana in corpore sano* and were to regard ability, physique and hereditary factors. Of these Galton says that such Eugenic certificates could only be issued at some future time dependent on circumstances. He admits that mistakes may be made at first in devising a satisfactory system but is hopeful for the future. As we shall see later, Galton in the following year actually drafted a scheme for Eugenic certificates. In the surviving fragmentary chapter of his utopia “Kantsaywhere,” dealing with the College of that place, there is a very full account of the examinations for Eugenic certificates.

(ii) *Breeding for Points*. Critics had suggested that breeding of domesticated animals is successful because they are bred for individual points.

and *do* pray conscientiously and fervently, though probably in a different form from that you yourself employ.” May 12, 1907: “Did I ever tell you that I have always made it a habit to *pray* before writing anything for publication, that there be no self-seeking in it, and perfect candour together with respect for the feelings of others.” And again, Jan. 20, 1910: “I have read a most interesting article in the *English Review* by Prof Murray, the Professor of Greek at Oxford, on the working religion of the Pagan Greeks at about A.D. 400 (Marcus Aurelius’ time). He gives extracts from two writers of that date beautifully expressed. One of them is a man named Eusebius (not *the* Eusebius) which is in the form of a prayer such as I would employ. It is not ‘give me this or that,’ but ‘may I not fall into this or that faulty conduct.’ It is an aspiration *not* a solicitation. The prayer in question would be a valuable addition to *any* prayer-book to say the least. I should like it and others like it to replace almost all that are there.”

This is the opinion of a man whose paper on prayer of 1872 had led to his treatment as a very flippant freethinker! See our Vol. II, pp. 115, 175, 258, etc.

Galton says that some contributors to the discussion had been unnecessarily alarmed. No question had been raised by him of breeding men like animals for particular points, to the disregard of all-round efficiency in physical and intellectual (including moral*) qualities and in the hereditary worth of their stock. (Personally also I very much doubt whether most breeders select animals for individual points without close regard to other characteristics.) Galton remarks that

“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.” (p. 50.)

(iii) *The Residue*. Galton does not make here a very strong reply to those who objected that, after the selection of the fitter, the residue would interbreed and grow increasingly inferior†. He appears to overlook his own point, that it is essential to create a differential fertility, so that the better stocks increase at a greater rate.

(iv) *Passion of Love*. To the argument that “Love is lord of all,” and will not be restrained, Galton replies that a slight inclination and falling thoroughly in love are two different things, and it is against the former that taboo applies, whether it is due to rank, creed, connections or other causes. “The proverbial ‘Mrs Grundy’ has enormous influence in checking the marriages she considers indiscreet.” (p. 51.)

(v) *Eugenics as a Factor in Religion*. Here Galton adds to his memoir two additional pages (pp. 52–3) as a short essay on this topic. He considers that Eugenics strengthens the sense of social duty in so many important ways—for it promotes wise philanthropy, the notion of parentage as a serious responsibility and a higher conception of patriotism—that its conclusions ought “to find a welcome home in every tolerant religion.” There follows a vivid description of “mechanical” evolution—one of the finest word-paintings that perhaps anyone has made of the world’s history—and then the statement that man has already largely influenced the quality and distribution of organic life on the earth and that if he will only recognise it, it largely lies in his power to influence the evolution of humanity itself. The brief essay concludes with the lines that occupy a place of prominence in the Galton Laboratory of National Eugenics as among the most stimulating words of its Founder:

“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,

* This confirms my view (see p. 224) that Galton would have included the moral with the mental characters.

† He supposes that in the future there would be a freer action for selective agencies, e.g. there would be a reduction of indiscriminate charity, but this seems a return, with emphasis, to the crude processes of natural selection.

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 for 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." (p. 53.)

Besides the two memoranda to which we have just referred, Francis Galton presented a short paper entitled "Studies in National Eugenics," which was appended to his "Marriage Restrictions." He refers to the appointment of Mr Schuster to the Research Fellowship, and sketches out the various inquiries which the new Eugenics Record Office might undertake. They form indeed an excellent scheme for any laboratory proposing to undertake eugenic research. Most of Galton's problems still remain unsolved owing to the difficulty of procuring accurate and adequate data, and they will remain so until the public at large is willing first to fill in at all, and secondly to fill in veraciously investigators' schedules, and until the State recognises how important it is that school, asylum and prison should be treated as laboratories, where under suitable regulations men of science may work*.

As confirming Galton's view that probability is the basis of Eugenics we may note that the bulk of his suggested problems demand the collection of data and their statistical treatment.

I. The first problem is the estimation of the average quality of offspring from that of their parents and ancestry, and this covers questions of relative fertility. Under this heading Galton includes genealogical work on (a) Gifted Families; (b) Capable Families; (c) Degenerate Families; (d) Extent of social class interchanges, to what extent do "castes" rule in modern civilised communities; and (e) Possibility of obtaining valuable eugenic data from Insurance Office records.

II. The Effects of Action by the State and by Public Institutions. Under this heading we may deal with (a) Habitual Criminals, and the problems of their origin and segregation; (b) Feeble-minded and Insane, their origin and the restriction of their reproduction; (c) Grants for higher education, how far these are advantageously used, and to what extent they might be employed to encourage fertility in eugenic marriages; (d) Indiscriminate charity, including out-door relief and perhaps we may now add "the dole." Have they, as there is reason to believe, tendencies other than eugenic?

III. What factors in religion, custom or law, and what social influences tend to restrict eugenic marriages or reduce their fertility?

IV. Heredity. "The facts after being collected are to be discussed for improving our knowledge of the laws both of actuarial and physiological heredity, the recent methods of advanced statistics being of course used" (p. 16). Galton suggests two special problems of great interest: (i) Effect on offspring

* Schoolmaster, medical officer and governor of prison have no time for statistical inquiries. Too often on retirement they publish statements based merely on *impressions*, and none knows better than the statistician how fatally inaccurate these may often be.

of *differences* in parental qualities* and (ii) a thorough study of characters in Eurasians in order to test the applicability of the Mendelian hypothesis to man.

V. A Bibliography of papers bearing on Eugenic topics is desirable. Many papers already exist, published in scientific transactions and journals, which bear on the Eugenists' problems; such a bibliography should include papers of breeders and horticulturists. Considering the enormous development nowadays of Genetics it would probably be well to treat separately Genetics and Eugenics.

VI. Co-operation between students of Eugenics. Probably Galton had in mind here special journals, societies, and congresses.

VII. Certificates of Eugenic fitness. To these we shall return later.

It will be seen that Galton's programme did not lack comprehensiveness.

Another event of this year was the invitation to Galton to accept the Presidency of the British Association at the York Meeting in 1906. It is desirable to indicate that it was not from want of asking—and even of gentle pressure—that the Association missed the honour of numbering Francis Galton among its past presidents. In this he stands with his cousin Charles Darwin; the names of two of the most original scientists of the Victorian epoch fail to appear on the presidential roll.

The following letters received by Galton on May 8 and answered on May 9 explain the situation.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. *May 5, 1905.*

DEAR MR GALTON, At the meeting of the Council of the British Association held at Burlington House this afternoon, it was unanimously resolved that you be nominated as President of the British Association for the meeting to be held at York in 1906. The proposal was received by the Council most cordially, and the officers were instructed to communicate with you and ascertain whether you will agree to the nomination.

* I do not know on what Galton's suspicion rested of a marked influence on the characteristic (*c*) of a child, if there was a great difference (δ) between the paternal (*f*) and maternal (*m*) characteristics. Theoretically, if ϵ be the coefficient of assortative mating, *r* of parental heredity supposed the same for both parents, σ a standard deviation, and $r_{\delta c}$ the correlation of δ and *c*, then:

$$r_{\delta c} = r \frac{\sigma_f - \sigma_m}{\sqrt{(\sigma_f - \sigma_m)^2 + 2\sigma_f\sigma_m(1 - \epsilon)}}$$

Since the coefficients of variation are nearly the same in man and woman, we have, if M_1 and M_2 are mean values in father and mother,

$$r_{\delta c} = r \sqrt{1 + \frac{2M_1M_2(1 - \epsilon)}{(M_1 - M_2)^2}}$$

In the case of absolute measurements in man and woman, $M_1 = (1 + \frac{1}{12})M_2$ and $\epsilon = \cdot 2$ roughly.

Accordingly

$$r_{\delta c} = r \times \cdot 069 = \cdot 03, \text{ approximately.}$$

Hence, statistically, there is no significant influence of the *difference* of parental characters on the character of the child. Physiologically, of course, there may be some influence of extreme differences, but such being rare it may not be detectable in the statistical treatment.

May I add that I am sure it will be a matter of rejoicing and gratification to Biologists generally if you see your way to accept this position and become our President at the next meeting in this country. I am asking Professor George Darwin, the President-Elect for this year's meeting, to write to you also—so I hope you will receive a letter from him in the course of a day or two. I am, dear Mr Galton, Yours very sincerely, W. A. HERDMAN, Gen. Secretary.

This letter was backed up by one from George Darwin.

NEWNHAM GRANGE, CAMBRIDGE. *May 6, 1905.*

MY DEAR GALTON, You will perhaps already have received an official intimation that you were yesterday unanimously nominated Pres^t. of the B.A. for the York meeting. I had the pleasure of proposing your name, and I pointed out that you ought to have been nominated years ago, and that the fact that men of science were formerly somewhat blind to the great work that you have done gave no excuse for omitting even this belated recognition. That you may not think that this is merely my personal opinion, I should add that speaker after speaker endorsed what I have said. We all hope that you may feel yourself able to accept the nomination. It was pointed out as an objection that your deafness would be a difficulty in as much as presiding at the Council meetings could hardly be carried out efficiently by you. To this most, perhaps all, considered that there was a complete answer—you have only to absent yourself from Council meetings. During the present year Balfour never comes—as we knew he would not—and we get through our business with the aid of the V.P.'s.

I hope that you will not allow this consideration to deter you from acceptance, and, if you will take it, my advice to you would be that you should not attend any Council meetings during your year of office, when you would have to take the chair, or at least should ask a V.P. to preside. I cannot of course judge whether you will feel yourself disposed to undertake the duties, but I can only very heartily express the hope that you will feel you have the strength to do so. Yours very sincerely, G. H. DARWIN.

To this letter I add Galton's reply:

42, RUTLAND GATE, S.W. *May 9, 1905.*

MY DEAR GEORGE DARWIN, It was only last night that I returned and found your very kind letter and that of Prof. Herdman to whom I have just written. I am deeply sensible of the proposed honour and fully recognise the unique opportunity afforded to the President of the Brit. Assocⁿ of drawing the attention of the whole scientific world to such views as he may put forward. Also I am cordially grateful to the thoughtful way in which you propose to make the work less laborious and independent of my deafness. But the fatal fact remains that I am not strong enough even under all these alleviations. The preceding excitement would be enough to upset me. I cannot stand even a moderate amount of flurry. It is of no use for me to fight against impossibilities. Long since I have learnt to renounce many tempting pleasures, and must do so now. The only chance I have of doing useful work during the remainder of my life, lies in doing it quietly and living very simply much like an invalid, and in never undertaking to tie myself to a day when I might prove quite unfit. Once before when Sir William Flower was President and the names of possible persons were to be considered at a Council meeting at which I was present, he with the previous assent of the other General Officers, emphatically proposed me at the first. I immediately begged to be left out of account, being too painfully conscious even then of the limitations of my strength. Notwithstanding kindly pressure, I persisted in the refusal. It would be foolishly rash if I made the venture now.

Ever sincerely yours, FRANCIS GALTON.

P.S. I have had a pleasant and healthful 2½ months in the Riviera (Bordighera), but missed your sister. I saw Miss Shaen during her brief visit there. What an eventful August you will have at the Cape. I heartily wish you every possible success and pleasure. But what a racket it will be!

During this year Galton was very busy with the superintendence of his Eugenics Record Office and many of his letters relate to proposed work, to

developments at the office, or to suggestions and criticisms touching the biographer's researches. I give three illustrations to show how keenly alive he still remained to all going on in our joint field of work.

42, RUTLAND GATE, S.W. *May* 31, 1905.

MY DEAR KARL PEARSON, If your timely and most useful article on Dr Diem's material in the *Brit. Med. Journ.* is intended to start an organised inquiry, towards which I can in *any way* help, pray command me. It is just one of the things I want to see done. Quere, a reasonable plan would be to reprint your article in a pamphlet form, with tables to show exactly what is wanted, and after preparing the way a little to circulate it judiciously. Is there not an error—at all events the sentence requires explanation—in “Dr Diem's tables show that nervous disorders are *more numerous* in the parentages of the sane than in those of the insane”? What are “nervous disorders”? Or are sane and insane transposed*? If a pamphlet were circulated the meaning of the phrases 1 to 5 in Dr Diem's and your list should be defined in it. As, for example “want of mental balance”! We are all of us so mad! How mad must we be to justify the epithet of “unbalanced mind”? Parental and fraternal histories ought to be easily accessible among the insane and feeble-minded, and among the sane still more so. But in the latter case there are often skeletons hid in closets. One seems to want corroboration of what is said by others who have known the family intimately. Biographers fib so much. I have just been reading one that includes two letters praising a man as a gentle angel, whom I recollect as a red pimple-faced obstreperous and most eccentric schoolmaster in my very early days. Where is truth to be found? Ever yours sincerely, FRANCIS GALTON.

This research was not at the time pushed further. What is essential to the effective study of the heredity of insanity is a register of the persons in the kingdom who have at *any* time in their life been in an asylum (and of course it must state from what type of mental disease); at present we can only *guess* what percentage of the population has been certified at any time as insane.

42, RUTLAND GATE, S.W. *July* 27, 1905.

MY DEAR KARL PEARSON, I kept your letter the last to open, as I dreaded it would contain a grave and well merited rebuke, but it did not, and the motive for the rebuke is happily dissipated. It was the announcement by Murray that he was about to publish eugenic matter for the University of London before he had received authority to do so. It was a stupid blunder of his, for which he wrote a most penitent letter that was laid before the members of the Senate yesterday, who have condoned it—for their resolution in the University Intelligence, p. 7, of to-day's *Times* puts all on a solid footing. The material in question consists of 65 Noteworthy Families in Modern Science, and “is to appear as Vol. I of the publications of the Eugenics Record Office.” This is a big recognition in my opinion. Murray is pleased to publish on the $\frac{1}{2}$ profit system....I envy the old biometric teas†, but everything “dehisces.” I go north on Saturday towards and then to Westmoreland; Eva Biggs goes south to Devon, and in the 3rd week of August we reunite at Ockham.

Last Monday and Tuesday evenings we spent at that wonderful air-cure Hindhead, where I had the great pleasure of seeing again Mrs Tyndall, who lives in the house her husband (Prof. Tyndall) built.

* If “nervous disorders” be used in the sense of slight nervous troubles, hysteria, excitability or depression, far short of insanity, the explanation may be that in the case of stocks tainted with insanity, these cases are intensified and the sufferers become actually insane.

† For some years Francis Galton and his niece had come within reach of the biometric holiday workers for a few weeks in the summer. We were often some distance from each other as at Bibury, Witney and Oxford. The morning was given to work, then the victoria carried our leader and bicycles the remainder of the party to some inn, in a village if possible with a beautiful church, and there was a biometric tea, at which discussion turned not wholly on work.

I am rather pleased at the way that has occurred to me of explaining why the men of highest genius have so few able descendants and these often cranks, viz. that there is negative correlation between their faculties,—sensitiveness and dogged work, imagination and good sense, etc.—so that the inheritance of such an unstable combination is improbable. There is much to say, this is only a notice, so to speak.

Ever very sincerely, with kind remembrances to Mrs Pearson, FRANCIS GALTON.

Even letters which touched chiefly on personal matters were sure to contain at least a few sentences as to work.

THE RECTORY, OCKHAM, SURREY. *Aug. 25, 1905.*

MY DEAR KARL PEARSON, It was with self-restraint that I did not write to say how grieved I was at your domestic sorrow, and how deeply I sympathise with you. I feared to extract a reply and knew you were overworked. This note is merely to enclose my brand-new circular, which I begin to distribute among friends, and hereafter I hope much more widely. If you think any of your lady co-operators especially are likely to help and take interest, I would gladly send circulars to them. Miss Elderton is established now at the "Eugenics Record Office" and at work there*.

This is a pretty and healthy place, and friends are near. Sir H. Roscoe has a beautiful garden, 600 and more feet above the sea, where everything flourishes. Kindest remembrances to you both. Eva Biggs is at this moment sketching or choosing a sketching place by an artistic but foul pond. Ever sincerely, FRANCIS GALTON.

(9) *Events and Correspondence of 1906.* During this year I do not think that Galton published any papers, except the Memoir on Resemblance and the humorous little note in *Nature* on the cutting of a cake (see Vol. II, p. 329, and above, p. 124). But it was full both for Galton and his biographer of new and sad experiences which, as they were to some extent common to them both, brought them closer together and ripened their friendship. To the one the loss of a sister†, to the other of a mother; to both of an irreplaceable friend and colleague, a death rendered the more bitter by its unexpectedness, and by attendant circumstances, which touched both with nearly equal sorrow. I had started with a keen appreciation of Galton as a scientist, I had learnt to value him as friend and counsellor; I now understood and deeply admired the strength of his humanity and his generosity of mind. The following letters may give some idea of the warmth of feeling that existed between Galton and his two lieutenants, even as the tripartite relationship was dissolved.

7, WELL ROAD, HAMPSTEAD, N.W. *Jan. 24, 1906.*

MY DEAR FRANCIS GALTON, May I send just a line of very heartfelt sympathy with you in the loss of which I have just heard? I know it will be the greater in that you were not in England at the time. I am at the age when these losses begin to be more frequent, and deprive life of much of its old "go"; and just at present one lives a day at a time, with two or three of one's own generation and some of the generation above almost more than threatened. Hence one feels very strongly the closeness and the mystery of death; and sympathy—which one is helpless to express—goes out to a friend in like case. I have often thought the only real expression of a feeling like this is given by the hand and eye, and not by the tongue, which is so helpless that we had better go on with the old routine of life, speechless on such points.

* As Secretary. Francis Galton hesitated about a woman taking part in academic matters, although he had begun to realise the good work of the women in the Biometric Laboratory. He was comforted by the Principal's opinion, "Sir Arthur Rücker speaks highly of lady secretaries, and generally agrees with what we talked about." Letter to K. P., June 20, 1905.

† "Bessie," Mrs Wheler.

I have sent Schuster's paper to press. Hartog has paid the account. I was seeing Dr Pearl yesterday and put my head into Miss Elderton's door; she seemed bright and fresh, and said she had plenty to do; so I hope the work of your Eugenics Office is going forward.

The enclosed letter may amuse you. I think that X. is a very dangerous person, if his notion of eugenics is the intermarriage of consumptive stocks! Very many thanks for your long letter. I wish there were some simple colour register. I don't expect it is easy to get colours like terra-cottas and salmons out of Abney's apparatus. I shall send you a copy of the poppy plate when it comes. I hope Miss Biggs will not be too scornful about it!

Weldon will have told you about Y. and Z.'s attack at the R.S. Weldon had a good paper last Thursday and Z. drew as usual red herrings across the track.

Affectionately yours, KARL PEARSON.

Feb. 1, 1906.

MY DEAR KARL PEARSON, Thank you very much for your letter of sympathy. I have now lost the last tie that brought the family's interests together as to a common focus, and kept each member informed by letter, weekly or otherwise, of the welfare of the rest. To what an enormous amount of grief do the tombstones of any churchyard bear witness!

The "slasher" against X. is right well deserved. I had always a faint misgiving of his Oriental ways and fluency, which steadily deepened until I have come to look upon his aid as unreliable and dangerous. He strikes me as an interesting evidence of the danger of entrusting political power to Oriental subjects—Indian, Egyptian and others.

I will venture shortly to ask you to do me a very great favour, namely to look over a short type-written paper on "the Measurement of Resemblance," and tell me what you think of it. The thing has, as you may remember at Peppard*, been often taken up by me, puzzled over and temporarily laid down. It is at length worked out, I think, fully and practically, but before venturing on publication, I should *greatly value* criticism. At this moment it is only in an uncorrected draft, and I do not wish to hurry before putting it into a corrected form and sending it to London to be typed. The typist will then be instructed (say in a week or a fortnight) to send you a copy†.

We go to-day to "Hôtel de la Rhune, Ascain, Basses Pyrénées," for a week. It is a picturesque Basque Village, four miles from here. Then we *probably* return to where I am writing from, "Hôtel Terminus, St Jean de Luz, Basses Pyrénées," for a day or two, and afterwards according to conditions not yet determined on which we are dependent, to somewhere else. These may lead either to a dip of a fortnight into Spain or to another Basque village, I cannot foresee which. I will send address later on.

The Basque orderliness, thorough but quiet ways, and their substantial clean-looking houses, tug at every Quaker fibre in my heart, and I love them so far. As to their wonderful language unlike in syntax to any other, the virtue of these parts is accounted for by the legend that Satan came here for a visit, but finding after six years that he could neither learn the Basque language, nor make the Basques understand him, he left the country in despair. With kindest remembrances to Mrs Pearson. Ever sincerely yours, FRANCIS GALTON.

It would be an interesting problem to determine what is the degree of likeness of a man to himself, by correlating the habits and modes of thought of individuals at selected ages. We might thus obtain a measure of the permanence of individuality. How far is one the same man at 20 and 60 years of age? Galton at least in his love of travel at 18 and 84 exhibited a marvellous sameness. His love of ingenious mechanical apparatus also remained fully as strong, and his humility was not a whit less.

"How curious it is to see," remarks Lord Minto, "how exactly people follow their own characters all through life."

* The long vacation of 1903 was spent at Peppard, the Galtons on the Green, the Pearsons at Blount's Court Farm, the Weldons at the far end of the village, and various biometric workers round about. It was a delightful and fertile summer.

† See the section in Vol. II on the "Measurement of Resemblance," pp. 329-333.

If Galton's character seemed to me at first to change between 1890 and 1910, it was only because with ever increasing intimacy I learnt to understand him better and better.

7, WELL ROAD, HAMPSTEAD, N.W. *Feb.* 16, 1906.

MY DEAR FRANCIS GALTON, Very hearty thanks to Miss Biggs and yourself for your consoling words as to the plate of poppy petals. I feared you would be as disgusted with them as I felt, but you have not the originals to place beside them. I think, however, we shall succeed in getting something better in the final proof. Your paper reached me safely the day before yesterday, and I have read it through thrice. It seems to me most suggestive and I want very much to be making "isoscopes" and practically trying how it works. It would be most satisfactory to find it giving a higher average degree of resemblance between relatives than between strangers. You use I suppose one eye only to see both objects simultaneously? Would it not be well to get a simple instrument made by Beck or Baker from your drawings with an ocular micrometer, and test on photographs? or are you thinking of finger-prints? Would you like the paper in *Biometrika* or do you want a wider audience? I need not say we shall be most pleased to have it. Affectionately yours, KARL PEARSON.

Thus matters seemed to be slipping back into their old channels, with work in the foremost place. Easter was to be spent by us at Longcot with the Weldons near at hand in little Woolstone inn at the foot of the hill marked by the White Horse (or rather "White Dragon"). There were the usual plans for further work, visits to Oxford to see the mice and cycle-rides to make lay studies of church architecture. Weldon was not in good health, he was depressed and thought a visit to a picture gallery in London would be a relief. He went, and from the gallery passed to a nursing home, and died within twenty-four hours of double pneumonia.

42, RUTLAND GATE, S.W. *April* 16, 1906.

MY DEAR PEARSON, Weldon's death is a terrible and disastrous blow, so utterly unexpected. Few if any men will feel it more deeply than you who were so intimately associated with him, not many more than I do. We have lost a loved friend, and Biometry has lost one of its protagonists. I feel intensely miserable about it and shall feel the void he has left for probably the rest of my life. I should greatly have liked to pay the last tribute of friendship to his remains by attending the funeral, but I dare not risk it. Among other things an incipient mild phlebitis in a leg prevents my standing during many minutes and my doctor is strict on this.

I do indeed pity Mrs Weldon from my heart. How deeply your Wife will feel it all, and how helpful she is sure to be, as you are. Give my kindest remembrances to her. We go to the country on Wednesday but letters will be forwarded from here. It will be a sad day.

Affectionately yours, FRANCIS GALTON.

The first part of the funeral service was in the chapel of Merton College, and to my surprise I saw Galton there.

THE AVENUE HOUSE, BISHOPTON, STRATFORD-ON-AVON. *April* 19, 1906.

MY DEAR KARL PEARSON, The card of invitation showed it was possible for me to attend the first part of the funeral without harm, so as you saw I went, and came on here by a later train. It is inexpressibly sad. I do not myself yet fully know all the circumstances, but the more I know the more pity full * it seems. I should be very grateful for tidings about Mrs Weldon, into whose sorrow I could not venture yesterday to intrude. If you or Mrs Pearson have the

* So Galton wrote, and the words express more than "pitiful."

opportunity of doing so pray express my sincerest sympathy with her.....I do pity you both in losing so dear and intimate a colleague and in so tragical a manner....I am staying with my niece, Mrs Studdy, here at her house, until Saturday morning, then I go to my nephew Edward Wheler, Claverdon Leys, Warwick. These two, another dear niece Mrs Lethbridge and my ageing brother, now exhaust the list of my near relatives. Kindest remembrances to Mrs Pearson. I heard of her movements from Professor Clifton and knew she was not in Oxford yesterday.

Ever affectionately, FRANCIS GALTON.

The blow struck us both severely; there was much to think over, and some things had to be done immediately, *Biometrika* reconstituted, an eloge written, a memorial to Weldon instituted and many papers sorted. Without Francis Galton's continuous sympathy, aid and counsel, it would have been impossible in that year to continue my work.

First, as to the Weldon memorial; largely by the aid of two or three generous donors, of whom it is needless to say Galton was one, enough money was eventually obtained for a marble bust by Hope Pinker, to be placed in the Museums at Oxford, and a biennial Weldon medal with premium for the best biometric memoir published in the immediately previous years—the medal to be awarded by Oxford electors, but not confined to that University nor to British subjects. The scheme, as finally drafted and accepted by the Hebdomadal Council, was largely Galton's creation. I had felt very strongly that biometry was destined eventually to take an important place in biology, especially in researches into evolution and that, for an international prize of this kind, at least in the more distant future, the Council of the Royal Society would be the fittest judges.

Secondly, sheet after sheet the eloge on Weldon went to Francis Galton and was returned with criticisms and suggestions. He was especially dissatisfied with my brief references to Weldon's part in the attempt to remodel the University of London, and to his work in relation to the Evolution Committee of the Royal Society. As some history, little recognised, is conveyed in this interchange of letters, I have ventured to insert several of them here. They will illustrate the help Galton gave to his younger friends and the sympathy he felt for all their difficulties.

The wrapper and title-page of *Biometrika* had to be hastily rearranged, and I wrote to Galton for advice. His suggestions, very closely followed, ran thus:

CLAVERDON LEYS, WARWICK. *April 25, 1906.*

MY DEAR KARL PEARSON, Friday, May 4, after your College meeting, will quite suit me to all appearances...but I can foresee only a short way, and have to mould my plans upon others. I go to London to-morrow, and am away in Essex, Saturday to Monday, but have no further engagements. About the future of *Biometrika*, would not the simplest plan be for you to edit it *solely* in your name? Weldon often said that he wished you would do so, for all the work had been and will be yours. You suggested that "founded in 1901 by Weldon, yourself and myself" should be inserted. You must not give so much prominence to me. Why not keep to the existing formula and say: "Founded in 1901 by Professors K. Pearson and W. F. R. Weldon in *consultation* with Francis Galton." Then simply "Edited by Karl Pearson"? A list of coadjutors would scarcely add weight to your name.....Affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *April 29, 1906.*

MY DEAR FRANCIS GALTON, The scrapbook with the photograph* reached me just before leaving Longcot, and the other book was awaiting my arrival here. I shall endeavour to get an enlargement, for as you say the attitude is very characteristic, but I fear it will not stand much enlarging. Please tell Miss Biggs I will take all care of the book. The other book shall go back to its place on the shelves at Oxford, when I next go down. I found the finger-print books and the letters in going through the papers at Oxford. I shall keep myself free on Friday and you will tell me whether you are able to see me. At times there seems so much to talk to you about and then again it all passes from me. It was possible to go on as long as I was attempting to put the papers at Oxford in order, but I seem now quite dazed, and for the first time in all my teaching experience the idea of facing my students and lecturing seems positively repellent,—at times impossible. I feel wholly without energy to start the term, and if I could only see the man able to do my work, I would ask for 6 or 9 months leave of absence. I have only sounded this personal note because I want you to pardon me, if I say or do anything stupid at present. Yours always sincerely, KARL PEARSON.

42, RUTLAND GATE, S.W. *April 30, 1906.*

MY DEAR KARL PEARSON, The account of your overwrought spirits and energy quite distresses me. I look forward greatly to seeing you here on Friday. If there are hopes of your coming *earlier* than 4 p.m. on that day please send a postcard that I may not be out. My time is quite at your disposal.Anyhow I look forward to some quiet conversation with yourself alone. Ever affectionately, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *May 7, 1906.*

MY DEAR KARL PEARSON, My attempts have been fruitless to put anything down that you are not already familiar with, about Weldon's characteristics. The extraordinary fulness and accuracy of his letters astonished me. He would write almost a treatise, and insert long tables with apparent ease and as a work of supererogation, which would be a large labour to most men. I suppose too that a certain *pertinacity*, in the favourable sense of the word, was one of his most marked peculiarities. The extraordinarily wide range of his accurate, not superficial, knowledge, was another feature. He was too kindly a critic of things that I asked him to criticise to be of value to me on those occasions, I am sorry to say. Rightly or wrongly my impression always was that he needed some one very strong scientific end in view to compel him to concentrate his remarkable powers more steadily. But I may be judging incorrectly here. I wish I could think of more, this much is I fear useless to you.

Affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *May 13, 1906.*

DEAR FRANCIS GALTON, I want to ask your opinion about resigning my fellowship of the Royal Society. You will remember that the last paper I contributed to the Society met with a great deal of difficulty in getting accepted—probably was accepted only on account of your nice little speech. But the Secretaries communicated a resolution to me that I should be requested in future contributions not to mix statistics and biology in the same paper. This of course was equivalent to the intimation that they would not accept future biometric papers from me. I was at the time—I think it is more than three years ago—sorely tempted to resign, but did not do so under the impression that it might be looked upon as personal dudgeon. I have not communicated any paper of *my own* to the R.S. since. The one case where I presented a paper was an application by Miss Cave of our statistical methods to a problem in meteorology. In that case the Secretary wrote and suggested that I should withdraw the paper as the meteorologists did not approve the methods used†. This I declined to do and after some controversy the paper

* Of Weldon; at his death, but few, and those unsatisfactory, portraits could be found.

† A commentary on this judgment is that the Meteorological Office recently sent round a circular to various persons, including myself, asking if we could provide further correlations of barometric pressures! Still the pioneers of correlation work in meteorology were hardly treated.

was printed. I have always meant, however, to test the biometric question again, and when Dr Pearl gave me what appeared to me a really noteworthy paper—showing for the first time that even the Protozoa do not mate at random, but assort themselves—the very important result wanted to show how species can be differentiated, even if all members are fertile *inter se*—I presented it to the R.S. as a test case. The Secretary wrote to Weldon who was then Chairman of the Zoological Committee and stated that it would be much better to print it in *Biometrika* than in *Phil. Trans.* The paper is a long one with much illustration and as neither Weldon nor I saw why the Royal Society should be closed to biometricians, the suggestion was therefore refused. Unfortunately Weldon's death left the matter to be finally decided by the committee under a new chairman and they have now settled not to publish the paper "mainly on difficulties felt as to the biological significance of the quantity measured." The quantity measured is the correlation coefficient in three characters for conjugating protozoa, and it appears to demonstrate that physiologically in the lowest types of life, like is compelled to mate with like by structural conditions. It appears to be the first clear demonstration of Romanes' physiological selection, and supplies the need Huxley felt for evidence that differentiation can arise inside a species fertile *inter se*. It is the old tale that men are set to express an opinion on a biometric paper when they do not know what is the significance of a coefficient of correlation! But I think I have really good ground now for doing what Weldon and I more than once talked about, retiring from the R.S.

My chief work and interests now lie in biometry. If the R.S. will have nothing to do with it, and publishes papers and reports of which the writers lack the most elementary knowledge of statistics, then the Society ceases to appeal to me in any way. I cannot see that I shall do any harm in raising my protest, however feeble it may be. It is not, I trust, a personal point, for I have sent nothing for three years to the Society, but I do not care to sit still and see a really fine piece of work consigned to the Archives, when the Society ought to have felt it an honour to publish it. However, tell me frankly your views and I shall abide by your advice.

Always yours sincerely, KARL PEARSON.

42, RUTLAND GATE, S.W. *May* 14, 1906.

DEAR KARL PEARSON, I fully understand and sympathise with your feelings. It is a disgrace to the biologists of the day, that their representatives in the Royal Society are incapable of understanding biometric papers, and of distinguishing between bad and good statistical work. To that extent I am entirely at one with you, but I do not on the above grounds see that your resignation would mend matters. It is a very general rule of conduct *not* to withdraw when in a minority, because a vantage ground is surrendered by doing so. It is far easier to reform a society while a member of it than when an outsider. The object is, by direct and indirect means, as occasion may offer, to *educate* biologists in the elements of higher statistics. This is being slowly but surely done by *Biometrika*, and would be done more quickly if you could find somebody with a light touch to show as much of the way as biologists should go, and of the false ways in which they have strayed, as the conditions of the case permit, by writing in popular magazines. I do not see why the *meaning* of correlation should not become familiarised, though the methods of work are technical. And similarly for much more, the objects aimed at may be explained, though not the processes. There is an Arab proverb about the ease with which the greater part of the honey in one pot may be transferred to another, and the extreme difficulty of transferring the whole.—So much for mere elementary education.

As regards higher work, you may be driven to make *Biometrika* a seat of judgment, *not* to argue or to enter into controversy (which I know you hate), but simply to pass sentence with reason given just like newspapers do. A fair lash, on the proper quarters, at the right

I can recollect two bad cases; at one university a memoir on barometric cross-Atlantic correlations was refused a prize because the methods were not "original"; at a second university an elaborate piece of work, showing that there was no correlation between the position of the moon and any meteorological phenomena, failed as a thesis for the doctorate on the ground that its results were *negative*—as if negative results were not in this case as important as positive—and besides, as the meteorological expert put it, the candidate had omitted to inquire how far thunderstorms are subject to lunar influence!

moment, bestowed whenever it is deserved, would soon be dreaded, and become a check on charlatans; it would afford a motive to others towards acquiring biometric knowledge in order to appreciate the punishment. You can do all, or any part of this, with more effect as a fellow of the R.Soc., than otherwise, so I should say *don't resign*, but abide your time, and give a good and well-deserved slash now and then to serve as a reminder that your views are strong, though not querulously and wearisomely repeated. Ever yours, FRANCIS GALTON.

The above two letters, relating to matters now of the fairly distant past, are not printed with a view to renewing old differences, or justifying past phases of feeling, but to indicate how close was Galton's relation to his younger scientific friends, and how he aided and counselled them in all their scientific relations. In another matter also he was both materially and advisorily most helpful. The Weldon memorial fund was certain to be sufficient to provide a bust of Weldon for Oxford, but I was ambitious that it should do more, and this in the special manner that I thought Weldon himself would have most approved. I wanted something that should form a permanent encouragement to biometricians the whole world round, and I had specially in mind the younger men. I wanted to see besides the bust, the institution of an annual or biennial medal and premium. In order to obtain a greater range of subscribers, I proposed that the three universities with which Weldon had been associated should in turn adjudicate the proposed medal and premium, and I drafted the first appeal for the Weldon memorial fund to this effect and sent it to Francis Galton for his criticism.

42, RUTLAND GATE, S.W. *May 27, 1906.*

MY DEAR KARL PEARSON, I am heartily at one with you in your object, but see difficulties in the proposed method of attaining it. They are:

1. The experience of like attempts shows how difficult it is to raise as much money as you want. I could tell you my own, but being personal do not like to write it.
2. The Royal Society fails to find competent referees in biometry, much more would the three several universities fail to do so. The dignity of the body which awards medals is of less consequence than the assurance that the award is just.
3. An annual or biennial medal and premium, to be awarded to each of the three universities in turn, does not seem a very attractive bait.

I write with much diffidence as to what I think would be preferable:

(a) Mention a medallion as a possible alternative to a bust*. It would be cheaper, and would serve as an appropriate design for the medal.

(b) Supposing that the assurance of an annual sum of £— would justify the issue of a medal I should be prepared to give as much as would purchase £— consols for that purpose....But it must be *anonymous*....

(c) If this plan seems acceptable I would at once send the sum with an accompanying letter to this effect: "I enclose the sum in question for instituting a periodical medal or premium in memory of Prof. Weldon to be awarded to the author of the most valuable biometric publication of recent date, on the understanding that you will consult biometric friends on the conditions that are to regulate the award, and more especially to determine whether it should be limited to one class of English biometricians, to all classes †, or be independent of nationality...."

* Probably a bust would need to have been produced to get the medallion, as no portrait in profile existed. K. P.

† Galton was rightly desirous that the award should not be confined to biological biometricians but should embrace sociology, anthropology, etc. K. P.

Galton next expressed his desire that the medal should be associated with *Biometrika* and suggested how this might be done. To this idea, I was strongly opposed; it would not have attracted outside support and sympathy, the journal might cease to exist, its vitality was not then fully established, and there would be no trustees for the fund. With Galton's gift the medal was assured; I had no doubt that the remaining sum needful would be forthcoming from Weldon's personal friends, and there was no occasion to make a broad appeal to the three universities. It was possible to stress the international character of the medal, which I had much at heart.

Please at this present stage, consider nothing of the above as *final*. I only put it forward in the form that *now* occurs to me which would doubtless be much improved by your and other criticism. Pray give it freely. To-morrow I go out of Town for three nights so excuse me if I miss a post or two; my letters will be forwarded, of course. Enclosed I return your draft. With all good wishes for the final success of the plan. Ever very sincerely, FRANCIS GALTON.

UNIVERSITY COLLEGE, LONDON. *May 28, 1906.*

MY DEAR FRANCIS GALTON, Yesterday I was looking at a letter from the Weldon series, dealing with the foundation of *Biometrika*. I had just written to tell him that the complete guarantee fund was forthcoming, and the journal could really start. He begins "Dear good old Galton, dear good old everybody," and that is somehow just how I feel, when I write now to you! This is not an answer to your letter because I want to think it over and reword my original proposals, but I feel quite certain that the annual medal you suggest would not only be invaluable as an inducement to men to strive their best for biometric research, but would indirectly produce some good papers for our journal. I quite agree that it should be open to sociological as well as purely zoological inquiry. I will write again in a few days. My heart is very full just now. We have had Mrs Weldon with us for two days going through papers and letters. I am beginning to see the lines of my memoir a little better.

Affectionately yours, KARL PEARSON.

P.S. I am not at all sure that it would not be of great value in the future to publish some at least of Weldon's letters. They are full of suggestion for research, and represent his scientific spirit far more effectively than his published papers.

[Undated, but early *June, 1906.*]

MY DEAR FRANCIS GALTON, Many thanks to Miss Biggs for all the trouble she has taken in hunting up those letters from Weldon, and you for letting me read them. You need not fear any criticism of my work by *him* will influence me. Our friendship had gone through the fire and nothing could modify my judgment or affection now. But this is a hard week, I have been at Oxford sorting papers for three days, and I have brought the memoir down to the early biometric papers. I will send the result to you soon. It is hard now to distinguish exactly what was yours and what was his, but I don't think you will feel hurt if I have not always put the praise where it should be. It is easier to praise the dead than the living. Please just stick to your life, till mine is gone; I can't do all this again. It is the fourth time I have had to throw all my energy into a dead man's papers and work, and three times the man has been so to speak a part of my own life. How can one tell the tale? Affectionately yours, KARL PEARSON.

7, WELL ROAD, HAMPSTEAD, N.W. *June 28, 1906.*

MY DEAR FRANCIS GALTON, A good and a bad piece of news. In the first place another anonymous donor wishes to add a second £— Consols to yours. This is good because we might hope the fund would go up eventually to £1000 and this would be very good indeed.

In the next place I wrote to Lord Rayleigh asking him whether he thought it at all likely that the R.S. would consent to act as trustees of a Weldon medal and premium for biometric

work. He replied that he "would sound the officers." I have his reply to-night, which I am sending to you. You will see that it is distinctly unfavourable. In the first place, I did not do more than ask him his opinion as to what the Council would be likely to do, if the proposal were made to them. You will see that he speaks of referring it to the Zoological Committee. Now that is hopeless—that body has just refused Pearl's really good bit of biometric work "principally on the ground that they do not see the biological significance of the quantity measured," i.e. they do not see what is meant by a correlation coefficient. Further, the idea of the Evolution Committee having anything to do with the matter is too absurd*. That Committee is now merely a body for running Mendelism and the last thing to commemorate Weldon would be to assist that movement.

Now I want you to tell me what to do. Whether: (1) to let Lord Rayleigh put the matter before the Zoological Committee: in which case the offer will probably be rejected. (2) To write to Lord Rayleigh and point out that the Zoological Committee—as it does not contain a single biometrician—can hardly express a useful opinion on the point. I believe it is simply a method of shifting the decision on to another body than the Council. (3) To ask him to consider the proposal as withdrawn. (4) To ask him to bring the matter directly before the Council, so that we may know that they and not the Zoological Committee are responsible for the decision arrived at.

Kindly let me know what your views may be. Of course other trustees can be found, e.g. the University of London. But I feel that for the distant future the R.S. would have been the right trustee for an international thing of this kind. Affectionately yours, KARL PEARSON.

Please return Lord Rayleigh's letter. If you could by any means let me have a reply by to-morrow, Saturday, night, it might save the matter going further, if that is your advice.

42, RUTLAND GATE, S.W. *June 30, 1906.*

MY DEAR KARL PEARSON, I think that the R.S. ought to be left severely alone. Their official representatives repudiate biometry and their Council is already overtasked in awarding medals. I can quite imagine their doing what the R. Geograph. Soc. have already done, viz. refuse any offer to found a new prize. Oxford University seems to me far more suitable in many important respects, and its list of Professors (as given in Whitaker) affords at least 10 suitable electors, ...and there could be no valid objection, I should think, to specifying certain names in addition. I have not however an Oxford Calendar by me to refer to, for precedent, but will go to the Club and if there be time, will write again, thereon, to-day. The 10 [?11] Professors are

Anthropology	Medicine
Astronomy (Law of Error)	(?) Natural Philosophy—(I don't know in the least what this is)
Botany	
Comparative Anatomy	Physiology
Geometry	Pure Mathematics
Human Anatomy	Zoology

I should suggest a short printed circular, enclosed with a few lines of written letter, to each of these, saying that so much money is already in hand, that it is proposed to found a Weldon biometric Medal, or other award,—that it is suggested that the University of Oxford would be the most suitable body to bestow it,—that there are at least 10 professors with whose subjects biometry has some connection, from among whom a suitable board might be selected by the University to adjudge the award. ...Finally to ask for their suggestions and whether they are willing to co-operate in furthering the proposed plan.—That, after answers shall have been received, the question of approaching the University will be considered.

Would it be convenient if I called on you to-morrow (Sunday) afternoon? I would suggest at 2 o'clock, but any other reasonable hour would suit me equally well. Will you telegraph? and I will abide by what you tell me. Affectionately yours, FRANCIS GALTON.

I have an engagement *here* at 4.15.

I am delighted to hear of the additional £—. I return Lord Rayleigh's letter.

* The President in his letter had suggested that if the medal were accepted, the Evolution Committee might be a suitable body to award it. K. P.

42, RUTLAND GATE, S.W. July 6, 1906.

MY DEAR KARL PEARSON, The first thing that I heard of the Evolution Cttee was from Michael Foster who said that the C. of the R. Soc. had been asked to form one, and that they would on the condition that I would act as Chairman, to which I assented.

The offer of a big sum to help in founding a Darwinian establishment for plants and animals was made by me tentatively on many occasions, on the condition that the large balance needed for such an institution could be raised elsewhere. I repeated it more or less formally during the existence of the Cttee, but the response was quite inadequate. The offer of Charles Darwin's house in Down at a moderate (? nominal) rent was made by the Darwin family to the Cttee, but the double event of cost of maintenance and the practical impossibility of visiting it from London on Sundays owing to the awkward hours of the trains, made it impossible to accept the offer. No one benefited by my offer; "no jackals came down for the spoils*."

The work of the Cttee was a great disappointment to me. For one thing, I had hoped that it would be sufficiently authoritative, or rather that its weight would suffice to weld numerous bodies that have gardens or menageries into common action, to allow some plots or cages, &c. for research. The Clifton Zool. were prepared to do this, but Thiselton-Dyer said that even he could not depend on the gardeners at Kew to carry out any experiment accurately, so that plan fell through. I knew that the Zool. were untrustworthy helpers—I mean the keepers.

The Cttee talked more than worked, and Z. was very boring, writing very long letters to me and always averse to compromise. V., whom he brought in as an Associate, was to my mind, distinctly objectionable in using the name of the Cttee when he had received no sanction to do so. On the whole, the Cttee seemed to be doing so little and working with so much friction that I did not care to be longer connected with it, so I resigned. Weldon did so too, guided by much the same motives.

This is all I have to say. It necessarily relates chiefly to myself but indirectly perhaps to Weldon, whom I then found very helpful, as he always was.

Miss Biggs and I have spent a long day in Henley—Peppard—Stoke Row, etc. We saw Mrs Grey at the Manor House† and the boat races were going on at Henley. It was a glorious day for us—We passed Blount's Court Farm.—I trust you are now well placed at Winsley Hill.

Ever yours, FRANCIS GALTON.

WINSLEY HILL, DANBY, YORKSHIRE. July 11, 1906.

MY DEAR FRANCIS GALTON, I enclose two things. First, a sympathetic card (which please return) from the Vice-Chancellor, Oxford, as to the Weldon Prize. Secondly, the proofs of the part of the memoir which I think you have already seen, and also the MS. of the London period. I hope to get the Oxford period done this week. I want you to let me have the MS. back, if you can by return, it must go to Press as soon as possible. I have found it very difficult indeed to write the London part, because the Evolution Committee formed such a very large part of Weldon's life in those years, and I cannot think it was good for him. You were most kind and sympathetic, but he felt that he had to do something of moment and to do it quickly. Further it had to be done under constant fire of unfair criticism. I have found piles of papers about this, that I knew nothing about before, and it is heartrending to think that I was worrying him about his mathematics at the same time. Reading the papers through now it seems to me that a definite plan was formed about 1896 to eject the biometricians and take possession of the Evolution Committee. But all that Weldon wrote, and he wrote and spoke strongly about the R.S. publishing the Mendelian Reports in a semi-official way, may be applied equally to his own work in the early stages. Z.'s attacks did not start until Weldon had reviewed Z.'s book in 1894 or 5, and then they became incessant and ceased only with the death of Weldon. The book was, I think, faulty, but I looked up Weldon's review (in *Nature*) the other day, and it in no way

* See, however, our p. 134 above.

† The house occupied by Galton in 1903 during our Peppard stay. We were at Blount's Court Farm. K. P.

justified those years of unceasing nagging which led to the capture of the Committee. I suppose I shall have my years of it now*!

Please write quite frankly and I will endeavour to modify anything which you think must be altered. You will I know understand that I am placing Weldon alone in the centre of my stage. Affectionately yours, KARL PEARSON.

* This forecast was confirmed in the same year :

“Of the so-called investigations of heredity pursued by extensions of Galton’s non-analytical method and promoted by Prof. Pearson and the English Biometrical School it is now scarcely necessary to speak. That such work may ultimately contribute to the development of statistical theory cannot be denied but as applied to the problems of heredity the effort has resulted in the concealment of that order which it was ostensibly undertaken to reveal. A preliminary acquaintance with the natural history of heredity and variation was sufficient to throw doubt on the foundation of these elaborate researches. To those who hereafter may study this episode in the history of biological science it will appear inexplicable that work so unsound should have been respectfully received by the scientific world. With the discovery of segregation it becomes obvious that methods dispensing with individual analysis of the material are useless. The only alternatives open to the inventors of those methods were either to abandon their delusions or to deny the truth of Mendelian facts. In choosing the latter course they have certainly succeeded in delaying recognition of the value of Mendelism, but with the lapse of time the number of persons who have themselves witnessed the phenomena has increased so much that these denials have lost their dangerous character and may be regarded as merely formal.” Mendel’s *Principles of Heredity*, Edition 1906.

The attacks made on the early papers of the Eugenics Laboratory were largely encouraged by writings of the above character (see our pp. 399, 406 and 408). It is, perhaps, needless to say that it was Galton in his *Natural Inheritance* and neither Weldon nor myself who were “inventors of those methods.” The author of Mendel’s *Principles* failed to realise that (i) Evolution by Natural Selection depends upon mass-changes, i.e. on selective death-rates which demand actuarial methods, and (ii) that all scientific knowledge is *relative*, there is no absolute truth in science; we seek the best *description* of the phenomena we observe, and as there may be more than one effective description of the group of events we are investigating, there is no necessary opposition between an analysis of individuals and an analysis of mass-changes. The one may have as great scientific value as the other.

It is difficult to see how admiration for Francis Galton, and even for parts at least of his *Natural Inheritance*, was compatible with a complete contempt for biometric methods, but William Bateson’s view, as expressed in the following letter (which Mrs Bateson most kindly permits me to publish), seems to indicate the source of our divergence. For me there is no absolute truth in scientific knowledge or in religious creed, the one provides conceptual models of more or less descriptive exactness of our sensations of phenomena, the other fits itself to the emotional needs of differing races, periods and individuals.

Mendelism is only a truth as long as it is an effective description; a continuous or a discontinuous conceptual model of a group of natural phenomena may be equally valid as “scientific knowledge.”

MERTON HOUSE, GRANTCHESTER, CAMBRIDGE. 7. vii. 09.

DEAR MISS BIGGS, I have been in Paris a week and only found your letter on my return. Of course I will now send the book to Mr Galton, and I am delighted to do so. It did not occur to me that you might have mentioned our conversation to him. I had greatly wished to send it but came to the conclusion that the simpler course was to refrain.

I don’t think many people admire, or can admire, Mr Galton more than I do. The novelty of his thoughts and the freshness of his outlook on nature are not to be found in any other living writer, so far as I know. I often remember the thrill of pleasure with which I first read *Hereditary Genius* and the earlier chapters of *Natural Inheritance*, and every year when I read aloud pieces of those books to my class, as I always do, I can see what excitement they have the power to cause.

You ask whether “Just as all creeds are right,” may not “all the paths of Science and Art” be right? Hardly, I think, if for the words we substitute the things themselves. In Art, yes: all are surely right which are sincere; for to the individual artist that which is sincere is, by that very prerogative, to him, Art. The multitudinous forms of art are the product of our manifold natures, and no one may decide for another. But in the natural world of Science, or in the supernatural of the creeds for that matter, I cannot see how there can be more than one right, nor how the path which ends in the wilderness can, outside the language of compliment, be called right. How often have I regretted that Mr Galton has not been with us in the past ten years! It has been indeed a strange perversity of chance. Please see to it that he does not trouble in any way to acknowledge the book for, as I said to you, I shall quite understand. Yours truly, W. BATESON.

42, RUTLAND GATE, S.W. July 13, 1906.

MY DEAR KARL PEARSON, I return the papers. They greatly interest me. I have put trifling marks on pages 5, 6 of the proofs and on 61 of the MS. The only remarks I would make on the MS. are that (1) perhaps the University of London part might be clearer, briefer and more emphatic, and (2) that I think more might be made of the possibilities of an Evolution Cttee than is alluded to on p. 64. For my own part, I thought at first, and this was my main motive in joining it, that the numerous bodies engaged in horticulture and zoology might in one aspect of their work, be co-ordinated by the Cttee and that research of a scientific kind might be introduced into the proceedings of each of them. A Cttee would help to keep them up to the mark, and prevent overlappings. But the desire for this seemed too faint to produce any such result.

I cannot recall the meeting mentioned at the Savile Club, and doubt in consequence whether I was really present at it. I am almost sure that Michael Foster's asking me to take the chairmanship was the first thing that I ever heard about the proposed Cttee. Dear! dear! what a list of efforts are included in the life of an actively minded man like Weldon—successes and failures.

I return the Vice-Chancellor's letter, which is excellent so far as it goes.

Heron's admirable paper reached me *after* I last wrote. Is he the excellent man you spoke to me about, who was not then quite ripe for the Eugenic Research Fellowship. He seems just the man to hold such an appointment.

We have just returned from a brief country visit. It is delightful to hear that you are so pleasantly placed among old Quaker associations. They—the Quakers—were grandly (and simply) stubborn. I think we shall go again to Ockham for August but to another house—negotiations are pending. Affectionately yours, FRANCIS GALTON.

WINSLEY HILL, DANBY, GROSMONT R.S.O., YORKS. July 14, 1906.

MY DEAR FRANCIS GALTON, Your letter and suggestions are very helpful. Your corrections to the proof shall be made. The other points I will refer to one by one.

University of London. It is awfully difficult for *me* to give the full account of this. I had got many men to join the Association, George Meredith, Hardy, Besant, etc., by a more or less personal appeal stating that we wanted to found a university absolutely homogeneous with a professor at the head of each department on the lines of a Scotch or German university. Huxley was elected president *after* this scheme had been adopted and brought his enormous force to work on a small executive committee of which I was secretary to carry out a plan of *his own* in which we were to compromise with colleges, night schools and the existing university to get a *federal* body. He arranged meetings with each of these institutions. The first with the University of London was to come off in a few days. I protested that this was not the policy on which the Association had been built up and that the executive committee could not go beyond its instructions. Huxley with all the force of an old hand completely confused me—all I know is that I resigned the secretaryship and that the members of the committee asserted that I had promised not to take action against Huxley's scheme. Personally I don't think I made any definite promise, but I know that Huxley saw danger to his project and engineered me into a state of confusion. When I had time to think it over I saw that he had left me in an absolutely false position. I must either be entirely untrue to the men of weight and name who had joined the association on the basis of a genuine professorial university or break through Huxley's entanglements*. This I did by an open letter to him, sent to the *Times* and to him at the same time. I put myself right with the members of the Association but entirely in the wrong with regard to Huxley. Ultimately the Association reversed the whole of Huxley's policy, but these doings (1) had killed its effectiveness, (2) hurt Weldon fearfully and (3) made people believe me impossible on committees. Huxley *must* be right and such a small person as myself must be wrong.

* In my opinion to-day Huxley by his action destroyed all the chance there then was of a real university for London, and left us with the miserable pretence of a university that still exists. The "Association for promoting a Professorial University in London" had practically united all the teachers of weight in London and many other men of mark as well. It was wholly impossible to carry through any pettifogging federal scheme without its sanction. Huxley had no real academic ideals, and a suspicion of all universities controlled by the professoriate. His error was to accept the presidency of an association whose programme was entirely opposed to his own views.

Looking back on it now, I think Huxley was morally wrong; he used all the force of his name and position to get a younger man, who was really responsible for the movement, out of the way in order that he might carry out a different scheme. I was formally wrong, but morally right, and nobody saw, not even Weldon, that I, having taken a false step, was doing what was painful to me to put myself right with men whom I had induced—often by much talk and persuasion—to join a movement for a great ideal of academic reform.

Now you will see that I cannot put all this directly into Weldon's Life. But it was a remarkable instance in which his admiration for his hero, and personal affection for a friend came into opposition, and he succeeded in preserving both, and this although I never gave him as I have given you the grounds for what I did. It is this element in the whole matter which makes the account of Weldon's relation to the University movement, as you find it, obscure.

I have put in six more lines about the Evolution Committee emphasising what your aims were and how they were rendered unavailing by the members pulling in different directions and the struggle of different schools. To my mind the absence of such an experimental farm as you suggested has been the great drawback of the past years. We want a land "Marine Biological Association." But it would never have been possible to combine the thoroughness of Weldon with the slipshod character of the rival school. Friction would have destroyed everything. The only hope is that a Dohrn may arise some day, a man with the energy and force of character to carry it out which marked him. The worst of it is that the Americans have already got such a station under the Carnegie Institution, but so far they have done nothing very profitable with it; it needs as chief a very clear strong thinker. The success of these things always lies in the strength of the individual who dominates the whole. Dohrn must have been splendid....

I enclose a letter to you, which seems to me to confirm my version of the first origin of the 1893 Committee. In 1896 Nov. or Dec. you were so weary of Z.'s incessant letters to the Committee—the originals or copies occupy an entire box in Weldon's papers—that you suggested Z. should be added to the Committee. Now was the old Committee *dissolved* and a new one formed, or as I suggest were Bateson, Dyer and myself* added to the old Committee and shortly after many others? There is no definite statement in Weldon's letters, but between Nov. 1896 and February 1897 the Committee appears to have taken a new lease of life, the old statistical object is dropped, many new members appear and the whole scheme of breeding and inquiry by circulars to breeders comes into being. Can you throw any light on these points? I enclose the circular that Weldon in his letter says he has sent to Darwin, Poulton and Macalister, and received their assent to. Weldon in a letter of Dec. 4, 1893, says:

"I am writing to ask people to meet on Saturday at 3.0 (Dec. 9th) as you (F. G.) suggested, but at the Savile Club, 107 Piccadilly." He states that as the Royal Society is not available on Saturdays he has chosen the Savile. Perhaps the locus was changed later?

Might I have the enclosed back, so that all the papers may be in order and together, if there is need for any further reference? Also will you return the enclosed poem in W. F. R. W.'s handwriting? Is it a translation and if so of what? It reads rather as if it were. If not, what made him choose this metre, and what is it the prologue to? It is the only poem I have found. What is the reference to Macrobius? Affectionately yours, KARL PEARSON.

42, RUTLAND GATE, S.W. July 16, 1906.

MY DEAR KARL PEARSON, I have found my (scanty) diaries of 1891–1897, and have been to the R. Soc. to read the minute book of the Evol. Cttee and refresh my memory. The sequence of affairs was I think this, so far as I was cognisant—*First* Michael Foster's call on me—I have no record of this,—about the then *talked of* Cttee. *Second* the Savile Club meeting, of which I have no recollection, but believe it must have been just an informal ratification of views previously well discussed. My diary notes the engagement. *Third* the appointment of a R. Soc. Cttee, in the Minutes of whose first meeting Jan. 25, 1896, a letter was read from me to the R. Soc. "suggesting the desirability of appointing a Cttee for conducting statistical inquiries into the measurable characteristics of plants and animals." Also, a letter from the R. Soc. appointing us, myself (as chairman), F. Darwin, Profs. A. Macalister, Meldola, Poulton and Weldon, giving us £50 to start with, and recommending us to apply to the Govt Grant Cttee for any further sums we might think necessary.

* The R.S. records show that I was added in 1896: see p. 126 above.

Jan. 1897, Bateson, Godman, Heape, Lankester, Maxwell, Masters, Salvin, were elected members, and Bateson attended.

Feb. 26 (clearly of the same year, from the above facts) *when Bateson, etc. were present*, it was resolved to ask that the objects of the Cttee should include "accurate investigation of Variation, Heredity, Selection and other phenomena relating to Evolution." In this year it was briefly called (? for the first time) the "Evolution Cttee."

June 15, 1899, the question was raised "whether the Cttee ought not to cease to exist."

Nov. 29, 1899, Discussed and read a letter (about to be sent?) from me to the Sec. R. Soc. expressing my view "that the Cttee would not serve any useful purpose by continuing to exist," but asking reappointment for one year.

Jan. 25, 1900, Dyer, Meldola, Pearson, Weldon and I all resigned. (The Cttee still lingers on and meets about once a year.)

There is no indication of any previous Cttee for this or any allied purpose, but Weldon had many grants, personally, for his shrimp experiments, etc. Neither was there any break in the continuity of the Evolution Cttee.

I quite see your difficulty about the history of proceedings connected with Huxley and the University of London,—how to satisfy the reader and yet not be too explicit on painful subjects.

The allusions to the poem (which I return with Weldon's letters) are not understood by me. I do not even yet recall who "Macrobius" was—(not a *Macrobe*, the inverse of a "Microbe"!).

I still think that I must have a lot of Evolution Cttee correspondence *somewhere* in my cupboards, etc. If I can find anything worth sending you shall have it, of course.

Affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. Oct. 22, 1906.

MY DEAR FRANCIS GALTON, I am rather distressed that I have heard no more of you. I trust no news is good news and that with mild weather you have had a quick recovery. Please let me have a line as to your locus and "status."

I still want to talk to you about many things of which it is almost impossible to write. *Item.* The Weldon Medal and Premium. This now amounts to £870, but I have endeavoured to adopt your original wishes as to the conditions. As I understood them, they involved: (i) The institution of a biennial prize and medal—not for an essay *ad hoc*, but for some piece of published work during the previous four years, which forms an advance in biometry. (ii) That the prize should not be confined to any one nation or men of any one university. (iii) That the paper must consist (a) of the application of statistical theory to the study of special problems in Zoology, Botany, Anthropology, Sociology or Medicine, or (b) of such extensions of statistical methods as may be of value in such investigations. These are in general terms what I have put before the Hebdomadal Council and that body will discuss the point to-day. I think the perfect openness of the medal and premium is what Weldon himself would have wished. It would hardly be possible to find a fitting man every two years in Oxford itself. If Oxford finds it impossible to give prizes outside its own body, it will be best, will it not, to try London?

I have been somewhat surprised to hear from Schuster that he was resigning the Eugenics Fellowship *immediately*. I wrote at once to him, saying I was sorry to hear it, and feel that he would have done better to talk it over with you first. At the same time, I think I see his position, he feels that his work, which he very frankly says is limited to certain directions, is not on the lines you want. I think what he has recently done on inheritance of mental characters is very good, but it will not attract much attention, and much popular attention is going in the next few years to be attracted to Eugenics. The difficulty will be to get a man who is really sound and yet can catch the popular ear. I don't know where to find the right man for you, although men who will do good bits of work, if one suggests them, are always forthcoming. I hope you won't be worried about it all....

Affectionately yours, KARL PEARSON.

The death of Weldon was a terrible disaster to Francis Galton and his biographer, but while equally felt by both, the effects of the shock were more

intense and lasting in the case of the much older man*. He seemed to me from this date less able to take independent action, and to find reliance on others more needful.

(10) *Eugenic Certificates*. Among Galton's papers I have found a manuscript entitled *Eugenic Certificates* which belongs to this year; I also found typewritten copies of this manuscript, some of which had clearly been circulated for criticism and advice. I expect, although dated June, it had been written in the early part of the year, as it is the natural sequel to the memoir on Eugenic Studies read before the Sociological Society†. I had not seen the manuscript before I found it among Galton's papers after his death. Our correspondence in May‡ will I think explain why he did not show it to me, although for some time past he had shown me most of his writings. He may very probably have thought that I should hold the time for issuing Eugenic Certificates not yet ripe. But I do think it important for the future progress of Eugenics that the manner in which Galton visualised Eugenic Certificates should be recorded.

Galton's unpublished MS. on Eugenic Certificates.

Private for consideration.

FRANCIS GALTON, 42, RUTLAND GATE. *June 1906.*

EUGENIC CERTIFICATES.

The time seems to have arrived when the question should be seriously discussed, whether it be practicable and advisable to issue Eugenic Certificates that would and ought to be accepted as trustworthy and that would be inexpensive and yet self-supporting.

The subject is full of difficulties, but I think they can all be met if certain restrictions be permitted, of which the following are the chief:

1. The purport of the certificate to be that in the opinion of the Judges, the achievements of the holder and those of his near kinsmen prove him to be distinctly superior in Eugenic Gifts to the majority of those in a similar position.

2. That certificates be granted at first only to men, and these between the ages of 23 to 30 inclusive and belonging to the educated classes. At an earlier age they would have hardly had sufficient opportunity of proving their powers, at a later age the memories of the youthful achievements of their kinsfolk in the previous generation are difficult to verify.

The practicability of giving certificates to women would require a special discussion. It will not be alluded to again in the following remarks.

3. That the qualifications for a certificate be limited to facts that are permanently recorded in some accessible form, so as to be verifiable. They must be described on a ruled schedule that will be supplied on application.

4. The achievements are to be drawn from the results of some of the numerous competitive trials, whether in sport or in earnest, in athletics, in literature or otherwise, to which nearly every young man of the educated classes is now subjected; also to such prizes, awards or appointments, etc. as may have been gained.

* It is noteworthy that Galton's general correspondence, which for most years was voluminous, is much reduced in 1906; apart from my letters to him, very few other letters appear to have survived.

† See p. 272 above.

‡ See pp. 282-284 above.

5. Evidence will be required of a somewhat higher* order of achievement than that to which the certificate testifies, lest undue weight should be assigned to success due to especial aptitude rather than to all-round ability, or to a success won under exceptionally favourable circumstances. The hardship of a certificate being sometimes withheld from a deserving man through want of convincing evidence is a lesser evil than the occasional grant of them to the undeserving. In the first case, an individual fails of his due; in the latter case, the credit of the certificates is shaken.

6. The ignorance of particulars concerning a man's ancestry is usually so great that inquiries concerning hereditary gifts must perforce be limited to his nearest kindred, namely to (1) his (whole) brothers and sisters, (2) his father and the father's (whole) brothers and sisters, (3) his mother and the mother's (whole) brothers and sisters, all of whom are usually within the scope of information easily procurable by persons aged 23 to 30. Half brothers and sisters are not taken into account. (The questions concerning the kinsfolk of the applicant, while they are framed to extract really useful replies, have to be much less detailed than those which concern the applicant himself.)

QUESTIONS TO BE ANSWERED BY EACH APPLICANT
FOR THE EUGENIC CERTIFICATE.

1. Your name in full, place and date of your birth, your address, your occupation. Maiden surname of your mother; full name and address of your father, his occupation.

2. Have you undergone a physical examination as to fitness instituted by any branch of the public service? If so, state particulars and date.

3. Can you refer to any physical competition of which records are accessible, in which you were ranked distinctly higher than the average of your competitors? If so, give not more than three of the most notable instances.

4. Have you performed any physical feats that were distinctly beyond the powers of men of the same age and of equal training to yourself? Give particulars of not more than three of the most notable instances.

5. Have you been classified in any important literary examination, whether at school or college, for a public service or otherwise? Give particulars of the three instances in which you were especially successful and mention the number of competitors in each case; if they be not known with exactness, give limits within which their numbers certainly lie.

6. Have you been awarded prizes or other distinctions at any large college, school, or university, or by any literary or scientific body? If so, state the particulars of not more than three of the most noteworthy ones.

7†. Have you been elected to any coveted post of trust, paid or unpaid, in any school or college or in any association, whether it be athletic, scholastic or other? State particulars of not more than three of the most important of these as evidence of the trust placed in you by your comrades.

8. Have you received any and what appointments? If so, do not mention more than two or three of the principal ones.

9. State anything else that you may think favourable to the conclusion to which a certificate testifies.

NOTE. Weight will be given by the Judges to the general character of your replies, which should be appropriate and satisfactory, but brief.

It will be observed that an accumulation of small instances is reckoned superfluous, when a few prominent facts suffice to carry the desired conviction.

Nothing whatever is to be written that cannot be quoted and cannot be verified.

* The greatest successes are due to more than the average powers as the greatest failures are due to less. F. G.

† Can any further good test of *character* be suggested? F. G.

*For Private Information only.***QUESTIONS A, CONCERNING THE KINDRED OF THE APPLICANT.**

On the Fraternity consisting of the Applicant and of his *whole* Brothers and Sisters. Write A by the side of the figure in the first column that refers to the Applicant.

Register	Names or Initials in order of Birth	Sex M. or F.	If deceased	
			Age at Death	Cause of Death
1				
2				
3				
⋮				

Register	Initials	Notable achievements of any brother or sister of the Applicant that fall within the purview of this Certificate

We certify that to the best of our knowledge the above account is correct, also that with the exceptions mentioned below, no member of this Fraternity has ever suffered from Insanity, Epilepsy or other severe form of nervous disease.

Exceptions giving full particulars. If no exceptions write the word "None"	
--	--

Signatures of $\left\{ \begin{array}{l} \text{Writer of the above notice.} \\ \text{The Applicant.} \end{array} \right.$

The last paragraph and the corresponding paragraphs of Questions B and C must be on a separate sheet marked "confidential." F. G.

QUESTIONS B, CONCERNING THE KINDRED OF THE APPLICANT.

On the Fraternity consisting of the Father of the Applicant and of the Father's *whole* brothers and sisters. Write F by the side of the figure in the first column that refers to the Father, and describe his achievements more fully than those of his brothers.

Register	Names or Initials in order of Birth	Sex M. or F.	If deceased	
			Age at Death	Cause of Death
1				
2				
3				
⋮				

Register	Initials	Notable achievements of any brother or sister of the Father of the Applicant that fall within the purview of this Certificate

We certify that to the best of our knowledge the above account is correct, also that with the exceptions mentioned below, no member of this Fraternity has ever suffered from Insanity, Epilepsy or other severe form of nervous disease.

Exceptions giving full particulars. If no exceptions write the word "None"	
--	--

Signatures of { *Writer of the above notice.*
The Applicant.

QUESTIONS C, CONCERNING THE KINDRED OF THE APPLICANT.

On the Fraternity consisting of the Mother of the Applicant and of the Mother's *whole* brothers and sisters. Write M by the side of the figure in the first column that refers to the Mother, and describe her achievements more fully than those of her sisters.

Register	Names or Initials in order of Birth	Sex M. or F.	If deceased	
			Age at Death	Cause of Death
1				
2				
3				
⋮				

Register	Initials	Notable achievements of any brother or sister of the Mother of the Applicant that fall within the purview of this Certificate

We certify that to the best of our knowledge the above account is correct, also that with the exceptions mentioned below, no member of this Fraternity has ever suffered from Insanity, Epilepsy or other severe form of nervous disease.

Exceptions giving full particulars. If no exceptions write the word "None"	
--	--

Signatures of { *Writer of the above notice.*
The Applicant.

As far as I am able to trace from Galton's correspondence only two men gave expressions of opinion upon Galton's proposed Eugenic Certificate. Mr Havelock Ellis, having seen Galton's proposal in the paper at the Sociological Society, wrote to ask Galton whether he had taken any further steps in the matter; his letters seem to indicate his sense of the difficulty of the project rather than the strong enthusiasm which surmounts difficulties. Mr J. Tracey, Tutor of Keble College and an authority of the Oxford University Appointments Board, was, according to Galton's notes of an interview, distinctly favourable. He said that many examinations covered practically all the personal questions Galton wished to be answered. Therefore having passed any one of these examinations would *so far* be a sufficient justification for a Eugenic Certificate. Some appear to enter a short way into family history. Indian Civil Service, Woolwich, Egyptian (Soudan) Service are especially notable. Most certificates take no cognizance of hereditary ailments, if there be any in the family. Could such ailments be properly ignored? Mr Tracey thought there need be no fear (under reasonable precautions) of false returns. Also he did not think Galton's estimate of 10s. per certificate unreasonable, if rooms were allowed and an unpaid board of referees could be had. *Upshot* (as drawn up by Galton) "I must collect material about the chief existing examinations from G. G. Butler, David Mair and others, and write an article based on it to show what could at present be easily done *re* Eugenic Certificates." I do not think this article was ever written, but a fuller account of Galton's views was later provided in "Kantsaywhere."

(11) *Reconstitution of the "Eugenics Record Office."* We have seen that Mr Edgar Schuster resigned his post of Research Fellow in Eugenics, and although he was willing to continue holding the post for a short period, coming up two or three days a week from Oxford, he wished to be relieved as soon as Galton could make new arrangements. Our leader was ailing, the death of Weldon and certain home troubles had depressed him sadly, also the wintering in England—contrary to his custom hitherto—and at such a place as Plymouth*, undoubtedly checked that vigour of action which had hitherto characterised him. He felt it impossible to cope with the search for a new Eugenics Fellow and the direction afterwards of his work. Our experience in the Biometric Laboratory had taught us the serious length of time it takes to collect statistical data and afterwards to reduce them fully by modern statistical methods, whereas Galton was undoubtedly eager for quick returns; he approved brilliant essays in the monthlies, and wanted to see marked progress in the acceptance of Eugenics in his own day; he had not yet fully differentiated Eugenics as a science from Eugenics as a creed of social action. He was not urging hasty action†, but he did not, I think, fully realise that all eugenic research was of a very laborious and lengthy kind.

* From October to March Galton passed this winter in Plymouth on the Hoe (at various addresses).

† See our pp. 220-21.

He wanted his Eugenic Office to show immediate results; and just for this reason I had stood as far as possible aloof from it, except when he or his assistants directly consulted me on statistical points. Further, who was I to advise him? You cut off all the suggestiveness, all the power of original productivity of a man of genius, if you recommend him to follow your own dull, laborious and commonplace methods of attaining truth. But matters were now reaching a crisis; there was certainly no obvious successor to Schuster, Galton felt incapable of further personal supervision, and there was a possibility that the seedling he had planted, which might otherwise develop great academic branches of study, might perish as a sapling for lack of careful tending. I felt that my only chance of giving effective aid was to put clearly before him the difference in our modes of approach to the same goal.

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Oct. 24, 1906.

MY DEAR KARL PEARSON, This afternoon I have (1) moved into the above lodgings, (2) received your letter, (3) received Schuster's reasons for resigning. I am far from fit, but the bronchitis is quite gone. I expect to be here for at least Nov^r & Dec^r. I have lent 42, Rutland Gate to some relatives during these months. The £— for the Weldon medal and premium (?is the bust to come out of this) is a substantial sum, and I congratulate you on your persuasive powers. Don't *now* let any conditions that I made at the beginning hamper your action. I feel quite sure that you will do the right thing. If Oxford refuses, and then London University accepts, I am not at all sure that it would not be a gain to the cause.

Schuster's brief letter of resignation surprised me, so I wrote nicely to ask for reasons, which he has given fully in the sense of what you wrote to me. I am not fit now for effort, and am inclined to ask the Senate not to fill the vacant appointment yet. I wish that somehow it [the Eugenics Record Office] could be worked into your Biometric Laboratory, but I am far too ignorant of the conditions to make a proposal. If any feasible plan occurs to you, pray tell me; it is almost sure to have my hearty acquiescence. I have of course followed with all possible interest Lister and you, and look forward to his answer in to-morrow's *Nature**. He will probably try to raise a different issue, but I am sure you are far too cautious to follow any red herring dragged across the path. Also I have just read your letter in the *Times* on Sidney Webb's topic. Excuse more as I am rather tired.

Affectionately yours, FRANCIS GALTON.

I am so glad you approve of Schuster's recent work, which he will send me in due time.

UNIVERSITY COLLEGE, LONDON. Oct. 25, 1906.

MY DEAR FRANCIS GALTON, I am sorry indeed to hear you are still ailing, and trust you are taking all care of yourself. I want to add one or two points to my letter of yesterday.

Weldon Memorial Fund. The bust fund is now about £240; the medal and premium fund about £870. I want to raise the former to £300 and the latter to £1000. Personally I should like to maintain the condition which I think you originally suggested that the prize should be *international*. I believe that not only shall we thus get good men, but that the subject will attract new workers everywhere. If the prize be confined to the members of one university, we shall get very little but small academic essays.

Next as to Schuster: you will remember that you wrote to me when I was in Yorkshire, asking if I could suggest any work for him, as he was coming to the end of his material.

* Mr Lister, as President of the Zoological Section of the British Association for this year, had made a strong attack on Biometry. This was clearly within his competence, but as illustration of the futility of biometricians, he cited matters from Dr Pearl's paper on *Paramecia*, which he had only seen confidentially as a referee, and which the Royal Society had settled not to print, nor had it at that date been published elsewhere. It was a repetition of the Homotyposis memoir indiscretion.

I wrote and suggested the insanity data to him, as I felt the problem was one of some importance, and I knew I could probably get some good material. But I told him *very distinctly* that I made the suggestion with hesitation, and he must consult you.

My letter then pointed out that any problem which is of first class importance—such as that of the relative influence of heredity and environment in the case of insanity—requires a long time for the collection of data and as long a time for the reduction of them, and next I ventured to break my own views to Francis Galton.

Now there arises the difference between the biometric work here, and what it seems to me, if I interpret your views rightly, you want done in the Eugenics Record Office. We have many irons in the fire, there are about a dozen workers always engaged, and one inquiry often goes on for five or six years through two or three generations of students; but it gets done and published at last. It seems to me that this “secular” progress is almost impossible without continuity. If your Fellow during his term of office is to collect and reduce data, and publish pretty frequently work of a striking kind—and this appears to be needful to make the subject popular and keep it in view—then he cannot take up a *big* statistical inquiry. It is not always easy to find a fairly rounded easy bit of work such as I set A. There is on the other hand always plenty of the heavy continuous work. B. is not a man of striking originality, but he is a very safe man; find him a problem, give him help and advice and he will do sound work. His tendency has been, however, more and more to the biometric side. I feel that this is not, perhaps, what you want for Eugenics at present, and that you hold that there is room for more than the biometric treatment of sociological problems. I have had great hesitation in taking any initiative at all in the Eugenics Record Office work, because I did not want you to think that I was carrying all things into the biometric vortex! When Schuster informed me that he was resigning the Fellowship, I at once asked him to reconsider his position, and talk it over with you first. He then said he had fully determined to undertake more purely biological work. I suggested to him that if he felt he must give up Eugenics, he might take up the problem for which Dr Mott has got material, namely the convolutions of the brain in the sane and the insane. But while an inquiry as to environmental and hereditary influence on insanity does seem to me eugenic, I am not clear that the relation of brain complexity to mental grade is; and accordingly my suggestion was only to be definite if Schuster found himself on resignation wanting a problem. Personally I should like to see him going on with the fellowship, until you are able to consider what had best be done. If he wants eugenics work, I think I could provide him with the data for 300 tuberculosis cases, and show him how to get more. The brain convolutions form the more fascinating problem and well done might produce a good deal of stir; but this is all I can say about Schuster's resignation. You can appoint a man like A. to succeed him, but will he find his problems *for himself*, and then make something of them? I am uncertain, and a good popular problem might not be discoverable every year. He would probably come to me and all I could give him would be some of the “secular” work which was nearing completion; that might be a rather dull and commonplace process for him.

Now my *personal* idea of the Eugenics Record Office is that it should continue steadily to collect data bearing on the effect of environment, of heredity and of intercaste marriage upon man; that the Fellow should go on with annual or biennial appointment, and should live in London and work daily at the office; that the results accumulated should be published, like A.'s paper, at irregular intervals, when a bit of work was completed, and be issued from the Eugenics Office. I think great results could be obtained ultimately in this way, but it would have to depend on my idea of “secular” accumulation. You will understand what I mean when I say that our investigations on school-children took five years to collect and two to reduce; that our measurements of families took four years to collect and two to reduce; that our present inquiry on the inheritance of disease has been more than two years in progress and it may be more than another two before reduction can be begun*; our inquiry as to

* This was written in 1906, the full reduction was only begun in 1927 and is still in progress! K. P.

albinism in man has been going on for three years and is far from completed; it is precisely so with the tuberculosis and insanity researches. No Fellow in his one or two years of work could attempt to complete a six years' research of this kind, but he could help in carrying on such work, and publish during his period of office such researches as happened to be nearing completion. I think in this way he might keep the eugenics idea before the public; but the scheme is essentially based upon the "secular" accumulation of data and continuity in the direction of the office such as we have had here in our biometric work. If you think I could aid in such a plan I will do so willingly, and am ready to place at the disposal of your office such inquiries as we have in hand relating to man, but I should need to control the manner in which the data were reduced, and see that the material which has taken considerable time and much energy to collect was properly dealt with.

On the other hand I am conscious that much may be done on eugenic lines apart from biometric methods, if you can only get the right man, but it is doubtful whether there would be continuity in the work or any permanent collecting of records. Still an able man would advertise the subject much better than I can do with many other claims on my energies, and I do not wish to minimise this aspect of the matter. I will always under *any* conditions of your Office, give it what aid lies in my power and you may wish for. My hope would be that, if you let matters slide for a little now, you will be ready and able to take up the directive work again in a few months' time.

I have no idea what Lister will say, but I expect it will be a protracted fight! There is another man asking all sorts of questions in the *Times* to-day!

Affectionately yours, KARL PEARSON.

It will not be needful to print more than one other letter from me regarding the association of the Eugenics Record Office with the Biometric Laboratory, namely, that of placing before Galton the draft plan of the "Galton Laboratory for National Eugenics" (see below, pp. 304-307). I do this to indicate that the lines on which that Laboratory has been run since Galton's death were settled by the letters which passed between us in 1906, and to remind the reader that the Galton Laboratory was actually started early in 1907 under its present Director, and except in the matter of greater power and activity was not modified in any essential manner by Galton's death in 1911. It is, perhaps, unnecessary to state that the text of Galton's will of 1908 and the codicil to the same will dated 1909 were not those which the following letters indicate that he put before me for criticism in 1906; the latter belonged to a will of the same year. The substance of the final paragraph of the codicil of May 25, 1909, was first made known to me by Galton's executors.

While in 1911 I was glad and proud to be elected Galton Professor, especially as it was in accordance with Galton's wish, it was with much hesitation that I took over in 1906 the voluntary task of supervising his Eugenics Office. Above all things I dreaded that any difference of view between us as to work should in the slightest impair what to me was a most perfect friendship. It is a sign of Galton's generosity and large-mindedness that although he remained thoroughly interested in what we did, he never once attempted in the least to control us or to express anything but keen satisfaction in our proceedings. When I recall that Galton was always a man of very definite opinions, that the science of Eugenics was his creation not mine, and lastly that in these four years of my supervision Galton passed from 84 to 88 years of age,—a time when the majority of those who survive grow querulous and

are apt to criticise younger men,—it seems to me that none can need stronger proof of how his sagacity and power of self-sacrificing friendship lasted to the end.

(Confidential.) 7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Oct. 25, 1906.

MY DEAR KARL PEARSON, We are substantially in such close agreement *re* Eugenics that I can write very briefly. I quite agree to the "secular" work, but with occasional "Chips from the Workshop," to use Max Müller's and Bunsen's phrase. The Eugenics Fellowship was avowedly an experimental venture, so this seems a proper opportunity to reconsider its constitution.

As regards ways and means (this is confidential) I am prepared to ensure £500 a year to its maintenance during my lifetime, and fully £30,000 clear on my death for a professorship. What is best to be done during my lifetime, considering my age and precarious health and powers? The "Fellow" should work under continuous direction and in London as you say, and not in too solitary a fashion. Could he be made to lecture or to demonstrate, in connection with the Biometric (or even the Economic) School? A Professor would have a class, which would keep him to the collar.—Anyhow, it would be convenient if Schuster continued as a stop-gap, working as you suggest at tuberculosis, for that would retain Miss Elderton and the rooms. I would ask him if you thought well.

Of the few younger persons whom I know, none seems to have a larger portion of what is desirable than C.'s son, the statistician, who has now a Government post. He is full of ideas. I do not know whether what could be offered to him, *including a post-obit Professorship*, would tempt him to give up his not well-paid Government appointment. If you thought well, and could suggest a scheme that the Senate would be likely to approve, I could ask him or any other good man that might be suggested. This is of course quite confidential. So it is on these points I want advice.

I ought to explain about B.'s letter. It was so brief and dry that I was unable to appreciate the merits of the case, which I subsequently did when *you* wrote.....His second letter in reply to mine wholly removed that impression. I personally like him much. He wants juiciness (jucyness? I can't spell it!).

So Lister is silent this week in *Nature*. Excuse bad writing in an armchair.

Ever affectionately yours, FRANCIS GALTON.

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Nov. 19, 1906.

MY DEAR KARL PEARSON, I am most sensible of your helpfulness and kindness, and find myself so much at one with you that I can now write briefly. Understanding that whatever is done now should be with reference to the "post-obit," I will begin with a revised codicil, *see enclosed*.—After you have corrected it, and it is otherwise put into order, I propose to send it to Hartog for his suggestions; and finally to my lawyer.

The work of the Office should now I think be directed towards this end by thoroughly working the new Fellow or Student in statistics of a kind that *you* approve, but having a eugenic tendency like so many of your own biometric papers.

Next for the choice of Schuster's successors. Your very kind proposal of undertaking the supervision of the Office for a year or 18 months removes from my mind a great weight of responsibilities that I have not health to fulfil. If you undertake it, clearly the choice of the men ought to lie wholly with you. If fairly good luck attends the venture we may find a man by that time (18 months) sufficiently trained and prepared to grow into a good Professor. A. seems to have excellent stuff in him and to be in every way of a suitable disposition, but as I said in my last letter, he should be encouraged to interest himself in the sociological problems and the collected data of the day, and leisurely to prepare a *provisional* or rather a *suggestive* programme of future office work. Too much of pure mathematics will be harmful to him from the present point of view.

It is most desirable that the future Professor should be on easy social terms with the executives of various societies and departments, and A. seems quite capable of that position before long. As I said, we both liked him much. He inspires confidence, too.

Affectionately yours, FRANCIS GALTON.

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Nov. 29, 1906.

MY DEAR KARL PEARSON, I have now heard all I wanted to hear about the bequest. As mentioned, I enclosed the draft in a "private and confidential" letter to Hartog. He answered with full approval and with that of Rücker and wished to show it also to the V.Ch., but Sir Edw. Busk was out of town. He has since seen it, made some minor but important suggestions, and I will now send it to my lawyer to draw it fully out in duplicate for a final review before incorporating it as a Codicil. It is so important that it deserves this trouble.

I am most desirous to learn the conclusions of your Oxford meeting. The *Times* had no reference to it.

Now about the immediate future of the Fellowship. I quite agree with all you say about A. When I wrote I did not understand the importance to him of a D.Sc. All that I wished to convey was that if he were to go in for Eugenics he ought not to give too much time as a *diversion*, so to speak, to pure mathematics to which, I dare say, his heart turns. I did not know of your Library at University College and had for the moment forgotten the Foxwell Library.

What steps must be taken to secure a Fellow, or two Students, etc., to succeed Schuster? I must wholly turn to you to represent me in this matter as I said before, and will write to-day to Hartog to tell him so. It is very good indeed of you to undertake the work for a year or 18 months; better the latter, as it will carry on to Mid-summer when I am much more likely to be serviceable, if wanted, than in winter. See P.S. to this letter and please read the enclosed to Hartog and forward it with any remarks of your own.

I feel the want of congenial talk now, but as Plymouth is not London must make up my mind accordingly. I look forward to the Report of Rayleigh's Presidential Address on the 30th. Do you know of an apparently very striking Report of the Inspector of Inebriates to the effect that they are naturally degenerates and near insanity, and that the women have huge families? There was an Abstract of the Report in a Devonshire newspaper. I have written for the Report itself. Also, has the Japanese, K. Toyama, sent you his elaborate Mendelian experiments on Silkworms? Ever affectionately yours, FRANCIS GALTON.

P.S. I may as well quote from Hartog's letter of Nov. 14:

"I think that the Senate could have no objection whatever to the Association of the work with the Biometric Department under Prof. Pearson whose guidance will, as you say, be of very great value."

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Dec. 4, 1906.

MY DEAR KARL PEARSON, *Biometrika* reached me yesterday and I have read with the fullest appreciation your excellent and affectionate memoir of Weldon. It appears to me a model memoir, so well proportioned and so graphic. One sees in every page the great care you have taken. It is a worthy monument to a life prematurely closed. If he could only have written more of his book on Heredity! He was so familiar with such a mass of biological facts.

I return Prof. Turner's letter, and have written to him in aid of what he wants in respect to B., giving such help as I can. I wish him every success. I grieve to gather from Turner's letter that besides all your other worries and the 'flu, there has been the illness of one of your children.

Enclosed is my lawyer's draft of the Codicil. I should be most obliged if you would look it over and pencil any suggestions you think proper upon it, and return it to me. I will then re-consider it and send it (a clean copy) to Hartog. It grieves me to add this straw to your over heavy load.

I quite agree with you about offering the bust to Hope Pinker to make for £250.

Ever affectionately yours, FRANCIS GALTON.

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Dec. 6, 1906.

MY DEAR KARL PEARSON, Let me begin by saying how interested I am in the new *Biometrika*, and having plunged into your Intelligence paper got myself into a desire to work out the classes on the Centile principle, and hope to send the results to-morrow. Alas, I work so slowly now! You will have some day to discuss the *slowing down* of all functions with age.

Thank you very much for your very judicious suggestions about the Codicil, I will go carefully again through it and hope to send it off to-night to Hartog. University College charges *no* rent for the rooms occupied by the Office, but pray, as you kindly propose, talk over the matter for the future with the Provost.

Will you then, please, provide work after February and see to carrying on the Office? I simply feel myself powerless, as I said before, and have no wish to meddle in and to mar whatever you may do for me. I leave it quite to you to arrange with Hartog and the University, about selecting Schuster's successor or successors and giving them work.

Your news about the inheritance of the tuberculous diathesis is good and very important.

I am grieved to hear of the pain and anxiety you have gone through about Helga. Turner writes to me saying that my letter to him about B. was just what he wanted—I am glad.

Ever affectionately yours, FRANCIS GALTON.

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Dec. 12, 1906.

MY DEAR KARL PEARSON, Excuse delay in reply, my bronchitis has been troublesome but the attack is now passed.

What wonderful papers yours are, and how conspicuously they show the need of high mathematics in order to deal rigorously with apparently simple questions. I have now read your "Relationship to Intelligence of...&c." not once only, but more or less minutely more than three times (I am so slow, now!), but as to the "Random Migration" I have only read the conclusions and am awe-struck at the mathematics.

It is delightful to hear that you are already well enough to take part in the quartet dinner of successive occupants of the same chambers*. You ought to be proud of one another. The day-dreams of boyhood and youth are never fulfilled, or overpassed. Napoleon was no exception.

You had better I think tear up that centile paper I sent, which cannot be amended sufficiently for publication in any form. The diagram ought to be changed considerably. I have been improving on it and think I may make a little paper, suitable to some minor publication, that would be useful as a *first step*, and that would give the results of the kind in question with much ease, though only roughly. But I won't bother you with this now.

How well you have arranged the Title, etc. on the cover of *Biometrika*. I am very glad that you retain Weldon's name as you do. It is good news about Hope Pinker.

The Codicil after final revision by Hartog and Sir E. Busk has now been executed. I posted it yesterday to my lawyers.

The weather to-day is about as vile, with squalls and driving rain, as weather can be!

Ever affectionately yours, FRANCIS GALTON.

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Dec. 14, 1906.

MY DEAR KARL PEARSON, You really misread my "hearts of hearts" *re* mathematics. I worship and reverence them †, though in their application I have a tendency towards economy in their

* The men who in succession shared my chambers in Harcourt Buildings in the Temple were W. M. Conway, afterwards Sir W. M. Conway, art critic and M.P., Robert J. Parker, afterwards Lord Parker of Waddington, and E. C. Perry, afterwards Sir E. Cooper Perry, Principal Officer of the University of London.

† It was difficult to convince Galton that any higher mathematics were needful for statistical work than the percentile method of treating the normal curve and the linear regression graph. Perhaps the following sentences extracted from a letter to his sister Bessie (Mrs Wheler) concerning the education of her son Edward may be fitly quoted here. They are dated Feb. 6, 1866 and show the value Galton set on some mathematics:

"The value of a solid substratum of elementary mathematics is I can assure you of an importance almost equal to that of a new power in every profession in life. I see it at every step. Ingenious men without the thoroughness and precision, which mathematics alone are sure to give, sink below their natural level when competing in life with those that have it."

Tests for the significance or non-significance of the differences between samples of populations, which essentially require higher mathematics, he had not been forced to consider in his pioneer work.

use, under the ever-haunting fear lest the exactitude of their results may not outrun the trustworthiness of the data. That is all. My fundamental misgiving is concerned with a too free use of the statistical axiom: "that unspecified influences tend to neutralise one another in a homogeneous series." My doubt always dwells on the questionable assumption of homogeneity, believing that extreme values are liable to be often caused by an heterogeneous admixture, present and active though undiscerned. So I love the ruder but theoretically correct statistics overmuch, feeling always *safer* within their moderate limits of one or two decimal places. All this is quite harmless, is it not? It is a purely general statement quite without reference to *Biometrika*.

I will with pleasure send a *revised* note about the centile matter, for it wanted re-writing.

I should be very glad to pay for the calculation of centiles and one tenths of centiles (in other words of mill-iles if such an awkward word existed) in terms of the P.E. and to 3 decimal places for printing in *Biometrika*, together with the revised matter. The present centile table is not quite minute enough to save trouble in interpolation. It is printed in *Natural Inheritance*. The form of it might be improved and if you approve I will draft what I mean and send it. Would you care to insert it in *Biometrika* if calculated? And can you find a calculator? I look forward to seeing your table of amounts of pigmentation.

About the Eugenics Office—what can I now do? I am still in a position to make terms with the University, before paying into their hands next month the promised £1000 to carry on the Fellowship for two additional years. Why should I not make it a condition that it should be treated as a department of the Biometric Laboratory and be wholly under your control? This would suit my views perfectly. Hereafter when the Professorship is established and a tradition of accuracy has been formed the Office could take a wider scope, as already arranged. Do tell me what you think I had best do.

I have not seen Lock's book yet. Murray wrote me saying he was about to publish a book by a Caius man (I forget the name but presume Lock) on Heredity, who wished to insert a portrait of me together with others and asking if I could spare a photo for the purpose. I sent three to choose from; the one he selected was the non-copyright one by Mrs Brian Hodgson, the same photo as that in *Biometrika*, which has also been published elsewhere more than once.

I hope you will pitch into any errors this writer may have made in his book.

Montague Crackanthorpe has been writing to me about his very readable paper in the current *Fortnightly*. He has many irons in the fire, I must urge him to keep the Eugenic iron red-hot.

Ever affectionately yours, FRANCIS GALTON.

Copy of a rough Draft of a Letter to Sir Arthur Rücker.

Dec. 16, 1906.

I feel in some difficulty about the immediate future of the Eugenics Office. Prof. Karl Pearson expresses himself as most desirous to give help to myself *personally* but fears a greater loss of time and energy than he can spare if the management of the Office by him requires his frequent attendance at S. Kensington for Cttee meetings and discussions on points of detail. There must of course be two opposing views which it is hard to harmonise: (1) The reasonable desire of the University to strictly control a department that avails itself of its prestige and occupies rooms that it provides; (2) The desire of the man who works it to do so with the minimum of "red-tape" entanglement. The question is the more difficult because so far as I know there is as yet no one available for the immediate appointment as Fellow, who can fill the Office properly without considerable statistical oversight, such as Pearson almost alone could give and would I think be willing to give if he had a free hand. Personally I should be quite satisfied if the management of the Eugenics Office could be put for a while under the complete control of K. P. as a branch of his Biometric Laboratory, but whether you would approve of this I do not know, neither do I know whether K. Pearson would accept the charge though I have hopes that after persuasion he might do so. Invalidism sadly hampers me. My intention though not my promise is to continue the £500 annually during my life and, as you know, I have made provision for a considerably larger support after my death. But before paying the £1000 to the University thus prolonging the annual grant up to 3 years from now, one year being already provided for, I should like to be assured that the immediate future of the Office is arranged for in a way likely to give good results without that assistance which I feel no longer able to give.

I have no evidence of the final form of Galton's letter to the Principal of the University, but I judge it was at the very least written in the above sense, and I know that during the four remaining years of his life the University certainly troubled me with a minimum of what Galton describes as "red-tape entanglement." It is a sign of his insight into men's characters, that he emphasised what I largely dreaded, but had not insisted upon as a great difficulty to him.

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Dec. 20, 1906.

MY DEAR KARL PEARSON, The enclosed from Sir A. Rücker has just reached me. I am most grateful that you consent to supervise. I can assure you that you need not have the slightest fear that the direction you may give to Eugenic work will disappoint me, for I know that what is done will be *thorough* and such as could not have been done by other means as effectively as in connection with your laboratory. Please return me Rücker's letter.

I send back your newspaper cuttings. It is astonishing to watch the difficulties that intelligent people—of "Child-Study" stamp—have in taking in new ideas. You recollect how it was in Darwin's time.—Poor humanity!

I have just been reading a daring book by Dr Rentoul, *Race Culture or Race Suicide* (Walter Scott Publishing Co.). It is full of shortcomings but very suggestive, and shows how much has been written and done here and in America. There is a massive movement going on out of the public sight. He mentions a fact that may be new to you, as it was to me, that a certain "Malthusian League" sends pamphlets "Why have any more children?" to the parents mentioned in the Birth Columns of Newspapers. Have you seen any of these? I recollect something of the sort long ago by (? Annie Besant).

You shall have the proposed form of the *Table* (Centiles etc.) in a day or two*. Once again I am most grateful to you. Affectionately yours, FRANCIS GALTON.

(12) *Scheme for the Francis Galton Eugenics Laboratory.*

As a result of our interchange of letters in the last three months of 1906, I was able to put on to paper a scheme for the small beginnings of a Eugenics Laboratory—for so the Eugenics Record Office was re-named—which more or less satisfied both of us, and which on February 1st, 1907, was accepted by the University practically without modification. Galton presented an additional £1000 which with the balance of £600 or £700 from his first gift enabled the little Laboratory to run for three years. In 1909 and 1910 Galton made further gifts of £500 for the years 1910 and 1911.

Final Form of Scheme for a Eugenics Laboratory for the University of London.

HAMPSTEAD. December 22, 1906.

MY DEAR FRANCIS GALTON, I had my last day of College work yesterday, and I have been trying to put into form my thoughts on the Eugenics Laboratory work, as they have been settling down in my mind during the last few weeks, for your suggestion and approval. Let me just explain a number of points first. I want to make the Eugenics Laboratory a centre for information and inquiry. I want to extend the tendency which is growing up for outside social and medical workers to send their observations to the Biometric Laboratory. But to do this I think we ought to try and associate some half dozen men (in the first place, say) with the Laboratory as an advisory committee or as associates. (I mean by this men from whom we can seek advice on points in their own fields of research.) I have not yet consulted the individuals I have in mind.

Now as to personnel. I don't think we shall do better than Heron. He is very keen. ... He is doing some mathematical teaching at present of which he has to give a month's notice of termination. So that if you approve, I would suggest his name at once to South Kensington.

* This paper in the form Galton desired with Centiles calculated by Dr W. F. Sheppard was published in *Biometrika*. See our Vol. II, pp. 401-2.

I would suggest that Miss Elderton be no longer spoken of as a clerk, but be made a Francis Galton *Scholar*. She is quite capable of doing original work. I should give her a little additional instruction in statistical methods, and set her on to research work either alone or in conjunction with Heron, so that her name would appear on the publication of it. I would further suggest that her stipend be raised. My reasons for this are as follows. . . . She is very competent* and is now fairly well trained, and it is very desirable that we should retain her services. She is keen on the work. Further, if we are to get really good workers, we must give them a method of insuring to some extent their future. Now to have published something and been a Francis Galton Scholar, not merely a clerk, will give Miss Elderton a better chance if she passes later into social work of any kind. It is most desirable that people trained in the Eugenics Laboratory should pass into work in public or municipal service of some type, as in dealing with mental defectives or invalid children, etc. We shall thus develop into a training school for practical eugenic work.

My next point is that the office should if possible have a paid computer. We cannot afford more than, I think, £— for this. We shall not get for this the services of a man, or the whole time of a first class woman. . . . Miss Barrington is the only person I can think of who is thoroughly trained and who would possibly be willing to give three or four days a week to computing for the Office. You will, perhaps, know her from her conjoint papers on inheritance in Greyhounds and Shorthorns. If we got her services, we should have a staff of three who would push through a lot of work.

I should suggest a continuous series of Eugenics Laboratory Publications. Even if we cannot publish an independent series, they should be published with continuous numbering and volumes of offprints made up and distributed to the Press to show the activity of the Laboratory. If the funds admit and there seems a possibility with the unexpended balance, an independent series of memoirs might be issued. . . . Anyhow the important point is that, wherever and however published, there should be a single title "Eugenics Laboratory Publication No. —" and continuous numbering.

I think the Eugenics Laboratory ought through its Fellow, and with our aid in the Biometric Laboratory, to give instruction and aid to students and research workers in Eugenics and on this account some more detailed entry should be made in the University Calendar and occasional advertisements appear in one or two journals.

Next as to the purchase of reports, journals and books. I am very keen on the formation of a good library, and anything you get, pamphlet or book, that you would weed out of your own library pray turn over to the Eugenics Laboratory. Also it would be most valuable if you would send us the titles of any books or reports that we ought to look up. I shall certainly read Rentoul.

As to the additional room in Gower Street: I have two rooms there adjacent to the present Eugenics Office and can give up one, at any rate until October, to the Laboratory, because Heron will want a room for himself. Please pardon the enormous length of this letter.

Affectionately, KARL PEARSON.

If you approve, we might send something like the enclosed scheme and explanation of it to Sir Arthur Rücker.

*Proposed Draft Scheme for the Francis Galton Laboratory
for the Study of National Eugenics.*

UNIVERSITY OF LONDON.

The term National Eugenics is here 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 Laboratory is at present established at No. 88, Gower Street, and the Staff consists of:

(i) The Francis Galton Research Fellow. (a) The Fellow is appointed by the Senate on the recommendation of a special Committee reporting through the Academic Council. (b) The value of the Fellowship is £— per annum; that it be tenable for one year in the first instance, and

* The opinion of the first Galton Fellow may be cited here: "Miss Elderton has certainly been a remarkable success at the Eugenics Office; but I think her marvellous energy and quickness to learn anything new would have enabled her to succeed at anything she undertook."

for two subsequent years on favourable report from the Committee at the end of the first and second year's tenure respectively. (c) That the duties of the Fellow be to devote the whole of his time to the study and teaching of Eugenics. He shall report annually to the Committee on the nature of his researches during the year, and send to each of its members from time to time copies of such publications as he may solely or conjointly with other members of the staff have issued. (d) The chief object of the Fellowship is Research, but the Fellow will be expected to acquaint himself with statistical methods of inquiry and to give instruction to students or inquirers in Eugenics or allied problems, such instruction not to occupy more than a couple of afternoons a week. As chief executive officer he will be responsible for the general conduct of the Laboratory.

(ii) The Francis Galton Scholar. The method of appointment and the duties of the Francis Galton Research Scholar shall be similar to those of the Francis Galton Fellow, the stipend being such as shall from time to time be fixed by the Committee.

(iii) The remainder of the annual income of the endowment shall be devoted to assisting the general work of the Laboratory, to accumulating statistical material bearing on National Eugenics, and to the publication of researches made by the Laboratory or its associate members.

(iv) Members of the Staff are expected to work during the academic session daily (Saturdays excepted) in the Laboratory. The vacations will be about 3 weeks at Christmas, 3 weeks at Easter and 6 weeks in the summer, but it may be necessary to arrange the latter so that the Laboratory is not entirely closed for so long a period as 6 weeks.

Proposed Budget and Personnel.....

There is an unexpended balance from the original grant for each of the first two years. I would suggest (i) the purchase of a much needed Brunsviga Calculator. (ii) Various books of tables, etc., in current use for statistical work; a slide rule or two, etc. (iii) Providing with suitable furniture, cupboards, bookcases and lockers, an additional room in Gower St.* (iv) Incidental and unforeseen expenses. It is most desirable that any further balance should be allotted to (i) Purchase of Reports, Journals and Books, (ii) Issue of inquiry schedules and pedigree forms, (iii) Publication Fund, (iv) The gradual formation of a collection of instruments useful for observing the mental and physical conditions of children and adults, so that information and practical object lessons can be given to inquirers on these points.

Proposed Statement for Insertion in the University Calendar, or for Advertisement. (It is most important that persons engaged in social and medical inquiries should know of the existence and work of the Laboratory.)

The Francis Galton Eugenic Laboratory.

University of London (temporary address: 88, Gower Street, W.C.). The Laboratory is under the supervision of Professor Karl Pearson, F.R.S., in consultation with Francis Galton, F.R.S.

Francis Galton Fellow in National Eugenics:

Francis Galton Scholar :

Computer :

Advisory Committee: The following have kindly consented to aid the Staff of the Laboratory in special forms of inquiry †:

It is the intention of the Founder that the Laboratory shall act (i) as a store-house for statistical material bearing on the mental and physical conditions in man and the relation of these conditions to inheritance and environment, (ii) as a centre for the publication or other form of distribution of information concerning National Eugenics. Provision is made in association with the Biometric Laboratory at University College for training in statistical methods and for assisting research workers in special Eugenic problems. Short courses of instruction will be provided for those engaged in social, anthropometric, and medical work, or desirous of applying modern methods of analysis to the reduction of their observations.

* This will be necessary if the staff be increased to *three* members. But the whole of this should be of a nature which will be useful when the Laboratory is transferred to permanent quarters.

† The Advisory Committee or list of consultants originally suggested consisted of: (i) a Commissioner in Lunacy, (ii) a R.A.M. Professor, (iii) an Actuary, (iv) an Anthropologist, (v) a Zoologist, (vi) a Pathologist and (vii) an Ophthalmologist.

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Dec. 22, 1906.

MY DEAR KARL PEARSON, I can hardly tell you what comfort and relief your letter has given me, feeling that your views and mine are in close accord, and that you have such a masterly grip of the situation.

I send back your letter for convenience to you of future reference, also Sir A. Rücker's to me, which had better be kept with it. I have made a few notes by the side of your letter to me, which will save additional writing. There is little to add to these. I am very glad that you retain Schuster on the Advisory Committee, not only on account of his own merits but as evidence of the continuity of the work, and am particularly glad that you feel that the appointment of Miss Elderton as "scholar" is feasible from the University point of view, and that you propose to raise her salary. She has always seemed to me an invaluable member of the staff. The computer will prove a real help and a relief to the future work of the Office.

The funds cover the estimated expenditure very narrowly. I wish I could undertake to give more. Possibly I may in a few months be able to give help towards the library and other non-recurring expenses, but I can't promise.

The "Eugenics Laboratory Publications" may greatly help by drawing attention to calculations stored in the Office but not printed as yet on account of cost; being in that respect a sort of glorified statement of similar matter to that which you insert on the red slip in each *Biometrika*. It could also contain lists of books received, and perhaps of memoirs wanted. The Form etc. of it would have of course to be carefully considered.

When I sat down I thought that a longer letter than this would be required, but on again looking over the notes I have made in the margins of your letter it seems that I have exhausted my say. I will write another letter about other things.

Affectionately yours, FRANCIS GALTON.

We may conclude this topic by reproducing a personal letter from Sir Arthur Rücker of thanks to Francis Galton.

UNIVERSITY OF LONDON, SOUTH KENSINGTON, S.W. Jan. 28, 1907.

DEAR MR GALTON, I must write a private line to you thanking you most sincerely for your generous gift of £1000 and the still more generous schemes you are developing. Your endowment is certainly the most original as I hope it will be one of the most useful of those that have been made since the University was reorganised, and it is a great pleasure to me to find that so old and kind a friend has selected the University of London for his gift. It is these external signs of approval which lighten a task, which like all work worth doing, involves detail which sometimes amounts to drudgery. In proof of the fact that you have chosen a progressive body may I tell you one fact. The income of the University 5 years ago was £29,000. This year it is £95,000 and including University College (now incorporated) it will next year be about £120,000. But we want not only public bodies like the L.C.C., the Goldsmiths' and Drapers' Companies to help us; we want distinguished individuals to recognise the existence of the University amidst the welter of London life. You are one of the few who have done this, and none have done it with more originality and generosity. Please accept my warmest personal thanks and Believe me,

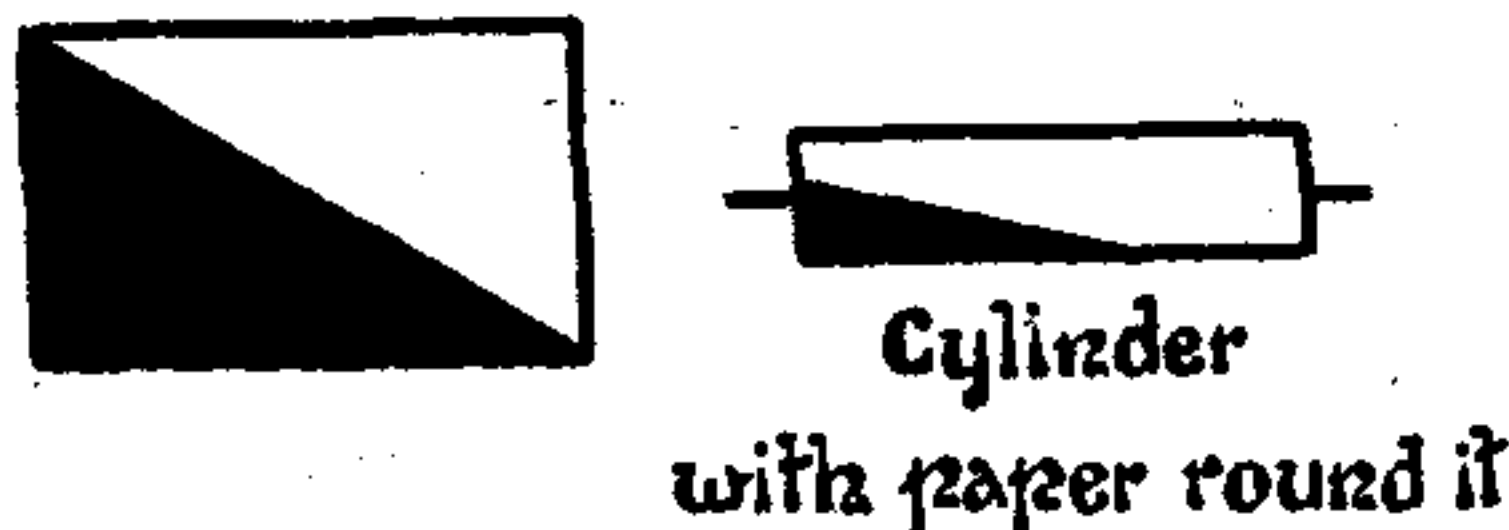
Ever yours sincerely, ARTHUR W. RÜCKER.

One out of several further letters of Galton to his biographer dealing with other matters may be reproduced here in order to show how the octogenarian still retained interest in photographic problems. Cf. our Vol. II, p. 313.

7, WINDSOR TERRACE, THE HOE, PLYMOUTH. Dec. 25, 1906.

MY DEAR KARL PEARSON, More than one justifiable cause has prevented my returning the beautiful mouse-skin pictures till now. Do you need to use a coloured glass in making comparison between the coloured mouse skin and the black and white picture? I return the plates. I should like to have sent you a fully worked out picture of a method I have often thought of by which the mean tint of a variegated black and white *rectangular* portrait ought to be got. But I have

wasted too much time already on what may be of no use. So I simply send the enclosed. Abney used a rotating cylinder with a black and white drawing wrapped round it, in order to get the photographic equivalent to each combination of black and white*.



What good news about Pearl. I return his letter. I will shortly send the centile paper and diagram. Some delay has necessarily occurred about it. I am not idle but get through things now so slowly.

Best Christmas wishes to you all, and may you enjoy cake with the F. G. cut. My *Nature* of last week has miscarried so I have not yet seen my own paragraph, though others, like yourself suspecting me, have written to me about it. The post is just going out so I conclude now,
Ever affectionately, FRANCIS GALTON.

To obtain the mean tint of a rectangular picture.

Mount the picture on a [rotating] cylinder with axis vertical [?horizontal], in front of a camera. The dark slide of the camera to have a narrow vertical slit. Take an exposure—then cap. Move screen the width of the slit and take a second exposure; again cap. Repeat the process until the sum of the widths of the slits is equal to the length of the picture. Print off. The print will be streaky and of same width as the original was long. Mount the print crossways on the same cylinder as before and proceed as before. The result will be a plate of a uniform tint, the mean tint of the original. F. G. Dec. 25, 1906.

Galton's plan to get a mean tint is suggestive although it is not quite clear how he proposed to carry it out in practice, especially in dealing with the *relative* mean tints of engravings, say, of different sizes, or of piebald skins. Would a whole series of cylinders be needful to fit subjects of different heights, or must the subjects first be reduced to a standard size by photography? How in practice would such reduction affect the *relative* tints of the two engravings? Again I do not follow the necessity for the slit, or how it is to be moved. A photograph of the engraving on the rotating horizontal cylinder would give vertical streaks on the plate. A print from this, which must be taken under stringently standardised conditions, could then be put crosswise on a cylinder of proper size and again photographed to obtain a uniformly tinted negative and thence a print. The "greyness" of this print would have—with absolutely standardised conditions—some relation to the average tint of the engraving, but I cannot see that they would be the same. Supposing the lighting always (artificially) the same and the exposures identical, it would be possible to compare the "greyness" of the prints thus defined with those obtained from known amounts of black and white on the cylinder, and thus form a scale. As I have said, Galton is here suggestive, and the problem is of some practical importance, but it needs much experimental work before it can be considered solved.

(13) *Work and Correspondence of 1907.* The year 1906, owing to reasons in part indicated, had been a year of stress and change for both Galton and

* A similar arrangement was adopted in the Biometric Laboratory for tint comparison judgments in 1894 (see *Phil. Trans.* Vol. 186 A (1895), p. 392). It is still used in the Anthropometric Laboratory attached to the Biometric Laboratory.

his biographer. In 1907 Galton, though he still had cause for anxiety, recovered something of his usual mental activity and hopefulness. He had been asked and with some hesitation had consented to give the Herbert Spencer Lecture at Oxford on June 5th; meanwhile his biographer had been invited to give the Boyle Lecture on May 17th, and in accepting had taken for his topic: "The Scope and Importance to the State of the Science of National Eugenics." On the other hand, Galton chose as his subject-matter: "Probability, the Foundation of Eugenics*," although the most interesting part of his lecture strayed somewhat from that topic. By the title Galton chose for his lecture he definitely gave forth as his opinion that his new science of Eugenics ought to be based on the actuarial treatment of man. For him the selective mating-rate, the selective birth-rate, the selective death-rate, and heredity in man were fundamentally mass-problems, to be solved statistically, by actuarial methods; shortly, Eugenics was a branch, the most important branch, of Biometry. For evolution the important matter is the changes that are taking place in the type or average of a species, and the variations that render these changes possible. We may never be able to predict what the individual child *C* of a given *A* and *B* will be like, but we can state the *probability* that he will be so and so; in other words, we know the average distribution of character in the children of all parents like *A* and *B*. If *A* and *B* both come of stock tainted with insanity, we can predict with considerable accuracy the percentage of their offspring which will be insane or transmit insanity. It is no argument against the eugenic principle—that *A* and *B* ought not to have had children—to tell us that their particular child, *C*, is sane—he may be indeed a genius. The aim of Eugenics is to improve the race as a *whole*—to raise our nation above its present low level—not to breed one sane man at the cost of producing one or more bred insane. No farmer would be content with his flock, if with every white lamb, however fine its wool, he added at the same time a black sheep to his flock! I think this is the meaning of Galton's statement that probability is the foundation of Eugenics, and of his opinion expressed in his letter to Bateson that "an exact knowledge of the laws of heredity" would scarcely help us in the problems of Eugenics †.

A few letters here may throw light on the trend of events.

March 2, 1907.

MY DEAR FRANCIS GALTON, Just a line to say that I have been asked to give the Boyle Lecture at Oxford this year (May 17th) and have settled to take "The Scope and Importance to the State of the Science of National Eugenics" for my topic. I expect my views will not wholly satisfy you, but they may help to push forward the whole movement and lead some of the younger Oxford men to think over and possibly take up the subject. If any ideas occur to you before Easter I should be glad of jottings or of suggestions for lines of thought. My idea is to indicate what we know already, what again we need to find out, and how much all these

* Oxford, at the Clarendon Press, 1907.

† See p. 221 above. It is, perhaps, needless to remark that with all the thousands of pounds and of pages devoted to genetic research during the last 25 years we seem to-day scarcely nearer the *exact* knowledge of the laws of heredity; the further we advance the more complex does the problem show itself.

matters bear on national welfare, indeed that right views on them are essential to healthy patriotism.

I trust no further news is good news. I had a line from Mrs Weldon in which she speaks with much warmth of feeling of having received a very kind letter from you.

Affectionately yours, KARL PEARSON.

I see you are an optimist and believe in the existence of eleven men of judgment to one crank; I am inclined to think we too often get eleven foolish to one wise, and this average gives the latter a chance!*

3, HOE PARK TERRACE, PLYMOUTH. *March 7, 1907.*

MY DEAR KARL PEARSON, It is now fixed that both Eva Biggs and I return on the 13th [? 14th], this day week, to 42, Rutland Gate. I have been much better of late. Illness seems gone out of me, and I walked a total of between 2½ and 3 miles yesterday, which I have not been able to do for many months.

If you have time, it would be useful, I think, to your Boyle Lecture, to read Sir John Gorst's *Children of the Nation*. At first I only read a chapter here and there, which seemed superficial and inadequately proven, but knowing that he has far from a superficial mind, I re-read it from beginning to end to my great profit. He shows the awful waste of good human material by bad administration, such as is not only preventable, but is prevented in some other countries. He wants to rouse public opinion. Eugenics as I pointed out when first adopting the word has the two-fold meaning of good stock and good nurture; in short "well-bred" in its fullest sense. If you include "nurture" in your lecture, Sir J. Gorst's book might give useful hints. Also it shows the machinery (with its drawbacks) that exists for carrying through new plans.

When we meet I should like to ask a question which you and Mrs Pearson could greatly help in solving, namely *if* I were to give up my house in Rutland Gate (being unable to live in London except for a few months in the year) would Hampstead be a good place to go to? I don't want more than a smallish house, but with a sunny (small) garden, and everything healthy. Such things seem to abound in Hampstead. Is it so?

Ever affectionately yours, FRANCIS GALTON.

BIOMETRIC LABORATORY, UNIVERSITY COLLEGE. *March 9, 1907.*

MY DEAR FRANCIS GALTON, I am so glad to hear that you are feeling the revivifying influences of spring. It is glorious to feel the sun again and to realise that summer is approaching. I am glad beyond that to hear there is even the slightest chance of your coming to Hampstead! I don't want my joy, however, to run away with me; I must not be too biased by it in telling you all the "ills" and "wells" of Hampstead as I know it.

[Here follows a rather too detailed account for reproduction of the advantages and disadvantages of Hampstead, especially the latter in the winter.]

Of course to me personally it would be a very great gain, I can hardly say how great, because I don't want that to weigh with you when health and environment generally must be considered in the first place;—but Sunday afternoons would be more of a possibility, and *you* know what nearness means in an overcrowded life!

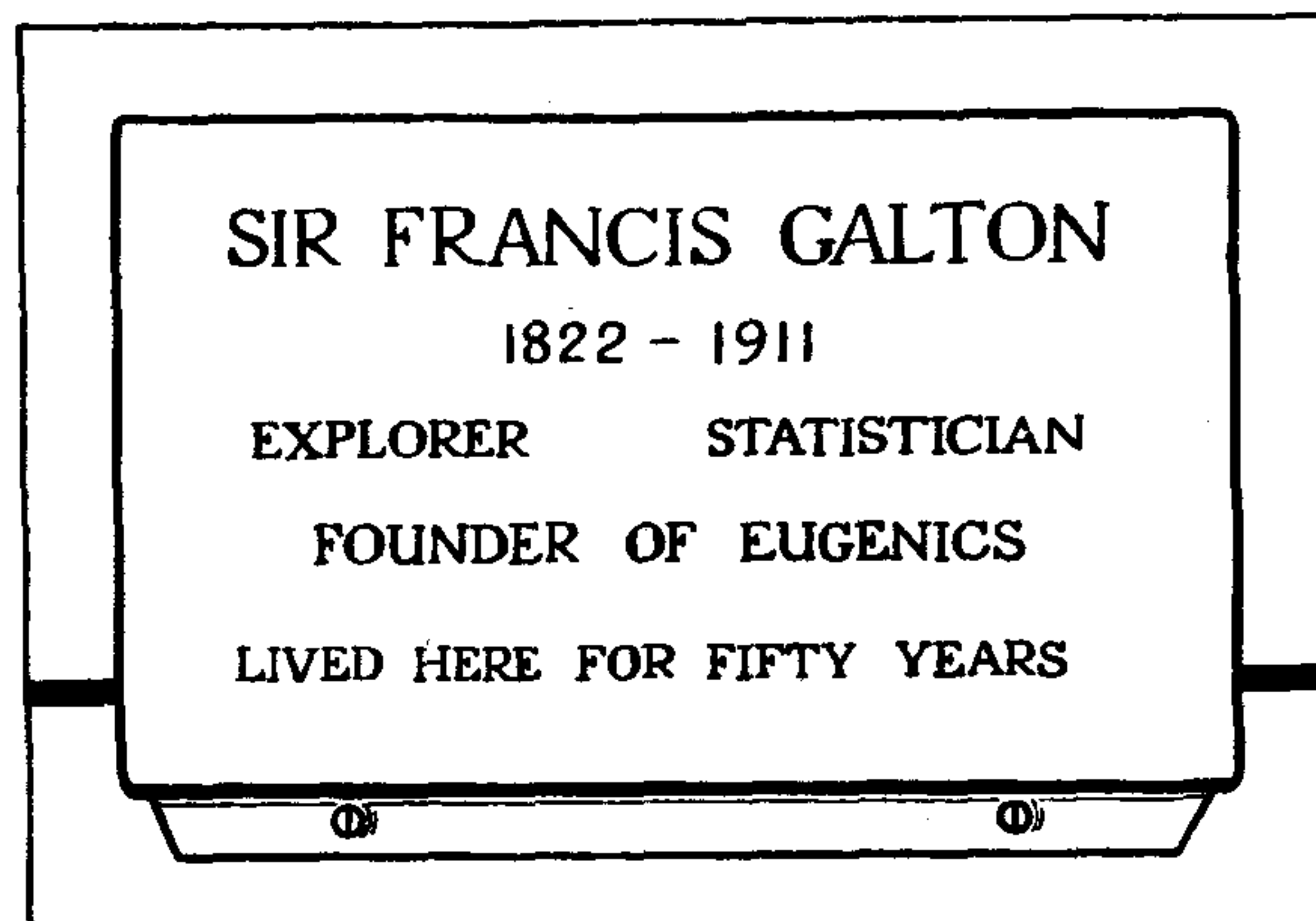
The Eugenics Laboratory goes steadily along. Miss Elderton has got the ten types of cousins worked out for two characters and will soon have them done for four. The general conclusion is that cousins have almost exactly the same degree of resemblance as grandparents and grandchildren, i.e. correlation equal about 0.3. This seems to me of very considerable importance, because (i) cousins are contemporaries and can be more easily and accurately investigated than grandparents, (ii) there are far more of them than in the case of grandparents, and hence a closer estimate can probably be made from them †. Further, as far as I can judge, the marriage of first

* From a postcard of nearly the same date. This had reference to Galton's "Vox populi" letter to *Nature* of March 7, 1907. See pp. 403-4 of Vol. II of this *Life*.

† I may add that two cousins can of course be found who have no correlation *inter se*, only with the subject, which is an advantage not possessed by brothers. Thus the multiple correlation of four properly chosen cousins (.53) does not fall much short of that of two brothers (.58).

cousins must stand on exactly the same footing for good or ill as the marriage of a descendant with an ascendant in the second degree. About 75 % of the asylums in the country have already sent their reports with statistics and Heron has had a good deal of work in arranging and sorting them. The net result is that there appear to be about half-a-dozen men who might be both capable and willing to take elaborate family histories of the insane in their charge; the collection of such histories should be started at once. Always affectionately, KARL PEARSON.

Francis Galton did not come to live in Hampstead. I do not think, however delightful it would have been for me, that his health would have stood the winters there as well as at Hindhead or Haslemere, where he passed the winter months after he had ceased to feel able to spend them abroad. Thus 42, Rutland Gate remained his house to the end, and now—largely at the suggestion of his faithful servant Gifi—carries on the balustrade above the porch a tablet with the following words:



42, RUTLAND GATE, S.W. *April 8, 1907.*

MY DEAR KARL PEARSON, I am anxious to learn that you are well. You wrote of digestive troubles—which sap strength—are they past? Yesterday I came across a long-missing packet, which I had labelled “Old Papers of the Evolution Committee, R. Soc.—of probably no present value. Might be useful if a Darwinian Institute were ever founded*.” It would have been valuable to you when writing the Memoir on Weldon, containing as it does many letters from him. Whether you would care to see the packet now, I cannot guess. You shall have it at once if you like. I have only looked cursorily through its contents, but find them decidedly interesting as giving the various opinions of a variety of experts. What is of more present interest to you now is the enclosed letter from Leonard Darwin. I send it without comment. It may at least suggest a phrase in your forthcoming lecture at Oxford. Please return it when done with.

The Vice-Chancellor has asked me through Poulton to give the “Herbert Spencer” Lecture, but I have declined on the ground of infirm and uncertain health....I was delighted to hear yesterday that the Petries expect to add a unit to the forthcoming generation.

Ever affectionately yours, FRANCIS GALTON.

Major Leonard Darwin's letter referred to a brief talk with a distinguished politician about the Poor Law Commission; the conversation was very unsatisfactory. Darwin had spoken of the eugenic aspect of the matter, but the minister showed no interest and said doctors did not believe in heredity, or words to that effect. Major Darwin was very anxious that a combined effort should be made on the part of scientists to place their aspect of the

* See pp. 128-135 above.

case before the Commission. He considered that the biographer might give good evidence as he had thought on this side of the question. Anyhow Galton was not to answer his letter, but "to set something going to stir up such muddy opinion."

7, WELL ROAD, HAMPSTEAD, N.W. *April 8, 1907.*

MY DEAR FRANCIS GALTON, May I come and see you? I expect I have been rather foolish. In order to work I have been staying at home for the Easter vacation; it is the first time for more than 20 years, and I expect it won't pay. But the arrears were so overwhelming that I ought to stay at home, I think, for a year. There is material which has been waiting for years to be put into paper-form, and it is not fair to some of my co-workers to go on leaving it untouched. College teaching—a good deal of an elementary kind, but of the bread and butter sort—has gone on increasing year by year, so that I get little time for research work during term. I have, however, taken a bold step and written to the authorities suggesting that I ought to have some of the work taken off my hands. If one were in Germany, or had accepted one of the posts that have been offered in America, one would by fifty be able to do the work one is best fitted for. But this in England is only possible at Oxford and Cambridge; at all the newer Universities one has to undertake endless teaching work, which has no relation to the field of one's greatest efficiency. Now I have had my grumble out, and you can put it down to solitude and dyspepsia!—My wife and bairns are away and I have had several days of solitary meals, and 10 to 12 hours a day of solid work.

At meals I have read: (i) Rentoul: his exaggerations and fallacious statistics spoil an otherwise strong case. He is wretchedly careless also in expression—rather a medical Bernard Shaw. In fact he displeases me. (ii) I skimmed Plato's *Republic* and *Laws* again for eugenic passages, but they don't amount to much beyond the "purification" of the City by sending off the degenerates to form what is termed a "colony"! (iii) I read, much to my own pleasure, George Gissing's *Private Papers of Henry Ryecroft*. It is quite different from anything I have previously read of Gissing; over and over again false and annoying, but it is really literature, and there are some fine passages—pessimistic though they be. If you do not know it, it is worth considering.

Sheppard has computed the first half of your table and is progressing with the second, but for high values it means a good deal of work. He promises it in a few days now. The Press has been taking holiday and I have no proofs of the Eugenics paper yet. We have reduced the wasp material and I have written up the paper; we find that *workers* are the most variable, then the *drones* and lastly the *queens*. This is noteworthy because the drones are said to be more variable than the workers in the case of bees. I have also written a reply to Y.'s attack on my Huxley Lecture. It is the hardest task possible to have to reply to an old pupil and friend, who smites you without talking it over with you first!

Now when may I come and see you? When will you be alone? I could come Thursday about 3.30, if that would suit you. Affectionately, K. P.

P.S. I return Leonard Darwin's letter and enclose the others which you need not return. There is much to be done yet before statesmen of the Lord — — type will realise what statecraft has to learn from the Science of Man!

I wish you had felt up to the "Herbert Spencer" Lecture.

42, RUTLAND GATE, S.W. *April 9, 1907.*

MY DEAR KARL PEARSON, By all means come on Thursday about 3.30 as you propose. If you care for a change, and to dine quietly and to sleep here, you would be *most* welcome; but send a line in time to prepare bedroom. Don't bring dressing things. I fear you are much overworked. You shall see the packet of Evolution Committee papers when you come, and you can then settle whether I shall post them to you after you leave. I have not seen Y.'s attack. If you come to sleep here, why not stay on? You shall have all the comfort and privacy I can give you. I am quite alone now, and should be delighted if you would do so. There is an extraordinary battalion of family griefs just now, the two appendicitis cases of my niece's sons are going on very badly, and she herself is utterly overwrought and ill. ... Nay, there is still more to the bad—but I won't croak and bore. Ever affectionately yours, FRANCIS GALTON.

7, WELL ROAD, N.W. Sunday, April 14, 1907.

MY DEAR FRANCIS GALTON, It was quite a holiday seeing you on Thursday, and I came back with fresh vigour to my task. I have got about a quarter of the lecture now done. I am sending you by parcel-post (a) Pollock's *Spinoza*, a fine book, which some day you will let me have back. (b) A series of my own Essays, which please do not return. In mitigation of anything which may offend you in them, I may say that most of them were written 25 years ago and all of them more than 20. The only ones that I suggest you should look at are Nos. 6 and 7, possibly No. 10 might interest you in a spare moment.

I enclose the proof of the wrapper for the Eugenics Memoirs. I hope you will approve it. Will you return it to me with suggestions of any changes you would like? I shall have to send it to the University for approval...By the bye, I was amusing myself by trying to draw up a pedigree of Darwins and Wedgwoods on the basis of *Noteworthy Families*, pp. 18-19. On p. 18 Josiah Wedgwood is said to be George Darwin's *me me fa*, and on p. 19 his *me fa fa*. Hence his mother's father and mother's mother must have been brother and sister! On p. 19, l. 6, I read: "*me fa fa* (she was her husband's *fa bro dau*)." Now the "she" is I suppose the *me*, hence the great Charles' wife was a *Darwin*, his father's brother's daughter, but her father's father was a *Wedgwood*. Hence she was a *Wedgwood*. Something seems to have gone wrong on pp. 18 and 19.

Will you put the W + D pedigree for me on a bit of paper? I have got very confused over it. Can you send me —'s address? It has occurred to me that it might possibly do good, if I sent a few lines. I think, perhaps, I am the only person, who knowing so much, could effectively say something more. It might not help, but I don't think it could harm. If you advise me not to, of course I shall not attempt it. But sometimes a call to the immediately obvious duty is really helpful. Affectionately, KARL PEARSON.

42, RUTLAND GATE, S.W. April 16, 1907.

MY DEAR KARL PEARSON, I am so glad that the pleasant visit you gave me was no hindrance to your work. Excuse delay in replying to your questions....I must postpone for another day the Darwin pedigree. The original papers are, I think, at 88, Gower Street, but I may succeed otherwise in working it out. The books are safely come! Many thanks. I will read both of them leisurely.

As regards the entries on the wrapper, they seem to me to be quite clear and appropriate, except that the address given to applicants to exchange publications should be to some *person*. I have put "to the Editor" as a suggestion. As regards the colour of the wrapper, it may have distinctive merits, but not in the sense that the printing on it is distinct. At this moment I cannot read it in a darkish corner of the room, and I have often noticed in the heaps of periodicals on the tables at the clubs that the printing on the blue cover of the *Edinburgh Review* is by far the most indistinct of any. As regards size you naturally want to be constant to that of your other publications, so I say nothing against it, though my own unbiased feeling would be strongly in favour of Royal 8^{vo}.

The Vice-Chancellor of Oxford has attacked me about the Herbert Spencer lecture with such a kind and thoughtful letter,—assuring me that if when the time comes I should feel unequal to delivering it personally, or even of being present, he would arrange for its being read in my absence,—that I felt obliged to cancel my previous refusal. So I shall have to hold forth towards the end of May. I see that the first of these lectures was given in 1905 by Frederick Harrison. What may have occurred in 1906, I do not yet know....I will be able to tell more when I write about the Darwin Pedigree. Ever affectionately, FRANCIS GALTON.

[HAMPSTEAD.] April 19, 1907.

MY DEAR FRANCIS GALTON, I should have written yesterday only I was hoping to hear possibly from you again. I want to say how glad I am to hear you are going to undertake the Herbert Spencer Lecture after all. The only point I feel some compunction about is whether I have not, unwittingly, taken your subject from you. I had no idea at the time I sent them my title that you would be lecturing yourself in Oxford, and I would change it even now, if they had not posted it about the place. At least I judge they must have advertised it in some way, because I have received one or two letters already on the title. Now can you look upon me as

your John the Baptist, making the way straight? I am getting my lecture typed so that I may send you a copy. Will you let me know, if there is anything that trenches too much on what you have in view, and I will cut it out? Of course it is all *you* in a certain sense as it deals with Eugenics from beginning to end; still you must see it and give me your views....The Eugenics folk are back, at least Miss Barrington was up with some problems yesterday.

Bateson has edited a vast work—the Report of the Hybrid Conference—wholly Mendelian. I come in for my fair share of abuse! There is just one paper of $1\frac{1}{2}$ pages which would have pleased Weldon. It is by a Canadian on the inheritance of bearded and beardless wheat—one of the “striking Mendelian illustrations.” He very quietly demonstrates by aid of illustrations that the Mendelian theory does not work. Affectionately yours, K. P.

P.S. Your letter just come and I have re-opened this. Your Darwin pedigree is, I think, clear but there is still, I believe, a slip. You say: Mrs Darwin was her husband's *fa bro da*. Her husband's *fa* was a Darwin, and therefore his *bro* was a Darwin, and his *bro da* would be a Darwin and not a Wedgwood in maiden name. I think it should be she was her husband's *me bro da*.

42, RUTLAND GATE, S.W. April 21, 1907.

MY DEAR KARL PEARSON, It is amusing that at Oxford we should both be proclaiming Eugenics as one of the large progeny of the University of London! Really the study is gaining an academic *status*! I do not think we shall clash as, though the title of my lecture is “Probability, the Foundation of Eugenics,” there are new points in it, and for the rest, when you send me your typed copy I shall have time to revise my own lecture by cutting out anything that appears as duplication. I should be most grateful for your free criticism of mine, which, owing to my slow work, won't be written out even, much less typed, by the end of this week. It shall be sent to you as soon as ready. What is your date? Mine is towards the end of May, but I do not yet know more precisely. You are quite right, the passage ought to have been she was her husband's *me bro da*, the “she” being of course transformed into a more intelligible expression....After much discussion with relatives, I have determined to safe-guard my interests by engaging (as soon as I can find one) a “Nurse-housekeeper,” that is, an upper servant (not a lady), age about 40, who could manage *well* the household, mend my things and be able to write letters in an emergency, which were fairly well-spelt, etc., and also nurse me well when I am next ill. Such persons exist in abundance but are hard to find. If Mrs Pearson knows of any such I should be grateful to her to tell me. I should give the “Nurse, etc.” good wages, fully up to her “market worth.” Ever affectionately yours, FRANCIS GALTON.

The reader of the letters of Galton, 1906–1907, will realise that while he was mentally as active as ever, clear and concise in his judgments, his physical strength had begun to fail him, and he became more and more conscious of the need to be cautious about himself. This need was emphasised by two accidents which he met with in the course of this year.

Extract from a letter of April 22, 1907, of K. P. to F. G.:

My lectures are both at Oxford. I lectured at Cambridge last term on statistical methods. I give the Boyle Lecture on May 19th to the “Undergraduate and Junior Graduate Science Club,” but I believe others attend....On May 21st I lecture to the Philosophical Club (a club of Oxford lecturers and dons) on “The Possibility of a wider Category than Causation.” This lecture starts from the idea that no two physical entities are exactly alike, e.g. not even two atoms are precisely identical. They form a class with variation about a mean character. Hence even in physics the ultimate basis of knowledge is statistical—the category is of course correlation not causation. The main difference is that in physics the correlation coefficients are nearly unity but in biology they diverge considerably from unity. Except that in this second lecture I shall assert that Probability is the basis of *all* knowledge (not only of Eugenics!), it will not touch on your topic at all. But I am rather sorry if I trespass on your field in my first lecture. All I can say is that you must read it before delivery and allow me to be, if possible, your way-straightener.

42, RUTLAND GATE, S.W. *April 22, 1907.*

MY DEAR KARL PEARSON, I telegraphed in order to save a post....It was purely a blunder of mine about Cambridge instead of Oxford for your second lecture. I wish you all success on May 19th and again on May 21st. Have you any *proof* that the ultimate atoms are unlike, other than by inference? But I shall see what you say in good time. Of course it is most probable that they differ. I think my lecture will not trespass at all on yours except as far as the title may suggest. You are very good about the Albinism and the Eugenics publications. I like to feel that the Eugenics Laboratory is a sort of annexe to your Biometric Laboratory, using the same methods and working with similar precision under your guidance. I do not a bit understand the *Royal Soc. Proc.* memoir just out on the constitutional peculiarities of albinos. Anyhow it seems that their blood behaves differently in the presence of "proteids"—a mere name to me—from that of pigmented people. (Can people of *piggish minds* be properly styled *pig-mented*? I crave pardon!!) Ever affectionately yours, FRANCIS GALTON.

[HAMPSTEAD.] *May 3, 1907.*

MY DEAR FRANCIS GALTON, Here at last is my lecture typed by Miss Dickens's Office! It was hastily written and the tables have yet to be added. I should esteem it a great favour if you would write on the blank facing sheets any suggestions that occur to you, and let me have back the copy for emendation. I fear the whole thing is very laboured, but I am writing under much pressure and feel a good deal the want of a holiday. I hope all goes well with you.

Affectionately, KARL PEARSON.

Our letters for the next fortnight chiefly cover the last stages of the final drafting of the Weldon Prize regulations. Then they touch again the Oxford lectures. I will cite first the letter which reports my own lecture.

7, WELL ROAD, HAMPSTEAD, N.W. *May 29, 1907.*

MY DEAR FRANCIS GALTON, I think you may care to hear how my Oxford campaign has passed off. My lecture on Friday was fairly well attended. It was in Balliol Hall, and I soon found that I must throw up my manuscript and take to talking. Of course this made me slip many points, but that won't so much matter as the lecture is to be printed. On Saturday I went through the mice with Mrs Weldon, had a talk with Schuster about his brain-work, and wrote about half my lecture for Sunday. That was given in Magdalen Summer Common Room to the Philosophical Club. The members seemed to me mostly groping in the field of obscure definitions. The metaphysicians did not understand me, and the few science folk present were hostile. They could not grasp how much wider the correlation category is than the causal. However, I think I did some good, although these Oxford dons did not impress me as a group of very clear and powerful minds*. It was quite different when I faced in January the Cambridge mathematical lecturers—then one felt in the presence of men of superior intellectual power, and was rather ashamed of oneself. I hope at any rate I have done some Baptist work, and you will find the way straightened. They know now, or ought to, what Eugenics signifies and what the word correlation denotes. I had an interview with the Vice-Chancellor and hope the Weldon memorial will shortly now be settled. I trust this bitterly cold weather will not get a hold on you; it makes me at times feel very incapable and inert. I hope your lecture has got written without too much effort. I hear it is to be given in the Sheldonian Theatre, which, I fear, will want more volume of sound than Balliol Hall. Always affectionately, KARL PEARSON.

The following letters deal with Galton's lecture.

42, RUTLAND GATE, S.W. *May 25, 1907.*

MY DEAR KARL PEARSON, Here is my lecture, but without the 9 diagrams on one page, and without the references to them in the text. They have been redrawn and are being "processed." I send them thus as there is not too much time. Any suggestions in the text would be most welcome. Ever affectionately yours, FRANCIS GALTON.

* Looking back on the discussion now, I think we were really speaking different tongues, wherein the same words carry different atmospheres.

7, WELL ROAD, HAMPSTEAD, N.W. *May 26, 1907.*

MY DEAR FRANCIS GALTON, I wish the Hampstead dream had been realised and that I could first have run in and spoken to you, instead of having to trust to the written word!... Now to the lecture. I like your opening and your finishing *extremely*, and your centre I should like also, if I heard you deliver it with the manuscript thrust aside, while you talked to the audience in Froebel fashion. I quite realise your point, that it is possible to make these biometric conceptions part of the average man of culture's ideas. Every word you have written would be telling, if you were teaching the teacher to teach. But I am not certain how far your very condensed five object lessons will be acceptable when you bring them in the Oxford June week to your *child*, not to your teacher. What you must do later is to expand them into a small primer of biometry. Now what I feel is this, that if you do not attempt to read these elements of a primer from your manuscript, but just talk a bit about them in the middle of your lecture, you will lead your audience to read these parts afterwards in print, while you fascinate it meanwhile personally as you have the power to do. That is really my sole criticism—an Oxford June audience is the child and not the teacher.

These other points involve merely suggestions of slight changes: (i) Surely you have inverted the order of our Huxley Lectures. My lecture was in 1903, but I think yours was two years earlier and not the year after. In fact you put the right date on the top of p. 7. So here you will see, you, not I, led the way! (ii) Will you think me ungrateful, if I ask you not to praise me quite so much? It is natural that I should feel and speak strongly about your work, because I owe so much to it for method and suggestion, but if you praise me 'tis as you branded your own herring as of peculiar virtue. Please re-read in this sense pp. 2—3 and 9. I know you will grasp how much I appreciate all your praise, but others possibly will not see it from the same standpoint. (iii) Would it not be well to free yourself on p. 21 from your unit by measuring your *A* and *B* in terms of their standard deviations? You thus avoid the difficulty which occurs to the mind coming fresh to the subject of the index of correlation* depending on the units used—lbs. weight, inches of stature, etc.—and thus providing no comparable ratio, but one varying with the units. If you agree to measuring in terms of your standard deviations as units, all values of the index of correlation are comparable and lie between -1 and $+1$. All this is, of course, very familiar to you [see, indeed, our pp. 5, 51, and Vol. II, p. 393, but it passed from Galton's mind when preparing his manuscript].

You would bring it home to your hearer and save him some difficulty, if you gave a hint that the coefficient of correlation lies arithmetically between 0 and 1, and has only a numerical value, being independent of scales, such as those of weight, length or units of pigment intensity.

I wish I could come to Oxford to hear and possibly help you. I would if it were July, but I am under rather high pressure, and one of my ears is giving me much trouble and exciting the neck in some way. Affectionately, KARL PEARSON.

I shall hear how the lecture goes, I have no doubt; but I should like to hear when you have a chance how the lecturer gets through the exertion, which is another matter.

Galton was not fit to speak at Oxford, one of the reasons being the accident referred to in the following letter. The lecture was read by Mr Arthur Galton.

42, RUTLAND GATE, S.W. *May 27, 1907.*

MY DEAR KARL PEARSON, I have now a bout of ill fortune. Feeling particularly well I went on Friday to Bushey Park and returned a bit tired but nothing more. However a horrid bout of bronchitis came on and on Saturday night 12.30 on getting out of bed I rested in the dark on an insecure table with crockery and tumbled on the floor with such a clatter and bound with the bed-clothing dragged after me. I had not the strength to free myself so there I lay till 6.30 when the household stirred and the united strength of three maids got me into bed with a very sharp sciatica. It is possible that I may be fit to go to Oxford on June 5 but I feel practically sure that my lecture must be read for me.

* I use here the term employed by Galton in his lecture; by 1907 the name "*coefficient of correlation*" was in general use.

Thank you much for your suggestions, but I can't conscientiously adopt those that relate to yourself. The errors of date of the two Huxley lectures were serious (I can now trace how it occurred; I had bothered over it). I dare not think of Hampstead now, feeling that I mayn't be fit for more than a bath chair, hereafter. An oak floor makes a hard bed for an invalid, as my ribs, etc. loudly proclaim in their language of feeling. It is a good biblical phrase "the iron entered into my soul"; that is just what the oak has done—also Hudibras'

"Now am I out of Fortune's power.
He that is down can fall no lower*."

I wonder whether, when the lecture is over, I could persuade Miss Elderton to write a primer of the proposed lessons. If the idea takes, it would be worth her while. Ladies often do these things better than men. Ever yours affectionately, FRANCIS GALTON.

Thanks for the appreciative account of your doings at Oxford †. I return it.

Galton was beginning as the result of his experience of the women workers in the Biometric and Eugenics Laboratories to have a higher opinion of the contributions of academically trained women to science. (See Vol. II, pp. 132-4.)

7, WELL ROAD, HAMPSTEAD, N.W. *May 27, 1907.*

MY DEAR FRANCIS GALTON, I am so very sorry indeed to hear of your accident, although I am glad you can be humorous as to its incidents. But you really ought not to be, so to speak, out of range of the household and unable to summon them for six hours! You must have someone in your dressing-room within call. You ought at least to have bells and sticks within reach.

I shall still hope that it may be possible for you to deliver the lecture yourself, for although I would not have you make any effort that would have risk to health in it, I still know what a great pleasure it would be to many at Oxford to hear you speak yourself. As soon as you have got this over, you must see Miss Elderton and talk your project over with her.

Always affectionately, KARL PEARSON.

You must not let anything I have said induce you to attempt more than you feel quite capable of, but it would be were it possible so fine to speak to Oxford in one's 86th year!

It is high time that we turn to the Oxford Lecture itself; the letters above printed will suggest to the reader how much time and thought its preparation cost Galton. Strange are the vagaries of chance, the outward plumage of Galton's lecture on Eugenics approached the wrapper-colours of the *Edinburgh Review* and *Eugenics Laboratory Publications*! (See p. 313 above.)

After a vivid and brief characterisation of Herbert Spencer:

"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" (p. 5),

Galton passes to the aid which Spencer gave him personally by discussing with quick sympathy and keen criticism in the old smoking room of the Athenaeum Club, while waiting for a game of billiards, the ideas with which Galton at the time was teeming. We may imagine that the process was scarcely mutual; it is hard to think of Herbert Spencer *seeking* criticism of his ideas, although they naturally met with it, when he gave expression to them (see *Memories of My Life*, pp. 178, 257-8). For Galton, Spencer was

* See Vol. I, p. 64.

† *The Oxford Magazine*, May 23, 1907, p. 345.

a whetstone whereon he could give his conceptions greater sharpness and clarity, and he confesses in the present lecture that he misses this much in his old age. And yet looking back on all that correspondence of some twenty years, re-reading our letters, it seems to me that both Weldon and I were ever seeking to guide our master into what we thought the straight and narrow path*. But the following passage shows how badly we had failed:

“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.” (p. 6.)

After this preliminary reference to Herbert Spencer, Galton began with a section on the *History of Eugenics*. He referred to the accident that the word “Eugenics” should have occurred in the titles of both Boyle and Herbert Spencer lectures and passes that praise on the Boyle lecturer to which I raised objection in my letter reproduced above (see p. 316). He then mentioned the coining of the word “Eugenics,” in his *Human Faculty* of 1883, and recapitulates his creed wherein man is to control organic evolution, as he controls physical nature, and eugenic conceptions are to attain a religious validity—are indeed to become phases of a “categorical imperative.” In this creed he emphasises

“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, as far as we know it, is now moving. Namely towards the evolution of mind, body, and character in increasing energy and co-adaptation.” (p. 8.)

Galton re-states the view that we men may very likely be the chief, perhaps the only executives on earth, and that as such we are responsible for our success or failure to further certain obscure purposes, which we must strive to ascertain †. Our instructions, if obscure, are yet “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” (p. 9). Galton admits that in 1883 the idea of directed evolution did not appeal to investigators, “it was too much in advance of the march of popular imagina-

* I have before me at this moment a long paper by Galton in manuscript dated April 1890; it is on the topic of “Sexual Generation and Cross Fertilisation.” It appears to have received the *coup de grâce* from a letter of Weldon’s which is attached to it, suggesting that Galton should make a study of modern cytological ideas before proceeding further. It seems to me that the criticism of youth, bursting with the newer knowledge, may not always be of advantage to the inspirations of enthusiastic age with a riper practical experience and a much longer period of close observation. Youth makes its mistakes regardless of the counsel of age, and sometimes those very mistakes bring to it “la gloire.” Let old age blunder without restraint from the young, and possibly after-generations may see in those very blunders not the least luminous rays in the aureole of genius.

† Jonathan Hutchinson asked what was his religion replied: “I am a good planetarian.” So might Galton have asserted.

tion." It had to wait till the publication of *Natural Inheritance* in 1889 ; then Galton found the lieutenants he stood in need of :

"The publication of that book proved to be more timely than that of 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 [i.e. in Man]. The publication of *Biometrika*...began in 1901." (p. 10.)

Galton then refers to the Huxley Lectures of 1901 and 1903, and to his own papers of 1904 and 1905, to the establishment in the latter year of the Eugenics Record Office with its Research Fellow, and to the foundation in the year of the lecture of the Laboratory for National Eugenics. It is a brief, but adequate history of the small beginnings of the new science, concluding with its definition, that of the University of London Committee.

I have so far passed over the earlier portion of this section which does not really belong to the History of Eugenics, but rather to that of Evolution. Galton refers to that wondrous creation the *Hyperion* of Keats, to the succession of deities ; Chaos ; Heaven and Earth ; the Titan brood ; the Olympian Gods. Each ousting their parents, and forming a notable advance, physically and mentally, on their predecessors. Thus Galton would have each generation of men advancing by their self-constituted control of evolution through heredity to higher qualities :

"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." (ll. 212-15.)

Thus in his 86th year Galton showed how little he had lost of that poetic imagination, which always marked his fertile mind. He could read into the barbaric theogony of primitive Greece a lesson for the men of to-day.

The second section of the lecture is entitled: *Application of Theories of Probability to Eugenics*. It commences with the statement that Eugenics demands *quantitative* results. It is not content with such vague words as "much" or "little," but seeks to know "how much" or "how little" in precise and trustworthy figures. Given, Galton says, that we know that a certain class of persons, *A*, is afflicted with some specified degree of degeneracy we wish to find out how many of their offspring, *B*, will also be afflicted and to what extent. Further we want to find out: "What will be the trustworthiness of the forecast derived from averages when it is applied to individuals?" Galton then turns for a measure of untrustworthiness to the average deviation, *D*, from the forecast.

"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 which might be faced without reproach through a sentiment akin to that expressed in the maxim 'It is better that many guilty should escape

than 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." (p. 14.)

Galton admits that a thorough investigation of the kind referred to, even if it were confined to a single grade of a specific degeneracy, is in itself a very 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." (p. 14.)

It will be seen how thoroughly Galton's mind was imbued with the conception that the science of Eugenics has to deal with mass-phenomena, that it is essentially based on statistics and must adopt the actuarial method, i.e. that it is based on probability reckoned on past experience. This conception leads him directly to his next section: *Object Lessons in the Methods of Biometry*. He proposes to speak of those fundamental principles of probability, which are chiefly concerned with 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" (p. 15). Galton accordingly sets out to sketch in outline a series of lessons of a Kindergarten type, which a teacher may fill in, and thus lead the ordinarily intelligent person, though he be ignorant of mathematics, to a knowledge of the fundamental ideas on which probability is based. He fears that this will scandalise biometricians †, but he has previously softened their wrath by saying that no man can hope to achieve much in Biometry without a large amount of study, the possession of appropriate faculties and a strong brain!

I do not propose to enter into the nine pages of the Lecture (pp. 15-23) which draft this scheme of "Object Lessons." They have, as I shall indicate later, been developed by W. Palin and Ethel M. Elderton into a primer of statistics. Most of the ideas have already been considered in this biography; the scheme proceeds in the main from "median" and "quartiles," and covers the simpler forms of variation and correlation.

The final section of the lecture is entitled: *Influence of Collective Truths upon Individual Conduct*. Galton commences by noting that probability will provide a solid foundation for action in the matter of Eugenics. But the

"stage on which human action takes place is a superstructure into which emotion enters, we are guided on it less by Certainty and by Probability than by Assurance to a greater or lesser

* This is the terrible dilemma in which the tender-hearted Condorcet found himself when he came to analyse the probability of criminal trials leading to correct judgments. There, however, life had come into being; here it need not be called into existence.

† I think this was a little poke at his friend, who had really criticised the *occasion* not the matter of Galton's "object lessons." The friend had indeed already in the "'eighties" given several Kindergarten courses on experimental probability at Gresham College to City clerks and Government employees, who afterwards became statisticians, and besides to a considerable number of bookmakers and professional gamblers who entered keenly into the spirit of the demonstrations, and whose gratitude took the form of free gifts of "tips" for the Derby and schemes to break the bank at Monte Carlo!

degree. The word Assurance is derived from *sure*, which itself is an abbreviation of *secure* that is of *secura*, 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 utilise 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." (p. 24.)

The general drift of this final section, if not so clearly put as Galton has elsewhere expressed it, is that the principles of Eugenics must be made part of the social code, a collective truth of society at large, whose power over the individual can scarcely be overrated.

"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." (p. 26.)

Galton considers that the opinion which holds particular social codes of conduct to be unchangeable is like the conviction of lovers that their present sentiments will endure for ever. Love is notoriously fickle and so also is public opinion. Galton illustrates this by the fashion of hair on the male face. In the days of his youth the "assumption of a moustache was in popular opinion worse than wicked, it was atrociously bad style." During the Crimean War the infantry were relieved from shaving, and on their return to England beards spread to the laity, but stopped short of the clergy. Then a distinguished clergyman "bearded" his Bishop on a critical occasion, the Bishop was so overcome that he yielded without protest, and "forthwith hair began to sprout in a thousand pulpits where it had never appeared before in the memory of man" (p. 27). Once mould public opinion to consider a non-eugenic marriage atrociously bad form, and the victory is won—the law, as Galton indicates, follows limpingly the growth of the public conscience.

"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 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." (pp. 29-30.)

That the Herbert Spencer Lecture, notwithstanding fine passages, is not fully up to Galton's best work may strike the reader †, but he cannot see it in the same aspect as those of us who knew the extreme stress, not then fully ended, to which the old man in his 86th year had been for twelve months subjected. It was a surprise to some of us that he ventured to lecture at all, and we rejoiced that the lecture could be as good as it was.

* It is startling to see this word reappear here after the use of "physical" and "mental" in the definition of Eugenics on p. 12 of the lecture!

† See my remarks at the top of p. 316.

Six days after the Herbert Spencer Lecture, Galton wrote to me:

42, RUTLAND GATE, S.W. *June 11, 1907.*

MY DEAR KARL PEARSON, An invalid's days creep by so uneventfully, that the passing of time is little felt and one gets too easily in arrears. I owe you many thanks for your kind interest and inquiries. For my part, I have practically said "goodbye" to bronchitis, for the present,—and feel plucky enough to venture on a visit to a niece in Leamington on Thursday, and, if that proves successful, to go a little further afield to a nephew for the next week. Letters here will always be forwarded.

I am very curious about your new method of determining correlation. When you publish, don't forget me.

Crackanthorpe's "Population and Progress" interests me much. His last chapter (VI) opens out quite a new horizon to me, and suggests a subject for discussion at some future Hague Conference—viz. limitation of *populations*! The pullulating nations have ever been the *primum mobile* of invasions. If a country breeds more than it can provide for, there is bound to be an outburst. It is Germany's difficulty and temptation at the present moment. My head is full just now of such ideas, and of encouragement to entertain them, derived from that excellent article of Mrs McFadyean's in the *XIXth* [*Century*], showing how the *women* all over the world are now becoming enlisted in furthering the limitation-of-families question. They have so far less temptation to be imprudent than their husbands, and suffer so far more acutely from imprudence than the latter do, that their awakening to the question seems of the higher importance. I had never looked at the matter before from the woman's point of view, as Mrs McFadyean does. It does not now seem to me nearly so hopeless as it did to limit the families of male degenerates, if the purely selfish feelings of their mates can be worked on and aroused.

Ever affectionately, FRANCIS GALTON.

This summer the biographer and his family were at River Common near Petworth, and Francis Galton took a house at Haslemere; but although I cycled over to see him, it was not possible to resume the old "biometric teas," the shadow of Weldon's death still hung over both households, and I had in addition much anxiety about the illness of my Father. Galton gave me sound advice and in my letter to him of July 7 I find the words: "I always feel about you, as I felt about Henry Bradshaw, that if I put a personal difficulty, I shall get the help of a contemplative man of riper experience. I think it is a trace of the old Quaker blood in both of you."

I give a few of the letters which passed between Galton and myself in the remainder of 1907.

THE GALTON EUGENICS LABORATORY, UNIVERSITY COLLEGE, GOWER ST. *June 20, 1907.*

MY DEAR FRANCIS GALTON, I am writing a number of letters about the Eugenics Laboratory and feel I must send one to you while I sit invigilating here with my examinees. I have a good bit of news for you. The Education Committee of the L.C.C. has consented to place its material—observations on the mental and physical condition of London school-children—at our disposal. I believe there are 8000 cases to be dealt with. This has relieved my mind a good deal, for I was growing very anxious as to whether I could provide the Laboratory with enough material to work at. Miss Elderton is simply a cormorant! We are slowly collecting several series of data, but the time to get them up to a number big enough for safe conclusions must be long, and some of the data that have been sent to us have not proved very good. Heron's memoir on "Inheritance of the insane Tendency" will go to press as soon as I have the time to throw into shape his rough draft, I hope early next month. Miss Elderton's work on cousins is practically done; Miss Barrington's on inheritance of defective eyesight and the influence of home environment on eyesight (overcrowding, etc.) is nearly complete. I think this will form a good six months' work to start with. We shall then get on to the data for children from Manchester, Birmingham and now London.

You will be amused to know how general now is the use of your word *Eugenics*! I hear most respectable middle-class matrons saying, if children are weakly, "Ah, that was not a eugenic marriage!"

We are going two or three miles from Petworth for the Long Vacation. Have you made your plans? I hope you have been feeling quite well again and well over that unfortunate slip. Your lecture is doing much good. I expect mine will be out by the end of the month and we shall be able to get up quite a talk concerning Eugenics in the journals.

I want to ask you about the new rooms for the Laboratory. The College is ready to give two rooms next the new Biometric Laboratory, which will be open in October in the main buildings. Of course this would make matters much easier for me, and easier for the Eugenics folk, who have to come and see me; but you must let me know your views. I propose a social gathering of some kind, when the new laboratories are opened in October, to bring biometric and eugenic folk together, and to advertise the whole thing. Always yours affectionately, KARL PEARSON.

Has the new nurse appointment proved a success?

42, RUTLAND GATE, S.W. *July 12, 1907.*

MY DEAR KARL PEARSON, Thanks for Palin Elderton's letter which I return. My domestic servants' insurance is through the X. Society, and absolves me from troubles like yours, for I have to pay *retrospectively* at the close of each year for extra servants. Leonard Darwin, who is in touch with politicians, has again urged me to ask you to offer "hereditary" evidence before the Poor Law Royal Commission. He fears that the subject will otherwise be wholly ignored in what is likely to become the basis of legislation for many years to come. I suppose the point is to afford evidence: (1) that the undesirables contribute largely to the *naturally* undesirable portion of the population, (2) that natural undesirability is a *fact*, (3) that various forms of charity unnecessarily *promote* the propagation of the less fit, and (4) that the methods of *restraining* it are important to consider. It seems to me that (2) ought to be "rubbed in," also (3). Can you not do something in this way by writing to the Secretary of the Poor Law Royal Commission enclosing a programme of what you are prepared to testify? According to Leonard Darwin the present occasion is a most important one to interfere in. Excuse *my* interference! Ever affectionately yours, FRANCIS GALTON.

Last night I wrote to accept one of the houses that have been inquired about. It is in Hindhead (Haslemere), and rejoices in the name of "Yaffles." "Yaffle" in the patois of the district means, I am told, a green woodpecker. The garden of the house adjoins that of Mrs Tyndall who has lived there ever since her husband died. She will be a nice neighbour. I go there on Aug. 1 for 6 weeks. There is a railway connection, I see, between Haslemere and Petworth, and the distance *direct* between the two places seems on Bradshaw's map to be only about 10 miles. So I trust we shall meet as heretofore not infrequently.

ROCK HOUSE, RIVER COMMON, PETWORTH, SUSSEX. *July, 1907* [after the 12th].

MY DEAR FRANCIS GALTON, Your letter to hand. The "Yaffle" is a fairly common name for the green woodpecker in the South. I have heard him a good deal here and we always call him the "Yaffle." You will be open and high up, but I hope Mrs Tyndall has removed her Husband's big screens!

To-day I feel incapable of writing to any Secretary of a Royal Commission, for I am hit by a slight attack of 'flu which is I find just dying out here. As I have no fever, I think I may write to you safely. If Major Darwin would send me the Secretary's address I would write to him and forward a copy of the Eugenics lecture which will reach me shortly. I hate, however, suggesting myself to anybody; I suppose if they wanted my evidence they would ask for it.

Affectionately, KARL PEARSON.

42, RUTLAND GATE, S.W. *July 29, 1907.*

MY DEAR KARL PEARSON, It *seems* long since I wrote, for I have had a most interesting stay in a large moated house in Suffolk. Clear water all round it, no smell, stables away from it, draw-bridges raised each night as they have been for some hundreds of years, etc. etc. It is Helmingham Hall, where the widow of Lord Tollemache lives. The son and heir is at a more

important house in Cheshire. On Thursday I meet E. B. at Waterloo Station and we go down together to *Yaffles, Hindhead, Haslemere*, for 6 weeks.

Before leaving town I called at the Home Office to learn the address of the Poor Law Royal Commission. The porter wrote out the enclosed, R. G. Duff being the Secretary. I hope you will send them the copy of your lecture with the *passages marked* on which you think evidence ought to be taken, and which you are prepared to give. It is really an important crisis, as I am assured.

It will be very pleasant if we could occasionally meet, much as of old. *Yaffles*, if you could be persuaded to bicycle so far, is very prettily situated with a terraced garden and two out of door sheds,—in one or other of which I hope to spend much of the day. How are you all thriving? A word as to the outcome of your own trouble about your Father's health and the doctor's opinion would be very welcome. With kindest remembrances to your Wife,

Ever affectionately yours, FRANCIS GALTON.

YAFFLES, HINDHEAD, HASLEMERE, S.O. *August 13, 1907.*

MY DEAR KARL PEARSON, All goes well, and I expect that all will be re-established. I can't write details, but the more hopeful prospect seems destined to be fulfilled completely.

I began here with ill-luck. A second tumble at night, with some slight concussion and a considerable attack of sick headache. All this has passed happily away and I am quite well. This and what I had to learn as regards the first paragraph above, was the cause of my delaying so long to write.

This house is perfectly charming. The grounds cover 4 acres of hill side, and are partly wild, partly terraced, with seats everywhere and distant views. The house itself is a sort of bungalow, just large enough to hold us two and Eva's half-sister, Mrs Macintyre, who lives at Penang and is over for a short holiday, with her baby. She is an acquisition in more than one way. The house is beautifully clean and fresh, very artistic, and many shelves-full of excellent readable books. I have done but little owing to the above-mentioned reasons—in fact I dared not even read a line for two days.

Do tell me about yourself and yours. Petworth is within the reach of a long drive from here, and I see there is railway connection of a sort, but I fear roundabout and by different railways. I should be delighted to meet you anywhere not further than Petworth. Jonathan Hutchinson, the surgeon, has established quite a large museum in Haslemere, which forms a scientific centre. On Saturday he gave lunch to a School-Hygiene-Congress party and invited us. Preparations for 50 hungry people, and only 25 (including ourselves and his own party) came to the lunch. He has a medical museum in Gower St and is going to live there and catalogue it.

Ever affectionately yours, FRANCIS GALTON.

ROCK HOUSE, RIVER COMMON, PETWORTH, SUSSEX. *August 26, 1907.*

MY DEAR FRANCIS GALTON, It was a great pleasure to see you on Saturday, the more so as you looked so fit and bright. I cannot but think that the return to your old home habits has been good for you, and I feel sure that it will gladden Miss Biggs to be conscious of this also. I should have sent you a line on Sunday but I buckled to and got Heron's draft memoir off hand, and sent it for his consideration. It ought not to be long now before it is out, and I think it will produce some effect. I suggest that you see it in slip, as it is then quite easy to adopt criticisms and modifications and is far easier for you to read.

I hear from one of my folk, that Captain Hurst at the B.A. meeting asserted that in human eye colour, blue is a Mendelian unit, *all* the other shades forming the opposite allelomorph. That those cases we have shown in which two blue eyed parents have other coloured offspring are solely due to our not properly examining the colour of the eyes, and if we had done so a small amount of pigment, orange or brown, would always be found. It is the old Mendelian trick, if you may pick your individuals you can prove anything. It is of course perfectly true that if you take two blue eyed parents, both of whom come of blue eyed stock, you will get blue eyed children. The test of Mendelism lies in two blue eyed parents of other stock, always giving blue eyed offspring. But if they don't they will be dismissed as having a small but unrecognised amount of orange pigment! No doubt, if we settled beforehand the blueness of the eyes of both parents, and some of the children were and some were not blue eyed, we should be

told that the wife's virtue was not beyond question and that she had had a fancy for a heterozygous paramour! That point has indeed already been suggested in this inquiry!

I have been rather pleased. In my Homotyposis paper I dealt with sweet-peas and felt pretty certain that they must be *cross-fertilised*, because of the numerical constants. Of course it looks commonsense from the blended forms one sees everywhere. But Darwin in *Cross and Self Fertilisation of Plants* strongly believes that in England they are not so. Now I have watched the whole process here. The bee works in a sort of frantic manner, pushes both flaps down and the pistil rises from its case, and usually he sweeps both sides of it with his hind legs. The bees I have seen have their belly and the whole of their hind legs covered with the pollen of the sweet-pea, and there is not the least doubt that there must be a great deal of cross fertilisation. Darwin speaks of the difficulty of access of the bee, but it is singular that with his great accuracy of observation he should have missed the simplicity of the whole thing. It is really rather striking to watch the bee at work. If you have any sweet-peas in that beautiful Yaffles garden, do try and confirm my observation. Affectionately yours, KARL PEARSON.

I am not sure that this bee is the ordinary hive bee; it looks a somewhat stouter insect, but of much the same type. I have not seen more than two working at the same time on a long row of sweet-peas, although there might be 5 or 6 at the same instant on a small lavender bush, but these bees would, I found, very quickly visit 20 or 30 flowers*.

YAFFLES, HINDHEAD, HASLEMERE, S.O. August 30, 1907.

MY DEAR KARL PEARSON, The caricature of you is uncommonly good, though of course not flattering. Even the upper part of the back is distinctive, but the remainder of the dwarfed body is not good. I will keep it, if you don't want it back.

Schuster's paper in the *Eugenics Laboratory Publications* reached me yesterday and very interesting it is. I will write to him. I shall be very glad to see Heron's paper "in slip."

About the sweet-peas, when I reared them all those years ago, I selected them on the advice of both Hooker and Darwin, and was assured also that in nursery gardens rows of peas of different colours were often planted side by side, and that no cross fertilisation was ever observed. But I have with my own eyes seen, as you have, bees (of some kind) visiting flowers in succession without, or with little, regard to their colours and supposed their visits to be innocuous, though why, I have never been able to understand. There are only a few sweet-peas here, at the bottom of the garden, and no *hive* bees anywhere about, but bees of alien kinds, so I cannot easily repeat your observation in respect to hive bees.

It was a very great pleasure to see you last Saturday, and to have a long talk. To-day, we drove to Linchmere and saw in the church a brass tablet to Salvin (the S. American botanist, who had a property near here). You may recollect him at the meetings of the R. S. Evolution Committee. He was usually reticent but very helpful on occasions and always a thorough gentleman. Ever affectionately yours, FRANCIS GALTON.

On and after Thursday Sept. 12—QUEDLEY, SHOTTERMILL, HASLEMERE.

YAFFLES. Sept. 8, 1907.

MY DEAR KARL PEARSON, I have rented the above house for 2 months certain, with option of continuing through the winter. It is pretty and has $1\frac{3}{4}$ acres lawn and garden with a well-warmed greenhouse into which the drawing-room opens. So I have a fair chance of pulling through the winter in it. What "Quedley" means, I don't yet know. I gather from a letter from Giff that the new part of *Biometrika* is out and has been received in Rutland Gate. If so, it will soon reach me. I see that Schuster's article has attracted favourable newspaper notice. The enclosed (don't return it) is a good example.

All goes on quietly here. I have at last got into good working order a method of "lexiconising" silhouettes. I can't conceive why artists and anthropologists have never succeeded in sharply determining points of reference in the human features, when it is so easy to obtain them by the intersection of tangents. The enclosed (don't return it) shows my primary triangulation. The *C*, *N* and *F* (obtained by intersections) are closely approximate expressions for the tip of chin, of nose, and of "nasion" (to adopt the word you used). With a *small* repertory of descriptive symbols, I find it feasible to give a formula for any profile, whence a very respectable duplicate of it can easily be drawn. Types of races ought to be readily defined and compared

* See the present volume, pp. 6-7.

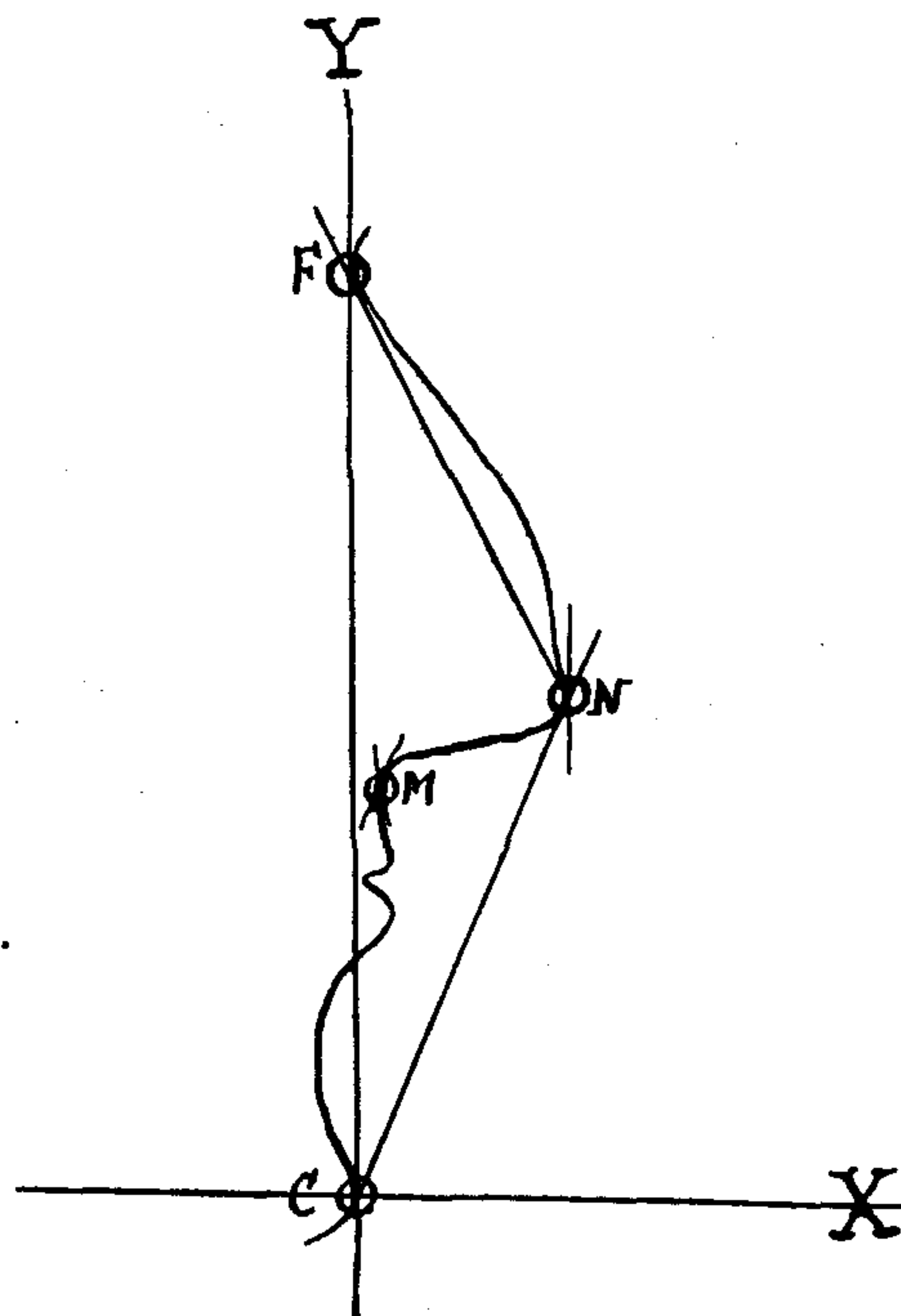
on this principle, but I have not yet attempted to do so. However, I have a book of racial portraits at home, which I will get here to experiment with. How do you all get on? When do you return to dear smoky London? Ever affectionately, FRANCIS GALTON.

Primary triangle
of a profile.

$CF = 100$ "cents."

Measurements are
all in cents.

CX, CY are the axes
for rectangular coords.



F.G. Sept. 8, 1907.

ROCK HOUSE, RIVER COMMON, PETWORTH, SUSSEX. Sept. 9, 1907.

MY DEAR FRANCIS GALTON, I am extremely glad to hear that you are going to try Haslemere for the winter and I hope most sincerely that it will prove a success. I fear "Quedley" is not Sussex dialect but personal to the owner. I hope it will be as sunny and bright as the "Yaffles." I have written to Sir Robert Parker asking him if he will let me lunch with him one day this week. He is, I know, in London on Wednesday, so that it will be towards the end of the week. May I come and see you afterwards? I would let you know the day. I should have to start back at 5, as I do not care to cycle after dark, but I should like to see you again before I get back to work. My Wife goes to Oxford on the 17th and we all go back on the 21st. I do not begin lecturing until the 1st, but I want if possible to get everybody arranged in their new quarters, and we shall hope to give our inaugural tea-party when you are again in Town. I am probably in for two controversies; one in the *British Medical* on the inheritance of the tuberculous diathesis, and one (possibly, in *Nature*) on the correlation of stellar characters. This, in reply to attacks at the B.A.

I think your profile scheme is quite good, only you must measure and find names for the *angles* of your fundamental triangle. Would it be also worth while taking the projection on the median sagittal plane of the centre of the auricular orifice, or of some point on ear? This reminds me that I have had some idea of measuring such of the University College students as will consent thereto. If you thought well we could set up a profile-taker in the dark room with magnesium wire and sensitive paper and soon get a large number. What do you think?

I am glad to see the favourable notice of Schuster's paper. I think on the whole we must be well content with our "First Fellow."

I find there are two kinds of bees. I have captured specimens of both to-day. One sort certainly gathers honey, but never touches the pistil or pollen of the sweet-pea, the other is never content and does not leave the flower until he has swept the whole of the pollen from the stamens onto his belly. I am sending the two kinds of bees to be identified.

Affectionately, K. P.

QUEDLEY, HASLEMERE. *October 2, 1907.*

MY DEAR KARL PEARSON, Enclosed I return Heron's paper, with suggested verbal corrections in pencil. The proposal (even *if* it be not wholly his) of a General Register of the Insane deserves all emphasis and would be a good subject for the Eugenics Office, as such, to "agitate" about. One first step would be in writing an article (by Heron himself, or by someone else) to appear shortly after the publication of his memoir. I wrote to him and have received this morning a clear ground-plan of the new rooms in University College. I am so glad that all is now so compactly under your wing. Shall you have an opening *tea-party*, and when? I should like to come up on purpose, but doubt its wisdom as I feel that fiend Bronchitis is hiding just round the corner, ready for a spring. I have indeed had premonitory symptoms already. Still, if the weather continues fine, I would come up on purpose.

As yet I have not met either of your two friends, Mr Justice Parker or Nettleship. But cards have been interchanged. This place grows upon me and seems more suitable for the winter than any other that I know of. All goes well here. *At least* one doctor is said to be so good that it seems a waste of opportunity not to be ill while here, and to send for him! You will be head and ears over in work, so I will not write more now.

Affectionately yours, FRANCIS GALTON.

QUEDLEY, HASLEMERE. *October 10, 1907.*

MY DEAR KARL PEARSON, I hope the delay of two days in my reply has not inconvenienced you. I found it very difficult to put some of ——'s scarcely intelligible sentences into readable shape. But it is a most interesting paper and the diagram is very striking to the eye.

I have, thanks to you, seen much of Mr Justice Parker and of Nettleship, both at their several houses and at mine. You have too much now in hand to think of new things, but a suggestion thrown out in conversation with the former deserves bearing in mind, namely a discussion of the *parentage* of the *unemployed*, which *may* prove to be of degenerate quality. It does not seem very difficult to carry it out. Another topic which I discussed with Sir Alfred Lyall and an Indian friend of his, is the feasibility of testing *promise and performance* in the Indian Civil Service, where appointments go very much by merit. I worked at this some (? 20 or more) years ago and have lots of MS., but I then published nothing, because the data were too few. Now, they are fairly abundant. I should like to talk this over with you some time. About the opening *tea* at the new rooms, I am quite at your service and would come up for it (and for other things, for two or three nights) whenever you may appoint. There is always uncertainty as to my impending bronchitis, but I will come if I can and you must excuse me if I fail. Will it be an evening *conversazione* or a late afternoon *tea*? It is growing autumnal here, but very little of the foliage has yet changed in tint. Where it has changed the effect is beautiful. Haslemere continues to commend itself as a winter residence. I am very grieved at your domestic anxiety, which *must* increase rather than diminish. You have all my sympathy.

Ever affectionately yours, FRANCIS GALTON.

[HAMPSTEAD.] *October 16, 1907.*

MY DEAR FRANCIS GALTON, I feel I must write you a line to tell you that my Father died at two o'clock yesterday. The operation had been delayed too long and his whole system was so weakened that the slight shock of the operation was more than he could stand. I feel my energy will be for some time very fully taken up with executorship and trustee work, although I shall have valuable aid in my co-executor, Sir Robert Parker. But it is a difficult and lengthy business to close up a home. There is no one now naturally to continue it, as my Sister and I already have made our own homes and environments. It is difficult to disperse all the hundred and one things one has known from one's childhood; almost sacrilege to sell them, and yet nobody wants the bulk of them.

My Father was a man of immense will and endless power of work, with a wonderful physique. A cripple from a fall from his pony when a boy, he was yet a splendid shot and a good fly fisher, striding over the fields gun in one hand and stick in the other in a way which out-tired me as a boy. Then he would be up at 4.30 to prepare his briefs, take a standing breakfast at 9, and rush into his brougham; back at 7 o'clock, dinner over at 8, he was in bed at 9, and so for month on month, we only saw him at these hurried meals, when speaking was scarce allowed.

Even in the vacation time he would take his sports in the same way ; 6 a.m. was the right time to be out on the river and the day went on till dusk, because the fish bit best after sunset ! Long days for a fidgetty boy, who was only allowed to use his rod when there were no fish to be frightened ! Even these last 15 years when he has been working on Domesday Book, accumulating immense piles of MS., my Father on my entry would sometimes point to a chair and forget me if I stayed. An iron man with boundless working power, who never asked a favour in his life, and never really got on because he forgot to respect any man's prejudices, and never knew when he was beaten. I learnt many things from him, and know that I owe much to him physically and mentally. But we were too alike to be wholly sympathetic. He thought my science folly and I thought his law narrowing,—the view of both of us being due to an inherited want of perspective in the stock ! Still he was a man of character and strength. I never saw him give in charity, yet I know now from his papers that more than one of his relatives owe to him their success in life—"Loan barred by the Statute of Limitations" is the quaint way in which he docketed the documents relating to the expenses of a college education for a nephew, or the starting in life of a brother ! I am rambling on when I ought to be thinking of other things, but just now all other matters seem small, when one is taking stock of a completed life, which no other has seen or can now see so closely, nay, who seeing would judge to be at all significant.

Affectionately, KARL PEARSON.

[HAMPSTEAD.] *November 23, 1907.*

MY DEAR FRANCIS GALTON, I have been wishing much to write a line to you, but I have been very pressed, and troubled also with a severe cold on my chest. However I must send you one little line now. First, Schuster was with me on Wednesday. He is arranging for an Anthropometric Laboratory for the Oxford students and came up to ask about instruments and other points. I had a sort of half idea that your old instruments went to Oxford from South Kensington. If this were so, can you tell me who has charge of them ? It might save purchasing certain things. Schuster seemed to think that there were possibilities in Oxford, which wanted pressing now that we had sown the seed of Eugenics there.

Miss Elderton has been away with a bad cold. The radiators in the rooms have proved incapable of doing their work and we have had great difficulties. So bad indeed that Dr Alice Lee has resigned, which will be a great loss to me, although she had recently been a little difficult to work with. I know only one person her equal in rapid and correct calculation and that is Miss Elderton ; we *must* keep the latter at the Eugenics Laboratory, if we can. I passed her memoir for press finally to-day. She has worked out about 60 correlation coefficients for Uncles and Aunts and this mass of material shows that the intensity of resemblance is much the same as for Cousins. I have advised her to write a second paper on Uncles and Aunts, and discuss the whole point as to this paradox. She has put in a reference to this in the Cousin paper.

I hope Haslemere is proving a good winter resort, and that you are not so low down as to get the valley frosts. I think I told you, did I not, that I paid £1000 into the Oxford University Chest for the Weldon Memorial recently ? I have asked for copies of the final scheme to send to the donors. Affectionately, K. P.

QUEDLEY, HASLEMERE. *November 26, 1907.*

MY DEAR KARL PEARSON, I was becoming anxious through not hearing from you, knowing that you were not well and are overworked. This is bad weather for your cold and for that of Miss Elderton. I grieve that you are losing Dr Alice Lee. It is most desirable that the paradox of almost identical intensity of kinship to an uncle and to an uncle's son should be faced, as you propose, by Miss Elderton, and I am very glad that the intention is referred to in her Cousin paper.

As regards the S. Kensington instruments I gave them all to Professor Thomson for use at Oxford, in the Cavendish [*? Anatomical*] Laboratory. Schuster would do good work if he could show the exact *importance* of each measurement proposed and could arrange a system that is of real and proved value and at the same time simple. Correlation would play a large part in devising this, for if *A* is closely correlated with *B* and *C*, it may be sufficient (under limitations of time, trouble and expense) to observe *A* and to neglect *B* and *C*. I look forward to receiving a copy of the final scheme for the Weldon Memorial and am very glad that so substantial a sum as £1000 is available. I wish I had "radiators," even poor ones, in this house, which is becoming cold notwithstanding many fires. A sharp winter would be felt severely in it.

Methuen's "literary adviser" has written to me a sweet and fetching letter for an autobiography to be published by them. I am disposed to write it, for it will give daily occupation for some time and will revive many memories. So I am discussing with him a single volume nicely got up, on the half profits basis. Oddly enough a common friend to myself and Methuen (whom I do not yet know personally) was spending last Saturday to Monday here under an engagement to lunch on Sunday with Methuen; so I gave him the letter to show and talk about. Methuen proposes to call, but is now much invalidated as the result of an operation last summer.

Ever affectionately, FRANCIS GALTON.

(Antescript. This is a "business" and not the personal letter which I want soon to write.)

THE GALTON EUGENICS LABORATORY, UNIVERSITY COLLEGE. December 1, 1907.

MY DEAR FRANCIS GALTON, I fully appreciate your point as to the facing what people will say about cousins being at least as alike as uncle and nephew. When Miss Elderton did the cousins' work, we had only my eye-colour work (based on your material) to compare with it. For 8 series of eye-colour correlations each embracing about 1200 cases we found a mean correlation value .265. Miss Elderton has worked out 32 series from my General Family Records—for uncles and nephews, etc. For Health and Intelligence we get mean of 16 series of about 1000 each, .272, practically the same as for my eye-colour work. Temper and Success which involve more doubtful judgments give about .20. You will see that these are comparable with Miss Elderton's cousin resemblance of .267. You ask how does it come about? Frankly I can't say. But I want to draw your attention to another point. When you first started this correlation work, you expected parental correlation to be $\frac{1}{3}$ and brothers' to be $\frac{2}{3}$. My view in the "Law of Ancestral Heredity" paper, *pure theory*, was $\frac{1}{3}$ and .4. These values would also arise from simple Mendelism. Now you see I still thought the brothers would be *more alike* than parent and offspring, because the other parent would disturb the relation of one parent to the child; just as we might suppose the uncle's wife would do. But when we have worked out long series of parental correlations and fraternal correlations, what is the result? Why that it is very difficult to show that they differ from equality. I think my Family Measurements were very reliable and yet for long series the parental correlation came .46 and the fraternal .50, and probably this difference was due to comparing different *generations* of adults, i.e. father and son do not live in the same environment as two brothers. My position at present is that we have to find out the correlations from observation and when they are definitely known, turn back to theory. *Alternate inheritance* would, perhaps, give fraternal = parental correlation and would, I think, make cousins and uncle and nephew equal. It is, I think, in some such "determinant" direction that we must look for light in this matter. I will add a note to Miss E.'s paper.

Affectionately, K. PEARSON.

QUEDLEY, HASLEMERE. December 20, 1907.

MY DEAR KARL PEARSON, How nice Miss Elderton's paper looks. The Laboratory publications make a most respectable show. I am very glad you inserted the paragraph you did, at the end, showing that the paradoxical result of cousinly likeness being the same as avuncular, has not been unnoticed. The more I think about it the more amazed I am that an uncle's wife or an aunt's husband should exercise no appreciable effect. Facts are of course the supreme authority, but it is hard to bow before them here.... Ever affectionately, FRANCIS GALTON.

QUEDLEY, HASLEMERE. December 28, 1907.

MY DEAR KARL PEARSON, The *Tribune* article is clever and only too true. I have been long desiring to start some movement to raise the deplorably low standard of scientific literature and have corresponded about it privately. Sir Archibald Geikie, whose family are now settled here, is still more emphatic than myself, and we had a good talk yesterday. We both belong to the R. Soc. of Literature, and I hope to induce it to take the "improvement in style of current scientific literature" as a serious duty. A man ought to feel as ashamed of publishing a slovenly memoir as he would of appearing at a public ceremony dirty and ill-dressed. But it is not only of an aesthetic but of a matter-of-fact trouble one has to complain—viz. of the length of time that is wasted by the reader in trying to understand what ought to be expressed by more vivid language, simpler expressions and more logical arrangement. I am now writing on this very

subject to Sir Edward Brabrook who is the chief working authority of the R. Soc. of Literature, to enlist his interest and to get advice. Geikie and I did form a provisional scheme of action.

This house, Quedley, really is not cold. Nettleship, who was here yesterday, and whom I asked, found no fault with its situation. The valley fogs do not as yet reach it, while I hear great complaints of cold and fog at Hindhead. In fact I really think I have fallen upon the most suitable house in the whole place, for my particular needs.

I am now busy, as long as I can work, day by day, over my "Reminiscences." It is curious how the sense of "past" disappears. All my life from 5 years to 85 is beginning to seem to me "present," like a picture on the wall. Ever affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. December 30, 1907.

MY DEAR FRANCIS GALTON, I am very glad my alarm about the cold at Quedley is false. I certainly did not mean to disturb you needlessly. It was only my short experience of the valley some way above Shottermill where we had a house for four weeks.

I should rather like to talk over the point of scientific literature with you, because I think there is danger of two distinct factors being confused. In the first place every paper ought to be written in lucid English. With this I am the more in sympathy, because I realise to the full my own difficulties in this matter. We want far more essay writing from the science student, although this must not be driven to the Oxford extent of making the discovery of fitting words the main occupation of the student. On the other hand every science must have its special terminology, and its symbolism and short-hand. These can be interpreted into long-hand and simple English in popular lectures and reviews, but in the scientific memoir written for a scientifically educated public the terminology and short-hand of the special branch of science concerned must be preserved for the brevity and lucidity they provide. You might, I think, as well demand of a mathematician a definition and explanation of dy/dx in a *Phil. Trans.* paper as ask in a scientific memoir on heredity for an explanation of the fundamental equations

$$(DD) \times (RR) = 2(DR), \quad (DR) \times (DR) = (DD) + 2(DR) + (RR)$$

of Mendelism. This symbolism is now known and accepted by all students of heredity whether they believe in Mendelian theory or not. Similarly such terms as "somatic" and "gametic" are to be found in every biological textbook. When therefore the *Tribune* cites such things as these and calls them "jargon," it is merely stating that its writer was incompetent to review the memoir because he was ignorant of the terminology of the branch of science he was discussing.

This is quite apart from the possible want of lucidity of the English, or from any demand for a popular exposition of the results reached by more elaborate memoirs. These may be desiderata, but they are not to be confused with a mere absence of scientific terminology: and I think we have now reached an epoch when the popular exposition of heredity should be taken more fully into consideration.

In February it will be a year since our régime began, and the appointments of Mr Heron and Miss Elderton will come up for consideration, as well as my own relations to the Laboratory. I feel my own limitations very keenly, and it might well be that other supervision would give the scheme more go and a more popular character. I need hardly say that I am ready to fall in entirely with your views, either to make way for a man of more leisure and activity, perhaps more in touch with the outside world, or to go on as we have been doing for one year more. As for the Galton Fellow and Scholar, I think we ought to give them some notion as to the future. The Fellow has done good work, but has not at present quite as much initiative as I shall look for later; the Scholar has much impressed me, and is even more able than I anticipated. Taking the difficulty of finding new and efficient workers, I think we shall not readily find better instruments even if we agree that they need a more active guide. If you agree, there ought to be some report to the University and perhaps a meeting of your Committee. I will very readily draft something, if you will quite frankly send your views on the immediate future. Whatever is done now ought to be done so as to terminate definitely in February, 1909. I think the present people are too good for one year only of work, but they ought to understand that you may want to remodel the Laboratory scheme in 1909.

Have you considered the possibility of resuming the reins yourself this year? I only came in default of any obviously better person to supply your place, and I am only a *locum tenens* ready to move on when you say the word. Affectionately, KARL PEARSON.

I think Galton's opinion of the falling off in style of scientific, especially R.S., memoirs was very well founded. He possibly did not realise some of the factors that had contributed to it. In the early history of the Royal Society the responsibility for the issue of papers seems to have rested with the Secretary (or Secretaries), and, I think, some of the feeling of this responsibility for editing lasted up to the days of Sir George G. Stokes, who must have spent endless time and energy over the verbal and critical emendation of authors' papers. Failing this editorial work much must depend on the printers' readers. My own—now fairly considerable—experience suggests that it is only at the University Presses of Cambridge and Oxford that one can be certain of the highest efficiency not only in proof-reading and suggestion, but in ensuring that corrections are properly made. The glory of a press depends as much on the general culture of its readers as on the beauty of its type. A second factor which I believe has largely escaped notice lies in the change of the class from which the writers of papers are now drawn. With the system of education as now developed the majority of men of science are springing from humbler and less cultured homes than formerly. Many of them have never passed through the literary training of public school and university, but have been "educated" in secondary schools and science laboratories, and have only exceptionally an appreciation of style, or any power of lucid expression. Add to this, and anyone who examines statistically the recent list of the fellows of the Royal Society will confirm the statement, the men of leisure and culture who occupy themselves with science, while formerly numerous, are now a vanishing minority; thus we see how it is that the hurriedly written papers of the modern professional scientists lack the lucidity of expression, sometimes the grammatical English, of the more leisurely savants of the middle of last century. Galton was keenly alive to the result, if possibly he had not studied fully the causes of the change. I think that Sir Archibald Geikie in the discussion which followed Galton's paper at the Royal Society of Literature came nearer to pointing out the inevitable evolution which has taken place in the scientific world. He said:

"It seems to me that no candid reader can compare the scientific memoirs published at the present day with those which appeared a hundred years ago without coming to the conclusion that in average literary quality the modern writings stand decidedly on a lower level than their predecessors, and that the deterioration in this respect is on the increase. The earlier papers were for the most part conceived in a broader spirit, arranged more logically, and expressed in a better style than those of to-day. They show their authors to have been generally men of culture, who would have shrunk with horror from the slipshod language now so prevalent.

"If it be asked what reason can be assigned for this change, various causes may be suggested. In former days, the number of men of science was comparatively small, and they belonged in no small measure to the leisured classes of the community. They were not constantly haunted by the fear of losing their claims to priority of discovery, if they did not at once publish what they had discovered. They were content to wait, sometimes for years, before committing their papers to the press. And no doubt the printing of their papers was likewise a leisurely process, during which opportunity was afforded for correction and improvement. But this quiet, old-fashioned procedure has been hustled out of existence by the more impatient habits and requirements of the present day. The struggle for priority is almost as keen as the struggle for existence." (*Trans. R. Soc. of Lit.* Vol. xxviii, Part II, p. 10.)

Sir Archibald might have added that in many cases it *is* a struggle for existence, since the chance of appointments too often is made to depend in the case of young men rather on the quantity than the quality of their published papers.

(14) *Events and Correspondence of 1908.* The events of this year have been to some extent foreshadowed in the letters of 1907. We have seen that Galton was busy with two projects, namely (i) with an endeavour to improve the literary style of scientific memoirs, and (ii) with the writing of his volume of memories. There are three other matters to which we shall also refer; they are (iii) the proposal to found an association for promoting Eugenics—the Eugenics Education Society, (iv) his papers before this Society, when founded, and (v) the Darwin-Wallace celebration at the Linnean Society. We will take these in a somewhat different order, interpolating correspondence which may throw light on their origins.

(a) *On the Literary Style of Scientific Memoirs.*

QUEDLEY, HASLEMERE. Jan. 1, 1908.

MY DEAR KARL PEARSON, The first thing in this my first letter written in 1908, is to wish you and yours the happiest and most fruitful of New Years that it is reasonable to desire.

I think you have read more into my letter than it was intended to hold. We are fortunate in having Heron and Miss Elderton, and it would be natural to continue their appointments, unless *you*—and I understand that you do not—wish otherwise. I am sure *I* should be sorry to lose them. Then as to yourself, the idea of your ceasing to superintend that which you have built-up so powerfully on solid foundations, simply makes me shiver. Pray not a word or thought further about this!!

Now as to what I want the Royal Soc. Lit. to do. You and I are at one in respect to the necessity of strong action to put a stop to obscurity of expression, to bad grammar, and to faulty logical arrangement. The remaining question regards *technical language*. My own feeling is to restrict it so far that capable scientific men, who are familiar with *cognate* branches, shall be able to understand memoirs without difficulty. At present they are not able to do so without great labour. Here I have in view the publications of the Royal Society, which, and Geikie feels at least as strongly as myself, are faulty in this respect, besides being uncouthly and barbarously written. Heaven knows that I am only too willing to have my own faults of writing roughly corrected, and how much I feel indebted to the slashing of a friend, who kindly read the MS. of some of my early writings. He treated them ignominiously, I saw they deserved it and was grateful. You, I think, are more inclined to consider those memoirs which are addressed somewhat exclusively to specialists. But even here more caution seems required. A technical word does not quickly acquire the exact technical meaning it is intended to convey. Take your own useful expression “sib,” which you apply to the children of the same parents. I see Skeat in his Dictionary defines it as nearly related, and he shows Gossip = God-sib, to be equivalent to God-parent. So when “sib” is used in your limited sense, the addition once for all in the same paper of the words “children of the same parents” would be helpful and prevent puzzling*. It is certainly well to *minimise* the use of technical words. The English language is a powerful weapon in skilful hands, and much more can be expressed briefly in it without technical language than is generally attempted. I heard last night from Brabrook and find

* I am puzzled by this paragraph. I had introduced the word “siblings” not “sibs” to cover a group of brothers and sisters regardless of sex and equivalent to the sense lost to modern English of “Geschwister,” or “Søskende.” “Sib” stands to me as an equivalent for kin, and I was somewhat vexed when Nettleship cut my “sibling” short into “sib.” It would appear as if I must have sinned by somewhere using “sib.” Speaking from memory, I should say that on the early occasions on which I used “sibling,” I had defined the meaning I attached to the term.

that my letter to him has fallen aptly. They are very shortly going to consider seriously what to do. Complaints are so wide and loud, not by any means from non-scientific people only, and the Royal Soc. Lit. feels that criticism falls within its province. All goes well here. The Hope Pinkers lunched with us yesterday. He told me about the progress of the bust of Weldon and that you had seen it. Ever affectionately, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. Jan. 2, 1908.

MY DEAR FRANCIS GALTON, I am very busy to-day, but I must send you some few lines in reply to your very kind note. I reciprocate heartily your wishes for the New Year, and these include my desire for the success of your proposed attack on the citadel!

I am quite ready to continue superintending the Eugenics folk, and you must not suppose I am not interested in the work. All the same I am quite prepared to surrender the reins whenever you feel another man would achieve more in the particular directions you have most at heart. We are both ultimately of Quaker stock, and I want you to talk quite frankly when the time comes, remembering that I shall not be hurt by any decision you may take. I have so much in hand, that to close one phase of my work only means more progress in other phases. I should only feel sad if something were to happen which closed *all* phases of my work. Why, if Eugenics and even Biometry were closed down, I should turn to Astronomy with all my energy and time; I know how badly statistical knowledge is needed for problems therein! I will send you a little formal note shortly as to the re-appointment of the "Eugenicians" (that word shall not go further!), which you can forward with any further comment to the University authorities. As a mathematician I must emphasise my view that symbolism is an enormous gain to any branch of science. Just think where we stood in statistics without the theory of total and partial correlation coefficients! But how in the world can we express in any brief and decent English the formula

$$\rho_{12.3} = (r_{12} - r_{13}r_{23})/\sqrt{(1 - r_{13}^2)(1 - r_{23}^2)},$$

for the influence of the mother (2) on the son (1) for a character constant in the father (3)?

I think you are wholly right to demand good grammar and *clear* expression, but I believe your movement will fail in these demands, if you attempt to drag terminology and symbolism into the fight. My ideal scientist in this respect was Clifford; every educated man can follow his popular addresses, yet how few but mathematicians his scientific memoirs. Discovery and popularisation are distinct aspects of scientific work. They were excellently combined in Clifford and Huxley, and largely in Darwin; but you must not expect to find this combination frequent nowadays. Your battle will be the easier, if you avoid arousing the wrath of the specialist in this respect. You have him in a cleft in the matter of English, but I fear you court failure, if you assert that the average man of science ought to be able to follow all the specialist papers in the *Phil. Trans.* If the terms accepted by every student of a specialised branch of science and the whole of its symbolism—its "short-hand"—are to be classed as jargon, and given short shrift, I sadly fear the Royal Society of Literature will find itself prostrate, Don Quixote-like, before the windmill! Affectionately, K. P.

How I shall rejoice to see the "Reminiscences"!

Extract from a letter of Francis Galton.

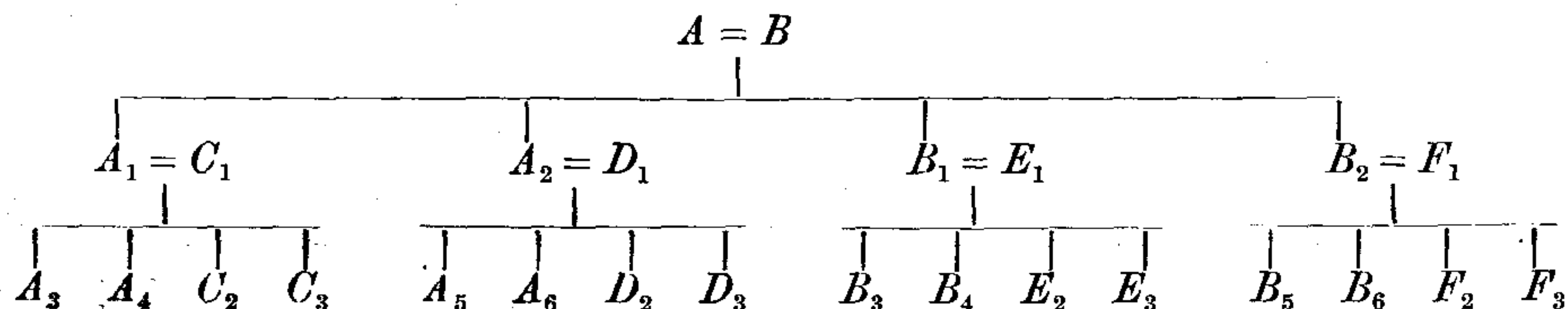
QUEDLEY, HASLEMERE. Jan. 25, 1908.

...The same morning that brought your reply to my letter, brought also the typed copy of your Report from the University of London, which I signed as approving. What a very good report you have made! I wish I could see any glimmer of light in the cousinal = avuncular correlation. It seems almost equivalent to fraternal = nepotal correlation, and quite incredible *a priori*.

7, WELL ROAD, HAMPSTEAD, N.W. Jan. 27, 1908.

MY DEAR FRANCIS GALTON, Being kept to the house and sofa to-day—not 'flu, or I would not write to you—I have some chance of getting letters off hand. Many thanks for your kind and helpful letter of this morning. There are now some 40 to 50 avuncular correlations worked out and they fully confirm the view that the relationship of cousins is as high as that of uncle and nephew. There are several points that need to be thought out carefully. The cousins are

generally of the same generation and approximate age; the uncle and nephew belong to different generations and may be of considerably different ages. But if anything the avuncular correlation is less than the consinal, and accordingly I am not sure that the age and environmental differences would do more than equalise their values. Again we should expect brothers to be more alike than parent and offspring, but the fraternal correlation is only very slightly greater than the parental, and this again is due possibly to the age and nurture influences being more effective in the latter case*. As an illustration of what might happen, let us adopt as hypothesis an alternative inheritance in which $\frac{1}{2}$ the offspring follow one parent and $\frac{1}{2}$ the other. In this case 50% of the offspring are like a given parent, but only $33\frac{1}{3}\%$ of the brothers are like a given brother. Thus the parent has *greater* resemblance to his offspring than the brother to his brethren. Now let us look at the grandchildren of a pair, *A* and *B*, on the assumption of this alternate inheritance:



With regard to the original grandparents, the 16 grandchildren are either like one or other of them, *A* or *B*, or unlike them, taking after their daughters or sons-in-law, C_1 , D_1 , E_1 , or F_1 . Thus 25% of the grandchildren are like a given grandparent. Now consider an A_1 uncle, he has 12 nephews or nieces and 2 of these are like him, i.e. 16.6%. Each individual cousin like A_3 has two out of 12 cousins like himself, again 16.6%. It would thus appear that on such a theory we should have as great a resemblance between cousins as between uncle and nephew. Now I don't suggest that this scheme is actually at all representative of what takes place, but it seems to me to indicate that we can invent schemes in which it does not follow that uncle and nephew have a greater measure of resemblance than cousin and cousin, nor brother and brother a greater measure than parent and offspring. We must first observe and obtain our correlations and then endeavour to interpret them. Affectionately, K. P.

The divergence of view between Francis Galton and myself with regard to the use of technical terms is well illustrated in the following letter. I had sent him a paper in proof which was shortly to appear in *Biometrika*. Of this he wrote:

QUEDLEY, HASLEMERE. March 8, 1908.

MY DEAR KARL PEARSON, I would strongly urge a footnote to the first page† headed—"Technical words used," including *Chromomeres*, *Chromosomes*, *Determinants*, *Mytosis*, also even *Cytology*, *Somatic* and *Zygote*, with definitions of each. *Allogene* might be dismissed with the remark "explained in text." Thinking of the men who ought to read the memoir with interest,—Yule, MacMahon, G. Darwin, Burberry, etc.,—there is hardly one who would know the meaning of these words, or would care to read the memoir unless they were first defined. This or some analogous plan would often be a *great help* to readers of *Biometrika* articles. It is a most interesting investigation of yours. I had long had a vague idea that something of the sort was needed, but could not phrase it satisfactorily to myself. You must indeed feel the void left by Weldon.

* Galton's argument was that in the case of cousins (sons of two brothers) there were *two* wives, the cousins' mothers producing variability, whereas in the case of uncle and nephew there was only *one* mother, the sister-in-law of the uncle, to be considered. So in the case of two brothers, we might argue there is no source of difference in descent, but in father and son the mother comes in as a cause of additional variability.

† This refers to the proofs of a memoir "On a Mathematical Theory of Determinantal Inheritance from Suggestions and Notes of the late W. F. R. Weldon," ultimately published in *Biometrika*, Vol. VI, pp. 80-93.

It is good news that you have taken "Moorcroft" for Easter. It will tempt me to stay on longer here than I had in my mind. I am glad the Eugenics Education Society's meeting was hopeful. Crichton-Browne may make a useful president, but he has many irons in the fire. However it is all in his way, and if he is hopeful about it, he will throw energy in. I wish I could see your show at the University College soirée. My book is nearly finished in *draft*, and is typed, but much has yet to be done to it, in verificating [*sic*] and the like, which will be troublesome. May you have a healthy relief from your excessive work here in Hindhead!

Affectionately yours, FRANCIS GALTON.

QUEDLEY, HASLEMERE. *March 16, 1908.*

MY DEAR KARL PEARSON, In reply to your card asking me for something to exhibit at the U.C. soirée, I have thought of an effective, yet somewhat absurd thing. But I have failed to get it. It is a *Punch* cartoon, published I fancy in the early '70's, of a weedy nobleman addressing his prize bull:

Nobleman—By Jove, you are a fine fellow!

Bull—So you would have been, my Lord, if they had taken as much pains about your ancestors, as you did about mine.

I wrote to *Punch* to make inquiries, but they have not succeeded in identifying the picture. It would have been a capital thing to frame and to let lie among other exhibits. I should have been much disposed towards utilising it in some way farther on my own account. I cannot think of anything else suitable. Your Tables of the Coefficients of Hereditary Resemblance ought to be shown somewhere. A model of the old kind but differently arranged, like this perhaps, would be effective. [Here is inserted a rough drawing of a geniometer without figures (see our p. 30 and Plate I) working by aid of a lever to indicate the average regression of an individual on various ancestors.] Heron might devise one, say 2 ft. high, to stand on the table, and to be *worked there and explained*. If so, it ought to be *rough*. People would understand it quicker.

I am reading J. Arthur Thomson's new book on Heredity. The first part seems forcible and good. I had no idea that there was so much to be said about Acquired Faculties. I am curious to get on with it, but am obliged to be slow, and am now just at Mendel. By the way I find that I had the honour of being born in the same year, 1822, as he was. All goes on well here. I trust that "Moorcroft" will be a great success and no "April 1st" venture.

Ever affectionately, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *March 26, 1908.*

MY DEAR FRANCIS GALTON, I am hoping to see you so soon that I should not write, were it not to tell you that I may be rather later in coming to Haslemere than I intended, and somewhat more inclined to be discontented. My youngest child has got whooping cough, so our party must be broken up. My Wife stays to look after her, and my Sisters-in-law come down with two of my children on Saturday to Moorcroft. I hope to get down early next week. I shall stay here as long as my Wife will allow, as I am not very easy about my bairn. She does not take these sort of things lightly, and I dislike whooping cough more than most diseases for its sequelae.

We have had a busy day, or rather three days. Lord Rosebery—the Chancellor—came to open the new wing to-day and walked round our new rooms. I showed him our skulls and the Eugenics Laboratory. He said: "Now how do you pronounce that word? I shall call it Eughennics," i.e. with a hard *g* and a short *e*. And so he did in his speech afterwards! Then to lead him back to his past I showed him hair from mane, tail and flanks of nearly 100 chestnut horses. But he looked solemn and said: "Ah, Mr Gladstone had a great interest in chestnut horses, owing to the coloration of the Homeric steeds." In his speech later he paid you and your Laboratory quite a pretty compliment. We had many guests, but whether there were any worth showing things to is another question.

You would see that ——— has been convicted of an indecent assault. The whole thing is so improbable, and sounds so impossible that we must wait for the appeal. But it must at present be a bad blow for the Eugenics Education Society. He was giving six lectures on Eugenics! Luckily that word has not been mentioned and I hope may not be, and I can't think this

charge can be true*. I don't like several of these Committee-men, but this appears wildly unlikely. If it were proved, I should think the Society would go to pieces, but it would also be bad for us, if the word Eugenics were to get smirched in the beginning in this way.

Affectionately, KARL PEARSON.

QUEDLEY, HASLEMERE. *March 27, 1908.*

MY DEAR KARL PEARSON, I long to see you again, and hope that your mind will soon be easy about the whooping cough. Poor child! I have taken this house up to April 14th, so shall well overlap your stay here.

—! what a name that man has. It is enough in itself to make ridicule out of Eugenics. I know nothing more about the accusation yet than you have told me.

The *Times* gives a cheering account of University College and Lord Rosebery's speech. Of course the *g* in Eugenics is properly hard, but we say it soft in Genesis, Genus, Generation, etc., even in Prince Eugène. Ever affectionately, FRANCIS GALTON.

We tried to tempt both Heron and Miss Elderton to come here for this week end, but both happen to be engaged. Au revoir!

BIOMETRIC LABORATORY, UNIVERSITY COLLEGE, GOWER STREET, W.C.

April 28, 1908.

MY DEAR FRANCIS GALTON, I am back and at work! I hope the paper will be a success and that there will be some interesting discussion. I am *wholly* with you as to the great need of condensation, of improvement of English and of style. I am not wholly with you as to use of scientific terms, or as to the possibility of making all scientific papers intelligible to the educated, but not specialised reader. I hope that the former can be pressed without unnecessarily attacking the extensive use of terminology....

Has the map scheme progressed at all? Let me know if I can do anything further by aid of photography or otherwise. Yours, always affectionately, KARL PEARSON.

Think of a good name "Thesaurus rerum ad hereditatem pertinentium," "Thesaurus facultatum humanarum," or what †?

Galton's paper was read by Mr Pember—he was not able himself to deliver it—on April 29, 1908, before the Royal Society of Literature ‡; it is entitled: "Suggestions for improving the Literary Style of Scientific Memoirs." In my opinion it is of more value from the standpoint of the biographer, than from any influence it had, or alas! is likely to have, on "the simplicity of language, clearness of expression or the logical arrangement" of scientific memoirs. Galton's remedies were: (i) That the Councils of Scientific Societies should not be left in the dark as to the goodness or badness from the literary standpoint of the memoirs they are asked to publish, and accordingly should directly ask the referees of papers whether they consider the memoir referred to them (1) clearly expressed, (2) free from superfluous technical terms, (3) orderly in arrangement, (4) of appropriate length, (5) if it introduces any new terms (to be cited) has used necessary and appropriate words, and (6) generally has an adequate literary style. This is to suppose that the referees will be men of sound literary taste, whereas in nine cases out of ten they would be selected for their specialist knowledge, and the barbarous would sit in judgment on the barbarian. (ii) That in order that scientific societies might be

* The conviction at the Police Court was quashed on appeal to Sessions.

† This has reference to *The Treasury of Human Inheritance*, the prospectus and materials of which were then being prepared.

‡ *Transactions*, Vol. xxviii, Part II, pp. 1-8.

made to realise the occurrence of literary faults in the memoirs they publish, occasional articles might be issued "containing a selection of passages that are conspicuous for short-comings."

I must confess that (ii) seems to me a method more likely to produce effect than (i), and it might still be worth the combined efforts of a stylist and a natural philosopher, could they meet—after a satisfactory dinner—on the common ground, like Galton and Spencer, of the "old smoking-room of the Athenaeum*."

Galton was far too modest to pose as a literary critic. Of himself he writes :

"I am far too sensible of my own grave deficiencies to assume that position. But a man need not be a cobbler in order to know when his shoe pinches. My standpoint is merely that I find many scientific memoirs difficult to understand owing to the bad style in which they are written, and that I am conscious of a rare relief when one of an opposite quality comes to my hand." (p. 2.)

Galton does not give any actual illustrations of bad grammar and faulty syntax ; probably he considered that to do so was to pillory individuals, where the whole herd was to blame. When he passes from such errors to other literary defects he does cite a couple of cases, i.e. the contrasted terminations of the two Mendelian terms *dominant* and *recessive* (which should be *recedent*), implying a distinction which does not exist, and the use of such words as "Dimethylbutanetricarboxylate" by modern chemists.

"It is of course understood that these are what have been termed 'portmanteau' words, in which a great deal of meaning is packed, but they are overlarge even for portmanteaux ; they might more justly be likened to Saratoga trunks, or to furniture vans." (p. 4.)

The chemists certainly do seem to be rather lacking in imagination, but it would be impossible to make any suggestion to them without a very full understanding of their needs. As to the Mendelian term "recessive," the fault, as far as English is concerned, lies with those biologists who first translated Mendel's papers. It was the discovery of a fit English equivalent, not the invention of a new scientific term †.

Galton then quotes his favourite English poet Tennyson to show how much power there is in the English tongue to express clear ideas in words of few syllables.

"Long English words and circuitous expressions are a nuisance to readers and convey the idea that the writer had not that firm grasp of his subject which everyone ought to have before he takes up his pen." (p. 4.)

But is not the real problem a harder one than Galton admits ? The whole force of the poet's lines lies, not in clear cut definition of the words used, but in their linked atmospheres ; it is just the width of meaning, the long train

* Perhaps a still more effective method, which did not occur to Galton, would have been to have drawn up a petition to the Council of the Royal Society, signed by as many Fellows as possible, drawing attention to the literary quality of scientific memoirs. Probably every Fellow would have signed, not wishing to be thought a *vir obscurus*.

† Mendel actually uses "dominirend" and "recessiv." I can find no previous history of the latter word in German, nor has that language a form like "recedent."

of memories and associations, which enables us to see the picture before us. Take one of Galton's quotations :

“One show'd an iron coast and angry waves.
You seem'd to hear them climb and fall
And roar rock-thwarted under bellowing caves,
Beneath the windy wall.”

All the adjectives are used in figurative senses, and the beauty of the passage lies not in the use of clear and narrowly defined terms, but in the atmospheres which experience and usage have attached to the words in the memory of the reader. It is precisely these atmospheres which form the staple of the poet's craft. They are a grave danger to the scientist, and he strives to meet them by coining new words with stringently limited meaning, or, less advantageously, using old ones in a new, narrowly defined sense. Every time a really great poet uses a word he enlarges its atmosphere, while the object of the scientist is—at any rate for the time being—to circumscribe a word's atmosphere; he can often achieve his end by adopting little used words*. I would not weaken by a jot Galton's criticism of bad grammar, careless writing, or sheer pedantry in terminology, only I do not believe it feasible to write scientific memoirs with simple English words like Tennyson used in his *Palace of Art*. As an editor and teacher I agree with Galton that

“The preliminary culture of students of science seems usually to have been very imperfect”; and again :

“The comparative rarity among the English of a keen sense of the difference between good and bad literary style is a great obstacle to the reform I desire. It is especially noticeable among the younger scientific men, whose education has been over-specialised and little concerned with the ‘Humanities.’ The literary sense is far more developed in France, where a slovenly paper ranks with a disorderly dress as a sign of low breeding.” (pp. 5-6.)

I would have every postgraduate training in a laboratory for research write at least a monthly essay on a topic bearing on his branch of science. Yet grant all this, and still I feel that it was not only the “slovenly papers” which agitated Galton. Unconsciously behind it was the importance he felt of keeping abreast with the half-dozen branches of knowledge, in the early nurture of which he had taken part. His paper is the swan's song of the last of the great Victorian leaders in science. In his youth he had followed and contributed to the early growth of Anthropology, Meteorology, Evolutionary Biology, Genetics, the Theory of Statistics, and Psychology; but these sciences had outgrown their infancy, had become highly specialised, and teemed with new terms with which he could not keep in touch. It would have been a very great task for a younger man; for the octogenarian, however outstanding his intellect, the task was impossible. Galton was, perhaps, over-inclined to attribute this incapacity to follow, as he longed to do, all new developments in half-a-dozen sciences to the obscure use of language or to the introduction

* Thus “conjugation” is a better word than “mating”; “dominance” than “mastery”; “probability” than “chance”; “evolution” than “unrolling”—the simple English words before scientific adoption would have too wide customary atmospheres.

of what he held to be unnecessary mathematics into discussions where he felt certain elementary theory could have provided a solution.

Galton's physical strength was indeed waning, he was seriously unwell during the Easter of 1908. His mind still remained as fertile as ever in ideas, he was continually planning new projects, but the mental energy needed to carry through serious investigation was failing him.

42, RUTLAND GATE, S.W. *May 18, 1908.*

MY DEAR KARL PEARSON, At length, I am to be allowed an hour's drive—after quite a long bout of bronchitis and asthma. It began here in Easter week and has kept me for 10 days or so mostly in bed, and quite invalided. I have contrived twice to get people here to dine, half on business, but though leaving them early it rather overtaxed me. The doctor declares that I am fast getting well at last. You may judge how incompetent I have been by the fact that even yet I have not tackled the last part of *Biometrika*. But I have nearly got my "Memories" off my hands.

A letter of yours, April 28, has only come into my hands this morning. The housemaid had dropped it, and so it lay unopened behind a box in the hall.

* * * * *

That Eugenics Education Society promises better than I could have hoped. Crackanthorpe is serious about it, and Professor Inge has joined it! I can't find that Crichton-Browne has as yet done much. A. acts as a *restrainer*, but is very eager, and they have got a particularly bright lady Secretary who acts and works hard for the love of the thing. I have not *yet* ventured to join it, but as soon as I am assured it is in *safe* management, shall do so.

I hope you are all the better for Hindhead. I am eager to get (in half an hour) my first out-of-doors view of this May time. Ever affectionately, FRANCIS GALTON.

The appearance of the Eugenics Education Society—another child of Galton's fertile mind—in these letters may be best explained by printing here the rough draft of a letter of Galton to Montague Crackanthorpe, dated so far back as December 16, 1906. Having established his Research Institute, Galton now turned, as he had done in the case of Finger Prints, to the popularisation of the principles of Eugenics.

May I consult with you on the following?

Is not the time ripe for some association of capable men who are really interested in Eugenics, and might not the existing Eugenics Office of the London University serve as a centre? If you think so and cared to suggest the outline of a working plan and a few good names, I should be grateful. I am too much of an invalid to push forward any undertaking except by letter. Still I think something useful might be done even in that manner. I do not yet see the way clearly and am desirous of fresh ideas.

Edgar Schuster has resigned his Research Fellowship, the future of the Office is just now uncertain. One idea is to have a "Fellow" at £250 a year, a Student at £100 in addition to the very capable Secretary, of good actuarial blood, who is already there and is familiar with the ways of the Office. Do you know of any capable man who would be a likely candidate for the vacant Fellowship? Hitherto it has been an annually renewable post. The Office is in Gower St, in rooms rented by University College and near to the Biometric Laboratory of Prof. Karl Pearson, who is a pillar of strength.

(b) The Darwin-Wallace Celebration of the Linnean Society of London, 1st July, 1908.

Two things remain impressed on the biographer's mind as memories of that day. I first felt the strong need Francis Galton had for a supporting arm. By the time the medals had been distributed, and the recipients* had spoken, the fatigue had so tried Galton that he had to leave the meeting. I saw that he rose with difficulty, and leaving my seat also, saw him home. He had spoken well, but the exertion and the closeness of the day had severely taxed him.

The other memory is also a sad one; we had met to do honour to a great English leader of scientific thought, one whom I take it we all respected, and to whom many of us felt we owed a deep debt of gratitude; he had given us, as Galton said, a keen sense of intellectual freedom. It was, as it were, a memorial service of thanksgiving, which all men of science could join in together, irrespective of divergence of scientific creeds. Some wag on the Linnean Executive had placed William Bateson in the chair adjacent to mine. I awaited his coming with expectation, determined that our greeting should disappoint the wag. But Bateson refused it, sat sideways on his chair, with his back to me, the whole of the medal distribution, and no doubt the wag was amused by what was simply pain to me—pain, that a distinguished biologist should refuse to join harmoniously with a biometrician, however despised, in a common service of reverence to one so immeasurably greater than either of us.

Dr Dukinfield H. Scott, the President, addressing Galton, spoke as follows †:

“Evolution, as understood by Darwin and Wallace, depends upon three factors, Heredity, Variation and Natural Selection. In the study of the first of these factors, Heredity, the work of the present day is characterised by the application of exact methods, whether on biometrical or Mendelian lines. It was you, Dr Galton, who first showed the way by which exact measurement could be applied to the problems of evolution and heredity, and indicated that their laws must be susceptible of proof. You have pointed out a new method, and the possibility of a more logical treatment of evolutionary questions. By establishing such principles as that of ‘Regression to Mediocrity’ you have added new laws to evolution, and under the name of ‘Cessation of Selection’ you have suggested an explanation of degeneration following disuse, anticipating that afterwards independently proposed and elaborated by Weismann ‡, and called by him Panmixia.

“The ingenuity of your methods, your energy and enthusiasm in applying them, and your constant interest in the work of others, and readiness to help them, have made you a great

* Alfred Russel Wallace, Sir Joseph D. Hooker, Ernst Haeckel, August Weismann, E. Strasburger, Francis Galton and E. Ray Lankester, all of whom but Haeckel and Weismann were then present; the last remaining leader, Lankester, died just ten days before I wrote these lines.

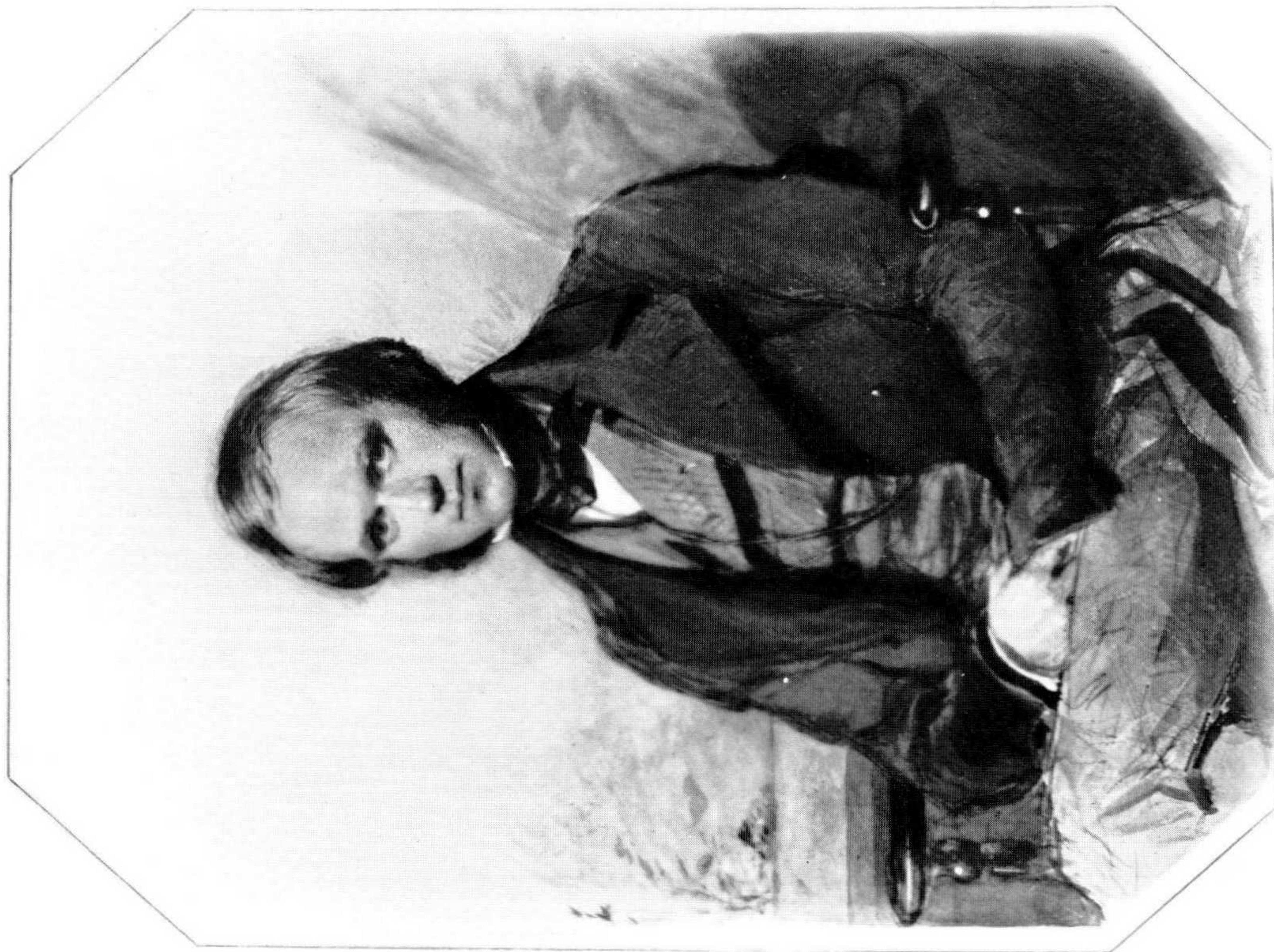
† *The Darwin-Wallace Celebration, held on Thursday, 1st July, 1908, by the Linnean Society of London*, London, published by the Society, 1908. The work contains admirable portraits of Darwin and of the medallists, pp. 24–26.

‡ I think it desirable to publish the following letter from August Weismann. It admits the priority of Francis Galton in the main idea involved in the continuity of the germ-plasm.

FRANCIS GALTON, ESQ., LONDON.

FREIBURG I. BR. 23 Febr. 1889.

SIR, You had the kindness to send to me your new book “Natural Inheritance” and a whole series of smaller papers you published before on the same subject. I thank you very much for your kindness and I am indeed very glad to have now all your memoirs at once at hand for consulting them. Till now I did not know all of them, but some ones, for instance “A Theory of Heredity” from 1875. It was Mr Herdman of Liverpool



Two portraits of Charles Darwin : on the right at age 31, from a water-colour painting by Richmond, formerly in the possession of his daughter, Mrs Litchfield ; on the left at age 33, with his eldest son William, from a daguerreotype, in the possession of Lady George Darwin.

power in the advancement of evolutionary studies: a power which has only been strengthened by your characteristic open-mindedness and willingness to accept new views.

"You have shown, throughout the wide range of your work, that exactness of method is consistent with the charm of style; and we may recall the words of your cousin, Charles Darwin, in speaking of your famous book on *Hereditary Genius*, 'I do not think I ever, in all my life, read anything more interesting or original.'

"The new departure which you inaugurated in the study of Evolution, has been previously recognised by the award of the Darwin Medal of the Royal Society. We desire to add our recognition of the originality and importance of your work by asking you to receive the Medal which commemorates the united discoveries of Darwin and Wallace."

This speech, while admirably characterising some of Galton's work, misses entirely its fundamental aim, namely, by an accurate knowledge of the laws of evolution, as expressed in the three factors referred to above, to make man master of his future development, to give him control, biologically as he now largely has physically, of Nature herself*.

Galton with his usual modesty made no reference to his own work; the occasion for him was one for reverence towards those who had emancipated our minds. He said:

"I thank you for your remarks, Sir. You have listened to-day to many speakers, and I have little new to say, little indeed that would not be a repetition, but I may say that this occasion has called forth vividly my recollection of the feelings of gratitude that I had towards the originators of the then new doctrine that burst the enthralment of the intellect which the advocates of the argument from design had woven around us. It gave a sense of freedom to all the people who were thinking of these matters, and that sense of freedom was very real and very vivid at the time. If a future Auguste Comte arises who makes a calendar in which the days are devoted to the memory of those who have been the beneficent intellects of mankind, I feel sure that this day, the 1st of July, will not be the least brilliant."

who—some years ago—directed my attention to this paper of yours, after having read my own papers on heredity, on continuity of germ-plasm and others. I regret not to have known it before, as you have exposed in your paper an idea which is in one essential point nearly allied to the main idea contained in my theory of the continuity of germ-plasm. You will find in the English translation of my essays just now appearing, a note by Mr Poulton, which draws the attention of the reader to your ideas. I shall profit by the next occasion which offers itself to me to give a more extensive account of your views and to point out the differences between our views. Heredity is a very complicated and difficult matter and I am afraid that none of us, who have thought about it, will have solved the whole mystery of it. Nevertheless it may be, that we have touched upon the right way which leads to the solution of the riddle.

Please excuse my bad and perhaps not always intelligible English! But as you tell me, that you do not read German with fluency, I thought it more convenient for you, if I wrote in bad English than in good German.

As soon as my book shall appear you will receive a copy of it, which I beg you to accept as a sign of my high esteem. Believe me, faithfully yours, AUGUST WEISMANN.

The "continuity of the germ-plasm" almost universally attributed to Weismann is really, as I have indicated in Vol. II, pp. 81-2, 169-171, 186-7, a product of Galton's inventive mind.

* Among the speakers, I think only Lankester recognised the part which our knowledge of evolution must in the future play with regard to human society:

"'Darwinism' must in the future guide statesmen and politicians as well as men of science. It is in its application to the problems of human society that there still remains an enormous field of work and discovery for the Darwin-Wallace doctrine. The science of heredity, of fecundity and sterility, of variation and adaptation, has yet to be far more completely studied and developed in its application to man and to human aggregates than it yet has been; at the same time a true psychology has to be arrived at and made, together with a knowledge of heredity, the basis of education, of the government and of the prosperity of the modern state. How far we are from any satisfactory progress in this direction, the words and the actions of political leaders of all parties at this moment fully demonstrate" (*loc. cit.* pp. 29-30).

But Galton, besides holding this view, had stepped into the public arena, and proclaimed a science which by providing a creed should control the biological evolution of man—Eugenics.

It was indeed an impressive meeting, the last occasion on which the "Old Guard" of Darwinism answered to the roll-call. Galton and Hooker died in 1911, Strasburger in 1912, Wallace in 1913, Weismann in 1914, Haeckel in 1919 and Lankester in 1929.

WINSLEY HILL, DANBY, GROSMONT R.S.O., YORKSHIRE. *July 6, 1908.*

MY DEAR FRANCIS GALTON, I have got back to my Yorkshire moors and their fresh air,—if it be cold,—and I hope to do a good three months' work! Let me have a line to say you were none the worse for the Darwin-Wallace Celebration, and I hope none the worse for this cold bout that has followed it.

I smelt the good smell of the turves and the bracken and the young heather and saw the first young grouse yesterday. The only grief is to come back after two years and find those one left hale now in the churchyard. When you know nearly the whole country-side, there are sure to be big gaps in the ranks. In London where one does not know even the names of one's neighbours within fifty yards of one's house, one does not get into touch with other folk's sorrows. I shall be here, if you write at any time, the whole holiday, except perhaps a couple of days to the South of the moors to see a tablet we have put up to my Father in his birthplace. Here we belong to those who have "gone over the moor," and have thus passed out of memory. As one of my ancestors of 1680 says in his will "Let my son Henry take my black mare and ride across the moor." That meant he was to go and seek his fortune south. My Father remembered as a boy the Quaker relatives from this Dale riding pillion with their wives across the moor, and stopping at his grandfather's house on their way to York Quarterly Meeting. That was his last touch with Danby. Four years ago I saw a farmer riding pillion with his wife over the moor on what is still called the "Quakers' Path." Four miles up on the moor is the solitary hut which used to be a meeting-house, whence Gregory Pearson was taken to York Gaol in 1684, where he died. My other forebear, George Unthank, came back alone a year afterwards across the moor. You will understand why I like the smell of the moor.

Affectionately, K. P.

42, RUTLAND GATE, S.W. *July 10, 1908.*

MY DEAR KARL PEARSON, I delayed writing to get news, if any, from A. who came here the day before yesterday, and Heron yesterday, (both to dinner). That Eugenics Education Society seems really promising. The prospectus has been re-worded and members are coming in. Mrs Gotto is marvellous in her energy. I have been doing rather too much, with the usual penalty in consequence, of $\frac{3}{4}$ of this day in bed, but no real harm. Next week I go into Oxfordshire and Worcester to a great nephew and to a niece respectively, and then back until August 1 when we go to a house in the neighbourhood of Petersfield for a month, whence I will write to you (with address of it).

You must feel like *Antaeus*, who was revived by touching his mother-earth. The Quaker associations must be at times almost overpowering, where you now are.

I expect the first batch of the proofs of my "Memories" every day. They have done all the little illustrations, and two portraits of me—that which you know well, and one from Furse's picture. I shall be glad when the book, index and all, is finally off my hands. I called at University College and found them at full work in the Eugenics Laboratory. I wish I could think of a good way of measuring the power of "Mrs Grundy," in some one important social usage. "The force of popular opinion" would be a good subject for an essay, if numerically assessed.

That Linnean Medal has been nicely mounted in an unpretentious little round wooden frame, with glass on both sides. What kind care you took of me that day,—Hooker had a large luncheon party on the morrow, none the worse for the ceremony!

Affectionately yours, FRANCIS GALTON.

WINSLEY HILL, DANBY, GROSMONT R.S.O., YORKSHIRE. *July 16, 1908.*

MY DEAR FRANCIS GALTON, Thank you for your helpful suggestions and corrections about the *Treasury* circular. I think something might be done to gradually give a value to words in current use. I have endeavoured to do so in the case of correlation, defining "high" 1.00 to .75,

"considerable" .75 to .50, "moderate" .50 to .25 and "low" .25 to .00. I found writers were always speaking of "high," "moderate" or "low" relationship and I thought it worth while to make a start with more exactitude.

It is extremely good of you to undertake a "Butler" pedigree*. Can you do one of the "Pollocks" also? The "Darwins" are already done and we shall want ten at least for the first number. Can you think of any families that we might look up in the Eugenics Office Records? We could put together two or three science ones from the *Noteworthy Families*. We want one or two "governmental" or "executive" families. If you can think of any names, we will see if they are already done in the Laboratory Records.

Will you do us another favour, i.e. write a page, or, if it must be, only half a page of preface to the first part? If the thing starts well, it will go on through the years, until it will be the great mine for searchers after nuggets of heredity, and it would be pleasant to think of a few lines from you starting what will be a great monument, I hope, of your inspiration. I am sending you back a prospectus (rough form) to be a slight guide as to the nature of the work. I am asking Professor Osler of Oxford to write me a few lines of appeal to the younger medical men to aid from that side. He is the one man before whom the profession bows down, and if he aids it will be a great gain. I must not write more as I am rather invalided with a four days' attack of neuralgia. I got the doctor in to-day, but we have not yet succeeded in getting to the root of the trouble. Affectionately, KARL PEARSON.

[A leaf from a calendar was attached containing the words:]

July 13, Monday.

"Gather, then, each flower that grows,
When the young heart overflows,
To embalm that tent of snows †."
Maidenhood.

† Did any man of science ever write as wildly and carelessly as this famous poet?

SHIRRELL HOUSE, SHEDFIELD, BOTLEY, HANTS. August 11, 1908.

MY DEAR KARL PEARSON, I long to know how you are faring, and that the neuralgia has ceased. All is abundantly right with myself; moreover my publisher's men have been active and during the past week have sent me the whole of my "Memories" in proof, which has occupied all my working hours to revise. But this is done now. I had hoped to hear from you something more about the "Thesaurus," and to see your circular which probably contains a specimen of *how* you wanted biographies drawn up—whether in respect to a single character or how far generally? In your letter and in the lithographed page I see no provision for symbolising school-boy or university success, obtained when the person has not *completed* his opportunities. Thus, how to symbolise a youth of much school promise, and who has gained an open scholarship, but is not old enough yet to compete for higher things. I have at least three such cases in the Butler family. The same kind of difficulty of classification may occur in other subjects. Thus:—"not affected but still within the danger zone."

You ask about whom to apply to for the Inge, Buxton and other families. Ask Professor Inge himself. I can't recollect his address (I think in Brookside) but "Cambridge" would surely find him. The pedigree at the Eugenics Office was sent by him and he is very willing. Sir X. Y. would either do, or get the thing done, for his family. He has some near lady relative who is versed in pedigrees, but it would be awkward to address him about tuberculosis for instance. I fear the maladies of that family would be like skeletons in their cupboards. Both Sir Vernon Lushington and Sir Ed. Fry, heads of their respective families, would be likely to contribute.

You will probably have seen Crackanthorpe's letters to the *Times* about the Feeble Minded Report, one on Friday and one to-day. I have not yet procured the Report itself but am writing for it to-day. (I read the *Times* extract of it.)


You will gather from the above that I have done *nothing* last week in respect to the proposed "send off" or to the Butler family. I have been working up to my full strength

* Pedigrees of families distinguished for scholarly, literary or executive power were being compiled in the Eugenics Laboratory.

elsewhere, but at length am fairly free. It would be easy to get what you want as regards scholastic success in the U. and V. families, but in respect to health and character it might be otherwise there as elsewhere. I know that U. *shrinks* from anything like a medical pedigree, not because his own is other than good but on more general grounds of not alarming the young with the terror of impending, hereditary disease. Under any pseudonym, his family history would be recognised by some one, and so become generally known. I fancy that you will get the medical information you mostly want from un-related bystanders rather than from members of the family. Send me a line to remove my present difficulties that I may set to work for you. I am happily housed and gardened here. I gave a day to see my brother in the Isle of Wight, which by road, rail and steamer is about two hours off. All the rest of the time I have stuck to my books. Affectionately yours, FRANCIS GALTON.

I return the page of the *B.M.J.*

WINSLEY HILL, DANBY, GROSMONT R.S.O., YORKSHIRE. *August 17, 1908.*

MY DEAR FRANCIS GALTON, Your letter I think will have crossed one of mine. It would have been answered sooner, but it went astray, through no fault of your addressing but owing to postal blunders, which seem characteristic of this district! I am sending you a piece of the albino memoir. Will you please let me have it back, as I have not yet corrected it, and I want to return it for Press. I have not a spare Plate of Fig. 61, but send one of Plate XXXVI. You can use the symbol  to mark non-adult brilliancy. It is well in the pedigree to stick to a single character, but in the account of the pedigree, put in all points bearing on this character. Thus look at Fig. 61 in proof sent. You will see hair and eye colour given as far as possible; mentally deficient and deaf mutes are cited, also any other cases of weakness or degeneracy. You will see also that age is frequently stated.

I have not yet printed a revise of the "Thesaurus" prospectus because I wanted first to see what helpers we could get. I think we shall be all right on the medical side.

I am so glad to hear your quarters are comfortable. You are certain to find nice neighbours: Are you within driving distance of Cowdray Park? It is perhaps the most beautiful park in England, if you get up to the north from the motor road through it. There is an aged oak with a seat to it on a path which strikes north after passing the dower house (?) near the west gate, which is to my mind typically English in its environment.

Here the hills are glorious purple and the "Grouseler" has not yet begun to disturb the peace. The cold, I suppose, has kept the birds back. I am glad the "Memories" are done; how exciting it will be reading them! Yours always affectionately, KARL PEARSON.

SHIRRELL HOUSE, SHEDFIELD, BOTLEY, HANTS. *August 27, 1908.*

MY DEAR KARL PEARSON, Our stay is so near its end that there is barely time for a to and fro letter, so I have written and send the enclosed at once. I have sad misgivings about being able to make out here a good U. pedigree. It is an eminently sane and healthy stock, and very athletic, but the first wife of U. (I think you will gather whom I mean) died of uterine cancer. He was most unwilling this should be known to her children and contrived that the Register of Death should ascribe it to a true but secondary cause.

Professor V. comes in a few minutes to dine here. His is a noted family, I believe. I will see what can be done about it, and if favourable will write. In great haste.

Ever affectionately, FRANCIS GALTON.

On *Monday* we leave here, and tour about for a week or fortnight. 42, Rutland Gate will then be my address but letters may be delayed in reaching me.

42, RUTLAND GATE, S.W. *Sept. 7, 1908.*

MY DEAR KARL PEARSON, Having failed to satisfy myself about the U. pedigree, I wrote to C. U., who handed my letter to his very capable son, who sends me the enclosed cards and "tree." Will they, subject to a few pencilled and other corrections, do? I replied to him that I had sent them on to you, that the *names* would be struck out, but that his name would be wanted for authenticity. When I hear from you, I will redraw the tree on a larger scale and see to its revision before returning it to you. Will that do? By when do you want it?

I hope the weather has so far mended with you as not to bring your holiday change earlier to an end, than was originally intended. It is pleasant enough here. I sat out yesterday in my bath chair in the park, for an hour or more.

I have secured a pretty little house in Brockham, just south of Box Hill, with the Mole River for its meadow boundary. It is called "The Meadows." We go there at the end of October. My own matters get on. The whole of the text of my book is in the printers' hands "for Press" and the index is in their hands too, but not yet in type. I shall be glad to have wholly done with it.

Eugenics gets on. I have drafted an Address for the October meeting of the new Society of which I enclose the prospectus (*No*, I don't. I can't find one!). The address takes up fresh ground and I must ask Crackanthorpe to smash it into shape as soon as it is type-written. I see that in the President of the Anthropological Section, Ridgeway's, address, there is a good deal of *platitudinous* appreciation of Eugenics towards its close.

What do you think of Frank Darwin's Address? I must read it carefully yet again, but at present it seems to me that he asks for too much *tenacity* of memory from each of innumerable units. The forgetfulness of one of them would create a havoc in the orderly development. But I write crudely. Ever affectionately, FRANCIS GALTON.

Your tale about Churton and the mad college porter is very amusing*.

42, RUTLAND GATE, S.W. *Sept. 24, 1908.*

MY DEAR KARL PEARSON, I returned yesterday to London and the new No. of *Biometrika* arrived shortly after. I am glad that you have that off your hands. Your last letter, which describes your health as run low and the quantity of work ahead, made me feel sad, and fearful that the residue of your scanty holiday may have been far short of what your health needs. How I wish I could be of service to you in any way. It is a shame that your powers and zeal should be used up by comparatively small details of not the most advanced tuition †. I did not write before, being unwilling to add to your work. Now when you have time, a line would be very acceptable just to say how you are.

The U. pedigree is not even yet such as I could wish. The V. U.'s, on whom I relied, were out of town and when they returned just before I last left it, could not find the required notes. I will now try a different way.

I have let this house for the winter, beginning with Nov. 1, and have taken "The Meadows," Brockham, Dorking, for that same time. It is small but very well appointed, and is pretty. Moreover it stands high, notwithstanding its name and the fact that the river Mole bounds its adjacent meadow. Box Hill is just to its north and is said to shelter it.

I address this to Hampstead, thinking that you may have returned by now.

Ever affectionately, FRANCIS GALTON.

I am a little busy with the new Eugenics Education Society. Also I have just read the proof-sheets of Saleeby's forthcoming book on race improvement. It has some new things, but too much denunciation. However he rubs certain elementary truths strongly into the reader.

7, WELL ROAD, HAMPSTEAD, N.W. *September 25, 1908.*

MY DEAR FRANCIS GALTON, Many thanks for your sympathetic note. We came back last Saturday and I am trying to get back into harness again. I enclose the final form of the prospectus of the *Treasury*. I do not propose to issue it just yet, until we are a little farther forward with Part I, but we began drawing the plates for it to-day. I think we shall have a good first number. I have got a good Pollock Pedigree; Sir Edward Fry answered very nicely and I hope to get fully the data from him. Mr Vernon Lushington has not yet answered; I have

* Alas! Galton's letter to me concerning Churton, the abnormally shy College dean of my undergraduate days at King's, Cambridge, and my reply citing the incident of the under-porter mistaking him for the devil have alike perished.

† At this time the biographer was giving 24 hours a week to teaching and demonstrating, apart from aiding research workers, supervising Galton's Eugenics Laboratory and much heavy editorial work.

one or two other heavy pedigrees in hand. I see the "Memories" announced. By the by, I picked up a privately printed "Pedigree of the Family of Darwin" issued in 60 copies only; it gives your pedigree pretty fully. It will be helpful in doing the Darwins. I must come and see you soon. Affectionately, KARL PEARSON.

7, WELL ROAD, HAMPSTEAD, N.W. *October 7, 1908.*

MY DEAR FRANCIS GALTON, I was indeed sorry to hear yesterday that you had called the day before, and I had not been down at College. It was, indeed, a disappointment, because I want to see you for your own sake and to talk about several things. I have been working very hard in my last few days of freedom to get my Appendices to the memoir on Albinism done. Not the text, that has yet to be written, but the descriptions of the 550 pedigrees and the bibliography through the Press. We shall do the statistical part from this printed Appendix. I have also been gradually getting the plates of photographs printed off. It will be my biggest piece of work should I live to complete it.

Meanwhile to-day all the rush of the term has begun. I have four new postgraduate biometricians of good type, one a doctor working at plague bacilli and opsonins; another a biologist from Harvard, and a third who is taking up the influence of earlier judgments on later judgments.

In Eugenics we are all hard at work. The memoir on the inheritance of eye characters and the influence of environment on sight has been delayed, because Nettleship thought we ought to give more account of earlier work. Some weeks have been spent in studying such work, but it really is of very little service for our purposes.

Heron is nearing the end of his London children and Miss Elderton of her Glasgow children. She finds the employment or non-employment of mothers influences sensibly but not very markedly the physique of the child, but the employment of the father as measured by the mortality of that employment is also influential, though not so sensibly. Perhaps the greatest difficulty is that the employment of the mother is correlated with the mortality rate of the father's trade. If he follows a bad trade with a high mortality rate, then the mother generally has employment out, or home work. So the wheels of the whole machine are interlocked and it is very difficult to get the simple *independent* causes either of degeneracy or of physical fitness in children.

Your subject looks very good. Can you send me a ticket or two more for people I know would like to hear you? I shall certainly hope to be present.

Yours always affectionately, KARL PEARSON.

I cannot get to Oxford for the Weldon ceremony to-morrow. I should have liked to be there, but it meant risking a breakdown.

The first plates of the "Thesaurus" are nearly ready for the engraver, i.e. the drawings are ready and I hope to get it out in November.

42, RUTLAND GATE, S.W. *October 8, 1908.*

MY DEAR KARL PEARSON, It was just a chance visit on the spur of the moment that I paid on an exceptionally fine day to University College. I knew well how busy you would be and shrank from offering myself, but I am very free and could come almost any day and hour you might suggest*.

It will be a *grief* as well as a great pleasure to me if you come on the 14th to the lecture. I have asked the Secretaries to send you cards. But don't think of coming if you are tired. You have indeed both hands full and overfull of work. Thanks for all you tell me about the Eugenics work and the Biometric.

To-day one thinks much of the Weldon ceremony. I could not venture to attend it, however gratifying it might in itself be to do so.

You will probably have received, or will receive almost immediately, my *Memories of my Life*. The reading of it will keep; don't think you are expected to do that now, in the midst of all your other work. Methuen has got it up, I think, very well and legibly. What an immense deal must be omitted in any autobiography and that not the least important!

Ever affectionately yours, FRANCIS GALTON.

* Galton had called without warning and found me out.

HAMPSTEAD. Friday, October 9, 1908.

MY DEAR FRANCIS GALTON, It was a great pleasure to receive the *Memories* this morning. There is nothing which delights one more than to realise a little better that part of the life of a great friend in which one has had no share. I am only at Chapter III yet, but the reading so far suggests many points. First and foremost that you must make me a pedigree for the inheritance of longevity in the Galtons. I think it would be very suggestive. I shall hope to see you on Wednesday, if circumstances don't, as they probably won't, allow me to speak to the chief performer.

Would Saturday, October 17, next be a possible day to come and have a chat with you? I could come in immediately after lunch, or any time up to 5 o'clock that would suit you.

Affectionately, KARL PEARSON.

My Wife joins with me in demanding that in the Second Edition of the *Memories* there shall be a portrait of F. G. as a young man.

(c) *Papers read before the Eugenics Education Society.*

We must now return for a time to Galton's scheme for a Eugenics Society: see p. 339 above. This had in the earlier part of 1908 been vigorously pushed by Montague Crackanthorpe and the "Eugenics Education Society" had come into existence. At Mr Crackanthorpe's suggestion, Galton read a paper on Eugenics at the former's house, 65, Rutland Gate, on June 25, 1908. The paper was printed in *The Westminster Gazette* of the following evening. The paper is of much interest and is in part autobiographical.

Galton starts with the statements that the word Eugenics is pronounced with a soft *g* and that the Science of Eugenics is based on Heredity. He points out that the latter word does not appear in Johnson's Dictionary, and he says that forty years previously he had been chaffed by a cultured friend for adopting a French word*. Notions about human inheritance were very vague and confused, and the subject had never been squarely faced. The prevalent notion was that inheritance existed in animals and plants, but men were in another category. It was admitted that physical characters were sometimes inherited, but the heredity of mental characters was stoutly denied by many—as it still is denied by some. This sprang partly from theological grounds. "There was much talk about men being equal and masters of their own fate." Galton tells us that his first opinion was formed in 1840, when he was at College:

"Where competitions of all kinds showed most clearly to an unprejudiced eye that men were *not* equal in their natural powers, but most diverse in mind as well as body. It was also noticeable that high gifts of both of these tended to run in families."

* Galton used the adjective "hereditary" as early as 1863 and 1864 in his papers on "Domestication" and "Hereditary Talent" written in those years (see our Vol. II, p. 70). He used "heredity" in his *Hereditary Genius*, 1869 (see p. 334). According to the *New English Dictionary* the word had been used in the sense of estate, property or succession, as early as 1540, but apparently it was given for the first time a biological sense by Herbert Spencer in his *Principles of Biology*, 1863, see §§ 80 and 82. I do not know whether Galton adopted it from Herbert Spencer or from the French writers. On the other hand, "hereditary" was used of disease in both the 16th and 17th centuries, although without considering whether the disease was truly hereditary or conveyed by infection *in utero*. Thus "hereditarie lepresie" in 1597 and "hereditary gout" in 1699.

The first evidence that strongly impressed Galton, even in those early Cambridge days, was that of the Senior Classics. To be Senior Classic was scarcely less a feat than to be Senior Wrangler in the good old days when "Seniors" existed. Yet out of forty-one Senior Classics Galton found six who had a father, son or brother who was Senior Classic, or in one case a Senior Wrangler. He remarks that no mere tuition could account for this, they must have been born with exceptional capacity. He found that in every form of bodily and mental activity the same rule applied—those who achieved most had more achieving kinsmen than chance or good teaching could account for.

We thus recognise the birth of the ideas which came to fruition in *Hereditary Genius* as occurring when Galton was at Cambridge, surveying unnoticed the academic phenomena around him. At that time, he remarks, there were "no means such as we now have—thanks to the development of statistical science—of measuring with numerical exactness the closeness of the various kinships."

From these observations the lecturer said he had concluded that man was not an exceptional creature in respect to heredity, and that what applied to other animals and to plants applied also to him :

"I perceived that the importance ascribed by all intelligent farmers and gardeners to good stock might take a wider range. It is a first step with farmers and gardeners to endeavour to obtain good breeds of domestic animals and sedulously to cultivate plants, for it pays them well to do so. All serious inquirers into heredity now know that qualities gained by good nourishment and by good education never descend by inheritance, but perish with the individual, whilst inborn qualities are transmitted. It is therefore a waste of labour to try so to improve a poor stock by careful feeding or careful gardening as to place it on a level with a good stock.

"The question was then forced upon me—Could not the race of men be similarly improved? Could not the undesirables be got rid of and the desirables multiplied? Evidently the methods used in animal breeding were quite inappropriate to human society, but were there no gentler ways of obtaining the same end, it might be more slowly, but almost as surely? The answer to these questions was a decided 'Yes,' and in this way I lighted on what is now known as 'Eugenics.'

"Eugenics has been defined as 'The study of those agencies which under social control may improve or impair the racial qualities of future generations, either physically or mentally.' It aims at showing clearly how much harm is being done by some one course of action, and how much good by some other, and how closely connected social practices are with the future vigour of the nation. Its procedure is the reverse of fanatical; it puts social problems in a clear white light, neither exaggerating nor underrating the effects of the influences concerned. It is probable that even democratic governments will hereafter appreciate the value of Eugenic studies, and deduce from their results recognised guides to conduct. Such governments would be compelled to do so in their own self-defence, if not on higher grounds; otherwise they would come to an end, for a democracy cannot endure unless it be composed of capable citizens.

"The influence of public opinion, together with such reasonable public and private help as public opinion may approve of and support, is quite powerful enough to produce a large, though gentle, Eugenic effect. It is already becoming possible through Eugenic study to foresee with much assurance that such-and-such proposed action will influence a definite percentage of the population, though we cannot at present, and probably never shall be able to, foretell whether the individuals so affected will be *A*, *B*, *C*, or *X*, *Y*, *Z*."

"To the statesman this individualisation is unimportant, since individuals are only pawns in the great game which he plays. The true philanthropist, however, concerns himself both with society as a whole and with as many of the individuals that compose it as the range of his affections is wide enough to include. If a man devotes himself solely to the good of the nation

as a whole, his tastes must be impersonal and his conclusions appear to a great degree heartless, deserving the ill title of 'dismal' with which Carlyle labelled Political Economy. If, on the other hand, he attends only to certain individuals in whom he happens to take an interest, he becomes guided by favouritism, oblivious alike of the rights of others and of the well-being of future generations. Statesmanship is concerned with the nation; Charity with the individual; Eugenics is concerned with and cares for both.

"A considerable part of the huge stream of British charity furthers, by indirect and unsuspected ways, the production and support of the Unfit. No one can doubt the desirability of money and moral support, now often bestowed on harmful forms of charity, being directed to the opposite result, namely, to the production and well-being of the Fit. For the purpose of illustration we may divide newly married couples into three classes according to the probable civic worth of their offspring. Amongst such offspring there would be a small class of 'desirables,' a large class of 'passables,' and a small class of 'undesirables.' It would surely be advantageous to the country if social and moral support, as well as timely material help, were extended to the desirables, and not monopolised, as it is now apt to be, by the undesirables.

"Families which are likely to produce valuable citizens deserve at the very least the care that a gardener takes of plants of promise. They should be helped when help is needed to procure a larger measure of sanitation, of food, and of all else that falls under the comprehensive title of 'Nurture' than would otherwise have been within their power. I do not, of course, propose to neglect the sick, the feeble, or the unfortunate. I would do all that available means permit for their comfort and happiness, but I would exact an equivalent for the charitable assistance they receive, namely, that by means of isolation, or some other less drastic yet adequate measure, a stop should be put to the production of families of children likely to include degenerates."

Galton then referred to the newly founded Eugenics Education Society and the previously founded Eugenics Laboratory, and concluded as follows:

"I will only add to this brief address that my purpose will have been fulfilled if I have succeeded in impressing on you the idea that Eugenics has a far more than Utopian interest; that it is a living and growing science, with high and practical aims. I would ask you to make the Society known to your friends, and to persuade them as best you can to help on its good work."

It was a thoroughly good paper for a man in his 87th year, and expresses in a marvellously brief space the creed of Eugenics. It is perfectly true that a democracy cannot endure unless it be composed of capable citizens, but did Galton fully appreciate what follows, when, as is the usual case, a democracy *starts* with a majority of incapable citizens? A government which drew a line between capable and incapable would rapidly perish; for the incapables care nothing for the future of the race or nation, but seek from their necessarily subservient governments *panem et circenses*—more time to pillion-ride, more leisure for cigarettes, chocolates and cinemas—at the cost of the capable. Eugenics—however sturdily we preach its creed, and we have no preacher to-day like Galton—must be unsuccessful if we *start* with such a democracy. We might as successfully ask the weeds in a garden to make way of their own accord for the flowering plants whose development they choke. Let my readers think what a gardener could achieve, if his tenure of office depended on the consent of the weeds!

I will now reproduce some of the letters of the autumn of 1908.

42, RUTLAND GATE, S.W. Oct. 13, 1908.

MY DEAR KARL PEARSON, I see no reason against the Eugenics Laboratory publications including similarly *solid* work to its own, especially of a statistical kind which cannot easily find a home elsewhere. On the contrary it seems to me advisable. For a more popular kind the Eugenics Education Society might afford a home. As to F.'s work I gather that it is hardly up

to the mark of a Eug. Lab. publication. If you think it to be on the border line and would send it to me, I would do my best to give a casting vote. I should be quite prepared to *exact* a revision of the paper in accordance with your suggestions to him, *before taking it into consideration at all*. He might be told this definitely.

I fear that Mrs Gotto may have bothered you about speaking to-morrow. Please absolve me from the charge of having incited her.—Quite the contrary, I have insisted that you must not be troubled, but for all that I believe she has been irrepressible in her zeal.

Affectionately yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. Oct. 15, 1908.

MY DEAR KARL PEARSON, I have read F.'s memoir and return it with a few remarks, which you can if you like send to him. What you said last night was *excellent*, and very helpful to the Society, as showing what valuable work they might do as collectors of facts, and organisers of local inquiry into family histories. I wholly go with you there.

Affectionately yours, FRANCIS GALTON.

Galton's paper, to which reference is made in the preceding letters, was read before the Eugenics Education Society at the Grafton Galleries on October 14, by the author himself. It was, I think, the last time I heard him address an audience, but he spoke clearly and well, and seemed less fatigued than at the Darwin-Wallace celebration. The paper is entitled "Local Associations for Promoting Eugenics," and was printed in the issue of *Nature*, Oct 22, 1908*.

Galton begins by stating that he only proposes to consider what steps can be taken by local associations in the large field of *positive* Eugenics, namely in favouring those especially fit for citizenship; for the time being he put on one side the topic of restricting the production of undesirables, which has been sometimes termed negative Eugenics†. The problem before Galton was the nature of the furtherance of Eugenics that local associations more or less affiliated to the Education Society could provide. He writes:

"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 flaw discovered 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.

* Vol. LXXVIII, pp. 645-647.

† The term is not very satisfactory. "A-eugenics" is worse, "Cacogenics" is cacophonous, dys-genics should I fear be dys-eugenics, for it would signify without the "eu," I take it, absence of any generation, whereas it is to represent that branch of our subject which studies what may control misbreeding in man. Further the word used must be such that the study of cures for misbreeding is not confused with the practice. For example, what is the opposite of a eugenic marriage, i.e. one approved by the principles of Eugenics? If it be an "a-eugenic" marriage, then "a-eugenics" sounds rather like the practice of misbreeding, than the body of principles which we propound to minimise it. Galton in this paper uses the term "anti-eugenic" for an undesirable mating—the word is correctly formed, but "anti-eugenics" might signify propagandism against the principles of eugenics rather than the study of the causes making for anti-eugenic matings, or the factors which might minimise them.

"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."

Galton supposes that in any district a few individuals, some of local importance, desire keenly to start a local association. After forming themselves into an executive committee, and nominating a president, officers and council, they would form the association although it has no legal corporate existence. This committee should next with the aid of the central society provide for a "few sane and sensible lectures" on Eugenics and on the A, B, C of heredity. They would seek the co-operation of local medical men, of the public health officers, of the clergy, of lawyers, and of all officials whose duty brings them into touch with various classes of society. The new association would embrace everybody likely to have sympathy with the eugenic cause; it would be thus much like any political or philanthropic agency. Then we reach something more original. The committee is to seek out "worth" in their district; by civic worthiness Galton understands the value to the State of a person as it would be assessed by experts or fellow-workers. Each class is to choose its own men of worth, students to be chosen by students, artists by artists, business men by business men and so forth*. These men of worth are to be invited to social gatherings. "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 these gatherings." Clearly Galton was considering that the local association would be a mixture of social classes, and he cites the meetings of the Primrose League at one end and those in Toynbee Hall at the other end as illustrations, given considerable tact, of what such reunions might achieve for the eugenic cause. He thinks the committee by its inquiries into "worthiness" would obtain a large fund of information as to the notable individuals in the district, and their family histories. These could be used for eugenic studies; the histories should be tabulated in an orderly manner, and the more significant of them communicated to the Central Society.

Speaking for himself only Galton states that in classifying persons as to "worth," he should consider them under three heads: in the first place physique, in the second ability and in the third character; subject, however, to the provision that inferiority in any of the three should outweigh superiority in the other two. Galton admits character as the most important but it is not so easy to rate as the other two. "The tenure of a position of trust is only a partial test of character, though a good one so far as it goes." From this Galton passes to a conception that he had broached many years earlier†, associations of the well-born—the "Eugenes"—for mutual aid;

* See p. 231 above.

† See our Vol. II, pp. 78-9.

the "worthies" are to become a caste, with a just pride in their common worthiness, and with a feeling such as the soldier has for his regiment, or the boy for his school.

"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 further. A tree will have been planted; let it grow. Perhaps those who may hereafter feel themselves or are 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."

These associations would be standing examples of the benefits which flow from following eugenic rules and the evils which arise when they are disregarded. Ultimately a public opinion would be created in the district selected as a eugenic field.

"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



Francis Galton, aged 87, on the stoep at Fox Holm, Cobham, with his biographer.

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."

Was it only the idle dream of an old man? Scarcely! Galton had grasped the truth in his early youth that man would respond to careful breeding even as other animals; he had propounded his gospel in full manhood, as early as 1864, when nobody had listened to him; he had repeated his doctrine in 1883, when he was sixty years old, with scarcely more effect. And now in his last years he called on his fellow-countrymen once more to have faith and act on that faith. There is a hereditary nobility, an aristocracy of worth, and it is not confined to any social class; it is a caste which is scattered throughout all classes; let us awaken it, that it may be self-conscious, and realise how the national future lies incontrovertibly in the feasibility of making it dominant in numbers and submitting the rest to its control. Those who imagine that Eugenics as a national faith was the dream of an octogenarian, have failed to understand the whole trend of Galton's intellectual development; he preached and waited, he waited and taught. The dream of his youth, he endeavoured to the extent of his ability to make practice in his old age. As in the case of Finger-prints, he took the precaution of first establishing a science, and then followed it with his appeal for public recognition of the principles of his science through all the channels at his command. We shall see that he did not think them exhausted by newspaper articles, eugenics education societies and associations, or by public lectures.

What he might have achieved had he been ten years younger, or the English public ripe for his teaching a decade earlier, it is not possible to say. For two more years he fought for his creed, but his physical strength was failing. In his earlier days his chief recreation had been walking alone and thinking; his best thoughts came to him on these occasions. We can follow the change in the truthful record he gives under *Recreations* in successive editions of *Who's Who*. We find:

In 1898,	"Chiefly solitary rambles,"
in 1904,	"Solitary rambles,"

but in 1908, the year we have now reached:

"Sunshine, quiet, and good wholesome food."

He gave a literal interpretation to the word "recreate," and we find him from 1908 onwards seeking, well wrapt in rugs, sunshine and quiet in a sheltered garden corner, or on the "stoep" of a fitly chosen winter home.

Sitting thus, Galton's thoughts rambled through the past eighty odd years and they became again actual to him. As he says in a letter to his biographer: "How much an autobiography must omit," and this, although in a lesser degree, is true of a biography, if it be compiled within fifty years of its subject's decease and its writer would not pain survivors!

*Memories of my Life**. Galton's letters indicate how busy he was during the latter half of 1908 with this book. It would not be fitting—were it indeed feasible—to give an analysis of his work here. Our biography has, indeed, endeavoured to give a picture of Galton's personality, his deep affection for his relatives and for his friends; it has been able to say what he could not say of himself. An autobiography can only indirectly characterise its subject, unless its writer be as unabashed as Benvenuto Cellini, or as self-saddened as Jean-Jacques Rousseau. But beyond this characterisation, we have endeavoured to lay stress on Galton's contributions to science and to reproduce his thoughts in his own words. The reader will find little of this in the *Memories*; they deal not wholly, but chiefly, with the men—many of them noteworthy in their day—whom Galton had known in the course of a long lifetime. They are delightful reading, full of anecdotes and reminiscences, but the Galton of our volumes—the scientific originator, the modest inquirer, the intensely affectionate and reliable friend—is not easily recognised in the pages of his autobiography.

There are, however, two or three passages I should like to quote here for the benefit of those who are unable to read the *Memories*—now, alas, out of print. The first illustrates the depth of Galton's feelings for his friends. He is speaking of his college friend, Henry Fitzmaurice Hallam, born in 1824, only to die when he was 26 years old. He was the younger son of the historian, and brother to Arthur Hallam, who died at 22 and was the subject of Tennyson's *In Memoriam*.

“Henry Hallam had a singular sweetness and attractiveness of manner, with a love of harmless banter and paradox, and was keenly sympathetic with all his many friends. He won the Second Chancellor's Medal. Through him I became introduced to his father's house, still shadowed by the sudden death of his son Arthur and of a daughter. Mr Hallam was very kind to me, and the friendship of him and of his family† was one of the corner-stones of my life-history.... Henry Hallam, like his brother and sister, died suddenly and young, to my poignant grief. His death occurred while I was away in South Africa. I have visited the quiet church at Clevedon, where all the Hallams lie, each memorial stone bearing a briefly pathetic inscription, and kneeling alone in a pew by their side, spent part of a solitary hour in unrestrained tears.” (pp. 65–6.)

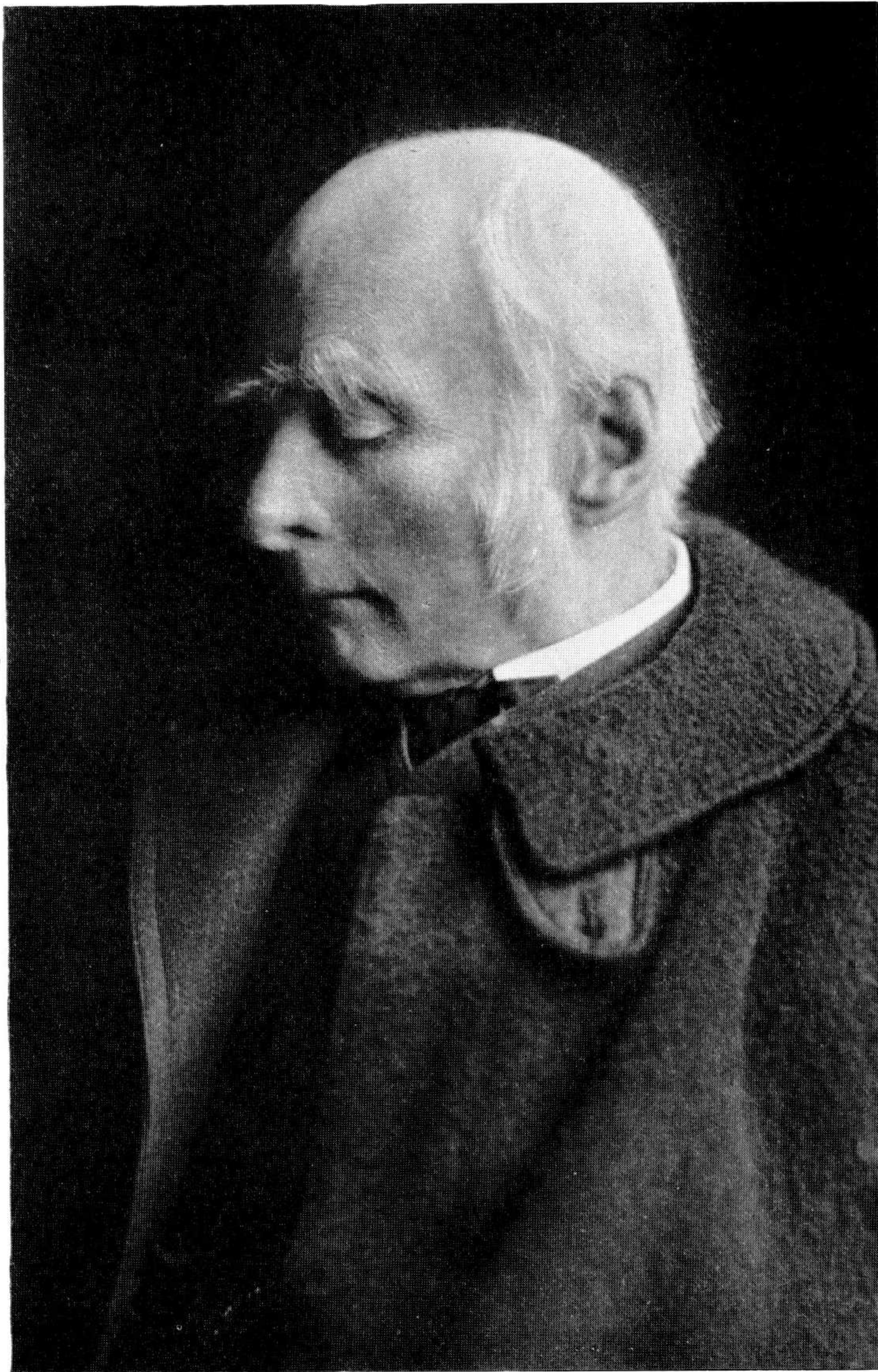
Another passage I wish to cite bears upon the nature of Time; it should be compared with Galton's view of Time in the *Inquiries into Human Faculty*‡.

“I will mention here a rather weird effect that compiling these ‘Memories’ has produced on me. By much dwelling upon them they became refurbished and so vivid as to appear as sharp and definite as things of to-day. The consequence has been an occasional obliteration of the sense of Time, and the replacing of it by the idea of a permanent panorama, painted throughout with equal vividness, in which the point to which attention is temporarily directed becomes for that time the Present. The panorama seems to extend unseen behind a veil which hides the Future, but is slowly rolling aside and disclosing it. That part of the panorama which is veiled is supposed to exist as vividly coloured as the rest, though latent. In short, this experience

* Methuen & Co., London, 1908.

† There was another daughter Julia Hallam, who travelled with Emma and Francis Galton: see Vol. I, p. 180, and also pp. 140–1, 171, 191, 205–207, and 238.

‡ See Vol. II, p. 263.



A reverie, caught "when the spirit was not there."

has given me an occasional feeling that there are no realities corresponding to Past, Present and Future, but that the entire Cosmos is one perpetual Now. Philosophers have often held this creed intellectually, but I suspect that few have felt the possible truth of it so vividly as it has occasionally appeared to my imagination through dwelling on these 'Memories.' (pp. 277-8.)

In Galton's last chapter, entitled *Race Improvement*, he summarises what he has hoped for and what he has done for Eugenics. He writes :

"Skilful and cautious statistical treatment is needed in most of the many inquiries upon whose results the methods of Eugenics will rest. A full account of the inquiries is necessarily technical and dry, but the results are not, and a 'Eugenics Education Society' has been recently established to popularise those results. At the request of its Committee I have lately joined it as Hon. President, and hope to aid its work so far as the small powers that an advanced age still leaves intact may permit." (p. 321.)

The last paragraphs of the *Memories* reiterate the teaching of 1865*, expressing it, perhaps, more effectively and concisely. It is probably very rare for a man at 86 to gain wide acceptance for a creed which he failed to impress on his contemporaries when at 42 he had the vigour and energy of early manhood. Galton was clearly 40 to 50 years ahead of his own generation. He thus concludes his autobiography :

"I take Eugenics very seriously, feeling that its principles ought to become one of the dominant motives in a civilised nation, much as if they were one of its religious tenets. I have often expressed myself in this sense, and will conclude this book by briefly reiterating my views.

"Individuals appear to me as partial detachments from the infinite ocean of Being, and this world as a stage on which Evolution takes place, principally hitherto by means of Natural Selection, which achieves the good of the whole with scant regard to that of the individual.

"Man is gifted with pity and other kindly feelings; he has also the power of preventing many kinds of suffering. I conceive it to fall well within his province to replace Natural Selection by other processes that are more merciful and not less effective.

"This is precisely the aim of Eugenics. Its first object is to check the birth-rate of the Unfit, instead of allowing them to come into being, though doomed in large numbers to perish prematurely. The second object is the improvement of the race by furthering the productivity of the Fit by early marriages and healthful rearing of their children. Natural Selection rests upon excessive production and wholesale destruction; Eugenics on bringing no more individuals into the world than can be properly cared for, and those only of the best stock." (pp. 322-3.)

"I shall treat," said Galton in his 42nd year, "of man and see what the theory of heredity of variations and the principle of natural selection mean when applied to man †," and his treatment only ended with his life.

7, WELL ROAD, HAMPSTEAD, N.W. *November 5, 1908.*

MY DEAR FRANCIS GALTON, I cannot refrain from sending you a line now that I have finished the *Memories* to thank you for the very kind things you say about my work. I have read the book with great interest and it has been helpful in more ways than you will realise. It was nice to find you also knew and appreciated Croom-Robertson. What a wonderful width of interests you have had, and how delightful that you had not to wedge them in between other things and carry out your work in haste! I spoke to Heron yesterday about work and his appointment and I must look into the original terms of his nomination before discussing it further. I certainly thought it came *ipso facto* to an end in February, but he seems to think it was as in Schuster's case for three years. I do not know that we could get a harder worker at present.

* See Vol. II, pp. 71-78.

† See Vol. II, p. 86.

Let me say exactly how affairs stand. (1) Eugenics Laboratory Memoir No. V has gone to press. It is on the Inheritance of Vision and on the Influence of Environment on Eyesight. It is a heavy bit of work and would have been stronger had we only been able to collect data *ad hoc* of an accurate kind. But I think it definitely shows what ophthalmologists have doubted—the inheritance of the various classes of eyesight, and further that environment, notably school environment, is not the most important factor in shortsightedness. (2) Resemblance of nephew and niece to uncle and aunt—will go to press in the next few weeks. (3) Brainweights of normal and insane. This took a good many weeks' work, but the results are inconclusive. The data were sent by Crichton-Browne, but they lack several needful points, e.g. information as to special type of insanity, and the records filled in at Wakefield from the Asylum Case Books are not accepted by C.-B. I am doubtful whether the results should be published, except to induce some one to start *de novo*. (4) Eugenics Laboratory Publication VI. Occupation of Father and Mother in relation to the Physical Health of school-children. This is based on 20,000 Glasgow returns provided by the Scottish Education Office. It will be ready by Xmas. (5) Eugenics Laboratory Publication VII. Influence of physique (nutrition, tonsils, teeth, glands, etc.) on mental capacity of children. Data for 30,000 London School-children from County Council. This also will be ready by Xmas. (6) *Treasury*: 10 plates are now engraved, or ready for engraver. I hope to have Part I out this month. This represents the last 18 months of work, and I want you to see that the staff have been working really well, but that these heavy bits of research do not come lightly to an end. Our not publishing anything for a year must not be taken as a sign of inanition.

By the by I got a few days ago about 50 folio sheets of pedigree and accounts of the Lushington family! V. L. had asked a nephew to prepare it, but had not written to tell me about his having done so. We have already some 20 pedigrees of distinguished families, with perhaps 200 individuals in each. They will have to go on folding sheets, they are so gigantic.

Nettleship has just found two albino dogs—brother and sister. We are now going to try and discover whether we can create a race of albino dogs from these two. There have only been very vague rumours of such things hitherto. They are from their photographs very beautiful beasts, and I hope not too delicate to survive.

I trust the winter quarters are going to be a success. Let me hear how you go on and what problem you are turning over. Affectionately, K. P.

I have nine biometric research students this term and my new Laboratory is *full*. It is the first time I have had more students than I want on this side. A man came this afternoon for admission wanting to do research work, and I took quite a lordly tone with him and told him to go away for a fortnight and write a paper and I would take him if it was good enough for publication. I have never been able before to pick and choose postgraduate workers—and this man was a Cambridge wrangler!

7, WELL ROAD, HAMPSTEAD, N.W. *November 30, 1908.*

MY DEAR FRANCIS GALTON, I want to send you a hurried line to say that I hear from all sides that Heron did *exceedingly well* at the Eugenics Education Society the other night. I really think he ought to give a course of lectures on Eugenics next term and that it would do him and the subject good. I feel sure he has a lot in him and only wants to be made to feel more confidence in himself. I shall make an effort to hear Miss Elderton on Wednesday week. Can you send me a line as to the enclosed difference in the Galton pedigree and that of the big Darwin pedigree? Is it possible that James K— M— had issue that died early?

I am sorry to hear about your cold, but I expect that the weather will be more fixed this next month, and that a fixed temperature is what we all need.

I have got Part I of the *Treasury* to Press and I think my talk at the Royal Society of Medicine recently will help it forward. I hope you won't think Part I too medical, but I want if possible to bring the medicals in the first place into line. Now one more point, do you know the P—s or anybody connected with them? There is a very singular inheritance in their family, which they keep screened and I should like to get some clues if it were possible.

Yours always affectionately, KARL PEARSON.

I was at Oxford last week, going through mice-work. Mrs Weldon comes up to work for a fortnight in my laboratory and we hope to get clear on some points. The medal for the prize is in hand.

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH, SURREY. *December 2, 1908.*

MY DEAR KARL PEARSON, I write at once and will send the corrected notice of the M— twins as soon as I get it back. The facts had got mixed, and if re-sorted would I believe be right. J. K— M— *had* issue; L— M— (now apparently on his death bed) had *not*. He was *unmarried*.

It gives me great pleasure to hear so favourable an account of Heron's lecture. Mrs Gotto wrote to the same effect as you did. I wrote and thanked *him* for it. It would be a good thing if, as you suggest, Heron could be made to lecture, or hold a class in some form at University College, as he has gifts for success. I do not "know the ropes" well enough to venture to say more than that the idea seems most desirable. Did he show you a long German poem on Eugenics by Sophia Martin, wife of a Professor at Rostock, Mecklenburg? I am told that it is not bad at all, and possibly may be rated as really good poetry.

Enclosed I send a rough idea in outline. It may be a familiar one (and *might* be wrong!), but seems worth sending. Beyond its measurement, there is no fact in correlation that is more interesting than the proportion in which the causes of variation are (1) unknown or neglected, and (2) known; and it is so easy to deduce this from r in the simple cases of linear correlation between normal variables. How far it might be extended to other correlations I have no clear idea, but it seems very improbable that much could be done in that way.

Affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *December 13, 1908.*

MY DEAR FRANCIS GALTON, You will have been expecting to hear from me about Miss Elderton's paper, but alas! I could not get to hear it. I have been crippled with lumbago for a week and was perforce absent. I had a very tiring week previously, culminating in a meeting at the Royal Society of Medicine, where I went to ask help for the *Treasury*, but found myself the subject of a very bitter attack from a disciple of Bateson's called N. I am not a ready debater and find it hard to marshal my arguments in reply to a set speech of nearly 70 minutes designed to prove that biometry was sheer rubbish, and that medical men would be fools to give any help to a biometrician. It is on these occasions I miss so much Weldon's ready repartee and light cavalry charges into the foe! I don't know how far I saved defeat; if I did it at all, it was owing to the unmeasured abuse of my opponent. But it put the final touch to the very heavy week and I broke down on Saturday. I have crawled down and round the Laboratory for two or three days, after two days in bed and one on the sofa, but I am back on the sofa again to-day wondering whether the muscles of my back will ever do proper duty again! Heron gave a good account of Miss Elderton's paper, but I wish I could have been there to give her some aid.

On other matters some progress has to be reported. 12 pedigree plates and 4 plates of half tone illustrations for the *Treasury of Human Inheritance* are now ready and some of the text is now set up. We shall have it out by January certainly. Also the first sheets of the long-delayed memoir on the Inheritance of Visual Characters have come in. I shall hope to send you proofs of a Note of mine for *Biometrika* and shall welcome any criticisms. I hope all goes well.

Affectionately, KARL PEARSON.

Nettleship has got two albino bitches satisfactorily crossed by the albino dog. It will be most exciting to see the result of this attempt to create an albino race of dogs. I had an albino hen offered me the other day, but I did not see how to keep it!

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH, SURREY. *December 14, 1908.*

MY DEAR KARL PEARSON, Your bulletin distresses me. Lumbago is so painful and depressing. I have just been reading the biography of Alice Hopkins (daughter of the Cambridge coach). She had sciatica, and spoke of $2\frac{1}{2}$ feet of pain. I sympathise much with you, as you may well be assured.

Yesterday I received a pedigree of the M— twins, about whom you sent a paper for verification. Enclosed I send it in a correct form. Also, after reading your Skin Colour of Crosses, I jotted down a recollection of my own which impressed me much. You can make any use of it you like. The paper is very instructive. I have pencilled a few words on p. 3 which seemed wanted.

I am assured from many sides that Miss Elderton did her lecturing *excellently*. Also that Heron did his part as Chairman very well indeed. Miss Biggs was in London Thursday and Friday nights and met several "Eugenicals," full of enthusiasm. I grieve at the rudeness of your Mendelian opponents, which is harmful to progress. Confound them!

Don't hurry one bit, but don't please destroy the little problem I sent you about the proportionate efficacy of known and disregarded causes of variability in two correlated variables. It will keep as long as your convenience requires, and you are over-worked. I have thrown off my chronic cough for three whole days. May it prolong its absence. All goes on well, though of course monotonously.

Miss Biggs was at Miss Parker's wedding and delighted with all she saw.

Ever affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *December 14, 1908.*

MY DEAR FRANCIS GALTON, I am sorry to trouble you again so soon and also to write, perhaps, unclearly, but I have only just got through the day and my back is giving me much pain. So please do not give undue weight to any phrase in itself. Miss Elderton came to me to-day and said that she had received an offer of the post of Secretary to a London College from the Principal of that College and that she had been given till Friday to consider her answer. That she had at first made up her mind to refuse, because she much preferred research work to executive work, and had not intended to tell me. But on second thoughts she felt she must ask my advice. Now I know exactly what this means, that home affairs are not too flourishing, and the post at the College means a definite post with steady rise, and a good position if needful for further advance. My impression of her is that she is a remarkably able woman with capacity in more than one direction. The first impulse was to say, but "you *must* stay here, the Eugenics Laboratory will collapse without you," but I felt without knowing your views, that this was hardly fair to her or to you. Now I want your advice before Friday. I cannot think of the Laboratory without Miss Elderton, she is the life and soul of the place, knows the whole of the material, writes all the letters and keeps everything going. I am sure she does not want to go, enjoys the work and is keen on the subject, and would find the secretarial work at a College less to her taste, but it offers an assured future. Now what ought we to do in the matter? I have always considered that you must look upon the Laboratory as on its trial and that if we failed to satisfy you, you must ruthlessly change the system or close the Laboratory as seemed to you best. Am I right therefore in trying to induce her to stay? I have no doubt, she is so valuable that she will always get a post, but suitable posts don't turn up every day and I feel if we advise her to stay we ought to say: If the Laboratory is closed or re-organised we will give you long enough notice to find a new berth. I don't think she would mind for herself, but, as I said before, her contribution to home funds is of some importance. On the other hand, if we go on, she is almost indispensable. It would take years to get any one with the same training, if even they had the same aptitude. Now what shall we do? It is not, I think, a question of money. There was ample when I last saw the accounts, and notwithstanding that there will be a heavy publication expenditure in the next six months (there are four memoirs nearly ready, and there is the *Treasury*) there is quite enough for present purposes and for a future pledging of resources. May I say to Miss Elderton: We will give you a permanent appointment subject to a year's notice, or such shorter period as would seem good to you and fair to her? The problem then is: Ought we in justice to her future to let her go? Or, ought we for the sake of the Laboratory to keep her with a more permanent post and perhaps an increase of salary? May I guarantee her, say £— or £— with a year's notice? I feel the answer cannot rest with me, because it depends to some extent on the future of the Laboratory. I don't want you to keep the Laboratory going for our sakes; we are all keen and ready to go on with the work on the lines which our powers render possible. But whenever you feel that we are not doing what you think best for the acquirement of that knowledge, which I know you have most at heart, then you must simply give me the word and we will bring things to a close. In this matter of Miss Elderton's, by advising her to refuse the College post I might be protracting the life of the Laboratory beyond your wishes, and thus I must consult you on the point. I do not know whether I have put her own wish strongly enough, she wants to stay and would do it at personal sacrifice, but here home calls on her have to be considered. Affectionately, K. P.

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH, SURREY. *December 15, 1908.*

MY DEAR KARL PEARSON, All you say in favour of Miss Elderton I am *fully* prepared to believe from my much less but still not inadequate knowledge of her. She most certainly ought to be retained if possible, as the far future working of the Laboratory will be much more hopeful if she continues in it.

My feelings about the Laboratory remain the same that they were two years ago when we had so much correspondence and I drew up a Codicil to my will to provide amply for its permanent establishment after my death and to pay for a professorship. I can't undertake to die soon in order to hurry on the endowment, but I have not the slightest desire to do otherwise than continue the present £500 a year so long as I live. I would *increase* it, by say £50, rather than reduce it, if it were clearly advisable to do so. It is worth considering whether Miss Elderton's position in the Laboratory might be altered, by hereafter calling her Secretary, and on the next occasion abolishing the Research Scholarship altogether. It would not do to promote her over Heron, but hereafter when his term terminates it might easily be done. Possibly you may think that the two duties of Secretary and Research Fellow might be worked simultaneously, but if so, it must be clear which of the two is the responsible head, and I do not see my way here. Anyhow on the next vacancy the promotion could easily be made. I am most sorry about the cruel lumbago. Affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *December 15, 1908.*

MY DEAR FRANCIS GALTON, Your letter gave me *great* pleasure this morning. We do not need more money, and above all things we want you to live to see the work you have set going reach more general acknowledgment. But what, I think, the younger workers, who really have worked hard and toiled forward against a good deal of outside (and even inside*) discouragement need is the knowledge that you really care for their work, and I think your letter really helps in that. You hardly realise how much they think of almost anything *you* do or say! Among the fourteen workers in the Biometric and Eugenics Laboratories at present we have five women and their work is equal at the very least to that of the men. I have to treat them as in every way the equals of the men. They are women who in many cases have taken higher academic honours than the men and who are intellectually their peers. They were a little tried therefore when your name appeared on the Committee of the Anti-suffrage Society! I refer to this merely to show that what you think and do *does* produce effect in the Laboratory, and therefore the knowledge that you really care for their work helps us all round. I think that your approval accordingly counts for a great deal more than you realise. I know Miss Elderton is very keen on the work and wants to devote all her energies to it, but I am sure the feeling that *you* think she is doing good work weighs as much as or more than any opinion of mine. I ventured to tell her that she was indispensable and that there was no immediate fear for the life of the Laboratory. I can trust you to bear this in mind if anything should happen to me.

I have not forgotten your problem, but I wanted to have another talk with Heron over it, before I returned the sheet. Could you not write a note on it for *Biometrika*? It would be quite easy to get a table calculated for you. Bulloch came in to-day with 30 pedigrees of hermaphrodite families. One noteworthy point has come out in collecting this material—a disproportionate number of hermaphrodites, perhaps 25 p.c., are *twins*. This is a very noteworthy point indeed and deserves special investigation. I have heard of hermaphrodites in sheep; were these twins? Always affectionately, K. P.

Please excuse this handwriting, I am writing on my back.

* P.S. Only last week a lecturer in the College read a paper "On the influence of Heredity on Conduct," which consisted chiefly of abuse of the Eugenics Laboratory work and workers.

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH. *December 22, 1908.*

MY DEAR KARL PEARSON, This is little more than a sincere Xmas greeting to you and yours. May that cruel lumbago keep its fangs off you. It is sometimes consoling to think of greater suffering than one's own, so imagine the feelings of the Chinaman who, humbly visiting his great superior on whom all his hope of advancement lay, when about to make his kow-tow was suddenly smitten with lumbago!

I have written both to Miss Elderton and to Heron, saying nice things. The latter has sent me the calculated values for the little formula; I have tried unsuccessfully to put my point in a "Note" as clearly as desirable, so that matter must stand over for the present. I will try again later. I see your lectures at the Royal Institution on Albinism are announced. Sir Trevor Lawrence (Pres. of the Horticultural), a great grower of orchids, has his home near here. He has much to say about an albino orchid of his, but I am so weak in botanical nomenclature that I am not at all sure whether I understood rightly what he told me. If you care for more, sufficiently to frame questions, I could easily get answers from him.

Lady Phillimore near Henley on Thames, the wife of the Judge, showed me a breed which she thought unique (as I understood) of white *ducks* in a pool in her grounds.

I must not trouble you with more than to beg you to give my heartiest Xmas greetings to Mrs Pearson and your children. Ever affectionately yours, FRANCIS GALTON.

HAMPSTEAD. Christmas Eve, *December 24, 1908.*

MY DEAR FRANCIS GALTON, I saw Heron yesterday. He has delayed his journey northward in order to work now, and take a few days off at the beginning of next term. The University of St Andrews has asked him to give four lectures, and I thought he had better do it and spread the light there, as Macdonell has done at Aberdeen. He seemed to appreciate your kind letter very much. We arranged a course of Lectures at University College of which I send the rough draft. I think it ought to do well. We tried to get the subject into 5 or 6 but had to give up the idea. Please comment on it. Did you hear whether the white ducks at Henley were true albinos with *red* reflex in their eyes?

The *Treasury of Human Inheritance* progresses, and I think it ought to be out by January. The great difficulty is to get all the material into the same "format." Each man makes his pedigrees, his notes and his bibliography in a different way. But after the first number appears we shall have a more concrete form for future contributors to work by. You take for example "Deaf-Mutism" or "Tuberculosis," and nobody so far has made a bibliography of papers dealing with heredity in these subjects. All sorts of pedigrees have been coming in, and I think when the first few parts are out, we shall have a constant flow. The heredity inquiry is everywhere in the air now.

I hope this cold turn will not be too bitter for you. I am much better, but still tender in the back, and I can't get up or down easily. I must say I like for working purposes a good high temperature. With the best wishes for the New Year for both Miss Biggs and yourself,

I am, Yours affectionately, KARL PEARSON.

Mrs Weldon has been working for more than a fortnight in the Laboratory over the mice skins. It is a big business, but we shall get it through some day.

About your problem in correlated variables, I think you are correct if A, B, C, D, \dots which are causes of X are not correlated among themselves, for the reduction of variability σ is then indicated by a standard-deviation

$$= \sigma \sqrt{1 - r_1^2 - r_2^2 - r_3^2 - \dots}$$

But if they are correlated, I am less certain about your view. For example for two causes 2 and 3 we have

$$\sigma \sqrt{\frac{1 - r_{12}^2 - r_{23}^2 - r_{31}^2 + 2r_{12}r_{23}r_{31}}{1 - r_{23}^2}},$$

and r_{23} contributes to this reduction by the term $2r_{12}r_{23}r_{31}$, as well as by $-r_{23}^2$. Thus I don't feel quite clear about your view when the causes are correlated together.

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH. *December 30, 1908.*

MY DEAR KARL PEARSON, A sharp attack of asthma which has departed this morning as suddenly as it came on sent me to bed with three warm bottles, unfit to do anything but sleep. So excuse delay in answering.

The programme of lectures seems excellently devised, being good in itself and bringing out the subjects of which the lecturers can speak with authority. Hereafter one wishes for lectures on some such subjects as "Effects of small social changes in promoting the birth-rate of capable or

of incapable citizens." But only an historian could do that and the Eugenics Laboratory is hardly the place for it. I have no comment other than complete acquiescence with your programme.

Miss Elderton comes here for a week-end on January 30th (I think), so I shall hear many details from her as to what is going on. I am glad that your lumbago, which you have borne so heroically*, is better, though maybe this cold snap of weather has been an enemy to you. Seasonable weather!! Stuff and nonsense—Give me the temperature of an incubator!

I can't think "Germinal Vitality" worth serious consideration. It would require much evidence from horticulturists and breeders to make it at all probable. *His* evidence is *very* lax.

I am very glad that St Andrews has asked Heron and that he will lecture. One of the professors there, Stanley Butler (of physics and mathematics), is a nephew of my Wife's and writes me to-day a letter practically about my book but evidently not forgetful of Eugenics. The white ducks of Lady Phillimore had *not* red eyes so far as I noticed. *Later*. I had intended after getting through arrears of writing, to send a revised statement of my problem, but find myself too tired, so must postpone. Ever affectionately, FRANCIS GALTON.

(15) *Events and Correspondence of 1909*. In the pressure of work upon me during the years 1905–1909 I had scarcely noted the changes taking place in Francis Galton; they were gradual, and so much of the old fire and suggestiveness remained that I did not fully realise how he was failing, though the failure was far more rapid on the physical than the mental side. Re-reading the letters that passed between us in the year 1909, it now seems to me clear that he passed another milestone on the decurrent highway of old age in his 87th year. The only published writings of Galton that I can find for this year are the following:

(i) A brief Introductory Note to the *Treasury of Human Inheritance*. The letters of this year will indicate how keen was Galton's interest in this work. It was designed on a comprehensive scale, and was intended to provide data for the measurement of all phases of human heredity by pedigrees indicating the transmission of ability, mental superiority and defect, physical and pathological characters in stirps. It has now, 1930, reached its third large quarto volume, but the cost of the photographic and pedigree plates and the need of funds to pay contributors have sadly hampered its progress. Occupation could be found in this direction for at least half-a-dozen thoroughly trained workers, but while endowments are always forthcoming for the maintenance of the unsound, there is so far little enthusiasm for building up our knowledge of why the unsound come into existence†. The idea of the *Treasury* was not Galton's, but it met with his full sympathy, and the early costs of publication were defrayed from his grant to the University of London. His prefatory note runs thus:

"The Inheritance of Qualities in Families lies at the basis of the Science of Eugenics, and though much is known about it a much fuller inquiry is urgently needed than has hitherto been possible. Goodness and badness of physique, constitution and abilities are distributed in similar proportions among individuals in successive generations, but the chain-work of hereditary influences through which this is effected has been most inadequately recorded. The facts of Family

* Fortunately Galton was not present to *hear* his future biographer's language!

† Honourable exception must be made of the Committee for Medical Research, which has by its grants enabled the Galton Laboratory to carry forward the section of the *Treasury* dealing with the inheritance of eye-defects.

Inheritance, being unregistered, fall readily into oblivion as generations pass by, and an enormous amount of valuable experience is thereby irrevocably lost. The object of the *Treasury* is to remedy, as far as lies in its power, this deplorable waste of opportunity.

"If the *Treasury* prospers, as is hoped and expected, a vast amount of information will gradually be collected by its means, in a form suitable for analysis, that will enable more exact conclusions to be hereafter drawn and more emphatic advice to be given than is now possible.

"In conclusion I may perhaps be permitted to express my own sincere gratification that the Eugenics Laboratory has already become so well equipped and conditioned as to undertake the publication of this large and important serial." FRANCIS GALTON.

(ii) A "Foreword" to the first issue of the *Eugenics Review*, which appeared in this year, and in which, as the offspring of the Eugenics Education Society, the Hon. President took great interest. Galton stated the aims of the *Review* in the following sentences :

"Its general purpose is, as stated in the Prospectus, to give expression to the Eugenic movement and to place Eugenic thought, where possible, on a strictly scientific basis....

"The EUGENICS REVIEW emphatically disclaims rivalry in any form with the more technical publications issued from time to time from the Eugenics Laboratory of the University of London now located at University College. On the contrary, it proposes to supplement them. There are two sorts of workers in every department of knowledge—those who establish a firm foundation, and those who build upon the foundation so established. The foundation of Eugenics is, in some measure, laid by applying a mathematico-statistical treatment to large collections of facts, and this, like engineering deep down in boggy soil, affords little evidence of its bulk and importance. The superstructure requires for its success the co-operation of many minds of a somewhat different order, filled with imagination and enthusiasm ; it does not require technical knowledge as to the nature of the foundation work. So a navigator, in order to find his position at sea, is dependent on the Tables calculated for him and printed in the Nautical Almanac or elsewhere. But he may safely use these Tables without having acquaintance with the methods by which they were constructed...The field is very wide and varied. To those who carefully explore it the direct conflict of Eugenics with some of the social customs of the day will be unexpectedly revealed, while its complete harmony with other social customs will be as unexpectedly made clear." *The Eugenics Review*, Vol. 1, pp. 1-2, April 1909.

Galton did not foresee that one of the troubles of the remainder of his life would be that the one sort of workers would bitterly attack the other. The members of the Council of the Eugenics Education Society and its journal from the very outset became the harshest critics of the youthful Eugenics Laboratory. No publication of the latter from the day the Society was founded to the present has met with aught but unfavourable reception from that quarter. And this conduct not only rendered much Eugenic investigation still-born, but vexed endlessly the founder not only of the Laboratory but of the Society. Galton did not see that a group of persons of widely diverging views, especially on such topics as sex-problems, several of whom had very highly strung temperaments and little if any real scientific training, might ultimately do small good either to Eugenics as a science or to Eugenics as a creed. As Director of the Eugenics Laboratory I was in a difficult position, and I felt it wise to stand aloof from the Society. I knew that the help I needed and was seeking from the medical profession would hardly be accorded if I were associated with certain then prominent members of the Society. Further I felt morally sure that sooner or later our very different ways of approaching eugenic problems would lead to a divergence of opinion, which would have been harmful inside the Society. My staff consented to give the Society a

couple of lectures, but I asked its Council the sole favour of leaving us alone, as we were quite ready to leave them. Not till certain members of its Council, not content with asserting the futility of the actuarial or statistical method of attacking eugenic problems, began to hint that we were wasting Galton's gift to the University did it appear to me necessary to make any reply to such ill-informed criticism*. But there is little doubt that the endeavour to make Eugenics a science in the academic sense—to build up a special technique for it and fix in a vaguely circumscribed field a defined area for cultivation—was much hampered by the action of successive officers† and members of the Eugenics Education Society. It is conceivable that Galton's attempt to appoint for the Laboratory and the Society separate spheres of action as indicated in the "Foreword" just cited did on the whole more harm than good; nobody likes to be told, however true it may be, that he is incapable—without training—of doing the higher type of work. Be this as it may, Galton in the last two years of his life was—to use a mild word—saddened by the attitude of certain members of the Eugenics Education Society. I recognised myself that the staff of the Laboratory had laboured hard and done good work. I knew that neither they nor myself were biased in one way or the other in such problems as those of the relative effect of inheritance and of environment, of the influence of parental alcoholism on the health and mentality of school-children, of the inheritance or non-inheritance of the tuberculous diathesis, or of mental defect and insanity. We simply desired to reach the truth by applying appropriate scientific methods to such data as were available. The only prejudice permitted in the laboratory was the distrust of all preconceived opinions and the doubt of statements based merely on impressions. Once, however, we had ascertained the conclusions flowing from our data we were not prepared to surrender them because they clashed with the largely sentimental notions of those who had not closely studied these problems. I knew Francis Galton was with us in these points, but I think our opponents were less aware of it, nor to this day have they realised that he was so doubtful of the manner in which the Eugenics Education Society was being conducted, that in December 1910 when he asked my advice, a word from me—not spoken—would have led to his retirement from the Society‡. It is necessary to make these remarks or the letters of 1909–1910 would be unintelligible.

(iii) A preface to W. Palin and Ethel M. Elderton's *Primer of Statistics*. This little book was written to carry out Francis Galton's conception of a series of "object lessons" in elementary statistics as shadowed forth in the

* When, many years after Galton's death, we had at last saved enough from the scant publishing funds of the Laboratory to venture on a journal—*Annals of Eugenics*—in which to issue our researches, we were virtually accused by an official of the Society in its *Eugenics Review* of having neglected this duty far too long!

† One President of the Society recently organised a petition of its members to the governing body of another department of the University requesting that they should institute a second professorship of Eugenics!

‡ See my remarks on influencing the judgment of men of genius even when they are old on pp. 408 and 412 of this volume.

Oxford Herbert Spencer Lecture*. For further details of its history the reader must consult Galton's letters of this year. The preface runs:

"In my 'Herbert Spencer' lecture of 1907 before the University of Oxford, I expressed a belief that the elementary ideas on which the modern system of statistics depends, that the quality of the results to which it leads, and that the meaning of the uncouth words used in its description, admitted of much simpler explanation than usual. I sketched out a possible course of lectures to be accompanied with certain simple sortings, with object lessons and with diagrams. Finally, I expressed the hope that some competent teacher would elaborate a course of instruction on these lines. I entertain a strong belief that such a course would be of great service to those who are interested in statistics, but who, from want of mathematical aptitude and special study, are unable to comprehend the results arrived at, even as regards their own subjects. It is, for example, a great hindrance to have no knowledge of what is meant by 'correlation.'

"I learnt with much pleasure that two very competent persons were disposed to undertake the task—namely, Mr W. Palin Elderton, well known as a highly instructed actuary, and his sister, Miss Ethel M. Elderton, who holds the post of Research Scholar in the Eugenics Laboratory of the University of London (now located in University College), and who is a thoroughly experienced worker in the modern methods.

"This primer is the result. It goes forth on its important errand of familiarising educated persons with the most recent developments of the new school of statistics, and, I beg to be allowed to add, with my heartiest good wishes for its success."

September, 1909.

(iv) Galton was much interested in the course of this year in the asserted Deterioration of the British Race, and in the Report of the Commission on that subject. The problem was essentially a statistical one, but the evidence given before the Commission was largely that of witnesses without any statistical sense, who gave merely their opinions and impressions based too often on narrowly local or inadequately transitory observations†. Above all other problems Galton had selected that of the segregation of the mentally defective as a field in which something might be achieved at once. He was roused especially by any appeal to an individual case as confuting a statistical average. Such an appeal drew from him a letter to *The Times* of June 18th in this year:

Sir,—A specious inference was drawn yesterday, in a speech by Lord Halsbury at the luncheon given to Lieutenant Shackleton by the Royal Societies Club. He said (I quote from your report) that: "in view of what Mr Shackleton had gone through it was impossible to believe in the supposed deterioration of the British race." But exceptional performances do not contradict the supposition in question. It is not that deterioration is so general that men of remarkably fine physique have ceased to exist—for they do, thank God—but that the bulk of the community is deteriorating, which it is, judging from results of inquiries into the teeth, hearing, eyesight and malformations of children in Board Schools, and from the apparently continuous increase of insanity and feeble-mindedness. Again the popularity of athletic sports proves little, for it is one thing to acclaim successful athletes, which any mob of weaklings can do,—as at a cricket match,—it is quite another thing to be an athlete oneself.

42, RUTLAND GATE, S.W. *June 16.*

FRANCIS GALTON.

* See p. 317 *et seq.* above. The little book has done extraordinarily well and has passed through several editions.

† I feel bound to quote again here Galton's splendid aphorism of 1879 (see Vol. II, p. 297 above): "General impressions are never to be trusted. Unfortunately when they are of long standing they become fixed rules of life, and assume a prescriptive right not to be questioned. Consequently those who are not accustomed to original inquiry entertain a hatred and a horror of statistics. They cannot endure the idea of submitting their sacred impressions to cold-blooded verification."

This common error, which might be termed statistically—giving a new sense to the Latin phrase—the *ex uno disce omnes* fallacy, seems peculiarly characteristic of ageing statesmen. I can hardly attribute it to mental deterioration with age, but rather to their ever waxing appreciation of the calibre of the minds to which they chiefly appeal*.

In order to break a lance for the segregation of the mentally defective Galton wrote a brief essay entitled "Segregation" which was published in a small book: *The Problem of the Feeble-Minded. An Abstract of the Report of the Royal Commission on the Care and Control of the Feeble-Minded* †. It was planned by the Cambridge Eugenists and had besides Galton's essay an introduction by Sir Edward Fry.

Galton considers that the Royal Commission attacked a eugenic problem of the first order of magnitude with thoroughness and remarkable success, and that the evidence before them emphasised the view that the annual output of mentally defective children admits of being largely diminished in future generations at a slight cost by the policy of segregation. He estimates that slightly under one per cent. of the population belongs to the class which includes the mad, the idiotic and the feeble-minded. On this estimate 300,000 persons might roughly be supposed to fall into the category in England and Wales. Galton says that they fall "little short of a million"; I do not understand how he has reached this result. I believe, however, that if we could form a census of all those who have *at any time in the course of their life* been certified we should reach a higher percentage than Galton's 1 in 118. In addition to those who have once been certified, there are many in the wealthier classes of the community, who are tended without certification in their own homes, as any medical man of large practice can bear witness to. The problem of the insane is not a matter personal only to their relatives, it is a question of the highest national importance. The Commissioners in Lunacy ought to be instructed to keep a *General Register of the Insane*, open to any inquirers under due restrictions, the first of which should be evidence that they belonged to or sought to be connected with the stock inquired about. If *A* and *B* are tending to pass from friendship to a closer relationship, it ought to be possible for them to ascertain—what in many cases is screened from them by their elders—whether one or both come of insane stock. No one can fully appreciate the urgency of a General Register of the Insane, who has not seen close at hand the terrible affliction of a wife, when her husband develops a hitherto screened familial insanity and when she realises that her children may, one or more, be stricken down with it in later years. Until such a register is organised and has

* I may be permitted perhaps to cite another illustration of this *ex uno disce omnes* fallacy: In a lecture dealing with mental growth I had cited data to show that on the average the prime of quickness of mind, as judged by mental reactions, occurred about 28 years in males and then slowly but steadily declined. My statement, of course in a distorted form, was duly reported in the press. At a public dinner a few days later, a well-known statesman, ageing but at present active, denied the truth of my statement on the grounds that his own—an exceedingly spry and inventive—mentality had grown brisker with the years!

† Messrs P. S. King & Son, 123 pp. This little book is now unfortunately out of print.

been running for at least a generation, it is not possible to obtain anything but the roughest, and this probably a minimum, estimate of the mental disease in the country, and of the number of persons in whom it is hereditary. Galton, citing the Royal Commissioners, assumes that 66,000 of the feeble-minded are not provided for, and that from the eugenic point of view these form the most dangerous sub-class of the mentally defective. I would venture to suggest that those who have familial insanity of a kind which is not chronic, but permits of return to home and mate, may be equally dangerous*.

Writing of the feeble-minded Galton continues :

“The persons in question are naturally incapable of standing alone. If protected and supervised they may lead harmless, and even useful, lives and do something towards earning their living. But when unprotected and cast upon the world, they go to the bad. They do so, not necessarily through vicious propensities, but from the absence of will-power to resist temptations; and quickly sink into the pauper and criminal classes. The women commonly become prostitutes. The feeble-minded, as distinguished from the idiots, are an exceptionally fecund class, mostly of illegitimate children, and a terrible proportion of their offspring are born mentally deficient. A decorous family life among their children is obviously impossible; the conditions of their nurture prevent it. Some of the issue of the feeble-minded are wholly mad or imbecile and find their way to asylums; others are merely feeble-minded and drift into bad ways as their parents did before them; in others, again, the evil is latent, but may break out in a subsequent generation. So the mischief goes on increasingly, and, judging from the growth of insanity, a considerable part of the population has already become bearers of germs of degeneracy.

* * * * *

“Almost all the evidence printed in the report points unmistakably to segregation for life as the only means of preventing feeble-minded girls from doing great harm to the community. They propagate children freely, as already mentioned, who, whether they be as little, less, or more, mentally endowed than themselves, are in all cases subject to most undesirable conditions of nurture.”

Galton then refers to the voluntary homes for feeble-minded girls, and the question of whether they are really happy in them. At that date compulsory detention was not allowed, and accordingly, if a girl was discontented she could leave the home, and one could not really assert that happiness *with* this freedom was a valid ground for believing in an equal happiness when she could not escape. I pointed this out in a letter to Galton (see our p. 373), but he seemed to think that he had evidence for their happiness even under compulsion in the many institutions and labour-colonies where now

“they live happily and feel as if at home, and where they remain for many years. Unfortunately, as yet, no power exists for their compulsory detention. The inmates are taken out, it may be, by their not wise relatives, or they want a change and leave of their own accord. Anyhow, when they quit the shelter of the institution, they usually go to the bad, and after a time very often apply to be again taken in, with an actual or a forthcoming baby.

* It is not moral insensibility, but ignorance, which is too often at the root of the evil. I can recall the case of a young man who had as bad a pedigree of familial insanity as can be well met with, and had actually himself been certified. He consulted the Director of the Eugenics Laboratory on his proposed marriage, and confidently believed that if he begot children when he was not insane, he would not place them under the slightest risk of hereditary insanity.

"Feeble-mindedness is of many grades. In a large institution, the inmates, whether men or women, can be graded and be much more easily supervised than in small ones, and be occupied in work, greatly to their own happiness, or in play, according to their several capacities. As regards cost of maintenance, some few of the feeble-minded may wholly or nearly pay for their keep by their work; almost all of them can do something towards the expenses. The cost of maintenance per head, all included, does not necessarily exceed £25 a year. What the average cost of each uncared-for, feeble-minded person may now be can only be guessed, but in work-house and prison maintenance, in thefts, destruction and food, it may be safely reckoned to far exceed that sum."

I cannot believe that the argument from "happiness" is a useful one. How is "happiness" to be defined? Is it what *we* hold to be the state of happiness for another, or the state which that other holds to be for his own happiness? Is it to be the happiness of the moment, or the average happiness over a period of years? The fact that occasionally—probably in conditions of suppressed impulse—certain feeble-minded girls have attacked their matrons or even visiting Commissioners, seems to me to indicate that we must advocate segregation not on the ground of "happiness" for each feeble-minded individual but, as Galton puts it, on the ground that it will be a eugenic victory over ills of long standing, hitherto scarcely noticed, but forming a "very serious and growing danger to our national efficiency."

"Every high form of civilisation brings evils in its train, eating like cancer into the constitution of the people, and surely leading to their gradual deterioration and ultimate ruin, unless they are boldly withstood in good time. The propagation of mental deficiency is one of these evils and the report shows that it is now ripe to be dealt with."

This is the last formal essay which Galton wrote; the urgent plea of national efficiency united for a common end in their last years the two men who had fought for and against Darwin's theory of natural selection (see p. 122 above).

Such are all the public actions with regard to Eugenics that I can credit Galton with in this year*. But his letters show how constantly during the six months of ill-health at the beginning of this year his thoughts turned to Eugenics, his laboratory and popular propagandism.

* Of work not concerned with Eugenics all I can recall is the paper on "Sequestered Church Property": see Vol. II, pp. 410-11. I may also note that the Eugenics Education Society reprinted in this year in a little volume entitled *Essays in Eugenics*, seven of Galton's lectures and papers, namely the Huxley Lecture, the papers in the Sociological Society's journal, the Herbert Spencer Lecture and the paper on Local Associations. It is a very serviceable little volume for propaganda work. In the preface Galton says that the progress of Eugenics in the last few years is such that its practice is not a mere Utopian vision; the influential power behind Eugenics is Public Opinion, and it is amply strong enough for the purpose when fully aroused.

"It is above all things needful for the successful progress of Eugenics that its advocates should move discreetly and claim no more efficacy on its behalf than the future will confirm; otherwise a reaction will be invited. A great deal of investigation is still needed to show the limit of practical Eugenics, yet enough has been already determined to justify large efforts to instruct the public in an authoritative way, as to the results hitherto obtained by sound reasoning applied to the undoubted facts of social experience."

Galton to the end inculcated safe, but slow and continuous advance, educating, but never hustling Public Opinion.

*Correspondence of 1909.*7, WELL ROAD, HAMPSTEAD, N.W. *Jan. 3, 1909.*

MY DEAR FRANCIS GALTON, I had intended to write a line sending every best wish of the New Year to Miss Biggs and yourself, but letters don't get written when they are of the type which one writes for pleasure! I have just got the last bit of copy of the next issue of *Biometrika* to press. It will be rather a fighting number I fear; but it runs from opsonins to cocks' combs and tadpoles' blood-corpuscles and so ought to be of general interest. I enclose the first forty pages of the memoir on Vision to be published in the Eugenics Laboratory series. I fear you will find it dull reading, but it means nearly a year's work on Miss Barrington's part. She insists on my adding my name to hers, but she has done the real "grind" of it, and I am only responsible for the direction of the work and more or less putting it into form. I think it opens up almost virgin soil, and ought to attract some notice. Your suggestion as to apparently small causes affecting the fertility of populations would no doubt form an excellent topic for an essay, but it would demand a long period of careful collection and investigation. One instance I can cite for you. Before the passing of the Factory Acts children were a valuable commodity in Bradford. Their parents are said to have nurtured them well and taken great care of them; they strove to have a good supply, because they were a source of revenue. Since the passing of the Acts, a child hardly contributes to the family income before he starts his own establishment. He does not repay his cost of nurture. The result has been that mechanical checks to conception and abortion are rife in Bradford; there is a general decline in the birth-rate, and the child is looked upon as a burden.

I am planning a great change in my work of the next half year which may possibly come off. I have asked for a holiday for six months, on the grounds: (i) that I have been feeling inert and below par, and (ii) that the arrears of research work are so great, that nothing can get finished. I have not had a real holiday since my marriage tour, eighteen years ago, and, I think, the College may be willing to permit it now, for the grant for the Biometric Laboratory from the Drapers' Company expires this year, and it is desirable to have a good show of completed research work with a view to its renewal. If my request be granted I shall have no elementary teaching of any kind. I shall be a "half-timer" at College, spending my afternoons with the research students and with them only, while I devote my mornings to polishing off arrears of work, so that in the summer I can take a complete holiday. I hope this will be a restorative. But as one gets older the tissues don't seem to respond to rest in the old way. I now seem to understand better why so many men give up research work for attending committees at 50. Even retire and sell their working tools like Huxley!

Still I am going to look upon my six months as a restorative to pristine vigour—until at least I have shown it won't work. Affectionately, KARL PEARSON.

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH. *Jan. 8, 1909.*

MY DEAR KARL PEARSON, The probability of your receiving a half-year's remission will be grateful news to all your friends, for you are by now dangerously over-worked, I feel sure. What a solid piece of work that is on the Inheritance of Vision. It bears on its face the mark of a full year's labour. You did not ask me to return the paper so I do not. I shall be eager for a postcard to tell me that the half-year's relaxation is fixed. Pray send one when it is so. Yesterday, Charles Galton Darwin, the mathematical son of Sir George, lunched and spent some hours with me. His fate will be decided in June, just about the date of the Darwin Centenary. If he gets the Senior Wranglership—the last that can be got—it will be delightful. He is very bright and capable looking, but too modest to be bothered with questions about his chances, which, as I hear from many quarters, are good but not certain.

Your instance of the Bradford birth-rate being affected through an Act of Parliament is very instructive. From time to time other more or less similar instances will be noted, especially as to the effect of changes in purely social usages.

I am just living on, capable of very little useful work, but very comfortable, and having everything to be grateful for that can reasonably be expected now that the winter fogs are ceasing. Ever affectionately yours, FRANCIS GALTON.

HAMPSTEAD. *January 9, 1909.*

MY DEAR FRANCIS GALTON, Yes, I have got my leave and for six months I am to be a half-timer! In July and August I shall try to take an absolute holiday. I shall devote all my mornings to clearing off arrears and afternoons to the higher lectures and research folk. If I keep away from my students in the mornings I shall probably be able to work off arrears. The difficulty will be if my substitutes fail to get a grip on the students or break down with 'flu, which is always rampant this term.

There have been several friendly notices of the forthcoming *Treasury*. We have difficulty in settling whether to bind the plates into the parts, put them loose or make a pocket to hold them. What do you think? Some users will want to compare all the plates dealing with the same characteristic, and of course these may be Plates III, XX and LXI.

I am sorry to hear you feel less active, but does not the winter always teach us that our ancestors back in some grade or other hibernated? My first lecture at the Royal Institution is to preach the doctrine that the white man may be descended from a manlike dark-skinned ancestor—say a *Pithecus satanas*—but not the negro from a manlike *white* ancestor.

Affectionately, K. P.

I suppose you will be at the Cambridge Darwin Commemoration? In some respects I should like to have gone, but it is too much a glorification of what is not Darwinism to please me*!

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH. *January 12, 1909.*

MY DEAR KARL PEARSON, I am so glad that the half-time arrangement is settled. You ask suggestions about the plates for the *Treasury*. A number of loose pages is objectionable, but could you not have them all in a paper wrapper which should itself go into a pocket in the cover? Could you conveniently instruct the proper person to send me a copy *here*?

Good luck to your *Pithecus satanas* lecture! I see that Taylor is about to give a course of lectures at Hampstead which, judging from his prospectus, may contain new and interesting points.

I have been bothered by letters in the *Times* about my share in Identification by Finger-Prints and have sent a reply. This morning I had a note "The Editor of *The Times* hopes to publish at an early date the communication kindly sent him," so I suppose that other letters have been received and that he will dispose of them all at once. I don't by any means acknowledge the justice of what my adversaries say.

This change of weather suits me well and I have got out a good deal both yesterday and to-day. Ever affectionately, FRANCIS GALTON.

* Neither Francis Galton nor I attended the celebration, nor did we find ourselves able to contribute to the memorial volume.

The time, perhaps, has arrived when it is permitted to record an anecdote of what occurred at a meeting of the organising committee of which Adam Sedgwick and Bateson were members. It was suggested that I should be asked to contribute a paper to the memorial volume. Bateson said that, if I were asked he would have nothing more to do with the Committee or the volume. Sedgwick said: "Are you the Pope?" and the incident ended in laughter, with the compromise that I should be asked to write on a definite topic—which did not permit of my breaking a lance for the threatened stronghold of Darwinism. A few lines from a letter of Thiselton-Dyer to Galton dated March 29, 1909, may, perhaps, be quoted here:

"You have done exactly the same thing that Darwin did. He gave a working hypothesis of the production of a species. You have succeeded [with the theory of Regression], where Herbert Spencer and everyone else have conspicuously failed, in showing how structures are got rid of when they become superfluous. But incidentally you have enormously enhanced the inevitableness and potency of Natural Selection. I have long wanted to say all this, so pray forgive this long letter. There is a sorry reaction against Natural Selection at the moment. The Darwin family seem to me to have practically thrown over their father's theory. But I verily believe that you have set it firmly on its feet again."

I do not think the "Darwin family" ever consciously threw over their father's theory, but they certainly did not perceive how the novelties they fostered tended to a "sorry reaction."

THE GALTON EUGENICS LABORATORY, UNIVERSITY COLLEGE. *January 23, 1909.*

MY DEAR FRANCIS GALTON, I have been approached by the Provost to know whether you would not take the chair at the first Eugenics Lecture on February 23. I need hardly say that it would give me very great pleasure if it were possible for you to do so. *But* I would on no account urge this on you, if it would in any way involve a risk in the travelling up to Town and the possibility of damp or cold here. You must give this its due weight, and I shall fully understand your decision.

Of other points there is little to record. I hope shortly to send you the remaining proofs of Miss Barrington's memoir and Part I of the *Treasury*, but the Press moves but slowly. I gave my first lecture at the Royal Institution on Albinism in Man last Tuesday, my chief point being that the manlike ancestor of man had a darkly pigmented skin. The evidence shows that no blacks are ever thrown from a white, but copper and white with yellow or red hair come as variants from jet black negroes. I think I have got a real point, but the audience while ready to accept a pithecoïd ancestry were not prepared for a negroid! My second lecture is on Tuesday.

Yesterday I heard Wallace on Darwinism. The Royal Institution was packed to the roof. Wallace was quite audible, but not very original and lacking in the vivacity needful to keep his audience alive. *But* it really was worth hearing him. He gave examples of 20 individuals to show variation and to *prove* that two organs of the same individual were *not* correlated!! But he made a strong attack on progress by mutation, and used one very good argument, namely that from mimicry, which I had not heard before. He said that a beetle exactly like a wasp could have reached the wasp condition by gradual approximation to open wings and colouration, but it could by no conceivable jump suddenly become a wasp in all external appearance. I think the argument was valid and a strong one.

A white man married an albino negress, the offspring were two *mulattoes*. What can we make of that as far as Mendelism is concerned? It seems to me a very curious state of affairs, and it means that the black colour was latent in the albino negress and blended in her offspring.

Ever yours affectionately, KARL PEARSON.

I thought the enclosed might show you that correlation is going to be a real tool in Astronomy.

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH. *January 25, 1909.*

MY DEAR KARL PEARSON, You know well how willingly I would have done what the Provost suggests, but my infirmities put it wholly out of the question. *It would be dangerous* for me to attempt the task. Moreover, as a much less important matter, my deafness shuts me out from presiding. Please convey all this to the Provost and beg him to excuse me.

I was eager to hear more about your Royal Institution lecture, of which the only printed account I had seen, viz. in the *Graphic*, was worthless. But Mrs Gotto, who has just been here on a week-end visit, assured me that she had heard it was excellent.

The mimicry argument, on which Wallace laid stress, is in the air. Butler I think started it, and a man, of whose wife I know something, Professor Walker, a cytologist of Liverpool, sent me the MS. of a forthcoming book of his; he lays great stress on it.

The white man marrying an albino and producing two *mulattoes*, is paralleled by Sir Trevor Lawrence's experience with albino orchids: they rarely if ever produce albino offspring. They have colour *latent* in them.

Thank you for the astronomical paper. I have as yet only glanced through it, but am delighted to find that two different samples of stars give the same result.

I have very recently lost a dear brother-in-law, Arthur Butler; also the widow of my cousin Sir Douglas Galton. The elder of her two daughters lives near here and I heard of her mother's gradual sinking, from senile gangrene of a foot, which I suppose poisons the system with septic matter.

Thank—what? or whom?—the days are lengthening, and hope is in the air! I trust your comparative rest is acting as favourably as you could wish. In a little more than a month I shall be moving on, possibly to the New Forest for another month before venturing to London.

Ever affectionately yours, FRANCIS GALTON.

I wonder if you happened to see a column of mine based on Schuster's work, about Sequestrated Church Property? The *Daily Mail* ordered a Reporter to interview me, who

learning at Rutland Gate that I was here, asked for instructions and was ordered to Dorking by the Manager. He had to walk 2 miles each way on a bitter evening and all for a paragraph. What hustlers Editors are!

7, WELL ROAD, HAMPSTEAD, N.W. *February 4, 1909.*

MY DEAR FRANCIS GALTON, I wrote to Hartog, the University Registrar, asking him to get Heron reappointed for a third final year, and Miss Elderton's scholarship also extended and raised to £—. I told him that you had been consulted on the point, and that you generally approved. It might be well for you to write a line to him to show that we have talked over the proposal. I have had a good deal of worry and delay over the *Treasury of Human Inheritance*. It is a gigantic task. I think the disease pedigrees alone run to thousands, mostly in out of the way journals and dissertations, not accessible in England. But I hope the experience of this first part will make the others easier, and get the contributors running smoothly in definite grooves. I had simply no idea of the amount of material that really exists nor of what this work may do to bring it to a focus!

Another point has been troubling me which I want to write to you about. Mrs Gotto has asked for Miss Elderton's and Heron's lectures for publication. I hope she will not think me churlish in feeling compelled to refuse. This refusal arises from more than one cause. Miss Elderton gave material and some results of work which is not yet finished, and which it is our duty to finish and publish in a form rather more academic than the publications of the Society. Heron not only gave work which he hopes shortly to publish in the Galton Laboratory *Memoirs*, but I gave him free run of my diagrams, some of which relate to work in progress, and of which it would not do to anticipate the publication. Neither had at the time thought of publication but only of interesting the Society in *work in progress*. I think you will see that it is not churlish, but practically desirable not to anticipate full publication.

Affectionately, K. PEARSON.

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH. *February 6, 1909.*

MY DEAR KARL PEARSON, I have written to Hartog about Heron and Miss Elderton adding that I suppose he will hardly think it necessary to summon a Committee, but that if he does I am too infirm to attend it.

The *Treasury* will give great trouble to you, but you will, I hope, be able to divert a yet larger part of the office work to it. (I wonder if among the thousands of disease pedigrees you have included the important one given by Bedford Price, pp. 110-111 of the *Report on the Feeble-Minded...*, Vol. 1?) It is as you say, a gigantic work, especially at the outset. How I wish I could help; but I cannot, my working powers are now so small.

It will never do to allow the Eugenics Education Society to anticipate and utilise the Eugenics Laboratory publications. I will write to Mrs Gotto about it. I have written a brief send-off to their forthcoming Review, in which I emphatically insist upon the difference between the work of the two classes of publication, that they are *supplementary*, and in no sense rivals. The Laboratory gives the foundation, the Society the superstructure.

We leave here towards the end of the month; as at present arranged for Lyndhurst in the New Forest, but I will write further.

I have got drawn into a publication about the Feeble-Minded, in which there are to be two collaborators, one being Sir E. Fry; if that falls through I retract also. In the meantime I have got all 8 vols. of the Report—a mighty mass of letterpress. Would it be acceptable and useful to the Library of the Eugenics Lab. if I sent it there when done with?

I hope your "half-time" gives a sensible amount of relief.

Ever affectionately yours, FRANCIS GALTON.

HAMPSTEAD. *February 7, 1909.*

MY DEAR FRANCIS GALTON, Thank you most heartily for your very sympathetic letter. I agree so wholly with what you say—there is need for the purely scientific research, and for propaganda. I feel that the former demands two essentials: we have got to convince not only

London University but the other universities (i) that Eugenics is a Science and that our research work is of the highest type and as reliable and sober as any piece of physiological or chemical work, (ii) that we are running no hobby and have no end in view but the truth. If these things can be carried out we shall have founded a science to which statesmen and social reformers can appeal for marshalled facts. If our youthful efforts were mixed up in any way with the work of Havelock Ellis, Slaughter or Saleeby, we should kill all chance of founding Eugenics as an academic discipline. Please don't think I am narrow, or that I do not admit that these men have done or may do good work. All I say is that I could not get the help we are getting from the medical profession, from pathologists or physiologists, if we were supposed to be specially linked up with these names. Rightly or wrongly it would kill Eugenics as an academic study. All I want is to stand apart doing our scientific work, not in any way hostile to the Eugenics Education Society, giving it any facts we can or an occasional lecture, but not being specially linked to it in any manner. For this reason I am rather sorry that D. has gone on to its Council, because it makes a link, which I think it is better for Laboratory and Society not to forge—it will hamper the freedom of both. My policy, however, with my young people is to show them my own standpoint, but in no way to control their action. Unofficially and privately I shall always be ready to aid the Society. Yours affectionately, KARL PEARSON.

I think we have a copy of the Feeble-Minded Report, but it is needless to say that we shall hail your gift if we have not. I know that Miss Barrington has been at work on the pedigrees in it.

I am in a state of most irrepressible excitement! I believe I am on the track of a far-reaching clue, namely the effect of presence or absence of *internal* pigment, especially that of the brain centres in mammals. I think it is going to explain why deaf-mutism, imbecility and albinism occur in the same stocks. Don't reveal my secrets! But I believe the ordinary albino *has* internal pigment; the imbecile lacks at one or more brain centres internal, but he does not lack external pigment, and the deaf-mute lacks pigment in the membrane of the perilymph chamber, the "retina" so to speak of the ear. The imbecile deaf-mute albino, *who spins like a waltzing mouse*, lacks pigment everywhere. The waltzing mouse is a partial albino. The partial albino cat with blue eye and white coat is a deaf-mute. The wall-eyed horse tends to "spin." The perishing of the internal pigments of the brain leads to senile insanity. Most of us lose only our external pigment with age. Everything fits in and it ought to give a grand connected theory of degeneracy. Of course it may all prove a dream! On Friday night there was an autopsy on an albino and much may turn on it, if the internal pigments are shown to be there. Mott is examining the pigmented centres in the brains of imbeciles and deaf-mutes for me. Of course my hypotheses may all collapse, but so far it seems to be the first connected theory of why imbecility, albinism and deaf-mutism run in the same stocks. I expected that imbeciles might "spin," and I find from inquiry that the "spinning imbecile" is a known type. There is an American at Colney Hatch, Mott tells me, who continually spins like a whirling Dervish. I shall put that down, if my theory works out as akin to Hamilton's prediction of the "conical points" of the wave surface! Don't laugh at me too heartily!

7, WELL ROAD, HAMPSTEAD, N.W. *February* 10, 1909.

MY DEAR FRANCIS GALTON, Your *Foreword* is most kindly and all we could possibly want. I saw Mrs Gotto to-day and tried to explain to her that our position was one of sympathy but independent action. We must not make ourselves in any way intimately associated with propagandism. The medical men are coming in and giving us splendid material for the *Treasury*, often confidential and personal histories. But Saleeby and others on the Eugenics Education Society's Council are red rags to the medical bull, and if it were thought we were linked up with them we should be left severely alone. I think it a very great thing to have won even partial confidence from a portion of the medical world, and if we can keep it and extend it, we shall have really done a great stroke in forwarding the scientific side of Eugenics. I have mentioned all this because I believe Mrs Gotto thinks me unreasonable, but we should only hamper each other's movements, and to make Eugenics an academic study and get the medical world to aid us will be one definite piece of work done on one side of the movement, and as you say this sort of work can be a foundation for the other. Yours affectionately, K. PEARSON.

MEADOW COTTAGE, BROCKHAM GREEN, BETCHWORTH. *February 20, 1909.*

MY DEAR KARL PEARSON, Can you give me a line of guidance as to the value of Miss Mary Dendy's data on Feeble-Minded Children, of which she sent you copies? (She fears they were not satisfactory.) My reason is that I have corresponded with her and she estimates that, for every F.M. her institution takes in, two F.M.'s are prevented from coming into existence. I asked for the grounds of this estimate and she writes offering to send masses of original or of copied data, which I do not want. My object in writing to you is merely to learn in a *general way* whether her grasp of statistics seems to you to be fairly good, or otherwise? I was much struck with the goodness of her evidence.

All this arises out of a forthcoming little book from Cambridge, about which the Horace Darwins and the Whethams are keen. Its purpose is to give a short account of the contents of the Blue Book. They have persuaded Sir Edward Fry to write a short (and excellent) preface, and me to write a short paper also, which I have done, calling it "Segregation." The weakest points in this are want of good evidence for the great *average fecundity* of the F.M. women, and for the *happiness* of the segregates in labour-colonies, etc. It was as to the former of these that I wrote to Miss M. Dendy, and I have suggested that she might be asked to contribute also as to the latter. I am sorry to bore you with all this rigmarole.

We leave here on this day week, Saturday 26, for the Crown Hotel, Lyndhurst, where I have taken rooms for a week certain, with power of staying on. How lovely this weather is!

Affectionately yours, FRANCIS GALTON.

UNIVERSITY COLLEGE, LONDON, W.C. *February 21, 1909.*

MY DEAR FRANCIS GALTON, We have in the Laboratory eight or nine MS. volumes covering the records of nearly 1000 feeble-minded children provided for us by Miss Dendy but copied at our expense. We have only partially analysed these, and we did not go steadily at them because we had our doubts as to whether in the cases of relatives no entry meant in all cases that the relatives were sound, or that it was not really known whether they were sound or not. An examination of our data for Birmingham and Manchester showed such very different percentages of alcoholism and insanity in the F.M. stocks, that it did not seem feasible to advance farther without more certainty of the method of examination and record. Miss Dendy was *most* kind, and, of all the people working at the feeble-minded that I have come across, the most business-like in her record and her talk. *But* in a long personal interview which Miss Elderton and I had with her, we did not feel confident that the categories "sound" and "nothing known" had been really kept apart. In few cases had the inquirer gone beyond the mother and investigated the weight to be given to her answers. We could not press the point further, because Miss Dendy rather resented our cross-examination as a charge on her own credibility. I did not feel that her data were untrustworthy, but I did not feel confident enough about the point mentioned to undertake heavy work on them, while we had better material unreduced. I believe that as far as the size of fraternity of feeble-minded goes, the results are *quite* trustworthy and I have used them, but I should use them with regard to heredity somewhat cautiously.

The next point we come to is exceedingly difficult. You may take it as certain that the feeble-minded stocks are very prolific. But the feeble-minded girl or woman is not generally selected as a wife. She is seduced and often bears illegitimate child after child in one or other workhouse. You will find a good deal of evidence for this in the Report. Often she becomes a prostitute and loses her power of bearing children. I do not think that in any of these degenerate cases, the actual degenerates are so socially dangerous as the degenerate-bearing stocks, which are generally most fertile. A great many epileptics are, however, married and appear to bear largely feeble-minded, albinotic and insane, as well as epileptic children. I should certainly think Miss Dendy was correct, however, in saying that to segregate a feeble-minded girl is to save society from one or two feeble-minded, or more accurately degenerate, children. I have heard from more than one woman who works among the feeble-minded, that at certain ages and times they cannot be allowed out for five minutes without offering themselves to the first man they meet. You have in their cases the imperial passion unrestrained. Does not this answer your second question? Given such a dominant impulse, and prevent its fulfilment by segregation, how can the segregated be "happy"? It will be like a caged and foodless animal

with plenty outside its cage. You can hold that the restraint is better than the freedom in its ultimate bearings on the happiness of the individual. But you will not get these purely animal and uncontrolled natures to regard it from this standpoint. The justification for the segregation must be, I fear, not their "happiness," as judged by themselves, but the profit to society at large. The madman might be "happier" seated in the market-place with a paper crown on his head, but we wisely segregate him for our own and not his happiness, even if he is quite harmless. I think this is the only line we can take with regard to the feeble-minded.

Mrs Hume Pinsent, one of the Feeble-Minded Commissioners (address Lordswood, Harborne, Nr Birmingham), has much evidence on the need for segregating the feeble-minded. She is a sister of Mr Justice Parker and a friend of mine. I feel sure, if you were to write on this point as a *definite* point, i.e. whether feeble-minded girls were responsible on an average for one or two degenerate children, she would reply to you with her wide experience. At the same time we were not able to do more with her inheritance data than I fear we can with Miss Dendy's, there was a lack of the requisite information, and especially of a distinction between "known to be sound" and "no information."

I am rather anxious about the success of our first lecture on Tuesday. I do not in my MS., alas! seem to say effectively what I want to say. Always affectionately, KARL PEARSON.

MEADOW COTTAGE (on Saturday I shall be at the Crown Hotel, Lyndhurst).
February 24, 1909.

MY DEAR KARL PEARSON, G. K. Chesterton's paragraph is too grotesquely absurd to be worth noticing. His name and paragraph might however be kept in mind for a future "Dunciad," in which specimens of current nonsense might be quoted. I am most desirous to hear about your lecture and the audience. Ever affectionately, FRANCIS GALTON.

My only surviving brother* died yesterday; the result of an accident, practically.

7, WELL ROAD, HAMPSTEAD, N.W. February 24, 1909.

MY DEAR FRANCIS GALTON, I am so sorry to hear of your loss, which I know will mean another rending of the ties with the past. I appreciated your feelings towards the various members of your family so much better after reading the "Memories," and have very vividly in mind what you say of this brother.

There is another point I have been thinking about very much and I want Miss Biggs to second my endeavours. I wish so strongly you would have a bust made by a first-class man. Pictures are excellent but only one person can possess them, whereas a good bust means fairly easy economic multiplication in plaster. My thoughts have been turned to it recently because of Hope Pinker's present to me of Weldon's bust, and I have just purchased a cast of Montford's Darwin to match it in the Biometric Laboratory.

About the lecture there is I fear little to be said. The audience, about 57, was very attentive and I think quite earnest. But I made a mistake, I *read* and did not speak, so I only got about half through my material. My points were non-inheritance of acquired characters and so little permanent effect of nurture, small direct effect of nurture compared with nature, old maintenance of standard by relative death-rate, and our need to replace that by a selective birth-rate; but I did not properly get to the latter. I shall probably give a second lecture next time, and postpone Heron's for a week. I cannot say that I was satisfied with either my material or my treatment of it, but I am not "in fettle" just now.

Affectionately yours, KARL PEARSON.

CROWN HOTEL, LYNDHURST. March 1, 1909.

MY DEAR KARL PEARSON, There is much to read and write about, but I am hardly up to much just now. We motored here on (snowy) Saturday and I reached my limit of resistance; consequently I was tucked up in bed all yesterday, with happily perfect results, so that except for weakness I am quite at my normal again. These quarters are singularly comfortable and I expect to stay here for a month. What an issue of Eugenic work this past week! I was re-reading your Oxford lecture (*Mem.* in Table X, correct Female to Male in the 2nd or 3rd line) and had

* Erasmus Galton, aged 94.

received Miss Barrington's (and your) paper when I left. It will be read as soon as pressing arrears are worked off. The *Western Morning News* of Friday has just reached me. What an unusually sensible and forcible article! It shows that Eugenics is being taken seriously at last.

You may recollect that I told you of a clever *Punch* cartoon of the Lord and the Bull, which I failed to find again. Miss Burnand, half-sister of the caricaturist, has made it out for me, at last. It was by Du Maurier, and is in *Punch*, March 20, 1880. When you are in easy reach of a collection of *Punch's* volumes do look at it. It ought really to be utilised somehow, possibly by the Eugenics Education Society. I will suggest it to them. About the bust you suggest—is not a bust rather a "White Elephant"? Eva Biggs and I will talk it over. A small thing that could stand on a chimney piece with other things, seems better.

Thank you for your kind words about my brother, whose cremation took place on Friday, very quietly by his express wish and no mourning to be adopted by his relatives. So I do not write on black-edged paper. It is strange that a living human being should so quickly be reduced to four handfuls of ash, and that scattered over the soil of a garden. The whole thing has rather upset me, as is but natural. Affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD. *March 7, 1909.*

MY DEAR FRANCIS GALTON, I am so glad that at any rate you will consider the possibility of a bust. It has, from my small experience, seemed so sad that this sort of thing should be badly done after a man is dead, when it can be effectively done only when he is alive. Besides this, we have the (to me) all important point that a bust is capable of good reproduction at a moderate cost, if the initial cost be great indeed.

Punch, March 20, 1880, is within 10 feet of me, but we can't open the cupboard because the wall has settled and jammed the doors, and *Punch* from 1850 onwards is at present inaccessible, until a carpenter is forthcoming. I brought it from my Father's, but the weight was too much for the wall, and the result is as above! We will put up a copy in the Laboratory.

Now I want to ask you if you remember closely any more Darwins. Horace Darwin has a wen near the right ala of his nose. I had often noticed it and thought nothing of it. Yesterday on my bust of Darwin I noticed that there was a projection in the same position and see it is a wen! Then I find it also on the 1881 portrait of Darwin. Do you know if it occurs in George, Frank or Leonard, or any of the older generation? It is extraordinary how blind one is at times. I knew Horace's wen quite well and never realised it as a marked inheritance, until my eye caught it on the Montford bust, and I had verified it on Charles Darwin's portraits!

As to cremation, both my parents were by their special desire cremated. It seemed to me so far less repulsive than the ordinary earth burial, but the preliminary ordeal was very galling. The law assumes that you have probably poisoned your relative and proceeds to a system of cross-questioning attendants and nurses which may be most painful in the hands of an unsympathetic local officer or magistrate. Affectionately, K. P.

CROWN HOTEL, LYNDHURST. *March 8, 1909.*

MY DEAR KARL PEARSON, The chill caught motoring sent me fairly to bed, starvation, and doctor (a good one), but I am now in the drawing room again and convalescent. Otherwise I should have written to say how gratified I had been at the account sent me by Heron of the success of your last lecture. That 10% of the population are producers of half the next generation shows the possibility of promoting the well-being of the nation by concentrating attention on a comparatively few families. I rejoiced too at the slashing conclusions of the memoir on Hereditary Vision.

About the bust, it seems that the sculptor brother of Charles Furse lives within easy railway distance of here. Eva Biggs is making various inquiries before fixing anything.

Methuen has sent me a substantial cheque (£66) on account of my *Memories* up to the end of December, and the sale has proceeded since then and is proceeding—which will go towards paying for the bust. There are other funds also, similarly available. I have not been out of the house since I arrived here 9 days ago, but am convalescent now and look forward to seeing soon something of the pretty neighbourhood.

Heron wrote that you looked very *fit* at the time of your lecture. The overpowering weight of *Punch* is amusing. Ever affectionately, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *March 9, 1909.*

MY DEAR FRANCIS GALTON, I am extremely sorry you should have had this invalid time after your change, and rejoice that you are now able to come down again. The past fortnight has been very trying for one and all of us, and it is sad to find so many of one's young folk laid up. I have had two assistants down and many students—influenza as usual.

I heard Heron to-day and, though he was very nervous, he did quite well and held his audience—one of about 45 to 50. He has a good delivery and will, I feel sure, become a first-class lecturer. He did not grow monotonous, and he had plenty of material and resource. Perhaps he might reiterate his points, as he makes them, a little more; it always helps a general audience to be told beforehand what is about to be proved, and to be told afterwards that such and such a point has been proved. But this omission is general with young lecturers, who do not know the density of the average human, and it is capable of easy correction. I must not write more now. Affectionately yours, KARL PEARSON.

Hartog wrote to me about the Report for the year on the Eugenics Laboratory, saying that it ought if possible to be in this month. I have sent him some account of our work, suggesting that it should go to the Committee first. I have—I fear rather hurriedly—detailed what has been done, what is in the doing, and what possibly might be done as to staff, etc. I think when you come back to town, perhaps in May or so, it might be well to have a meeting of the Committee and discuss the future work, and if the Laboratory goes on, what line it should take.

CROWN HOTEL, LYNDBURST. *March 10, 1909.*

MY DEAR KARL PEARSON, I hope to be fit in May (latish) to take part in the proposed meeting of the Committee to discuss future work of the Eugenics Laboratory. I feel that its work depends so largely on yourself, that I shrink from suggesting anything. You, not I, know what is feasible, and I bear in mind that you want, and may ask for and get, a complete holiday for a year or so. Whatever under the circumstances commends itself to you as the proper course to lay down, I am practically certain to agree to, but I should make a hash if I endeavoured to do so myself. How far can Heron and Miss Elderton stand alone? With your support and supervision they do their work admirably, but without it I should fear errors in planning. There are so very few besides yourself competent to supervise, and you may begin to feel the onus of doing so too great for continuance. Tell me, please, exactly what you think about this. I am very glad that Heron's lecture pleased you, and that you think so highly of his powers and promise. Miss Elderton (with her brother) has just concluded and sent me a typed copy of the elementary book that I proposed should be written (in my Oxford lecture). I have seen some parts of it already, and must go through it to-morrow. Excuse more now.

Ever affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *March 18, 1909.*

MY DEAR FRANCIS GALTON, This is a line to say that Heron's second lecture went quite nicely. He discussed physical inheritance in man and dealt with attacks on your eye-colour data from the side of Davenport and Hurst, who assert that two true blue eyed parents always have blue eyed children. His audience was quite good and there were some new faces. My report on the Eugenics Laboratory was drawn up rather hastily, because Hartog said it must be in by February. Your kind letter as to the future of the Laboratory shall be replied to with a suggestion or two during the Easter vacation, so that you may have time to consider matters before the meeting in May.

Now as to the Eldertons' booklet. I have not yet seen it; it is something which they have done quite off their own bats, and I am very curious to read it. I think it would probably be quite an addition to our smaller format series and help that on, but I am not sure whether it would get the same sort of circulation that a well-known publisher would procure for it, as we spend very little on advertisement. We must consider that point. There is a stupidly hostile article on Eugenics in the *Nation*. I have got my *Punch* cupboard forced, and we are much pleased with the "Bull and the Earl." I think we must get an enlargement in sepia made for the Galton Laboratory, so don't give it away as a crest for X.

Did you get a copy of the *Treasury*, Parts I and II, last week? I should like to know if you would care for other copies, and also that you are not very disappointed with it.

Yours affectionately, KARL PEARSON.

CROWN HOTEL, LYNDBURST. *March 18, 1909.*

MY DEAR KARL PEARSON, Excuse pencil. The demon *lumbago* has planted beak and claws into my loins and sent me helplessly to bed. I have a good doctor and a skilful man-nurse, besides my niece and her maid. Also this hotel is most comfortable, so there is no cause for murmuring.

Hartog will fix some day for the Committee in the latter half of May that will fit in with other work. He is much pleased, as well he should be, with the work done under your supervision at the Eugenics Laboratory. What an immense amount of information, closely packed, there is in the *Treasury*! I congratulate you heartily upon it. Excuse more for I write under difficulty. I am curious to learn how you will arrange about the Laboratory during your holiday absence, which I trust will be both enjoyable and healthful. It is good news that Heron lectures so well and is so promising.

The "Bull and the Earl"—I suggested it for a vignette, if arrangement could be made, in the new *Review*. M. Crackanthorpe rose to the idea, but I don't know what will come of it. I wonder whether you noted a *most* Eugenic undertaking in last week's *Spectator*, signed by (Lady) Constance Grosvenor. I sent it—just in time—to M. Crackanthorpe for the *Review*. It is worth reading and digesting.

Ever affectionately but crippled now, FRANCIS GALTON.

HAMPSTEAD. *March 20, 1909.*

MY DEAR FRANCIS GALTON, I am indeed sorry to hear of the lumbago and I know by recent experience, how trying it is. The only point I know in its favour is that it goes as quickly and mysteriously as it comes! And I trust this will be your case. Curiously enough only a post or two earlier I heard from my chief craniological worker—Dr Crewdson Benington—that the fiend had seized him. I don't think you need anticipate that I shall be a long time away, probably I shall only try to get a complete summer holiday. I have got Dr Goring and two assistants coming on May 1st for a year to reduce the measurements made on the criminals in H.M. Prisons. It will be a gigantic piece of work as there are about 40 characters, physical, mental and moral, in more than 3000 criminals, and it ought to be the first real piece of criminal anthropology effectively reduced and discussed. The Treasury are paying for the assistants and granting Dr Goring a year to do his work in. This will keep me fairly closely at it, and it ought to throw light on many Eugenics questions. It is the first "semi-official" recognition of our statistical laboratory.

I am rather anxious to see what support the *Treasury* meets with. We have made a bigger venture than anything since *Biometrika* was started, and I don't know whether the medicals will rise to the occasion. Let me have a card to say how you get on.

Affectionately, KARL PEARSON.

CROWN HOTEL, LYNDBURST. *March 22, 1909.*

MY DEAR KARL PEARSON, The lumbago, after one week in bed, is "mysteriously disappearing." Allah be praised!!

I write now about the Eldertons' little elementary book, for the cost of publication of which I am responsible. It never occurred to me before, but the Eugenics Education Society are just the people to publish it. It is exactly in their way. They *have* published several essays and are about to republish mine (I received a letter this morning), and as the writing of the Eldertons' book was due to the suggestion in my Oxford lecture, it would come into their series of publications with aptness.

Thank you for all you tell me. We shall be turned out of this hotel about the end of March by a crowd of hunting men who make a practice of coming to the New Forest in April. Whether I then return to town, or stay out longer, depends much on the caprices of the mysterious lumbago. It is wonderful what capable and well educated young doctors one finds now in such small places as this. Ever affectionately yours, FRANCIS GALTON.

I am writing to Miss Elderton.

7, WELL ROAD, HAMPSTEAD, N.W. *March 25, 1909.*

MY DEAR FRANCIS GALTON, I have not yet seen the Eldertons' MS. but I suppose I shall eventually. I shall be quite ready to publish it as a Laboratory publication if that seems desirable to those concerned. I am not at all sure, however, that it would not be well to try it with a good publisher first of all. It would save the expense of publication and get a reasonable amount of notice from the Press and advertisement. I think Mr Elderton is a little frightened of the idea of the Eugenics Education Society. The Society, I think, is doing good work, but there are some names associated with it, that some people (probably without basis) fight shy of, and of course he has to be rather cautious that he does not link himself with anything that would affect his Office. Please remember I have no authority for this view, but it is a possible inference from what I found was the feeling about the Eugenics Education Society publication and I thought it might be worth suggesting as possible. You will no doubt consider the matter all round. As I said, I am ready to do anything in regard to publication.

You will be amused to see that you and I are "Moralstatistiker," whatever that may mean.

We go away to Great Missenden on Friday, April 2nd. I hope the lumbago is now quite mastered. Affectionately, KARL PEARSON.

I have sent in to the Royal a criticism of Darbishire's recent paper "An Experimental Investigation of the Influence of Ancestry," which I should like to have your views on when in type. I have also found out that while Mendelism gives—judged by *somatic* characters—a correlation of $\frac{1}{3}$, if we correlate *gametic* characters, this rises to $\frac{1}{2}$, so that it is the assertion that the hybrid shows the dominant character which makes the difference.

FOREST PARK HOTEL, BROCKENHURST, HANTS. *April 4, 1909.*

MY DEAR KARL PEARSON, I put off writing until we were safely established here, where we arrived yesterday and where two of my nearest relatives are coming to us for a few days. My five weeks in Lyndhurst have been those of an invalid, but I already feel the good from a change of air and am less pessimistic. You will be, I know, at Missenden, but your letter gave no more exact address, so fearing miscarriage I send mine round by Hampstead. You have duly impressed the *Medical Gazette* with the Eugenic microbe, I am glad to see. The proof sheets of the Education Society's *Review* have at last reached me. It seems on the whole creditable, but more definite work by them is needful, and will come in time. I am curious to learn what you think of the Eldertons' attempt. I hope you are all well placed at Missenden. This is a very nice and cheerful hotel. I have nothing to say that you would care to hear, having been in a sick chamber so long, and dependent on a man-nurse—a very good and quiet man, by the way. May invalidism long keep away from you and yours, is my hearty wish!

Ever affectionately yours, FRANCIS GALTON.

ICKENHAM, GREAT MISSENDEN, BUCKS. *April 6, 1909.*

MY DEAR FRANCIS GALTON, I was very glad to get your note this morning and hear that you had got into comfortable new quarters. I feel sure this springlike weather will do us all good. I ran eight miles on my cycle to-day—a great achievement for me now-a-days—and I do not feel the worse for it. Sedley Taylor of Trinity came in with a friend of ours to tea, and I had some Eugenics talk with him. One point he told me—namely that they had a portrait of you at Trinity—was news to me and good news. It is much that at Cambridge anything but Batesonism should be recognised. I have been hoping to get on with the Albino paper, but much old work has stopped the way. I had first to finish the two Mendel papers for the R.S. and then to write a rejoinder to the attack in the R.A. Society's *Monthly Notices*. Yesterday I got the Eldertons' book and read it through last night. I think it on the whole very good. One has got to remember that they have not 30 years of experience in lecturing behind them. There are many things I should myself have illustrated more copiously with diagrams and models, and I think the chapter on the probable error wants further illustration. This I have suggested to them. But take it all in all I think they have done a difficult thing creditably—better than I in the least anticipated. The right thing would have been in the old days one of Macmillan's Science primers, but I don't know whether they still issue them or anything like them. You will perhaps remember Clerk Maxwell's on "Matter and Motion" and Huxley's "Introductory

Primer"? This would be exactly the right "format" and express the extent and aim of the work. I think it should pay its own way and a good publisher would take it, especially if *you* wrote a few introductory lines.

I sent the last plates of the next part of the *Treasury* back yesterday, and the text is all ready but for a section—bibliography and introduction—on inheritance of the insane diathesis, which I can't get out of the man who has promised it.

I shall look forward with much curiosity to the *Eugenics Review*. It seems to me that at present there is so very much spade work to be done, and that we are apt to go astray if we merely discuss without the necessary groundwork of facts. I suggested to the Society that it should set about definite pieces of work in the way of collecting material, but I doubt if many of its members have the true scientific instinct. Mrs Gotto said she had two academic persons who wanted to do eugenics research work and asked for suggestions, and Heron naturally said "Why not send them to the Laboratory, we can always find work for them to do, and are endowed to do it." But Mrs Gotto seemed to think that they ought to work under the guidance of the Society. She also asked for copies of our schedules concerning family characters and diseases. These I was perfectly willing to provide her with, on condition that when filled in they were returned to the Laboratory. This did not, however, seem to be satisfactory to her. I think it is not possible for us to provide schedules, which are issued for definite pieces of work in progress in the Laboratory, to be used independently by other investigators. This has actually been done in America and Scotland, persons borrowing our schedules on the excuse that they were going to return them to us, and then using them to collect facts for themselves! It does not seem quite playing the game! One enthusiastic American got 100 of my schedules, which he said he would return to me. He used them for his own purposes and never a one did I see again! My own view is that our work lies in different fields and is supplementary, but I fear the Eugenics Education Society will not accept this view, and does not fully grasp that we can be quite sympathetic, but must do our own work in the narrower field of statistical research.

I have a nice letter from Lady Welby, but asking a question rather beyond me—why a grouping of three is more frequent than other groupings. I fear she would think me flippant if I suggested she should make a frequency curve of the odds at the principal race-meetings during the year, to see if there is a basis for her statement! Have you noticed the effect of political feeling between England and Germany? Formerly I could always get a civil answer if I wrote to a German librarian or scientific man asking a question. Now I rarely get any answer at all! Affectionately, KARL PEARSON.

FOREST PARK HOTEL, BROCKENHURST, HANTS. *April 8, 1909.*

(I stay here until April 17 and then move on.)

MY DEAR KARL PEARSON, You tell me much of interest. You will, of course, gently snub Mrs Gotto, if she goes too far in her zeal. I have expressed as emphatically as I can, in the "Foreword" to the forthcoming Eugenics Education Society's *Review* (due a week hence), my view of the distinctive character of the work of her Society. It can only popularise, and work upon foundations laboriously laid elsewhere.

I am glad you approve on the whole of the Eldertons' primer.

I have written to Miss Elderton by this post, suggesting that the consideration of *where* to publish should be deferred till after this number of the *Review* has appeared, which will indicate its probable future *status*, and may advertise the books it is intended by them to issue, among which, if their proposed programme is carried out, the primer might suitably be included and get advertised where likely purchasers would see it.

I am very glad that you feel your strong physical powers returning. About the portrait in the College Hall of Trinity, Cambridge; shortly after they elected me to an Hon. Fellowship, two College Dons saw Furse's portrait of me at my house and suggested that I should offer a copy of it to the College. This was done, and I must say that it is an effective addition to their collection, both because the picture is a good one and because its background is somewhat light coloured and shows up very well against the dark oak panelling.

I congratulate you on the forwardness of the next part of the *Treasury*.

Lady Welby is irrepressible in her inquiries. She was with us at Lyndhurst for more than a week, full of mystical *triads*, etc. and much else. Socially she is very charming and good.

What painful evidence you give of the modern tone of German feelings towards us innocents! Wishing you all possible Easter pleasure and success.

Ever affectionately, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *April 22, 1909.*

MY DEAR KARL PEARSON, It has been a grief to me, that my doctor who has just been, will not allow me to go to the Royal Society this afternoon to hear your paper. We came up yesterday, a day earlier than intended, and stay in town till next Wednesday! I write this to Hampstead not being sure of your present address. Affectionately yours, FRANCIS GALTON.

It did me good to read your solid writing in *Biometrika* about the mulattoes, etc.

ICKENHAM, GREAT MISSENDEN, BUCKS. *April 22, 1909.*

MY DEAR FRANCIS GALTON, ...I have to thank you for a copy of the *Eugenics Review*. I heartily approve of the *Foreword* and your clear statement of the position of affairs. I think the review will stir people up and lead them to think about this all important matter. A good deal of the text is a little "thin," and some statements a bit misleading. For example, the penny-a-liner report of what Mr Gilbey said at the Police Court regarding the *deaf-mute* woman ought not to have been inserted without verification. The case, of which I have the full pedigree, is worse than appeared at the Police Court, but Mr Gilbey did not make the absurd statements attributed to him. He has been working so loyally to help the Eugenics Laboratory collect deaf-mute pedigrees, that I am sorry to see this stupid misstatement of one of the $\frac{1}{2}d.$ papers reprinted, and hope he will not suppose us in any way responsible. I think the Journal will be a success and do good work the nearer it approaches the standard set by the *Archiv für Rassenbiologie*, which I see noticed in their pages. But, of course, it would be hypercritical to expect that standard at first.

I am returning to town on Monday, and send this to 42, Rutland Gate, as I do not know your present address. I trust that you are well, and in a warm district. I have been renewing many sad memories of W. F. R. W.'s and my early excursions and his pond dredgings on this side of the Chilterns in the first autumn of his Oxford life. Affectionately, K. P.

42, RUTLAND GATE, S.W. *April 23, 1909.*

MY DEAR KARL PEARSON, You will probably get this about the same time as one I wrote yesterday. The Doctor was quite right; when the time of meeting approached I felt quite unfit. My circulation is playing tricks.

R. wrote me a long letter, not a word in it either about yourself or about *Biometrika*, but appealing for pecuniary help. Knowing that there must be some long story in the background I did not answer it, the more so as I do not see my way to do what he asks.

The *Eugenics Review* is rather feeble, but may mend and I think will do so. I wonder if you noticed Crackanthorpe's blunder about improving the sight of hawks by breeding! I have just come from a hawking district and am assured that hawks never breed in confinement, but are caught wild when young and trained afterwards, as elephants are. Thank you for what you tell me about Mr Gilbey. I shall see Mrs Gotto here this afternoon and will tell her. You speak of W. F. R. W.—how memories crowd upon us, unexpectedly. I do not leave here until Wednesday, if then, for I suspect the Doctor may be averse to the exertion of the change. Coming here tired me a good deal. I am most curious to read your paper of yesterday.

Ever affectionately, FRANCIS GALTON.

ICKENHAM, GREAT MISSENDEN, BUCKS. *April 24, 1909.*

MY DEAR FRANCIS GALTON, I enclose two notices which you might miss. You shall have copies of my R.S. papers as soon as I have them. I have only seen a single proof of each; they do not appear to send round copies as of old to the author. I hope to have in a few days my lecture on the "Groundwork of Eugenics" for you. I hope you won't judge it too severely, as it had to be done in the pressure of term time and I was in much haste. Still, I think it fills a gap in Eugenic literature. If you are in Town may I come and see you, to-day, Saturday, week? I won't stay long, but I should like to see you after the winter absence, if I may, and you are not feeling too overdone. Affectionately, K. P.

42, RUTLAND GATE, S.W. *April 26, 1909.*

MY DEAR KARL PEARSON, Yes, *do* come on Saturday. Tell me beforehand at what hour I may expect you? The doctor has forbidden my going into the country again just now, at which I feel much relieved, not feeling up to moving again so soon. All you say of what you have published and are about to publish of course interests me greatly.

Affectionately yours, FRANCIS GALTON.

I return the "cuttings" with many thanks.

7, WELL ROAD, HAMPSTEAD, N.W. *May 2, 1909.*

MY DEAR FRANCIS GALTON, I owe you a word of apology and Miss Biggs also. It was not till I got to the Station that I realised how late it was. You, I fear, must have found our talk very trying, but the time went so quickly that I was quite unconscious of how stupidly I was tiring you. You must put it down to your own power of not wearying others and forgive me; but if I come again I will keep my watch out! My heart was very full at seeing you so fixed to your chair, but ten minutes' talk showed me that you were really as active as ever and that consoled me. The wonderful part of life is that the problems are so manifold and as long as we retain our mental curiosity, there is no cessation to our activity or to the pleasure of life. I have felt this even in moments of physical disablement.

I have been thinking over the difficulty I saw was in your mind about the future, I hope the very distant future, of the Eugenics Laboratory. You must remember that at present the training in statistics does not lead to paid positions. It is beginning to, but the posts available are few and the best men who want to get on in life won't enter this field. But if your Foundation ever becomes a reality, there will be something for a strong man to look forward to, and this will act itself as an inducement. Also the time is coming when governmental and municipal work will demand men of the kind we are training. We are only a little bit (not very much) ahead of public needs. My strong view is that in a very few years there will be plenty of good men in this field. Now might it not be well to give the University a few years' grace, if the authorities thought fit to use it, before appointing a professor, after the endowment becomes actual? This would suffice to bring men into the field and save the University from the need of making an *immediate* appointment, if the right man were not forthcoming at once. Lecturers could be appointed for a year or two, and the Library extended and developed. For example, a period of five years fixed, in which the University would have time to look round, and until a professor was appointed 50% of the endowment might be used for continuing the Eugenics work by lectureships, etc., and 50% go towards a permanent endowment for publication and library funds. I believe that this period might never be used at all, or only some of it, but it would save the University from a compulsory appointment if the right man were not ripe for the work at the first opportunity. I feel so strongly that you have in this matter just met a great future need, that one would deprecate any first appointment which would not be an all-round success, or of appointing someone who would not be willing to make use of all the material and the connections which the Laboratory has now established. Given a few years' grace and the man will be forthcoming. In the last four or five years I have had at least two or three really strong men pass through my hands, but I could not frankly say: "Stick to statistics and throw up medicine or biology because there is some day a prize to be had." I feel sure, however, with a future, such men will naturally turn to Eugenics work. Only this last winter one of my American students said: "I wish I could go in for Eugenics, but my bread and butter lies in doing botanical work. I know that definite posts are there available." And that was precisely the case with Raymond Pearl, who has now got the control of an Agricultural State Breeding Station—he was far keener on man than on pigs and poultry, but the public yet has not realised that it needs breeding also! Well, if you will only make up your mind to stay with us a few more years this will right itself! There must be sooner rather than later a government statistical bureau, and this will demand trained statisticians. Once we have a flow of such men who mean to make statistics their profession in life, there will be ample material to select from. At present the biometrician is the man who by calling is medical, botanical or zoological, and he dare not devote all his enthusiasm and energy to our work. The powers that be are against him in this country.

Now I shall weary you as much with my letter as with my talk. The only further matter I have in hand would be this. There is some talk of Heron going to St Andrews as lecturer on statistics. I would rather see him in a government appointment, e.g. Scottish Education Office or something of that sort. But he knows the ropes so well now that it would be desirable to keep him—if this does not come off this year—until he is appointed. I should therefore suggest for the next year, i.e. from February, 1910, this sort of monetary arrangement:

Fellow:	£200
First Assistant:	£120
Second Assistant:	£ 80
Draughtsman:	£ 45
Petty Cash:	£ 25
	<u>£470</u>

This would leave only £30 for publication, but, I think, there is still a balance which may be added to this and leave us enough to get through the year's publication. The draughtsman's or rather "draughtswoman's" appointment is the new feature. I have been paying Miss Ryley 10/- for each pedigree plate for the *Treasury* and we ought to get about 60 to 70 ready on the material we have now collected in the year. The market price would be hardly less than 15/- or 20/- according to the amount of work and we should have a full control of her time and energy. The work is very beautifully done, as I think you will see from the engraved sheets, and I should think it worth while to retain her for at least a year. If the above meets with your approval I will suggest it for sanction to the Committee and the University. If you approve and still feel not able to attend a meeting in May, I could bring it forward and we might see what the Committee think. Affectionately, KARL PEARSON.

42, RUTLAND GATE, S.W. *May 4, 1909.*

MY DEAR KARL PEARSON, Your visit was a treat, and did not tire me. When you come next, which I hope will be soon, don't look at your watch at all! My leg gets better.

I quite agree with your views in all their detail about the future of the Eugenics Laboratory, but delayed writing until I could look at the copy of my Will to see whether or no the circumstances you have in view would make delay in filling up the post impossible. I think not, but have written for a copy of the clause in question, for you to see. If a codicil be thought advisable, it can be supplied. It might be desirable to add a phrase after the words referring to the Establishment of the Professorship "within five(?) years after my decease," but I will think further about it, and will write when I send you the copy, in about three days. It is hard to steer between too much rigidity and too much slackness.

About your test for acuteness of eyesight, why not simply wind the test card to and fro, until just readable, when viewed through an "isoscope*", which the subject adjusts to his focus. The absolute value of the distances for a normal eye in terms of the just-perceptible difference, to be determined once for all by the operator. The personal index, due to + or - magnification by the cornea, etc., to be determined by the distance between the lenses of the isoscope, when vision is clear, at some definite distance or distances. *How* to calculate it is another matter.

Ever affectionately yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *May 6, 1909.*

MY DEAR KARL PEARSON, Here is a copy of the paragraph in my Will concerning the future Professorship, which *might* be advantageously relaxed a little by a codicil. The codicil might state that the Professorship may be unfilled if the University so desire for a period not exceeding five years, its duties being carried on in the meantime in such way as the University may determine. Is that what you desire? Is there any other change or addition desirable? Very sorry to trouble you about this, but it is important.

Ever affectionately, FRANCIS GALTON.

I have £500 all ready for next year, to be paid to the University.

* See our Vol. II, p. 332.

7, WELL ROAD, HAMPSTEAD, N.W. *May* 7, 1909.

MY DEAR FRANCIS GALTON, Reading the section you have sent me it seems so thoroughly good that it appears almost a pity to modify it. At the same time there might be a difficulty supposing at any time—at starting or after a successful career—there was no immediately available man for the post. I have made inquiries and find that in France a University is not forced by the existence of an endowment to fill a chair unless there be some person suitable to hold it. Thus at the Paris "École des Langues orientales vivantes," it is a recognised principle that under circumstances of this kind a professorship may be held in suspense until a suitable man be found, the teaching being meanwhile conducted by a lecturer who has no claims to fill the chair unless he should prove himself suitable in the course of his work. I think this is a very good provision. I should, however, be inclined to limit the vacancy to a period not exceeding five (or even four) years. That is time enough to test a man or two, and for the University to look round. The lawyers would probably know quite easily how to word a codicil, if they consider the present section does not permit of the power required. What is needed is power to hold the professorship in suspense for any period not exceeding four or five years if some person suitable to hold it is not, in the opinion of the Senate, immediately available, and to carry on the work by lecturer or lecturers until a suitable man be found.

Your talk led me to thinking over possible men. It is rather difficult to do so, because the man who might be good now might be too old, or changed in aspirations and form of work, long before any appointment will be made. Besides this, I cannot plan a future contingent on the death of a friend, who is one of the few sympathisers with all the work in hand and without whom it would seem all stale and unprofitable. But I want you to remember that there are still men like Palin Elderton and Raymond Pearl, who are thoroughly keen, full of the vigour of youth and strenuous to any extent, and that there is no reason to fear they will not have successors.

Now to another point which may amuse and interest you. Some account of the Francis Galton Laboratory has got into the Chicago papers, I do not know how or by whom it may have been written. An American writes and says that he is a friend of the wealthiest man in B——, who is immensely interested in Eugenics, and has been experimenting on horses to measure the effect of sympathy on conception! All this seemed rather vague! But he continues that his friend wants to know if we want help in any way at the Laboratory! Of course I am going to write to him, and though nothing may come of it, I shall give ample details. Looking at the future, what I should suggest would be: (i) endowment for publication and education-work, (ii) the formation of a complete library of Eugenics, (iii) if he is inclined for a big thing, the building of an institute in which the future work of the Galton Professor and Laboratory can be carried on. Of course, nothing will probably come of it. These wealthy men are strange in their ways, and change their minds frequently. But if he seems to be keen and likely to do something, I shall, perhaps, ask you to write to him. Of course, one began to dream golden dreams of a Eugenics Institute, a hive of workers, under the control of your future professor—something like the Institut Solvay at Brussels—but I must not be hopeful on such a very slender basis! Affectionately, KARL PEARSON.

I return the Extract. I have just been looking at Bateson's book. I take the place of Weldon as the butt for his contempt. There is not the least recognition of the fact that almost every one of the dogmatic statements made by the author a few years back have now been quietly dropped!

42, RUTLAND GATE, S.W. *May* 12, 1909.

MY DEAR KARL PEARSON, Here is the draught codicil suggested by my lawyers, to whom besides writing on my own behalf, I enclosed your last letter to myself, as helping to make the position clear to them. About the "library," the addition of that word in the codicil as marked in pencil at the side of Clause 10, seems sufficient, but would you prefer more detail? I should mention that the endowment will be considerable. Allowing 10% for legacy duties, I reckon that its value will exceed fifty thousand pounds or, say, an income of £1500. But Chancellors of the Exchequer may make larger inroads than hitherto upon bequests. Excuse bad writing. It is upon my knees. Ever affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *May 13, 1909.*

MY DEAR FRANCIS GALTON, I think the codicil will achieve what you want. The University should provide and I have no doubt will provide rooms, etc. for your Professor, so that I think there is no need to provide for buildings of any kind. Looked at with the experience of the last few years before me, it seems to me that what your man will need is (i) a fairly ample expenditure on books and journals; there is an immense amount of literature coming out now which wants collecting—reports, journals, isolated monographs, etc., and (ii) an adequate publishing fund. If at any time the professorship were for a year or two vacant no better use could be made of any surplus, after paying for a trial lecturer, than *investing* it as a library or publication fund.

I think I told you a man wrote to me about a year ago and asked what he should do with £1000 he wished to leave in his will to Eugenics. I told him to leave it to the University of London for a fund for popular lectures and publications in Eugenics. I don't know whether he carried this out. To the American, who has recently written and asked what the Laboratory needs most, I have answered: Library and Publication funds. Now these may very likely not come off and then a free hand to the University in respect of *investing* unspent income for special funds of this kind would be of much value. A strong man (and your foundation will bring a strong man) wants freedom of this kind enormously. I know even in my own smaller way what the Drapers' Grant has been! I had not to think about how to get funds for a special bit of work, but had, within its limits, power to go and do a thing or get an instrument made without worrying over how it was to be paid for! It would have been an immense boon had I had it between 30 and 40, when one was in the prime of one's working powers, and had only a small private income.

You will see I have marked in pencil three points in the codicil. I think the word "extension" would indicate that you did not wish the work necessarily not to develop and grow during any interregnum. I have inserted the words "in the University," but these are only suggested on the assumption that you have them in view. If not, they would of course not be right. If not inserted, there might be claims on the University for aid in many ways—where you may have given aid. I think, perhaps, the word "initiated" might be introduced as helping to cover any or all work of the Eugenics Laboratory, which it might be considered worth preserving under altered conditions.

Miss Elderton gave quite a good lecture. She speaks with great clearness and is perfectly self-possessed. Her audience was about 45, and quite a good one in quality. Her lecture on Tuesday ought to be an interesting one as it will be the first attempt to give a quantitative comparison of Nature and Nurture.

I have got rather a heavy cold—the result of a chill on Sunday—but I have not yet been kept to the house. I did not go to the Royal last night, but we sent some exhibits from the Laboratory, which you would have been the one person to appreciate fully, and you, also, would not be there! Affectionately, KARL PEARSON.

You say nothing about yourself, but I hope the leg if not yet down is better.

42, RUTLAND GATE, S.W. *May 18, 1909.*

MY DEAR KARL PEARSON, Best congratulations on the Eugenics pamphlet. It is so *massive* as well as popular, and nothing could be better than the letterpress. The diagram of the square box with peas, intended to be clustered thickly towards one corner, does not, however, tell its own tale. In the other diagram some dotted lines are wanting in parts. It is a real starting point for popular Eugenics literature of a high class.

I have received this morning from my lawyers the codicil amended in accordance with your suggestions. They have done it uncommonly well. Affectionately yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *May 18, 1909.*

MY DEAR FRANCIS GALTON, Thank you very heartily for your kind letter as to the pamphlet. I hope it may do some good. The printing has been rather hurried because we wanted it out before the lectures came to an end. The plates were all made by simply taking photographs of the actual diagrams, models, etc. used in the lecture itself, to save the time and labour of redrawing or sketching. Thus they are rather crude and faulty. But this process,

which I had never ventured on before, has the merit of great rapidity. It did not, however, show up properly the red amid the yellow peas in the box diagram.

I am glad you have got the clause worded satisfactorily. I think it will be a safeguard but I hope it will be unnecessary and that the right man will be found when the time comes.

Miss Elderton gave a very good lecture to-day—I think *quite the best* of the series—but for some reason her audience was rather smaller. It was a pity as the material was very good and she lectured fluently for over an hour. Affectionately, KARL PEARSON.

THE GALTON EUGENICS LABORATORY, UNIVERSITY COLLEGE. *June 9, 1909.*

MY DEAR FRANCIS GALTON, I think the enclosed letters may interest and amuse you. To Letter I, I replied that we need aid most for (a) a publishing fund and (b) a library, and that if Mr H.'s views went beyond these lesser matters he could build an Institute for the Galton Laboratory! Letter II follows! Just think of those "old and crooked" mares forwarded to England and arriving in Gower Street! We should have to tether them in the quadrangle! I have written again endeavouring in a friendly way to show that the highest results are not to be obtained by any experiments on "old and crooked" mares! But some Americans are very weird, and a better man than myself might have made something out of Mr H. "the wealthiest man in B——"! Affectionately, K. P.

42, RUTLAND GATE, S.W. *June 11, 1909.*

MY DEAR KARL PEARSON, What fools this world contains!—even in the U.S. A man with the persuasiveness and moral standard of a dealer in horses or in works of art, might possibly succeed in diverting the coin to more promising Eugenic purposes than the effect of sympathy on the conception of mares, but *quere*.

I heard from Heron, that M— shied at the idea of publishing the little book by Miss Elderton and her brother. Of course I am prepared to contribute towards the cost of the publication, if on those terms only a good publisher would accept it.

Ever affectionately, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *June 15, 1909.*

MY DEAR FRANCIS GALTON, You will be glad to know that Messrs Adam & Charles Black have accepted the Eldertons' book at their own cost giving to the authors a 10% royalty on copies sold. I think these are as good terms as we could expect.

There is to be a meeting of the Galton Laboratory Committee to see the Report and if approved to forward it to the University Senate next week. I don't think it means more than sanctioning the Report Hartog sent to you. He wrote to me that there will be a vacancy on the Committee and asked me unofficially if I could suggest any member of the Senate to go on. He sent me the enclosed list and asked for suggestions. But I know nobody with a Eugenic bent. Do you? They all seem to me folk rather lacking in imagination. Gregory Foster would do quite well, but I don't know that he has any special knowledge in this direction.

I had two very different men to see the Laboratory yesterday. Dr Woodward, the President of the Carnegie Institute of Washington and Dr Chau-tao-Chen, First Secretary of the Chinese Finance Board. I suppose a sort of permanent Secretary of State for the Chinese Treasury. I got him to promise me some Chinese Skulls*!

Yours affectionately, KARL PEARSON.

I am so sorry about Charles Galton Darwin! Still he has done quite well and will no doubt get his fellowship. Will you write a brief introduction to the Eldertons' booklet? What shall we call it—A Primer of Biometry or of Statistics or what?

42, RUTLAND GATE, S.W. *June 16, 1909.*

MY DEAR KARL PEARSON, Of the names in the Senate suitable for our Committee, A. C. Headlam, Principal of King's College, seems one of the most suitable. He has given help in various ways—lecture room, etc.—to the Eugenics Education Society. Roscoe is very

* He thought the skulls of decapitated criminals might be available, but even these never reached me.

sympathetic, I think, and very businesslike, as you know. Sir Philip Magnus is also worth considering, besides Gregory Foster. I am prepared to pay in the £500 for next year's cost of the Laboratory as soon as the Committee has met and done what it ought to do!

You have done unexpectedly well about the Eldertons' little book. If, as you suggest, it is called a Primer, it ought to be of *Biometry and Eugenics**. The two latter words are important.

I shall be very happy to write a few words of introduction, quoting from my lecture at Oxford (the Indian Anarchist's Foundation), on the need of such a book.

With you, I am very sorry at C. G. Darwin's ill fortune; but I take it, he knows quite enough maths. to make them his effective *servant* in future work, and I hope he will do so.

How amusing about the Chinaman! You will not I suppose extract pecuniary help through Dr Woodward. Ever affectionately yours, FRANCIS GALTON.

Please excuse bad writing. I am placed, on account of swelled legs, in an uncomfortable position.

Private. A letter came to me the day before yesterday from the Premier to the effect that I was to be knighted on the "approaching" King's birthday (i.e. on Nov. 9). A precious bad *knight* I should make now, with all my infirmities. Even seven years ago it required some engineering to get me on the back of an Egyptian *donkey*! and I have worsened steadily since †.

THE GALTON EUGENICS LABORATORY, UNIVERSITY COLLEGE. *June 17, 1909.*

MY DEAR FRANCIS GALTON, I am so pleased that among all the humbug of this world—and science is no more free from it than politics—the work you have done should be officially recognised. My Chinaman and Dr Woodward were only a trifle previous in their use of "Sir Galton" last Monday. My memory of poetry is very misty, but has not Wordsworth a poem "Who is the perfect Knight"? Certainly I don't think it was the man who could mount his steed best.

Will you let me have your views on the Galton Laboratory Report, if you are unable to be present? Particularly as to how far you would wish us to proceed to the election of a new fellow in or before next February, or are content with the staff remaining at present as it is. Also what you think of appointing Miss Ryley at £45 a year to do the pedigree plates, provided we do not exceed our funds. Of course, if you feel able to come to the meeting, I need not trouble you to write. If there are any views you would like to have expressed, please send them to Hartog or to me that they may be read to the meeting. The Senate met yesterday and through an oversight I fear on my part in telling you *to write to College*, I did not get your letter till dinner time. Meanwhile the Senate had put Cyril Jackson, Chairman of the L.C.C. Education Committee, on the Galton Committee. I think this is really a good appointment. The L.C.C. Committee has lent us 10,000 schedules of London children and if we can get really into close touch with that body, we shall have the finest material accessible anywhere. Affectionately, KARL PEARSON.

If you are not at the Committee on June 25, may I come in after the meeting and talk over its doings with you? It would be about 4 or 4.30 to 5 o'clock.

7, WELL ROAD, HAMPSTEAD, N.W. *June 26, 1909.*

MY DEAR FRANCIS GALTON, There was a point the Principal of the University asked me, and which I forgot to mention to you yesterday. He said "Could you tell me whether Sir Francis Galton would object to the University seeking for further funds to increase the activity and possibilities of the Eugenics Laboratory?" I said that I would sound you on the matter but that I thought I knew your answer would be: That anything that helps forward the cause of Eugenics had your approval. I said to him that as far as I personally was concerned the points I should emphasise strongly would be: (i) that if any further aid should come to the

* (Or rather, "of Biometric and Eugenic Calculations." This would be the long title. F. G.) The little book was finally called: *A Primer of Statistics*.

† Another friend said to Galton: "Why they ought to have made you a K.C.B. years ago!" and he replied with a twinkle in his eye—it was on his morning "trundle"—"Well, I am a sort of K.C.B.—I am a Knight of the Chair of Bath."

Laboratory, it must remain, as long as I had any share in the work, the *Galton* Laboratory; (ii) that the provision should take directions which would give greater scope to the future Galton Professor and not in any way anticipate that foundation, e.g. establishment of a permanent publication fund, annual grant for purchase of books, and increase of staff or accommodation for workers. In fact I told him what I have told the Americans, that "any contributions would be gratefully received," but that this work was going so far as it lay in my power to be associated with your name. I don't know that the University will do much for us—they did not succeed in doing much when I set about building the observatories—but there is no reason why they should not try. The fact that they did ask for money to help forward the work would to that extent be a sign that "Eugenics" had been finally accepted as a part of a University's work. Will you let me have your views, possibly in a form I could unofficially communicate to the Principal of the University? Affectionately, KARL PEARSON.

7, WELL ROAD, HAMPSTEAD, N.W. *June 28, 1909.*

MY DEAR FRANCIS GALTON, Your letter was *admirable*, and I think will be helpful. The "accident" about the slip was that I forgot to put in a note about it! I want a few words to express the idea that since Darwin we no longer look upon a "race" or "nation" as fixed in type or character, but as always in a state of change towards the better or worse, and that the statesman who realises this and works for the future will be the one whom history, which is ever written "in the future," will commend. I have expressed myself very clumsily, but I want some words to this effect to sum up my lecture on the *Problem of Practical Eugenics*, and I thought perhaps you could give the paragraph a more apt phrasing.

Yours affectionately, KARL PEARSON.

42, RUTLAND GATE, S.W. *June 28, 1909.*

MY DEAR KARL PEARSON, It is grateful to me to hear from you that the University of London is so favourably disposed towards Eugenics as to consider the propriety of seeking aid to increase its utility. Such aid would be acceptable in the direction that has commended itself to you, namely to the establishment of a publication fund, an annual grant for purchase of books, and for an increase of workers together with accommodation for them. Would you kindly convey these views, together with any others of your own, unofficially to the Principal? I may add that I have just sent to Hartog the promised cheque of £500 for the maintenance of the Laboratory next year. Affectionately yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *June 29, 1909.*

MY DEAR KARL PEARSON, I wrote to Hartog to say that you and I were quite at one in respect to modifications in the *status* of the personnel of the Eugenics Laboratory (I forget the words I used, but they were to that effect) and explained to him that I was much too infirm to attend the Committee.

As regards the last paragraph in your Report, as we have got (thanks to you) satisfactory workers at the Eugenics Laboratory one cannot do better than give more permanence to their positions than at present. If the funds allow, by all means include Miss Ryley on the Staff. In fixing the future titles and emoluments of Heron, Miss Elderton and Miss Barrington, if you can get in a word to absolve us from granting pensions on retirement, it might be well. I have known much grievance created on the part of those who had "expectations" in other Societies and Offices. For my part, I think it will be much more satisfactory to rearrange the titles of our officials, as you propose. I wonder what those titles will be, out of "Secretary," "Librarian," "Editor," "Computer," and so forth. Miss Elderton should if possible have a title to herself, and not "Assistant..." All this is merely suggestion. You know the ropes so far better than I do, that I am sure to acquiesce in whatever proposal you may make as to these not unimportant details. Ever affectionately, FRANCIS GALTON.

NYSTUEN, PAYABLES, WOODCOTE, NEAR READING. *July 4, 1909.*

MY DEAR FRANCIS GALTON, In the hustle of getting away, I could not write to thank you for many things. I have adopted most of your re-wordings for my sentence which are clearly "betterments." I am very glad the Eugenics Laboratory arrangements are settled for another year from February. I feel that with the present staff we can do good work. The Laboratory

might achieve more with another personnel, but the new blood would want training afresh, and I fear facing anything extra at present. I feel very deeply the kindness with which you have fallen in with all my suggestions, and made it possible for me to work the Laboratory with a minimum of additional labour. As you know, I never can find the right words to express what I think or feel, but you will try and interpret the spirit under them.

What is producing the most unfortunate effect at the present time is the recent sneering attack of Bateson*. It is difficult to determine whether it is better to spend energy on replying to such criticisms or to leave them unregarded and go on with my own work. In the latter case the unthinking public assumes them to be valid and that no reply is possible. In the former, one wastes the energy that should be spent on permanent work on attacking a man whose whole position changes from year to year. For example, he used to assert that Albinism in man was a Mendelian unit character; now that with six years' work I have got some data and facts as to albinism, Bateson, knowing this, finds it "a case to which Mendelian rules do not apply." Controversy in such a case is impossible, it becomes wrangling.

The enclosed may interest you, if Heron has not sent it to you. We are here in our "wooden house" with much pleasure as to our environment and hopes for restfulness. The rooms give one a sense of space and light, and the furnishing is graceful and comfortable. The "stoeps" are pleasant and the green fields run up to us on every side. Our landlady, to judge by her books, must have a wide range of taste in French, German and scientific literature. I find Huxley's scientific (not popular) essays and Frank Balfour alongside George Meredith and Zola! She has been round the world (to judge from her photographs) and has qualified as a medical practitioner!

I hope your summer resort will be an equal success. If there be any chance of your being within motor distance, please let me know, for I might get to you, if the fatigue were too great for you to get here. Always affectionately, KARL PEARSON.

42, RUTLAND GATE, S.W. August 7, 1909.

MY DEAR KARL PEARSON, On Tuesday we go for two months to Fox Holm, Cobham, Surrey, and really there is now good hope of a belated summer. I am very wishful to know how you all are. For my part, I creak on, not unhappily but little usefully. However, I have small jobs on hand which interest me. One of these I shall want before long to consult you about. It is due to the proposal of Ploetz's society to give some sort of diploma to those who rank eugenically in the uppermost quarter of the population. I have long considered how some such scheme could be practically worked out, and am putting my ideas on paper. Ploetz (I strongly suspect on your initiative †) has asked me to accept the Hon. *Vice-Presidentship* of the Society. They have only five *Hon. Members*, among whom are Haeckel and Weismann. It is a great honour.

You may like to hear that, overpersuaded by you and by Miss Biggs, I have had my bust modelled by Sir George Frampton, R.A. Friends quite approve of it. It is to be cast in bronze and will be ready before Xmas. The various operations are tedious but are now in the hands of specialists. How carefully good artists work! It was a delight to watch his touch. The model was finished two days ago. I have got a very nice house. Fox Holm is between Byfleet and Cobham. It is just South of St George's Hill; 3 miles from Weybridge (via Byfleet), 2 miles from Cobham. I should indeed be grateful if you could come over to us some day. I am far too infirm to get about, without much care, or would find my way to you. We motor down on Tuesday. Possibly I may find motoring less fatiguing than hitherto. Two hours of it a few days ago was as much as I could bear. Ever affectionately yours, FRANCIS GALTON.

PAYABLES, WOODCOTE, NEAR READING. August 8, 1909.

MY DEAR FRANCIS GALTON, I was very glad to get your letter this morning, for I was beginning to fear that you might be ill, as I had no news direct or indirect. We have had several "ups" and not a few "downs," since the beginning of July. *Item*, My boy has got into College at Winchester, which we hardly expected and he is carrying off his honours nicely and is thoroughly enjoying his holiday. *Item*, I went to Oxford to give away the prizes at his school,

* See above, p. 288, and compare pp. 406-408.

† I knew nothing about the matter. K. P.

and found myself at the appointed time landed at Uffington in sight of the White Horse, having forgotten to change at Newbury, and only got to Oxford when the ceremony was all over! *Item*, I had to go up to see my Doctor; but he has made me feel distinctly better, granting me a sound heart, lungs and arteries, but a crippled digestive machinery. *Item*, I have nearly got a number of *Biometrika* ready, and am really getting forward with the albinos and other work. You will receive shortly two more Eugenics Laboratory Lectures and Part III of the *Treasury*. *Item*, I have had some unpleasant American experiences with the man who wanted to help the Laboratory. In my second letter I simply said that we could not approve his horse-breeding experiments, and that I regretted we could not send a man out to America to explain our projects, but that he could hear any particulars he wanted of the work of the Laboratory from Professor R. Pearl. That, I thought, was the end of the matter. However it appears he wrote to Pearl and was so pleased with his account, that according to his Father Confessor, the Baptist Minister, he determined to hand over his fortune to the Laboratory! Considering that I had written pretty frankly that I thought his ideas were folly, this was a sign of wisdom on his part! Now come his relatives on the scene and they, according to the Baptist Minister, have been writing the would-be Eugenist letters *in my name* to prove that I am insane! Really the Americans are a wonderful people and full of resource. I don't mind the two letters I have written being treated as public property; they concern only the purpose of the Laboratory and the foolish character of the American's breeding schemes, but it is a bit rough to have forgeries put out in one's name even in a foreign country. The whole thing, however, has its humorous side.

I think Ploetz is a sound man, and keen on Eugenics. I should not, however, allow his "International" Society to absorb yours as a branch, which he may suggest. I fancy he is working in the first place to accumulate material with regard to families.

I am so heartily glad about the bust and so grateful to Miss Biggs for seeing it through. I knew it ought to have been done, because it is idle to disguise the fact that there will be a need for it, and it is so feeble to get recognition only of this fact, when it is too late to get a true portrait. I am sure you will enjoy this weather, if your new quarters are at all airy. We have been taking two meals a day in the open air. I shall look you up on the map and certainly come over if cycle and train will work in. I have got three albino puppies born since we came down, so that now we have ten albino dogs. It is strange to see how motherhood has converted our fearful, shy little Pekinese into a furious little vixen. She sprang at a huge English sheepdog the other day and drove it right out of the croft, and she promptly nipped my fingers when I touched one of her pups. They have not opened their eyes yet, but to judge from their coats they are all albinos. I propose next to try a cross with a pug, the offspring should not be albinos, and then if we cross them, we might get a race of something approaching albino pugs. These Pekinese albinos are not as graceful as the normal Pekinese, and are very inert. Always yours affectionately, KARL PEARSON.

FOX HOLM, COBHAM, SURREY. *August 11, 1909.*

MY DEAR KARL PEARSON, This is mainly to report arrival at this pretty, small house, with lawn, gardens and acres of wood-land. Best congratulations on your boy's successful entrance into Winchester.

What strange people the Americans are! Don't get dragged into a law-suit there!!

About the bust, I was over careful about praising the work, which I did not see after Frampton's final handling in his studio. Miss Biggs did, and is enthusiastic about it, both as a likeness and as a work of Art. So that is well.

I hope the puppies' eyes are now open and that they are as red as you could desire. It is excellent news that your Doctor passes you as quite sound. Alas, I am *not*, and no better in essentials. It will be delightful to see the two additional lectures, and Part III of the *Treasury*.

Ever affectionately, FRANCIS GALTON.

PAYABLES, WOODCOTE, NEAR READING. *September 4, 1909.*

MY DEAR FRANCIS GALTON, I hope all is well with you, and that your quarters have fulfilled your hopes of them, and not proved too cold during this sunless month. I meant to write to you before, but I have been rather depressed and somewhat over-worked. I have been suffering from teeth troubles, not exactly toothache, which would be settled by one or two

losses, but a general sort of neuralgia in the jaw, which passes from one tooth to a second and hardly allows itself to get fixed. Then I have set myself too big a task with this albinism monograph. I cannot get it done, and have spent most of my vacation over the geographical chapter. I am still on the African section although Asia and Australasia have gone to press. It is reaching too large proportions already, and the Piebalds, Heredity and Statistics chapters are yet undone. I find on measuring up the map that Weybridge is beyond my cycling powers. I should like to induce a motoring neighbour to carry me across, but he has not given me a chance yet of leading him to an offer! He keeps us, however, alive with a flow of guests. Among the last were Professor Turner and his wife from Oxford. My bairns have learnt to cycle and I have gone short runs with them along the old Peppard lanes, but they will soon outride my distance. We had a very pleasant day in Winchester to see Egon's new surroundings. I was immensely struck with the beauty of the College and hope his life there will be a happy one. The environment of a great school like this ought to excite the boys to be and to do.

I have heard no more of the Americans, so I trust they will leave me in peace. The three puppies are getting about now, but I don't think I shall be able to keep four albino dogs, and must seek a home for them. I hope the Laboratory publications reached you safely. I enclose two notices. I believe some of the daily papers also had notices. Miss Elderton's Lecture on Nature and Nurture ought to be out this week. I am printing a paper by Dr Goring on the "Inheritance of Phthisical and Insane Tendencies based on criminal Observation," which I think is very good. My neighbour here is a great pig breeder, but he *will* not take any interest in actual measurements for heredity, only in the prize and show work.

Ever yours affectionately, KARL PEARSON.

FOX HOLM, COBHAM, SURREY. *September 6, 1909.*

MY DEAR KARL PEARSON, I had delayed writing, hoping vainly that you might discover a way of getting here comfortably, some day. I am truly sorry you feel unrested. You will discover, as all your elders have discovered, how strict our bodily limitations are. We are each of us machines, each of his individual horse-power which we cannot strain safely by tying down safety valves, or the like.

Let me offer a tribute of admiration to your lecture, which I have read and re-read and look upon as a masterpiece. As for the *Treasury* it speaks for itself of the immense care in compilation.

I wonder whether you could conveniently turn some of the Laboratory folk on to a simple, but, I think, important inquiry, for which the collection of family histories affords ample material. It is, how many relations, *on the average of that collection*, has each person in the following degrees:

- | | |
|--|-----------------------|
| (1) Grandfather's (Paternal) brothers, | (2) ditto (Maternal), |
| (3) " " " sisters, | (4) " " " |
| (5) Father's brothers, | (6) Father's sisters, |
| (7) Mother's brothers, | (8) Mother's sisters, |

and *quere* the sons and daughters of 5, 6, 7 and 8.

The above 8, plus the 4 grandparents and 2 parents = 14 in all, form a large body of individuals and it is well worth while, in the frequent absence of exact knowledge of their number, to appraise the *average significance* of heredity in such and such a degree. If you think this feasible, I will draw up a more careful scheme, excluding half-brothers and the like.

I am so glad about your boy at Winchester and about your other "bairns" on their cycles. You would be amused to see the mechanical appliances that Giff and my man-nurse use to prise me into a Victoria—I am so helpless!

I hope the puppies prove to be thorough albinos.

X. has written an uncommonly good paper in the *Sociological Review*, of which I received an offprint this morning, on the obstacles to Eugenics. It is the best piece of writing that I have seen of his. Perhaps the American will come down unexpectedly with a big gift after all!

So you have a great pig establishment close by. My heart rather leans to pigs, but I wish they did not smell. Ever affectionately, FRANCIS GALTON.



Francis Galton, aged 87, on the stoep at Fox Holm, Cobham, in 1909, with the faithful Gifi and the Albino puppy Wee Ling.

PAYABLES, WOODCOTE, NEAR READING. *September 10, 1909.*

MY DEAR FRANCIS GALTON, What you want about the average number of relatives is of importance and shall be done, but it will need one or two points considering first. In the first place, the younger generations are not always complete and it may not always be easy to ascertain whether this is so or not. I think it would very much diminish the available pedigrees if one had to be certain on this point. In the next place, there has been such a great change in the past thirty years, the modern *complete* families are 1, 2, 3 or 4, but 30 or 40 years ago they were anything up to 6 or 11. There is also another point, do you mean to include *all* born, or only those living to a definite age? A generation ago, perhaps, $\frac{1}{4}$ died in infancy and childhood, even in the professional classes; now perhaps only $\frac{1}{8}$. You will see that this may, without some agreement as to treatment, introduce difficulties. I am not at all sure that the best way would not be to work at the Quaker family histories or the older Herald's Visitations. But we shall always have to remember that the problem reduces to the size of the family in a certain definite class, and this is modified by custom, by period and by the infantile and child death-rates. Could we not reach your point by discovering the average size of family and the sex ratio in each grade? I enclose a rough copy of Miss Elderton's Lecture. It ought to be out to-morrow.

Here is a rough postcard my boy has made of the albino Pekinese Spaniels. They are very jolly little beasts—and quite of the harmless lap-dog order. Would Miss Biggs like Wee Ling? He will want to have a little training, but I don't think he would give much trouble. If at any time he became a nuisance I daresay I could find another home, but I should like to know where he was, if he had to be united in holy matrimony at any time with one of his cousins or half-sisters!

The pigs of our neighbour, who has some 300 acres, are very lordly and go with attendants, one pig, one man, for their daily exercise. Yours always affectionately, KARL PEARSON.

I have heard no more of the Americans! Why cannot Cook and Peary behave like Darwin and Wallace?

FOX HOLM, COBHAM, SURREY. *September 11, 1909.*

DEAR PROFESSOR PEARSON, The photo of Wee Ling is most attractive and I should of all things enjoy to bring him up—but this alas is prevented by the "cruel uncle"! Possibly your powers of persuasion might move him. Since you induced him to sit for a bust, you might prevail over this matter too, won't you try? and I will bring up the pup in the way he should go, having had much experience with dogs in my life.

MY DEAR KARL PEARSON, The foregoing appeal from Eva Biggs has melted away my antagonism to dogs. Yes! send Wee Ling and much care shall be lavished on him*.

Ever affectionately, FRANCIS GALTON.

Hurray! E. B.

FOX HOLM, COBHAM, SURREY. *September 12, 1909.*

MY DEAR KARL PEARSON, I answered about Wee Ling yesterday, in a hurry, to save the Sunday post. This refers to the other part of your kind letter. It had been my intention to write about some of the points you raise, all of which are important.

Respicere finem. My object is to procure the desired data from one or more well defined and homogeneous groups, defined by convenient limits as to date and minimum age of children; this latter has to be regarded: say 20, or other early marriageable age. The dates are a more serious matter. You know better than anybody, the times over which childbirth has continued normal in any particular group. The Quakers, as you suggest, would serve well. So eminently would the Jews, if returns exist.

Have you ever, by the way, inquired about what I understand to be an immense store-house of family facts, viz. the *printed* pedigrees, taken under affidavit, of the families of *intestates*, whose property comes into Chancery? I have no lawyer at hand to consult afresh.

* I cycled over from Woodcote to Cobham taking Wee Ling in the basket on my handle-bar. Plate XXXVI was a result of this visit, and Plate XXXVIII shows Wee Ling in good company shortly afterwards.

My authority was the late Vaughan Hawkins, whose account was graphic and most interesting. But this was half a century ago, and the procedure may have changed since, and the old Records be inaccessible; but it is worth inquiry into. He said that the difference between the sizes of family of rich and poor was most conspicuous, the limit of eight in the former corresponding, if I recollect aright, to sixteen in the latter.

To return to the point after this episode. If you have time to think out a *moderate* inquiry of this sort, and see your way to set some clerk to work on it, I should be very glad.

Thanks for Miss Elderton's lecture. How well and clearly much of it is written. It would tax the power of a consummate literary genius to make statistical reservations easy to grasp.

My friend Lt.-Col. Melville, the army physician, was delighted with Heron's lectures, which he attended. He contemplates sending some of his best students for statistical instruction at the Biometric Laboratory, if they can be taken in. So he tells me!

Affectionately yours, FRANCIS GALTON.

PAYABLES, WOODCOTE, NEAR READING. *September 13, 1909.*

MY DEAR FRANCIS GALTON, You must not have the dog to be a nuisance. It was a mere idle suggestion on my part, as they really are rather nice as dogs go and almost unique. If you have it, and it does not fit in, then we will find another home for it.

I have got, I think, the person to put on to do the work on the relatives—a new recruit coming in October—I will look up the Chancery data on my return. I suppose copies will be preserved at the Record Office, but I will inquire.

It is very hard to make people understand, that one has no aim but to get at the facts in this "Nature and Nurture" business. When we came to the problem, I expected to find the two factors about equipollent, but the insignificant character of "Nurture," as compared with heredity, soon became transparent. Even now when we find a fairly high (e.g. 0.2) correlation between environment and physique, it is very doubtful whether it is not a secondary effect of heredity, the feebler parents having a worse environment, because their wages are less. But the view that "Nature" is the fundamental factor is stirring up, as I feared it would, a whole hornets' nest.

Affectionately yours, KARL PEARSON.

7, WELL ROAD, HAMPSTEAD, N.W. *October 18, 1909.*

MY DEAR FRANCIS GALTON, Miss Elderton asks me to answer your card, because she is not quite sure as to one or two points. It depends to some extent on two matters: (1) How the midparent is defined:

Midparent Deviation = $\frac{1}{2}$ {Father Deviation + (Mother Deviation increased in ratio of father's variability to mother's variability)}.

This is theoretically the best definition and agrees with your original one provided

$$\frac{\text{Father's variability}}{\text{Mother's variability}} = \frac{\text{Father's mean value}}{\text{Mother's mean value}}$$

This equality is very nearly true for many human characters, but not quite for all.

(2) The existence or absence of assortative mating between father and mother. Let us call the correlation between father and mother ρ . This correlation coefficient is rarely over .2 and lies between .1 and .3. Assuming this, we have:

$$\text{Midparental correlation} = \sqrt{\frac{2}{1+\rho}} \text{ (Mean of parental correlations),}$$

and again:

$$\text{Ratio of Mean Filial to Midparental Deviations} = \frac{1}{1+\rho} \text{ (Mean of parental correlations).}$$

Now there is no sensible difference between the parental correlations that we have been so far able to discover. Hence if r = parental correlation,

$$\text{Ratio of Mean Filial to Mid-parental Deviations} = \frac{r}{1+\rho}.$$

Now r is very close to $\cdot 5$ —it varies from about $\cdot 46$ to $\cdot 52$ for the best series in man. Weldon's results for mice *not yet published* give almost the same values. *But he has so selected his pairs of mice that ρ runs up to $\cdot 8$!* For man ρ may be safely put $\cdot 2$. Thus the ratio you want is $= \frac{\cdot 5}{1\cdot 2} = \text{about } \cdot 4$.

The ratio of mean filial deviation to parental deviation, i.e. for a single parent, is $\cdot 5$ but of course the prediction in this case is subject to a larger probable error; these errors in the two cases being about in the ratio of $\sqrt{\cdot 75}$ to $\sqrt{\cdot 60}$, the latter corresponding to the midparental estimate.

I hope this will not be too complex, and that I have given what you want. Pray write again if there be any further point I could make clearer.

I had a letter from the Principal of the University saying that the University was drawing up a list of their needs and asking me to say what the Galton Eugenics Laboratory needed. It was a somewhat difficult question to answer since if the University is in the way of getting money, there is no reason why the Laboratory should not have a considerable share. I suggested that £100 a year for books, £200 for publications, and £500 to pay a man to give the bulk of his time to supervision, could be easily assimilated! If we get $\frac{1}{4}$ of all this from the University we may be happy, but it really is a sign of the times that they ask us if they can aid. We are very full this session. In the Biometric and Eugenics Laboratories together we have I think 16 research workers, and practically no vacant tables.

I shall shortly send you the average numbers of certain classes of relatives—aunts and uncles. I fear we cannot work cousins because the records are too incomplete.

Has Wee Ling behaved himself, or has he become a nuisance? Don't hesitate to return him if he has become a difficulty.

Affectionately yours, KARL PEARSON.

THE RECTORY, HASLEMERE. *October 25, 1909.*

MY DEAR KARL PEARSON, You can with difficulty understand how incompetent I am to do mental work. I have blundered much in putting the enclosed into shape, desiring to avoid needless complexity, and now if the suggestion (B) be adopted the problem becomes apparently simple enough. Still I dare not trust myself to do it. I only want a rude approximation, but want one very much.

Nettleship lunched with us on Saturday and inspected Wee Ling's eyes. The puppy is a joyful little beast with a now tightly curled tail and is a friend with all the servants. But he has a horrid temper, and bites with his little sharp teeth and swears in Chinese dog-language, a quite different language to that of English pups. He had a sharp lesson from the cat, in social usages; for trying to oust her from her chair, he received a wipe from her claws across his little pink nose. No real harm done, but it must have hurt.

We are well placed and the air of Haslemere suits me perfectly, but I do very little. Sir Archibald Geikie tells me of scientific events. He was delighted with Birmingham and remarked that among the men selected for degrees were two brothers (Haldane), one brother and sister and brother-in-law (Balfour, Mrs Sidgwick and Lord Rayleigh).

I asked Nettleship about you, whether he thought you were not working too hard. He evidently thought so, but added that you were like a racehorse, difficult to keep quiet. And here am I bothering you about a problem! How I wish you could be relieved from routine work. I wonder if you will come down to see your friends hereabouts?

My niece is happy, after $2\frac{1}{2}$ weeks out of the allotted 4 weeks in bed, for rest-cure. She *hopes* to get abroad to S. France in early winter, leaving me in charge of another niece (Mrs Lethbridge). I am fortunately well-nieced; three are at the moment hereabouts, two in this house and one hard by. Ever affectionately yours, FRANCIS GALTON.

This letter contained the following problem of which a solution was sent to Francis Galton as a New Year's Greeting, 1910, and was published in *Biometrika*, Vol. x, pp. 258–275.

Problem.

October 25, 1909.

An array H is made of husbands arranged in estimated order of civic worth (see remarks below). Gauss's Law is supposed to apply throughout. Let the standard deviation of H which does not need measurement be unity. Cut off a segment G from the upper end of H , including $1/n$ th of the whole of H ($1/n$ is here wanted only for the two values $\cdot 02$ and $\cdot 04$, to which the corresponding deviates in Sheppard's Table, *Biometrika*, Vol. v, p. 4, are $2\cdot 0537$ and $1\cdot 7507$). Make an array F in order of civic worth of all the male adult children of G as calculated from the formula for parental Heredity. It will be a skew array. Let the mean (or better the median) of all the values in F be f , and let the position of that value in the array H be $1/w$ of its length from the upper end. Required: the ratio of w to n for the two values of $1/n$ mentioned above, and consequently that of the deviates at those class-places (from Sheppard's Table).

Remarks.

A. It seems impossible to obtain a satisfactory numerical value of civic worth, but it is not more difficult to classify it by judgment, than it is to select recipients of honours, members of Council, etc., out of many eligible persons. Therefore the method here adopted is to compare class-places and to derive the corresponding deviates from Sheppard's Table.

B. Some law of fertility must be assumed that shall give limits to the possible error from ignorance of the true one. Perhaps the assumptions (i) that infertility so balances deviates that the F values are much the same as those of the children of parents at $1/n$ th of the array from the upper end, and (ii) that they are the same as those at $1/2n$ th of the same, might be adequate.

7, WELL ROAD, HAMPSTEAD, N.W. October 26, 1909.

MY DEAR FRANCIS GALTON, I have only just got back from Newcastle, so you must excuse a hurried note. I was down by 5 o'clock yesterday and back by 1 o'clock to-day. But I always feel heartened by lecturing to the north country folk. They came between four and five hundred strong, had $1\frac{1}{2}$ hours' lecture, and nearly 100 standing all the time and so keen and interested.

One point I can tell you at once, the *average* civic worth of your array of offspring would be to the average civic worth of your array of fathers (both measured from their respective means) in the ratio $r\sigma_1$ to σ_2 , where r is the correlation coefficient, σ_1 and σ_2 the standard deviations of fathers and sons respectively. This would be true for linear regression quite independently of Gauss, wherever you cut off your array of fathers, and quite independently of any law of fertility, if r = correlation of father and son, and σ_1 and σ_2 their standard deviations. But r will not be the r for a stable population, and σ_1 will not = σ_2 as for a stable population, if you make fertility a function of the inherited character. Their values will then turn on the law of fertility and this may upset the whole story if it alters very markedly the value of r . I will, however, look into the point and let you know. I expect this is the kernel, however, of what you really want, i.e. the alteration in variability σ_2 of sons and the new value of r . Still the other value may interest you—i.e. that regression does not apply only to the group of offspring of one parental value, but the whole population of offspring due to any series of parents has a mean regreeding on the mean value of any section of the parental population, precisely in the same way as mean of array of offspring regredes on a single parental value.

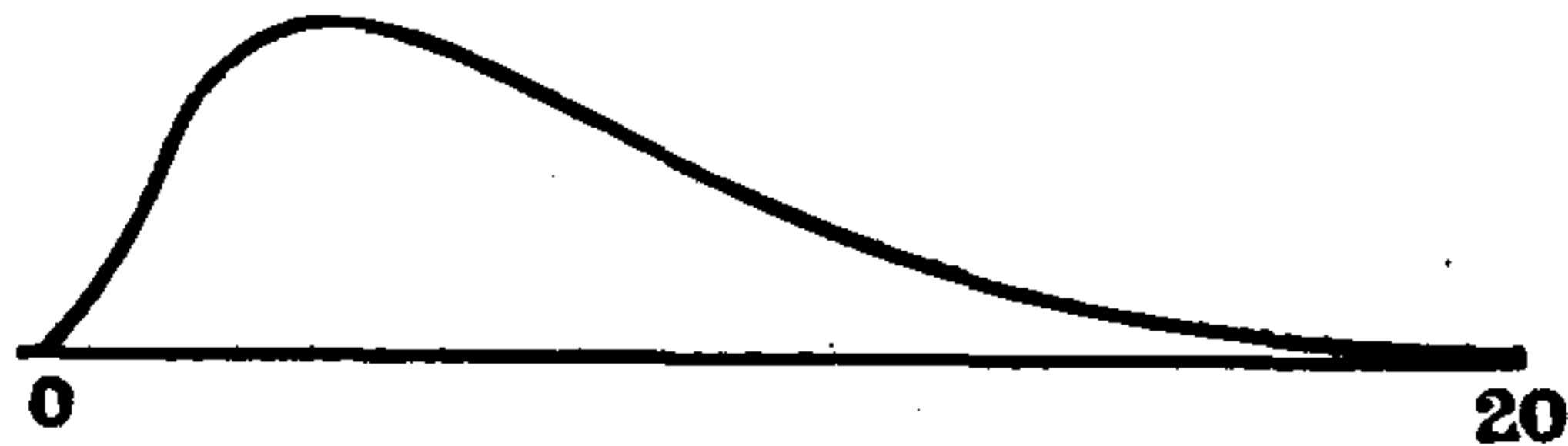
I am extremely sorry to hear about Miss Biggs, and hope the trouble may not be of long duration. You will miss her very much during the winter.

I don't understand Wee Ling's temper; his brother and sister are very frisky, but angelic in temper. I gave you Wee Ling because we had decided he was the most intelligent*. I hope you got the letter about the midparent. Yours always affectionately, KARL PEARSON.

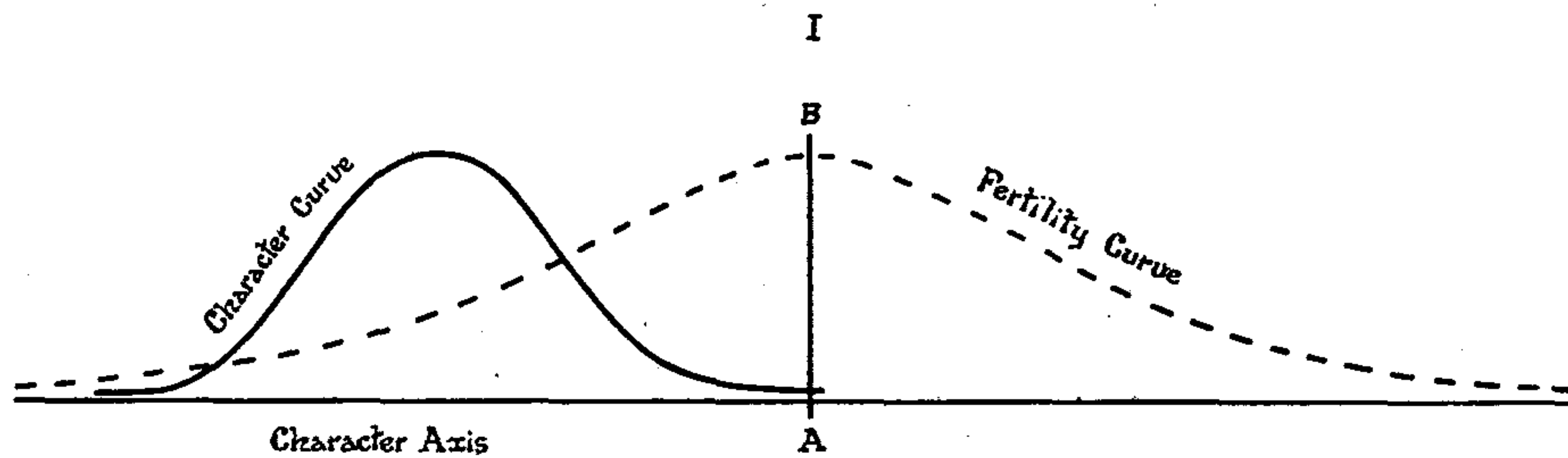
Have you seen the Whethams' book? Or Riddle's paper on Pigment and Mendelism?

7, WELL ROAD, HAMPSTEAD, N.W. *October 31, 1909.*

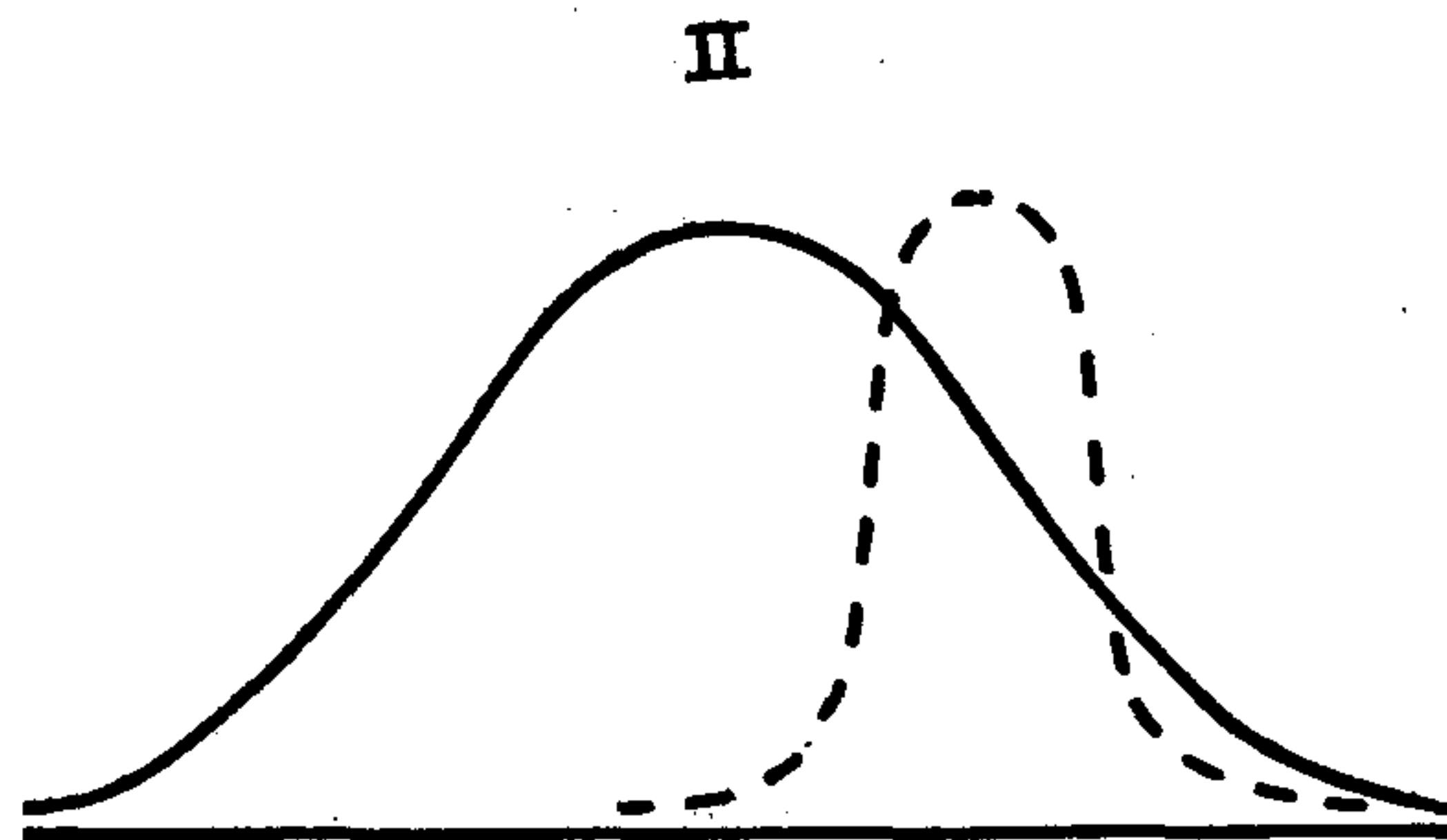
MY DEAR FRANCIS GALTON, I think I have got out a general theory of the problem you suggested on the following lines: Given a differential fertility, what changes will it make (1) in the mean and variability of the offspring and (2) how will it change the coefficient of heredity in the population. From these results I can at once deal with your special problem of a certain percentage of the population having a desirable character but lessened fertility. The chief difficulty is the form of the law of fertility. Now the distribution of the size of families in any population is not Gaussian, it rises steeply and falls slowly, thus:



It certainly does not closely approach any mere straight line relation. It would therefore seem reasonable to suppose such a curve to give the fertility distribution with any character. It seemed to me better than taking a straight line to see where we arrive by supposing the fertility is somewhere a maximum and drops in Gaussian fashion on either side of the modal value. To take the cases in which the fertility is greatest with the worst values of the character we have only to place the fertility curve much to one side, e.g.

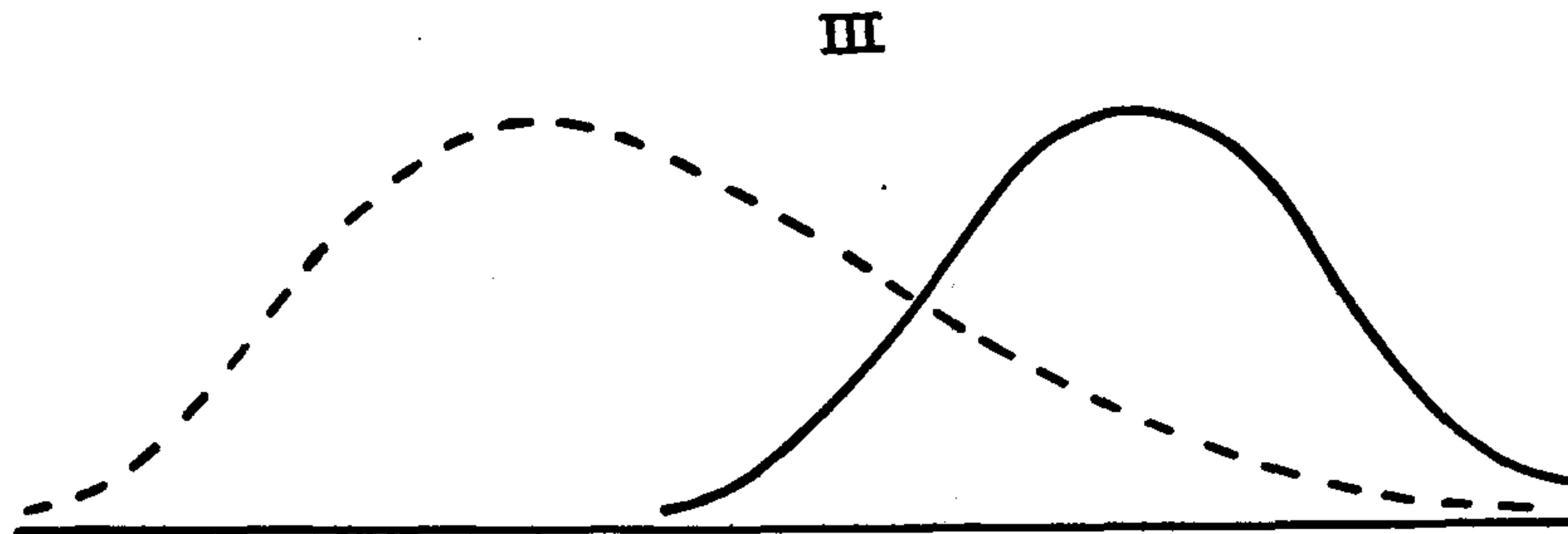


To the right of the line *AB* no individuals occur and accordingly the fact that there would be fertility, if individuals occurred, is of no importance. We can also take the case when a very small part of the population is fertile; thus:



* See our Vol. II, p. 76, as to breeding for intelligence in dogs. Unfortunately Wee Ling, while markedly intelligent, and long a dear friend of the biographer's family, turned out to be incapable of reproducing his kind!

and by pushing the curve to the extreme left we obtain practically an increasing fertility instead of a decreasing fertility with the character.



I and III correspond fairly closely to your suggested linear relation, and, I think, the algebra is easier on this assumption. The formulæ are fairly complex, as we have the three constants fixing the fertility curve at our choice, but I have got out the distribution of the offspring generation in terms of these constants. As usual the formulæ are perfectly idle until we turn them into numbers. The only point to be noted is that the character of the population takes in a very few generations, as we might anticipate, the value corresponding to that of maximum fertility.

I will get illustrative numerical cases worked out, but they will take some calculation and this may delay matters some time. Unfortunately Mrs Weldon has had to give up the mice work although incomplete, and my computer, Miss Bell, who succeeded Dr Lee, is pressing on with that. For Weldon's sake this work ought to have been published long ago. I think in the course of three weeks the fertility numbers can be ready. Heron and Miss Elderton are both struggling to finish their big memoirs, and Miss Barrington and Miss Ryley are respectively at work on pedigrees of locomotor ataxy and on cataract pedigree plates. We have never had such a crowd in the laboratories and the "lecture series" has popularised the work and brought a number of keen but theoretically (statistically) rather weak students, who want to do Eugenics work, but have not a preliminary training.

Now as to your other problem. I find that from the family schedules we can get no trustworthy record of the average number of cousins, because selection has been made of cousins, but the aunts, uncles, nieces and nephews seem to work all right. The cousins must be taken from *full* pedigrees and I am uncertain at present whether our material will suffice. Here are the results for uncles, etc.

On paternal side: Each uncle has 3.23 married brothers and sisters who provide him on an average with 6.4 nephews and nieces apiece.

Hence each uncle has 20.7 nephews and nieces.

Each paternal aunt has 3.23 married brothers and sisters with average families of 6.2, or there are 20.0 nephews and nieces.

On maternal side: Each uncle has 3.33 married brothers and sisters with 6.1 offspring, or there are 20.3 nephews and nieces.

On maternal side: Each aunt has 3.33 married brothers and sisters with 6.0 offspring, or there are 20.0 nephews and nieces.

Roughly therefore each family consists in our data of 6 offspring, 3 male and 3 female, of whom *more than* 3.3 marry and produce *more than* 20 offspring. I say *more than* 3.3 marry, because while an aunt or uncle has 20 nieces and nephews, she or he may or may not themselves be married, and in either case they would still be aunts or uncles. Roughly I make out that a man has between 40 and 50 first cousins of both sides together. I have 19 paternal and 14 maternal first cousins, but I am below the average as only two of my mother's brothers and sisters had children and several of my father's had very small families. However we will try to get some real data.

There is another point about which I want to write you a few lines. For some time past there has been a series of attacks, some signed, some unsigned, by X. upon the Eugenics Laboratory. I do not know X., nor do I want to know him. I have never spoken to him, nor have I ever

BIOMETRIC LABORATORY, UNIVERSITY COLLEGE. *November 8, 1909.*

MY DEAR FRANCIS GALTON, Thank you very much for the photograph of Wee Ling; he is clearly progressing. Thank you also very much for your letter. I enclose a sample of X.'s type of attack. The article is worth reading to show the hopeless character of this man's work. There is not a single appeal to demonstrable facts, to statistical data, in the whole paper. It is simply rhetorical, wholly indefinite in result and meaning. But any reader of the obscure paragraph on p. 9 must, whatever else he makes out of it, come to the conclusion that we have wasted the resources of the laboratory in a "sterile logomachy" and that we have made no attempt to trace the origin of alcoholism or measure its influence on the offspring and the individual. The essential fact is that we are the only people who have really endeavoured to measure the relation of alcoholism in parents to the mental and physical condition of the children, and that only in this Laboratory is the relation of alcoholism to crime and insanity actually known and its statistical correlations to environment and class have here alone been worked out. I believe that we only have seen what relation alcoholism has to feeble-mindedness. The rest is "impression," "opinion," rhetoric and fustian like that exhibited by X. I think if you carefully read the paragraph—and it is only one among many which have emanated from the same quarter—you will see that we cannot continue to leave such charges unreplied to. I hate this sort of controversial work, but sometimes it must be undertaken, if only to prevent the truth from being swamped. I feel very strongly about this, and must write to you exactly what I feel. But if this criticism of an active member of the Eugenics Society seems to you undesirable, I will do it from outside the Laboratory altogether. Yours affectionately, KARL PEARSON.

THE RECTORY, HASLEMERE. *November 9, 1909.*

MY DEAR KARL PEARSON, I have read and re-read the marked passages pp. 9–10 in the *British Journal of Inebriety*. They seem to me more suited for a bantering reply, than for the fire of heavy guns. I mean, for a paragraph in the sense of "What does X. really want? He seems to object to statistical inquiry showing the extent to which feeble-mindedness is transmissible. But that is a fact that statesmen must take into account and of which it is of primary importance that the information should be trustworthy. He thinks it a serious matter that Eugenists are not acquainted with physiology and pathology, but that is certainly not true of many contributors to the Eugenics Laboratory and other Biometric Publications. He wants inquiry into the origin of defects; by all means let it be attempted by those who are capable and see their way to fruitful inquiry. But that is a special line of research with which the Eugenics Laboratory is not occupied. Lastly, what is meant by the sonorous phrase 'sterile logomachy'?"

I have scribbled the above just as I should do in a first draft, to ease my mind and get my thoughts in presentable order. Don't think more of it than that. The great point is not needlessly to *embitter* any controversy, but to show that the opponent is ignorant and presumptuous. I feel sure you can do this.

I have writing now near my elbow a very good lady assistant, Miss Augusta Jones, who tells me that her sister is now working at your laboratory.

My niece left her bed yesterday, much better for her month's rest-cure, but will require I fear somewhat prolonged care. She goes to Rutland Gate for the week-end, to be doctored and set up with winter clothing. Ever affectionately yours, FRANCIS GALTON.

I may be amusingly embarrassed in relation to X., because he has undertaken to boil down for Harmsworth's forthcoming big serial publication four of my books, and I have assented, the publisher assenting also. I have not seen any advertisement of this $\frac{1}{3}$ to $\frac{1}{2}$ million issue but a favourable allusion to it in *Public Opinion*.

7, WELL ROAD, HAMPSTEAD, N.W. *November 11, 1909.*

MY DEAR FRANCIS GALTON, I ought to have written to you to thank you for your letter and now for your extract from the *Cambridge Review*, but I have been very busy and just about fit for the sofa when I get home at night. You, seeing things from a reposeful distance, can judge more wisely than I, but I feel very strongly the general harm that all exaggeration and rhetoric does to a good cause and I am sorry that your books are to be taken in hand by this prophet of the age. He can no more understand the *Natural Inheritance* or the *Hereditary*

Genius than he can grasp the principia of statistics. Why are there so many baneful journalists of the type which seems to delight in strangling all genuine scientific spirit? This may sound harsh, but I fear it is none the less true. I wish your books were in other hands. They will survive any treatment our friend may deal out to them, but the men you want to interest will be repelled, not knowing how far the rhetoric and froth lies in the account or in the original. You see how strong I recognise our friendship to be, that I venture to write thus! For myself I feel your advice is a wise view, and I shall endeavour to bear it in mind in making some reply to the criticisms which have been made.

We have been a good deal troubled with Wee Ling's sister. She has had a bad bronchial attack, and we have had a Vet. almost daily, but hope she is on the safe side now.

Yours always sincerely, KARL PEARSON.

7, WELL ROAD, HAMPSTEAD, N.W. *November 24, 1909.*

MY DEAR FRANCIS GALTON, Here are more of our friend X.'s productions! *Six* years ago he wrote a letter to the *Daily Chronicle* stating that if tuberculous persons kept their bedroom windows open, they might intermarry without danger to their children. That was just when we had first reached the perfectly definite conclusion that the tuberculous diathesis or constitution is inherited. I wrote—this was before the days of Eugenics and I had never heard of the man before—that it seemed to me criminal to suggest that the tuberculous might freely marry without danger to their children. Since then I have not criticised him nor referred to his opinions. It may be that my words have rankled in his mind and produce effusions of the type I again send you. I don't want to worry you with these matters, but X. writes as the accredited representative of the Eugenics Education Society and his words and actions are damaging the whole movement in the minds of those who are worth convincing.

Yours always affectionately, KARL PEARSON.

THE RECTORY, HASLEMERE. *November 25, 1909.*

MY DEAR KARL PEARSON, It so happened this morning that while I was writing to Miss Elderton, the post brought Press cuttings, including this of the *Pall Mall* (Nov. 23). I wrote to her about it, quoting a sentence from a recent speech of the Poet Laureate: "Do not resent criticism and never answer it," which seems to contain much of value.

X.'s article contains 3 detached pin-pricks or goads: (1) Mendel, (2) children of inebriates, (3) children of consumptives. I can't see that (1) has anything to do with the present question and might be put off by a sentence. (2) and (3) attack the appropriateness of the statistics used, and might perhaps be usefully answered, not as a reply to this particular attack but in a *brief memoir* dealing only with the point in question. Newspaper controversy will lead to rejoinders and re-rejoinders and will hardly convince in the end. Every pronouncement admits of an opposing argument. Think of dear old Euclid, whom we once thought infallible, and of Paley, whom generations of the ablest men of their day considered proof against attack! I sincerely hope you may see your way to do what I have ventured to suggest.

I was glad to see in the newspapers that you have given help to the "Child-Society" (of which I otherwise know nothing) in framing their "questionnaire."

All goes on smoothly here. E. B. has been to town for a few days' doctoring and has returned very well in spirits. Ever affectionately yours, FRANCIS GALTON.

I send my little volume of reprinted lectures. The little book by the Eldertons will surely do some good.

THE RECTORY, HASLEMERE. *December 3, 1909.*

MY DEAR KARL PEARSON, I was *very* glad to see in some Press cuttings received this morning, that you were about to test the effects of environment on Jewish children. This seems to me a far better response to what X. has written, more dignified, than a controversial argument.

Ever affectionately yours, FRANCIS GALTON.

The puppy progresses; so do we all. The puppy grows very like a portrait I once had of Confucius.

BIOMETRIC LABORATORY, UNIVERSITY COLLEGE, GOWER STREET, W.C.

December 3, 1909.

MY DEAR FRANCIS GALTON, Most hearty thanks for your volume of collected papers. It will be most useful to have them in one book to refer to. I only regret you did not republish one, which I think very good. It appeared in, I believe, the *National Review*, Admiral Maxse's journal*? If I recollect rightly it first defined "Genetics," and was earlier than all now republished.

I have been very busy, mostly with matters leaving no permanent trail, and have had no time for controversy. The work on children, as to the influence of environment, is not undertaken in reply to X.; it is part of work long planned and intended to verify conclusions already reached. For the general conclusion that environment has not an influence one-quarter of heredity, we have overwhelming evidence now.

I fear we shall not see eye to eye with regard to X. It is not criticism that does any harm, it is repeated misstatement by a man who is ignorant, which does, not us, but the whole progress of Eugenics harm when it comes from, and apparently with the sanction of a Society established for distributing Eugenic truth. I won't write any more about it, or bother you any further in the matter. The evil is done, and can't be undone, but it seemed to me that I ought to tell you at least once how strongly I feel about it; and I am glad to think how strongly your friendship reacts to the strain. In one respect X.'s abuse does the Eugenics Laboratory a service—the medical profession—which with rare exceptions finds X. impossible—will not be rendered less sympathetic to the work here by a knowledge that our Eugenics differs both in method and results from his.

We have had a good deal of anxiety with our puppies; I expect we cannot give them the space and exercise they require, and I fear we must part with them, although it "will tear our hearts." Yours always affectionately, KARL PEARSON.

(16) *Events and Correspondence of 1910.* We now reach the last year of Galton's life. It was, perhaps, more active than the previous year, 1909; but the signs of physical failure became more marked; his handwriting was now and then for the first time difficult to read, but his mind remained ever suggestive, and to me personally his help and sympathy were ungrudgingly poured out until the very end. His simple nature rejoiced in the honours conferred on him. If the long-delayed knighthood was a pleasure to him, the conferment on him in this year by the Royal Society of the Copley medal † was a still greater delight. In particular, when I saw him soon after the award he was full of appreciation for the words of the President on St Andrew's Day:

"But it was not only in geography and meteorology that Sir Francis Galton manifested his versatile energies. He was much interested likewise in biological studies, especially in regard to questions of relationship and heredity. So far back as 1871 he began what has proved to be a voluminous and important series of contributions to these subjects. From his first paper, 'Experiments in Pangenesis,' down to his last volume on 'Eugenics,' his successive papers have shown a continuous development of ideas and conclusions. He was led from his early ethnological inquiries into the mental peculiarities of different races to discuss the problems of

* See above pp. 88–93.

† Galton received numerous letters of congratulation, which he thoroughly enjoyed. Professor H. H. Turner, writing to express his pleasure at the award, added that no doubt the recipient would find an amusing problem in their classification. It has fallen to another to do so. There is only one that breathed the love and affection of a long friendship. "Another gold medal! How glad I am! I feel a golden glow too, a much bigger glow than I expect that you are feeling"—so Lady Pelly expressed herself. Only two letters ventured to address the medallist as "My dear Galton." They were from his old mid-Victorian friends Lord Avebury and Sir Henry Roscoe. For the remainder he was "Dear Sir Francis." Galton had outlived the friends of his youth and most of those of his prime!

hereditary genius from the fundamental postulate that a man's natural abilities are derived by inheritance under exactly the same limitations as are the form and physical features of the whole organic world. To obtain further data for the discussion of this subject he carried out the elaborate statistical inquiries embodied in his *English Men of Science*. Confident in the results of these researches, he proceeded after the manner of 'the surveyor of a new country who endeavours to fix, in the first instance, as truly as he can, the position of several cardinal points.' His results in this quest were given in his *Inquiries into Human Faculty and its Development* published in 1883. A further contribution was made by him in 1889, when his work on *Natural Inheritance* appeared. His subsequent papers and essays on 'Eugenics' have still further stimulated inquiry into a subject of such deep and transcendent importance in all efforts to improve the physical and mental condition of the human race. It has seemed to the Council fitting that a man who has devoted his life with unwearied enthusiasm to the improvement of many departments of natural knowledge, whose career has been distinguished by the singleness and breadth of its aims and by the generosity with which he has sought to further them, should receive from the Royal Society its highest award in the Copley Medal." *Nature*, Dec. 1, 1910, Vol. LXXXV, p. 143.

I have extracted only a portion of the summary by the President of Galton's life-work, but it will suffice to indicate that before the end of his life the highest English scientific body sealed with its approval his labours.

We have to note of his actual writings two slender papers in the *Eugenics Review* and one or two letters to the newspapers. Beyond these we have his personal letters to friends. Let us first consider the two papers in the *Review*. The earlier is entitled: "Eugenic Qualities of Primary Importance*." Galton states that his few lines are offered as "a contribution to the art of justly appraising the eugenic values of different qualities †." Galton considers that certain broad qualities are needful in order to bring out the full value of special faculties. We can ascertain what these broad qualities are by considering what are the differences between prosperous and decadent communities.

"I have studied the causes of civic prosperity in various directions and from many points of view, and the conclusion at which I have arrived is emphatic, namely, that chief among those causes is a large capacity for labour—mental, bodily, or both—combined with eagerness for work. The course of evolution in animals shows that this view is correct in general." (p. 75.)

Galton then cites birds and mammals as replacing the more sluggish reptiles. Mammals, he says, are so constituted as to require work; when they cannot exert themselves they become restless and unhealthy. Prosperous communities are conspicuously strenuous, decadent communities conspicuously slack.

Galton admits that circumstances may raise the tone of a community; a cause seizing the popular feeling may arouse a potentially capable nation from apathy, but it would do so still more if the community had inborn "strenuousness," a simpler word would be "grit." To make his argument complete Galton ought to have demonstrated that "grit" is a hereditary character. I have little doubt that it is so, but I know of no investigation on the point. According to him this strenuous quality is built up of a sound body and sane mind enlightened with intelligence above the average and

* Pp. 74-76 of Vol. I.

† The reader will note that Galton in July, 1910, used the word "qualities" and not "faculties": see our p. 225, above.

combined with a natural capacity and zeal for work. It would thus appear that strenuousness is compounded of three or more simpler factors, and it is needful to suppose that these are individually either linked or highly correlated. My own investigations of school-children demonstrated that Health, Ability and Athletic Power were certainly inherited. Hence a compound of these would be so without doubt. Further, I found that these three factors were themselves intercorrelated, if not so highly as each separately was correlated in brothers*; thus it appears probable that strenuousness is an inheritable quality. Galton contrasts the strenuous and slack communities in apt sentences worth preserving :

“A prosperous community is distinguished by the alertness of its members, by their busy occupations, by their taking pleasure in their work, by their doing it thoroughly, and by an honest pride in their community as a whole. The members of a decaying community are, for the most part, languid and indolent; their very gestures are dawdling and slouching, the opposite of smart. They shirk work when they can do so, and scamp what they undertake. A prosperous community is remarkable for the variety of the solid interests in which some or other of its members are eagerly engaged, but the questions that agitate a decadent community are for the most part of a frivolous order. Prosperous communities are also notable for enjoyment of life, for though their members must work hard in order to procure the necessary luxuries of an advanced civilisation, they are endowed with so large a store of energy that, when their daily toil is over, enough of it remains unexpended to allow them to pursue their special hobbies during the remainder of the day. In a decadent community, the men tire easily and soon sink into drudgery; there is consequently much languor among them and little enjoyment of life.” (pp. 74-5.)

Some of the critics of Eugenics have said that men of genius, who are so valuable to a nation, are often epileptic, crippled or semi-insane; this is the old fallacy of pointing to isolated exceptions, which prove the rule, when once we have demonstrated how few such exceptions are. There is no link of Nature which binds intellects of exceptional ability to sickness of body or mind; and if such a bond existed our first object as Eugenists would be to rupture the chain and breed men noble in body as well as in mind. Shall we permit epileptics to breed that another Napoleon may be given to mankind? He may come soon enough without that! Shall we refuse to segregate morons†, because Byron was a poet? Dante and Goethe were not morons and were greater than he! Shall we cease to discourage the mating of the tuberculous, because Keats was consumptive? The outrooting of phthisis is of more importance to a strenuous nation than even the possession of the man who wrote *Hyperion*! Surely Galton has reached a truth when he tells us that to work for the strengthening of our nation is higher philanthropy than we are wont to meet with in the current and very restricted meaning of that word. The practice of Eugenics is something greater than the practice of charity. Let us, he says in conclusion, interest ourselves

“in such families of civic worth as we come across, especially in those that are large, making friends both with the parents and the children and showing ourselves disposed to help to a reasonable degree, as opportunity may offer, whenever help is really needful.” (p. 76.)

* See “On the Relationship of Health to the Psychological and Physical Characters in School Children,” *Drapers' Company Research Memoirs, Studies in National Deterioration*, No. IV, Cambridge University Press.

† The accepted technical term for a mentally high grade abnormal person.

Those who preached salvation for men through good works, never thought of adding that the object of such charity must not be an enemy of society. To give to a beggar increased the grace at the disposal of believers, even if the mendicant's poverty and sores were the product of his own licence. Then came those who taught that charity must be organised and due inquiry made as to the character and needs of the recipient. This destroyed the spontaneity of charity, the desire to do at once and easily a good work, and reap immediately that feeling of grace acquired which has descended traditionally from the older faith. Lastly, we have Galton's view of philanthropy, propounding as it does a third view of charity: seek the family of civic worth, the individuals of eugenic stock and confine your help, "whenever help is really needful," to these alone. Our statesmen

"should regard such families as an eager horticulturalist regards beds of seedlings of some rare variety of plant, but with an enthusiasm of a far nobler and more patriotic kind. For since it has been shown elsewhere that about 10 per cent. of the individuals born in one generation provide half the next generation, large families that are also eugenic may prove of primary importance to the nation and become its most valuable asset." (p. 76.)

Thousands of pounds are willed every year to charities, not infrequently without knowledge of, or inquiry into the social value of the institutions benefited; it is the old seeking for grace by good works regardless of the recipient. Yet not even mere hundreds of pounds are left by testators, as by Galton, to increase our knowledge of what really makes for national efficiency, or to put into practical use the knowledge so acquired. Year by year the property and endowment of charities, and the number of those living upon them, some good, many worthless, few really under national control, increase to an alarming extent.

Let us turn to the historical source of the Reformation and remember what happened when unthinking belief in "good works" poured into the lap of the Church endowments and estates for the support of masses of men, who did little to increase the efficiency of the nation; in Galton's sense of the words, many monastic bodies were decadent communities—indolent, slouching, conspicuously slack. The danger to-day appears to come from a different side, but the false principle which is at work is the same, and we can study the analogy with profit.

Galton's second paper is entitled: "Note on the Effects of small and persistent Influences*." Our author was always urging that small but repeated influences will like drops of water ultimately wear away the hardest rock. He preached it to his too impatient followers, who with less insight into the workings of Nature, and into the religious and social evolution of mankind, largely failed to be impressed by it; some were eager for immediate eugenic legislation, when Galton would have had them give repeated if almost impalpable shoves at the right instant to the swing of public opinion. It was in the persistent action of small influences that Galton trusted for a revolutionary change in public opinion with regard to Eugenics. He refers as an analogous illustration to cases in which travellers are deflected from their

* *Eugenics Review*, Vol. 1, pp. 148-9.

proposed course, and return to the point from which they started, thus really walking in a circuit or making a complete revolution. He cites the actual experience of a young friend who in a walk of $2\frac{1}{2}$ miles actually came back unconsciously to her starting point. It was a problem to delight Galton—he reckons it all out and concludes that in $7\frac{1}{4}$ paces she turned on the average through half a degree—which is roughly about $4'$ of angle in a single pace, an amount quite inappreciable by ordinary observation*. Then we have the long experience of a sagacious old man :

“So it is with public opinion. It may be slow to deflect, but if deflected gently and continuously in the same direction by reasonable advocacy, it may be ultimately turned quite round by that agency alone. ... For although, if watched for a short time only, public opinion appears to be stable, few things are more unstable in the long run.” (p. 149.)

Thus Galton would have his disciples turn public opinion in favour of Eugenics. And bearing his caution in mind, his biographer thinks always of the Odenwald, and gives Mrs Grundy a mild O. B. cannon—a friendly but persistent shove in the ribs at every third pace.

It was a grave misfortune that in this, the final year of his life, Galton should have been drawn into three controversies which sadly interfered with the last piece of work he had in hand.

The first attack came from a member of the Eugenics Education Society against the investigations which the Eugenics Laboratory had been making on the influences of order of birth on health and longevity. Now let us suppose those researches were wholly erroneous—which I do not admit—then the fitting way to criticise them was to show that they were statistically in error. Instead of that we were treated to an outpouring of turgid rhetoric—“The biometricians—so called, one fancies, because they measure everything but life”—“Things like that are trifles in biometrics, where anything may happen. The point I wish to make is that statements about the first-born can mean nothing, and investigations can discover nothing, until we abandon this preposterous worship of Number as Number—in which our Neo-Pythagoreans remind one of nothing more than the superstitions of the seventh son of a seventh son”—“I am not concerned here to defend the House of Lords, nor primogeniture in any of its forms, but I am concerned to protest against the tendency to identify the divine cause of eugenics or race-culture with these mathematical divinations,” and so on †.

* I may be permitted, perhaps, to cite my memories of a similar case in relation to Oscar Browning, a well-known character of my Cambridge days. While I was in Heidelberg studying after my Cambridge career, O. B. came there for a week-end in a very hot July, and we arranged on the Sunday to take a walk in the Odenwald, lunching about one o'clock at X. (I forget its actual name). The day was so hot that we determined to leave the road and walk in the same direction through the forest itself. Now those who knew O. B. will remember that when walking with him he cannoned against you at every third pace. As a result of this slight but persistent series of impacts, we emerged at 12.30 on to the high road again, moving in the right direction—not at X., but a few yards behind where we had first entered the forest. We returned to Heidelberg for lunch.

† Dr C. W. Saleeby in the *Pall Mall Gazette*, May 10, 1910, but there was much of the same character elsewhere also.

These denunciations were called forth by letters to *The Times*, March 21 and 31, from Francis Galton and myself in regard to the reform of the House of Lords. Galton drew attention to the fact that a distinction must be drawn between the principles of primogeniture and of heredity. The latter does not involve the former, and whereas a strong stirp may show an adequate number of scions of marked ability, it does not follow that we shall catch able legislators by sending eldest son after eldest son to the House of Lords. My thesis was that the Upper House has been too often recruited by mere plutocrats, by political failures, or by the sons of men who have not taken the pains necessary to found or preserve an able stock—the mother of the eldest son may have been the sister of a Cecil, or a chorus-girl. The House of Lords wants more, rather than less of the hereditary principle. As Galton put it: “There seems to be a regrettable amount of ignorance among our legislators of the facts and statistical methods upon which Eugenics is based.”

In *The Times* of May 21 appeared a summary of the memoir on the Children of Alcoholic Parents, issued by the Eugenics Laboratory, and on the whole a favourable leader upon it. This led to an endless controversy, and somewhat violent statements* on the part of those *The Times* termed “the enthusiastic advocates of what they are pleased to call temperance.” It is not my intention here to renew old controversies but to account for the feelings that were raised in Galton's mind with regard to the Eugenics Education Society in the last year of his life. One of Galton's chief missions in life had been to develop statistical theory, to obtain scientific measures of variation and correlation and thus to ascertain whether differences between classes were or were not significant. The development of his methods applied to living forms, including man, had been termed “biometry,” and solely by means of such biometric or actuarial methods is it possible to answer many social and medical problems. “General impressions are never to be trusted. Unfortunately when they are of long standing they become fixed rules of life, and assume a prescriptive right not to be questioned. Consequently those who are not accustomed to original inquiry entertain a hatred and a horror of statistics †.” Rightly or wrongly the ideas conveyed in the above sentences formed Galton's method and his conception of scientific research; to contemn them was to set at naught Galton himself.

Our statistics were good for the purpose we had in view and there was more than one series; from them came indubitably for the relative health of children of school age the result expressed in the words “the balance turns as often in favour of the alcoholic as of the non-alcoholic parentage”—in short we were unable to state that by the time children reached the school age, those of the alcoholic were less healthy than those of the temperate.

The Chairman of the Eugenics Education Society, Mr Montague Crackanthorpe, wrote at once to *The Times* to state that the result was “contrary to general experience”—but not a single datum did he bring forward. “General

* It was confidently asserted that the staff of the Laboratory were “in the pay of the brewers”!

† Galton: see our Vol. II, p. 297.

experience" was another term for Galton's "general impressions" which had assumed a prescriptive right not to be questioned. The Chairman administered one blow after another to the Honorary President of the Society! The latter had asserted that "probability is the basis of Eugenics"; the former thought he knew of a better method, though there is no evidence that he ever described it, still less attempted to apply it.

"To those, however, who are familiar with the methods of eugenic...research the Report [that of the Eugenics Laboratory] causes no surprise at all. It simply confirms their belief that, serviceable as biometry is in its proper sphere, it has its limitations, and that a complex problem such as that of the relation of parental alcoholism to offspring is quite beyond its ken...."

"First the biometrical method is based on the 'law of averages' which again is based on the 'theory of probabilities,' which again is based on mathematical calculations of a highly abstract order. From this it follows that in this particular problem, biometric research supplies no practical guide to the individual...."

"I agree that some of the new technical phraseology used by the biometricians is at first rather repelling—notably, their coefficient of correlation...."

But this, we are told, is not so bad as their probable error, which they had to borrow ready-made from the astronomers.

"Further: the biometrical method deals only with patent and not at all with latent characteristics or qualities. Herein it differs markedly from Mendelism...."

And so the Chairman of Galton's Society wandered on, talking of matters he did not understand and of a memoir—as he admitted afterwards—he had not at the time read*. Heredity was not discussed in the memoir, and accordingly the reference to Mendelism was meaningless. What the Chairman of the Eugenics Education Society imagined would be the effect of his letter I cannot say; that it moved Galton so that a word would have led him to resign his honorary presidency of the Society I do know. As for the members of the Eugenics Laboratory their irritation was far greater at the attack made on Galton's scientific creed than at the idle criticism of their own work. Galton himself wrote the following letter published in *The Times* of June 3rd:

ALCOHOLISM AND OFFSPRING.

TO THE EDITOR OF THE TIMES.

SIR, Mr Crackanthorpe's letter under the above heading casts doubt on the value of biometric conclusions because they are "based on the 'law of averages,' which again is based on the 'theory of probabilities,' which again is based on mathematical calculations of a highly abstract order." So far as I can understand this account it seems to me inaccurate, but I have no idea of what is meant by "law of averages." Allow me to give my own version of biometric methods—i.e. that they are primarily based on observations, after they have been marshalled in order of their magnitudes—the little figures, say, coming first and the larger ones last—by drawing diagrams, and by countings. This much suffices to give a correct idea of the distribution of any given set of variables; it is also sufficient to give a fair idea of the closeness of correlation, or of kinship, between any two sets of variables. Here exact correspondence counts as 1, no correspondence at all as 0, and intermediate degrees are counted by intermediate decimal fractions. However, in usual biometric computations, where large numbers of figures are

* He sent round the very morning his letter appeared in *The Times* to 42, Rutland Gate to borrow the memoir "as he thought he ought to see it."

discussed, the greatest possible precision has to be reached, and the measure of the accuracy so determined has to be ascertained; then elaborate mathematical methods must be employed, which cannot be briefly described except in highly technical terms.

I do not at all agree that "the relation of parental alcoholism to offspring is quite beyond the ken" of biometric methods. The memoir that is criticised discusses that relation in regard to offspring in their early life. The simple question, divested of all connotation, whether or no adult offspring suffer, and in what degree, seems to me perfectly within the ken of biometry. But the interpretation of the results so obtained is quite another consideration.

FRANCIS GALTON.

My admiration for Galton was never higher than when I read this letter. He had a right to be indignant, but he very quietly expressed his complete dissent from the views of the Chairman of his Society.

The controversy concerning the memoirs on alcoholism of the Eugenics Laboratory continued almost to the end of 1910. There was in the Temperance Press a good deal of the usual type of biased criticism; it was even boldly asserted that the memoirs had been published in opposition to the wish of Sir Francis Galton, and the manifest antagonism of the Eugenics Education Society to these memoirs needed some public statement; there were those who thought that the Laboratory had some relation to the Society, or even that the former was in rebellion against the latter, its supposed creator! The point had been reached when the paths of Society and Laboratory must diverge, a point I had foreseen, but had not expected to meet with quite so early on the journey. Galton was indeed in a difficult position: on the one hand there was a small group of workers endeavouring to the best of their ability to apply his own methods to reach safe conclusions with regard to important social problems; on the other hand he had called into existence a very miscellaneous group of persons—held together by a faith which had not yet its "confession"—many of whom had little scientific training and still less capacity for judging statistical work; a few were cranks, and some of these were rendered septic by their own verbosity.

This body Galton felt to be needful as a force to spread Eugenic ideas. He was only slowly learning that a "confession" is requisite to hold together the members of a sect, and that without this there will be just as many 'creeds taught as there are individual propagandists. To this miscellaneous crowd Galton's name was merely a symbol or flag; they had never studied his scientific methods, nor did they know the stress he had laid on various results deduced from them*. To them Eugenics was a matter of sentiment and of "general impressions," and they were not prepared to submit their sacred opinions to any numerical test, nor were they "sufficiently masters of themselves to discard contemptuously whatever may be found untrue" (see our Vol. II, p. 297). Not yet had Galton given up hope that

* One member doubted whether psychical characters were inherited at the same rate as physical; another whether "nature" was markedly more influential than "nurture," although he did not know what Galton understood by "nurture"; a third muttered "lies, damned lies and statistics," regardless of the truth that the trouble is not that figures lie, but that liars figure. In short, all that Galton held certain, and therefore held most dear, was called in question by members of the very society he had brought into being.

his propagandist Society might in the end prove useful; only when I saw him on Dec. 28–29 of this year was his judgment inclining him to resignation. I refused, although begged, to turn it either way. Galton expressed to me his grave doubts as to whether the Society was not doing more harm than good and whether it was not desirable to resign his presidency. I turned the conversation to other matters, believing that no attempt should be made by the relatives and friends of men of genius to control their decisions even when they are very old. You may aid them in their work, but must not attempt to mould their opinions. Their opinions may seem to us everyday folk unwise, but we have only first sight for the past, the present or the future—they have second sight, the prescience which in itself constitutes genius.

Professor Marshall, Sir Victor Horsley, Mr M. Crackanthorpe, Mr J. M. Keynes and Dr Saleeby joined hands in an attack on the Eugenics Laboratory memoirs. The latter in particular ventured in the *British Journal of Inebriety* to hint that Galton himself was not in sympathy with the work of the Laboratory. The latter wrote to me as follows:

THE COURT, GRAYSHOTT, HASLEMERE. Oct. 27, 1910.

MY DEAR KARL PEARSON, Saleeby is obnoxious to the cause. I send a copy of the enclosed by this post to the *British Journal of Inebriety* and another to Saleeby with a few curt but civil lines. I shall be rejoiced to hear from you. All goes well here. In great haste.

Ever affectionately, FRANCIS GALTON.

To the Editor of the *British Journal of Inebriety*. *Remarks by Dr Saleeby*. My attention has been directed to an article by Dr Saleeby in the last number of your *Journal*, at your request. I suppose that you will feel so far responsible for its contents as to print in your next issue my disclaimer of a prominent part of it.

The article implies that an antagonism exists between the views of the Eugenics Education Society and those of the Directorship of the Eugenics Laboratory of the University of London. That an antagonism exists between at least one member of the Society, namely Dr Saleeby, and the Laboratory is absolutely shown in this article. But I have no reason to suppose that the opinion of the Society at large, as held by its Council, is antagonistic*. If it were, I could not occupy the post I now hold of its honorary presidency, because so far from depreciating the work of the Laboratory, I hold it to be thoroughly scientific and most valuable, and I rejoice that I was its founder. FRANCIS GALTON.

It may not be amiss to state here that *all* the memoirs issued by the Laboratory were first read by Galton in proof and many as well in manuscript. He had never made a condition that he should see them, he left us complete freedom in every respect, but they were sent because even to the last his suggestions and criticisms were invaluable. To *The Times* a few days later, Nov. 3rd, Galton wrote thus:

THE EUGENICS LABORATORY AND THE EUGENICS EDUCATION SOCIETY.

SIR, It is frequently implied, especially by lecturers and writers of articles on alcoholism, and the belief appears to be widely entertained, that the Eugenics Laboratory of the University of London and the Eugenics Education Society are connected. Sometimes it seems to be thought that the laboratory is partly under the control of the society, or, on the other hand, that the two are more or less antagonistic. Permit me, as the founder of the one and the

* Galton chose to overlook at the moment the action of the Chairman of its Council!

honorary president of the other, to say that there is no other connection between them. Their spheres of action are different, and ought to be mutually helpful. The laboratory investigates without bias, and with the help of highly-trained experts, large collections of such *data* as may throw light on some of the many problems of eugenics. The business of the society is to popularize results that have been laboriously reached elsewhere and to arouse enthusiasm in the public. It is active in doing so. I wish to take this opportunity of saying that I wholly approve of the fairness and scientific thoroughness of the laboratory work under the direction of Professor Karl Pearson.

It is unfortunate that much of the criticism on the work of the laboratory is by those who write under a strong bias. That on the effect of alcoholic parentage upon offspring is an instance of this. I have neither need nor wish to say more about this question, because I understand that a discussion of these criticisms will appear in a second edition of the Memoir in question, which is now at the press*. Also that a new Memoir on extreme alcoholism in adults will appear in a few weeks. FRANCIS GALTON.

Enough has been said to indicate that Galton strongly sympathised with the staff of his Laboratory under the criticism poured out on it, much of which was written by those "under a strong bias." It worried him greatly because the attack originated in a group which had been labelled "Eugenists" by Galton himself, and was largely directed against the employment of methods, which he himself had devised.

Heredity and Tradition. The boundary line in the case of mankind between tradition—that is, the handing down of acquired experience in the form of knowledge, habits and institutions—and heredity—that is, the physical transfer to offspring of germinal matter which controls the development of their qualities or of their descendants' qualities—is not a very easily defined one. It does not admit of obvious experimentation in the case of man. Certain languages, for example, have nasal, guttural and even vowel sounds, which are difficult of acquirement by members of races which have not spoken those languages for generations. Is there a physical heredity of the organs of speech which carries with it differences of vocalisation in the different races of man? The song of birds is specific; do they acquire their individuality of song by heredity solely, or by tradition? The cry of the baboon can express at least pleasure, fear, rage and love-thirst; it is the same with the dog. We know too little of the development of language in the earliest stages of mankind to fix a definite boundary to the hereditary and the traditional. There are many other such instances which may be cited. Generally we must admit that it has been too customary to attribute to traditional knowledge in man what in other animals we term hereditary

* Replies were made to our critics not only in the public press, but in the following publications of the Laboratory:

A Second Study of the Influence of Parental Alcoholism on the Physique and Intelligence of the Offspring. By Karl Pearson and Ethel M. Elderton.

The Influence of Parental Alcoholism on the Physique and Ability of the Offspring. A Reply to the Cambridge Economists. By Karl Pearson.

An Attempt to correct the Misstatements made by Sir Victor Horsley, F.R.S., F.R.C.S., and Mary D. Sturge, M.D., in their Criticisms of the Memoir: "A First Study of the Influence of Parental Alcoholism, etc." By Karl Pearson.

All published by the Cambridge University Press.

“instinct*.” Ray Lankester, in a letter to *The Times* (May 30th, 1910), used the following words :

“There is no reason to suppose that any structural condition of the brain corresponding to knowledge or belief can be handed on from generation to generation by organic continuity—that is to say by the reproductive particles—whatever fancies and suggestions of a contrary tendency may have been indulged in by those who prefer mere speculation to scientific method.”

Besides this passage much else in Lankester's letter on Heredity and Tradition was scored by Galton in his copy which I possess. He was moved to write as follows :

HEREDITY AND TRADITION.

TO THE EDITOR OF THE TIMES.

SIR, In your issue of May 30 Sir E. Ray Lankester maintains it to be almost unthinkable that “definite belief, or what we call specific knowledge,” could be transmitted organically from one generation to another, and that very much of what is commonly ascribed to organic inheritance is really acquired through education. The question, in short, refers to the parts played respectively by Nature and by Nurture. I am not sure of the exact meaning to be attached to the terms “specific knowledge” and “definite belief,” as applied to other animals than man, but it seems to me that a hen-reared duckling shows a specific and definite belief that water is suitable for swimming by taking to it, notwithstanding the cries and gestures of its foster-parent.

Similarly that the terror of monkeys in a menagerie at the sight of a snake, or that of an artificially incubated chicken at the cry of a hawk, or, again, the impulse that seizes on the neuter females of a hive to massacre their brothers, whether the hive be reared from a single queen or otherwise, all rank as specific and definite impulses. Very many other illustrative cases could be adduced that will occur to most readers.

Sir E. Ray Lankester quotes Speech as part of the great tradition of man. It is so, no doubt, in its developed form, but not in its elementary condition of mere cries expressive of elementary wants. Each kind of animal has its peculiar cry. I have long since instanced the cuckoo, which, though nurtured in the nests of birds that chirp and twitter, utters its familiar note as soon as it is grown up.

Much more is inherited than educability—namely, the propensity to act in the same way under similar circumstances which characterises all animals of the same race, whether they have been reared from eggs and had no maternal teaching, or otherwise. Fowls reared in incubators, fish in fish farms, dragon-flies, moths bred for silk or for show, each species behaves after its kind in well-known ways, whether the individuals have been taught or left wholly to themselves.

To some persons it seems almost profane to place the so-called material and non-material matters upon the same plane of thought, but the march of science is fast obliterating the distinction between the two, for it is now generally agreed that matter is a microcosm of innumerable and, it may be, immaterial motes, and that the apparent vacancy of space is a plenum of ether, that vibrates throughout like a solid. FRANCIS GALTON.

Ray Lankester's reply was, I venture to think, by no means a strong one. He introduced the word “human” and stated that we had no right to consider that animals were, when exhibiting a particular behaviour, i.e. when following animal instincts, in a state of mind which corresponds to that of human knowledge or human belief. But the whole problem of the boundary line between heredity and tradition is whether, and where, we have the right to draw

* I have heard that certain primitive races, after defaecating, throw earth over their excrement. No doubt this is attributed either to fear of magic being wrought on themselves or to a nascent *knowledge* of sanitary welfare. But many dogs promptly cast with their hindpaws—very ineffectually under domestication—sand or earth over their faeces; this is of course attributed to *instinct*.

a distinction between instinct and traditional conduct. We have not at present any liberty to assume that animals are not conscious of and do not think about their so-called "instinctive" actions. The last paragraph of Galton's letter was merely a reminder that material and non-material are at present undefined terms, and that such terms as "corporeal" and "extra-corporeal" as used by Lankester are very vague. Further the statement—in our present ignorance—that it is barely possible to imagine a mechanism by which the reproductive germ-cells could carry from one generation to another the extremely complicated and precise structural conditions which are the material correlatives of what we call "a definite belief" or of what we call "specific knowledge," can be met by asking how it is possible to imagine a similar mechanism by which the chaffinches born last year are guided to build this year a nest of the most perfect workmanship

"...that seems to be
A portion of the sheltering tree."

Assimilated to its environment, is such a nest the product of hereditary knowledge* or hereditary instinct, and whichever it may be, is the material mechanism which can produce this any easier to imagine than one which might carry a "definite belief," the belief, for example, that the development of the herd instinct, which we call patriotism, is essential to national welfare?

(17) *Francis Galton's Utopia*. I have described, if briefly, the controversies of the last year of Galton's life; they undoubtedly hindered his other work †. But his active mind was still busy with the idea of spreading, even more widely than his Eugenics Education Society could achieve, his creed for the regeneration of mankind. Thinking over the problem of books that have had lasting influence on mankind his thoughts turned to those ideal politics, Plato's *Republic*, More's *Utopia*, Harrington's *Oceana*, and Butler's *Erewhon*. Why should he not exercise a similar influence on generations to come by writing his own *Utopia*, a story of a land where the nation was eugenically organised ‡? A modern Gulliver should start his travels again and seek a bride in Eugenia. Only a fragment of this *Utopia*, which was termed "Kantsaywhere," has reached me, it deals with "The Eugenic College of Kantsaywhere." The book purports to be "Extracts from the Journal of the late Professor I. Donoghue§, revised and edited in accordance with his request by Sir Francis Galton, F.R.S." On my last visit to Galton on Dec. 28–29, 1910, I was told with an air of some mystery by his niece that he was writing a "novel," that he probably would not mention it to me, but that if he did, I must persuade him not to publish it, because the

* The young birds certainly never watched their parents building the nest. Nor has anyone to my knowledge ever seen, or at least reported that he has seen, a young chaffinch or a young swallow studying the architecture of the parental home with a view to his or her own future needs!

† Besides the two Eugenics papers (see pp. 401–404 above), he only published the paper in *Nature* on "Numerical Profiles," see our Vol. II, pp. 326–328.

‡ "Let us then give reins to our fancy and imagine a Utopia—or a Laputa if you will." Galton in 1864: see Vol. II, p. 78. The idea was not originated in 1910.

§ "I don't know you"!

love-episodes were too absurdly unreal. It is perhaps needless, in view of what has been said above*, to say that I should have given no such advice. Galton was failing in physique but not in mind, when I talked with him less than three weeks before his death; and to recommend him to destroy what he had thrown time and energy into creating would have seemed to me criminal. If Swift had died before the issue of *Gulliver's Travels*, or Samuel Butler before the publication of *Erewhon*, their relatives might possibly have destroyed with equal justification those apparently foolish stories. I do not assert that Galton had a literary imagination comparable with that of Swift or of Butler, but I feel strongly that we small fry have no right to judge the salmon to be foolish or even mad, when he leaps six feet out of our pool up a ladder we cannot ascend, and which to us appears to lead into an arid world. We must remember that Galton had set before himself in the last years of his life a definite plan of eugenics propagandism. He wanted to appeal to men of science through his foundation of a Eugenics Laboratory; he had definitely approached separate groups like the Anthropologists in his Huxley Lecture and the Sociologists in his lecture before their Society and in his subsequent essays; he had appealed to the academic world in his Herbert Spencer Lecture at Oxford, and to the world that reads popular quarterlies in his Eugenics Education Society. But there are strata of the community which cannot be caught by even these processes. For these he consented to be interviewed, and for the still less reachable section who read novels and only look at the picture pages of newspapers, he wrote what they needed, a tale, his "Kantsaywhere." His scheme for proselytism was a comprehensive one, but I think Galton knew his public better than most men.

An Ibsen or a Meredith with far more imaginative power would, if they had taught Galton's creed, have struck above the level of those for whom Galton intended his tale. Its actual composition was started in May or June of 1910, when Galton had returned to Rutland Gate from Haslemere. It received many modifications in characters, names and actions during the following six months. In December he was sufficiently satisfied with it to submit it to a publisher, but the publisher would have none of it! Galton—as I realised, once he began to send me papers for criticism—was so modest that a moderately adverse judgment on a single point might lead him to discard many months of work; one learnt to mix praise with every suggestion for amendment. Almost anyone's adverse judgment, even that of a publisher or his reader who must assess solely by the likelihood of profit, was enough to shake Galton's confidence in his own work. To his niece, Mrs Lethbridge, he wrote on Dec. 28 :

You and Guy more especially must have had a wretched time of floods and tempests. We on the high ground feel like Noah on Ararat....

The glorious frosty sunshine of this morning picks me up. I have been "throaty" and obliged to rest a good deal. Karl Pearson comes this afternoon for one night. I am saving my voice for him. "Kantsaywhere" must be smothered or be suspended. It has been an amusement and it has cleared my thoughts to write it. So now let it go to "Wont-say-where." My very best New Year wishes to all of you and best love. Ever affectionately, FRANCIS GALTON.

* See above, p. 408.

Might not that which had cleared Galton's thoughts, in time, have cleared ours also?

The following letter will explain how the fragment of "Kantsaywhere" came into my possession. It is from one of Galton's nieces to whom the task of destruction had been committed by his executors, and written to one of these; it was forwarded to me by the latter with the fragments.

I was just thinking of writing to you about "Kantsaywhere" when your letter came. When I began the work of execution, my heart misgave me so much that I thought I would begin by merely "Bowdlerizing" it, and then see. So I destroyed *all* the story, all poor Miss Augusta, the Nonnyson anecdotes, and in fact everything not to the point—but there were a good many pages that I felt myself incapable of judging. So I am returning the mutilated copy, hoping (if you and Eva* could agree on the point) that Professor Karl Pearson might see it. Unfortunately Eva is not well enough just now to be consulted, so we must wait. Mutilated as it is, poor "Kantsaywhere" can never be published, and it is as safe from *that* as if it were destroyed altogether, but I think what remains might interest Prof. Pearson, and possibly, though I doubt it, be useful. Besides if *something* survived, I should not feel quite so much like a murderer! The duplicate copy is destroyed altogether...Anyhow it seems to me that if any one has "Kantsaywhere," it should be Professor Pearson or one of the Darwins. But this is only *my* view, and I don't want to urge it. You and Eva will be better judges than I.

[Dated: March 27, 1911.]

No doubt those who took upon themselves to pass judgment on Galton's last work were fully conscious of the responsibility they shouldered. But the fealty of a biographer is of a different kind; his duty is to give a *full* account of his subject; if there were weaknesses, they were compensated by strengths; if he is called upon to describe the actions of his subject when young, he must equally describe those of his old age. Whatever the duty of a literary executor† may be in determining whether the issue of an unpublished paper will tend to increase or lessen the reputation of the testator, this duty does not fall to the biographer; he must give an account of all that has come within his cognizance and which he thinks can illustrate the character and opinions of his subject. He must not emphasise strength by omitting to notice what some may consider weakness. Nor is the temptation to omit repeating to the reader what I know of "Kantsaywhere" at all overwhelming. I think it may help "to clear the thoughts" of all of us regarding what a society organised eugenically should strive to achieve. As for the story itself it was a mere driving band to carry the force of Galton's ideas into the working parts of minds differing widely from his own. The thread of the story, as far as I have been able to ascertain it from one who had read it before destruction and from the fragments in my possession, ran as follows: A professor of vital statistics after certain adventures reaches Kantsaywhere. He is a man of some parts and meets with a young lady of that country, who is about to take her Honours Examination at the Eugenics College. The professor is much interested in the customs of Kantsaywhere as well as in the young lady, and determines if possible to obtain for himself as high a Eugenics degree

* Lucy Evelyne Biggs, Galton's great-niece and companion.

† I do not think that Galton by his will appointed any literary executor, so that his papers, published and unpublished, would appear to have become the property of the residuary legatee, the University of London.

as Miss Allfancy. The hero of the tale is the "I" of the following extracts. Apparently a colony of Kantsaywhere had been founded and its government entrusted to a Council. My fragment opens with the statement that a Mr Neverwas had died :

"leaving all his property in the hands of trustees for the use of the Council of Kantsaywhere and their successors. He desired in his testament that the income should be employed in improving the stock of the place, especially of its human breed. The methods of doing so in force at the time of his death were to be continued with such future changes directed to the same end as experience might suggest.

"The College was to grant diplomas for heritable gifts, physical and mental, to encourage the early marriages of highly diplomaed parents by the offer of appropriate awards of various social and material advantages to relieve the cost of nurturing their children, to keep a minute register of results, and to discuss those results from time to time. He laid down the principle with much emphasis, that none of the income of his property was to be spent on the support of the naturally feeble. It was intended, on the contrary, to help those who were strong by nature to multiply and to be well-nourished. The practice of charity in the ordinary sense of protecting the feeble, however commendable in itself, was to be left to such other agencies as might be formed independently of the College and not disapproved by it.

"The 200 inhabitants of 1820 have now become 10,000, partly through natural increase, which is equal to the full rate of the present [1910] population of Russia, where in every decade, 100 becomes 140. At this rate in 90 years the 200 have become 1000. Immigration accounts for the rest.

"The Trustees of the College are the sole proprietors of almost all the territory of Kantsaywhere, and they exercise a corresponding influence over the whole population. Their moral ascendancy is paramount. The families of the College and those of the Town are connected by numerous inter-marriages and common interests, so that the relation between them is more like that between the Fellows of a College and the undergraduates, than between the Gown and Town of an English University. In short, Kantsaywhere may be looked upon as an active little community, containing a highly-respected and wealthy guild. So much for the early History of Kantsaywhere."

Our hero remarks that on his arrival in this strange colony he found himself more "keenly looked over" than ever in his previous experience.

"It is the way of Kantsaywhere, for everybody is classed by everybody else according to their estimate or knowledge of his person and faculties.

"Let me explain at once that what they are concerned with in one another are the natural, and therefore the only heritable characteristics. We have heard much in political talk of the 'prairie value' of land, that is to say, of its value when uncultivated, neither fenced nor drained, ploughed nor planted, only to be reached over the waste, and having neither houses nor farm buildings. Applying this idea to man, as if he were land, it is the prairie value of him that the Kantsaywhere people seek to ascertain. His 'brute value' would be a proper expression if employed in the original sense of that word, but 'brute' has acquired so many disagreeable connotations that if used here it would be misunderstood.

"I learnt that I was only just in time to undergo the first of my two examinations. It was merely a 'Pass' one, but a necessary preliminary for admission to the 'Honours' examination, in which the more successful candidates are classed in order of merit. The Honours examination of girls for the year was just over, and the lists were to be published that very night. The eldest daughter of the house, Miss Augusta Allfancy, was a candidate and all the family were keenly anxious to learn the result, for it would have an important effect on her after-life. It seemed tacitly agreed that nothing should be said on this matter until the results arrived, so they were only too happy to have their thoughts diverted to English topics and to my own affairs.

"In Kantsaywhere they think much more of the race than of the individual, and on my expressing a faint surprise, the family argued to the following effect: 'Suppose a person to be one of the two parents of four children. He or she contributes a half share to each, which is

much the same as a whole share to two*. This process may continue indefinitely in a growing population like their own, so his or her influence on the race may increase in geometric proportion as the generations go on. A person is therefore more important as a probable progenitor of many others more or less like to him in constitution than as a mere individual. I learnt that the object of the first examination was to give a Pass certificate for 'Genetic' qualities. By 'genetic' is meant all that is transmissible by heredity, whether it be of ancestral origin or a personal sport or mutation. The refusal to grant a Pass certificate is equivalent to an assertion that the person is unfit to have any offspring at all. By a second-class certificate that permission is granted, but with reservations, of which more will be said later.

"In reply to my expression of diffidence as regards my own success, I was emphatically reassured by my late scrutineers as to my *personal* capabilities, which Tom was pleased to rate at '30 at least,'—a term which will be explained later. But what my *ancestral* claims might be valued at, was another matter. They assured me that my sponsor, Mr Allfancy, had already submitted an outline of them to the examiners, in as favourable terms as the information warranted, and that he was quite satisfied with them for pass purposes, but was sure that they were insufficiently authenticated to receive adequate credence from the examiners for honours. Consequently far fewer marks might be awarded me for my ancestry than I probably deserved. They all expressed surprise at foreigners knowing so little with exactness about their grandparents and other ancestors, saying, that everyone in Kantsaywhere knew their own as well almost as if they had been their playmates and comrades, and that they all possessed an abundance of well authenticated facts about them †....

"I was told on inquiry that those who were placed high in the list, as Miss Augusta was, were justified in expecting numerous advantages on their marriage, that as many of them as there were vacancies in the College—there were ten in the present year—were elected Probationers, and therefore future recipients of those advantages if their husbands were adequately diplomaed, but not otherwise. What the girls most thought of, as Tom afterwards told me, was a marriage between two probationers whose joint marks exceeded 200 and who had at least two stars, of which more will be said later. It gave the right of having the marriage conducted with special ceremony ‡, and of its being known and recorded as a 'College marriage.' The offspring of such marriages are reckoned foster children of the College during their childhood, and they and their 'College parents' are helped in many important ways. But Tom added that his sister, in order to obtain one, must marry a man with at least 107 marks and one star, and that very few of such unmarried men are available. I took full notes of what Tom told me of the advantages attached to a College wedding, and to others which were a little short of having a 'joint 200 marks and two stars,' but I must get them verified before putting the results into my Journal."

We now reach Chapter V of the work, entitled: *Pass and Honours Examinations*. I have reproduced above all that remains of the first four chapters of the work; the bulk of the extracts given are certainly from Chapter IV, but some possibly from Chapter III. I do not know even the title headings of the first four chapters of the story. On March 21st Tom Allfancy takes the stranger to the Examination Hall for the Pass Examination, where, he tells us:

"I went through physical tests, which I need not describe particularly, as they were similar to those which all Englishmen undergo before admission into the Army, Navy, Indian Civil Service§, etc. But the examination was more strict and minute and in the medical part it was

* A "share" in this sentence must be taken of course to comprise all that an individual's germ-plasm involves, not merely his apparent characteristics.

† Galton was undoubtedly thinking here of his books the *Record of Family Faculties* (1884) and the *Life-History Album* (1884); see our Vol. II, pp. 362-370.

‡ This idea, as well as others in "Kantsaywhere," closely resembles that of Galton's first paper on Eugenics, that of 1864; see our Vol. II, p. 78.

§ See our pp. 231-2 above.

such as a very careful Insurance Office* might be expected to require. I was much questioned about the papers that Mr Allfancy had sent in, as regards my personal knowledge of the authorities for the facts there set forth. They then smilingly gave me a first-class P. G.—Passed in Genetics—degree, and I had to imprint my fingers in their Register, for future identification if necessary †. So I returned to my host with one small portion of a load of anxiety taken off my mind.

“I heard a little now, but must inform myself more particularly hereafter, as to the fate of those who failed to pass: A Bureau was charged with looking after the unclassed parents and their offspring, and much was done to make the lot of the unclassed as pleasant as might be, so long as they propagated no children. If they did do so kindness was changed into *sharp severity*.

“Labour Colonies are established where the very inferior are segregated under conditions that are not onerous, except that they must work hard and live in celibacy. It is difficult to describe the indignation and even the horror felt in Kantsaywhere, at acts that may spoil the goodness of their stock, of which they have become extremely proud and jealous. They look confidently forward to a coming time when Kantsaywhere shall have evolved a superior race of men. As it is the people who are born there and emigrate nearly always excel most of their competitors on equal terms, and return in after life with sufficient means to end their days in tranquillity near their beloved College.

“In the evening I found the Allfancy party much saddened by ill news to the effect that one of their dearest friends, who had made a ‘College’ wedding with much éclat a few years previously, had given birth to a deformed child. I had expected to hear from Mrs Allfancy some severe remark on the subject, but was mistaken. She was most sympathetic with the family and the child. The College was responsible, she said, for its existence: the marriage of its parents had its highest approval; it was brought into the world in accordance with the rules they advocate. The misfortune was due to some overlooked cause, which might or might not be of a kind that would hereafter be understood and could be provided against. No blame whatever attaches to the parents who should be whole-heartedly condoled with. The child should be in no way discouraged on account of its natural defect, except as regards absolute prohibition hereafter to marry.”

Our hero now enters for the Honours Examination, and the description of the anthropometric tests and even the place of examination remind us at every turn of Galton’s South Kensington Anthropometric Laboratory: see Vol. II, pp. 257–262 and 370 *et seq.* The reader who has followed the course of Galton’s labours in Vol. II will recognise how in his Utopia he draws together all the threads of his apparently disconnected efforts to unite them into a strong eugenic strand. The following is Professor I. Donoghue’s account of his experiences on March 25th:

“This was the first of the four days to be occupied in the annual examination of about 80 candidates for Honours, one quarter of them on each day. The examination consists of four divisions. The first is mainly anthropometric, the second is aesthetic and literary, the third is medical, and the fourth is ancestral. Many examiners are employed and a staff of skilled clerks in addition. The examination is conducted in batches, each batch being assigned a particular hour for beginning, and for being thenceforward submitted to the four sets of Examiners successively.

“My batch had to present itself at 12 noon. At that hour I handed in my Pass Certificate to an official, who sat in the Hall, by the entrance to a long enclosure of lattice-work ‡, through which everything was easily seen from the outside. The enclosure contained a row of narrow

* See our pp. 243 ftn., 268 above and Chapter XVII.

† See our pp. 154 and 159 above.

‡ The whole passage is a description of Galton’s First South Kensington Laboratory; even the lattice-work—the beginning of which is seen in Plate L, p. 371, of our Vol. II—was in use there.

tables ranged down its middle, on which most of the measuring instruments were placed, the heavier ones standing on the ground between them. Those instruments were duplicated that required a longer time for their use than the rest. A passage ran between each side of the tables and the walls of the enclosure. Five attendants, each having one candidate in charge, were engaged all day long in making a tour of the tables in succession. The candidate emerges and is dismissed at an exit door, which is separated from the entrance by a low gate, over which the official can lean while he sits.

"Immediately after entering the enclosure, my attendant made me sign my name and impress my blackened fingers on a blank Schedule. It contained numerous spaces with printed headings, which the attendant filled in with pencil as he went on. He took me round the enclosure, testing me in turn by every instrument and recording the results. They referred to stature, both standing and sitting, span of arms, weight, breathing capacity, strength of arm as when pulling a bow, power of grip, swiftness of blow, reaction time, discrimination (blindfold) between weights, normality of eye, acuity of vision, colour sense, acuteness of hearing, discrimination of notes, sensitivity of taste and of touch, and a few other faculties. Lastly the states of my teeth, which are particularly good, and of my mouth, were inspected. The entries to my schedule now and later on were, as I heard, to be examined and checked by clerks whose business it was to translate the Measures into Marks, according to a definite system. For related faculties, Weight and Strength in combination, a sheet of paper ruled in squares was prepared, in which a series of successive weights was written down its side and a series of strengths along its top. In the square where the line of the one was crossed by the column of the other the appropriate mark was written. This was copied out by the clerk for the use of the Examiners. But more will be said later on of their Measures and Marks.

"I was next taken to another part of the Hall and submitted to an examination for aesthetics and literature. I was given both prose and poetry to read aloud before the Examiners, a copy of these extracts having been handed to me to peruse beforehand. Then some simple singing was asked for. After this, a few athletic poses were gone through as well as some marching past, and the Examiners noted their opinions on my Schedule. Then I was allowed an hour to write four short essays on given subjects. This was the only literary test.

"I should say that they lay much stress on the aesthetic side of things at Kantsaywhere. 'Grace and Thoroughness' is a motto carved over one of the houses for girls in the College, and I have seen it repeated more than once in embroidery and the like. A loutish boy and an awkward girl hardly exist in the place. They are a merry and high-spirited people, for whose superfluous energy song is a favourite outlet. Besides, they find singing classes to be one of the best ways of bridging over the differences of social rank. Musical speech and clear but refined pronunciation are thought highly of; so is literary expression, and this examination is intended to test all these. The 'arry and 'arriet class is wholly unknown in Kantsaywhere.

"I was then medically examined in a private room, very strictly indeed, and much was asked about my early ailments and former state of health. Here again I need not go into details, for they can be easily imagined in a general way, even by a layman. It is wonderful how adroit the skilled medical examiners become in their task. Nothing seemed to escape their sharp observation, whether of old scars or any internal abnormality. My few defects were unimportant; I thought my vaccination marks had become invisible but they were quickly noted and minutely examined. The principles on which marks are to be awarded are fully laid down in printed directions.

"Lastly came the consideration of my ancestry. The papers communicated by Mr Allfancy were produced and again looked into and criticised, but much more minutely than before, and the value of the authorities for the facts stated in them was keenly discussed. I lay under a difficulty here. The official records made at Kantsaywhere are so minutely kept, that the requirements of the examiners have grown to be extremely rigorous as regards the evidences of ancestral gifts and maladies. All immigrants are more or less suspected. Besides this, such evidences as would require little confirmation in England, owing to public knowledge of the characters of their high authorities, may, and do, require more confirmation here than can easily be collected at home. I deeply resented my own ill-luck in this matter. The examiners told me only what I was fully prepared to hear, but expressed at the same time much regret that they were unable to give as many marks for my Ancestral Efficiency as I possibly, or even probably, deserved. In fact, I only got 5 marks for my ancestry.

"This concluded all that I had to undergo. I had spent about one hour under anthropometric tests, and from half-an-hour to one hour under each of the other three, besides the hour in essay-writing, or about four hours in all, exclusive of intervals. Candidates were undergoing examinations in different parts of the Hall at the same time, but not necessarily in the same order. The Medical Room was wholly separated from the rest. The Examination Hall was in full use during 6 hours, so with duplicated examiners, more than 20 candidates could be wholly and easily examined in a single day. Four such days dealt with all the 80 candidates. The clerks were simultaneously employed, each in copying and in reducing entries and adding up figures, which after being checked by other clerks were submitted to the chief examiners. Those gentlemen had also acted as overseers and taken some part in the examinations.

"The maximum number of positive marks that could be gained by each candidate is four times 30 or 120. A star (*) might also be gained in each subject. The marks were totalled, and about half of these totals usually range between + 45 and + 70. None of the candidates were given negative marks, those who would otherwise have received them having been weeded out by the Pass Examination. The names and marks of those who gained 70 marks and upwards are published in the newspaper, together with such brief notes as each case might call for. This part of the publication is official and wholly under the editorship of the Registrar. I learnt that supplementary marks might be, and often were, accorded for especially good service to the community subsequent to the examination. They had to be proposed by the Board of Examiners, and the grounds for the proposal had to be set forth in their Annual Report. This was submitted to the final approval of the General Meeting, which was almost always given as a matter of course. These Supplementary Marks are supposed to attest that the natural capacity of the person who receives them really exceeds that which was expressed by the number of marks he had received at the original examination.

"I do not know much in detail about the examination for girls. It is carried out by women examiners who had taken medical degrees elsewhere, and is, I was assured, as thorough as that which I had myself undergone, and was considered to be as trustworthy.

"There is a bifurcation of the Examinations both for girls and boys, part of each of them being intended for the more cultured class and part for the hard workers, whether on farms or in town. I need not go into particulars.

"I inquired minutely whether they were unable to devise some test for endurance or staying power, which seemed to me one of the most important of those they had to consider. It seemed that they had not as yet succeeded in eliminating the effect of practice. Neither were they enabled to examine into character directly as a separate subject, partly because it was not fully developed at the usual age of examination, and partly because of the extreme difficulty at that age of estimating it justly, the teachers and the comrades of a girl or boy often making sad mistakes of judgment.

"I was assured that no doubt was felt as to the trustworthiness of the marks given by the examiners, as a general rule, subject rarely to exceptions such as might be expected. The sons of College Marriages were unmistakably superior in bodily and mental gifts to those of the ordinary folk of Kantsaywhere, and these again compare very favourably with those of neighbouring colonies. Besides this, numerous results are published in which comparisons are made between the children of high-diplomaed parents and of those who are less highly graded. All concur in showing the general superiority of the former, just as much but not more than would be expected of the offspring of various qualities of any domestic animal. A general conviction of this truth forms the firm basis of the customs and ideals of Kantsaywhere.

"CHAPTER VI. *The Calendar of Kantsaywhere.* I returned to my host's house, where I was congratulated on having gone through my ordeal. I felt sure of success in the anthropometric part because I was something of an athlete, having rowed in a University race. I was also good in other respects, being reputed by good judges to be so prompt and sure a shot, that I have been urged, in all seriousness, to go to Monte Carlo and compete there for the valuable pigeon-shooting prizes. I knew I was all right medically, and thought I might do fairly in aesthetics. I, however, saw clearly that I was not even yet received with perfect freedom, except by Tom; the others evidently waited to learn how I should be placed, before letting themselves go, so to speak. They did not as yet invite me to accompany them to the houses of their friends, so I had much spare time, and thought the best way of occupying it until the lists were out, was to stay indoors and to make a careful study of the Calendar of Kantsaywhere College. I saw little

of Miss Augusta at this time, as she was invited to a succession of parties. The first four were official invitations given to ensure that each girl probationer should be made acquainted with an equal number of male probationers three or more years older in standing. The male probationers are divided more or less at random into two groups A and B, the females into F and G, then the four official invitations are to A and F, A and G, B and F, and B and G. They have an amusing old-fashioned method of grouping and re-grouping the guests at these entertainments, in order that each girl should have a full half hour of conversation with each young man. It approached merry-making and banished diffidence. It seems however that marriages between two newly made probationers are not particularly approved. It is thought best that the girls should marry young, say about 22 years of age, which admits of more than 4 generations being produced in each century. As for the men, they have to establish themselves in some occupation before they can support a wife, which cannot usually be done till nearly the age of thirty. Consequently many social gatherings are arranged to bring together young girl probationers and older unmarried men, also of the rank of probationers. Persons may fall in love in Kantsaywhere as they do in England, on grounds more or less unaccountable to others, but it is felt here that the best girls and the best men should have frequent opportunities of becoming friends and the earliest chance of falling in love with one another.

"I was surprised to learn from the Calendar of the large extent of the College possessions in farms, houses, hostels, and funds, which were used to encourage early marriages among the most highly diplomaed; I also perceived that the Collegiates must look upon themselves, as they did, as a great family community, out of which about one half of the members of each new generation were obliged to seek their living elsewhere, just as it usually happens in English families now. The Calendar contained the names of all who, since the date of the preceding edition, had either received marks exceeding +70 or any special award. The record in the Calendar of their doings was minute. It corresponded in length to the paragraphs of Burke's or Debrett's Peerages, but differed totally from them by containing anthropological facts, and little else. It was a mine of information for inquirers into heredity, yet it was described as being only a brief abstract of what was preserved in MSS. in the records of the Registrar.

"Tom had hinted to me that he thought his sister was slightly chagrined at her marks falling short of one half of those required for the great honour of a College wedding. The number of names of the men amongst whom she must marry, in order to secure one, was very small, and could easily be found from the Calendar. I looked for them and found only twelve, some or all of whom might be already engaged.

"The large property of the College consisted, first, of the original endowment, of which the income was now retained in England and had been accumulating during recent years to form an Emergency Fund. Secondly, of the fee simple of the district and of all the houses, etc., that had been erected on it since the beginning of the Settlement. Thirdly, of gifts and bequests from former Collegiates, in gratitude for their rearing and in payment for its cost. Fourthly, the annual Eugenic Rates from Kantsaywhere. The inhabitants submitted as cheerfully to as heavy a rate in support of the College, as we do for the support of our Fleet, namely three quarters of £1 per head of the population. We in England, numbering some 45 millions, contribute about 35 millions of pounds annually to the maintenance of our Navy. Here, the 10,000 inhabitants contribute £7,500 to the College, and could easily be persuaded to contribute more, if it were really needed. In very round numbers one half of the income from the last two sources, from gifts and from rates, goes to the Examining, Inspecting and Registering Departments, which together form the soul of the place. The other half goes to collegiates who really need help to enable them to give proper nurture to their large families. This is done very judiciously on the joint recommendations made to the Committee of Awards, by a Board of District Visitors in conjunction with the District Inspector. The Chief Medical Inspector is one of three High Officials, the Rector and the Registrar being the other two. These are elected by the Senate at its Annual General Meetings for a term of three years, and are re-eligible. The Senate consists of all resident Collegiates of either sex, who had gained at least 70 marks, or who are parents of children whose average marks exceed 70 and whose total marks exceed 200, and is the supreme Authority, but in quiet times, the above-mentioned three High Officials, together with a Council, annually elected at the General Meeting, manage matters very much in their own way. This constitution works very well on the whole, though with occasional jars, much as those which occur in our leading Scientific Societies at home.

“An important Committee of this Council is charged with the care of those who fail to pass the Poll examination in Eugenics. Such persons are undesirable as individuals, and dangerous to the community, owing to the practical certainty that they will propagate their kind if unchecked. They are subjected to surveillance and annoyance if they refuse to emigrate. Considerable facilities are afforded to tempt them to go, and agents of the College who are settled in the nearer towns to which they are most likely to drift, are prepared to take charge of them on their arrival. Their passage out is paid, small sums are granted to them at first, on the condition of their never returning to Kantsaywhere. They must renounce in writing all its privileges before being allowed the cost of deportation. Not a few of these persons do well enough especially when the principal reason of their rejection is some hereditary taint, and not personal feebleness. As regards the insane and mentally defective, suitable places for their life segregation are maintained in Kantsaywhere. With so small and eugenic a population, the cases are few and easily dealt with.

“The Regulations printed in the Calendar confirmed the view I had already formed, that the propagation of children by the Unfit is looked upon by the inhabitants of Kantsaywhere as a crime to the State. The people are not misled by the specious argument that there is no certainty whether the anticipations of their unfitness will be verified in any particular case and the individual risk may be faced. They look on the community as a whole and know the results of unfit marriages with *statistical* certainty, which differs little from *absolute* certainty whenever large numbers are concerned. For instance, they say 1000 unfit couples will assuredly produce a number of children that can be specified within narrow limits, of each grade of unfitness, though they cannot foretell whether these children will be the offspring of A, B, C or X. This same statistical certainty forms a large part of the foundation of laws and penalties in every part of the world. There are many grades of expected unfitness, ranging from, that of the offspring of the idiots, the insane and the feeble-minded, at the lower end of the scale of civic worth, to whom the propagation of offspring is peremptorily forbidden, whether it be by forcible segregation or other strong measures, up to the moderate unfitness expected in the offspring of parents who rank only a little below the average in eugenic worth. The methods of penalizing, taken in the order of their severity, are social disapprobation, fine, excommunication as by boycott, deportation, and life-long segregation. The degree of restriction varies from the limitation of the offspring of unfit parents to a small number, up to its total prohibition. They say that limitation of families is now a recognised institution among most of the cultured and many of the artisan and labouring classes in Europe and America, and there is no reason why a sentence demanding it for the protection of the nation should not be passed, and the infraction of that sentence punished as a criminal act. As regards fines, if the defaulter cannot pay them, he is treated with severity as a bankrupt debtor to the State, being placed in a Labour Colony with hard work and hard fare until it is considered that he has purged his debt. With so small a population as the 10,000 of Kantsaywhere, and with the general high level of breed of its inhabitants, the cases of marked unfitness are not sufficiently numerous to require formal classification in different asylums. They can be more or less individually dealt with by the Board of Penalties.

“The difficulty must again be discussed here, relating to the introduction of unfit immigrants. Municipal laws have been enacted, that are quite as severe as those in America and elsewhere, to exclude impecunious immigrants, but they are enacted here for the purpose of excluding the immigration of the constitutionally unfit into Kantsaywhere. Ships, as already mentioned, are only allowed to disembark their passengers subject to the fulfilment of certain accepted conditions. If unfulfilled, the ship-owners are obliged to convey them back to whence they came. Registered medical men are established at the principal ports from which immigrants arrive, whose certificate that a person has passed the ordinary test for fitness in body and mind is accepted. It exempts them from the somewhat more severe and tedious examination of which I have already spoken, which is conducted in a building attached to the Custom House and must be successfully gone through before they are allowed to disembark even for a short residence. They are required later on to pass the Poll examination which allows them to become citizens of Kantsaywhere.

“The grades of unfitness on the part of those who are married are determined by the number of their joint marks. Immigrant parents both of whom have received positive marks at the Poll examination may keep their children with them, but not otherwise.

"The restriction placed by public sentiment and, in extreme cases, by penalty, on the number of offspring that a couple may propagate in Kantsaywhere, is based on that of their joint marks. If these exceed + 20 the restriction is nil and large families are encouraged. If between + 10 and + 20 they are restricted by public sentiment to about three children. If over 0 and under + 10 they are restricted to two children. If between 0 and - 10 they are restricted by law as well as by sentiment to one child. If below - 10 offspring are wholly prohibited to them. The above concessions were established as compromises, after balancing conflicting claims. It was necessary to take into account the need of the parents, the advantages of family life and the well-being of the children, as well as that of the race."

Chapter VII is entitled *Measures and Marks*. It commences with the following words :

"A paragraph in the Calendar headed "Measures and Marks" greatly interested me in connection with my previous statistical studies. These enabled me to understand easily the methods used in Kantsaywhere, which must seem puzzling and fanciful to others to whom they are wholly new. Such persons will I fear skip this chapter."

Next follows a description of Galton's process of ranking by size. Then the quartiles are defined and we are told that half of their difference is taken equal to 10 Q-Vars*, while half of their sum is accepted as the middlemost value (median) of the series.

"Each measure is translated into the middlemost value of the series *plus* or *minus* so many Q-Vars. The quickly increasing variety of larger values than 30 Q-Vars and the fear of untrustworthiness in applying them have led the examiners in Kantsaywhere to limit their measures to a maximum of 30 Q-Vars, in each of the four principal divisions of the Examination. If the candidate obviously deserves still higher marks, they add a star (*) with accompanying explanation. Tom's exclamation that I was 'at least 30 in personal qualities' was thus explained.

"Measurement by Q-Vars, or indeed by any kind of Var, in the case of all 'Normal' variables †, has the further advantage of affording means whereby class-places may be converted into measurements, or vice versa, notwithstanding that they run at very different rates.

"...It is reasonably inferred that such faculties as cannot yet be directly measured, but which can be classified by judgment, will also obey the 'normal' law. The suitability of candidates for a particular post, or the goodness of essays written by different candidates, are cases in point. Whenever the objects in a 'normal' group of values can be classified, their class-places can be converted into Q-Vars.

Conversion of Q-Vars into Centesimal Class-Places.

Q-Vars	- 30	- 20	- 10	0	+ 10	+ 20	+ 30
Class-places (Centesimal)	2	9	25	50	75	91	98

"Measures made in Q-Vars are converted into marks by multiplying them by a factor appropriate to the importance of the faculty measured."

Thus Galton says if the civic worth of one faculty be $\frac{1}{2}$ that of a second, the marks of the first will be multiplied by 0.5, before combining the two.

* The "Var" is thus the tenth part of the "probable error" = $\cdot 06745 \times$ standard deviation. Thus 30 Q-Vars equal about 2.0235 times the standard deviation, and roughly about 2% of the population exceeds this.

† "Normal" variation is described in simple terms and attributed (erroneously) to "the great mathematician Gauss"; it is stated to be "with a useful degree of precision" the rule of distribution in the case of most anthropological measurements.

He does not explain how the proper weighting is to be reached. It is this system of scoring that the clerks used, when, working in pairs independently for the sake of checking, they reduced the marks for the Examiners in the eugenic tests (see p. 418 above). It will be seen that Galton is here reproducing the ideas and methods of his paper of 1889 on "Marks for Bodily Efficiency" and his preference for the use of percentiles (see pp. 387-390 of our Vol. II). In that second volume I have said on p. 401 that Galton, when 85 years old, broke a last lance for the use of the ogive curve, the median and quartiles. I had not at that date examined the fragment of "Kantsaywhere." It will be clear from the above *résumé* of its Chapter VII, that within two months of his death, in his 89th year, Galton again illustrated in popular language the advantages of his method of ranking.

We now reach the last chapter that has been preserved of Galton's Utopia. Here he largely drops his Eugenic State and gives expression to his own ideas on male and female beauty, on immortality and on funeral services, bringing in of course composite photography: see our Vol. II, pp. 283-298. I reproduce the whole of this chapter.

"CHAPTER VIII. *Marks gained by me—Society of the Place.* The lists came out on March 30. I got 17 marks less than Miss Allfancy, i.e. 77, but under the circumstances it was a very fair performance and I at once noticed the change in the reception given to me. It was distinctly more genial and intimate than before, and I was begged to accompany my host's family to half a score of different places to which they were invited. The loss of marks I had sustained owing to an "English" ignorance of my ancestry, became generally known and allowed for. I will describe in a few words my general impressions of Kantsaywhere society, to which I was now freely introduced. I had carefully guarded myself against exaggerated expectations of what might have been achieved by selective breeding at this place. It is but a small community and though of a high general level, the highest variations from that level cannot be expected to exceed those of an enormously larger population whose level is somewhat, and even considerably, lower. There are nearly 50,000,000 inhabitants in the British Isles and only 10,000 in Kantsaywhere; that is, they are 5000 times fewer. Again, however far gone a population may be in its decadence, it will retain enough organisation to bring forward its best specimens when there is a demand for them. I was greatly impressed by the tone and manner at the social gatherings that I attended, which were at first those of the more cultured class. The guests were gay without frivolity, friendly without gush, and intelligent without brilliancy; they were eminently a wholesome set of young people, with whom one could pass one's life, not only in serenity but with satisfaction and even a large share of keen pleasure. The physique of the girls reminded me of that of the "Hours" in the engraving of the famous picture of 'Aurora' by Guido in Rome. It is a favourite picture of mine and I recall it clearly. The girls have the same massive forms, short of heaviness, and seem promising mothers of a noble race. The simple way of gathering the hair in a small knot at the back of the head, shown in the dancing 'Hours,' is the fashion at Kantsaywhere. So is the general effect of their dresses, only they are here more decorously buttoned or fastened, than are the fly-away garments in the picture. As for the men they are well built, practised both in military drill and in athletics, very courteous, but with a resolute look that suggests fighting qualities of a high order. Both sexes are true to themselves, the women being thoroughly feminine, and I may add, mammalian, and the men being as thoroughly virile. No petty gossip or scandal is to be heard in their conversation, but a great deal is said about family histories and the prospects of the coming generation. These subjects occupy almost as much of their talk as athletic topics do at a public school, or as the performance of horses in racing circles. And it was genuine interest too; for they looked upon themselves, as I have mentioned more than once, with obvious pride as a chosen race for the purpose of furthering humanity, and were as suspicious and guarded against unknown outsiders as a Jew against a Gentile, or



Guido Reni's Picture of Apollo and the Hours preceded by Aurora, from the Casino of the Palazzo Rospigliosi, Rome.
Reproduced by kind permission of *The Architect* (March 14, 1885).

a Greek against a Barbarian. This gave a prevalent, and not a disagreeable mannerism. It suggested a constant sense of *noblesse oblige*, far removed from that disagreeable but not uncommon "Oxford tone" which implies that the speaker is a superior person to his listener. I think the selection of Kantsaywhere College folk may be rated as about equivalent to at least the best quarter of that of the population of Kantsaywhere town, which itself has a high level. The Collegiate average must be fully equal to the best twelfth of an English population. Now 1 in 12 is that of the foreman of a jury, and, unquestionably, the foremen play their parts, as a rule, very respectably. We are accustomed to appreciate bodies of picked men in many ranks of life and know well how superior they are. The crew of an Arctic research vessel are said to be a magnificent set of men: so are the Sappers and Miners. At a somewhat lower, but yet conspicuous degree of selection, stand the persons attached to those great and well-managed estates and firms, whose service is so popular that they have always more candidates to choose from than there are vacancies to fill.

.....
"Nothing struck me more than the photographic workshops, for besides their immediate interest, a religious parallel was drawn from them which will be described farther on. There is a great demand in Kantsaywhere for composite portraits of families. The material for making these is abundant and excellent, as it has long since become the fashion, now grown into an obligatory custom, for everyone to be photographed at reasonable intervals, both in full face and in profile, under similar and standard conditions of light, in addition to whatever more artistic representation may be desired. I am a bit of a photographer myself, and was delighted at the punctilious and exact way by which composite photographs were made. There was no unacknowledged faking but the work was strictly truthful throughout the whole process. The object is, I need hardly say, to superimpose the images of many different portraits, all of the same size, aspect and shading, in succession for a short time, upon the same photographic plate. The scale of the portraits and their emplacement require much precision. Here the various reductions and adjustments are leisurely made for each portrait and in a separate frame. When the photography begins, the frames are dropped in succession into their exact place, guided by pins and resting on a horizontal board below a fixed vertical camera*.

.....
"I saw several beautiful composites in the Studio, of men and women, respectively. Every family desires at least four family composites, one of the Grand-parental series, including Great Uncles and Aunts on both sides, another of the Parental series, including Father and Mother, Uncles and Aunts, and yet another of Self, Brothers and Sisters. Lastly, one made from the four grandparents and the two parents, allowing one half of the exposure time to each grandparent that was allowed to either parent. A peculiar interest lies in the close analogy between composite portraits and their religious imagery, as will be seen from what is now about to be said.

.....
"Their creed, or rather, I should say, their superstition—for it has not yet crystallised into a dogmatic creed, is that living beings, and pre-eminently mankind, are the only executive agents of whom we have any certain knowledge. They look upon life at large, as probably a huge organisation in which every separate living thing plays an unconscious part, much as the separate cells do in a living person. Whether the following views were self-born or partly borrowed I do not know, but the people of Kantsaywhere have the strong belief that the spirits of all the beings who have ever lived are round about, and regard all their actions. They watch the doings of men with eagerness, grieving when their actions are harmful to humanity, and rejoicing when they are helpful. It is a kind of grandiose personification of what we call conscience into a variety of composite portraits. I expect that many visionaries among them—for there are visionaries in all races—actually see with more or less distinctness the beseeching or the furious figures of these imaginary spirits, whether as individuals or as composites. There seems to be some confusion between the family, the racial, and the universal clouds of spirit-watchers. They are supposed to co-exist separately and yet may merge into one or many different wholes. There is also much difference of opinion as to the power of these spirits, some think them only sympathetic, others assign the faculty to them of inspiring ideas in men, others

* See our p. 215 above.

again accredit them with occasional physical powers. Everyone here feels that they themselves will, after their life is over, join the spirit legion, and they look forward with eager hope that their descendants will then do what will be agreeable and not hateful to them. I have heard some who likened life to the narrow crest of the line of breakers of a never-resting and infinite ocean, eating slowly and everlastingly into the opposing shore of an infinite and inert continent. But that metaphor does not help me much, beyond picturing what, in their view, is the smallness in amount of actual life with the much larger amount of elements of potential life. It is quite possible that if their confused ideas were worked out by theologians, who in a general way firmly believed in them, and who were able to define on valid grounds the extent of influences that the spirit world exerts over the living world, a very respectable creed might be deduced. Their superstition certainly succeeds, even as it is, in giving a unity of endeavour and a seriousness of action to the whole population. They have no fear of death. Their funerals are not dismal functions as with us, but are made into occasions for short appreciative speeches dwelling lovingly on the life-work of the deceased.

.....

“The houses near the town are practically villas, for the use of town dwellers, each with a small garden for flowers, vegetables and fruit. The extent of garden and agricultural land is about twenty square miles. There are about 500 holdings in all, of a rough general average of 40 acres each. About one half of these are let at a low rent, especially to highly diplomaed parents. Though every married couple has perfect freedom in choosing his residence here, or in emigrating elsewhere, the attractions offered to those who settle in the country are so large and many that the pick of the Collegiates occupy farms or villas. A country life is considered to be so highly conducive to the health and size of families that a large part of the wealth of Kantsaywhere is gladly allotted to its encouragement. It is a great convenience to the Registrar to have so large a part of his charge located close at hand and for his inspectors to have means of easily verifying doubtful statements by conversation with neighbours. Nearly every household undertakes some unpaid office connected with administration and there is abundance of local pride and patriotism in doing this work well. With a less gifted people these customs would hardly answer, but here it is otherwise.

“The character of the farming of Kantsaywhere is in many respects such as is described as ruling in Denmark, but for the most part it must bear a closer resemblance to....”

Here my fragment breaks off, the remainder having been removed, so that it is not possible to say what agricultural system Galton thought superior to that of Denmark.

Galton himself wrote very little of “Kantsaywhere” down; he dictated it to his Secretary, and was much diverted by his own characters. On one occasion he had to be reminded that he had already killed a personage, whom he badly needed later, and accordingly, much to his amusement, the slaughter had to be revised.

It is needful here to recall a point which Galton as an anthropologist strongly insisted on. He held that any form of superstition held by a tribe or nation as a whole—even the worst type of fetishism—was a source of strength to the believing group. A religion might be false, but anthropologically it was better than no religion*.

Galton was a firm agnostic, that is to say while fully recognising the infinite mystery behind life, and indeed behind the physical cosmos as well, he did not think that man could fill the void either by his own reasoning or by revelation of a transcendental kind. Nevertheless he believed that every nation required its peculiar “superstition,” and he devised in the above paragraph a curious one for the inhabitants of Kantsaywhere. It appears to

* See pp. 88–89 above.

centre in what I have termed the "Generant" of the stirp*, the composite individual who represents the entire ancestry of any person. Galton thinks of this in connection with his composite photography, and then introduces these Generants as an improved version of the Chinese worship of ancestors. They were to act as conscience to the new generation, in a land where each citizen studied and was proud of his forebears. That Galton himself thought of this spirit world as more than a valuable "superstition" I very much doubt.

(18) *Further Letters of 1910, concerning Eugenics, etc.*

THE RECTORY, HASLEMERE. *January 1, 1910.*

MY DEAR KARL PEARSON, What a noble New Year's greeting you send me! I prize it among the highest of honours, for it will be a landmark in the path of progress of Eugenics. How I admire the forcible and confident beats of your mathematical wings! Certainly, as you have phrased it, to Francis Galton, not "Sir," which under the circumstances sounds like tinsel. I rejoice in your work all the more, as it covers and includes much that I dearly wanted to see done, but had not strength or capacity to do. *Biometrika* is just the most suitable form of publication, too†.

You must kindly tell me soon about my contribution to the Eugenics Laboratory for 1911, about which Hartog will wish to know. I am quite prepared to go on as before if you see your way to its continuance, either in the present or in some modified form, consequent on the possibility of Heron wishing to follow an independent line, or more especially to your own desire to be freed from the care of its oversight (I hope not).

Give please my warmest wishes for the New Year to all your party. Wee Ling prospers and grows, and is a favourite. He enjoys a dry bone to chew. What an inexpensive and wholesome Lord Mayor's banquet might be provided if the Guests were supplied each with a plate and a dry bone, and nothing else!

The half sheet of a letter that was mistakenly sent to you, has since been identified.

Ever affectionately and gratefully yours, FRANCIS GALTON.

7, WELL ROAD, HAMPSTEAD, N.W. *January 9, 1910.*

MY DEAR FRANCIS GALTON, I hope you will not have thought me ungrateful in not replying to your very kind letter before. But I have been very, very busy. Fundamentally trying to get another chapter of the piebalds—i.e. one on the albinotic skin and dealing with pied folk and leucoderma and modern and ancient theories of pigment changes—to press. It is practically finished to-day—my last day of holiday. I have also revised in proof 80 pages on albinism in the negro; got Miss Elderton's paper on parental alcoholism finally passed and to press; and written 20 pages of suggestions to Heron for his big memoir. In addition I have read 10 papers for *Biometrika* and had to refuse four, which is always unpleasant for it makes foes. I have another half-dozen papers which want writing up and will again be postponed. I don't know whether I told you that last September old Dr Crewdson Benington died. He had been working in the Laboratory for two years, nothing finished, and a wheelbarrowful of manuscripts on skull measurements have come from his friends—"to be edited and finished." He was a curious old fellow—really able in many ways and affectionate, but difficult. He had divorced his wife, and his life was a failure, but he just settled down in the Biometric Laboratory and worked like a lad of 20, and I think we more or less kept him on the tracks. He came four years ago and then disappeared to the upper reaches of the Amazon, but Biometry brought him back again! The last two years he worked away without a break—and then last long vacation he was all alone in London and there was nobody to look after him. Poor old fellow, I always feel that if I had had time to write him weekly letters, he would still have been measuring skulls!

* See our pp. 20-21, 29.

† See our pp. 392-397 above.

We have got the scheme for recording eyesight and home-environment of Jewish children started. But we want more volunteer social workers. We propose doing 800 boys and 800 girls, but seeing and scheduling 500 or 600 homes will be a heavy task for one worker, Miss Rosenheim. I wish we could find a couple more Jewish ladies. Then I have been interviewing a Prison Commissioner to try and get an extension of the time for those working at the Criminal Statistics.

I have recently found some rather good Eugenics materials—on the lives of girls committed to Industrial Schools and afterwards followed for perhaps 6 to 10 years. Also very good material on *physically* defective children in Liverpool which I hope to get access to—they keep a fairly full account of the parents and what becomes of the children. Did you see Major Darwin's address? It seemed to me quite well put and likely to do good.

I have put in the "New Year's Greeting" a paragraph suggesting the sort of statistics that are needed, and hope to let you have a revise as soon as the diagrams are engraved. It is very good of you to say so much about the paper. My regret is that I am so slow in fulfilling requests and suggestions.

Now as to the Laboratory. Of course I want very much to see it go on and develop. The time is ripe for this sort of work and if we make it a success, it will be taken up at other places and then a real knowledge of what makes for true national greatness will be reached. Heron will certainly, I think, leave this year. His big paper is completed. He has grown a good deal, and has been very sympathetic and helpful. He has been helping much more in the laboratories and did quite good teaching work with the six workers we had in the Laboratory last term. I have got to try and find him a berth, but I think it ought to be possible. I expect a medical officer will come for training this term and there are sure to be one or two others. Miss Elderton also has done a good deal of teaching work last term. Miss Rosenheim, who is to do the Jewish homes, was in her charge; Miss Barrows, who has gone out to Jamaica to investigate the characteristics of half-breeds, and Miss Jones were both more or less in her hands. I hope Miss Jones will come back and take up the Industrial School girls—it would be a good bit of work. We want badly these trained social workers to go out and work for the Laboratory. But we have made a beginning. I think the work has been very good all round this last term and we really had not a vacant seat some days in the week. Unfortunately Miss Ryley got rheumatic fever, and this checked the *Treasury* work till I found Miss Jones was very excellent at drawing pedigrees.

Harelip is done, the section on Cataract nearly done, and Haemophilia and Dwarfism practically complete and ready for engraving. Miss Barrington has prepared nearly 100 pedigrees of ataxy and atrophy and muscular failures. So that the *Treasury* has material ready for at least another year. I think really there has been a great deal of very thorough and honest work done and that is why I lament outside criticism (!) of the kind that has appeared from inside the Eugenics fold. I hope you were not disgusted with the *Standard* notice. The interviewer cut out a long bit in the middle of the article and stuck the two halves together crudely! I hate being interviewed, but he said Hartog wished it when I refused the first time.

I think we ought to consider the right man to succeed Heron, if you settle to go forward. You might see when you come back to Town one or two of the men working in the Biometric Laboratory now. L—, who is a clear-headed Cambridge mathematician, has had an engineering training, but has been two years doing statistical work. I consider him very good. And M—, who has been also two years, is a very strenuous person and distinctly able, but he has not specialised as yet on man, and is rather rougher in manner.

I am glad to hear about Wee Ling. We miss our puppies very much and I fear we shall not have, as we had hoped, another litter this January. Even the matrimony of dogs is not always a success!

No more now. You will hardly read through all this. Always affectionately yours, K. P.

THE RECTORY, HASLEMERE. *February 26, 1910.*

MY DEAR KARL PEARSON, The sale of the Eugenics Laboratory memoirs and papers is very gratifying and encouraging. You will doubtless receive suggestions as to the kind of change that would make the *Treasury* more sought after. X.'s article does not impress me, because he has made no proper study of the "positive" aids to Eugenics. He sent me a programme of a recent lecture in which the "positive" influences were hardly alluded to. I wrote, and pointed that out to him, but it was too late. Removal of influences that obstruct fertility is positive Eugenics. No one has yet studied the conditions under which a population has made sudden

advances, and there are many such cases—after pestilences—in colonies—etc. The way in which the Dutchmen of the Cape multiplied was remarkable. Hopefulness seems a powerful aid; despondence is a powerful check.

Have you seen Whetham's singularly clear and powerful lecture, delivered at Trinity College, Cambridge, of which he is a tutor? If you have not, I would send you my copy to read.

Bernard Shaw is about to give a lecture to the Eugenics Education Society. It is to be hoped that he will be under self-control and not be too extravagant.

Wee Ling now weighs 16½ lbs., and though usually the reverse of aggressive, flew at a bigger puppy than himself of a commoner breed, to the loudly-expressed disapprobation of its owners, who were taking him for a walk. All goes on as usual with us.

Affectionately yours, FRANCIS GALTON.

THE RECTORY, HASLEMERE. *March 6, 1910.*

MY DEAR KARL PEARSON, We hope to be back for good at 42, Rutland Gate, on March 21st (Easter being March 27). It would be only too delightful if you could come and see me during that week. Select your own date and I will make my plans suit. Possibly you might be persuaded to spend a quiet night with us? Will you? Eva and I had doubts as to where the pretty card with the quotation from Meredith came from. We *suspected* it was Mrs Pearson, now that I *know*, please thank her from me, gratefully.

A letter from Heron about the antagonism of leading members of the Eugenics Education Society makes me unhappy. A quotation from a paper by Dr Slaughter justifies his contention fully. The passage seems to me inappropriate, untrue and in the worst taste. I have written to Mrs Gotto, who sees much of him, to point out this privately to him and otherwise to help in the cause of harmony. I don't like, just yet, to take a stronger course. How unwise many people are!

Like you, I in my small way have been a little plagued by retarded printing. An article of mine, long in type, will I expect really appear in this week's *Nature*. The profiles in it may amuse you. Ever affectionately yours, FRANCIS GALTON.

THE RECTORY, HASLEMERE. *March 10, 1910.*

MY DEAR KARL PEARSON, Heron's paper on Environment and Intelligence is indeed a credit to the Laboratory. How greatly he has improved, under your eye and help, since he first came. There is a weight and fulness in his writing now, that can hardly, I think, be further improved. I do not write to him myself, simply as a matter of discipline. It is better that praise should come from you or through you.

I have done all I can, within reasonable limits, to put a stop to the vagaries of members of the Council of the Eugenics Education Society, in which I am warmly seconded by Crackanthorpe and Mrs Gotto. Bernard Shaw* has been another difficulty but I trust that matters will now improve. *If they had the men*, the Society might do really good work in emphasising such points as those brought forward by Heron, whether on the incompleteness of the present school statistics, or, as in a former paper, on the registration of the insane.

Ever affectionately yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *March 25, 1910.*

MY DEAR KARL PEARSON, We are safe back and I have now thrown off some bad effects of the little journey. Do come soon. Wee Ling is grown, of course, and Miss Biggs is very fond of him. But London is a bad place for pet dogs and Wee Ling cannot be trusted loose, as he runs wildly after stray dogs to play with them. We think of finding a home for him during the summer and have two possibilities in view. According to the first plan, he would be taken by my niece, Violet Galton, to Warwickshire on Tuesday next and be left with my nephew, Edward Wheler, who is knowing about dogs, acting as Judge in some great shows and sending his retrievers to win prizes at others. So if you could come here Saturday, Sunday or Monday you would see the little creature before he goes. Fix your own time. I have no engagements and am always rejoiced to see you. Ever affectionately yours, FRANCIS GALTON.

* Anecdotes of the famous have always a peculiar flavour. The Eugenics Education Society had asked Bernard Shaw to give a lecture, and some members of its Council had been somewhat in doubt about the matter. All Galton's contribution to the quandary was: "I don't mind good jokes, but Bernard Shaw makes such bad ones."

42, RUTLAND GATE, S.W. *April 6, 1910. Dictated.*

MY DEAR KARL PEARSON, I have been so knocked about with cough, that I am still unfit for almost anything, with ever so much in arrear. I did not even wish you a happy return for your birthday, nor have I been as eager as I should be to hear about Wee Ling. It is joyful news that he gets on so well with you all*. I feel a sort of apology is due for having wandered so far from my regular track as to write the article in *Nature*, but I wished to finish off such bits of unfinished work as I could hope to achieve. As you say, life does not seem long enough for all the possibilities of interesting work. I feel like Tennyson's Ulysses :

"Life piled on life
Were all too little, and of one to me
Little remains."

So please count my apparent vagaries as merely an attempt to get some things now in disorder into shipshape form before I die.

If I find, as I expect to do, that Miss Jones can be trusted with the work you suggest and which is precisely one of the things I had in view, I will set her steadily at it.

Ever affectionately yours, FRANCIS GALTON.

P.S. I am so sorry I forgot to send a card about Uncle Frank's health, but I have been in bed with fever three days. E. B.

42, RUTLAND GATE, S.W. *May 7, 1910.*

MY DEAR KARL PEARSON, The King's death will throw much out of gear, and may prove a disaster to our country!

The account you give of an apparent wish of the University of London authorities to dis sever Eugenics, so far as locality is concerned, from Biometry, seems to me most unfortunate for the former. It may be logical to unite it with Sociology, but practically it would almost give a death-blow to its scientific status. Whenever you think I could intervene with advantage, pray tell me. I had seen the *New Age* and was vexed at Dr S.'s remarks. The allusion by the Editor to myself and to my letter may be quite correct, but I cannot properly recall the circumstances, owing to having had recently to reply to 2, 3 or more letters in the sense "I sympathise with your object, but am too infirm to give any active help."

The Council of the Eugenics Education Society have, I learn, extruded Dr S. by not putting his name on the candidate list. As I am told, certain members of the Council strongly objected to serving longer with him, and Mrs G. undertook to tell him so, which she did, doubtless with all practicable tact, but I have reason to know his feelings are much wounded. He however spoke very nicely to Mrs G.

Like yourself I missed the notice of Mr Justice Parker's lecture in the *Times*, and I am sorry.

Crackanthorpe's address, as it appeared in the *Times* summary, was weak, but a little better in the original, which I read. Ever affectionately yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *May 11, 1910.*

MY DEAR KARL PEARSON, Saleeby's letter to the *Pall Mall* lies near the frontier between "do-nothing" and "do-something." I wish that somebody, other than our two selves, could be posted up to reply to him. I am still in favour of "doing-nothing" ourselves. Whatever either of us might write, would be responded to and the issue be perplexed. Perhaps some opportunity may arise before long of pronouncing emphatically on all such inapt criticisms as those indulged in by C. W. S. and showing their futility. Ever affectionately yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *June 9, 1910.*

MY DEAR KARL PEARSON, Your letter is a useful reminder, but you must not accuse yourself of having forgotten to tell me any part of its contents. Enclosed I send the pestilent copy of the *New Age*. Do not trouble to return it. I am very glad to have made it now clear to them that I will not take any part in it.

Now, will you pardon me if I ask for a few minutes of your time, to look over the little memoir herewith enclosed. I may be a fool, but I think the simple results to be both new and important. Are they so, or merely rubbish, or anything between?

Ever affectionately, FRANCIS GALTON.

* He had rejoined us at Hampstead.

42, RUTLAND GATE, S.W. *June 10, 1910.*

MY DEAR KARL PEARSON, You are over-good to have taken such pains about my little problem. It shall now lie in a state of suspended animation. I must think well over the doubt you point out, whether the m_{μ} , etc. might be taken as of *equally probable* occurrence. At present, the difficulty does not strike me as it should. On all the other points I am fairly well prepared to give justification and explanation. Once again very many thanks.

The *Times* of to-day contains no rejoinder by Crackanthorpe to your paper, but he sent in the morning for a copy of your memoir, which I lent him.

Affectionately yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *June 23, 1910.*

MY DEAR KARL PEARSON, Hartog came here yesterday and gave a most satisfying account of the friendly disposition of the University towards the Laboratory. I especially asked him whether there was anything in the supposition that it was proposed to transfer it to Sociology. It is quite unfounded, so he assured me. Then he went on about the enlargement of the accommodation, by buying the next house and bridging across, at a cost of £1500. After he left, I thought that perhaps (if you thought it pressing) I might hasten this if I offered £750 on condition of the University supplying the rest. So I wrote privately to him to that effect, asking if he and the Principal thought it *probable* the money could be raised, adding that I made the offer subject to your approval, for though I had heard of the scheme from you I did not know exactly how far you approved of it. Hartog replies in a letter, just received, that I should consult you at once. So I do, hereby. I feel much less disposed to offer this money unconditionally than under the proviso that the University should meet it by an equal contribution.

I shall think of you all—including dogs—to-morrow evening.

Ever affectionately yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *June 27, 1910.*

MY DEAR KARL PEARSON, I can assure you that I acted *proprio motu* and that Hartog had not given the slightest hint, direct or indirect, on the matter. He came, partly to explain a misapprehension which, for some reason, he thought I was under, that the ultimate direction of the affairs of the Laboratory was circuitous. On the contrary, he assured me it was direct through the small Committee and thence to the Senate. Partly it was a personal visit, and I naturally asked many questions. Afterwards, turning over what he had told me, I wrote the letter. I have now written again to him wholly exonerating him from the suspicion of having, in any way, suggested that I should give more at present, adding that seeing, now, that matters were more complicated than I supposed, I would withdraw the offer. But that it might be repeated, probably in an altered form, if it seemed likely to draw an equal or larger contribution from or through the agency of the University, to match it. Both my letters to Hartog were "private." So glad to hear the Soirée was a success. Affectionately, FRANCIS GALTON.

42, RUTLAND GATE, S.W. *July 4, 1910.*

MY DEAR KARL PEARSON, Thanks for both of your sendings, (1) the cutting from the *Medical Times*, which I return, (2) for the letter—how on earth it ever reached you is a mystery—from Eva Biggs' servant (and more than servant), who is now married and settled in New Zealand. Yesterday I got together to tea, Miss Elderton, Crackanthorpe and Ploetz. C. made himself very agreeable in a long tête-à-tête with Miss E., but I fear was insufficiently penitent to receive full forgiveness.

About my little problem, I was appalled, on re-reading what I sent you, at its crudeness. I was ill when it was dictated and I find that an important sentence must have been omitted. Moreover it is deplorably wrong in one part. Please banish it from your memory and allow me shortly to send you a revised version. I have had two baddish days, mostly in bed, but am better and was fit for yesterday's tea. Eva is out all to-day, at and about Haslemere, looking at houses for the autumn there, of which we have had some offers.

I trust that Yorkshire retains its attractiveness to you all. We have here thunderstorms and most un-Julylike weather. I have not ventured out of doors for more than a week.

Ever affectionately yours, FRANCIS GALTON.

42, RUTLAND GATE, S.W. August 4, 1910.

MY DEAR KARL PEARSON, It is pleasant to hear that you are thriving in Yorkshire. I am still in London, not going to Grayshott until August 16. We have had much of very unenjoyable weather, but the last 3 days have been pleasant. Asthma has plagued me, but I stave off the worst bouts now, by smoking a cigarette of *bhang* (Indian hemp-hashish). It is curious to perceive the spreading of the narcotic effect over the lungs and everywhere.

Q. and his elder brother have just had tea here. He is simply a *beautiful* youth, of the very best Jewish type—simple and very intelligent. He thinks that there is a mine of information bearing on Eugenics that could easily be worked in Manchester, and said that he would like to write to you about it. I encouraged him to do so. So you will understand. I heard from him about his Russian and mystical Grandfather and the Kabbala (? spelling).—A good spiritualistic story is told of him.

So Marshall is at you again now, and with reinforcements about to come on the scene! Anyhow he is a worthy antagonist.

What pleasure and health you must have given Miss Elderton.

Ever most affectionately, FRANCIS GALTON.

Kindest remembrances to you all.

THE COURT, GRAYSHOTT, HASLEMERE. August 18, 1910.

MY DEAR KARL PEARSON, At last I am most happily settled. Your letter reached me in London just before motoring here. I had to spend that afternoon and all yesterday in bed, but am now up and eager, having got over a horrid asthma! It is pleasant to hear of your excellent weather and of much else. You know of course of the treatment bestowed on a *big* dog for sheep-chasing, viz. coupling him to an old ram, but Wee Ling's life would soon be pounded out of him in that way.

It is too bad of Victor Horsley. Of course Crackanthorpe's letter justifies him, but I feel myself to be incidentally referred to. If ever I know of any such *direct* reference, I will certainly disavow it.

You must be glad at feeling in sight of the end of Albinism—yet it suggests something more in respect to Melanism. I wonder whether the singular blackness in the R. family has been traced to a negro ancestor? I mean the present Lord R. and most of his sisters. His father also was very dark.

You will like Q., I am sure, when you know him personally. He is as modest as he is capable.

The tuberculous inquiry will not, I imagine, cause so great an outcry as the alcoholic. You have accustomed people to suspect the truth of current beliefs. I wonder what Sir Donald MacAlister thinks of all this? He is very favourably disposed towards Eugenics and is, as you know, a vigorous mathematician.

Try and excuse this bad writing. It is performed on a board, while sitting in a wheel chair, and with a scratchy pen, brought to me. Very best wishes to you all.

Ever affectionately yours, FRANCIS GALTON.

In October of this year the attacks on the work of the Eugenics Laboratory were in full progress and Galton wrote the letters to *The Times* and the *British Journal of Inebriety* cited on pp. 408–9 above. He was peculiarly moved by the half-hints made by certain writers to the press that he was out of sympathy with the work of the Eugenics Laboratory. All my letters to him directed to Haslemere in the last year of his life together with most of the letters he received during the same period appear to have been destroyed after his death, probably when Grayshott House was restored to its owners. Thus the correspondence for this last year must appear one-sided.

THE COURT, GRAYSHOTT, HASLEMERE. *October 30, 1910.*

MY DEAR KARL PEARSON, Will the enclosed draft of a letter to the *Times* fulfil what you think desirable? Pray make suggestions freely. I have heard from X. in a long "private" letter replying to what I sent him. He writes nicely but impenitently*. He is about to give numerous lectures. Very asthmatically, but affectionately yours, FRANCIS GALTON.

X. is no longer even a member of the Eugenics Education Society.

48, GROSVENOR STREET. *November 8, 1910.*

MY DEAR GALTON, I must write a line, as one of your oldest friends †, to congratulate you on the great honour of the Copley Medal.

I hope you have been keeping well.

Yours very sincerely, AVEBURY.

GRAYSHOTT HOUSE, HASLEMERE. *November 13, 1910.*

This will henceforth be my address.

MY DEAR KARL PEARSON, You must indeed have been "rushed" as you say. The Press cuttings reached me of the letters of you and the antagonists, whom it seems to me you bowl over easily.

Thanks about the Royal Society. I shall not, could not, attend however much I wished it, and had thought of asking you, if Sir George Darwin failed, to receive the medal on my behalf. But he *will*, anyhow, be there. So I have asked him to do so.

People die so fast that I can find only five other living Englishmen, with *Copley* after their names, in the Royal Society list of Fellows; they are—Sir Joseph Hooker, Lord Lister, Lord Rayleigh, Sir William Crookes, Alfred R. Wallace. How *age* counts!

Thank the Staff for me for their joint telegram of congratulations. There is no news here that you would care for. What a political turmoil is at hand!

Ever affectionately yours, FRANCIS GALTON.

GRAYSHOTT HOUSE, HASLEMERE. *December 6, 1910.*

MY DEAR KARL PEARSON, Who is Mr Snow? You seem to have found a worker after your own heart. I wish that you or he could throw more light on the paradox that cousins are no more unlike than uncles and nephews. It would seem a reasonable deduction that cousins to the *n*th degree are as much alike as first cousins. Then, again, statistics make out (unless I am quite wrong) that husbands and wives are as much alike as first cousins. I wish you could clear my puzzled mind. Also one wants to know more precisely about the compound effect of hereditary influences. What is that of bi-parental—of the same kind—as compared with uni-parental? What is that of all four grandparental + bi-parental? and so forth. The whole lot together cannot exceed 1.0 ‡.

I congratulate you on the last number of *Biometrika*.

How are you all? Your Winchester son will soon be with you. All goes on quietly here, but I am not allowed out of doors in such weather as we have recently had. In fact, I have been imprisoned now for 14 days and begin to crave for open air.

Sir Archibald Geikie comes not infrequently over the 5 hilly miles that separate his house from mine, and tells me scientific news.

If you care to rear a breed of dogs *who eat woollen cloth*, there is one in this house that does so. He began by nibbling off and swallowing the lappet of my man-nurse's coat, who had been caressing him, and subsequently found his way into the butler's pantry at night, and ran away with a beautiful new pair of trousers of mine, dragged them to his kennel and gnawed out a piece bigger than the palm of my hand and ate it. It has strained my Xmas feelings to pardon him!

* Galton's singular gentleness of disposition rarely allowed him to give expression to some of his deeper feelings about the proceedings of certain of his rasher self-styled followers. One incident, however, has been preserved: a letter came at mealtime; it went flying across the dinner table with the exclamation, "*My* disciple indeed!"

† Lord Avebury was 76 years old, twelve years younger than Galton, but they had been associated in many projects.

‡ It seems to me now in the light of experimental determinations that it *can*, and that this is the source of progressive evolution when small groups are isolated or there is intensive in-breeding.

It is wonderful how skilfully my tailor has patched the hole. The "fine-drawing" of the edges of the patch are invisible without scrutiny, such as no stranger would venture to make*!

I do hope all is well with you. Send me a line, even on a postcard.

Ever affectionately yours, FRANCIS GALTON.

GRAYSHOTT HOUSE, HASLEMERE. *December 14, 1910.*

MY DEAR KARL PEARSON, We are delighted that you can come. You will be most welcome as early as is convenient to you on the 28th, and as late as you care to stay on the 29th.

The Report of the Committee to the Senate, which I return, gives solid grounds for its application for a further grant to Eugenics and I am glad it was written by Hartog †, as it shows that the opinions of the Chief Executive Officer are strongly in its favour.

Few things would gratify me more than that you should be relieved from the drudgery of teaching engineering students, etc., and be kept free for Biometry and Eugenics. I return the Report, which I cordially approve, wishing, in vain, that I was familiar with the hidden springs by which the Senate of the London University is moved and was able to give indirect influence towards its acceptance.

Snow has kindly sent me an off-print of his Memoir.

Poor Tong ‡! Ever affectionately yours, FRANCIS GALTON.

(19) *The Last Scenes.*

Galton had fretted his one hour upon Life's stage; the panorama, to use his own simile, had reached its final turn on the roller. This was the last letter I received from Francis Galton. On December the 28th and 29th I was with him at Grayshott. The weather was favourable and we sat out in the sunshine, Galton warmly wrapped up, talking about the work of the Eugenics Laboratory, the shortcomings of some members of the Council of the Eugenics Education Society, which were much troubling him, and again about the grave reaction against Darwinian evolution. One thing I remember very well, Galton's intense pleasure about the Copley Medal (I had not seen him since the award) and the numerous friendly congratulations he had received, even from some who had long passed from his circle. At dinner the conversation took a lighter tone. We had two recent converts to the Catholic Church, and we gravely considered why the Devil devotes so much more attention to Catholic than to Protestant countries and individuals. "You don't stick a knife into Professor Y. or Dr X. as I should probably try to do in your place," interjected one ardent convert. "That is because I have not your security for absolution," I urged, and added: "Is your main thesis correct, did not the Devil disturb Martin Luther when he wanted to get on with his own work? I fear other minor devils cause me also to waste good ink." Galton took his full part in the talk. He seemed to me physically frail, but mentally active, and I saw no greater cause for anxiety than at

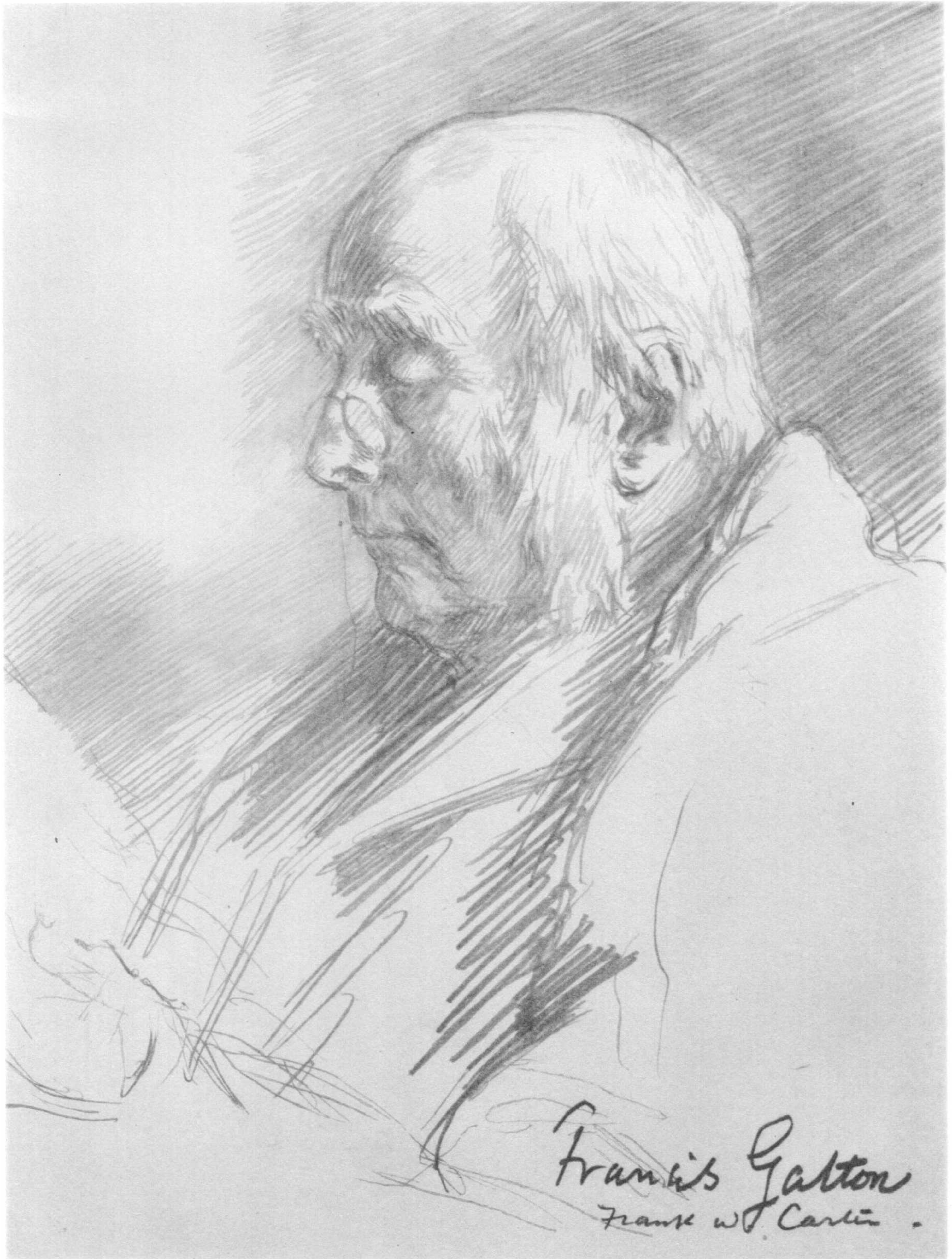
* The following letter from Galton's tailors may serve to give colouring to the incident:

10, CLIFFORD STREET, BOND STREET, W. *December 14, 1910.*

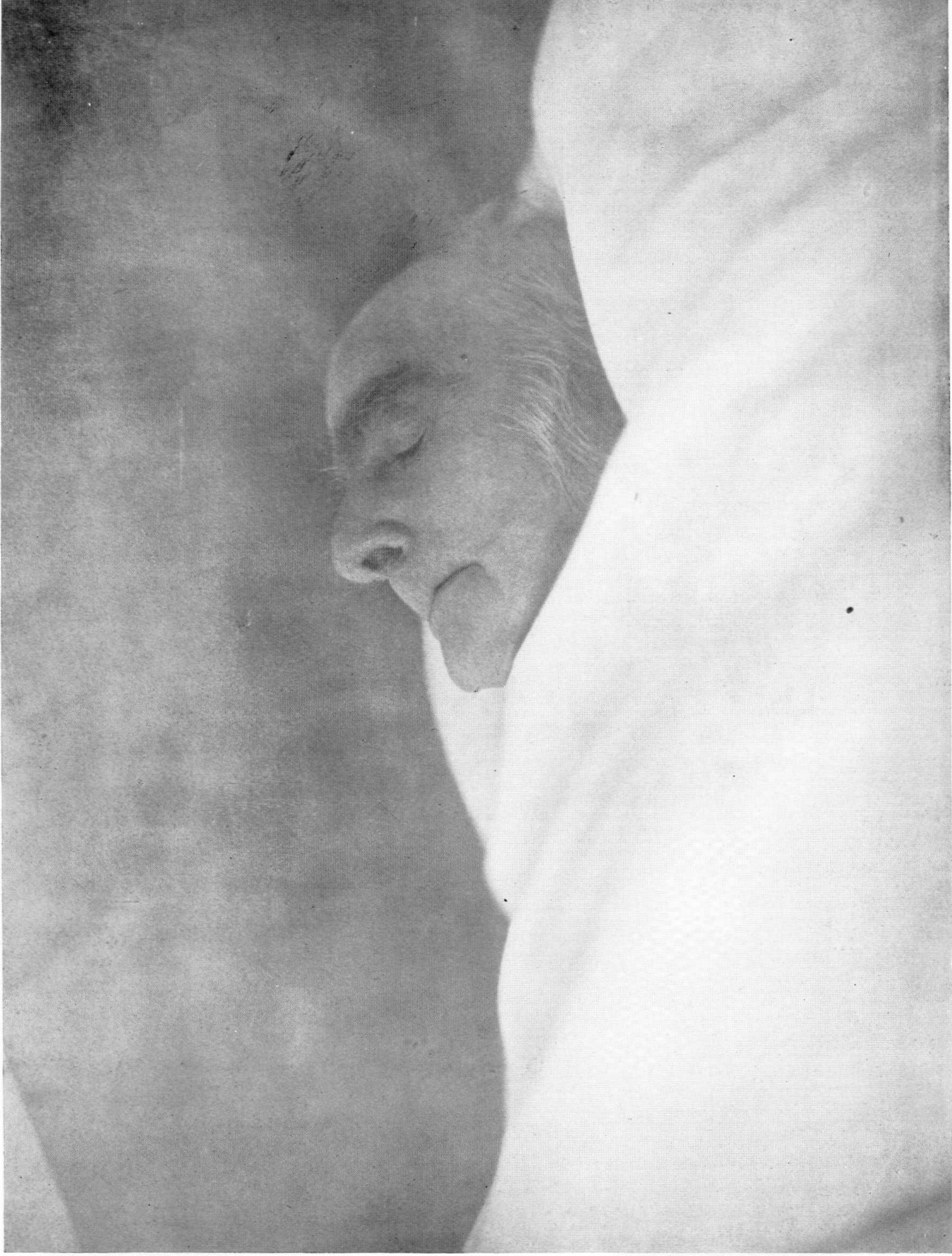
SIR FRANCIS GALTON, SIR, We have received the pair of Trousers and are carefully repairing the holes torn by the dog, which we are pleased to learn has been placed in eternal exile. They will be forwarded to you as quickly as possible. We remain, Sir, Your obedient servants, STULZ, BINNIE & Co.

† Galton was under a misunderstanding; it would be the Report on the Galton Laboratory based upon material provided by its Director.

‡ An albino bitch I had been obliged to send to a painless death owing to the development of an incurable disease. She was the mother of Wee Ling.



Francis Galton, aged 88, from a sketch made by Frank Carter, twelve days before Galton's death.



Francis Galton, January 17th, 1911, from a photograph taken after death.

any period in the past five years. Indeed I had been more anxious in 1909 than I was in 1910. There was no thought in my mind that I should not see him again, and that in another three weeks I should be standing at his grave-side.

GRAYSHOTT HOUSE, HASLEMERE. *December 31, 1910.*

DEAR PROFESSOR PEARSON, Uncle Frank has given me your letter. I don't believe the devil leaves you Protestants and Agnostics alone, but he doesn't torture you as he does Catholic communities....Who but the devil prevented you from doing what I asked, namely persuading Uncle Frank off that worrying Eugenics Education Society. You and your pupils do not let your names appear among that tiresome crowd, so why should Uncle Frank's name be put at the head of them?

The Doctor has been and keeps Uncle Frank in bed all day to rest, but this is the rule now once a week. He did so enjoy your visit. I wish you came more often as it cheers him up.

Ever sincerely yours, L. E. B.

GRAYSHOTT HOUSE, HASLEMERE. *January 2, 1911.*

DEAR PROFESSOR PEARSON, Uncle Frank is splendid again, and had a certain Dr Lyon Smith to tea and talk an hour yesterday. I honestly believe your visit did him good, but the cold tried him on Saturday [December 31st].

I daresay you are right about the E.E.S., but thought you might say in a quiet way some time that you were sorry he left them such a free hand. I don't like him, at the end of his life, being mixed up with such a set and who knows that some day he may not be made answerable for their actions, for after all he invented Eugenics.

I was joking about the devil, and shouldn't dream of taking notice of anything Luther either said or did! But its a great pity you folk blind yourselves to the existence of devils, and regard their tricks as a twist in the brain or something hereditary! A happy New Year to you from L. E. B.

GRAYSHOTT HOUSE, HASLEMERE. *January 15, 1911.*

DEAR PROFESSOR PEARSON, Uncle Frank is one degree better to-day but still in danger. He is not the least worried about the Laboratory affairs. I only told him the teetotallers were attacking you, and that a good leading article in the *Times* had snubbed them. He was much interested. He is quite easy in his mind and very clear when he speaks, but too weak to speak more than a word or two. My cousin Edward Wheler, a very dear nephew of his, is here—we never leave him a minute. Will write again. Very sincerely, L. E. B.

GRAYSHOTT HOUSE, HASLEMERE, SURREY. *January 18, 1911.*

MY DEAR LADY PELLY, I have the saddest news for you—dear Uncle Frank died last night—he had a sharp attack of bronchitis and died of heart failure, not having the strength to fight against it—he suffered much discomfort but very little pain, and just at the last he was very peaceful.

Edward Wheler and I were with him and, just before sinking, he looked and smiled as one of us spoke, or Giff came and looked at him. Up to the last few hours he was bright and keen, and if strong enough to articulate would quote some poetry or make an amusing reply. He looked so sweet when dead I could hardly believe he had gone. He is to be buried at Claverdon on Saturday next (January 21st), the home of his father, a few miles from Warwick. He was truly fond of you. He was ill just a week. With much love and great sorrow at having to give you such sad news. Yours affectionately, L. E. BIGGS.

On January 18, three days after his niece's letter to me, a telegram reached me that Francis Galton had passed quietly away on the previous night. Early in the month he had caught a bronchial cold from one of his attendants, and his strength was inadequate to carry him through the attack. I personally had lost the master in whose footsteps I had trod since I met his *Natural Inheritance* in 1889, and the man with whom my friendship had grown

closer and closer year by year, even to his death. Beyond near friends, then few in number, and his younger relatives, in two generations of descent, to whom his sweet disposition rather than his scientific talents had endeared him, there was an outside world which hardly realised that, with Francis Galton, the last of the great Victorian scientists had passed away. The friend of Darwin, of Wallace, of Hooker, of Tyndall*, of Huxley and of Herbert Spencer† had survived them all, and closed their era with the creation of a new science. It is too early yet to say whether the truths that it may give to the world are destined to form the religion of progressive states, the creed of a new type of mankind; or whether those who understand are still too few to impress upon the inert masses that by studying and then applying biological laws to his own species man may step over the corpses of his failures into a hard-won kingdom. There was little in the obituary notices that showed a real understanding of what Galton had achieved, still less any recognition of the possibilities of his work for the future of mankind.

Even the memorial tablet in the church at Claverdon Leys, prepared as

IN MEMORY OF

SIR FRANCIS GALTON. F.R.S.

BORN 16TH FEBRUARY 1822

DIED 17TH JANUARY 1911

YOUNGEST SON OF SAMUEL TERTIUS GALTON

AND FRANCES ANN VIOLETTA HIS WIFE

DAUGHTER OF ERASMUS DARWIN. F.R.S.

MANY BRANCHES OF SCIENCE OWE MUCH TO HIS LABOURS,
BUT THE DOMINANT IDEA OF HIS LIFE'S WORK
WAS TO MEASURE THE INFLUENCE OF HEREDITY
ON THE MENTAL AND PHYSICAL ATTRIBUTES OF MANKIND.

it was under the care of loving friends, lacks any reference to the crowning achievement of Galton's life. I would add to its last line the words: "in order that a true knowledge of natural inheritance might enable man to lift himself to a loftier level."

There was a unity underlying all Galton's varied work—even to that last creation *Kantsaywhere*—which only reveals itself when, after much inquiry and retrospection, we view it as a whole and with a spirit trained to his modes of

* MY DEAR GALTON, Herbert Spencer and myself are both low in health, would you come with us to-morrow (Saturday) to the Isle of Wight and help the sea air to restore us?

Yours ever, JOHN TYNDALL.

ROYAL INSTITUTION (dated "Friday" only, but in the '70's).

† DEAR GALTON, This day week, the 16th at 7, a few friends will dine with me *here*—Frederic Harrison and Morley of the *Fortnightly* among others. Will you give me the pleasure of your company as one of the number? Sincerely yours, HERBERT SPENCER.

ATHENAEUM CLUB, 9 March, 1878.

PLATE XLII



The Church at Claverdon, with the iron railings surrounding the vault where Galton's body lies.

thought. Twenty years of almost continuous reflection on Galton's labours have enabled me to see, using his own words, the whole as a "permanent panorama, painted throughout with equal colours," and to grasp better how great diversity of production may nevertheless be consistent with a marvellous unity in the main aim of a life. The skilful steersman may set the vessel's head to many points but never leaves out of mind his final port. The aimless wayfarer may voyage over strange seas and seek many havens, but without a steadfast purpose in life will never reach a firm anchorage. From 1864 to 1911 Galton achieved in many fields, yet in 1864 he had realised his life-aim—to study racial mass-changes in man with the view of controlling the evolution of man, as man controls that of many living forms. Has the time come for man to put the bridle on himself? To tame by science the nescient waywardness which lays waste his stock? Galton believed the hour had struck, and his fame in the future will largely depend on the accuracy of that judgment. If he was right, it will give him in the history of human civilisation a place equal to that of Darwin in science, but there will be a second place for him, to which Darwin has no claim; Galton taught a new morality, an unwonted doctrine of altruism—like all new creeds, difficult to accept and easy to pour scorn on: "Help the strong rather than the weak; aid the man of to-morrow rather than the man of to-day; let knowledge and foresight control the blind emotions and impetuous instincts wherewith Nature, red-clawed, drives man, mindless and stupefied, down her own evolutionary paths." "Awake, my people," was Galton's cry, like that of a religious prophet of the olden time. He was an agnostic, in that he saw the weakness of the creeds so far proclaimed by man, suffice, as they may, for many less deeply-probing minds; yet, as his niece* said to the biographer, he was a *religious* agnostic; the term seems to me an apt one. Galton believed in a recondite purpose in the Universe, which we men cannot unriddle, and he urged his fellows with religious earnestness to take up the burden of their task and further develop their species in fitness to its environment. Increased vigour of mind and body appeared to him the aim of the power which we seem to discern working obscurely, and as if with difficulty, behind the apparently blind forces of Nature.

Such thoughts were hardly present with most of us as we stood around the open grave in Claverdon church-yard †. What we felt deeply was the personal loss of that gentle, affectionate and modest nature, generous in thought and in practice, here bestowing an idea and there a helpful hand; rarely saying a harsh word, and often moderating the acerbity of others; taking life

* Mrs Millicent Galton Lethbridge.

† Francis Galton's remains were placed in the family vault constructed in the church-yard by his father. He lies by his parents, Samuel Tertius and Violetta (Darwin) Galton. The vault is surrounded by the iron railings seen in our Plate XLII. The stone contains the name and the dates of birth and death. Galton no doubt expressed a wish to lie there, and a simpler village church-yard, more remote and peaceful, could scarcely be found. Yet cremation, as in the case of Herbert Spencer, or of Galton's own brother, Erasmus Galton, would have seemed to his biographer a more fitting end for what must one day perish. It is with pain that I think even to-day of Francis Galton's mortal remains confined in a vault.

earnestly, but with a saving sense of humour ; he would have been of earth's elect even if he had never achieved high rank in science. It was the loss of that ever-flowing spring of understanding human sympathy that we felt most bitterly. His teaching days were already over, and his clearly stated creed would remain with us, if he himself had passed away ; but the gracious friendship and the long-continued series of affectionate letters were for ever broken. There was no one left who would have the same keen and enlightened interest in all forms of biometric work, nor indeed anyone to whom a Report on the work of Galton's own Laboratory would be in future of capital importance.

From many talks with Francis Galton about the future of his Laboratory, I knew he desired the whole time and energy of a relatively young and strong man of science to carry it successfully through its infancy. It did not occur to me to think of myself as the first director of the Laboratory to be created by his testament, for I should have been wholly unwilling to give up the superintendence of the Biometric Laboratory I had founded and confine my work to Eugenics research. It was because in 1909 after much discussion we could not hit upon the really suitable man for the first Galton Professor, that Francis Galton added the codicil to his will allowing the University to delay for a few years the appointment to the chair. I only learnt after his death the clause relating to myself which, after showing the codicil to me, he had added to it, granting me the liberty, if the University were willing to elect me to the professorship, of continuing my Biometric Laboratory. He had realised I should not desert it, even to be freed from elementary teaching. This was for me a last token of affection, and the creation of an obligation which I have sought in the past nineteen years to repay to the extent of my powers. May this book in part bear witness thereof.

Fortunatus ego, cui in vestigiis ejus, tametsi graviter claudicans, spatium conceditur !

APPENDIX I.

The Codicil to the Will of Sir Francis Galton.

The Will to which this is a Codicil was made on October 20, 1908, and the Codicil is dated May 25, 1909. In both Will and Codicil the word "faculties" replaces the "qualities" of the University Committee's definition*. There is a further clerical blunder in clause (4) (a); the word "Professional" is a *lapsus calami* for "Professorial." The former adjective has no sense in its present situation, and I know the latter to be what Galton intended, for I drafted at his request in 1906 a statement of the duties of the proposed professor, and the adjective "professorial" was introduced in order to distinguish teaching of an academic character from that communicated in public lectures.

I DEVISE AND BEQUEATH all the residue of my estate and effects both real and personal unto the University of London for the establishment and endowment of a Professorship at the said University to be known as "The Galton Professorship of Eugenics" with a laboratory or office and library attached thereto AND I DECLARE that the duty of the Professor who for the time being shall hold the said Professorship shall be to pursue the study and further the knowledge of National Eugenics that is of the agencies under social control that may improve or impair the racial faculties of future generations physically and mentally AND for this purpose I DESIRE that the University shall out of the income of the above endowment provide the salaries of the Professor and of such assistants as the Senate may think necessary and that the Professor shall do the following acts and things namely:

- (1) Collect materials bearing on Eugenics
- (2) Discuss such materials and draw conclusions
- (3) Form a Central Office to provide information under appropriate restrictions to private individuals and to public authorities concerning the laws of inheritance in man and to urge the conclusions as to social conduct which follow from such laws
- (4) Extend the knowledge of Eugenics by all or any of the following means namely:
 - (a) Professional instruction
 - (b) Occasional publications
 - (c) Occasional public lectures
 - (d) Experimental or observational work which may throw light on Eugenic problems.

He shall also submit from time to time reports of the work done to the Authorities of the said University.

AND I DECLARE that the receipt of the Principal for the time being of the said University shall be a sufficient discharge for any moneys payable to the said University under this my Will and shall effectually exonerate my Executors from seeing to the application thereof AND I ALSO DECLARE that the said University shall be at liberty to apply either the capital or income of the said moneys for any of the purposes aforesaid but it is my hope that the University will see fit to preserve the capital thereof wholly or almost wholly intact not encroaching materially upon it for cost of building fittings or library Also that the University will supply the laboratory or office at such place as its Senate shall from time to time determine but preferably in the first instance in proximity to the Biometric Laboratory I state these hopes on the chance of their having a moral effect upon the future decisions of the Senate of the University but they are not intended to have any legally binding effect whatever upon the freedom of their action AND I HEREBY DECLARE that it shall be lawful for the Senate of the said University if they shall think fit so to do to postpone the election of the first or any subsequent Professor of Eugenics for a period of not exceeding four years from the date of my death or from the date of the occurrence of any vacancy in the office as the case may be AND I DESIRE that in the meantime and until the appointment of the first Professor the Senate shall out of and by means of the income of my residuary estate make such arrangements

* See p. 225 above.

as may be necessary to ensure the continuance without interruption and the extension of the work in connection with Eugenics initiated by me and now carried on on my behalf at University College and that during any subsequent vacancy in the Professorship the Senate shall out of and by means of the said income make such arrangements as may be necessary to ensure the continuance without interruption of the work being carried on for the time being at the Eugenics Laboratory of the said University AND I HEREBY DECLARE it to be my wish but I do not impose it as an obligation that on the appointment of the first Professor the post shall be offered to Professor Karl Pearson and on such conditions as will give him liberty to continue his Biometric Laboratory now established at University College AND in all other respects I confirm my said Will IN WITNESS whereof I have hereunto set my hand this twenty fifth day of May One thousand nine hundred and nine.

FRANCIS GALTON.

APPENDIX II.

Scheme by Sir Francis Galton for a Eugenics Discussion Committee.

I have several times in the course of this work pointed out Galton's belief in Committees. In particular I have noted that in 1905 he set up an Advisory Committee for his Eugenics Record Office. The Minute Book of this Committee indicates how little could be achieved in this manner. It really only hampered the Research Fellow (see p. 233 above). When the Eugenics Record Office was reorganised as the Eugenics Laboratory, there was again an "Advisory Committee," but it was not to be and never was summoned; it consisted of experts in various fields, who were individually consulted when our work led us in the direction of one or another branch of science. These experts were of much service, and we were very grateful for their aid; but there were no periodic meetings designed to discuss what the future work of the Laboratory ought to be; or any excuse for much talk by those who were ignorant of the difficulty of collecting data, or what it was possible to deduce from them when obtained.

Advisory Meetings at the Eugenics Record Office, 88, Gower Street, W.C.

Mr Galton would be glad to utilise the room of the Eugenics Record Office, after office hours, for the occasional meeting of a few invited persons who seriously desire to promote *Inductive Research* in matters connected with Eugenics.

In Mr Galton's absence, Mr Schuster would act as host.

Under these conditions, Mr Schuster would arrange the day of each meeting, in conference with Mr Branford and Dr Slaughter, and the hour of opening and closing it.

He would similarly arrange as to the persons to whom invitations should be sent on each occasion, bearing in mind that exigencies of space make it inconvenient for more than eight persons to be present at the same time.

He would also draw up the Agenda, a copy of which will accompany each invitation.

The meetings will be somewhat informal, but its members may proceed to elect a chairman for the evening if any two of those present desire it. Whenever the votes including that of the chairman are equal, the host shall have a second and casting vote.

Minutes of each meeting shall be kept by Mr Schuster, who shall cause them to be typed in duplicate, one copy to be retained by the Office.

The Secretary, Miss Elderton, will do all necessary typewriting and posting.

The primary purpose of the meeting will be to propose and thoroughly discuss suitable subjects for eugenic research, including time, cost, the persons who might undertake them, and the value of the expected results. Definite proposals of this kind should take precedence in the Agenda.

Other topics connected with Eugenics might afterwards be discussed, preference being given to those that bear on the future work of the Office.

(signed) FRANCIS GALTON, *October, 1905.*



Finger-prints of Sir William J. Herschel's right forefinger at 54 years' interval, the longest known proof of persistence. The 1913 print shows the creases which develop with old age. Cf. p. 142 above.