

Forms and Schedules for Galton's Investigations

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The Royal Institute of Public Health.

LONDON CONGRESS, 1905.

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Section B.

ANTHROPOMETRY AT SCHOOLS.

BY

FRANCIS GALTON, D.C.L., Hon. D.Sc. Cambr., F.R.S.

ANTHROPOMETRY, or the art of measuring the physical and mental faculties of human beings, enables a shorthand description of any individual to be given by recording the measurements of a small sample of his dimensions and qualities. These will sufficiently define his bodily proportions, his massiveness, strength, agility, keenness of sense, energy, health, intellectual capacity, and mental character, and will substitute concise and exact numerical values for verbose and disputable estimates. Its methods necessarily differ for different faculties: some measurements are made by the foot-rule, others by scales, others by the watch; health is measured by the frequency and character of illness; the remainder by performances in the school or on the playground. Anthropometry furnishes the readiest method of ascertaining whether a boy is developing normally or otherwise, and how far the average conditions of pupils at one institution differ from those at others. Though partially practised at every school—for example, in all examinations—its powers are far from being generally understood, and its range is much too restricted. But as an interest in anthropometry has arisen and progressed during recent years, it is to be expected that the good sense of school authorities, assisted by the expert knowledge of medical men, anthropologists, and statisticians, will gradually introduce improvements in its methods and enlargements of its scope.

It is not, however, so much about this that I wish to speak, as on our present deplorable want of knowledge of the true worth of anthropometric warnings and forecasts. We do not possess enough material in the form of life-histories to enable us to frame answers in definite and appropriate figures to such elementary questions as these: How far does success or failure in youth foretell success or failure in later years? What is the prophetic value of anthropometry at school in respect to health, strength, and energy in after-life? How far are the observations, then, made useful in indicating the career to which a boy is naturally best fitted? What are his permanently weak and strong points? Is he, for instance, more or less likely than others to break down under a tropical climate? What becomes of the boys? In what proportion do they rise above the level of the station in which they were born, and in what proportion do they fall below it? The late Sir James Paget published a brief but most suggestive memoir entitled, "What becomes of the Medical Students?" During his long tenure of a professorship at St. Bartholomew's, his lectures were attended by about a thousand medical pupils, and the subsequent history of each was traced by his zealous assistants. Their successes and failures were then classified by Sir J. Paget in an ingenious and instructive way. It makes one heartily wish that similar investigations could be carried out into the after-careers of all who were educated at our public schools. Most laudable attempts have been made at many of them to compile registers, which are very useful as clues for further search, but far too scanty—at least, in all cases that I know of—for statistical deductions. The question now to be considered is the best way of accumulating a sufficient store of material to serve the above purposes in the future.

The conditions differ so widely in different places of education that it is almost necessary to limit the reply to one class of them. For this purpose it will be convenient to consider what might be done at the public schools. The question how the same general principles might be adapted to others must stand over for the present.

The first conclusion to be emphasized is that no programme for anthropometry in any school can be considered complete unless it provides for the collection of data during the after-lives of their pupils.

The difficulties of continuing records are many, and for the most part obvious, but I believe they might be overcome in the great public schools, to which I now confine my remarks, by the process about to be described. It is one that would prompt all the parties concerned to stimulate one another; it would work automatically, and it might be carried on without sensible charge on the funds of the institution. Some one of the masters who had a disposition for the work could be



selected to perform the function of registrar, and be partly, if not entirely, remunerated for his extra labour through fees, collected in the way hereafter to be described.

There are certain small preliminary expenses, which would be met by a charge of a few shillings on leaving school for the privilege of keeping the name on the books. A large envelope would then be provided for each boy, to contain his anthropometric record up to date, and subsequent documents, which would be stored in perpetuity and become the property of the school. I reckon that the average thickness of each filled envelope would be less than $\frac{1}{4}$ inch, so the records of 100 boys could stand side by side, like thin books, on a shelf 4 feet long. Each boy would also have two opposite pages of a ledger allotted to him, for brief entries from time to time. Access to all these documents would be permitted under reasonable restrictions.

It should be carefully impressed on every boy that communications will be welcomed from him all his life through, but under strict limitations as to their form and frequency, in order to reduce to a minimum the trouble of dealing with them. As regards form, the experience of all statisticians is strongly in favour of communications of this character being written on printed schedules, in reply to a few well-considered questions, only so much space being allowed for each reply as is really needful. The schedules must also contain a moderate amount of extra space for additional remarks. Printed questions check prolixity, bring to mind points of importance that might otherwise have been neglected, and ensure uniformity of arrangement.

As to frequency, yearly returns would be far too troublesome, and they are quite unnecessary. A four-yearly interval seems as good as any other that can be suggested, while it has the unique advantage of possessing one exceptional day—February 29 in each leap-year—which has thus far been unappropriated to any special purpose. I urge in all seriousness that it would be an excellent novelty to observe February 29 as a day of reminiscence—a rarer kind of Saint's day—wider and differing in its objects to those of the traditional Yule-time, which refer chiefly to family gatherings. It might be a day for each person to recall with affection and gratitude the friends and benefactors who had influenced his life for good, a recognised opportunity for reviving the friendships of early years by visits and letters. The sentiment that I wish to underline its observance is exactly expressed by Wordsworth's well-known lines:

"The child is father to the man,
And I would wish my days to be
Bound each to each by natural piety."

The celebration of the day in schools would be much concerned with the works of living men who were formerly pupils, but then engaged in the battle of life. Their doings would be spoken of, and hearty sympathies evoked. Affection and duty should co-operate in maintaining the bands of fellowship between school and former scholars; in short, its maintenance should be considered a "pious" object.

If these ideas should haply take root and thrive, it would become a common question between men at the beginning of each leap-year: "Shall you send returns to your old school?" This would serve both as a reminder and as an opening to pleasant talks about past times—about the successes and failures of contemporaries, and what had become of them; would lead to the renewal of not a few dim friendships that might otherwise have lapsed, merely through want of opportunity for keeping them up.

Uniformity of date in receiving the returns is desirable on other grounds. It would arouse a wholesome competition among the registrars of the several schools to compile their respective four-yearly digests in the best way they could, both from a scientific and a literary point of view. The simultaneity of the appearance of these digests throughout the country would compel public attention. They would be subject, as a whole, to comparison and criticism, through which their quality would improve on each successive occasion. Statisticians would, of course, take them simultaneously in hand, as containing a large aggregation of fresh, well-ordered, and trustworthy material, eminently suitable for their purposes.

It is an essential feature of my proposal to vest the initiative of sending in the records with the former pupils, thereby relieving the school authorities of the burden of hunting out changed addresses and of writing imploring letters. Consequently, the date for making the returns should be such that no person is likely to forget it. It will now be understood that the suggestion of February 29 has solid advantages.

The customary proceeding to which I look forward is that early in each leap-year every old pupil would bethink himself, and be reminded by others, that it is time to prepare his returns. He would



write to his former school, asking that a blank schedule be sent to the address given by him, and enclosing a statutory fee, calculated to cover the whole cost of trouble, materials, printing, and postage. The blank schedule would be forwarded, and the date of his application and his address would be entered in the ledger. When the filled-up return had reached the school, it would be noted in the ledger, slipped into the appropriate envelope, and be acknowledged by a few friendly words on a postcard. Finally, a copy of the four-yearly digest, containing among other things a list of contributors, would be posted to the same address on its publication.

I do not propose to enter into the character of the questions to be printed on the schedule, which, as already remarked, require very careful consideration, and should be framed, as far as practicable, on a uniform plan for all schools. Suffice it to say that the questions would take cognisance of only a few simple physical facts, and would principally relate to health, profession, preferments, marriage, and children. The two sides of a quarto sheet of paper would afford more than ample space for all that need be recorded by a person concerning his history during the past four years. Therefore, if he lived forty years after leaving school, the contents of his envelope would be limited to (1) ten sheets of after-life history, (2) his anthropometric record while at school (written in a thin copy-book, with blank pages at the end), (3) one sheet of family history (asked for from his parents when he was about to leave school, and probably repeated later), and (4) a few photographs. It was on this basis that I reckoned the average thickness of each filled envelope to be less than $\frac{1}{4}$ inch.

Whenever an old pupil revisits his school after a long interval, the opportunity should be taken of repeating and recording a few simple measurements, such as his height, weight, eyesight, and strength, writing them on the blank pages at the end of the copy-book containing his anthropometric record; also of asking him to look over the pages in the ledger that are adjacent to his own, which contain the names of his former schoolfellows, and to give such information as he can to fill up any long-continued blanks—it may be by the notice of a death and its cause. Such information, written and signed on a separate slip, would be noted in the ledger, and put into the appropriate envelope.

The scheme thus outlined would interest all the parties concerned. The former pupil would acquire a much more vivid appreciation than at present of his continued relationship to his old school. Knowing that his earlier life-history was stored there, he would be the more disposed to continue it up to date and to pay his small share of the cost of the entire procedure. Moreover, he would shrink from acquiring the reputation of being indifferent to the wishes of the school, by abstaining from sending his returns. The school authorities would rejoice in the possession of the whole history of those over whose early development they exercised large control. Anthropologists would know where to lay hands on a mass of material suitable for comparing the health, bodily qualities, and scholastic achievements in early life with the health, vigour, and achievements afterwards. Statisticians would possess a four-yearly census, out of which unexpected conclusions would probably be derived. Lastly, some few of the records would be invaluable to future biographers. There will, of course, be many failures to send, but a very great deal would be secured that must otherwise have been lost, quite sufficient to warrant the experiment.

It is the behaviour of a brute beast, such as a dog or a cat, to lavish care on its puppies or kittens for a while and afterwards to cast them off entirely; yet no more prolonged interest used in former times to be shown at most schools and colleges to their old pupils. A far more humane spirit has fortunately arisen of late years, and is apparently established. The effect of the present proposals would be to encourage it, and to prolong and intensify the kindly fellowship between past and present pupils and their school, and to make it serve more than sentimental purposes. The addition of a scientific motive could not fail to invest that relation with a more durable and business-like character, and to open a way to fields of research of no small importance that have hitherto been unduly neglected.



(NAME) _____ BORN ON _____ AT _____

BORN ON AT

AT }

[illegible]

BRIEF RECORDS
OF THE AFTER
LIFE OF

FOR FURTHER
BIOGRAPHICAL
INFORMATION, SEE

DATES.		OCCUPATION, EVENTS, AND ADDRESS.	PORTRAITS, WITH THEIR DATES.		DATES.		PHYSICAL FACTS.
Month.	Year.		Full Faces.	Profiles.	Month.	Year.	
		Between close of School Life and 21st Birthday.					Between School Life and close of 21st year of Age.
		From 21st Birthday to close of 30th year of Age.					From 21st Birthday to close of 30th year of Age.
		From 31st Birthday to close of 40th year of Age.					From 31st Birthday to close of 40th year of Age.
		From 41st Birthday to close of 50th year of Age.					From 41st Birthday to close of 50th year of Age.
		From 51st Birthday to close of 60th year of Age.					From 51st Birthday to close of 60th year of Age.
		From 60th Birthday to close of 70th year of Age.					From 60th Birthday to close of 70th year of Age.
		From 71st Birthday onwards.					From 71st Birthday onwards.
			Day of	Month	Year.		

BORN ON AT

AT

[illegible]

FOR FURTHER
BIOGRAPHICAL
INFORMATION, SEE

Cards for
Basset hounds

[illegible]

[illegible]

Circulars sample 1, issued at various times 33.



~~26C~~

25

Inquiry as to the alleged failure of the Owners of Sequestrated Church Property to leave Male Issue.

Name and description of the Property.				Was it held by the Church at the time of the Dissolution?				
				If so, give References				
SUCCESSIVE OWNERS.						Duration of Ownership	Relationship* to his or her Predecessor.	Describe circumstances under which the property passed to a new family, by bequest? sale? or marriage?
		Christian Name.	Surname and Title.	from	to			
Owner in 1800.	1							
Successive Owners.	2							
	3							
	4							
	5							
	6							
	7							
Present Owner up to latest information.					X X			
Signature of the Sender.				His or her Address.			Date.	
<p>NOTE.*—When the word "Nephew" is used, add (brother's son) or (sister's son) as the case may be.</p> <p>When the word "Uncle" is used, add (father's brother) or (mother's brother) as the case may be.</p> <p>After (male) "First Cousin," add (father's brother's son), (father's sister's son), (mother's brother's son), or (mother's sister's son).</p> <p>All relations beyond First Cousins are to be called "Distant."</p> <p>Similarly in all the above cases as regards their Female equivalents.</p>								

Please return this Schedule, when filled up, to Miss BIGGS, _____

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QUESTIONS ON THE FACULTY OF VISUALISING.

By FRANCIS GALTON, F.R.S.

THE object of these Questions is to elicit the degree and manner in which different persons possess the power of seeing images in their mind's eye.

From inquiries I have already made, it is certain that remarkable variations exist both in the strength and in the quality of this faculty, and it is highly probable that a statistical inquiry into them will throw light upon more than one psychological problem.

Before answering the Questions 1 to 5 (see the Schedule on the back of this page), think of some definite object—say your breakfast-table, as you sat down to it this morning—and consider carefully the picture that rises before your mind's eye. 1. *Illumination*.—Is the image dim, or fairly clear? Is its brightness comparable to that of the actual scene? 2. *Definition*.—Are the objects sharply defined, or are any or most of them little more than blotches of light and shade? 3. *Completeness*.—Are all the details of the breakfast-table seen with equal clearness, like a real scene, or do some parts obtrude themselves while others are barely visualised? 4. *Colouring*.—Are the colours of the china, of the toast, bread crust, mustard, meat, parsley, or whatever may have been on the table, quite distinct and natural? 5. *Extent of field of view*.—Does it correspond in breadth and height to the real field of view?

The Questions 6 to 16 refer to definite kinds of mental imagery. 6. *Printed pages*.—When recalling passages in a book, is the actual print clearly conspicuous? How much of a page can you mentally see and retain steadily in view? 7. *Furniture*.—Can you judge with precision of the effect that would be produced upon the appearance of a room by changing the position of the furniture in it? Could you rely on your judgment in purchasing furniture that should prove suitable in size, shape and colour? Can you carry in your mind's eye the colour and pattern of your wall-paper and of your carpets? 8. *Persons*.—Can you recall with distinctness the features of persons whom you know well? Can you at will cause your mental image of them to change position, as to sit, stand, or turn slowly round? Can you deliberately seat the image of a well-known person in a chair and retain it, and see it with enough distinctness to enable you to sketch it leisurely (supposing yourself able to draw)? 9. *Scenery*.—Do you preserve the recollection of scenery with much precision of detail, and do you find pleasure in dwelling on it? Can you easily follow the descriptions of scenery that are so frequently met with in novels and books of travel? 10. *Geography*.—Do you readily follow the geographical descriptions in ordinary newspaper letters from foreign correspondents. 11. *Military movements*.—Can you realise the changing position of troops, as though you actually saw them on the march, when reading the description of battles or of manœuvres? 12. *Mechanism*.—Can you visualise any machinery at work? If you are a mechanic, describe one of the most complicated machines that you can clearly and completely imagine? 13. *Geometry*.—If you have experience in this, state fully your power of visualising plane and solid figures. 14. *Numerals*.—Are any mental figures associated in your mind with the various numerals? that is to say, if the words "fifty-six" be spoken, do you mentally see those figures in any shape or not? Can you picture to yourself many lines of figures and hold them fast in the mental field of view, and peruse them when there. (If you happen to have decided powers of mental arithmetic, describe your process and mention the most you can do.) If you are a mathematician, how far do you visualise your formulæ? 15. *Card-playing*.—Have you a good recollection of the cards that are out, and how far does your recollection consist of a mental image of them. 16. *Chess*.—Can you foresee far ahead the effects of a contemplated move? If so, is it by means of a mental image of the board? (If you happen to be able to play chess blindfold, please describe fully the limits of your powers.)

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Any further information as to your visualising powers will be acceptable.

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For explanations, see the other side of this paper.

The replies will be used for *statistical purposes only*, and should be addressed to—

FRANCIS GALTON, 42, RUTLAND GATE, LONDON.

QUESTIONS.	REPLIES.
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4. Colouring	
5. Extent of field of view	
<i>Different kinds of Imagery.</i>	
6. Printed pages	
7. Furniture	
8. Persons	
9. Scenery	
10. Geography	
11. Military movements	
12. Mechanism	
13. Geometry	
14. Numerals	
15. Card-playing	
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<i>Other Senses.</i>	
17. Tones of voices	
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Signature of Sender and
Address

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Any further information as to your visualising powers will be acceptable.

F. G.

QUESTIONS ON THE FACULTY OF VISUALISING.

For explanations, see the other side of this paper.

The replies will be used for *statistical purposes only*, and should be addressed to—

FRANCIS GALTON, 42, RUTLAND GATE, LONDON.

QUESTIONS.	REPLIES.
1. Illumination	
2. Definition	
3. Completeness	
4. Colouring	
5. Extent of field of view	
<i>Different kinds of Imagery.</i>	
6. Printed pages	
7. Furniture	
8. Persons	
9. Scenery	
10. Geography	
11. Military movements	
12. Mechanism	
13. Geometry	
14. Numerals	
15. Card-playing	
16. Chess	
<i>Other Senses.</i>	
17. Tones of voices	
18. Music	
19. Smells	
20. Tastes	

Signature of Sender and
Address

Questions on Visualizing & other allied Faculties
F Galton



h.m.3

QUESTIONS ON VISUALISING AND OTHER ALLIED FACULTIES.

BY FRANCIS GALTON, F.R.S., 42, RUTLAND GATE, LONDON, S.W.

* * *The replies will be used for STATISTICAL PURPOSES ONLY (as in "Nature," January 15, 1880, on "Visualised Numerals."*

THE object of these Questions is to elicit the degree in which different persons possess the power of seeing images in their mind's eye, and of reviving past sensations.

From inquiries I have already made, it appears that remarkable variations exist both in the strength and in the quality of these faculties, and it is highly probable that a statistical inquiry into them will throw light upon more than one psychological problem.

Before addressing yourself to any of the Questions on the opposite page, think of some definite object—suppose it is your breakfast-table as you sat down to it this morning—and consider carefully the picture that rises before your mind's eye.

1. *Illumination.*—Is the image dim or fairly clear? Is its brightness comparable to that of the actual scene?
2. *Definition.*—Are all the objects pretty well defined at the same time, or is the place of sharpest definition at any one moment more contracted than it is in a real scene?
3. *Colouring.*—Are the colours of the china, of the toast, bread crust, mustard, meat, parsley, or whatever may have been on the table, quite distinct and natural?
4. *Extent of field of view.*—Call up the image of some panoramic view (the walls of your room might suffice), can you force yourself to see mentally a wider range of it than could be taken in by any single glance of the eyes? Can you mentally see more than three faces of a die, or more than one hemisphere of a globe at the same instant of time?
5. *Distance of images.*—Where do mental images appear to be situated? within the head, within the eye-ball, just in front of the eyes, or at a distance corresponding to reality? Can you project an image upon a piece of paper?
6. *Command over images.*—Can you retain a mental picture steadily before the eyes? When you do so does it grow brighter or dimmer? When the act of retaining it becomes wearisome, in what part of the head or eye-ball is the fatigue felt?
7. *Persons.*—Can you recall with distinctness the features of all near relations and many other persons? Can you at will cause your mental image of any or most of them to sit, stand, or turn slowly round? Can you deliberately seat the image of a well-known person in a chair and see it with enough distinctness to enable you to sketch it leisurely (supposing yourself able to draw)?
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9. *Comparison with reality.*—What difference do you perceive between a very vivid mental picture called up in the dark, and a real scene? Have you ever mistaken a mental image for a reality, when in health and wide awake?
10. *Numerals and dates.*—Are these invariably associated in your mind with any peculiar mental imagery, whether of written or printed figures, diagrams, or colours? If so, explain fully, and say if you can account for the association?
11. *Specialities.*—If you happen to have special aptitudes for mechanics, mathematics (either geometry of three dimensions or pure analysis), mental arithmetic, or chess-playing blindfold, please explain fully how far your processes depend on the use of visual images, and how far otherwise.
12. Call up before your imagination the objects specified in the six following paragraphs, numbered A. to F., and consider carefully whether your mental representation of them generally, is in each group very faint, faint, fair, good, or vivid and comparable to the actual sensation:—
 - A. *Light and colour.*—An evenly clouded sky (omitting all landscape) first bright, then gloomy. A thick surrounding haze, first white, then successively blue, yellow, green, and red.
 - B. *Sound.*—The beat of rain against the window panes, the crack of a whip, a church bell, the hum of bees, the whistle of a railway, the clinking of tea-spoons and saucers, the slam of a door.
 - C. *Smells.*—Tar, roses, an oil lamp blown out, hay, violets, a fur coat, gas, tobacco.
 - D. *Tastes.*—Salt, sugar, lemon juice, raisins, chocolate, currant jelly.
 - E. *Touch.*—Velvet, silk, soap, gum, sand, dough, a crisp dead leaf, the prick of a pin.
 - F. *Other sensations.*—Heat, hunger, cold, thirst, fatigue, fever, drowsiness, a bad cold.
13. *Music.*—Have you any aptitude for mentally recalling music, or for imagining it?
14. *At different ages.*—Do you recollect what your power of visualising, &c., were in childhood? Have they varied much within your recollection?

General remarks.—Supplementary information written here, or on a separate piece of paper will be acceptable.

F. G.

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QUESTIONS.	REPLIES.	
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2. Definition		
3. Colouring		
4. Extent of field view .		
5. Distance		
6. Command over imagery		
7. Persons		
8. Scenery		
9. Comparison with reality		
10. Numerals and dates .		
11. Specialities		
	Light and colour.	Tastes.
	A.	D.
	Sound.	Touch.
12. General sensations . .	B.	E.
	Smells.	Other sensations.
	C.	F.
13. Music		
14. At different ages . .		
General remarks . . .		



Full Address of Sender.
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13. *Music*.—Have you any aptitude for mentally recalling music, or for imagining it?

14. *At different ages*.—Do you recollect what your power of visualising, &c., were in childhood? Have they varied much within your recollection?

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p. 2

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2. Definition		
3. Colouring		
4. Extent of field view		
5. Distance		
6. Command over imagery		
7. Persons		
8. Scenery		
9. Comparison with reality		
10. Numerals and dates		
11. Specialities		
12. General sensations	Light and colour. A.	Tastes. D.
	Sound. B.	Touch. E.
	Smells. C.	Other sensations. F.
13. Music		
14. At different ages		
General remarks		

Full Address of Sender.
(Ladies should prefix Mrs. or Miss,
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Explanation of the reason for the inquiry, overleaf.

It is alleged that on the whole the hair of English children is darker than that of their parents, and it is asserted that the English race is gradually but surely becoming dark-haired. The object of the present inquiry is to test the truth of this statement. It is probable that the recent and rapid changes in English habits have caused certain sub-types to prevail in the struggle for existence, that were repressed before, and it is of interest to know what these sub-types are. The colour of animals is often found to be intimately correlated with their power or incapacity to thrive under certain conditions, and it may well be the same in the case of man. Again, it is undoubtedly the fact in America, where the mental fidget, social worry, business anxiety, and other conditions that characterise modern civilisation, are even more pressing than with us, that black-haired persons are less liable to permanent ill-effects from nearly every form of disease than those who are fair-haired. (Baxter.)

It is desired to ascertain, primarily in regard to the middle and upper classes of English society,—

(1) Whether it be true that children born during a recent period in England are darker than their parents.

(2) Whether there is any change in other personal characteristics.

(3) Whether dark-haired and other types differ in fertility.

(4) Whether the English race as a whole is becoming more dark-haired or otherwise changed, as the outcome of two possibly opposing tendencies, namely, of the most enduring type being the least prolific.

A suitable number of these papers with blank schedules overleaf, will be sent to any competent correspondent who is willing to collect information concerning the members of his own family. The most valuable returns by far will be those that extend to all the eight grandparents of the young family, and it is believed that the parents of many young families are competent to furnish such returns in their behalf, being themselves sufficiently young to obtain the required information concerning their own grandparents, great uncles and aunts, and, of course, of their parents, uncles,

aunts, brothers, and sisters. An inquiry of this completeness requires 15 forms to be filled up. The information concerning the brothers and sisters of direct ancestors is of importance in two ways, first as regards the question of fertility, and secondly as useful evidence of the race of that ancestor being more or less mixed. If a man who was himself fair-haired had dark-haired brothers and sisters, we should infer that most of his own ancestors had been dark-haired, and that he would be more likely to have dark-haired descendants than one whose brothers and sisters were all fair-haired. The two cases ought to be sorted into different statistical groups.

Returns will be of little value that do not include at least all the four grandparents, the parents, some of the uncles and aunts, and the brothers and sisters of the present generation.

Inquirers will often discover to their surprise that more of the desired information can be obtained concerning past generations than they could have supposed. Locks of hair will have been preserved, and perhaps forgotten portraits will be discovered to exist; besides this, the memories of elderly relatives and family friends are occasionally very tenacious, and will be often found corroborative of one another. The inquiry will have the merit of being accompanied by incidental pleasures; it will be an excuse for corresponding with distant friends and relations on topics of common interest, and it is probable that not a few facts of family history much prized by its members will in many cases be incidentally brought to light by its means.

Whoever may kindly undertake to collect data for me, will have the trouble of filling the blanks in the heading of the forms that are allotted to his family. The father and mother of (1) will be the same in all of them. He will also have the trouble of sending each form to be filled by the member of the family whom he thinks best able to do so, and when he has received them all back, of transmitting them to my address as below—

FRANCIS GALTON,
42, Rutland Gate,
London, S.W.

REGISTER NUMBERS.

Child	Any one of the brothers and sisters, 1.
Parents	Father, 2; Mother, 3.
Grandparents	Father of father, 4; Mother of father, 5. Father of mother, 6; Mother of mother, 7.
Great-grandparents .	Father of (4), 8; Mother of (4), 9. Father of (5), 10; Mother of (5), 11. Father of (6), 12; Mother of (6), 13. Father of (7), 14; Mother of (7), 15.

f.3v

The following Table assigns Register Numbers, by which each direct ancestor may be specified. No. 1 signifies a child irrespectively of sex, but all the other odd numbers refer to females, and all the even numbers to males. See the list overleaf.

TABLE OF GENEALOGICAL ASCENT.

TABLE OF GENEALOGICAL ASCENT.

No. () AND HIS OR HER BROTHERS AND SISTERS.

How many of the brothers and sisters are omitted in the above list—

1. Of those who survived infancy, but died before they were adults?
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Name and address of Contributor

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p. 4v

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gives that of his father, and this, with the addition of 1, gives that of his mother.

TABLE OF GENEALOGICAL ASCENT.

STAGE.	FATHER'S SIDE.	MOTHER'S SIDE.
Child	1	
Parents	<div style="display: flex; justify-content: space-around;"> 2 3 </div>	
Grandparents	<div style="display: flex; justify-content: space-around;"> <div style="display: flex; justify-content: space-between; width: 100px;"> 4 5 </div> <div style="display: flex; justify-content: space-between; width: 100px;"> 6 7 </div> </div>	
Great Grandparents . .	<div style="display: flex; justify-content: space-around;"> <div style="display: flex; justify-content: space-between; width: 100px;"> 8 9 10 11 </div> <div style="display: flex; justify-content: space-between; width: 100px;"> 12 13 14 15 </div> </div>	
&c.	<div style="display: flex; justify-content: space-around;"> &c. &c. </div>	

Name of _____ }
 Father of (1) } Resi-
 Maiden surname } dence }
 of Mother of (1) }

Name of _____ Resi-
No. () } dence)
If a female, state
her maiden name)

No. () AND HIS OR HER BROTHERS AND SISTERS.

[illegible]

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f. 6v

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The Table will be found very convenient, and to admit of indefinite expansion, with the invariable result that the Register Number of any individual when doubled gives that of his father, and this, with the addition of 1, gives that of his mother.

TABLE OF GENEALOGICAL ASCENT.

STAGE.	FATHER'S SIDE.	MOTHER'S SIDE.
Child	1	
Parents	<div style="display: flex; justify-content: space-around;"> 2 3 </div>	
Grandparents	<div style="display: flex; justify-content: space-around;"> <div style="display: flex; justify-content: space-between; width: 100px;"> 4 5 </div> <div style="display: flex; justify-content: space-between; width: 100px;"> 6 7 </div> </div>	
Great Grandparents . . .	<div style="display: flex; justify-content: space-around;"> <div style="display: flex; justify-content: space-between; width: 100px;"> 8 9 10 11 </div> <div style="display: flex; justify-content: space-between; width: 100px;"> 12 13 14 15 </div> </div>	
&c.	&c.	&c.
Name of { Father of (1)} Maiden surname) of Mother of (1)}	Resi- dence)	
Name of { No. ()} If a female, state) her maiden name)	Resi- dence)	

No. () AND HIS OR HER BROTHERS AND SISTERS.

[illegible]

How many of the brothers and sisters are omitted in the above list—

1. Of those who survived infancy, but died before they were adults?
2. Of those who lived to be adults?

Name and address)

of Contributor

Explanation of the reason for the inquiry, overleaf.

It is alleged that on the whole the hair of English children is darker than that of their parents, and it is asserted that the English race is gradually but surely becoming dark-haired. The object of the present inquiry is to test the truth of this statement. It is probable that the recent and rapid changes in English habits have caused certain sub-types to prevail in the struggle for existence, that were repressed before, and it is of interest to know what these sub-types are. The colour of animals is often found to be intimately correlated with their power or incapacity to thrive under certain conditions, and it may well be the same in the case of man. Again, it is undoubtedly the fact in America, where the mental fidget, social worry, business anxiety, and other conditions that characterise modern civilisation, are even more pressing than with us, that black-haired persons are less liable to permanent ill-effects from nearly every form of disease than those who are fair-haired. (Baxter.)

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(2) Whether there is any change in other personal characteristics.

(3) Whether dark-haired and other types differ in fertility.

(4) Whether the English race as a whole is becoming more dark-haired or otherwise changed, as the outcome of two possibly opposing tendencies, namely, of the most enduring type being the least prolific.

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Inquiry into the alleged Darkening of the Hair of the English in the Present and Recent Generations. (see overleaf).

THE inquiry deals with all individuals, from the children upwards, in each stage of direct genealogical ascent, to the grandparents inclusive, or even to the great-grandparents. It also deals with the brothers and sisters of each of those individuals. Consequently the data asked for refer to a series of *groups* of brothers and sisters, each of which contains one of the individuals just mentioned.

The following Table assigns Register Numbers, by which each direct ancestor may be specified. No. 1 signifies a child irrespectively of sex, but all the other odd numbers refer to females, and all the even numbers to males. See the list overleaf.

The Table will be found very convenient, and to admit of indefinite expansion, with the invariable result that the Register Number of any individual when doubled gives that of his father, and this, with the addition of 1, gives that of his mother.

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Grandparents	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> 8 9 10 11 └───┬───┬───┬───┘ 4 5 </div> <div style="text-align: center;"> 12 13 14 15 └───┬───┬───┬───┘ 6 7 </div> </div>	
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&c.	&c.	

Name of } Father of (1) } Maiden surname } of Mother of (1) }	Resi- } dence }
--	--------------------

Name of } No. () } If a female, state } her maiden name }	Resi- } dence }
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78v

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f.9v

Questions on Mental Imagery

address
replies
to

F. Galton - 42 Rutland Gate, London

- a. How long is it since you began to learn mechanical drawing?
- b. Mention two or three of the more important drawings that you have recently made.

Recall one of these drawings to your memory, trying to "see" it as clearly as you can in your "mind's eye", - then answer the following questions:

- c. Can you mentally see the whole of the drawing at the same time, in the same way that you would see it if you really looked at it, or do you mentally see it in parts and imperfectly?
- d. How far is the image vivid, steady, and defined? Is it ever as much so as images seen in dreams?
- e. Where does the image appear to be situated? In the head, in the eyeball, in front of the eyes, or where? Is its apparent position always the same?
- f. Could you mentally project the image on a blank piece of drawing paper and hold it so steadily there as to be able to draw its outline?
- g. Do you think that your practice in mechanical drawing has or has not increased the vividness and precision of the images you see?
- h. Further information relative to any peculiarities in your mental images would be acceptable.
- k. Give your name and full address. They are for identification only, not for publication.

Anthropometric Laboratory. Department of Applied Statistics.

University of London, University College.

A. 1. Name Schedule No.

2. Faculty Dates of Measurement

3. Home Address

4. Subject of Study

5. College Grade

6. Degree 7 a. Proposed Profession

8. Athletics 7 b. Actual Profession

9. Nationality of Father of Mother

10. Home district of Father of Mother

11. Birthday 12. Age 13. Order of birth

14. No. of brothers, Living Dead No. of sisters, Living Dead

15. Age, whether brother or sister, of Eldest of Youngest

16. Are any of them, or any Cousins, at College?

If so, Name Faculty

17. Music. Have you musical appreciation?

Do you perform on any instrument? If so, on what?

18. Scale of Ability A B C D E F G

19. General Health I II III IV V VI Remarks

B. Mental Tests.

Sched. No.	Time	No. correct	No. of errors	Score
1. Symbol substitution				
2. Hieroglyphics test				
3a. Memory (Geometrical Figures)				
3b. Memory (cubes)				
4. Number of cubes				
5. Judgment test				

Points	Edges
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	

C. Tactile sense

D. Olfactory sense

E. Colour sense

F. Respiratory system. 1. Rate (time for 20 respirations)

2. Maximum respiratory capacity 3. Maximum expiratory pressure

G. Weight

H. Skeletal Measurements.

	R.	L.
1. Height of Acromial point		
2. " Upper-edge head radius		
3. " Tip of styloid radius		
4. " Tip of middle finger		
5. Breadth between acromial points ...		
6. Stature		
7. Height of Crest of ilium		
8. " Tip of great trochanter		
9. " Knee joint		
10. " Lowest point int. malleolus...		
11. Breadth between trochanters		

- K. 1. Hair Character

I.4. *Sensori-Motor Tests.*

- ### M. Circulatory System.

- N. Vision.

6. Heterophoria

- ### O. Hearing.

P. 1. Profile No. _____ 2. Handwriting No. _____ 3. Finger print No. _____
(see page 4) (see page 3)

FINGER PRINTS

1. Right Thumb	2. Right Fore Finger	3. Right Middle Finger	4. Right Ring Finger	5. Right Little Finger
10. Left Little Finger	9. Left Ring Finger	8. Left Middle Finger	7. Left Fore Finger	6. Left Thumb

FINGER FORMULA

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
----	----	----	----	----	----	----	----	----	-----

HANDWRITING

Sir Henry Savile (1549—162 $\frac{1}{2}$).

He could not abide "witts"; when a young scholar was recommended to him for a good witt, he cried:

"Out upon him, I'll have nothing to doe with him; give me the ploxing student. If I would look for witts I would goe to Newgate, there be the witts."

Aubrey, under Sir Henry Savile's *Life*.

Please copy, in your usual handwriting, Sir Henry Savile's words only.

GALTON 2/13/2/2/18 413

SCHEDULES FOR FAMILY GROUPS.

This book is to be kept entire, and to be returned to F. GALTON with the rest of the apparatus.

Name and Address of the Sender {

MOTHER			FATHER		REMARKS and REFERENCES
Christian Name	Maiden Surname		Christian Name	Surname	
CHILDREN of the above			Their WIVES or HUSBANDS		
Christian Names in order of birth	Month	Day	Christian Names	Surnames	Further notes may be written on the back of the page.

Mark with an asterisk * the names of those whose finger prints have been sent.

MOTHER			FATHER		REMARKS and REFERENCES
Christian Name	Maiden Surname		Christian Name	Surname	
CHILDREN of the above			Their WIVES or HUSBANDS		
Christian Names in order of birth	Month	Day	Christian Names	Surnames	
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