

## **Final report of the Anthropometric Committee / F. Galton, Chairman.**

### **Contributors**

Galton, Francis, 1822-1911.

British Association for the Advancement of Science. Anthropometric Committee.

### **Publication/Creation**

[London] : [Printed by Spottiswoode and Co.], [1883]

### **Persistent URL**

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*Final Report of the Anthropometric Committee, consisting in 1882-3 of Mr. F. GALTON (Chairman), Dr. BEDDOE, Mr. BRABROOK (Secretary), Mr. FRANK FELLOWS, Mr. JAMES HEYWOOD, Professor LEONE LEVI, Dr. F. A. MAHOMED, Mr. J. E. PRICE, Lieut.-General PITT-RIVERS, Sir RAWSON W. RAWSON, and Mr. C. ROBERTS. Associates, Dr. T. G. BALFOUR, Dr. J. H. GLADSTONE, Inspector-General LAWSON, Dr. W. OGLE.<sup>1</sup> Drawn up by Mr. C. ROBERTS and Sir RAWSON W. RAWSON.*

[PLATES IV.—X.]

1. THE Committee, originally appointed in 1875, and aided by successive grants, of which it has expended 280*l.*, has made a Report in each of the five years 1878 to 1882, and now submits its final Report.

2. Not that the work open to the Committee is exhausted, although it has to a great extent supplied what was pointed out in its Reports of 1881 and 1882 as chiefly wanting, or that its conclusions are to its own mind complete and satisfactory. But it would require more time and larger funds than are at the disposal of the Committee to prosecute its inquiries, even with the materials now in its possession, to the end which it has had in view; and the Committee is of opinion that the most useful course will be to bring before the Association the results of its past labours, indicating at the same time the conclusions which it considers to be sufficiently established by the facts ascertained, and the deficiencies, both of data and methods, which remain to be supplemented, either by individual exertion, or by the reappointment of a similar Committee at some future period under the auspices of the Association.

3. In order to furnish a complete review of the information obtained, it will be necessary to refer to tables and data contained in previous reports. A list of these Reports is furnished in a note.<sup>2</sup>

*Objects and Operations of the Committee.*

4. The Committee was appointed for the purpose of collecting observations on the systematic examination of the height, weight, and other physical characters of the inhabitants of the British Isles.

5. Its operations in each year are described in the introduction to its Report of 1881. The description and amount of the statistics which it has collected, and the names of the persons to whom it is indebted for the collection, are detailed chiefly at the commencement of its several Reports from 1880 to 1882.

6. Among the objects early aimed at by the Committee, and prosecuted by it up to the year 1881, was the collection and comparison of photographs of the typical races of the United Kingdom; but at the meeting of that year this inquiry was assigned to a separate Committee, upon whom will devolve the duty of reporting upon this branch of the general subject.

<sup>1</sup> The late Dr. William Farr was a member, and Chairman of the Committee from 1875 to 1879.

<sup>2</sup> 1, Report for 1878, 5 pp. (numbered pp. 182-6 in the Annual Report of the Association). 2, Report, 1879, 35 pp.; *ibid.* pp. 175-209. 3, Report, 1880, 41 pp.; *ibid.* pp. 120-59. 4, Report, 1881, 48 pp.; *ibid.* pp. 225-72. 5, Report, 1882, 3 pp.; *ibid.* pp. 278-80. An Index to the Tables is given in Appendix C.



7. The points to which the Committee has addressed its inquiries are—

- (1) Stature.
- (2) Weight.
- (3) Girth of chest.
- (4) Colour of eyes } Complexion.
- (5) „ hair }
- (6) Breathing capacity.
- (7) Strength of arm.
- (8) Sight.
- (9) Span of arms.

To these might have been added others, especially—

- (10) Size and shape of head.
- (11) Length of lower limbs as shown by the difference between the sitting and standing positions.
- (12) Girth, length, and breadth of other parts of the body.

But the Committee was afraid of seeking to obtain more information than their contributors would be likely to furnish; and experience has shown that many of them have been unable to supply more than a portion of that which was requested. Few have furnished complete returns on all the subjects, but where one has failed another has succeeded, and sufficient data have been collected to give trustworthy statistical results on all the subjects of inquiry except those of breathing capacity and sight. An abstract of one of the complete returns will be given in its proper place, as exhibiting a good epitome of what the Committee has sought to obtain in all cases. (See Table XXIII.)

8. The large body of observations on stature, weight, and complexion collected by Dr. Beddoe, and those on stature, weight, and chest-girth collected by Mr. Roberts, previously to the formation of the Committee, have been made use of; and the Committee has thus had observations made on a total number of about 53,000 individuals of both sexes and of all ages, from which to construct their tables and to base their conclusions.

9. The statistics are unique in range and numbers, and have been obtained from a very large number of independent observers living in different parts of the country, without prejudice, and often in ignorance of the use which would be made of them; and they have been analysed and tabulated in a perfectly impartial manner, irrespective of all preconceived opinions. The Committee does not claim for them exemption from the liability to that amount of imperfection and probable error which must attach to all conclusions drawn from a disproportionate, and from a comparatively small number of observations. But great care has been taken in the examination and classification of all the returns to eliminate obvious errors, and to call attention in the body of the Report to any apparent discrepancies from faulty observation or deficient numbers.<sup>1</sup>

<sup>1</sup> 'If an exceedingly large number of measurements, weights, &c. be taken—supposing no bias, or any cause of error acting preferably in any one direction to exist—not only will the number of small errors vastly exceed that of large ones, but the results will be found to group themselves about the mean of the whole always according to one invariable law of numbers, and *that* the more precisely, the greater the total number of determinations. . . . Rude and unskilful measurements of any kind, accumulated in very great numbers, are competent to afford precise mean results. The only conditions are the continual *animus mensurandi*, the absence of



*Methods.*

10. The forms and instruments used have been explained in the Reports for 1878 and 1880; but practical difficulties have been found to exist in obtaining trustworthy observations with regard to breathing capacity. Experience has also led the Committee to believe that the use of Snellen's test-types for sight, Nos. 1 and 10, is more convenient, and will yield more trustworthy results, than that of the army test-dots, which were adopted in its original circulars.<sup>1</sup> Since 1879, also, the Committee has introduced the use of cards for recording the observations relating to single persons, which has been extensively adopted in Germany and the United States, and recently by the Investigation Committee of the British Medical Association, and which offers great facilities in analysing and grouping the facts observed. The Committee appends copies of the forms of the cards and of the methods of measurement and observation which they have employed. (See Appendix A.)

11. The difference between the *average* and *mean* of a number of observations, and its importance in dealing with the subjects under consideration, has been pointed out and discussed by Mr. Roberts in the Report for 1881, at p. 233;<sup>2</sup> and the special sense in which Mr. Roberts employs the term *mean*, being that value in an arithmetic series of observed values of which the observations are the most frequent, has been adopted by the Committee.<sup>3</sup>

12. In connection with the question of the applicability of the exponential law of error to statistical results relating to anthropometry, Mr. Francis Galton has contributed a valuable series of tables, with remarks, on the range in height, weight, and strength, in which he introduces his method of the calculation of deciles, quartiles, and medians.<sup>4</sup>

bias, the correctness of the scale with which the measures are compared, and the assurance that we have the entire range of error, at least in one direction, within the record.'—Sir J. F. W. Herschel, *Edin. Rev.* vol. xcii.

<sup>1</sup> See the Report for 1881 for a discussion of this subject by Mr. Lawson and Mr. Roberts.

<sup>2</sup> Also in a note at p. 121 of the Report for 1880.

<sup>3</sup> Mr. Roberts has followed Quetelet in the use of the word *mean*, and its difference from an *average* is thus explained by Sir John Herschel. Speaking of Quetelet's *homme moyen* he says:—'Now, this result, be it observed, is a *mean* as distinguished from an *average*. The distinction is one of much importance, and is very properly insisted on by M. Quetelet, who proposes to use the word *mean* only for the former, and to speak of the latter (*average*) as the "arithmetical mean." . . . An average may exist of the most different objects, as of the height of houses in a town, or the size of books in a library. It may be convenient to convey a general notion of the things averaged, but involves no conception of a natural and recognised central magnitude, all differences from which ought to be regarded as deviations from a standard. The notion of a mean, on the other hand, does imply such a conception, standing distinguished from an average by this very feature, viz., *the regular march of the groups, increasing to a maximum and then again diminishing*. An average gives us no assurance that the future will be like the past. A mean may be reckoned on with the most implicit confidence. All the philosophical value of statistical results depends on a due appreciation of this distinction, and acceptance of its consequences.'—*Edin. Rev.* vol. xcii. Mr. Galton, however, desires to state that considering many statistical groups which are regular in their distribution are at the same time normally asymmetrical, he does not recognise the expressions of 'mean value' and 'the value most likely to be observed' as strictly equivalent.

<sup>4</sup> Report for 1881, p. 245.



TABLE I.—Showing the STATURE, WEIGHT, CHEST-GIRTH, and STRENGTH Kingdom, arranged according to

STATURE																
Height without shoes		Scotland		Ireland		England		Wales		Total		Weight with clothes		Scotland		
Inches	Mètres	No. of observations	No. per 1,000	No. of observations	No. per 1,000	No. of observations	No. per 1,000	No. of observations	No. per 1,000	No. of observations	No. per 1,000	lbs.	kilos.	No. of observations	No. per 1,000	
Mean	77-	1'957	1	1	—	1	—	—	—	2	—	280	127'3	—	—	
	76-	1'931	4	3	—	1	—	—	—	5	1	270	122'7	—	—	
	75-	1'906	6	4	—	—	9	2	1	16	2	260	118'2	—	—	
	74-	1'881	15	12	—	—	16	2	1	32	3	250	113'6	4	3	
	73-	1'855	26	20	3	8	48	8	2	79	9	240	109'1	2	2	
	72-	1'830	69	53	10	29	117	19	6	202	24	230	104'5	4	3	
	71-	1'804	102	78	15	44	254	41	21	392	46	220	100'0	7	6	
	70-	1'779	115	88	25	72	473	76	33	646	75	210	95'5	14	11	
	69-	1'754	218	167	40	116	753	122	52	1063	124	200	90'9	24	20	
	68-	1'728	210	161	62	179	886	143	72	1230	143	190	86'4	67	55	
	67-	1'702	210	161	73	211	918	148	128	173	1329	155	180	81'8	125	103
	66-	1'677	139	107	58	167	881	142	145	196	1223	143	170	77'3	168	139
	65-	1'653	109	84	33	96	740	119	108	146	990	115	160	72'7	275	227
	64-	1'626	47	36	15	44	524	85	83	112	669	78	150	68'2	255	211
	63-	1'601	19	14	7	20	320	52	48	65	394	46	140	63'6	173	143
	62-	1'575	9	7	2	6	128	20	30	41	169	20	130	59'1	63	52
	61-	1'550	2	2	2	5	70	12	9	12	83	9	120	54'5	22	18
	60-	1'525	2	1	—	—	39	6	—	—	41	5	110	50'0	8	6
	59-	1'499	—	—	1	3	12	2	1	1	14	1	100	45'5	1	1
	58-	1'474	1	1	—	—	3	1	—	—	4	1	90	40'9	—	—
57-	1'448	—	—	—	—	1	—	1	1	2	—	—	—	—	—	
Total . . .		1304	1000	346	1000	6194	1000	741	1000	8585	1000	Total . . .		1212	1000	
Average inches . . .		68'71	—	67'90	—	67'36	—	66'66	—	67'68	—	Average lbs. . .		165'3	—	
„ mètres . . .		1'746	—	1'726	—	1'712	—	1'694	—	1'720	—	„ kilos. . .		75'1	—	
Mean inches . . .		68'5	—	67'5	—	67'5	—	66'5	—	67'5	—	Mean lbs. . .		160'0	—	
„ mètres . . .		1'741	—	1'715	—	1'715	—	1'690	—	1'715	—	„ kilos. . .		72'7	—	
Height÷weight inches per lb. of weight)		416	—	441	—	435	—	421	—	428	—	Weight÷hgt. (lbs. per in. of height)		2'406	—	

NOTE.—The factors in the bottom line give some means of ascertaining the most probable stature, weight, chest-girth, or strength of a man, when only one of these data is known. They also give modified values when the birthplace of the man is also known, whether it be in Scotland, Ireland, England, or Wales. The results so obtained are based on the supposition that the proportion between the values of these qualities is constant, which is practically true for values that do not differ widely from the mean.

The method of employing the factors is simple: thus, the first five of them are the number of inches in height divided by the number of pounds in



,585 Adult Males (age from 23 to 50) of the Population of the United  
Place of Birth.

WEIGHT								CHEST-GIRTH				STRENGTH			
Wales		England		Ireland		Total		Empty chest-girth: military measurement		Total: chiefly English		Strength: drawing-power, as in drawing a bow		Total: chiefly English	
No. of observations	No. per 1,000	No. of observations	No. per 1,000	No. of observations	No. per 1,000	No. of observations	No. per 1,000	Inches	Centimètres	No. of observations	No. per 1,000	lbs.	kilos.	No. of observations	No. per 1,000
1	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	45-	114·3	4	1	—	—	—	—
—	—	1	—	—	—	1	—	44-	111·7	7	2	—	—	—	—
1	1	3	1	—	—	8	1	43-	109·2	20	6	—	—	—	—
—	—	9	2	—	—	11	2	42-	106·6	57	17	—	—	—	—
2	3	10	2	—	—	16	2	41-	104·1	76	22	150	68·2	4	3
1	2	33	6	—	—	41	5	40-	101·6	128	35	140	63·6	4	3
8	11	62	11	1	4	85	11	39-	99·0	216	63	130	59·1	2	2
7	9	75	13	1	4	107	14	38-	95·5	330	97	120	54·5	15	10
14	19	174	31	8	32	263	34	37-	93·9	442	130	110	50·0	18	12
34	46	304	55	13	53	476	61	36-	91·4	588	173	100	45·5	73	46
102	138	492	89	25	101	787	102	35-	88·9	552	162	90	40·9	226	140
134	182	881	158	36	146	1326	171	34-	86·3	541	158	80	36·4	296	184
178	242	1075	194	51	206	1559	201	33-	83·8	249	75	70	31·8	522	387
153	207	1240	223	57	231	1623	210	32-	81·2	117	35	60	27·3	250	157
68	92	694	125	42	170	867	112	31-	78·7	40	12	50	22·7	69	43
23	31	338	61	7	29	390	50	30-	76·2	33	10	40	18·2	15	10
10	13	133	24	1	4	152	20	29-	73·6	5	2	30	13·6	3	3
2	3	26	5	5	20	34	4	28-	71·1	1	—	—	—	—	—
—	—	2	—	—	—	2	—	27-	68·5	1	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
738	1000	5552	1000	247	1000	7749	1000	Total . .		3407	1000	Total . .		1497	1000
58·3	—	155·0	—	154·1	—	158·2	—	Average ins. .		36·46	—	Average lbs. .		79·6	—
71·9	—	70·5	—	70·0	—	71·9	—	„ cm. .		92·6	—	„ kilos. .		35·2	—
55·0	—	150·0	—	150·0	—	155·0	—	Mean inches .		36·50	—	Mean lbs. .		77·5	—
70·5	—	68·2	—	68·2	—	70·5	—	„ cm. .		92·7	—	„ kilos. .		35·2	—
375	—	2·301	—	2·270	—	2·323	—	Girth ÷ hgt. .		·542	—	Stngth. ÷ ht. .		1·182	—
								Girth ÷ wgt. .		·235	—	Stngth. ÷ wt. .		·513	—

Mean

weight, in the five following cases, natives of Scotland, Ireland, England, and Wales, and in the British Isles generally. The factor for Scotland is 0·416, consequently a Scotchman whose weight is 150 lbs. has most probably a height of  $150 \times 0·416$  inches, or 62·4 inches. Similarly, in the next group of pounds of weight divided by inches of height, the factor for Englishmen is 2·301, consequently an Englishman 66 inches in height should weigh  $66 \times 2·301$  lbs., or 152 lbs. In the same way we may calculate the other elements by the remaining factors.



*Summary of Information Obtained.*

13. The Committee submit in this, its final Report, a review of all the information which it has collected under the different heads of inquiry, giving references to those tables and conclusions which have been published in its previous Reports, and adding such others as it has been able to draw from the several sources at its command.

14. The first object of the Committee has been to ascertain the principal characteristics of the adult population:—

*a.* As to the stature, weight, chest-girth, and strength of the whole country and of each of its four provinces, shown in Table I., pages 256, 257.

*b.* The relative stature, weight, and strength of men and women. Table II., page 261.

*c.* The stature, weight, and complexion (colour of eyes and hair) of men in different counties as indicating their racial origin, and the influence of soil, climate, occupation, and other sanitary surroundings. Tables III. and IV., and Plates V.–IX., pages 262 to 265.

*d.* The relative stature of men of British origin, and that of other nationalities and races as far as they have been ascertained. Tables V. and VI., pages 268, 269.

15. The second object the Committee has had in view has been to ascertain the rate of growth and development of children of both sexes under different conditions of life (*media*); the period of the attainment of maturity; and the influence of advancing age on the physical condition of the body. Tables XII. to XXV.

## ADULT POPULATION OF THE BRITISH ISLES.

*a. Adult Males—Table I.*

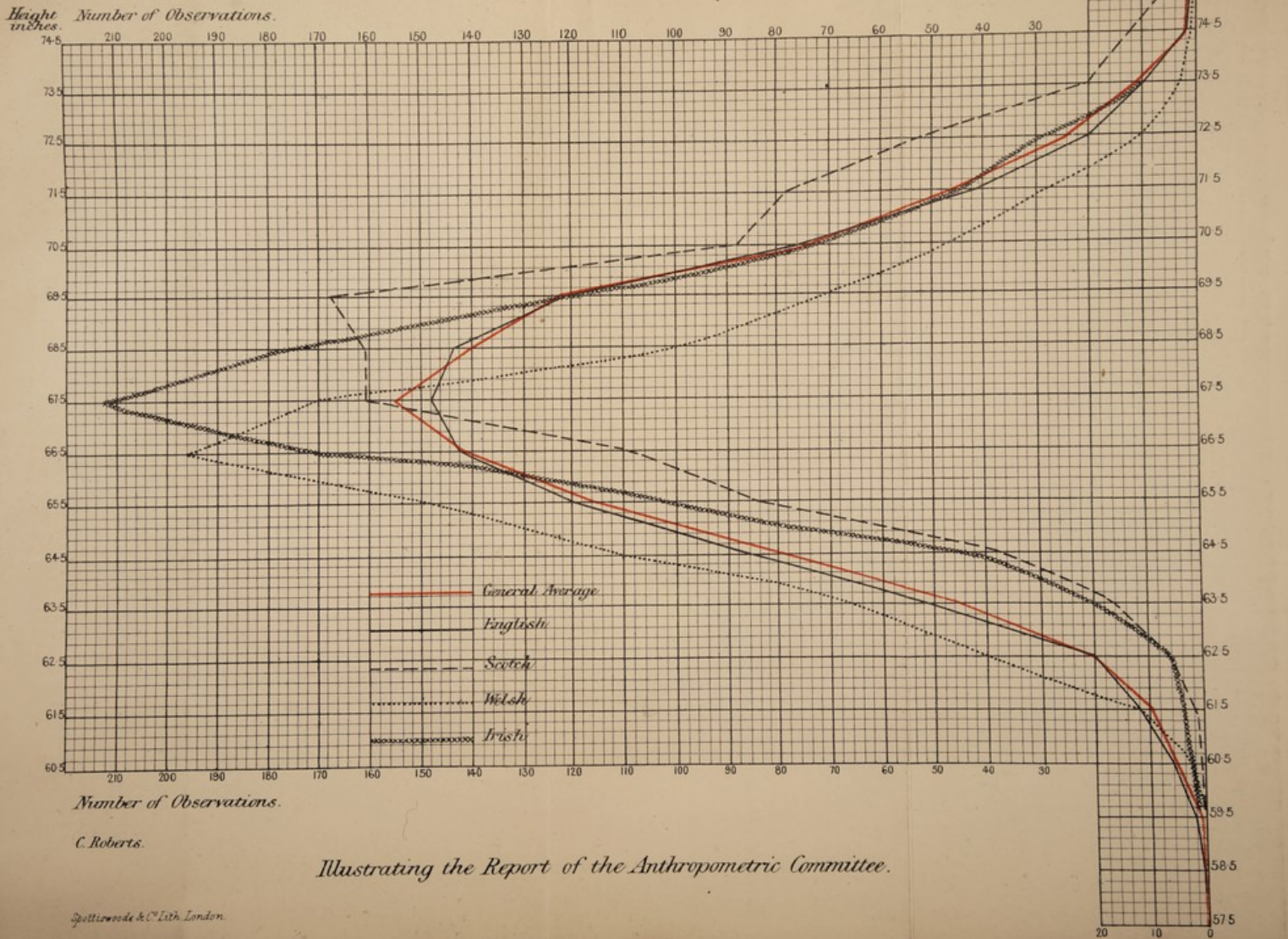
16. Table I. shows the stature, weight, chest-girth, and strength of adult males of the ages from twenty-three to fifty years, the number of men at each measurement, and the ratio per thousand of the male population.

17. The observations are grouped according to the place of birth in England, Wales, Scotland, and Ireland; and, with the exception of the Irish, they were chiefly derived from the division of the country under which they are entered in the table. The Irish returns are almost entirely those of men born in Ireland, but living in England, Scotland, or Wales; and the Committee regrets that it has not been able to obtain more than one return direct from Ireland. The Scotch and Welsh by birth, living in England, have been entered under their respective nationalities. The columns are arranged in the order of the superiority of the average stature and weight.

18. The general results indicated by this table may be summarised as follows:—In height the Scotch stand first (68·71 inches; 1·746 mètres), the Irish second (67·90 inches; 1·726 mètres), the English third (67·36 inches; 1·712 mètres), and the Welsh last (66·66 inches; 1·694 mètres), the average of the whole being 67·66 inches (1·720 mètres). In weight the Scotch take the first place (165·3 lbs.; 75·1 kilos.), the Welsh the second (158·3 lbs.; 71·9 kilos.), the English the third (155·0 lbs.; 70·5 kilos.), and the Irish the fourth (154·1 lbs.; 70·0 kilos.), the average weight of the whole being 158·2 lbs. (71·9 kilos.). Thus the Scotch are the tallest and heaviest, the English take the third place in both tables, while the position of the Welsh and Irish is reversed—the



Diagram showing the observed Stature of Adult Males of British Isles.  
Traced from the columns of Table 1. showing the number per 1000.







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Irish, occupying the second place in stature, come last in weight, and the Welsh, though lowest in stature, stand second in weight. For each inch of stature a Scotchman weighs 2·406 lbs., a Welshman 2·375 lbs., an Englishman 2·301 lbs., and an Irishman 2·270 lbs.

19. The columns showing the number of individuals per thousand at each height, besides showing in a uniform manner the relative stature and weight of the different nationalities, will be useful to military surgeons for determining the minimum stature of recruits for the army. From the run of the figures it is obvious that if each country has to contribute its relative quota of soldiers, the minimum standard for Welsh recruits should be two inches lower, and for English and Irish recruits one inch lower, than for Scotch recruits. This difference in the relative stature is best shown by the black line running across the table, which marks the *mean* height—that is to say, the height at which the greatest number of observations occur in each nationality.

20. It is probable that too much importance has been attached to stature in selecting recruits for the army in this country, and that a high standard does not necessarily produce men best fitted for military duties. In the Report for 1879 are given two tables of the stature and weight of the English, Scotch, and Irish recruits for the years 1862–3, when the minimum standard of height was 66 inches (1·677 mètres), and in 1864–65, when it was reduced to 65 inches (1·626 mètres); and the result of this change was to lower the general average stature of English recruits by only 0·17 inch, of the Scotch by 0·21 inch, and the Irish by 0·25 inch, but in all three nationalities to increase the average weight—the English by 1·3 lbs., the Scotch by 6·7 lbs., and the Irish by 0·8 lb.

21. Although the minimum standard was the same for all the nationalities, the influence of race is indicated by the difference in the average stature of the recruits. The English and Welsh recruits (who were not distinguished from each other) were shorter in stature than the Irish by 0·30 inch, and the Scotch by 0·44 of an inch.<sup>1</sup>

22. The measurements of the chest given in Table I. are almost entirely those of Englishmen, and must be studied in connection with the English observations of height and weight; and the same remark applies to the figures relative to strength. The chest-girths were taken by the method adopted in the British army, and the strengths by the spring-balance introduced by this Committee, and described in Appendix A.

23. An examination of Table I. shows that an adult Englishman or typical proportions has a stature of 5 feet 7½ inches; a chest-girth of 36½ inches; a weight of 10 stones 10 lbs.; and is able to draw, as in drawing a bow, a weight of 77½ pounds. These are the mean proportions. The averages give greater weight for height; they are:—Height, 5 feet 7½ inches; weight, 11 stones 1 lb.; empty chest-girth, 36·46 inches; and strength, 79·6 lbs. For every variation of an inch in stature above or below the average, 2·301 lbs. weight, ·542 inch chest-girth, and 1·182 lbs. strength must be added or subtracted to keep up the typical proportions. This rule of proportion is, however, only approximately correct, as variations in the stature depend largely on the length of the lower limbs, while the other qualities depend chiefly on the size of the trunk. In ascending the scale of height, therefore, the above figures are probably a little too great, while in the opposite direction they are barely sufficient, but in either case they are sufficiently near for all practical

<sup>1</sup> Further tables relating to recruits are given in Appendix B to this Report.



purposes.<sup>1</sup> A further development of this rule as applicable to both sexes and at all ages will be found in Table XX.

24. Plate IV. shows the relative stature of the four British nationalities, traced from the columns in the table showing the number of men at each height per thousand. The curve of the English very nearly corresponds with that of the average for the whole kingdom. The Scotch curve is above the average, and from its irregularity it is evident that the observations on which it is based are not quite representative of that part of the kingdom. The Welsh curve is below the general average, and in a manner balances the excess of the Scotch, while the Irish curve is somewhat too acute, owing to the comparatively small number of observations on which it is based.

*b. Adult Males and Females—Table II.*

25. Table II. shows the relative stature, weight, and strength of adult males and females in England, no returns for females having been received from other parts of the kingdom. The average stature of adult males is 67·36 inches (1·712 mètres), and of females, 62·65 inches (1·592 mètres), showing a difference of 4·71 inches (·120 mètres), or nearly  $4\frac{3}{4}$  inches. The average weight of males is 155·0 lbs. (70·5 kilos.), and that of females 122·8 lbs. (55·8 kilos.), showing an excess of 32·2 lbs. (14·7 kilos.), or about  $2\frac{1}{3}$  stones on the side of males, the percentage difference of weight being just threefold that of height. The ratio between the stature of men and women in England is as 1 to 0·930, or as 16 to 14·88, the difference being somewhat greater than in Belgium, where, according to Quetelet, the ratio is as 1 to 0·937, or about 16 to 15 (strictly 16 to 14·99). The observations of the strength of females were obtained from pupils in training institutions for schoolmistresses and from shop assistants, and the average is no doubt much lower than if the labouring classes were also represented. The difference of strength is 35 lbs., the females being little more than half as strong as males. In these tables, the age of the attainment of maturity is fixed at 23 years for males, and 20 years for females, the reasons for which will be explained in another part of the Report.

<sup>1</sup> The following measurements show the difference between the height of the body of men in the standing and recumbent positions, and the span of arms measured across the front of the chest. Also the difference between the height of the body in the standing and the sitting positions, showing the relative length of the trunk and of the lower limbs. The English figures are calculated from the American measurements of Dr. Hitchcock, taken in 1882.

	Age years	No. of obs.		Standing height	Horizontal length	Span of arms	Sitting height	
American Amherst College	21·5	327	{ mètres	1·729	1·748	1·787	0·907	Length of trunk and head
English Profes- sional class			{ inches	68·07	68·82	70·36	35·71	
	21·5	364	{ mètres	1·746	1·765	1·804	·915	
			{ inches	68·70	69·45	71·01	36·04	
Difference	American	{	mètres	—	+·019	+·058	—·822	Length of lower limbs
			inches	—	+·75	+2·29	—32·36	
	English	{	mètres	+·017	+·019	+·058	—·831	
			inches	+·63	+·75	+2·31	—32·66	

The ratio between the total height and the sitting height is 1 to 1·906.



TABLE II.—Showing the Relative STATURE, WEIGHT, and STRENGTH of Adult Males (23-50 years) and Females (20-50 years) of English Origin.

	Height				Weight				Strength			
	Height without shoes		Number of observations		Weight with clothes		Number of observations		Strength, drawing-power		Number of observations	
	Inches	Mètres	Males	Females	lbs.	Kilos.	Males	Females	lbs.	Kilos.	Males	Females
Mean	77-	1.957	1	—	260	118.2	1	—	—	—	—	—
	76-	1.931	1	—	250	113.6	3	—	—	—	—	—
	75-	1.906	9	—	240	109.1	9	—	—	—	—	—
	74-	1.881	16	—	230	104.5	10	—	150	68.2	4	—
	73-	1.855	48	—	220	100.0	33	—	140	63.6	4	—
	72-	1.830	117	—	210	95.5	62	—	130	59.1	2	—
	71-	1.804	254	1	200	90.9	75	1	120	54.5	15	—
	70-	1.779	473	—	190	86.4	174	—	110	50.0	18	—
	69-	1.754	753	—	180	81.8	304	1	100	45.5	73	—
	68-	1.728	886	3	170	77.3	492	—	90	40.9	226	1
	67-	1.702	918	11	160	72.7	881	2	80	36.4	296	—
	66-	1.677	881	22	150	68.2	1075	14	70	31.8	522	2
	65-	1.653	740	24	140	63.6	1240	20	60	27.3	250	5
	64-	1.626	524	44	130	59.1	694	58	50	22.7	69	25
	63-	1.601	320	57	120	54.5	338	101	40	18.2	15	101
	62-	1.575	128	71	110	50.0	133	108	30	13.6	3	98
	61-	1.550	70	59	100	45.5	26	53	20	9.1	—	9
	60-	1.525	39	37	90	40.9	2	10	—	—	—	—
	59-	1.499	12	22	—	—	—	—	—	—	—	—
	58-	1.474	3	17	—	—	—	—	—	—	—	—
	57-	1.448	1	6	—	—	—	—	—	—	—	—
	56-	1.423	—	3	—	—	—	—	—	—	—	—
	55-	1.398	—	2	—	—	—	—	—	—	—	—
Total number of observations			6194	379	—		5552	368	—		1497	241
Average { inches { mètres			67.36 1.712	62.65 1.592	Average { lbs. { kilos		155.0 70.5	122.8 55.8	Average { lbs. { kilos		79.6 36.2	44.5 20.2
Mean { inches { mètres			67.50 1.715	62.5 1.588	Mean { lbs. { kilos		150.0 68.2	120.0 54.6	Mean { lbs. { kilos		77.5 35.2	40.0 18.2

c. *Distribution of Adult Males according to Stature, Weight, and Complexion.*  
*Table III., and Plates V.-IX. (Maps Nos. 1 to 5).*

26. Table III. exhibits the average stature, weight, and complexion (colour of eyes and hair) of adult males born in the several counties of Great Britain and Wales and in each province of Ireland, arranged in the order of the greatest stature. The Committee is sensible that the number of observations in some of the counties is not sufficient to furnish an average which may be fully relied upon; but the results, as detailed in the remarks upon this summary, show that there is such a consistency between the data and the records of history as to justify a general trust in the conclusions to be drawn from the figures.



TABLE III.—Showing the STATURE, WEIGHT, and COMPLEXION of 8,614 Adult Males (age from 23 to 50) of the Population of the United Kingdom, arranged according to birthplace in Counties in the order of greatest Stature. Illustrated by Maps.

Counties	Num-ber of obs.	Average height without shoes		Average weight, including clothes		Ratio, weight per inch of stature Weight + Height	Light blue, blue, dark blue, and grey eyes, with			Total Fair eyes	Brown, hazel, or black eyes, with			Total Dark eyes	Other combinations, such as green, light brown eyes with light or dark hair
		Inches	Mètres	lbs.	Kilos		Very fair, light brown, or brown hair	Black or dark brown hair	Golden or red hair		Brown, dark brown, and black hair	Fair hair	Red and dark red hair		
										per cent.				per cent.	per cent.
SCOTLAND. Total .	1369	68·71	1·746	165·3	75·1	2·406	46·1	24·9	4·2	75·2	22·0	0·9	1·1	24·0	0·8
Kirkcudbright, Ayrshire, and Wigton	124	70·14	1·782	172·9	78·6	2·465	43·4	25·6	3·3	72·3	27·0	—	—	27·0	0·7
Edinburgh, Linlithgow, Hadding- ton, and Berwickshire	60	69·60	1·769	178·6	81·2	2·551	51·5	25·8	1·0	78·3	15·5	—	3·1	18·6	3·1
Perth, Stirling, and Dumbarton .	46	69·13	1·757	172·9	78·5	2·501	40·9	22·0	7·1	70·0	26·0	—	3·2	29·2	0·8
Sutherland, Ross, Cromarty, and Skye	63	68·76	1·747	169·8	77·2	2·469	45·2	26·0	2·9	74·1	23·1	1·9	0·9	25·9	—
Fife, Kinross, and Clackmannan	82	68·65	1·745	162·7	73·9	2·370	38·4	28·8	4·1	71·3	23·3	4·1	1·3	28·7	—
Argyle, Bute, and Arran .	97	68·63	1·744	177·0	80·4	2·579	42·9	22·1	5·7	70·8	24·3	0·7	2·1	27·1	2·1
Dumfries, Roxburgh, Selkirk, and Peebles	113	68·59	1·741	161·6	73·4	2·356	43·0	32·4	5·6	81·0	17·6	—	0·7	18·3	0·7
Inverness-shire .	88	68·45	1·740	166·3	75·5	2·429	44·2	26·6	3·2	74·0	24·7	1·3	—	26·0	—
Lanark and Renfrew (including Glas- gow)	189	68·21	1·734	151·4	68·8	2·219	52·8	17·6	3·2	73·6	24·6	0·4	1·0	26·0	0·4
Caithness .	39	68·22	1·734	168·1	76·4	2·464	37·5	27·5	7·5	72·5	17·5	2·5	2·5	22·5	5·0
Forfar and Kincardine .	65	68·07	1·728	159·9	72·7	2·349	51·7	29·3	2·6	83·6	14·6	0·9	—	15·5	0·9
Islay and Colonsay .	109	68·04	1·728	171·3	77·8	2·517	38·0	43·4	9·7	91·1	8·0	0·9	—	8·9	—
Aberdeen, Banff, Elgin, and Nairn .	109	68·04	1·728	165·9	75·4	2·438	40·1	24·0	2·1	66·2	28·9	2·1	1·4	32·4	1·4
Shetland .	108	67·92	1·726	155·9	70·8	2·295	62·4	11·1	4·3	77·8	21·4	0·8	—	22·2	—
Hebrides—Harris and Uist .	77	67·91	1·726	169·1	76·8	2·490	—	—	—	—	—	—	—	—	—
ENGLAND. Total	6194	67·36	1·712	155·0	70·5	2·301	40·4	19·6	3·1	63·1	31·5	1·6	0·6	33·7	3·2
Yorkshire, North and East Ridings .	231	69·00	1·754	164·0	74·5	2·377	40·5	20·5	5·6	66·6	23·8	2·9	0·3	27·0	6·4
Northumberland .	291	68·59	1·743	161·4	73·3	2·353	43·2	23·8	7·3	74·3	20·5	0·8	0·4	21·7	4·0
Cumberland and Westmoreland .	272	68·37	1·737	158·6	72·1	2·320	41·4	25·3	1·1	67·8	28·9	—	0·4	29·3	2·9
Lincolnshire .	200	68·16	1·732	162·9	74·0	2·390	34·5	23·7	2·8	61·0	32·8	1·1	2·3	36·2	2·8
Norfolk .	123	68·00	1·728	160·1	72·7	2·353	41·7	22·2	2·6	66·5	26·3	2·3	1·1	29·7	3·8
Essex .	133	67·95	1·727	156·9	71·3	2·309	26·4	26·4	4·4	57·2	35·9	0·6	0·6	37·1	5·7
Cornwall .	305	67·91	1·726	161·4	73·4	2·376	39·2	18·8	2·1	60·1	32·3	2·8	0·3	35·4	4·5



	87	67.82	1.724	160.5	72.9	2.366	45.1	17.0	2.6	64.7	31.4	—	—	31.4	3.9
Staffordshire	61	67.80	1.723	157.5	71.6	2.323	44.9	27.0	4.5	76.4	19.1	3.4	—	22.5	1.1
Derbyshire	164	67.71	1.720	160.2	72.8	2.366	27.2	22.8	4.3	54.3	32.3	5.2	1.3	38.8	6.9
Suffolk	95	67.70	1.720	153.0	74.1	2.260	48.2	18.0	5.8	72.0	25.2	2.1	0.7	28.0	—
Durham	92	67.66	1.718	156.2	71.0	2.308	38.6	16.9	1.2	56.7	36.1	2.4	—	38.5	4.8
Berkshire	228	67.62	1.718	157.1	71.4	2.323	41.9	14.1	1.1	57.1	38.5	1.1	—	39.6	3.3
Kent	243	67.50	1.715	151.7	68.9	2.247	45.8	16.4	1.8	64.0	32.9	0.8	1.0	34.7	1.3
Lancashire	166	67.45	1.714	155.2	70.5	2.301	40.2	15.7	1.2	57.1	37.4	0.8	0.8	39.0	3.9
Hampshire	156	67.38	1.712	153.9	69.9	2.284	44.6	17.5	2.6	64.7	32.8	1.0	1.0	34.8	0.5
Nottinghamshire	90	67.29	1.709	155.3	70.6	2.308	34.4	16.3	—	50.7	44.4	1.2	0.6	46.2	3.1
Leicester and Rutland	136	67.26	1.709	156.1	71.0	2.321	40.7	20.7	2.6	64.0	29.4	3.3	—	32.7	3.3
Northamptonshire	147	67.26	1.709	159.5	72.5	2.371	34.8	18.5	6.2	59.5	35.7	0.9	—	36.6	3.9
Sussex	65	67.22	1.708	157.6	71.6	2.344	33.1	18.5	3.2	54.8	43.6	—	—	43.6	1.6
Worcestershire	123	67.12	1.707	149.1	67.7	2.222	37.5	17.7	2.1	57.3	37.8	2.8	0.7	41.3	1.4
Warwickshire	75	67.07	1.704	157.9	71.8	2.354	35.6	13.7	2.8	52.1	43.8	—	—	43.8	4.1
Bedfordshire	218	67.08	1.704	156.9	71.2	2.339	43.0	20.0	2.8	65.8	28.8	3.2	0.5	32.5	1.7
Devonshire	73	67.00	1.702	158.1	71.8	2.360	35.3	23.0	1.6	59.9	32.8	1.6	0.8	35.2	4.9
Dorsetshire	453	66.98	1.702	152.6	69.3	2.278	42.1	19.2	6.4	67.7	29.6	1.5	0.2	31.3	1.0
Yorkshire, West Riding (including Sheffield)	259	66.92	1.701	152.9	69.5	2.285	36.3	17.2	2.4	55.9	32.3	0.5	2.0	34.8	9.3
London	122	66.75	1.696	155.3	70.6	2.325	39.9	11.2	2.8	53.9	44.7	—	0.7	45.4	0.7
Cambridge and Huntingdonshire	72	66.74	1.696	151.8	69.0	2.275	40.8	21.7	0.8	63.3	34.2	0.8	—	35.0	1.7
Oxfordshire and Buckingham	37	66.50	1.690	150.9	68.6	2.269	43.2	18.0	5.0	66.2	30.2	—	0.7	30.9	2.8
Cheshire	270	66.47	1.685	146.5	66.6	2.204	45.4	19.8	1.8	67.0	30.1	1.0	0.3	31.4	1.6
Surrey (exclusive of London)	23	66.45	1.688	154.0	70.0	2.317	41.7	22.3	1.0	65.0	29.1	1.0	1.0	31.1	3.9
Hereford and Monmouth	141	66.34	1.686	158.2	71.9	2.384	42.8	26.2	0.9	69.9	28.4	—	0.4	28.8	1.3
Wiltshire	60	66.33	1.685	149.4	67.9	2.252	40.8	15.7	1.4	57.9	36.7	—	3.4	40.1	2.0
Shropshire	336	66.31	1.685	148.3	67.4	2.236	50.3	14.3	2.2	66.8	30.2	1.4	—	31.6	1.6
Gloucestershire (including Bristol)	447	66.30	1.685	149.1	67.8	2.249	38.9	17.4	4.9	61.2	30.3	3.4	0.7	34.4	4.4
Somersetshire	160	66.27	1.684	152.5	69.2	2.301	29.0	36.3	2.0	67.3	23.8	0.8	—	24.6	8.1
Hertfordshire and Middlesex (exclusive of London)	735	66.66	1.694	158.3	71.9	2.375	34.4	21.2	8.7	64.3	26.8	4.2	1.1	32.1	3.6
WALES. Total	82	67.06	1.703	160.7	73.1	2.396	29.5	18.9	11.6	60.0	26.3	5.3	—	31.6	8.4
Flint and Denbigh	82	66.85	1.699	162.5	73.8	2.431	35.9	12.8	5.1	53.8	41.1	—	—	41.1	5.1
Carnarvon, Anglesea, Merioneth, and Montgomery	389	66.61	1.693	155.9	70.9	2.340	30.9	23.0	13.0	66.9	27.9	3.7	1.5	33.1	—
Cardigan	60	66.58	1.692	158.2	71.9	2.391	42.0	20.3	1.4	63.7	33.3	—	1.5	34.8	1.5
Brecon and Radnor	122	66.47	1.689	155.4	70.6	2.339	39.6	20.8	3.2	63.6	21.2	6.4	0.8	28.4	8.0
Glanmorgan, Caernarthen, and Pembroke	346	67.90	1.726	154.1	70.0	2.270	48.1	19.3	2.5	69.9	23.7	0.8	1.1	25.6	4.5
IRELAND. Total	35	68.73	1.746	154.9	70.2	2.253	59.0	24.1	1.2	84.3	13.3	—	1.2	14.5	1.2
Connaught	55	68.52	1.741	153.0	69.5	2.233	36.8	24.0	4.8	65.6	24.0	0.8	—	24.8	9.6
Munster	44	68.41	1.739	157.9	71.8	2.308	49.4	24.7	—	74.1	22.2	1.2	—	23.4	2.5
Ulster	143	68.21	1.734	149.4	67.9	2.181	50.3	11.5	7	64.5	28.9	1.1	2.2	32.2	3.3
Leinster															



27. To save much detailed description, the Committee has thought it desirable to illustrate Table III. by a series of shaded maps (Plates V.-IX.), which present at once to the eye the relative distribution of the stature, weight, and complexion of the adult male population in the several counties of Great Britain and in each province of Ireland.

Map No. 1 shows the distribution of the average stature (without shoes) of adult males, in degrees of half an inch each from 66 to 70 inches. The darkest shade represents the shortest stature.

Map No. 2 shows the distribution of the average weight (including the clothes) of adult males, in degrees of five pounds from 145 pounds to 180 pounds. The darkest shade represents the lightest weight.

Map No. 3 shows the distribution of adult males with fair complexion, i.e. blue and grey eyes with fair, light-brown, brown, and light-red hair. The darkest shade represents the lowest percentage of fair complexion.

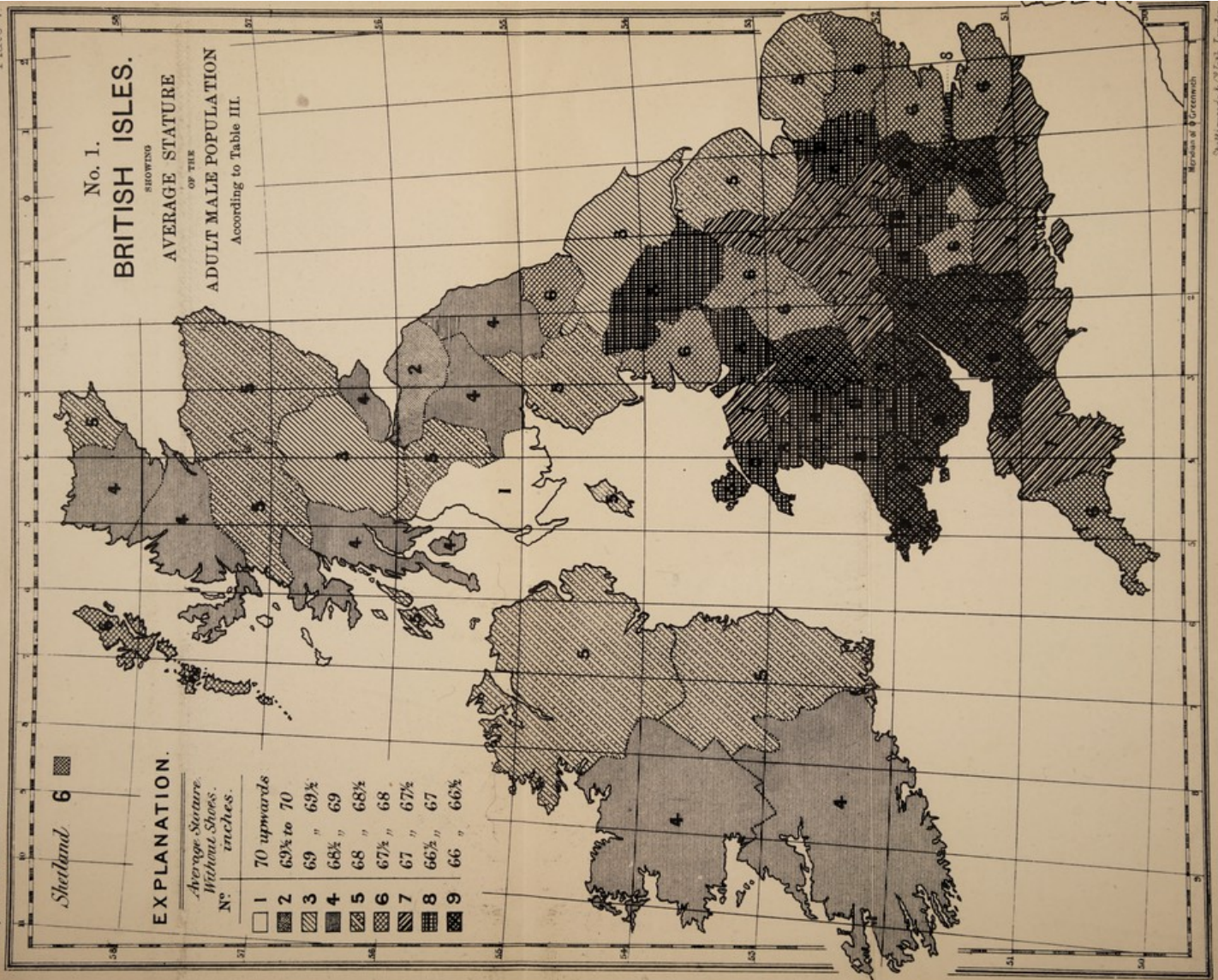
Map No. 4 shows the distribution of adult males with dark complexion, i.e. brown and black eyes, with brown, dark brown, dark red, and black hair. The darkest shade represents the highest percentage of dark complexion, or its greatest prevalence.

Map No. 5 shows the distribution of adult males with mixed complexion, i.e. blue and grey eyes with dark brown and black hair. The darkest shade represents the highest percentage, or the greatest prevalence of this complexion.

28. As the observations were necessarily made on a limited number of individuals, and as doubts may exist as to whether the results can be accepted as representing the whole of the male population at the ages specified, the counties having similar statures have been grouped together, and the male population for each group ascertained from the Census returns of 1881.<sup>1</sup> The average stature worked out from these figures is 67.58 inches, while that obtained from the actual observations on 8,585 individuals, given in Table I., is 67.66 inches, the difference between the two being only 0.08 of an inch. Table IV. shows the grouping of the counties, having the same stature according to the Committee's returns, and the total male population of each group at the ages from 25 to 55 years.

<sup>1</sup> These returns for England and Scotland are not yet published, and the Committee is indebted to the courtesy of the Registrars-General of those portions of the kingdom for manuscript copies of the returns. The ages of the men on whom the observations were made are not exactly the same as those obtained from the Census office, but they are sufficiently near for any practical purpose. The measurements were made on men from 23 to 51 years of age, while the Census returns are those of men from 25 to 55 years, but the four years above 51 will about compensate for the two years wanting below 25 years both in numbers and stature, in consequence of losses by death. Both periods correspond with the best portion of men's lives, at least as far as stature is concerned.

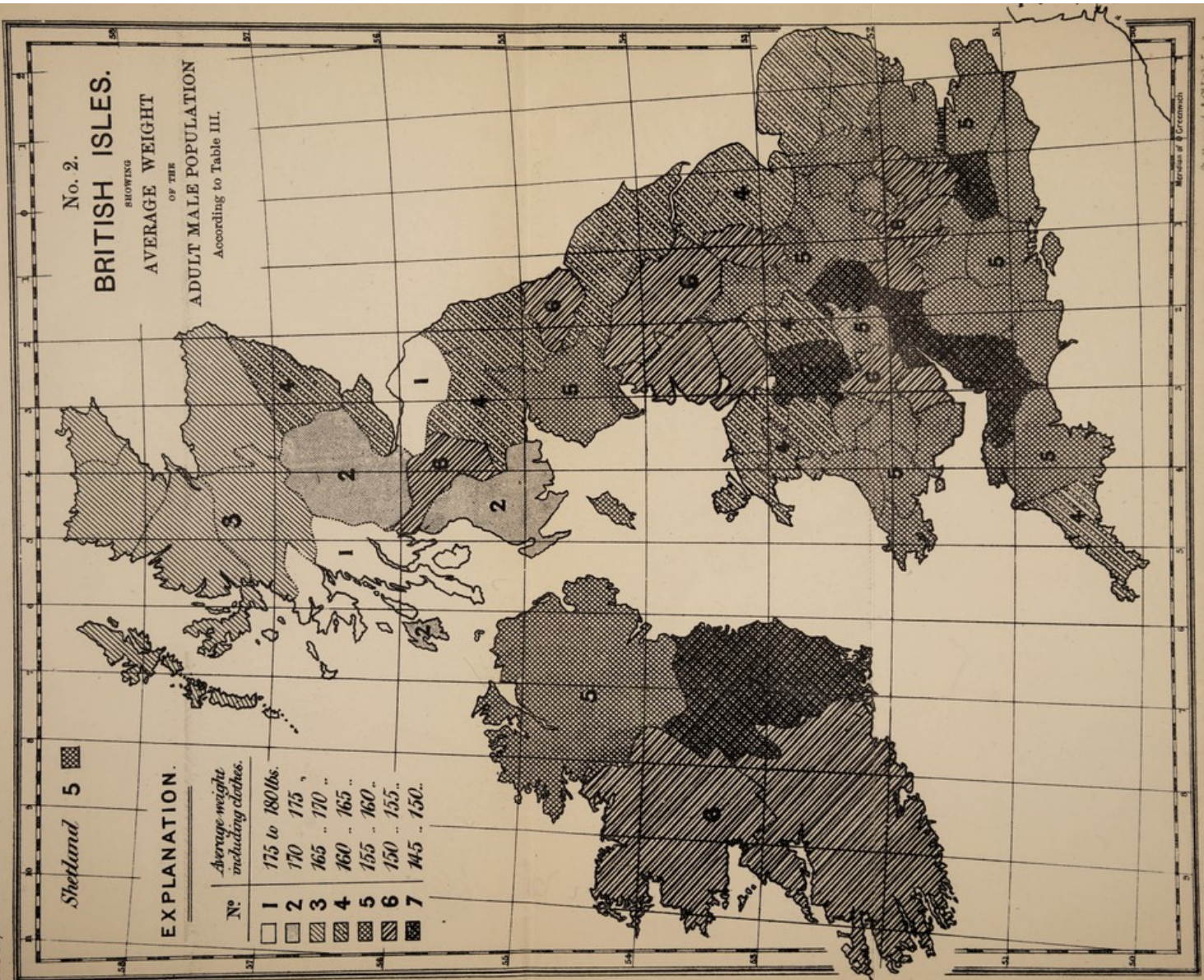










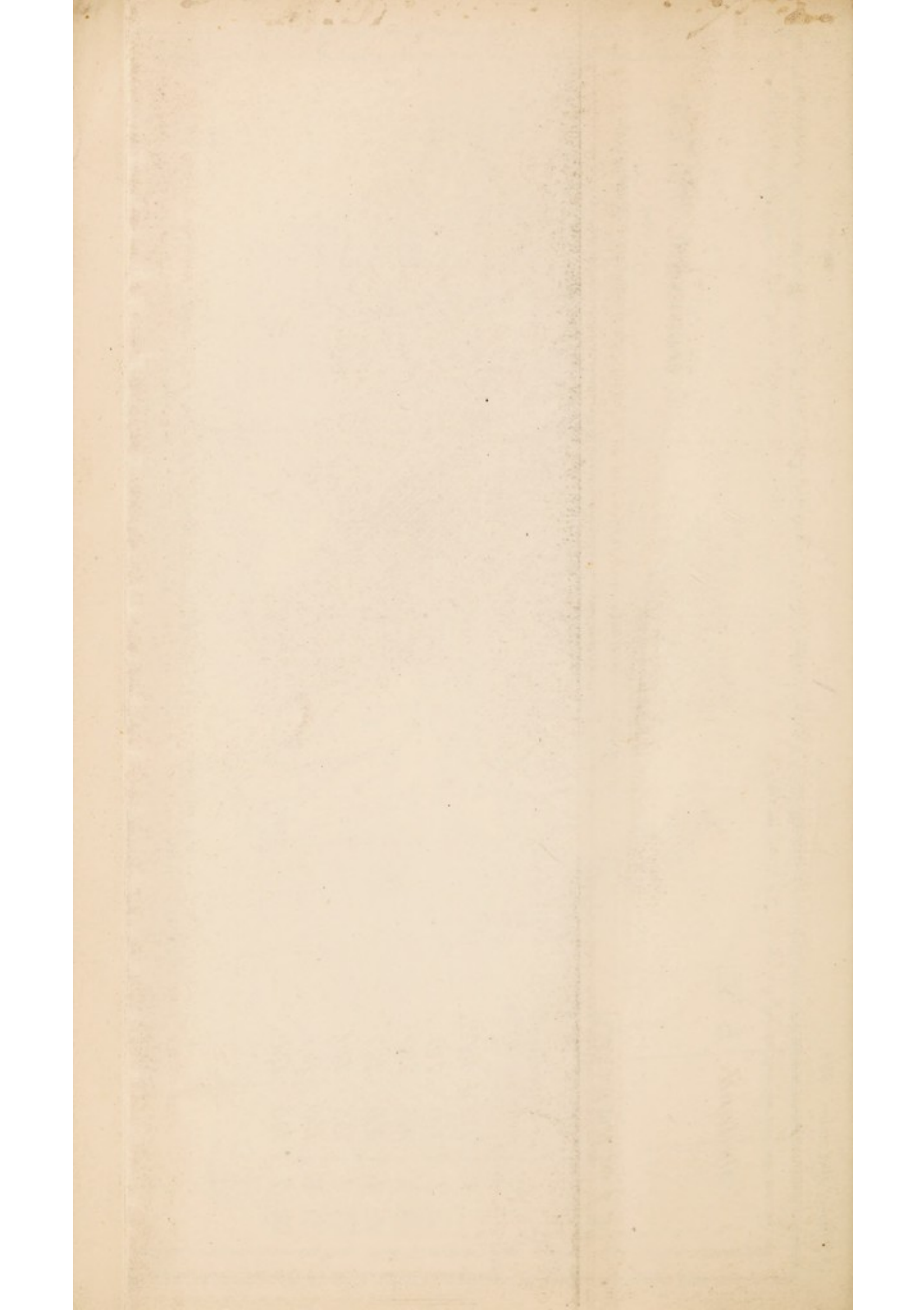


C. Roberts.

Illustrating the Report of the Anthropometric Committee.

Spelterhood & Co. Lith. London.  
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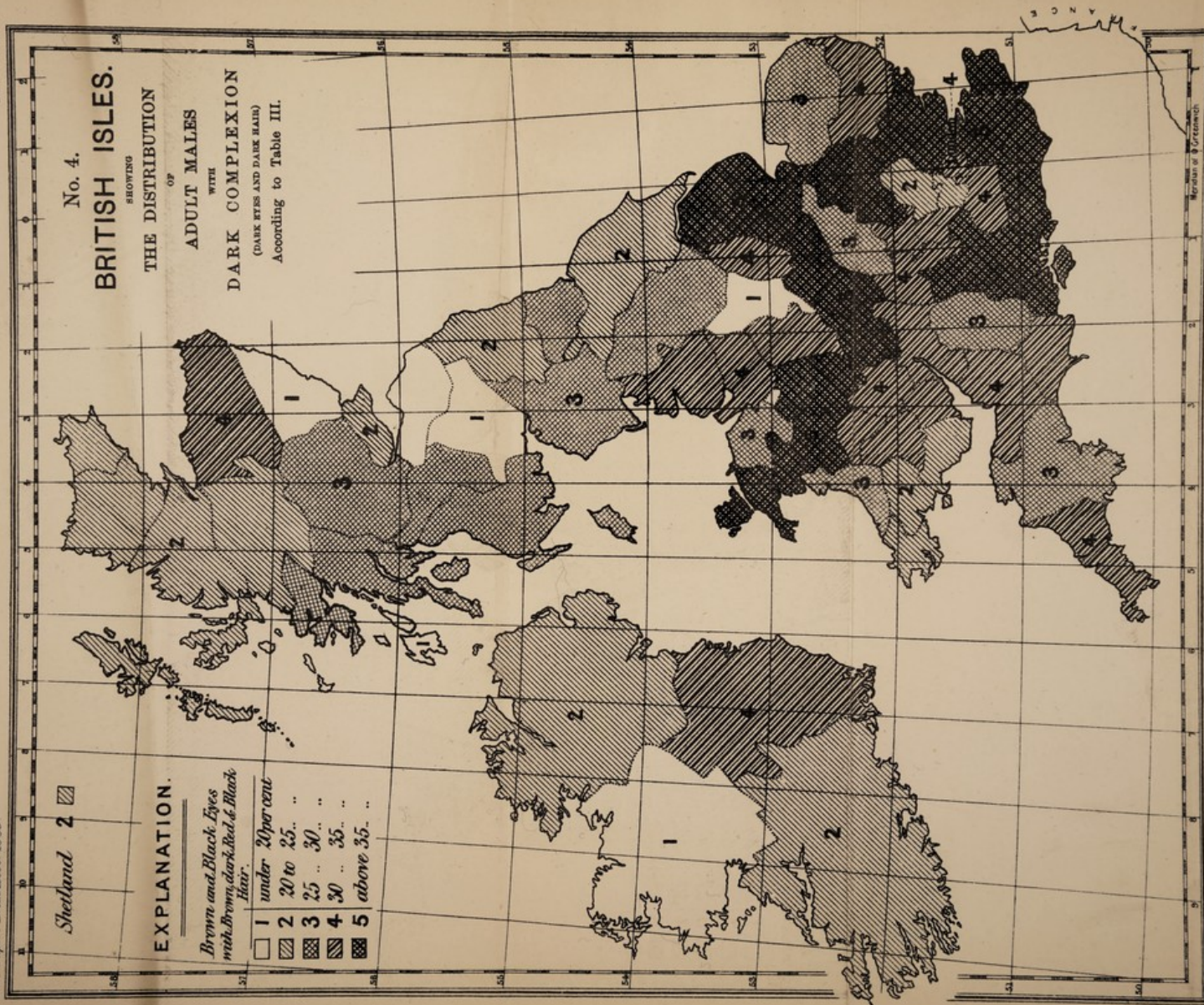




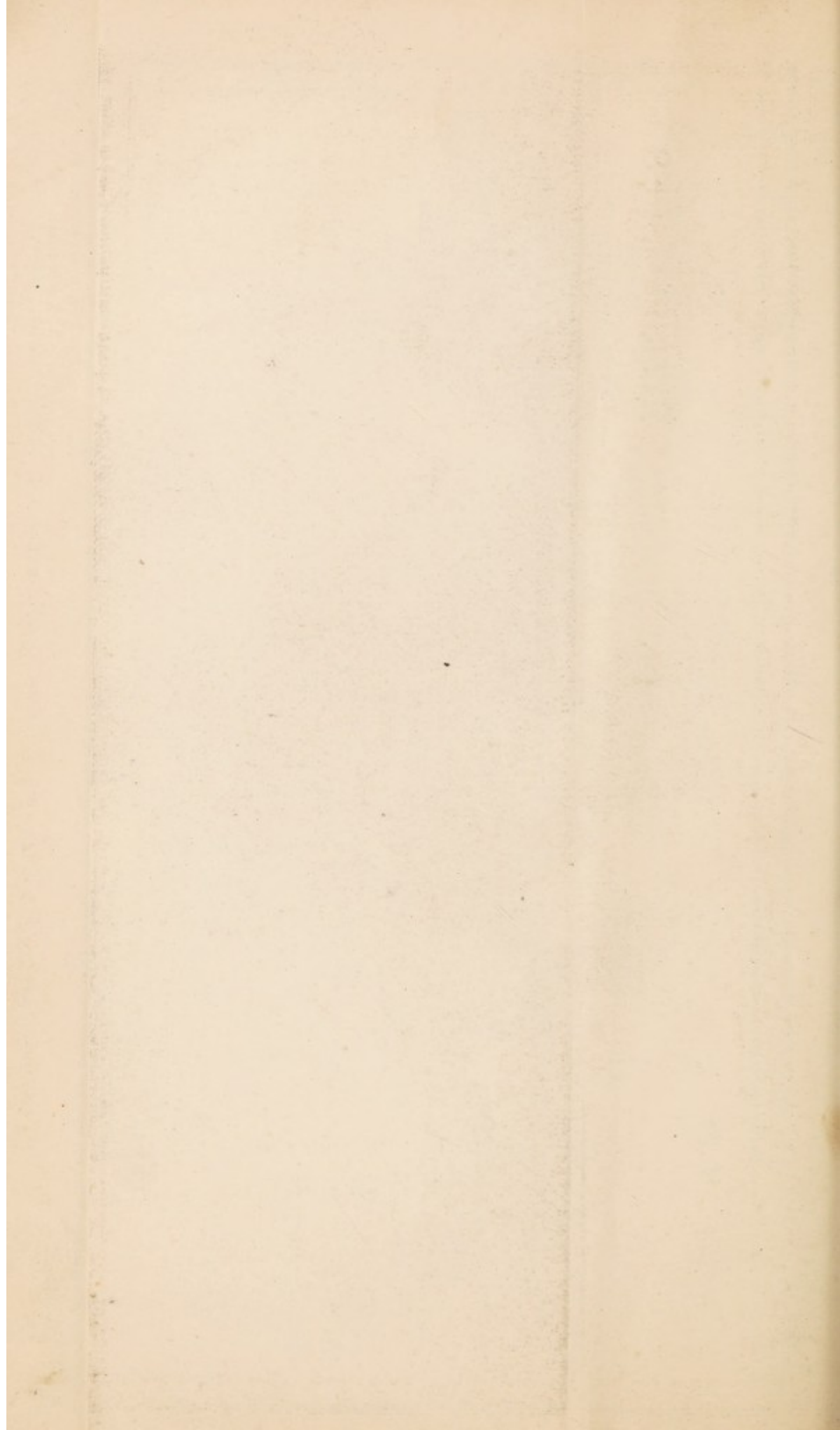




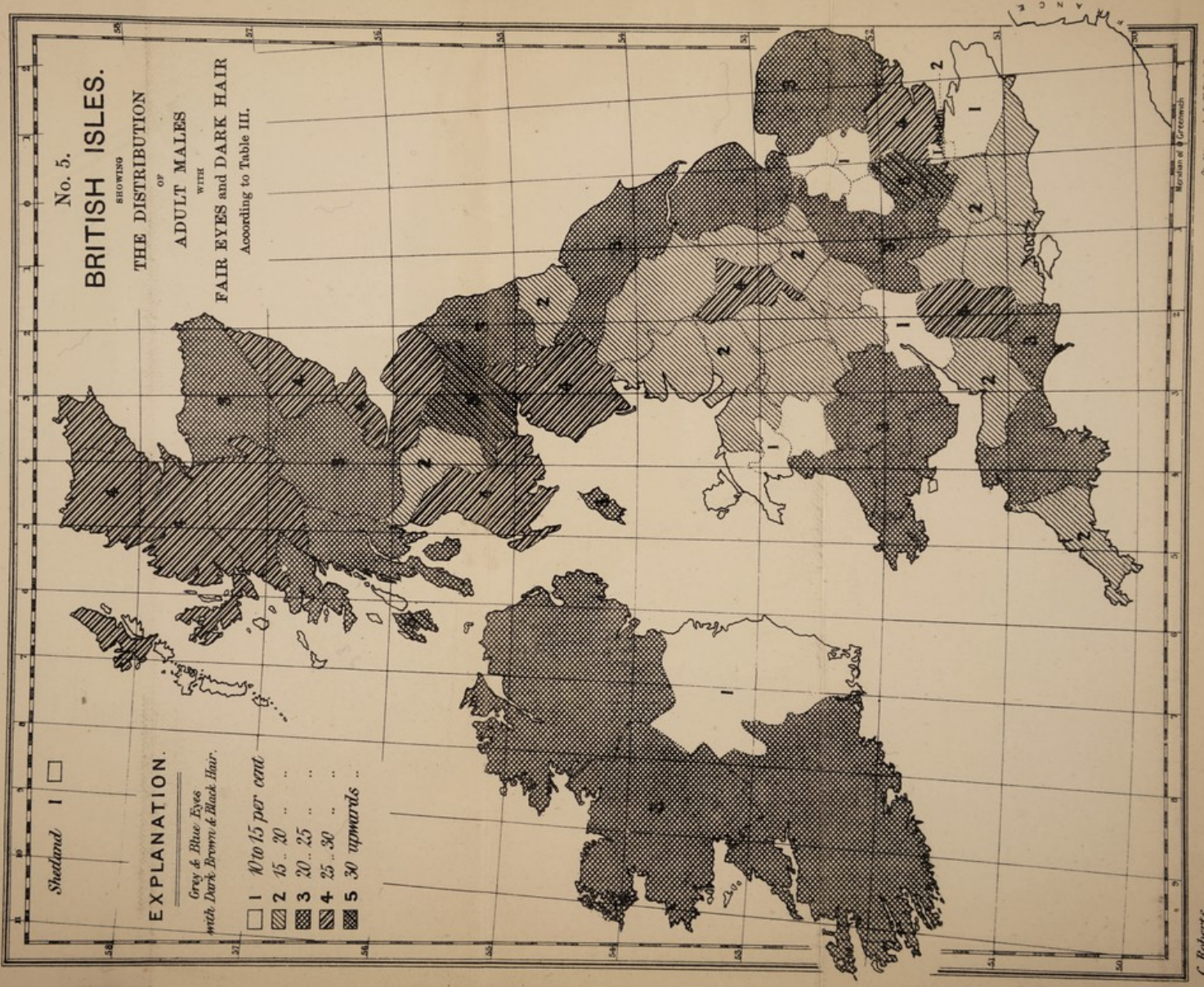














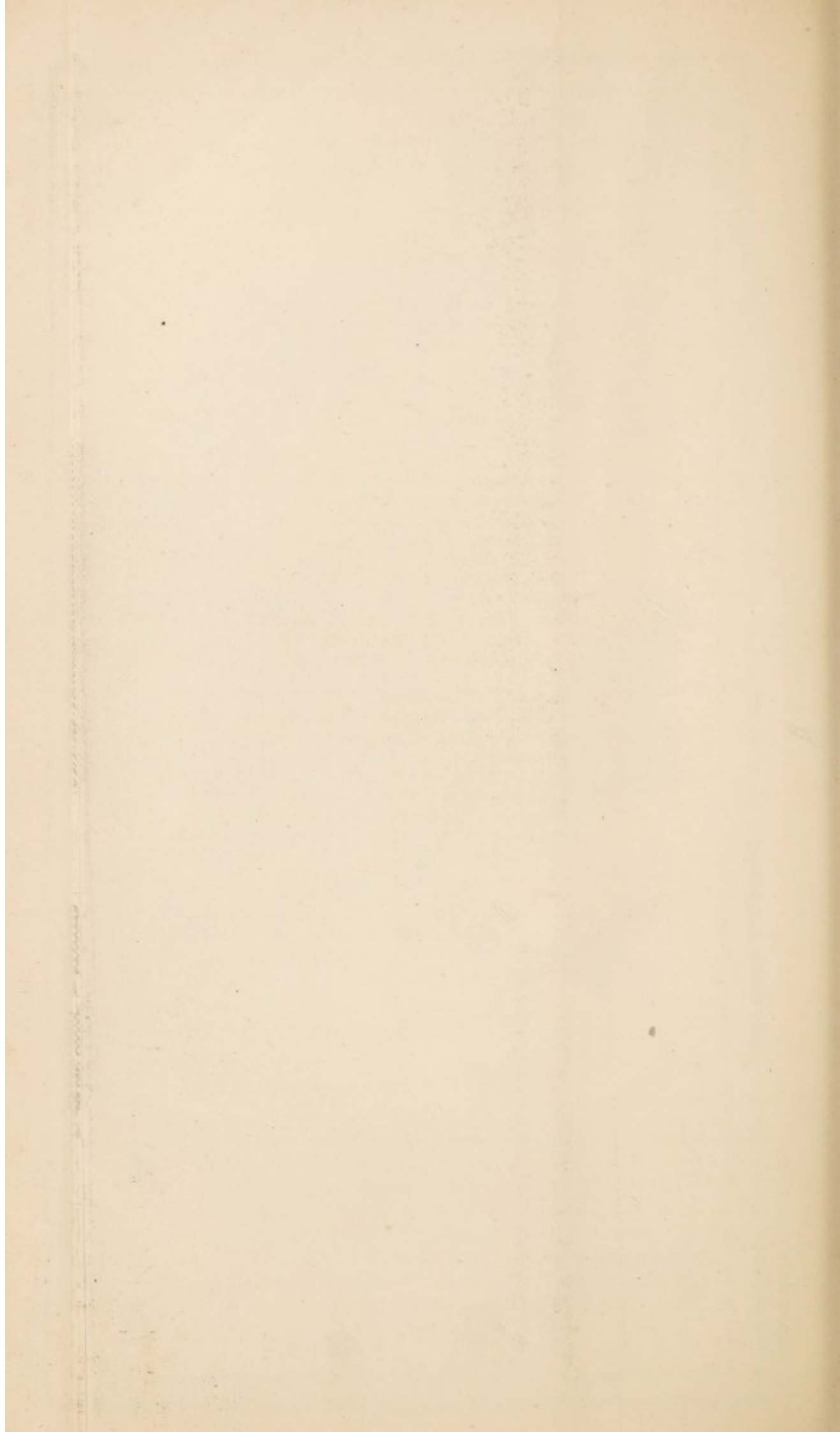




TABLE IV.—Showing the Number of Adult Males of the Ages above 25 and under 55 years for each group of counties possessing the same AVERAGE STATURE, and the ratio per 1,000. From the Census returns of 1881.

Observed average stature without shoes in inches	Counties of the United Kingdom	Adult male population age 25-55 years	Per 1,000
69½ and upwards	{ Kirkcudbright, Ayr, Wigton; Edinburgh, Linlithgow, Haddington, Berwickshire.	125,103	22·2
69 to 69½	{ Sutherland, Ross and Cromarty, Skye, Perth, Stirling, Dumbarton, Fife, Kinross, Clackmannan; North and East Ridings of Yorkshire.	167,914	30·0
68½ to 69	{ Argyle, Bute, Arran, Dumfries, Roxburgh, Selkirk, Peebles; Northumberland; Connaught, Munster.	459,055	81·7
68 to 68½	{ Caithness, Inverness, Aberdeen, Banff, Elgin, Nairn, Forfar, Kincardine; Lanark, Renfrew; Cumberland, Westmoreland; Lincoln, Norfolk; Ulster, Leinster.	974,177	173·4
67½ to 68	{ Shetland, Western Hebrides; Durham, Lancashire, Derby, Stafford; Suffolk, Essex, Kent; Berkshire; Cornwall.	1,326,292	236·0
67 to 67½	{ Nottingham, Leicester, Rutland, Northampton, Bedford; Warwick, Worcester; Flint, Denbigh; Sussex, Hampshire, Dorset, Devon.	688,465	122·6
—	London (66·92 inches).	667,118	118·7
66½ to 67	{ West Riding of Yorkshire, Chester; Carnarvon, Anglesea, Merioneth, Montgomery, Cardigan, Brecon, Radnor; Cambridge, Huntingdon; Buckinghamshire, Oxfordshire.	636,769	113·3
66 to 66½	{ Hertford, Middlesex (ex. metrop.); Surrey (ex. metrop.); Shropshire, Hereford, Monmouth, Gloucester, Wiltshire, Somerset; Glamorgan, Caermarthen, Pembroke.	573,774	102·1
		5,618,677	1000·

$$\frac{\text{Stature} \times \text{Population}}{\text{Total male population}} = \left\{ \begin{array}{l} 67·58 \text{ inches, average stature of adult males (25-55 years} \\ \text{of age) of the United Kingdom.} \end{array} \right.$$

29. *Ethnology*.—The variations in stature, weight, and complexion shown to exist in different districts of the British Isles by the maps, appear to be chiefly due to difference of racial origin, and this influence predominates over all others. 'We have reason to believe, from historical and antiquarian researches, that the ancient Caledonii, the Belgæ and Cimbri, and the Saxons and Frisians, as well as the Danes and Normans, were all people of great stature. On the other hand, the prehistoric (neolithic) race or races in Britain appear to have been of low or moderate stature. Accordingly the higher statures are found in the Pictish or



Cimbri-British districts of Galloway; in the Anglo-Danish ones of North and East Yorkshire, Westmoreland and Lincolnshire, and in Cumberland, whose people are ethnologically intermediate between the two. Lothian and Berwickshire are mainly Anglian, while the Perthshire Highlanders are the most clearly identified as the descendants of the Caledonii. The high position of Norfolk in the list is due to a large admixture of Danish blood on the coast. There is a fringe of moderately high stature all round the coast from Norfolk to Cornwall, while the inland people, retaining more of the ancient British blood, yield lower averages. Middlesex and Hertfordshire, which stand very low, were later and less perfectly colonised by the Anglo-Saxon than the surrounding counties, and nearly the same may be said of the counties around the Severn estuary and the Welsh border. Cornwall stands higher than the surrounding counties, and this is probably due to its having become the refuge of the military class of Southern Britain, in the main of Belgic origin. Flint and Denbigh owe their superiority to the other Welsh counties to the immigration of the Cumbrian and Strathclyde Britons.'—Dr. Beddoe.

30. According to the Committee's returns, the western provinces of Ireland possess a high stature, similar to the Scotch Highlands, with which they may have a common racial origin, while the lower stature of the eastern provinces is probably traceable to the comparatively recent Scotch and English immigrations. The Irish returns are, however, too few to be relied on (although the closeness of the averages for all the provinces would suggest the absence of any errors of observation), and any conclusions drawn from them must be received with great reserve until they are confirmed by more extended inquiries. In some of the returns the county origin and birthplace was not recorded, which accounts for the difference between the totals for the whole of Ireland and those living in each province.

31. The racial elements of the British population are best demonstrated by separating a few of the counties where there has been the least admixture of foreign blood, and comparing these together, thus:—

Race	District	Stature	Weight
Early British .	Cardigan, Radnor, and Brecon . . .	66·59	169·3
Saxon . . .	Sussex, Berkshire, and Oxfordshire . . .	67·22	155·8
Anglian . . .	Lothians, Northumberland, and Norfolk . . .	68·73	166·7
Scandinavian .	{ Shetland, Caithness, North and East York- shire, and Lincolnshire. }	68·32	162·7

32. *Geographical distribution.*—The inhabitants of the more elevated districts possess a greater stature than those of alluvial plains. The counties forming the river valleys of the Severn and Wye, the Thames, the Dee and Mersey, the Clyde, the Trent, and the fen district of Cambridge and Huntingdon, show a lower stature than the surrounding counties inhabited by persons of a similar racial origin.

33. With respect to latitude and climate, the inhabitants of the northern and colder districts possess greater stature than those of the southern and warmer parts of the island; those of the north-eastern and drier regions are taller than those of the south-western and damper climates. A similar disposition of stature has been found to exist in France and Italy, the



inhabitants of both these countries being taller in the northern than in the southern provinces. The same rule applies to the whole of the countries of Europe, in their relation to each other, as will be seen in Table IV., constructed to show the position held by the inhabitants of the British Isles relative to the stature of other European countries. The Committee regrets that it has not been able to obtain any information on this subject direct from the European countries (except some referring to conscripts, which were not suitable for their purpose), and has been obliged to avail itself of the observations made in the United States of America on emigrants from European States. In reading this table it must be borne in mind that the statistics referring to the United Kingdom, collected by the Committee, and to the native-born population of the United States, refer to men of all classes; while those collected by the military authorities of 1863-4 in the United States, referring to Canada and the other American countries, and to those of all Europe, refer to emigrants, who belong almost entirely to the labouring classes. The close accord between the average stature of the United Kingdom (67·66 inches) and that of the native white population of the United States (67·67 inches) is accounted for in this way; and, on the other hand, the marked differences between the statures of the Scotch (68·71), Irish (67·90), English (67·36), and Welsh (66·66 inches), as given by the Committee and those given by the United States Government (67·07, 66·74, 66·58, and 66·42 respectively) is explained. Some American writers on the subject have overlooked this important distinction, and, studying only the statistics obtained in their own country, have concluded that the Anglo-Saxon race is of greater stature in America than in Great Britain. In the Report of the Committee for 1879 Mr. Roberts has given a paper, illustrated by a series of diagrams and statistical tables, of English and Americans, showing the close similarity which exists between the stature and weight of the two branches of our race, both in children and adults; and the more extended observations of the Committee appear to confirm his conclusions.

34. *Occupation and sanitary surroundings.*—The various industries of this country are not often so defined by the county boundaries as to show their effects on the physical development. It is probable, however, that the low stature in the West Riding of Yorkshire is due to the large manufacturing town population included in the returns, and the relatively low stature of Durham to the large mining population. Lancashire and Stafford, which contain similar industries to those of the West Riding and Durham, do not show any falling off in stature, and it is probable that a large number of returns received from Sheffield have unfairly lowered the West Riding. The very low position, lower than can be accounted for by their racial origin, taken by the home counties—Hertford, Middlesex, and Surrey—is no doubt due to their proximity to London; the more vigorous men are attracted to the town by high wages, and the more feeble overflow into the surrounding districts. The counties which fringe the sea-coast possess a higher stature than those adjoining them but lying further inland. This may be due to race, as has already been suggested; but it may also be due to the more healthy situation or the fishing occupation. The lower stature of the river valleys would seem to imply that such situations are not favourable to physical development, especially as some of them were originally settled by the Scandinavian races.



TABLE V.—Showing the Average STATURE of Adult Males in each Division of the United Kingdom, according to the returns collected by the Anthropometric Committee, compared with that of Adult Males of American and European Origin, who were examined for admission into the United States Army in the year 1863-4; the natives of European origin being arranged in the order of their average stature, showing also the medium stature, and the proportions above and below it, with the proportions of the extremes of high and low stature. (See 'Statistics, Medical and Anthropological, U.S. Army, 1875.')

Countries	No. of observations	Average stature. Inches	Percentage pro- portion of total number			Extremes. Percentage proportion of total number	
			Under 65 inches	65 to 69 inches	Above 69 inches	Under 61 inches	Above 73 inches
<i>Observations of Anthro- pometric Committee :—</i>							
Scotland . . . . .	1,304	68·71	5·6	50·2	44·2	0·19	2·13
Ireland . . . . .	346	67·90	6·7	65·3	28·0	0·32	0·00
England . . . . .	6,194	67·36	17·8	55·5	26·7	0·93	0·43
Wales . . . . .	741	66·66	22·8	62·0	15·2	—	—
Total, United Kingdom .	8,585	67·66	16·1	55·7	28·2	—	—
<i>Observations on Conscripts in U.S. America :—</i>							
United States.							
White, native born . . . .	315,620	67·67	15·3	54·1	30·6	0·53	2·02
Coloured, of all degrees . .	25,828	66·63	29·6	51·9	18·5	1·79	1·00
Indians, N.A. tribes . . . .	121	67·93	14·2	52·0	33·8	—	0·08
<i>Immigrants from—</i>							
Canada (chiefly French) . .	21,645	67·01	21·8	56·3	21·9	0·74	1·01
Mexico . . . . .	91	66·11	25·2	51·7	13·1	3·29	1·09
South America . . . . .	79	65·90	41·7	40·4	17·9	2·13	—
West Indies . . . . .	580	66·31	28·9	56·4	14·7	0·86	0·34
Europe.							
Norway . . . . .	2,290	67·47	16·6	57·0	26·4	0·74	1·31
Scotland . . . . .	3,476	67·07	20·4	58·3	21·3	0·46	1·03
Sweden . . . . .	1,190	66·90	21·3	59·5	19·2	0·42	0·76
Ireland . . . . .	30,557	66·74	23·2	60·1	16·7	0·70	0·49
Denmark . . . . .	383	66·65	25·1	57·7	17·2	0·78	0·26
Holland . . . . .	989	66·64	26·6	56·3	17·1	1·31	0·50
England . . . . .	16,196	66·58	25·9	58·3	15·8	1·08	0·56
Hungary . . . . .	89	66·58	22·5	58·4	19·1	3·37	1·12
Germany . . . . .	54,944	66·54	27·0	57·0	16·0	1·31	0·51
Wales . . . . .	1,104	66·42	29·3	53·6	17·1	0·82	0·63
Russia . . . . .	122	66·39	29·6	51·0	16·4	3·28	0·82
Switzerland . . . . .	1,302	66·38	29·5	55·7	14·8	1·61	0·44
France . . . . .	3,243	66·28	30·0	56·5	13·5	1·85	0·57
Poland . . . . .	171	66·21	32·1	56·7	11·2	1·75	1·17
Italy . . . . .	339	66·00	37·8	48·9	13·3	2·06	0·29
Spain . . . . .	148	65·64	43·3	49·3	7·4	2·70	—
Portugal . . . . .	81	65·43	39·5	56·8	3·7	3·70	—



*d. British compared with other Races and Nationalities.*

35. Considering the large number of different races included in the British Empire, and the political and commercial relations of its people with nearly every other country, the Committee think it will be interesting and useful to give a table showing the average stature of the different races and nationalities of the world, as far as it has been able to ascertain them from published records. The list is very imperfect, and it is probable that many of the measurements need revision by more extensive observation. No nation is so favourably situated for revising and completing the list as our own; and the Committee hope that the table will be instrumental in promoting further observations of the kind, especially by medical officers in the Navy and Army, and others practising in our numerous colonies and dependencies. It is interesting to find that, with the exception of a few imperfectly-observed South Sea Islanders, and whose actual numbers, if the measurements are correct, are very few, the English professional classes head the long list, and that the Anglo-Saxon race takes the chief place in it among the civilised communities, although it is possible it might stand second to the Scandinavian countries if a fair sample of their population were obtained.

TABLE VI.—Showing the STATURE of Adult Males of the British Isles relative to that of other Races and Nationalities, arranged in the order of greatest Stature.

Race or Nationality	Authority	Mètres	Ft. in.
Polynesians { Samoa . . . . . 1·853 Tahiti and Pitcairn . . . . . 1·782 Marquesas . . . . . 1·763 New Zealand . . . . . 1·755 Polynesians . . . . . 1·753 Sandwich . . . . . 1·731	Lapeyrouse . Garnot, Beechey Porter, Cook, &c. Various . Wilkes, <i>Novara</i> . Lesson, Rollin .	1·762	5- 9·33
English professional class . . . . .	Anthropometric Com.	1·757	5- 9·14
Patagonians . . . . . { 1·778 1·730	Musters . . . . . D'Orbigny . . . . .	1·754	5- 9·00
Angamis of the Naga Hills . . . . .	Woodthorp . . . . .	1·754	5- 9·00
Negroes of the Congo . . . . .	Topinard . . . . .	1·752	5- 8·95
Scotch, all classes (recruits, 5 ft. 8·03) . . . . .	Anthropometric Com.	1·746	5- 8·71
Amakosa Kaffirs, South Africa . . . . .	Sir A. Smith . . . . .	1·741	5- 8·50
Iroquois Indians . . . . .	Gold . . . . .	1·735	5- 8·28
Todas of the Nilghiries . . . . .	Marshall . . . . .	1·727	5- 7·95
Negroes of Calabar . . . . .	Topinard . . . . .	1·727	5- 7·95
North American Indians . . . . .	Baxter . . . . .	1·726	5- 7·93
Irish, all classes (recruits, 5 ft. 8·04) . . . . .	Anthropometric Com.	1·725	5- 7·90
United States (whites, all classes) . . . . .	Baxter . . . . .	1·719	5- 7·67
English, all classes (recruits, 5 ft. 7·71) . . . . .	Anthropometric Com.	1·719	5- 7·66
Norwegians { . . . . . 1·727 immigrants to U.S. 1·717	Beddoe . . . . . Baxter . . . . .	1·719	5- 7·66
Zulus . . . . .	Roberts . . . . .	1·707	5- 7·19
English labouring classes . . . . .	Anthropometric Com.	1·705	5- 7·08
Canadians, chiefly French immigrants, U.S. America . . . . .	Baxter . . . . .	1·703	5- 7·01
Tajiks of Ferghana and Samarkand . . . . .	Ujfalvy . . . . .	1·705	5- 7·10
Swedes, immigrants to U.S. America . . . . .	Baxter and Beddoe . . . . .	1·700	5- 6·90
Chipeway Indians . . . . .	Oliver . . . . .	1·700	5- 6·90
Kabyles, large race . . . . .	Topinard . . . . .	1·699	5- 6·85



TABLE VI. (*continued*).

Race or Nationality	Authority	Mètres	Ft. in.
Welsh, all classes . . . . .	Anthropometric Com.	1·695	5- 6·66
Danes, immigrants to U.S. America . .	Baxter . . . . .	1·694	5- 6·65
Dutch . . . . .	Baxter . . . . .	1·693	5- 6·62
American negroes of all degrees of colour . . . . .	Baxter . . . . .	1·693	5- 6·62
English immigrants to U.S. America . .	Baxter . . . . .	1·692	5- 6·58
Hungarians . . . . .	Baxter . . . . .	1·692	5- 6·58
English Jews . . . . .	Anthropometric Com.	1·692	5- 6·57
Germans, immigrants to U.S. America . .	Baxter . . . . .	1·691	5- 6·54
Swiss of Geneva . . . . .	Dunant . . . . .	1·688	5- 6·43
Swiss immigrants to U.S. America . .	Baxter . . . . .	1·687	5- 6·38
Russians . . . . .	Baxter . . . . .	1·687	5- 6·38
Belgians . . . . .	Quetelet . . . . .	1·687	5- 6·38
French immigrants to U.S. America . .	Baxter . . . . .	1·683	5- 6·23
Poles . . . . .	Baxter . . . . .	1·682	5- 6·20
French upper classes . . . . .	De Quatrefages . . . . .	1·681	5- 6·14
Germans . . . . .	<i>Novara</i> . . . . .	1·680	5- 6·10
Mexicans . . . . .	Baxter . . . . .	1·680	5- 6·10
Berbers of Algeria . . . . .	Topinard . . . . .	1·680	5- 6·10
Arabs . . . . .	Various . . . . .	1·679	5- 6·08
Usbeks of Ferghana and Samarkand . .	Ujfalvy . . . . .	1·679	5- 6·08
Javanese . . . . .	<i>Novara</i> . . . . .	1·679	5- 6·08
Russians . . . . .	Shultz . . . . .	1·678	5- 6·04
Italians, immigrants to U.S. America . .	Baxter . . . . .	1·677	5- 6·00
South Americans . . . . .	Baxter . . . . .	1·675	5- 5·90
Australian Aborigines . . . . .	Various . . . . .	1·669	5- 5·68
Austrian Slaves . . . . .	<i>Novara</i> . . . . .	1·669	5- 5·68
Galchas, Iranian Mountaineers . . . .	Ujfalvy . . . . .	1·668	5- 5·66
Spaniards, immigrants to U.S. America .	Baxter . . . . .	1·668	5- 5·66
Berbers of Algeria . . . . .	Topinard . . . . .	1·666	5- 5·62
Portuguese immigrants to U.S. America .	Baxter . . . . .	1·663	5- 5·43
Ainos . . . . .	Rosky . . . . .	1·660	5- 5·33
Austrian Germans . . . . .	<i>Novara</i> . . . . .	1·658	5- 5·27
French working classes . . . . .	De Quatrefages . . . . .	1·657	5- 5·24
Esquimaux of North America . . . . .	Various . . . . .	1·654	5- 5·10
Hungarians (military statistics) . . . .	Scheiber and Beddoe . . . . .	1·652	5- 5·04
Caucasians . . . . .	Shortt . . . . .	1·650	5- 4·93
New Guinea, various tribes . . . . .	Various . . . . .	1·646	5- 4·78
Hindoos . . . . .	Shortt . . . . .	1·645	5- 4·76
Bavarians . . . . .	<i>Novara</i> . . . . .	1·643	5- 4·68
Rutherians . . . . .	Majer and Kopernicki . . . . .	1·640	5- 4·54
Dravidians . . . . .	Shortt . . . . .	1·639	5- 4·50
Cingalese . . . . .	Davy . . . . .	1·638	5- 4·48
Austrian Roumanians . . . . .	<i>Novara</i> . . . . .	1·631	5- 4·37
Chinese . . . . .	<i>Novara</i> . . . . .	1·630	5- 4·17
Italians (conscripts, 1·620) . . . . .	<i>An. di Statist.</i> , 1879 . . . . .	1·626	5- 4·00
Fuegians . . . . .	<i>Novara</i> . . . . .	1·625	5- 3·98
Polish Jews . . . . .	Majer and Kopernicki . . . . .	1·623	5- 3·88
Poles . . . . .	Majer and Kopernicki . . . . .	1·622	5- 3·87
Finns (Beddoe, 5 ft. 5·81) . . . . .	<i>Novara</i> . . . . .	1·617	5- 3·60
Papuans . . . . .	Various . . . . .	1·606	5- 3·20
Japanese . . . . .	Mrs. Ayrton . . . . .	1·604	5- 3·11
Aymaras Indians, Peru . . . . .	Forbes . . . . .	1·601	5- 3·00
Peruvians . . . . .	D'Orbigny . . . . .	1·600	5- 3 00
Cochin-Chinese . . . . .	Finlayson . . . . .	1·593	5- 2 70
Malays . . . . .	Raffles, Crawford, &c. . . . .	1·583	5- 2·34
Veddass of Ceylon . . . . .	Bailey . . . . .	1·536	5- 0·42



TABLE VI. (*continued*).

Race or Nationality	Authority	Mètres	Ft. in.
Lapps . . . . .	Horch . . . . .	1·500	4- 11·2
Andamanese . . . . .	Man . . . . .	1·492	4- 10·7
Aëtas . . . . .	De Quatrefages . . . . .	1·482	4- 10·3
Semangs . . . . .	De Quatrefages . . . . .	1·448	4- 9·00
Mincopese . . . . .	De Quatrefages . . . . .	1·436	4- 8·53
Bosjesmans (Bushmen and S. Africa) . . . . .	Various . . . . .	1·341	4- 4·78
Difference between the tallest and shortest races . . . . .		·421	1- 4·55
Average stature of man according to the above . . . . .		1·658	5- 5·25

*Special Subjects of Inquiry.*

36. In the sheet of instructions issued by the Committee observations were asked for to illustrate the physical differences of:—

- a. Persons engaged in different occupations.
- b. Persons bred and living in towns, or country.
- c. Natives of parts of the British Isles differing ethnologically, geologically, or in climate.
- d. Boys and men whose intellect and industry are above or below the average.
- e. The general characteristics of men noted for athletic power.
- f. The rate of growth in persons of both sexes bred in town and country, and engaged in different occupations.

The following table shows some of the extreme variations in stature which occur, and which are associated with different occupations and conditions of life, illustrative of the above subjects of inquiry.

TABLE VII.—Showing the STATURE and WEIGHT of Adult Males (age 23–50 years) under different conditions of life.

	Number	Ft. in.	lbs.
Scotch Agricultural Population, Galloway . . . . .	75	5 10·5	173·6
Metropolitan Police . . . . .	192	5 10 1	185·7
Fellows of the Royal Society . . . . .	98	5 9·76	—
Yorkshire Fishermen, Flambro' . . . . .	68	5 8·71	166·8
Athletes (running, jumping, and walking) . . . . .	89	5 8·34	143·7
Scotch Lead-miners, Wenlockhead . . . . .	92	5 8·43	163·9
London Fire Brigade . . . . .	69	5 7·40	160·8
Durham Coal-miners . . . . .	51	5 6·38	152·4
Edinburgh and Glasgow Town Population . . . . .	32	5 6·35	137·2
Welsh Lead-miners, Cardigan . . . . .	328	5 6·30	155·2
Sheffield Town Population . . . . .	100	5 5·80	142·5
Bristol Town Population . . . . .	300	5 5·77	142·4
Lunatics, General Population . . . . .	1,409	5 5·70	147·9
Criminals, General Population . . . . .	2,315	5 5·60	140·4
Hertfordshire Labourers . . . . .	174	5 5·35	145·0
Idiots and Imbeciles . . . . .	19	5 4·87	123·0

37. The influence of town life and town occupations on the physique of the population in districts in which the race differs little, and the climatic



conditions are the same, is seen by comparing the agricultural population of Ayrshire with that of Glasgow and Edinburgh, where the average difference in stature amounts to 4.15 inches, and in weight to 36.4 lbs., in favour of the country folk. A similar, though not so great a difference, exists in Yorkshire, where the fishermen of Flamborough exceed the artisans of Sheffield in stature by 2.91 inches, and in weight by 24.3 lbs. On the other hand, the population of London exceeds that of the adjoining county of Hertfordshire in stature by 1.57 inches, and in weight by 7.9 lbs. Quetelet observed the same condition in Belgium, where the towns showed a higher stature than the country districts; and he concluded that the greater ease and better food attainable in towns were more favourable to physical development than the hard manual labour and poor fare of the agricultural districts. It is probable that Quetelet compared different classes together, or that the towns in Belgium hold an exceptional position, like London to the adjoining districts in England.

38. As an example of the predominance of race over occupation, the stature and weight of the Scotch lead-miners of Wenlockhead, and the Welsh lead-miners of Cardiganshire, are given in the table. The occupation of lead-mining in both districts is in a great measure hereditary, and has probably been followed under similar conditions in Scotland and Wales for many generations, yet the Scotch exceed the Welsh lead-miners in stature by 2.13 inches, and in weight by 8.7 lbs. The stature and weight of the Durham coal-miners, and of the town populations of Glasgow, Sheffield, and Bristol, are given in this table, as they have been referred to above as influencing the averages of their respective counties, and placing them in an exceptional position as to the racial origin of their inhabitants.

39. One of the objects the Committee has had in view has been 'to ascertain the physical differences of boys and men whose intellect and industry are above or below the average'; but no returns of this kind have been received, except some referring to criminals and lunatics, and those have been introduced here as the most convenient place for their consideration:—

TABLE VIII.—Showing the STATURE and WEIGHT of Adult Male Criminals and Lunatics, compared with that of the General Population.

Classes	Height				Weight			
	Ages				Ages			
	20 to 25	25 to 35	35 to 45	45 to 55	20 to 25	25 to 35	35 to 45	45 to 55
General—	inches	inches	inches	inches	lbs.	lbs.	lbs.	lbs.
Average population	67.5	67.9	67.9	67.9	146.2	156.	162.	163.8
Class 3: country labourers	67.2	67.5	67.5	67.8	149.5	157.4	161.2	166.4
Class 4: town arti- sans	66.5	66.6	66.9	66.6	139.	147.3	154.1	148.6
Criminals	65.2	65.6	65.7	65.8	136.9	140.	141.4	143.4
Lunatics	65.7				147.9			



40. When compared with the general population, lunatics show a deficiency of stature of 1·96 inches, and of weight 10·3 lbs.; and criminals of 2·06 inches and 17·8 lbs., indicating a deficiency of physical as well as mental stamina in both these unfortunate classes of society. In respect to complexion lunatics show an excess of 5 per cent. of light eyes with dark hair, and criminals of 10 per cent. of dark eyes with dark hair over the general population.

TABLE IX.—Showing the COMPLEXION of Adult Male Criminals and Lunatics, compared with that of the General Population.

	No. of observations	Eyes light			Eyes dark			Eyes light brown, green, or exceptional, with hair light or dark	Total
		Hair light	Hair dark	Hair red	Hair dark	Hair fair	Hair red		
		per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	
<i>England—</i>									
General . . .	5,669	39·6	20·4	4·0	29·9	1·7	·7	3·7	100
Criminal . . .	2,315	40·1	13·6	1·1	38·1	·6	·6	5·9	—
Lunatic . . .	1,409	42·3	20·3	1·5	31·8	1·8	·4	1·9	—
Total . . .	9,393	40·1	18·9	2·7	32·2	1·5	·6	4·	—
<i>Wales—</i>									
General . . .	704	34·4	19·9	9·8	26·4	4·7	1·3	3·5	100
Criminal . . .	46	37·	17·4	—	45·6	—	—	—	—
Lunatic . . .	150	34·7	27·3	3·3	28·7	2·	—	4·	—
Total . . .	900	34·6	21·	8·2	27·8	4·	1·	3·4	—
<i>Scotland—</i>									
General . . .	1,261	46·3	24·5	5·2	21·2	·9	1·	·9	100
Criminal . . .	194	44·3	20·1	2·6	30·	·5	1·5	1·	—
Lunatic . . .	342	47·4	30·7	1·4	17·3	1·4	1·2	·6	—
Total . . .	1,797	46·3	25·2	4·2	21·4	1·	1·1	·8	—
<i>Ireland—</i>									
General . . .	285	49·8	18·2	3·5	23·5	1·1	1·8	2·1	100
Criminal . . .	215	44·2	18·6	·5	28·7	·5	·5	7·	—
Lunatic . . .	29	51·7	24·1	7·	17·2	—	—	—	—
Total . . .	529	47·4	19·	2·5	25·3	·7	1·1	4·	—
Total United Kingdom }	12,619	41·	19·8	3·4	30·1	1·5	·7	3·5	—

41. As an example of the relation of high mental to physical qualities the stature of ninety-eight Fellows of the Royal Society is given. Their average stature is slightly above (0·38 inch) that of the professional classes of this country, to which the majority of them belong.



42. As an example of high physical qualities as developed by training, the measurements of eighty-nine professional and amateur athletes are given. Their average stature exceeds that of the general population from which they are drawn by 0·68 inch, while their average weight falls short of that standard by 14·5 lbs. The ratio of weight to stature is, in the athletes, 2·100 lbs., and in the general population 2·323 lbs., for each inch of stature. Thus, a trained athlete whose stature is 5 feet 7 inches should weigh 10 stones, while an untrained man of the same height should weigh 11 stones.

43. The statures of the Metropolitan Police and the London Fire Brigade are given as selected men of the working classes. The former exceed the criminal class, with whom they have to deal, in stature by 4·5 inches, and in weight by 45·3 lbs. The men of the Fire Brigade are selected for their activity, and general fitness to meet sudden and trying demands on their physical and mental energies. The data referring to them may be accepted, therefore, as typical of the best physique which can be obtained for an English army, and of which our army should consist at its best.

*Complexion as determined by the Colour of the Eyes and Hair.*

44. The difficulty of determining the prevailing complexion of a race, or of the mixed population of a country or a district, by the colour of the hair, as is generally done, and of basing a classification on it, is greater than at first sight appears. Not only do the various shades run imperceptibly into each other, but observers differ in their appreciation of the different shades when viewed under similar conditions, and the prevailing colour of a district determines the relative value of others. Thus a person living among a dark-haired race would consider brown hair as fair, while another person living among a light-haired people would consider it dark, or at any rate not fair in the same sense as the former would. Objections of this kind do not apply to the eyes, as the colour of the iris is due to the anatomical disposition of pigment in front of or behind that structure. In brown and the so-called black eyes a layer of brown pigment covers the *front* of the iris and hides the deeper structures, and itself determines the colour; while in blue and grey eyes this layer of pigment is wanting, and the colour is due to the dark pigment (the choroid) situated *behind* the iris, the blue colour in various degrees resulting from the greater translucency of a thin, and the grey from a thick membrane. The marriage, moreover, of fair and dark persons often produces an intermediate shade in the colour of the hair in the children, but only occasionally produces an intermediate change in the colour of the eyes, the rule being that they are blue or brown like one of the parents. The cross between the blue and brown eye should properly be called green (the deeper blue showing through an imperfect layer of yellow brown pigment), but from popular prejudice to this term, eyes of this mixed colour are generally recorded as brown grey, light brown or light hazel.<sup>1</sup>

45. For these reasons the classification adopted in this Report is based on the colour of the eyes, and with the object of more clearly defining the two prevailing shades of complexion in this country, namely the 'fair' as characterised by light eyes and light hair, and the 'dark' by dark eyes

<sup>1</sup> See the Report for 1880, p. 134, for a further discussion of this subject.



and dark hair, the mixed or neutral eyes are eliminated, and the dark hair is separated from the former, and the light hair from the latter class. The combinations of blue eyes and light red hair, and of brown eyes and dark red hair, are given in separate columns, but the result is not satisfactory, as many cases of light red have doubtless been returned as fair hair, and of dark red as dark brown hair.

46. In the instructions issued by the Committee observers were requested to return the colours of eyes as grey, light blue, blue, dark blue, light brown, brown, dark brown, green, and black; and the colour of the hair as very fair, fair, golden, red, red brown, light brown, brown, dark brown, black brown, and black, and some chromo-lithographic sheets as tests<sup>1</sup> for the colour of the hair were at first issued; but the system was found to be too complicated for ordinary observers to follow, and they were left to record the colours of both hair and eyes according to the popular meaning of the above terms. An examination of the returns shows that in many cases wide limits have been given to such words as fair, golden, and brown at one end of the scale, and of dark brown and black at the other, which has necessitated the concentration of the data to eliminate errors of observation, and what may be called the 'personal equation' of the colour-sense in different observers. In the Report of the Committee for 1880 a table is given of the colour of eyes and hair according to the above scale, of boys and men of the professional classes from ten to fifty years of age, but, apart from its including too wide a range of ages, it is not so well adapted for showing the relative prevalence of complexions as the one now given.

47. The following grouping of the counties according to the prevalence of fair complexion, or, what is the same thing, according to the degree of nigrescence, shows that certain large districts—much larger than the county boundaries—are occupied by inhabitants of similar racial origin, or who have been subject to conditions of life which have reduced them to similar shades of complexion. The division of the percentages into five degrees is, of course, quite arbitrary, and sometimes two counties, only divided from each other by a decimal, and belonging therefore to the same group, may be represented by a different number. The exact percentages are given in Table III.

48. In this classification the men with dark eyes and light hair are combined with those having neutral eyes (green) and light or dark hair, because they are few in number, and because this peculiar complexion is probably due to crossing of the light and dark stocks, and the persistence of one feature of the parent in the eyes and of the other in the hair. The fact that men with dark eyes and light hair are more frequently found in the south-western counties of England, where the light and dark races meet and overlap each other, supports this view of their mixed origin. This complexion, moreover, is common in childhood, but disappears as age advances. According to Table XI. it diminishes in males from 13 per cent., during the first five years of life to 1 per cent., at forty-five years of age, and in females from 16.4 per cent. to 2 per cent. during the same period.

<sup>1</sup> These test-sheets proved not to be well suited for the purpose for which they were intended. The colours were not well graduated, and did not possess the sheen or gloss of the natural hair, on which so much of the variation of the colour depends. On the subject of colour-scales, see the *Bulletins* of the Society of Anthropology of Paris, 3rd S. vi. pp. 91, 92.



TABLE X.—Classification of the Counties of Great Britain and the Provinces of Ireland according to the prevalence of FAIR COMPLEXION or the degree of NIGRESCENCE of Adult Males.

		Fair eyes, with fair hair	Fair eyes, with dark hair	Dark eyes, with dark hair	Degree of nigrescence	Neutral eyes, with light and dark hair
		No. per cent. 1 = above 50 2 = 45-50 3 = 40-45 4 = 35-40 5 = 30-35	No. per cent. 1 = 10 to 15 2 = 15 - 20 3 = 20 - 25 4 = 25 - 30 5 = 30 upwards	No. per cent. 1 under 20 2 = 20-25 3 = 25-30 4 = 30-35 5 = above 35		No. per cent. 1 = 0 to 2 2 = 2 - 4 3 = 4 - 6 4 = 6 - 8 5 = 8 upwards
Norse	Shetland	1	1	2	4	1
English and Scotch East Border Group.	Forfar and Kincardine	1	4	1	6	1
	Lanark and Renfrew	1	2	3	6	1
	Edinburgh, Linlithgow, Haddington, and Berwick	1	4	1	6	2
	Dumfries, Roxburgh, Selkirk, and Peebles	2	5	1	8	1
	Northumberland	1	3	2	6	3
Central Irish Group.	Durham	1	2	3	6	2
	Connaught	1	3	1	5	1
	Leinster	1	1	4	6	3
North Irish Group	Ulster	2	3	2	7	2
Scotch High- land Group.	Sutherland, Ross, Cromarty, and Skye	2	4	2	8	1
	Inverness	2	4	2	8	1
	Perth, Stirling, and Dumbarton	2	3	3	8	1
	Argyle, Bute, and Arran	2	3	3	8	2
	Islay and Colonsay	2	5	1	8	1
	Kirkcudbright, Ayrshire, and Wigton	2	5	3	10	1
	Caitness	2	4	2	8	4
	Aberdeen, Banff, Elgin, and Nairn	3	3	4	10	2
North-East Scotch Group.	Fife, Kinross, and Clackmannan	2	4	2	8	3
	North and East Ridings of Yorkshire	2	3	2	7	5
North English Group.	West Riding of Yorkshire	2	2	3	7	2
	Nottinghamshire	2	2	4	8	1
	Cumberland and Westmoreland	3	4	3	10	2
	Lancashire	2	2	4	8	2
	Cheshire	2	2	4	8	2
	Derbyshire	2	4	1	7	3
	Staffordshire	2	2	4	8	2
	Staffordshire	2	2	4	8	2















49. In connection with this subject Table XI., showing the colour of eyes and hair in both sexes and at all ages, should be studied, as it shows the comparative worthlessness of the method often resorted to on the Continent of determining the racial elements of a country by examining the complexion of school children of different ages. The first column, referring to males (light eyes and fair hair), shows the gradual darkening of the hair of fair-complexioned children from 56 per cent. at the first five years of life to 33 per cent. at forty-five years; and the second column (light eyes with dark hair) increases during the same period at nearly a corresponding rate, the percentage of dark hair being 9.3 in the first five years and 34 at forty-five years of age. Thus,  $56 + 9.3 = 65.3$ , and  $33 + 34 = 67$ , or only 1.7 per cent. excess of dark hair received from other sources, or due to probable error of observation. In like manner the green and light-brown eyes of the middle column of the table decrease in number, or in other words become darker, and are transferred to the next column (dark eyes and dark hair) as age advances, from 15 per cent. at the first five years to 6 per cent. at forty-five years of age. The fifth column (dark eyes and hair) increases at the expense of the two adjoining columns from 15.5 per cent. at three and four years to 36 per cent. at twenty-nine years, after which age the percentage falls off very rapidly on account of the earlier accession of grey hair in the dark than the fair complexion of the first column, to which the higher percentages become transferred. The low percentage of dark complexion at ages from forty to seventy years does not arise from the elimination of this complexion by advancing age, or by death, but from the fault of the observers not having recorded the original colour of the hair before it became grey, which necessitated the rejection of all such returns in drawing up the table.

50. The table referring to females shows that darkening of the hair and eyes takes place to a much less extent amongst them than among males, and that there is little disposition for the dark hair to turn grey with advancing age. For corresponding periods to those applied to males, the fair-complexioned females in the first column lose 3.8 per cent. of their number, while the second column receives an accession of dark hair of 4.7 per cent. The dark-complexioned (dark eyes and hair) females in the fifth column increase by 8.6 per cent., at the sole expense of the sixth column, by the darkening of the hair. Unlike the males, the column showing the neutral eyes somewhat increases instead of decreases; and this increase appears to have come from the column containing the fair eyes and red hair, or it may be attributed to the difference in the 'colour equation' of some of the observers—women being much more critical, and therefore less consistent, than men in the definition of colours.

NOTE.—Dr. Beddoe proposes the use of indices of nigrescence for the classification of the colour of hair and eyes. 'That for the hair is got by subtracting the fair and the red from the dark hair plus twice the black, leaving out the neutral browns, thus:—

$$2 \text{ Black (N)} + \text{Dk. Br.} - \text{Fair} - \text{Red} = \text{Index.}$$

The black hair is doubled, because its occurrence shows a much greater tendency to melanosity. The index for the eyes is got by subtracting the light from the dark and neglecting the neutral shades, thus:—

$$\text{Dark} - \text{Light} = \text{Index.}'$$



## CHILDREN AND ADULTS OF BOTH SEXES.

51. A large portion of the statistics collected by the Committee refer to children, and these, together with those referring to the adults already considered in the early part of this Report, have been arranged in Tables XV. to XXV. to show the influence of age, sex, nurture, occupation, and sanitary surroundings on the physical development of the British population. The children are chiefly those of English parents, as few returns have been received from other parts of the kingdom. All classes of the community are represented, from the upper and professional classes whose children attend the Public Schools, like Eton, Marlborough, and Radley, to the poorest town population, whose children are found in the public elementary (or Board) schools, charitable institutions, and industrial schools. The adults also include all classes, from the Universities of Oxford and Cambridge, to town labourers and factory operatives.

52. In deciding upon the arrangement for practical purposes of returns so varied in their origin, and yet consisting in so large a proportion of information derived from special sources, the first consideration has been to establish a classification of the returns according to the *media*, or influences which have been instrumental in differentiating one class from another. The Committee has adopted the subjoined scheme, prepared by Mr. Roberts, and first brought before the Association in a paper read in the Anthropological Section in 1878. It is based on the principle of collecting into a standard class as large a number of cases as possible which imply the most favourable conditions of existence in respect to fresh air, exercise, and wholesome and sufficient food—in one word, nurture—and specialising into classes which may be compared with this standard those which depart more or less from the most favourable condition. By this means, in respect to social condition, the influence of mental and manual work; in respect to nurture, the influence of food, clothing, &c., on development; in respect to occupation, the influence of physical conditions; and in respect to climate and sanitary conditions, the influence of town and country life may be determined.

53. The classification has been constructed on the physiological and hygienic laws which are familiar to the students of sanitary science, and on a careful comparison of the measurements of different classes of the people, and especially of school children of the age of from eleven to twelve years. This age has been selected as particularly suited to the study of the *media*, or conditions of life, which influence the development of the human body, as it is subject to all the wide and more powerful agencies which surround and divide class from class, but is yet free from the disturbing elements of puberty and the numerous minor modifying influences, such as occupation, personal habits, &c., which in a measure shape the physique of older boys and adults. The data on which the classification has been based are given below. The most obvious facts which the figures disclose are the check which growth receives as we descend lower and lower in the social scale, and that a difference of five inches exists between the average statures of the best and the worst nurtured classes of children of corresponding ages, and of  $3\frac{1}{2}$  inches in adults.

2 vol.



TABLE XII.—Classification of the British Population according to *Media*—Occupation and other conditions of life.

Social Condition.*—Non-labouring Classes.			Labouring Classes		
Nurture.†—Very Good		Good	Imperfect		Bad
Professional Classes † (Upper and Upper Middle Classes) 4·46 per cent.		Commercial Class (Lower Mid. Classes) 10·36 per cent.	Labourers 47·46 per cent.	Artisans 26·82 per cent.	Industrial Classes (Sedentary Trades) 10·90 per cent.
Out-door § Country	In-door Towns	In-door Towns	Out-door Country	In-door Towns	In-door Towns
Country- gentlemen. Gentlemen- farmers. Officers of Army and Navy.	CLASS I.	CLASS II. Teachers in Ele- mentary Schools. Clerks. Shopkeepers. Shopmen. Dealers in " Drugs. " Books. " Wool. " Silk. " Cotton. " Foods. " Drinks. " Furniture. " Metals. " Glass. " Earthen- ware. " Fuel, &c.	CLASS III. Labourers and Workers on Agricul- ture. " Gardens. " Roads. " Railways. " Quarries. Navvies. Porters. Guards. Woodmen. Brickmakers.	CLASS IV. Workers in " Wood. " Metal. " Stone. " Leather. " Paper. " &c. Engravers. Photographers. Printers. &c.	CLASS V. Factory Opera- tives. Tailors. Shoemakers. &c.
			CLASS VI. Policemen. Fire Brigade. Soldiers. Recruits. Lunatics. Criminals. Industrial- schools.		

\* Social Condition ; (influences of leisure, mental and manual labour).

† Nurture ; (influences of food, clothing, nursing, domestic surroundings, &amp;c.)

‡ Occupation ; (influences of external physical conditions, exercise, &amp;c.) Percentage of male population, including male children (Census of 1871).

§ Climatic and sanitary surroundings.



TABLE XIII.—Table showing the RELATIVE STATURES of Boys of the age of 11 to 12 years, under different social and physical conditions of life. The zigzag line running through the *means* shows the degradation of stature as the boys are further and further removed from the most favourable conditions of growth.

Height in inches	Total No. of Observations	Public Schools	Middle-class Schools		Elementary Schools				Military Asylums	Industrial Schools	
			Country	Upper — Towns	Lower — Towns	Agricultural Labourers — Country	Artisans — Towns	Factories and Work- shops			
								Country			Towns
60-	6	2	—	3	3	—	1	—	—	—	
59-	16	2	3	9	5	2	2	—	—	—	
58-	35	9	9	8	8	5	0	—	—	—	
57-	66	11	17	13	4	4	4	5	7	1	
56-	118	21	23	27	14	14	4	10	3	—	
55-	230	28	35	57	32	32	15	13	17	—	
54-	329	33	53	68	47	47	24	36	20	2	
53-	361	15	55	58	47	47	26	34	38	4	
52-	441	14	37	61	58	58	36	52	59	6	
51-	370	6	25	40	61	58	28	45	57	10	
50-	367	7	23	27	40	36	17	46	61	11	
49-	252	2	8	20	27	32	12	31	40	—	
48-	132	—	3	1	20	14	4	11	20	10	
47-	102	—	3	4	1	7	7	5	13	6	
46-	22	—	—	—	4	5	1	3	7	3	
45-	12	—	—	—	—	1	—	—	1	1	
44-	1	—	—	—	—	—	—	—	—	—	
43-	1	—	—	—	—	—	—	—	—	—	
42-	1	—	—	—	—	—	—	—	—	—	
Mean	—	—	—	—	—	—	—	—	—	—	
Total	2862	150	294	392	304	181	293	341	840	66	
Average hgt.	52.60	54.98	53.85	53.70	53.01	52.60	52.17	51.56	51.20	50.02	
Mean height	52.5	55.0	54.0	53.5	53.0	52.5	52.0	51.5	51.0	50.0	







*Infants at Birth. Table XV.*

54. The statistics relating to infants at birth have been tabulated separately, because the conditions of measurement differ from those of other children, the stature having been taken in the recumbent position, and the weight without clothing. The parents of the infants were English and Scotch; and although the charitable institutions from which the observations were obtained are situated in London and Edinburgh, persons bred in the country are frequently admitted as inmates, and it is probable, therefore, that the statistics fairly represent the labouring classes. Observations on infants of other classes of society could not be obtained. The statistics refer only to infants presumably born at the full period of gestation, and contain the due proportion of twin births. The table is constructed to show the relative stature and weight of each infant, and the differences between the sexes.

55. The table is one of great interest to the student examining the physical development and the physical improvement of a race, as it presents the materials with which he has to deal in its earliest and simplest form. According to this table the average length of male infants is 19.52 inches, and of females 19.32 inches, showing a difference of only one-fifth of an inch. The average naked weight of male infants is 7.12 lbs., and of females 6.94 lbs., a difference of about 3 ounces in favour of males. The range of height between the tallest and shortest male infants is 10 inches, while that of boys of 15 years, when the disturbing influences of puberty are present, is 27 inches. This wide range in adolescence becomes contracted in adults to 20 inches. The range of height of female infants is two inches less than that of male infants, which may be due to accidental causes, but which suggests a less disposition to variation in the size in females than in males,<sup>1</sup> and which may be the cause of the greater freedom of female infants from accidents at the time of birth. It has been ascertained that still births occur in this country in the proportion of 140 males to 100 females, and this higher death-rate of male infants has been attributed to their greater size. We have no statistics of the size or weight of still-born infants, although they could be more easily obtained than those of living infants, but the table before us would seem to confirm this view, as the largest surviving infants are those of males. It would appear, therefore, that the physical (and most probably the mental) proportions of a race, and their uniformity within certain limits, are largely dependent on the size of the female pelvis, which acts as a gauge, as it were, of the race, and eliminates the largest infants, especially those with large heads (and presumably more brains), by preventing their survival at birth.<sup>2</sup>

<sup>1</sup> The greater disposition to vary in range of stature of males than females has been already referred to in the Report of the Committee for 1880, p. 141, in connection with Sir Rawson Rawson's analysis of the successive annual measurements of 12 boys and 13 girls made by Professor Bowditch, of Harvard, United States. 'A marked feature in the charts when compared together is the greater regularity and parallelism of the growth of the girls, especially at the earlier periods of life.'

<sup>2</sup> To ascertain if there is any difference between the circumference of the skull as compared with that of the pelvis in adults of very different races of man, Mr. Roberts has measured the skulls and pelves of some European and Andamanese







*Growth of Children of both Sexes.*

56. Tables XVI. to XXII. show the growth of children of four of the five classes into which the returns have been divided. Class I. comprises the upper and professional classes and their children, and it may be accepted as representing the best physique of this country, and used as a standard with which to compare all other classes. According to the census of 1871 this class constitutes 4·46 per cent. of the population. Class II. consists of the commercial classes, such as clerks and shopkeepers and their children, whose occupations are carried on in towns, and for the most part indoors, and therefore under less favourable conditions to healthy development than the constituents of Class I. Class II. comprises 10·36 per cent. of the population. Class III. represents the labouring classes, such as agricultural labourers, fishermen, miners, and others who follow outdoor healthy occupations, but whose nurture is inferior to the two former classes. This class comprises 47·46 per cent. or nearly half the population of the country. Class IV. represents the mass of our town population engaged as artisans. Their trades, being carried on indoors, and requiring less physical exercise than Class III., place them under less favourable conditions as to sanitary surroundings. This class forms 26·82 per cent., or about a fourth of the population. Class V., comprising persons living in towns and following sedentary occupations under the most unfavourable conditions as to nurture and sanitary surroundings, has been omitted from the tables, as sufficient data have not been received to fairly represent it. This class constitutes 10·90 per cent. of the population.

57. The average stature and weight of each of the four classes have been worked out from the number of observations for each class, but as the several classes constitute different proportions of the general population the average representing the 'general population' has not been worked out from the total number of observations, but is the average of

skeletons in the Museum of the Royal College of Surgeons, with the following results:—

	Stature. Metres.	Average circum- ference of Pelvis. m.m.	Average circum- ference of Head. m.m.	Ratio of Pelvis to Head.
1 European female . . .	1·592	430	500	1 to 1·16
6 European males . . .	1·712	410	530	1-1·29
Female pelvis . . .		430 Male head	530	1-1·23
10 Andamanese females . .	1·408	348	462	1-1·33
7 Andamanese males . . .	1·492	337	477	1-1·42
Female pelvis . . .		348 Male head	477	1-1·37

Only one European female skeleton was available for these measurements, but it appeared to be in every respect a normal one.

From these measurements it is obvious that the difference between the circumference of the head and the pelvis in the adult is much less in the large European than in the small Andaman race, and it is not improbable that the relatively small pelvis of the female Andamanese has been instrumental, in some measure, in differentiating that diminutive race. It is probably in this direction we must look for an explanation of the degenerating influences of town life and sedentary occupations, as they, together with the new movement for the higher education of women, favour the productions of large heads and imperfectly developed bodies of women in this and other civilised countries, and a corresponding disproportion between the size of the head and the circumference of the pelvis.



the other four averages, and it is therefore the average of the four classes rather than of all the individuals measured and weighed. The observations referring to adults are fairly representative of the general population as they were received from all parts of the country; but those referring to children were received from schools devoted to the education of special classes of society, and in numbers which did not correspond with their respective percentage proportion of the general population. By adopting the average of the averages of the four classes into which the school children have been distributed according to the occupations of their parents, the inequality of the percentage proportion has been eliminated. Tables and a diagram showing the *mean* stature, weight, chest-girth, and strength of males, as deduced from all the observations collected by the Committee, are given in the Report of 1881.

58. Tables (XIII., XIV.) have already been given (s. 53) which show the falling off in the average stature of children of the age 11–12 years, and of adults of the age 25–30 years, as the conditions under which they live are less and less favourable to healthy physical development. The children vary to the extent of five inches, and the adults to  $3\frac{1}{2}$  inches, and corresponding variations occur in the weights and other physical qualities.

59. Plate X. shows the growth in stature, weight, and strength of individuals of both sexes, and the girth of chest, head, arm, and leg of males as far as they have been recorded in the returns received by the committee. The tracings are made from the *averages* in the column representing the general population. Similar tracings of the standard class (males) having been given in the Report for 1880.

60. An examination of the curves and tables shows the following facts:—

(1) Growth is most rapid during the first five years of life; the observations, however, at those ages are not sufficient in number or variety to give a trustworthy average.

(2) From birth to the age of five years the rate of growth is the same in both sexes, girls being a little shorter in stature and lighter in weight than boys.

(3) From 5 to 10 years boys grow a little more rapidly than girls, the difference being apparently due to a check in the growth of girls at these ages.

(4) From 10 to 15 years girls grow more rapidly than boys, and at the ages  $11\frac{1}{2}$  to  $14\frac{1}{2}$  are actually taller, and from  $12\frac{1}{2}$  to  $15\frac{1}{2}$  years actually heavier than boys. This difference appears to be due to a check in the growth of boys as well as an acceleration in the growth of girls incident on the accession of puberty.

(5) From 15 to 20 years boys again take the lead, and grow at first rapidly, and gradually slower, and complete their growth at about 23 years. After 15, girls grow very slowly, and attain their full stature about the 20th year.

(6) The tracings and tables show a slow but steady increase in stature up to the 50th year, and a more rapid increase in weight up to the 60th year in males, but the statistics of females are too few after the age of 23 to determine the stature and weight of that sex at the more advanced periods of life.

(7) The curve of the chest-girth in males shows an increase at a rate similar to that of the weight up to the age of 50 years, but it appears to have no definite relation to the curve of stature.

(8) The strength of males increases rapidly from 12 to 19 years, and



at a rate similar to that of the weight; more slowly and regularly up to 30 years, after which it declines at an increasing rate to the age of 60 years. The strength of females increases at a more uniform rate from 9 to 19 years, more slowly to 30, after which it falls off in a manner similar to that of males. The curves of strength for the two sexes are not parallel: at 11 years females are weaker than males by 22 lbs., at 20 years of age by 36 lbs.

*The Period of Maturity in Man.*

61. The Tables do not show distinctly at what period man attains his full stature, and much difference of opinion exists on this subject. Some French writers (Barnard, Allaire, &c.) maintain that growth in height goes on until the 32nd or 35th year, and Dr. Baxter arrives at the same conclusion from the statistics of the United States Army; while most English writers (Danson, Aitken, Roberts, &c.) regard the 25th as the year of mature growth, and Dr. Beddoe places it as early as the 23rd year, admitting, however, that a slight increase may take place after this age. The difference of opinion on this subject arises, no doubt, from the faulty method of relying on the measurements of many different individuals, instead of measuring the same individuals from year to year until growth ceases. The elimination of the weak and ill-developed by death, the difficulty of following the same class, and all the members of the class, through successive years, and the selection of special classes (*i.e.* recruits whose ages are never certain), invalidate all conclusions as to the period of maturity drawn from statistics of measurements of many different persons; but, allowing for these sources of error, and judging by the run of the curves formed by the means and averages, it is probable that little actual growth takes place after the age of 21, and that it entirely ceases by the 25th year. It is evident, moreover, from Table XVI., that the full stature is attained earlier in the well-fed and most favoured class (Class I.) than in the ill-fed and least favoured classes of the community (Class IV.). *note*

62. It is difficult to understand, moreover, how any increase of stature can take place after the bones of the skeleton have become consolidated, and the epiphyses firmly united to the body of their respective bones; and the last of these unions in the long bones, on which the stature depends, occurs about the 23rd year. In adopting the 23rd year for men and the 20th for women as the ages of the attainment of maturity the committee was influenced by these considerations, and a desire to understate rather than overstate its case, and to embrace as large a number of observations as possible in its tables. In inquiries of this kind there is generally a slight amount of unconscious selection, very small persons being passed over, or having objections to being measured; and any deficiency of this kind will be balanced by the loss of growth which may occur after the age of 23 years. Females attain to maturity earlier than males, and the age of full growth has been fixed three years earlier for them.

*Influence of Advancing Age.*

63. The maintenance of the stature throughout life as shown by Table XVI. is a new and unexpected fact, but it is probably due to the survival of the taller and better developed members of the population, and the elimination by disease or death of the smaller and feebler ones. Quetelet



TABLE XVI.—Showing the Average STATURE (without shoes), at all Ages, of different Classes of the Population of Great Britain.

*Males.*

Age last Birth-day	General Population. All Classes. Town and Country			Class I. Professional Classes. Town and Country			Class II. Commercial Classes. Towns			Class III. Labouring Classes. Country			Class IV. Artisans. Towns		
	No. Obs.	Average Height. Inches.	Increase. Inches.	No. Obs.	Average Height. Inches.	Increase. Inches.	No. Obs.	Average Height. Inches.	Increase. Inches.	No. Obs.	Average Height. Inches.	Increase. Inches.	No. Obs.	Average Height. Inches.	Increase. Inches.
Birth	451	19.52	—	—	—	—	—	—	—	—	—	—	451	19.52	—
0-1	2	27.00	—	—	—	—	—	—	—	2	—	—	—	—	—
1-	1	33.50	—	—	—	—	—	—	—	1	—	—	—	—	—
2-	5	33.70	—	—	—	—	—	—	—	5	—	—	—	—	—
3-	35	36.82	—	—	—	—	—	—	—	22	37.41	—	11	36.23	—
4-	107	38.46	1.64	—	—	—	—	—	—	19	39.30	1.89	88	37.63	1.40
5-	201	41.03	2.57	—	—	—	—	—	—	34	42.35	3.05	167	39.72	2.09
6-	266	44.00	2.97	—	—	—	1	45.50	—	34	44.59	2.24	231	41.90	2.18
7-	307	45.97	1.97	—	—	—	4	47.50	—	39	45.81	1.22	264	44.60	2.70
8-	1524	47.05	1.08	—	—	—	61	47.60	—	324	47.09	1.28	1139	46.46	1.86
9-	2278	49.70	2.65	22	50.80	—	211	50.03	2.43	485	49.11	2.02	1560	48.88	2.42
10-	1551	51.84	2.14	101	53.69	2.89	331	52.04	2.01	783	50.93	1.82	336	50.72	1.84
11-	1766	53.50	1.66	242	55.23	1.54	687	53.76	1.72	597	52.32	1.39	240	52.68	1.96
12-	1981	54.99	1.49	490	57.29	2.06	902	55.29	1.53	395	53.67	1.35	194	53.72	1.04
13-	2743	56.91	1.92	869	59.08	1.79	857	57.43	2.14	403	55.31	1.64	614	55.81	2.09
14-	3428	59.33	2.42	966	61.29	2.21	800	59.47	2.04	9	57.94	2.63	1653	58.61	2.80
15-	3498	62.24	2.91	974	63.61	2.32	544	62.19	2.72	515	61.82	3.88	1465	61.36	2.75
16-	2780	64.31	2.07	1102	66.23	2.62	110	64.55	2.36	177	63.62	1.80	1391	62.85	1.49
17-	2745	66.24	1.93	1852	67.81	1.58	107	66.59	2.04	75	65.87	2.25	711	64.70	1.85
18-	2305	66.96	.72	1724	68.26	.45	62	67.44	.85	148	66.53	.66	371	65.60	.90
19-	1434	67.29	.33	951	68.8	.32	63	67.55	.11	143	66.87	.34	277	66.17	.57
20-	880	67.52	.23	461	69.08	—	61	67.58	.03	183	66.93	.06	175	66.50	.33
21-	757	67.63	.11	364	68.70	.12	51	67.79	.21	177	67.15	.22	165	66.55	.05
22-	558	67.68	.05	227	68.94	—	53	67.82	.03	169	67.35	.20	109	66.60	.05
23-	592	67.48	—	114	68.73	.03	59	67.42	—	274	67.38	.03	145	66.40	—
24-	517	67.73	.05	57	68.82	.09	62	68.09	.27	258	67.47	.09	140	66.55	—
25-	1576	67.80	.07	107	69.14	.32	47	67.93	—	218	67.52	.05	92	66.40	—
26-							47	68.07	—	194	67.46	—	74	66.46	—
27-							27	68.13	.04	162	67.76	.24	66	66.67	.07
28-							33	67.65	—	208	67.31	—	59	66.65	—
29-							26	67.96	—	163	67.54	—	53	66.82	.15
30-35	1886	68.00	.20	52	69.61	.37	85	67.70	—	745	67.59	—	180	66.65	—
35-40							82	68.07	—	631	67.62	—	111	67.08	.26
40-50	1148	67.96	—	46	69.38	—	79	68.09	—	943	67.56	—	80	66.80	—
50-60	198	67.92	—	13	69.50	—	16	67.69	—	147	68.06	.30	22	66.45	—
60-70	44	67.41	—	5	69.10	—	3	66.16	—	34	67.88	—	2	66.50	—
70-	12	69.22	1.22	—	—	—	1	68.50	—	11	69.95	1.89	—	—	—
Total Obs.	37574	—	—	10739	—	—	5472	—	—	8727	—	—	12636	—	—



TABLE XVII.—Showing the Average STATURE (without shoes), at all Ages, of different Classes of the Population of Great Britain.

*Females.*

Age last Birth-day	General Population. All Classes. Town and Country			Class I. Professional Classes. Town and Country			Class II. Commercial Classes. Towns			Class III. Labouring Classes. Country			Class IV. Artisans. Towns		
	No. Obs.	Average Height. Inches	Increase. Inches	No. Obs.	Average Height. Inches	Increase. Inches	No. Obs.	Average Height. Inches	Increase. Inches	No. Obs.	Average Height. Inches	Increase. Inches	No. Obs.	Average Height. Inches	Increase. Inches
Birth	466	19.31	—	—	—	—	—	—	—	—	—	—	466	19.31	—
0-1	6	24.83	5.52	—	—	—	—	—	—	—	—	—	6	24.83	5.52
1-	9	27.50	2.67	—	—	—	1	28.50	—	—	—	—	7	27.38	2.55
2-	6	32.33	4.83	—	—	—	—	—	—	—	—	—	6	32.00	4.62
3-	43	36.23	3.90	—	—	—	11	37.68	—	8	36.78	—	24	35.33	3.33
4-	99	38.26	2.03	—	—	—	12	38.50	.82	19	38.97	2.19	68	37.30	1.97
5-	157	40.55	2.29	—	—	—	10	40.00	1.50	43	41.87	2.90	104	39.77	2.47
6-	189	42.88	2.33	—	—	—	14	42.50	2.50	44	43.43	1.56	131	41.84	2.07
7-	173	44.45	1.57	—	—	—	30	44.43	1.93	47	45.35	1.92	96	43.56	1.72
8-	432	46.60	2.15	—	—	—	18	47.16	2.73	119	47.10	1.75	295	45.55	1.99
9-	499	48.73	2.13	—	—	—	42	49.90	2.74	175	48.93	1.83	282	47.36	1.81
10-	480	51.05	2.32	11	53.41	—	52	51.44	1.54	149	50.40	1.47	268	48.96	1.60
11-	441	53.10	2.05	22	55.04	1.63	87	53.33	1.89	115	52.48	2.08	217	51.54	2.58
12-	225	55.66	2.56	23	57.41	2.37	87	55.68	2.35	22	55.59	3.11	93	53.98	2.44
13-	206	57.77	2.11	68	59.03	1.62	66	58.47	2.79	14	57.36	1.77	58	56.22	2.24
14-	240	59.80	2.03	79	60.78	1.75	86	60.62	2.15	12	59.16	1.80	63	58.56	2.34
15-	201	60.93	1.13	70	62.11	1.33	98	61.28	.66	—	—	—	33	59.41	0.85
16-	136	61.75	.82	49	62.54	.43	82	61.56	0.28	—	—	—	5	61.16	1.75
17-	88	62.52	.77	20	62.83	.29	68	62.22	.66	—	—	—	—	—	—
18-	62	62.44	—	25	62.84	.01	37	62.05	—	—	—	—	—	—	—
19-	98	62.75	.23	48	63.40	.56	50	62.10	—	—	—	—	—	—	—
20-	130	62.98	.23	59	63.39	—	71	62.58	.36	—	—	—	—	—	—
21-	60	63.03	.05	24	63.63	.23	36	62.44	—	—	—	—	—	—	—
22-	53	62.87	—	13	63.53	—	40	62.22	—	—	—	—	—	—	—
23-	24	63.01	—	13	63.42	—	11	62.66	.08	—	—	—	—	—	—
24-	21	62.70	—	5	63.60	—	—	—	—	—	—	—	16	61.81	.65
25-30	43	62.02	—	19	62.97	—	—	—	—	—	—	—	24	61.08	—
30-35	30	61.15	—	8	63.25	—	—	—	—	—	—	—	—	—	—
35-4				—	—	—	—	—	—	—	—	—	11	60.90	—
40-5				—	—	—	—	—	—	—	—	—	5	60.60	—
50-60				—	—	—	—	—	—	—	—	—	1	61.50	—
60-70				—	—	—	—	—	—	—	—	—	2	60.50	—
70-	—	—	—	—	—	—	—	—	—	—	—	—	3	60.16	—
Total Obs.	4616	—	—	556	—	—	1009	—	—	767	—	—	2284	—	—



TABLE XVIII.—Showing the Average WEIGHT (including clothes), at all Ages, of different Classes of the Population of Great Britain.

*Males.*

Age last Birth-day	General Population. All Classes. Town and Country			Class I. Professional Classes. Town and Country			Class II. Commercial Classes. Towns.			Class III. Labouring Classes. Country			Class IV. Artisans. Towns		
	No. Obs.	Average Weight. Pounds.	Increase. Pounds.	No. Obs.	Average Weight. Pounds.	Increase. Pounds.	No. Obs.	Average Weight. Pounds.	Increase. Pounds.	No. Obs.	Average Weight. Pounds.	Increase. Pounds.	No. Obs.	Average Weight. Pounds.	Increase. Pounds.
Birth	451	7.1	—	—	—	—	—	—	—	—	—	—	451	7.1	—
0-1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2-	2	32.5	—	—	—	—	—	—	—	2	32.5	—	—	—	—
3-	41	34.0	1.5	—	—	—	—	—	—	11	33.1	—	30	35.0	—
4-	102	37.3	3.3	—	—	—	1	37.5	—	15	35.8	2.7	86	38.6	3.6
5-	193	39.9	2.6	—	—	—	—	—	—	29	38.9	3.1	164	40.9	2.3
6-	224	44.4	4.5	—	—	—	—	—	—	35	44.2	5.3	189	44.6	3.7
7-	246	49.7	5.3	—	—	—	4	51.3	3.8	37	47.2	3.0	205	50.7	6.1
8-	820	54.9	5.2	—	—	—	63	55.5	4.2	286	54.8	7.6	471	54.3	3.6
9-	1425	60.4	5.5	—	—	—	211	62.3	6.8	415	60.5	5.7	799	58.3	4.0
10-	1464	67.5	7.1	92	74.0	—	370	65.2	2.9	721	67.0	6.5	281	64.0	5.7
11-	1599	72.6	4.5	185	78.7	4.7	686	68.0	2.8	553	72.2	5.2	175	69.0	5.0
12-	1786	76.7	4.7	369	84.9	6.2	905	73.2	5.2	366	75.9	3.7	146	73.0	4.0
13-	2443	82.6	5.9	621	91.6	6.7	854	80.1	6.9	328	79.7	3.8	640	79.0	6.0
14-	2952	92.0	9.4	748	102.2	10.6	799	89.5	9.4	9	89.2	9.5	1396	87.3	8.3
15-	3118	102.7	10.7	652	114.3	12.1	344	99.4	9.9	676	100.6	11.4	1446	96.4	9.1
16-	2235	119.0	16.3	834	129.5	15.2	55	117.2	17.8	169	117.2	16.6	1177	112.2	15.8
17-	2496	130.9	11.9	1705	141.7	12.2	38	128.8	11.6	80	131.5	14.3	673	121.5	9.3
18-	2150	137.4	6.5	1638	146.4	4.7	39	135.1	6.3	135	138.7	7.2	338	129.3	7.8
19-	1438	139.6	2.2	940	148.5	2.1	69	138.6	3.5	140	140.2	1.5	289	131.1	1.8
20-	851	143.3	3.7	451	152.4	3.9	52	140.1	1.5	175	144.3	4.1	173	136.4	5.3
21-	738	145.2	1.9	365	152.7	.3	52	143.9	3.8	164	147.8	3.5	157	136.2	—
22-	542	146.9	1.7	215	152.8	.1	51	145.5	1.6	167	150.6	2.8	109	138.6	2.2
23-	551	147.8	.9	112	151.5	—	57	146.8	1.3	279	152.8	2.2	103	140.2	1.6
24-	483	148.0	.2	56	149.6	—	57	147.1	.3	250	151.9	—	120	143.4	3.2
25-	1522	152.3	4.3	115	156.3	3.5	45	148.5	1.4	224	154.1	1.3	61	139.9	—
26-							46	154.1	5.6	192	154.1	—	58	142.2	—
27-							26	149.2	—	171	156.7	2.6	56	146.9	3.5
28-							33	156.1	2.0	213	155.1	—	50	148.0	1.1
29-							26	154.3	—	161	158.0	1.3	46	148.1	.1
30-35	964	159.8	7.5	24	171.5	15.2	87	158.5	2.4	700	159.2	1.2	153	150.1	2.0
35-40	840	164.3	4.5	24	173.5	—	80	166.6	8.1	631	160.5	1.3	105	156.5	6.4
40-50	1140	163.3	—	44	172.5	1.0	72	168.6	2.0	911	162.0	1.5	113	151.7	—
50-60	179	166.1	1.8	13	174.5	2.0	16	173.4	4.8	129	170.9	8.9	21	145.6	—
60-70	35	158.1	2.0	5	164.5	—	3	165.7	—	24	170.9	—	3	150.8	—
70-	12	182.1	—	—	—	—	1	189.0	—	11	175.3	4.4	—	—	—
Total Obs.	33043	—	—	9208	—	—	5142	—	—	8409	—	—	10284	—	—



TABLE XIX.—Showing the Average WEIGHT (including clothes), at all Ages, of different Classes of the Population of Great Britain.

*Females.*

Age last Birth-day	General Population. All Classes. Town and Country			Class I. Professional Classes. Town and Country			Class II. Commercial Classes. Towns only			Class III. Labouring Classes. Country only			Class IV. Artisan Classes. Towns only		
	No. Obs.	Average Weight. Pounds	Increase. Pounds	No. Obs.	Average Weight. Pounds	Increase. Pounds	No. Obs.	Average Weight. Pounds	Increase. Pounds	No. Obs.	Average Weight. Pounds	Increase. Pounds	No. Obs.	Average Weight. Pounds	Increase. Pounds
Birth	466	6.9	—	—	—	—	—	—	—	—	—	—	466	6.9	—
0-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1-	8	20.1	—	—	—	—	1	22.5	—	—	—	—	7	19.6	12.7
2-	9	25.3	5.2	—	—	—	—	—	—	—	—	—	9	25.3	5.7
3-	30	31.6	6.3	—	—	—	11	30.9	—	8	33.0	—	22	30.8	5.5
4-	97	36.1	4.5	—	—	—	12	37.9	7.9	17	34.6	1.6	68	35.8	5.0
5-	160	39.2	3.1	—	—	—	18	38.8	0.9	44	38.4	3.8	108	40.3	4.5
6-	178	41.7	2.5	—	—	—	13	41.4	2.6	43	40.5	2.1	122	43.1	2.8
7-	148	47.5	5.8	7	51.8	—	31	45.4	4.0	42	46.8	6.3	99	46.2	3.1
8-	330	52.1	4.6	6	52.5	.7	12	52.5	7.1	140	51.9	5.1	172	51.8	5.6
9-	535	55.5	3.4	17	55.4	2.9	23	55.0	2.5	209	56.5	4.6	286	55.2	3.4
10-	495	62.0	6.5	37	62.9	7.5	23	62.9	7.9	171	61.8	5.3	264	60.5	5.3
11-	456	68.1	6.1	61	69.9	7.0	41	68.5	5.6	130	67.1	5.3	224	66.8	6.3
12-	419	76.4	8.3	55	79.7	9.8	55	77.3	8.8	126	75.7	8.6	183	74.9	8.1
13-	209	87.2	10.8	63	89.8	10.1	60	88.2	10.9	21	84.0	8.3	65	84.9	10.0
14-	229	96.7	9.5	75	98.8	9.0	81	96.3	8.1	12	94.0	10.0	61	97.7	12.8
15-	187	106.3	9.6	60	107.3	8.5	91	104.1	7.8	—	—	—	36	107.6	9.9
16-	128	113.1	6.8	49	113.9	6.6	75	112.2	8.1	—	—	—	—	—	—
17-	74	115.5	2.4	14	116.8	2.9	59	114.3	2.1	—	—	—	—	—	—
18-	64	121.1	5.6	26	123.1	6.3	38	119.1	4.8	—	—	—	—	—	—
19-	97	123.8	2.7	47	125.5	2.4	50	122.1	3.0	—	—	—	—	—	—
20-	128	123.4	.6	58	126.6	1.1	70	120.3	—	—	—	—	—	—	—
21-	59	121.8	—	23	125.3	—	36	118.3	—	—	—	—	—	—	—
22-	53	123.4	—	14	122.8	—	37	124.1	2.0	—	—	—	—	—	—
23-	29	124.1	.7	12	128.7	2.1	16	119.4	—	—	—	—	—	—	—
24-	19	120.8	—	5	120.5	—	—	—	—	—	—	—	—	—	—
25-30	43	120.0	—	19	119.1	—	—	—	—	—	—	—	—	—	—
30-35	23	120.8	—	8	120.6	—	—	—	—	—	—	—	—	—	—
35-40															
40-45	9	118	—	—	—	—	—	—	—	—	—	—	—	—	—
45-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
50-60	3	104	—	—	—	—	—	—	—	—	—	—	—	—	—
60-70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
70-	3	106.0	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Obs.	4685	—	—	656	—	—	853	—	—	963	—	—	2192	—	—

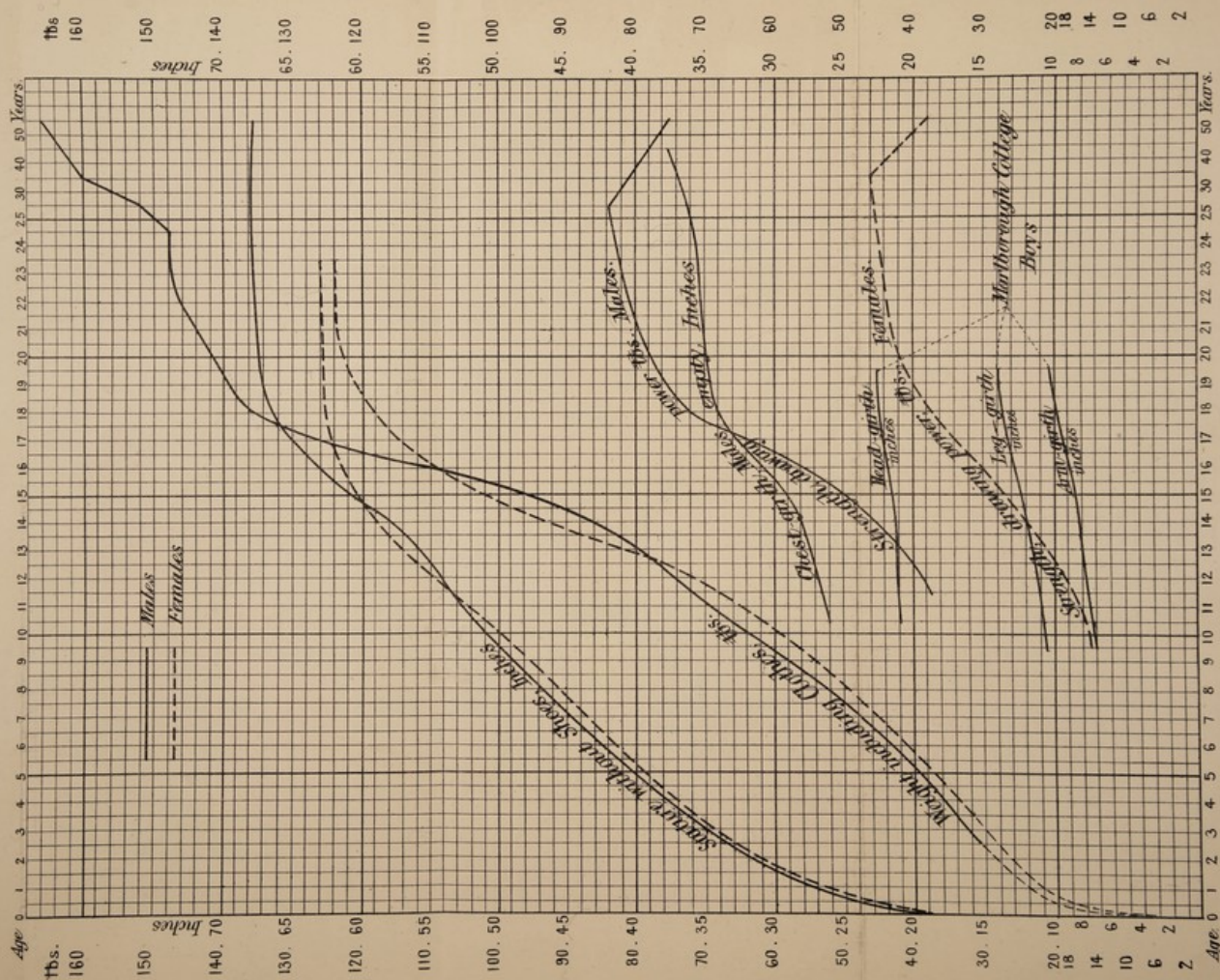


TABLE XX.—Summary Table showing the average STATURE, WEIGHT, and their relation

Age last birth-day	Height without shoes, in inches		Weight with clothes, in lbs.		Chest-girth, empty, in inches		Strength: drawing-power, in lbs.		Span of arms across the back, in inches		Ratio: weight divided by height		Ratio: weight divided by chest-girth	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Birth	19.52	19.31	7.1	6.9	13.25	12.65	—	—	—	—	—	—	—	—
0-1	27.00	24.83	—	—	—	—	—	—	—	—	—	—	—	—
1-2	33.50	27.50	—	—	—	—	—	—	—	—	—	—	—	—
2-	33.70	32.33	32.5	—	—	—	—	—	—	—	.96	—	—	—
3-	36.82	36.05	34.0	31.9	—	—	—	—	—	—	.92	0.87	—	—
4-	38.46	38.13	37.3	35.5	—	—	—	—	—	—	.99	.93	—	—
5-	41.03	40.82	39.9	39.6	—	—	—	—	—	—	.97	.97	—	—
6-	44.00	42.63	44.4	42.4	—	—	—	—	—	—	1.01	1.00	—	—
7-	45.97	44.45	49.7	46.7	—	—	—	—	43.10	45.83	1.08	1.05	—	—
8-	47.05	46.60	54.9	52.2	—	—	—	17.5	47.56	46.50	1.16	1.12	—	—
9-	49.70	48.73	60.4	55.5	—	—	—	15.0	49.07	48.39	1.22	1.14	—	—
10-	51.84	51.05	67.5	62.0	26.10	—	—	15.1	50.64	49.92	1.30	1.21	2.59	—
11-	53.50	53.10	72.0	68.1	26.53	—	37.5	17.6	51.98	52.41	1.35	1.28	2.72	—
12-	54.99	55.66	76.7	76.4	27.20	—	38.7	18.8	54.03	55.04	1.39	1.37	2.82	—
13-	56.91	57.77	82.6	87.0	28.03	—	44.2	22.3	55.51	58.06	1.45	1.51	2.95	—
14-	59.33	59.80	92.0	96.7	28.46	—	47.0	25.5	57.15	59.04	1.55	1.62	3.23	—
15-	62.24	60.93	102.7	104.8	29.74	—	52.2	29.6	—	60.79	1.65	1.72	3.46	—
16-	64.31	61.75	119.0	112.7	31.53	—	58.2	31.8	—	61.66	1.85	1.82	3.78	—
17-	66.24	62.52	130.9	114.9	33.64	—	67.8	33.9	—	62.52	1.98	1.84	3.89	—
18-	66.96	62.44	137.4	117.7	34.19	—	74.2	38.9	—	62.50	2.05	1.89	4.02	—
19-	67.29	62.75	139.6	123.7	34.49	—	76.4	40.8	—	62.69	2.07	1.97	4.05	—
20-	67.52	62.98	143.3	123.2	34.98	—	77.9	42.0	—	62.49	2.12	1.96	4.09	—
21-	67.63	63.03	145.2	121.2	35.25	—	80.2	41.9	—	62.19	2.15	1.92	4.13	—
22-	67.68	62.87	146.9	124.2	35.33	—	81.7	42.9	—	62.35	2.17	1.97	4.16	—
23-	67.48	63.01	147.8	126.4	35.62	—	79.7	38.5	—	62.36	2.19	2.06	4.15	—
24-	67.72	62.70	148.0	120.6	35.82	—	80.9	39.2	—	62.22	2.19	1.92	4.13	—
25-	67.75	62.02	149.2	120.1	36.18	—	83.5	40.8	—	62.61	2.20	1.94	4.21	—
26-	67.78		151.7								2.23			
27-	67.92		152.3								2.39			
28-	67.70		153.9								2.27			
29-	67.87	61.15	154.2	121.0	37.08	—	77.5	46.2	—	62.10	2.27	1.96	4.37	—
30-	67.89		159.8								2.35			
35-	68.09		164.3								2.41			
40-	67.96		163.1								2.39			
50-	67.92	61.15	166.1	118.6	37.58	—	76.5	38.1	—	60.29	2.44	1.96	4.38	—
60-	67.41		158.1	—	—	—	74.6				2.24			
70-	69.22		182.1	—	—	—	—				2.62			



Diagram showing the Stature, Weight, Chest girth and Strength of both Sexes, at all Ages of the General Population of the United Kingdom.



Illustrating the Report of the Anthropometric Committee.











has stated that man attains his maximum height at the age of 30 years, and maintains it up to 50 years, after which it begins to recede, and at 90 it has lost three inches. This may be, and probably is, true of individuals if measured from year to year, but it does not appear to be true of the population in the aggregate. The loss of stature resulting from the degeneration and loss of tissue, and the stooping position assumed by old people, is more than counterbalanced by the survival of a greater number of individuals who are above the average in height. The uniform increase in the weight and chest-girth throughout adult life also confirms this view.

*Industrial Schools.*

64. The statistics referring to Industrial School children of both sexes are given in a separate form, as illustrating the physique of children bred under the most unfavourable conditions of life. Boys of this class of the age of 14 years are nearly seven inches (6·83) shorter of stature and 24½ lbs. lighter in weight than the 1st or Standard Class of the foregoing tables. The returns sent in by Mr. R. Sutton from the Swinton School, near Manchester, are the most complete in all their details which the Committee has received from any source, and they may be accepted as models of what such returns ought to be.

TABLE XXI.—Comparative Table of Boys and Girls in Industrial Schools.

Age	Number of Observations		Height		Weight		Chest-girth		Span of Arms	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
16—	7	—	inches 57·64	—	lbs. 93·92	—	inches 29·25	—	inches 57·50	—
15—	58	1	55·43	55·50	85·50	67·50	28·30	—	57·17	58·50
14—	102	33	54·46	55·00	77·35	81·25	27·29	—	54·72	54·21
13—	221	58	53·23	52·98	72·31	72·76	26·31	—	52·45	53·60
12—	205	66	51·79	51·16	67·40	68·25	25·85	—	50·10	51·28
11—	158	63	49·11	51·48	63·19	60·96	24·17	—	49·15	49·11
10—	191	60	48·09	47·70	56·76	56·00	23·97	—	47·46	47·21
9—	100	70	47·02	46·44	52·40	52·77	23·30	—	45·30	45·41
8—	69	66	44·61	44·68	47·13	47·79	22·58	—	43·20	43·46
7—	64	45	43·54	42·38	45·70	44·05	22·16	—	41·23	41·95
6—	46	47	41·14	41·15	40·43	40·66	21·95	—	40·30	39·50
5—	37	43	38·63	39·22	36·68	36·98	21·42	—	38·10	38·25
4—	9	19	36·27	37·07	33·61	34·09	20·50	—	35·00	35·90
3—	5	10	34·50	35·50	30·50	32·50	—	—	33·25	32·50
2—	—	11	—	31·95	—	26·77	—	—	—	29·50
1—	—	4	—	27·00	—	16·21	—	—	—	—
6 & under 12 months	—	4	—	26·25	—	16·66	—	—	—	—
0 & under 6 months	1	1	23·50	27·50	11·00	12·50	—	—	—	—
Total	1,273	601								



TABLE XXII.—Statement of the Percentage Proportion in each Class, as regards COLOUR OF EYES AND HAIR, of Boys and Girls, of English Parentage, in Industrial and Workhouse Schools, at each age.

Ages last birthday	Boys						Girls								
	Number of observations	Eyes light, with			Eyes dark, with			Eyes light brown, with light or dark hair	Eyes light, with			Eyes dark, with			Eyes light brown and green, with light or dark hair
		Light hair	Dark hair	Red hair	Dark hair	Fair hair	Red hair		Light hair	Dark hair	Red hair	Dark hair	Fair hair	Red hair	
16	7	per cent. 43.0	per cent. 29.0	per cent. —	per cent. 29.0	per cent. —	per cent. —	per cent. —	per cent. —	per cent. —	per cent. —	per cent. —	per cent. —	per cent. —	per cent. —
15	61	37.7	29.5	5.0	24.6	—	1.6	11.1	11.1	11.1	11.1	—	—	—	11.1
14	89	49.6	18.0	2.2	25.8	1.1	1.1	4.4	8.8	17.4	6.5	2.2	2.2	6.5	6.5
13	182	49.0	10.0	4.4	28.6	0.5	3.7	1.6	13.4	35.6	—	1.6	1.6	6.0	6.0
12	165	47.3	16.0	3.0	20.4	1.8	2.2	7.8	7.8	28.1	—	—	—	6.3	1.6
11	134	47.0	10.5	6.7	24.6	4.5	1.5	5.2	6.6	14.5	4.0	7.9	7.9	5.2	5.2
10	168	50.0	14.3	2.4	27.4	—	3.5	2.4	66	63.7	2.5	—	—	4.5	4.5
9	85	54.1	4.7	1.2	34.1	1.2	4.7	—	69	60.9	2.9	1.4	2.9	—	—
8	57	49.1	3.5	12.3	24.5	1.8	3.5	5.3	57	60.0	1.7	3.3	3.3	7.0	7.0
7	48	54.2	8.3	2.1	33.3	—	—	2.1	37	64.9	5.4	8.1	8.1	—	—
6	31	58.1	6.4	3.2	25.0	—	—	6.4	30	80.0	3.3	6.7	6.7	3.3	3.3
5	31	58.1	6.4	—	32.3	3.2	—	—	24	46.0	12.3	8.3	8.3	—	—
4	9	44.4	—	—	44.4	1	—	—	7	42.7	—	—	—	—	14.2
3	5	60.0	—	—	40.0	—	—	—	4	50.0	—	—	—	—	—
2	—	—	—	—	—	—	—	—	3	66.0	—	—	—	—	—
Total	1,072	49.5	12.1	3.8	26.8	1.6	2.4	3.8	560	56.5	4.3	5.1	25.8	2.7	2.7



TABLE XXIII.—Comparison of Boys and Girls, at different Ages, in Industrial School at Swinton, near Manchester.

Age	No. of Observations		Height		Weight		Chest-girth		Breathing capacity		Strength of arm. Drawing power		Sight. Test dots distinguished at distance of feet	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
			inches	inches	lbs.	lbs.	inches	inches	cubic inches	inches	lbs.	lbs.	ft. in.	ft. in.
14	6	21	55.0	54.4	78.7	80.9	28.3	29.0	189	177	40.0	33.0	27.9	38.1
13	28	27	52.5	51.1	70.0	71.3	26.6	27.3	166	143	37.3	27.6	30.9	37.2
12	41	29	54.0	49.9	65.4	64.6	25.9	27.6	166	138	36.0	27.6	32.6	36.7
11	22	31	50.0	49.4	63.1	60.3	25.3	27.5	153	145	34.2	25.4	32.3	39.0
10	32	27	48.2	47.0	57.1	55.4	23.6	26.9	140	124	26.7	19.5	28.4	34.8
9	32	25	46.7	45.8	52.7	52.0	23.0	26.2	132	126	21.7	18.0	24.2	31.7
8	24	28	43.8	44.4	47.0	47.3	22.6	25.7	117	112	18.4	17.0	22.8	36.5
7	32	20	43.6	41.2	46.2	42.4	22.2	25.5	77	83	18.5	12.5	23.8	27.6
6	28	19	40.7	39.0	39.9	37.2	21.4	21.0	48	54	11.5	8.5	19.8	34.3
5	12	15	38.9	38.6	35.8	34.8	20.8	20.6	38	41	6.4	6.8	16.4	19.9
4	3	3	35.0	35.0	32.3	29.7	20.0	19.3	22	30	4.0	4.3	9.6	13.0
3	1	—	34.6	—	28.0	—	20.0	—	20	—	—	—	—	—
Total	261	245	—	—	—	—	—	—	—	—	—	—	—	—
Colour of Eyes and Hair. Percentage proportion in each Class.														
			Eyes light, with			Eyes dark, with			Light brown, green, or exceptional eyes, with light or dark hair			Total		
			Hair light	Hair dark	Hair red	Hair dark	Hair fair	Hair red						
Boys 261	{ English		54.6	12.7	1.7	20.1	1.2	3.4	6.3			100		
	{ Irish		65.0	3.7	3.1	15.3	5.5	7	6.7			100		
Girls 245	{ English		39.8	26.1	3.4	20.5	—	1.1	9.1			100		
	{ Irish		50.0	18.3	6.1	23.2	—	1.2	1.2			100		

*Physical Improvement or Degeneracy of the Population.*

65. Few statistics are in existence which help to throw light on this subject. It is generally believed that the population in the manufacturing towns of the North of England is rapidly degenerating, but a comparison of the measurements of stature and weight given in the Report of the Factory Commissioners of 1833, and in the Report to the Local Government Board on 'Changes in Hours and Ages of Employment of Children and Young Persons in Textile Factories,' 1873, shows that this is not the case. On the contrary, an examination of Table XXIV., showing these measurements, indicates a slight but uniform increase in stature, and a very large increase in weight, at corresponding ages. The increase in weight amounts to a whole year's gain, and a child of 9 years of age in 1873 weighed as much as one of 10 years in 1833, one of 10 as much as one of 11, and one of 11 as much as one of 12 years in the two periods respectively.

66. As an example of the condition of a class living under most favourable conditions, a table (XXV.) showing the measurements of the boys in the Friends' (Quakers') School at York, extending over a period of



twenty-seven years, is given. Allowing for one or two obvious errors of observation, the general run of the figures is very uniform, the statures remaining stationary, while there is a slight improvement in the weight at the higher ages in the last nine years.

TABLE XXIV.—Showing the average STATURE and WEIGHT of Factory Children at an interval of 40 years, 1833–1873. (Stanway and Roberts.)

STATURE.

Age	Boys				Girls			
	1833		1873		1833		1873	
	No.	Inches	No.	Inches	No.	Inches	No.	Inches
9	17	48.14	126	48.30	30	47.97	144	48.31
10	48	49.79	256	49.85	41	49.62	201	50.33
11	53	51.26	196	51.59	51	51.15	174	51.21
12	42	53.38	175	53.30	80	53.70	—	—

WEIGHT.								
	No.	lbs.	No.	lbs.	No.	lbs.	No.	lbs.
9	17	51.76	136	58.15	30	51.31	137	55.87
10	48	57.00	247	60.19	41	54.80	179	60.59
11	53	61.84	189	67.72	63	59.69	180	65.37
12	42	65.97	167	69.76	80	66.08	—	—

TABLE XXV.—Showing the average STATURE and WEIGHT of Boys in the York Friends' School, for 27 years, 1853–1879.

Age last Birth-day	No. of Obs.	STATURE				WEIGHT			
		27 yrs. 1853 to 1879	9 yrs. 1853 to 1861	9 yrs. 1862 to 1870	9 yrs. 1871 to 1879	27 yrs. 1853 to 1879	9 yrs. 1853 to 1861	9 yrs. 1862 to 1870	9 yrs. 1871 to 1879
		inches	inches	inches	inches	lbs.	lbs.	lbs.	lbs.
9–	13	51.5	51.4	49.7	53.4	62.9	63.2	*54.2	70.3
10–	86	53.3	53.9	*51.6	54.7	68.5	71.6	*61.1	74.2
11–	261	56.4	56.5	56.1	56.5	79.7	80.3	76.1	81.2
12–	585	57.7	58.0	57.9	57.4	85.8	86.2	86.1	85.4
13–	874	59.9	60.6	59.9	59.6	95.4	96.9	95.0	95.0
14–	1117	62.1	62.1	62.3	61.9	106.0	105.8	107.0	105.4
15–	1174	64.2	63.9	64.3	64.2	116.6	113.5	117.2	117.2
16–	515	66.1	65.4	66.1	66.3	127.8	122.2	126.6	130.2
1 –	36	67.2	—	67.0	67.4	136.3	—	130.0	138.6
	4661								

\* These values are too low, due probably to some error of observation. Mr. R. Clark, who furnishes the returns, is unable to account for the discrepancies in these year



## CONCLUSION.

67. Attention has been called to some of the principal points of interest in the data collected by the Committee, but in many respects the tables have been left to speak for themselves; and it is not improbable that a study of them will lead some persons to conclusions differing more or less from those given in this Report.<sup>1</sup>

68. The original returns, which the Committee recommend may be placed in the charge of the Anthropological Institute for preservation and future examination, comprise many statistics which could not be introduced into this Report on account of the time and labour required for their analysis and tabulation.

69. The Committee believes that it has laid a substantial foundation for a further and more exhaustive study of the physical condition of a people by anthropometric methods, and that its action will prove it has been useful as an example to other scientific societies and to individuals in stimulating them, as well as directing them, in the methods of making statistical inquiries relative to social questions. The medical officers, managers, or superintendents of many colleges, schools, and charitable institutions have been induced to keep registers of the physical proportions of those under their charge, which will in a few years become valuable records, not only of the physical condition of the inmates of their institutions, but of the sanitary conditions under which they have lived; they will also be available for the further study of the subjects specially treated of in this Report. The Collective Investigation Committee of the British Medical Association propose to carry on the work of this Committee in a direction which it is most needed, namely, by issuing an album in which persons may methodically record at frequent intervals their height, weight, and other physical qualities, together with points in their personal and medical history. The Committee hopes that this habit will be largely adopted and encouraged by the members of the British Association.

70. The Committee has to express its thanks to the numerous contributors to their store of facts, whose names and contributions have been published from time to time in their interim reports, and to numerous friends who, although not contributors themselves, have induced others to give their assistance.

<sup>1</sup> The inquiries relative to *breathing capacity* were abandoned in 1879 on account of the unsatisfactory nature of the returns received previous to that year. The apparatus were faulty.

The statistics relating to *eyesight* were dealt with in the Report for 1881, and the returns since received are not sufficient to require a further discussion of the subject.

The subject of *colour-blindness* was taken up by a Special Committee of the Ophthalmological Society after it had been inaugurated by this Committee, and it was given up on that account. The very interesting report of the Special Committee is published in the first volume of the *Trans. of the Ophthal. Soc.* 1881.



## APPENDIX A.

Specimen of the cards used by the committee for collecting observations, and the instructions for filling them up. The cards are of different colours for the two sexes, and one corner is cut off to make them face one way when arranged by hand. They can be dealt out like playing cards, and much time and trouble is saved in the analysis of their records.

ANTHROPOMETRIC COMMITTEE OF THE BRITISH ASSOCIATION,  
22 Albemarle Street, London

(to which address this Card is to be returned after being filled).

*Height* is to be taken as without shoes, and *weight* in ordinary indoor costume.  
*Span of Arms* is the distance between the tips of the middle fingers extended horizontally, measured across the back (*i.e.* back to the wall).

*Colour of Eyes* should be stated as grey, light blue, blue, dark blue, light brown, brown, dark brown, green, or black.

*Colour of Hair* as very fair, fair, golden, red, red brown, light brown, brown, dark brown, black brown, or black.

For *chest-girth*, *breathing capacity*, *strength*, *colour-blindness*, and *eyesight*, see the paper of instructions.

Under *Place of Birth* state Parish and County; or, if abroad, the name of the Country.  
Under *Occupation* state rank or profession.

*Race* should be stated as English, pure English, very pure English, Irish, pure Irish, very pure Irish, Scotch, pure Scotch, very pure Scotch, or mixed Scotch and English, &c.

*Origin*, as countryfolk, pure countryfolk, very pure countryfolk, townfolk, pure townfolk, or very pure townfolk, country birth, T. since boy, &c.

FOR A SINGLE SET OF OBSERVATIONS.

Place \_\_\_\_\_ Date \_\_\_\_\_ 188 \_\_\_\_\_

Name (or Initials) \_\_\_\_\_ Sex \_\_\_\_\_

Age—years \_\_\_\_\_ months \_\_\_\_\_

Height, without shoes, inches & eighths \_\_\_\_\_ Span of arms, inches & eighths \_\_\_\_\_

Weight, in ordinary indoor costume, lbs. \_\_\_\_\_ Strength, drawing power, lbs. \_\_\_\_\_

Chest-girth, inches and eighths \_\_\_\_\_ Breathing capacity, cub. in. \_\_\_\_\_

Colour of Eyes \_\_\_\_\_ Colour of Hair \_\_\_\_\_

Test dots distinguished at, feet \_\_\_\_\_ Colour-blindness \_\_\_\_\_

Sight { Test-types No. 1, read at inches \_\_\_\_\_

„ No. 10, „ feet \_\_\_\_\_ Astigmatism \_\_\_\_\_

Place of Birth { \_\_\_\_\_ } Occupation \_\_\_\_\_

Race \_\_\_\_\_ Origin \_\_\_\_\_

Name and Address of Observer \_\_\_\_\_



*Girth of Chest.*—This is the method adopted in the British Army. Make the person stand quite upright, with his shoulders back, and his arms hanging loosely by his side. The measurement must be taken next to the skin, without compressing it. The lower edge of the tape should touch the nipples, and the measurement should be read off in front. Care should be taken that the tape passes horizontally round the chest, because if the measurement is made obliquely, below the blade-bone, it will be erroneous. The person should be required to count ten slowly during the operation, to prevent him from keeping his lungs over-inflated. (If this measurement is made on females, it should be taken *below* the breasts.)

*Strength of Arm.*—It is proposed to measure the force that can be exerted by the arm when pulling (as an archer with a bow). A spring balance should be used for this purpose. The right or left arm, whichever is the strongest, should be used to draw, and the other to resist. The resisting arm must be free, and extended straight from the side, as nearly as possible in the line of the shoulders, and the hand of the other arm brought back towards the ear. (A spring balance, or 'arm-testing machine' for testing the drawing power, can be obtained of Herbert & Sons, 6 West Smithfield, London, E.C., price 18s. 6d.)



The above figure represents the position in which the strength of arm should be tested.

#### APPENDIX B.

TABLE XXVI., showing the STATURE, CHEST-GIRTH, and WEIGHT of Recruits, is introduced here for future reference and comparison. The figures show that recruits of the age of 18 years may be expected to increase 1 inch in stature,  $1\frac{1}{2}$  inch in chest-girth, and 10 lbs. in weight, before they reach the age of 23 years.



TABLE XXVI.—STATURE (barefoot) of Recruits for the Army, 1860-4.

Height without shoes. Inches	Age last Birthday								
	17	18	19	20	21	22	23	24	25
72 and upwards	2	19	55	52	52	46	49	59	120
71-	2	71	123	113	129	101	102	124	240
70-	3	205	259	280	276	261	199	253	527
69-	21	519	555	559	508	488	400	455	747
68-	67	1172	1139	988	835	756	609	746	1135
67-	219	2995	2159	1706	1268	1108	877	964	1425
66-	871	5593	3277	2292	1428	1309	964	1019	1349
65-	1224	5009	2504	1814	1144	881	608	567	996
64-	753	3968	1344	1172	718	603	373	421	850
63-	386	534	232	358	123	105	63	65	134
and under 62	135	78	25	26	17	9	7	7	12
Total	2683	20,163	11,672	9360	6493	5667	4251	4680	7537
Mean	65.50	66.00	66.25	66.50	66.75	67.00	67.00	67.00	67.00

CHEST-GIRTH (empty) of Recruits for the Army Anthropometric Committee.

Chest-girth, empty. Inches	Age last Birthday								
	17	18	19	20	21	22	23	24	25
43-	—	—	—	—	—	—	—	1	—
42-	—	—	—	—	—	—	—	—	—
41-	—	—	—	—	1	—	—	1	2
40-	—	—	—	—	—	—	—	1	2
39-	—	—	2	5	1	2	3	4	2
38-	—	3	4	9	9	8	9	13	5
37-	2	8	12	13	19	14	18	22	16
36-	—	37	70	51	46	32	24	45	31
35-	3	74	123	80	51	63	38	43	41
34-	10	155	173	123	79	39	33	47	44
33-	26	166	131	63	23	20	11	13	16
32-	9	55	37	14	1	4	2	1	3
31-	7	11	9	2	—	—	—	—	—
30-	2	5	—	1	—	—	—	—	1
29-	1	2	—	—	—	—	—	—	1
Total	60	516	561	361	230	182	138	191	164
Mean	33.5	34.0	34.5	34.75	35.0	35.5	35.5	35.5	35.5

WEIGHT (naked) of Recruits for the Army, 1860-4.

Weight without clothes. lbs.	Age last Birthday								
	17	18	19	20	21	22	23	24	25
170-	4	39	69	101	116	145	160	177	180
160-	25	202	331	441	472	489	484	528	489
150-	75	871	1228	1396	1409	1369	1199	1317	1218
140-	338	3674	4055	3950	3411	3024	2537	2497	2290
130-	1345	9965	8881	7128	5073	3981	3153	2914	2590
120-	2724	18,196	11,765	7497	4891	3351	2206	2266	2132
110-	3494	13,912	5961	2937	1695	1191	761	757	751
100-	1404	2734	985	374	151	116	50	70	107
under 100	146	282	50	19	5	2	1	1	3
Total	9555	49,875	33,325	23,843	16,723	13,672	10,559	10,527	9760
Mean	120.0	125.0	125.0	130.0	135.0	135.0	135.0	135.0	135.0



## APPENDIX C.

Index to the Tables in the several Reports of the Committee, showing the nature of the measurements given in each Table.

## IN 1879.

Several selected classes; males at each age.	Stature, weight, and ratio of weight to height.
Christ's Hospital School; males at each age.	Stature, weight, chest-girth, and relation to one another, by Sir Rawson Rawson.
British Race in England and America, and Belgians; males and females, at each age.	Stature and weight, with diagrams, by C. Roberts.
Recruits, British and American armies, at each age.	Stature and weight, by C. Roberts.

## IN 1880.

Schoolboys of several classes, of age 11 to 12.	Stature, by C. Roberts.
Standard class; males of ages 10 to 50.	Stature, weight, chest-girth, and strength of arm, with diagram.
Standard class; males of ages 10 to 50.	Relation of the several measurements to one another.
Standard class; males of ages 10 to 50.	Mean annual growth.
Professional classes; males of ages 10 to 50.	Colour of eyes and hair, with diagram.
Persons of town and country origin; males at each age.	Stature and weight.
American boys and girls.	Stature and annual growth, with diagrams, by Prof. Bowditch and Sir Rawson Rawson.
Factory children; boys and girls, 1833, 1871-3.	Stature and weight, by C. Roberts.
Marlborough College; males at each age.	Stature, weight, chest-girth, girth of head, arm, and leg, by the Rev. T. A. Preston, Sir Rawson Rawson and C. Roberts.
Telegraph messengers; youths at each age.	Weight, chest-girth, and lifting power, by G. C. Steet.

## IN 1881.

General population of United Kingdom; males at each age.	Increase in stature, weight, chest-girth, and strength of arm, with diagram.
General population of United Kingdom; males at each age.	Stature, weight, chest-girth, and strength of arm.
Population of different classes; males at each age.	Stature and weight.
Population of different classes; males from 25 to 50.	Relative stature.
Population of different classes; males at each age.	On calculation of deciles, quartiles and medians applied to range of stature, weight, and strength of arm, by F. Galton.
Population of different classes; males at different ages.	On army test of eyesight in each class, with diagram, by Inspector-Gen. Lawson.
Marlborough College; boys at each age.	On Snellen's tests for eyesight, near and distant vision, and colour-blindness, by the Rev. T. A. Preston and C. Roberts.



## IN 1883.

1. General population of each part of United Kingdom; adult males.	Stature, weight, chest-girth, and strength.
2. General population; adult males and females.	Relative stature, weight and strength.
3. Population of counties; adult males.	Stature, weight, and complexion, with diagram and five maps.
4. Population of counties; adult males.	Stature: ratio per 1,000.
5. Population of several countries, Europe and America; adult males.	Stature: average, medium, and extreme.
6. Population of several races and nationalities; adult males.	Stature.
7. Selected classes (British); adult males.	Stature and weight.
8. Criminals and lunatics (British) compared with other classes; adult males.	Stature and weight.
9. Criminals and lunatics (British) compared with other classes; adult males.	Complexion: colour of eyes and hair.
10. Population of counties of United Kingdom; adult males.	Complexion: degree of nigrescence.
11. Population of English and Welsh origin; males and females at each age.	Complexion.
12. Classification of population according to media.	Nurture, occupations, and sanitary surroundings.
13. Schoolboys of several classes, of age 11 to 12.	Stature (same Table as in 1880).
14. Population of several classes; males from 25 to 30.	Relative stature (same Table as in 1881).
15. Infants (at birth); males and females	Height, length, and weight.
16. Population of several classes; males at each age.	Stature.
17. Population of several classes; females at each age.	Stature.
18. Population of several classes; males at each age.	Weight.
19. Population of several classes; females at each age.	Weight.
20. General population; males and females at each age.	Stature, weight, chest-girth, strength, and span of arm; relation to each other, and between the sexes.
21. Industrial Schools; males and females at each age.	Stature, weight, chest-girth, and span of arms.
22. Industrial Schools; males and females at each age.	Complexion.
23. Swinton Industrial School; males and females at each age.	Stature, weight, chest-girth, breathing capacity, strength of arm, sight, and complexion.
24. Factory children, 1833-73; males and females at each age.	Stature and weight.
25. York Friends' School, 1853-79; males at each age.	Stature and weight.
26. Recruits (British army), 1860-64; ages 17 to 25.	Stature, weight, and chest-girth.



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