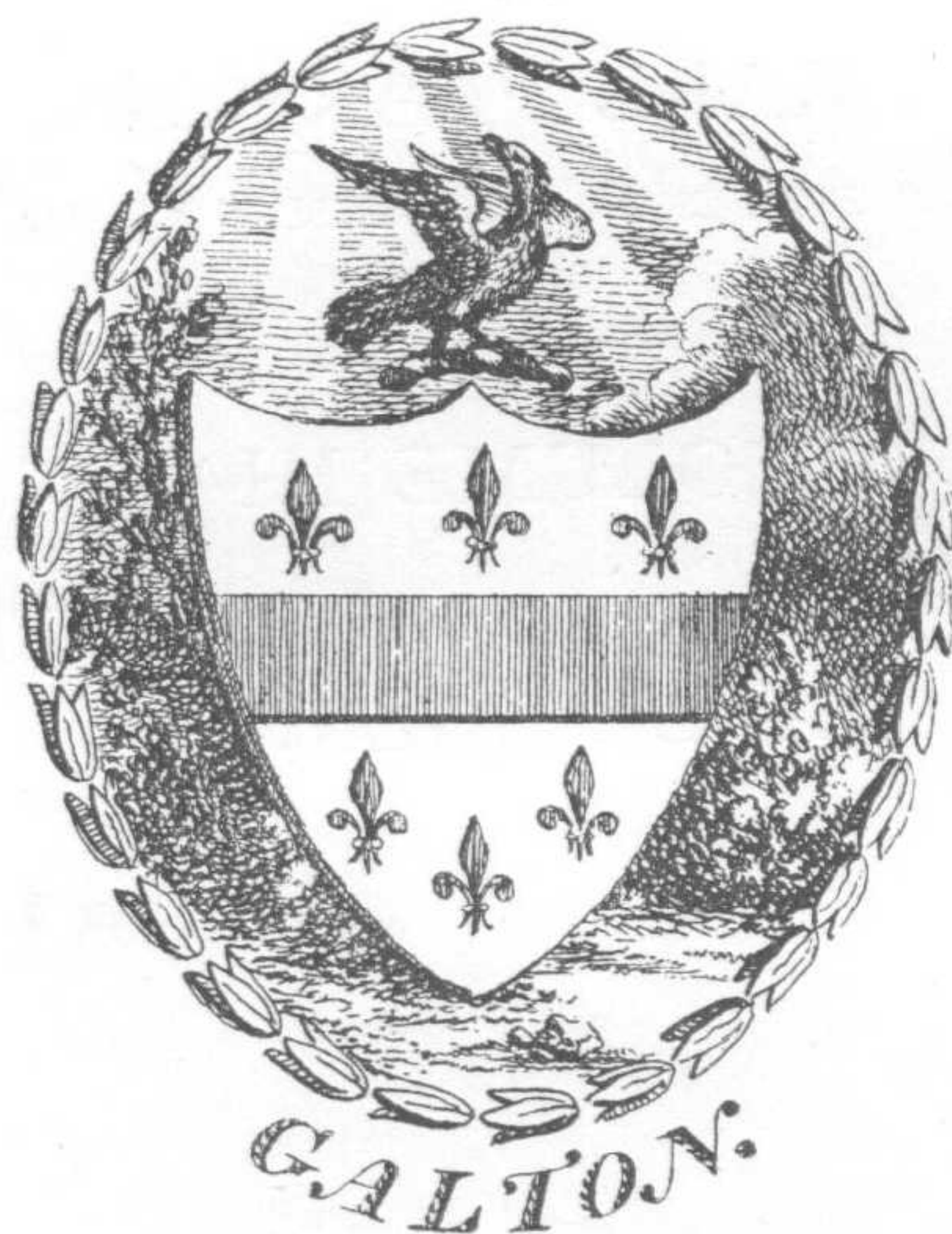


Printing Arts Co. Ld. sc.

*Sincerely yours
Francis Galton*

Francis Galton, aged 66, from the copperplate prepared for *Biometrika*, Vol. II.



Bookplate of Samuel Galton.

PRINTED IN GREAT BRITAIN

THE
LIFE, LETTERS AND LABOURS
OF
FRANCIS GALTON

BY
KARL PEARSON
GALTON PROFESSOR, UNIVERSITY OF LONDON

VOLUME III^A
CORRELATION, PERSONAL IDENTIFICATION
AND EUGENICS

CAMBRIDGE
AT THE UNIVERSITY PRESS
1930

PREFACE

AGAIN after a long interval the third and final volume of this *Life* appears. The delay is traceable to the same difficulties as arose in the case of the second volume, namely the high cost of producing nowadays a work of this character. As it was the generous help of Mr Lewis Haslam which enabled the second volume to be printed, so I have to record my gratitude to two friends who have assisted me to obtain the funds requisite on the present occasion. In the first place Professor Henry A. Ruger of Columbia University, New York, a former postgraduate worker in the Galton Laboratory, interested Miss Dorothy Chase Rowell in Galton's writings, and in the second place Dr F. A. Freeth reported my need to Mr Henry Mond. I wish to place on record here my deep gratitude to Miss Rowell and Mr Mond, whose gifts so far supplemented the proceeds of the sales of the first two volumes that I ventured to send the third to press.

It may be said that a shorter and less elaborate work would have supplied all that was needful. I do not think so, and there are two aspects of the matter to which I should like to refer. The writer of biographies usually belongs to the literary world, and is too often a minor light of that world. I have no claim to literary distinction of any order. I have written my account because I loved my friend and had sufficient knowledge to understand his aims and the meaning of his life for the science of the future. I have had to give up much of my time during the past twenty years to labour which lay outside my proper field, and that very fact induced me from the start to say, that if I spend my heritage in writing a biography it shall be done to satisfy myself and without regard to traditional standards, to the needs of publishers or to the tastes of the reading public. I will paint my portrait of a size and colouring to please myself, and disregard at each stage circulation, sale or profit. Biography is thankless work, but at least one can get delight in writing it, if one writes exactly as one chooses and without regard to the outside world! In the process one will learn to know—as intimately as any human being can know another—a personality not one's own; that is the joy of spending years over a biography where there is a wealth of material touching the mental output, the character and even the physical appearance of the subject.

If a work is to be printed, even twenty years after a man is dead some things, some strong opinions and some names, must still be omitted. Our lives are too closely entwined with those of others not to call for some reticence even after two decades have elapsed. Still I think the reader will find in these volumes a portrait of Galton which represents without undue repression, and without uncritical adulation, the man as I knew him, and as I have learnt from his writings and letters to interpret him.

The farther aspect of the matter lies in the opinion I have formed of what Galton's influence will be upon the future. Even since his death I see what strides in public acceptance the doctrine he preached has made. The dominant race of the future, the leading nation of civilisation, will not be the one with the greatest material resources, nay, not even the one with the greatest wealth of tradition; it will be the one which can claim to have the finest breed of men and women, physically and mentally. Civilisation has gained nothing from rivalry in destructive warfare; it can gain enormously from the rivalry of nations in rearing their future generations from the most efficient of their citizens. Galton was the first to realise this great truth, to preach it as a moral code, and to lay the foundations of the new science which it demands of man. In the centuries to come, when the principles of Eugenics shall be commonplaces of social conduct and of politics, men, whatever their race, will desire to know all that is knowable about one of the greatest, perhaps the greatest scientist of the nineteenth century. I have endeavoured to put together many things of which the knowledge in another fifty years will have perished, or not improbably the documents on which that knowledge could be based will be distributed in many directions. I have to the extent of my judgment and powers given an account of Galton's scientific work and of his social ideas, so that all that is essential to an appreciation of his labour and thought will be found in these volumes without the need for continual reference to widely scattered papers, and in the future to still more widely scattered letters.

With regard to Francis Galton's letters a word must be said here. I owe a deep debt of thanks to his relatives and friends for the immense mass of correspondence which has been placed at my disposal. Galton's own letters cover a period of at least eighty-five years, and the family letters stretch over a century. During that time profound changes have taken place in the manner of thought and in the habits of the dwellers in this country, and nothing can illustrate these changes better than the letters interchanged between the members, old and young, of a large family. We learn from such a century of letters much of the social history of our own country. We pass from an age when people travelled on horseback or in coaches to an epoch of aeroplanes and motor-boats; we note that it was once an open question whether it was wiser to invest in canal or railway shares, and we trace the changes from private to joint-stock banks. We see brought forcibly before us the passage from sail to steam; and—as the chief interest—we grasp how this evolution influenced the minds of those who were spectators of it. This century of Galton family letters would in the future be of high value to the social historian of our country, and it is with grief that I think of its dispersion. In a biography like the present there is small excuse for publishing letters which do not directly bear on the characterisation of its subject, but in picking out for publication letters from the many placed at my disposal my delight in social history may have occasionally led me to err in choosing letters which depict Galton's family environment even more significantly than they illustrate his keen affection for four generations of his kinsfolk.

While the circumstances detailed in the preface to my second volume led to a great extension of the original plan of this work, I felt the exclusion of many of these charming family letters was not justified by the introduction of so much scientific detail, and thus I have added them as an additional chapter to this volume. To Galton's niece, Mrs Lethbridge, I owe the privilege of publishing the selection from letters which, after the death of his sister Emma in 1904, her Uncle wrote to her almost weekly. They give the most perfect characterisation of Galton in his relationship to his family.

One apology I must make if the reader feels that in the chapter on the last decade of Galton's life the biographer has introduced too much of himself. To me that last decade was essentially bound up with our joint work for a subject we both had closely at heart; and I believe that for Galton himself our common aim—the establishment of Eugenics as an accepted branch of science—was a leading, if not the principal, purpose of those years. My own enthusiasm may possibly have deceived me, but I believe Galton during that decade lived more in the struggles and difficulties of our infant Laboratory than in any other phase of his wide interests. The sympathy and help he always so readily tendered to his friends may again have misled me, but I think the history of the Laboratory he founded and finally endowed was also the essential history of his own life in those last years. At any rate such is the aspect of Galton's many-sided nature that I then saw most closely, and it is accordingly that which I am best fitted to render account of. To me his final crusade for eugenic principles was the crowning phase of a life whose labours in medicine, evolution, anthropology, psychology, heredity and statistics directly fitted him to be the teacher and prophet of the new faith.

I have to express my gratitude to various societies and editors of journals for permission to reproduce the illustrations that accompanied Francis Galton's letters and papers. In particular, to the Royal Institution for permission to use the figures illustrating Galton's lectures of 1877, to the Royal Anthropological Institute for permission to use the diagrams of Galton's memoir of 1885; and to the Editor of *Nature* for permission to use Galton's diagrams or other figures from that journal. The permission of the Royal Society to reproduce illustrations to Galton's memoirs was granted when my second volume was published. The copyright in Galton's books belongs to the University of London. The copyright in most of the letters and photographs belongs to those members of the Galton and Darwin families who provided me with them, and permission to reproduce them again must be obtained from those members, as well as from myself (if the second reproduction be made from this volume).

While I must again renew my thanks to many who have aided me in this as in the earlier volumes, I am under deep obligations to my colleagues Professor C. J. Sisson and Miss Ethel M. Elderton for assistance in the toil of proof-reading; if in a few instances I have not followed their obviously better judgment, I trust they will not despise me for being of a perverse heart. To Dr Julia Bell I owe the expenditure of too many of her free hours for several years in the preparation of the ample index to this work; while to my Wife,

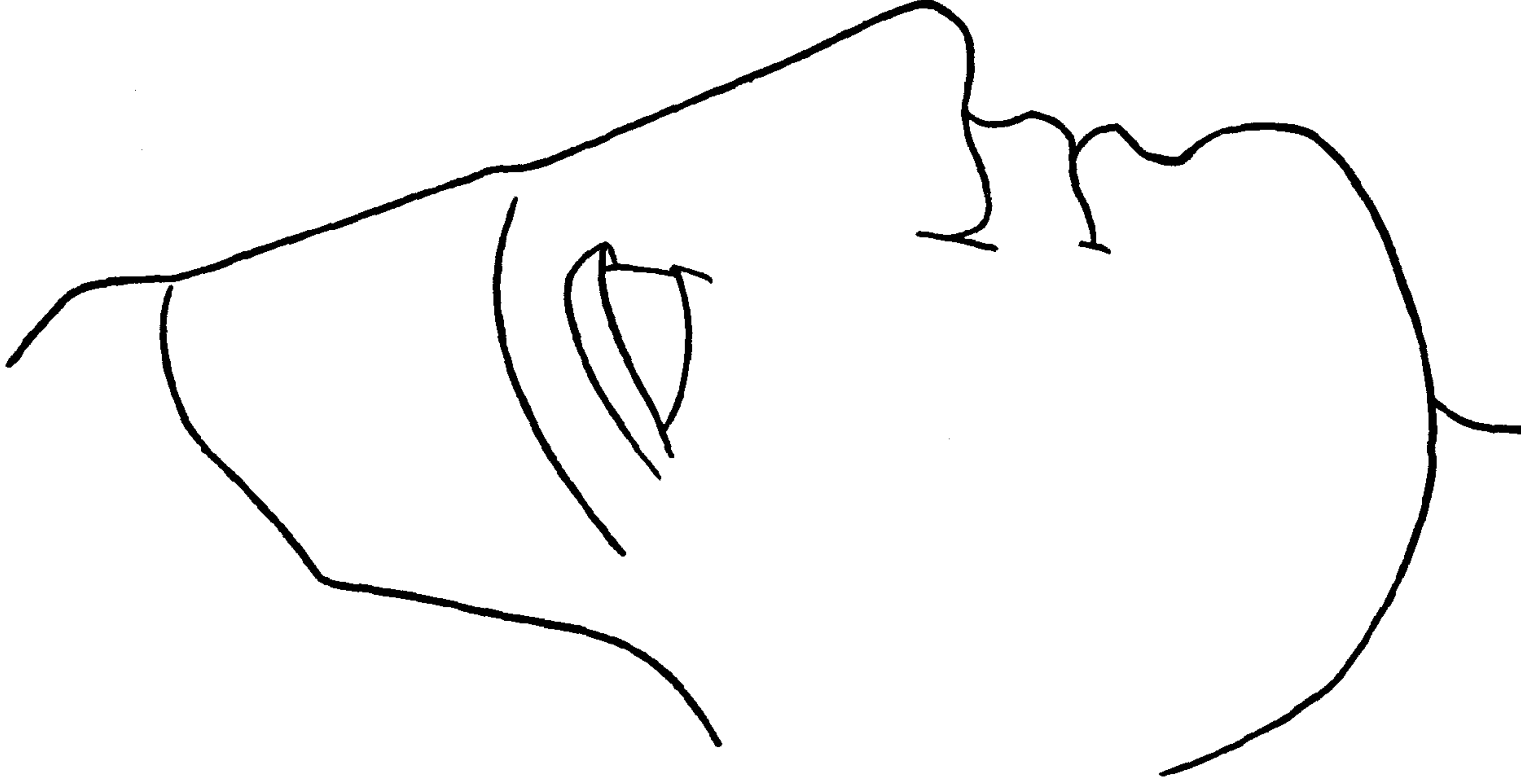
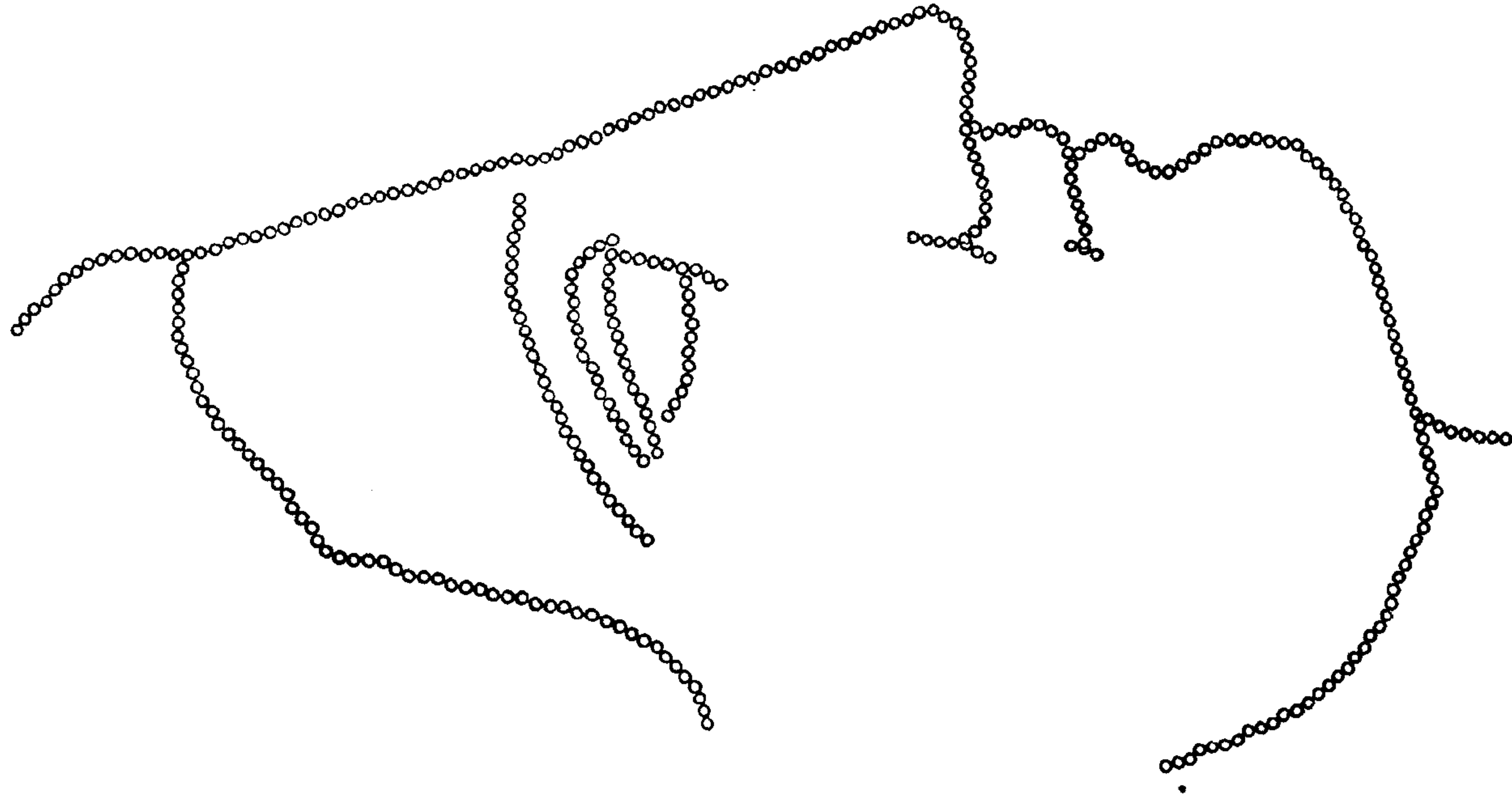
Margaret V. Pearson, I am indebted for the heavy task of aiding in selecting and of afterwards transcribing the numerous letters and papers, which has very greatly lightened my own labours. I cannot conclude without a word of thanks for the care which my printers, the Cambridge University Press, have devoted to the preparation of this work and the endeavours they have always made to meet the very varied requirements of its illustration.

KARL PEARSON.

THE GALTON LABORATORY,
UNIVERSITY OF LONDON.
March 22, 1930.

Yff Ony thyng Amysse be
blame connyng, and nat me:
I desyr þe redar to be my frynd,
yff þer be ony amysse, þat to amend.
(Mary Mavdley, *Digby Mystery.*)

The Greek Girl of the "Just Perceptible Difference" Lecture of 1893 (see Vol. II, p. 309 and footnote; the mislaid original has now been found).



The reader should place this plate some ten feet from his eye, and gradually approach it, noting the distance at which the 342 small circles become distinguishable.

CONTENTS OF VOLUME III^A

CHAP.	PAGE
XIV. CORRELATION AND THE APPLICATION OF STATISTICS TO THE PROBLEMS OF HEREDITY	1-137
A. Introductory	1-6
B. The First Idea of "Regression"	6-11
C. Heredity in Stature of Man. Development of the Conception of Regression	11-34
D. Attempt to demonstrate the Law of Ancestral Heredity on Eye-Colour	34-40
E. Law of Ancestral Heredity applied to Basset Hounds	40-44
F. Representations of the Ancestral Law	44-45
G. Experiments in Moth-Breeding	45-50
H. Correlations and their Measurement	50-57
I. <i>Natural Inheritance</i>	57-79
J. Discontinuity in Evolution	79-87
K. Eugenics as a Religious Faith	87-93
L. Miscellaneous Papers on Evolution, Heredity, etc.	93-113
<i>Noteworthy Families and Miscellanea</i>	113-126
The Evolution Committee, and the Proposal to acquire Darwin's House at Down	126-135
Appendix to Chapter XIV. "Weights of British Noblemen during the last Three Generations"	136-137
XV. PERSONAL IDENTIFICATION AND DESCRIPTION	138-216
§ I. History and Controversy	138-154
§ II. Popularisation of Finger-Printing	154-160
§ III. Scientific Papers and Books	161-215
A. The Royal Society Papers	161-174
B. <i>Finger-Prints</i> , 1893	174-194
<i>Decipherment of Blurred Finger-Prints</i> , 1893. <i>Physical Index to</i> <i>100 Persons</i> , 1894	194-199
<i>Finger-Print Directories</i> , 1895	199-215
Note to Chapter XV. Finger-Prints as Reminiscences	216
XVI. EUGENICS AS A CREED AND THE LAST DECADE OF GALTON'S LIFE	217-436
§ 1. Introductory	217-218
§ 2. Address to the Demographers, 1891	218-221
§ 3. Definition of Eugenics and the Eugenics Fellowship	221-226
§ 4. The Huxley Lecture, 1901. Allied Matters	226-240
§ 5. Selected Correspondence between Galton and his Biographer, 1900-1902	240-251
§ 6. Work and Correspondence of 1903	251-258
§ 7. Work and Correspondence of 1904	258-266
§ 8. Work and Correspondence of 1905	266-278
§ 9. Events and Correspondence of 1906	278-292

	PAGE
§ 10. Galton's unpublished MS. on Eugenic Certificates	292-296
§ 11. Reconstruction of the "Eugenics Record Office"	296-304
§ 12. Final Form of Scheme for a Eugenics Laboratory for the University of London	304-308
§ 13. Work and Correspondence of 1907	308-332
§ 14. Events and Correspondence of 1908	332-361
(a) On the Literary Style of Scientific Memoirs (pp. 332-339). (b) The Darwin-Wallace Celebration of the Linnean Society (pp. 340-347). (c) The Eugenics Education Society (pp. 347-353). (d) The auto- biography: <i>Memories of my Life</i> (pp. 354-361).	
§ 15. Events and Correspondence of 1909	361-400
§ 16. Events and Correspondence of 1910	400-411
§ 17. Francis Galton's Utopia	411-425
§ 18. Further letters of 1910, chiefly concerning Eugenics	425-432
§ 19. The Last Scenes	432-436
APPENDIX I. The Codicil to the Will of Sir Francis Galton	437-438
APPENDIX II. Scheme by Sir Francis Galton for a Eugenics Discussion Committee, 1905	438

ILLUSTRATIONS TO VOLUME III^A

Frontispiece. Francis Galton, aged 66, from the copperplate prepared for *Biometrika*, Vol. II.

Extra Plate. The Greek Girl of the "Just Perceptible Difference" Lecture of 1893, to face Table of Contents.

Tailpiece. Sir William J. Herschel's Forefinger prints at an interval of 54 years, the longest known evidence for persistence, to face Appendix II, p. 438.

PLATE		<i>to face page</i>
I.	The Genometer, after a suggestion of Francis Galton	30
II.	Galton's "Ogive Curve" as exhibited by a marshalled series of Bean Pods	31
III.	Dr Sorby's painting of a tree from the black pigment of human hair	97
IV.	Dr Sorby's painting of a tree from the red pigment of human hair	97
V.	Rajyadhar Konai's Contract with Sir W. J. Herschel, made at Hooghly, 1858, and signed with the imprint of his right hand	146
VI.	Effects of various injuries on Finger-Print Patterns	154
VII.	Persistence of <i>minutiae</i> in Finger-Print Patterns at intervals of nine and twenty-eight years	166
VIII.	Persistence of <i>minutiae</i> in Finger-Print Patterns at intervals of twenty-six, thirty and thirty-one years	166
IX.	The Standard Patterns of Purkenje, with Galton's drawings of their Cores	179
X.	Examples of the "outlining" of Patterns to assist Classification	180
XI.	Outlines of Patterns in Arches and Loops	181
XII.	Outlines of Patterns in Whorls, and Cores to Loops and Whorls	181
XIII.	Outlines of the ten Digits of eight Persons, taken at random	181
XIV.	Transitional Patterns—Arches and Loops	181
XV.	Transitional Patterns—Loops and Whorls	181
XVI.	Persistence of Finger-Prints, Enlarged Patterns	182
XVII.	Persistence of Finger-Print Patterns with corresponding <i>minutiae</i> like numbered	182
XVIII.	Finger-Prints of Like Twins, from the Collection in the <i>Galtoniana</i>	191
XIX.	Blurred Finger-Prints, Illustrations of Galton's Treatment (enlarged $2\frac{1}{2}$ times)	197
XX.	Selected corresponding Portions of Blurred Doublets (enlarged 7 times)	197
XXI.	Skeleton Charts of Ridge Central Lines of Doublets of Plate XX	197
XXII.	Plate XXI overprinted on Plate XX	197
XXIII.	Classification of Finger-Prints, Types treated by Galton as Arches	213
XXIV.	Classification of Finger-Prints, Types treated by Galton as Loops	213
XXV.	Classification of Finger-Prints, Types treated by Galton as Whorls	213
XXVI.	Galton's method of counting Ridges in Loops. Illustration of dabbed and rolled prints	213
XXVII.	Illustrations of Galton's Secondary Classificatory Symbols (<i>i, f, c</i>)	213
XXVIII.	Illustrations of Galton's Secondary Classificatory Symbols (<i>y, v, vy</i>)	213
XXIX.	Galton's Secondary Classificatory Symbols applied to Noteworthy Peculiarities	213
XXX.	Illustration of the use of Galton's Secondary Classificatory Symbols	213
XXXI.	Francis Galton, the Founder of the Science of Eugenics, from a photograph of 1902, by the late Mr Dew-Smith. (By kind permission of Mrs Dew-Smith)	217

PLATE		<i>to face page</i>
XXXII.	Francis Galton, about the age of 80	249
XXXIII.	Collotype of the "interspaces" on Galton's own Finger-Prints	257
XXXIV.	Francis Galton in 1904, aged 82	259
XXXV.	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	340
XXXVI.	Francis Galton, aged 87, on the stoep at Fox Holm, Cobham, with his biographer	353
XXXVII.	A Reverie, caught "when the spirit was not there"	354
XXXVIII.	Francis Galton, aged 87, on the stoep at Fox Holm, Cobham, with the faithful Gifi and the Albino puppy Wee Ling	390
XXXIX.	Guido Reni's Picture of Apollo and the Hours preceded by Aurora, from the Casino of the Palazzo Rospigliosi, Rome	422
XL.	Francis Galton, aged 88, from a sketch made by Frank Carter, twelve days before Galton's death	432
XLI.	Francis Galton, January 17th, 1911, from a photograph taken after death	433
XLII.	The Church at Claverdon, with the iron railings surrounding the vault where Galton's body lies	435

In the Pocket at the end of this volume:

- (a) Supplementary Pedigree of Distinguished Ancestors of Francis Galton and Charles Darwin
- (β) Galton's Types of Finger-Print Patterns reduced from the framed enlargements, once in Galton's Anthropometric Laboratory, now in the Anthropometric Laboratory at University College, London



Galton.

Bookplate of Tertius Galton.

ERRATA TO VOLUME I

- p. 53. Lines 11 and 19-20, *for* "John Hubert Barclay Galton" *read* "Hubert John Barclay Galton.
- p. 150. Plate LI. The long horizontal object above the mantel-mirror is an oriental pipe not a lance.
- p. 161. On p. 160 we see that Tertius Galton was proposing a visit to the English Lakes, and it would appear from Emma Galton's diary that this actually took place. It is not clear whether Tertius Galton's serious illness occurred at Keswick in the English Lakes, or at "Keswick" the home of the Gurneys near Norwich on the homeward journey. In the letter on p. 162 Galton is speaking of Keswick in the Lakes, but it is not always easy in the diaries of Emma and Francis to distinguish between visits to Lakeland and to the Gurneys' home.
- p. 168. Line 9. The mysterious "Missourian" of Galton's letter to his Father is very probably Galton's misspelling for "Mesosaurian." Not only in his boyhood and his college days, but even to the last decade of his life, Galton's spellings could be erratic. In one of his letters to me he excuses his spelling by the darkness in which he is writing. It is probable therefore that he judged the spelling of words by seeing them, and he may only have *heard* this fossil lizard spoken of, and not seen the name written.
- Pedigree Plate A. *Immediate Ancestry and Collaterals of Sir Francis Galton* in pocket at end of Vol. I. Last line but one, seventh column of names, *for* "F. M. Cormford" *read* "F. M. Cornford."

To

M. S. P. and M. V. P.

whose unstinted sympathy and aid
have enabled me to complete my task