

NOTES AND QUERIES

ON

ANTHROPOLOGY,

FOR THE USE OF TRAVELLERS AND RESIDENTS
IN UNCIVILIZED LANDS.



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NO. XIV.—HEREDITY.

By DR. BEDDOE, F.R.S.

With regard to original or congenital physical and mental qualities, it is not the existence and importance of heredity that is questionable, but its extent, limits, and conditions. Acquired physical traits are usually, if not always, intransmissible, but the existence of exceptions to the rule has been asserted. As regards acquired mental qualities little inquiry has hitherto been made.

Where any system of castes exists, or where the intercourse of the sexes is rigidly regulated, there is much room for observations of this kind.

Examine, for example :—1. How far stature, strength, beauty descend in the families of the chiefs. 2. How far intellectual ability or cunning in those of the priests and wizards. 3. Whether albinism, erythrisms, or other abnormalities (XI.) are thus transmitted, and to what proportion of the children in a family, or if not to children, whether they are ever transmitted to grandchildren. 4. Whether instances occur in which a tribal mark or something like it appears naturally in a child. 5. Whether a natural aptitude for a particular art appears in the children of a caste who practise that art. 6. Whether there is any power of resistance to malarial poison transmitted from parent to child in certain tribes or clans.

Further Notes on the same Subject.

By FRANCIS GALTON, F.R.S.

The nature of man appears to be as plastic as that of any domestic animal, and equally to admit of differentiation. The inquiries of a traveller might often show the directions in which the tendency to a spontaneous establishment of new breeds is most common; but he must distinguish with the utmost care between *natural* and *acquired* gifts, by seeking appropriate cases and investigating them thoroughly. Children of savage races educated in the houses of missionaries, quite away

from their own people, deserve close study, to see how far the natural character, apart from the traditions &c. of their race, persists in showing itself. Also the children of foreign slaves who are bred up by barbarians. The large families of polygamatous parentage afford good studies for heredity. Among the hereditary characteristics of a race which admit of precise testing, are:—Acuteness of sight. Delicacy of hearing. Aptitude to music. Neatness in handicrafts, and taste in design. Love of pursuits connected with the water: thus the South-Sea Islanders swim well in early childhood; is this really a natural or is it wholly an acquired faculty? Power of path-finding: the stories told of this gift are mostly gross exaggerations, but the subject deserves careful measurement; an ingenious traveller having a theodolite and skilled in its use, could make many experiments, which would give valuable results. Power of sustaining hunger and thirst. Craving for particular kinds of narcotics and drinks. Recuperative power after accidents, and strength to withstand severe shocks and mutilations. Immunity from, or liability to, particular diseases. Psychological peculiarities, as:—the inherent gifts of ruling races; the early check of the development of the mind; excessive powers of imagination, as shown in hearing unreal voices, seeing fancied apparitions; also the convulsionary habits of wizards. Half-castes deserve careful study. It is not easy to suggest beforehand what inquiries should be made. The traveller should be ever on the watch, and when an appropriate case presents itself to his notice, he should investigate it with great care. Those who confuse the effects of nature and of nurture, give information that is of very little use.

No. XV.—CROSSES. By DR. BEDDOE, F.R.S.

The principal moot points on this subject have reference to either:—

- (a) the fecundity of mongrels, or
- (b) the physical or mental improvement or deterioration produced by crossing, or
- (c) the points, if any, derived preferentially from either race or sex.

present language? if so, is it known to what language they belong and what they signify?

5. What are the names given to

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| <i>a.</i> Men? | <i>i.</i> Wells or Springs? |
| <i>b.</i> Women? | <i>k.</i> Hills? |
| <i>c.</i> Families? | <i>l.</i> Rocks? |
| <i>d.</i> Tribes? | <i>m.</i> Mounds? |
| <i>e.</i> Animals? | <i>n.</i> Caves? |
| <i>f.</i> Gods? | <i>o.</i> Ruins? |
| <i>g.</i> Towns? | <i>p.</i> Islands? |
| <i>h.</i> Rivers? | <i>q.</i> Tombs? |

NO. XXI.—ASTRONOMY.

By F. GALTON, Esq., F.R.S.

Divisions of the Year.—There are two celestial phenomena by which they may be effected:—(1) The solar method, by noting the group of stars which rise just before the sun, or set just after him and in his immediate neighbourhood; this suffices to fix the time to within 10 days. (2) The lunar method, by counting the number of new moons and reckoning the odd parts of the first and last lunation; this may suffice to fix the time even to a day; but the lunar year of 13 complete months is not of the same length as the solar year, to which the seasons conform; and therefore each method has an advantage and a disadvantage, and the two cannot be used together except by some clumsy compromise. 1. Inquire into the plan used for dividing the year, as regards (*a*) seasons and crops, (*b*) sun, (*c*) moon. 2. Is the difficulty of combining solar and lunar years recognized? 3. If so, is it met or avoided, and how? 4. Are there names for the phases of each lunation? and for how many phases?

Division of the Day.—There is a difficulty in using the height of the sun as a means to divide the day, because at the same hour it stands at different heights at different periods of the year, whether the hour be reckoned from midday or from sunrise or sunset. The difference of its bearing at sunset and sunrise is always considerable, but greatest within the polar circles, where it varies the whole way from N. to S. Near midsummer it momen-

tarily dips below the horizon towards the pole, and near midwinter it momentarily emerges above the horizon, opposite to the pole. 5. Is the fact of the variation of the sun's position at the same hour known and regarded when using it to divide time or to steer courses? 6. Is the property of the sundial known? viz. that the shadow of a fixed rod sloping towards the pole, always falls in the same direction at the same hour all the year through. 7. How is the day divided, by the position of sun or the length or direction of its shadow? 8. How as regards other means of division of the day? 9. Of short periods of time, as a walk two "pipes" (tobacco-smoking) long? 10. Are there names for any of the points of the compass? are these derived from prevalent winds, or from what?

Steering Courses by Sun and Stars.—For sun see last Par. The same star (not planet) has always the same bearing at the same altitude; but the bearing of the star, unless it be near one of the poles of the sky, changes considerably during the night, and its position in the sky differs at the same hour on different nights. To a traveller in equatorial regions, the equatorial stars, as Orion, are always either E. or W. of him unless exactly over his head. 11. When courses are steered by the stars, are these facts recognized? and how are they met?

NO. XXII.—ARITHMETIC.

By E. B. TYLOR, Esq., F.R.S.

The use of fingers and toes in counting, as well as of pebbles, sticks, &c., should be carefully noticed; also cases in which the numerals of the language only extend to a very low limit—for instance, not beyond 3 or 5. All examples which illustrate the formation of numerals by words describing the act of counting fingers and toes should be carefully sought; for example, the appearance of words meaning "hand" for 5, "man" for 20. Compound numerals capable of being analyzed into the constituent numbers should be sought for, such as a word for 7, meaning five-two. The numeration should be examined to show how it turns on reckoning by fives, tens, and twenties, which are the almost universal systems of the world, derived from the primitive practice of counting on the fingers. It

weapons used on these occasions, and state whether they are used for amusement only, or for war as well. 29. Are rats, birds, or other animals shot for amusement? 30. Aquatic sports, such as swimming-matches, shooting rapids, jumping from heights, diving, &c. 31. Equestrian feats, jumping on and off, standing up, shooting, jumping through hoops, &c.

32. Note any of the foregoing sports that are unknown amongst the people. 33. What sites are selected for the sports—natural rocks, hollows, hill-tops, &c.?

NO. LVIII.—COMMUNICATIONS.

By F. GALTON, Esq., F.R.S.

The actual weights transported and the greatest work to be got out of man and beast week after week deserve accurate measurement, also the food they do it on (see XXIV.). Marks like those made by gipsies or by scoring trees to show the road or to give hints to followers are worth inquiring into. Savages are accredited with an almost instinctive power of finding their way; but many of the cases quoted are found to be less extraordinary than stated. It would be a matter of extreme interest to rigidly test the power of several renowned path-finders, by leading them in a circular path in a new forest and seeing how directly they are able to find their ways back in a straight line.

1. Are there roads of any kind? how made and preserved?
2. Does the roadway through bush and forest consist of a network of paths running in and out of each other?

3. *Swamps*.—How are they passed? Is any thing sunk to preserve the roadway?

4. *Fords*.—Are any measures taken to preserve or improve them? Do the natives understand the natural line of fords from salient to salient banks?

5. *Ferries*.—Are any boats kept for the purpose? how maintained? what payment is made? any understanding with neighbouring tribes respecting them?

6. *Bridges*.—Are any of the following kinds used?—*a*, bridges of single trees, or trees from opposite sides crossed and fastened

in the middle ; *b*, bridges of piles and beams ; *c*, trestle bridges ; *d*, lattice bridges ; *e*, bridges of upright jambs and lintels of large stones ; *f*, sloping jambs united at top ; *g*, arches of horizontal slabs overlapping and converging, and closed by a large slab at the apex ; *h*, bridges of radiating arches ; *i*, boat bridges ; *k*, raft bridges ; *l*, flying boat bridges ; *m*, swing bridges ; *n*, rope bridges ; *o*, suspension bridges.

7. Are corduroy roads known ? 8. What points are attended to in selecting the halting-places ? 9. Any kind of inn or public house ? and how maintained ? 10. How are travellers accommodated in villages ? 11. Are wheeled vehicles used ? if so, describe them ? 12. Poles fastened to horses and trailed behind. 13. Are palanquins known, and carried by men or horses ? 14. Describe pack-saddles, and all modes of carrying burdens on animals' backs. 15. Are cradles or knapsacks used on the backs of the men ? 16. Any public conveyances or horses ? 17. What ceremonies or salutes are made by passers on a journey, or on entering houses or villages ? 18. What permissions have to be obtained by travellers ? 19. Any passes or complimentary introductions to neighbouring tribes ? 20. In transporting great weights by large numbers of men is the principle of pulling simultaneously by sound of music or voice practised, as with the ancient Egyptians and Assyrians ? 21. Are great weights suspended by crossed beams on the shoulders of a number of men, as with the Chinese ? what is the name for this ? 22. Any thing of the nature of mile-stones ? 23. Drawings of sign-posts, roadway marks ? 24. Ditto of telegraphic signals ? 25. Are any public wells dug ? and any regulations established for the use of them ?

NO. LIX.—PAINTING AND TATTOOING.

By A. W. FRANKS, Esq., F.R.S.

Painting.—1. Is painting employed in decorating the body ? 2. What are the pigments used ? 3. How is the painting applied ? is it frequently renewed ? and by whom is it executed ? 4. Do the designs vary according to the sex of the individual ? 5. Are there any special signs to denote the rank or religious sect of the individual ? and is their renewal accompanied by any

PART III.

MISCELLANEOUS.

**No. XCIV.—POPULATION.**

By FRANCIS GALTON, Esq., F.R.S.

Count wherever you can. The contingents of fighting-men afforded by a district, as compared with that procurable from other districts, gives their relative population, and it is not difficult to make out the particulars of a small district in detail. In some countries the numbers attending a religious festival may give a clue, so may the number of marriage-feasts and burials.

No. XCV.—CONTACT WITH CIVILIZED RACES.

By SIR T. GORE BROWNE.

1. Were the first civilized strangers who visited the races reported on refugees, convicts, deserters, settlers, or missionaries?

2. Did they communicate the vices rather than the virtues of civilized life?

3. What was the influence of the missionaries? Did they impart religious instruction only? Was the conversion of the tribe reported on real, or did they only add a belief in a new sort of magic to their old superstition?

No. C.—STATISTICS.

By FRANCIS GALTON, Esq., F.R.S.

The topics suitable to statistics are too numerous to specify; they include every thing to which such phrases as "usually," "seldom," "very often," and the like are applicable, which vex the intelligent reader by their vagueness and make him impatient at the absence of more precise data. The principal things to be borne in mind in making statistical inquiries are:—

1. That the groups with which they deal should be homogeneous. *Ex.* It would be correct to inquire into the average height, and the frequency of different degrees of deviation from it, of greyhounds, and similarly as regards the speed of race-horses; but it would be absurd to talk of these averages as regards dogs or horses generally, because there are many varieties of them differing greatly and irregularly in height and speed (see further remarks in par. 5).

2. When the homogeneous groups are largely governed by the variation of a dominant influence, it is necessary to split them up into subdivisions, each referring to a short phase of the variation. *Ex.* It is correct to seek the average height of boys between 11 and 12, 12 and 13, and so on, but it would be absurd to seek that of boys generally.

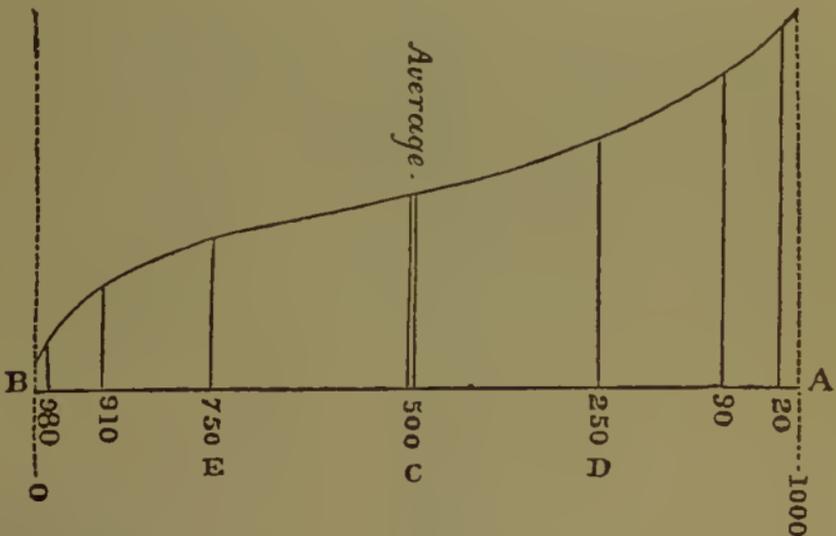
3. To select cases on a system wholly independent of the quality about which the inquiry is made. *Ex.* It would be correct to estimate the stature of the male adults of a nation by measuring individuals selected by lot; but it would be incorrect to take townsmen alone, and still worse those who lived in an unhealthy suburb of a town. It requires keen observation and much wariness to avoid errors due to a neglect of this caution, because phenomena that appear independent are often linked together in indirect and subtle ways. *Ex.* If we were to select the upper classes of Londoners according to the initial letter of their names, as printed in the Court Guide, and were to choose the letter Z for the purpose, we should be led utterly astray, as nearly all those names are foreign.

4. As regards the requisite number of cases, a few that are wisely selected and accurately reported are better than very many that are not. Each error sacrifices several good observations before it is diluted until it disappears; but if a faulty bias

(as in par. 3) runs through all the observations, no increase in their number will eliminate it. Otherwise, the rule is that the precision varies as the square root of the number of observations; thus, twice the precision necessitates four times the labour. It is the best plan to proceed tentatively; if the results fall into more harmonious sequence as you proceed, it is worth proceeding; and if after dividing your statistics into 2, 3, or 4 groups you find the groups agree pretty well and that their sums form a yet more regular curve than that obtained from any of the subdivisions, you may safely trust it.

5. The law of deviation.—Mention is above made of “homogeneous” groups: this epithet is applicable when individual differences are entirely due to the *aggregate* effect of a great many small and independent variable influences. *Ex.* The stature of an English male adult is due to his being a man of English race, reared under the range of those conditions of food, temperature, clothing, disease, and the like which prevail in England. The large causes common to all are the English breed and the range of English conditions; the small causes are differences of varieties and families, and of food, temperature, clothing, and the rest, within the range. The law of deviation depends wholly on the fact of *multifariousness of origin*; it has no more to do with the particular items of that multifariousness than the rules of arithmetic have to do with the quality of the things to be added or multiplied. Two and three make five, whether the objects be pence, or peas, or bills before Parliament; so the law of deviation holds for the stature of men and animals, and apparently, in a useful degree, for every homogeneous group of qualities or compound qualities, mental or bodily, that can be named. It is a very general statistical law. The obvious effect of multifariousness is to make it an extremely rare event that all or nearly all the influences should be exerted in the same direction. *Ex.* It is a very rare event that all the cards in a hand at whist are found to be of the same colour. This is a simple result of the law of permutation: there are a vast and calculable number of different events each of which is equally likely to occur, and only one of these is the event in question. Proceeding on this principle and making certain rather forced suppositions to render calculation feasible, the law of deviation is mathematically deduced; and comparing fact with theory, wherever comparison is possible, it is found that they agree very fairly and in many cases surprisingly well. Reasoning backwards, we may suspect that a group is not homogeneous, or that the

large influences are not sufficiently subdivided into phases (refer back to 3), when it does not conform to this law. The law shows that the frequency of small deviations must be very much greater than that of large ones, and that the larger the deviation is, whether above or below the average, so the frequency of the occurrence diminishes in an accelerating degree. It also shows, owing to the suppositions introduced, that the deviations on either side of the average are symmetrical; this is rarely strictly the case in nature. The rate of diminution, according to the above-mentioned theory, is shown in the following diagram,



in which I suppose 1000 men to be ranged in a long line in order of stature, beginning with the tallest at A and ending with the shortest at B. Then the middle man at C (500th in the scale) will be of the *average* height, and the 250th man at D will be as much taller than the one at C (owing to the symmetry of the curve) as the 750th, at E, is shorter. Knowing these two facts, the height at C (call it c) and the difference (call it r) between C and D (or C and E), we can tell the distribution of height all along the line until we come near the ends, where the run of the figures always becomes irregular. Thus it will be found that the height of the 90th man is $c+2r$; that of the 20th man is $c+3r$. Similarly the 910th man is $c-2r$, and the 980th is $c-3r$. The curved line of the diagram remains unaltered whatever may be the number of equal parts into which the horizontal line A B is supposed to

be divided. If it referred to 100 men instead of 1000, the ordinates would correspond to the 2nd, 9th, 25th, 50th, 75th, 91st, and 98th men instead of the 20th, 90th, &c.; consequently the traveller need only deal with a moderate number of men, arranging them in a series, and noting the height of those who stand at the *quarter points*. Thence he obtains c and r . He may do this for any quality whatever, running, shooting, colour, &c.; but it would be very proper that he should take notes concerning the men standing at the other points I have named, besides C and D. The common but much more laborious way of obtaining these results is to measure every individual and to group them into classes, so many per cent. between 5 feet 1 inch and 5 feet 2 inches, so many between 5 feet 2 inches and 5 feet 3 inches, and so on, from which data c and r can be obtained by the ordinary tables. Always mention the number of people measured, for the reliability of the average depends upon it; it is, as already mentioned, as its square root. A good book on these matters has yet to be written. Quetelet's letters on the Theory of Probabilities is perhaps the most suitable to the non-mathematical reader; it is published in French in Brussels and is translated into English also (1849, Layton).

THE END.