

The following is the extract from the *Memoirs* relating to the find:—"In May, 1862, Lieutenant-Colonel Wood and myself (Dr. Falconer) had found numerous wrought flints and some bone weapons in Paviland, but the deposits there had been so disturbed by previous excavations of an old date that none of the instances were free from the taint of suspicious occurrence."

If the learned palæontologist or his friends had made a proper search in the Swansea Museum (to which he makes frequent reference) he would have found the collection now forwarded with the names of the finders, and reference to Mr. Jeffreys or myself would have placed the question of disturbance on its true basis, viz., that the flints, &c., found in "1860" were the rejected of our work in 1835.

DISCUSSION.

Mr. HUGHES said that, although there might be quite sufficient evidence of the agency of man in the manner of occurrence of the flints exhibited, as it would be shown that they occurred in the cave under such circumstances that they could not have been selected and carried to the position in which they were found by the ordinary operations of nature, still he would point out that there was no evidence of human workmanship on the specimens themselves, all the forms being such as commonly resulted from the natural fracture of flint, which, however, when found serviceable, were selected, and often imitated by man.

The following paper was read :

On the HEREDITARY TRANSMISSION of ENDOWMENTS and QUALITIES of DIFFERENT KINDS. By GEORGE HARRIS, Esq., F.S.A., Vice-President of the Anthropological Institute.

It is my desire on the present occasion to institute an inquiry, and to call attention to the mode of transmission in various ways, not only of actual talent or genius, the hereditary descent of which has been discussed in a very able and interesting work by Mr. Galton,* but also of endowments and qualities of different kinds, physical and moral as well as intellectual, and the observation of each of which appears to me calculated to throw light on the other. Mr. Galton's work is especially valuable as regards the mass of well-authenticated facts which he has brought together, however we may differ from some of the conclusions at which he has arrived. It is my intention, however, in the present paper not so much to follow Mr. Galton in his track as to take up the subject where he has left off, and to attempt to effect researches beyond the line to which he has limited his inquiries.

* "Hereditary Genius: an Inquiry into its Laws and Consequences. By Francis Galton, F.R.S., etc. London: Macmillan and Co.

Of the fact of the actual transmission of endowments and qualities of various kinds from parent to offspring, few will entertain any doubt, whatever doubts may be felt as to the mode of the transmission, and the extent to which this is effected. The question then arises from which of the parents are these characteristics mainly derived, from the father, from the mother, or from both parents? And are particular endowments and qualities inherited principally from different parents? In several remarkable cases the derivation of intellectual talent has been traced to the mother; but in other cases it has been clearly from the father that the faculties in question were transmitted. In a great many instances—the majority, I believe—it will be found that the endowments and qualities of both the parents have been transmitted to the children, although in different proportions, to various members of the family. In several cases it has been observed that persons inherit remarkable qualities, intellectual and moral as well as physical, from the grandparents instead of the parents. In the case of disease this principle has long been recognised. And may not the hereditary descent of diseases, which has for some time been carefully observed, afford us a guide to trace out the mode of the descent of intellectual and moral endowments and qualities, which has escaped, or at any rate has not secured, a corresponding amount of observation?

It is obvious, however, that endowments and qualities of different kinds do not by any means always directly and lineally descend. As the offspring are in each case derived not from one only, but from two parents, something may be supposed to be derived from each, which will of course be more or less modified by the character of both parents. In addition to this, endowments and qualities of each kind appear to be transmitted in various ways. In some few cases a particular talent or quality descends direct from one of the parents to one of the offspring without undergoing any change. In other cases the talent or quality is so transmitted, but an entirely new direction is given to it by the new possessor, as when the son of a great painter comes out as a poet, or the son of a distinguished mathematician is eminent as a lawyer.

One very remarkable peculiarity about the descent of both endowments and qualities, and also physical peculiarities as well, of which I could adduce some striking instances, is the case where the qualities of both the parents are as it were split and divided among the offspring, one child inheriting one quality, another child another quality, of one or other of its parents. Thus, one child will possess the taste, another the originality, another the acuteness, of one or other of the parents, while he will be wanting in the other capacities peculiarly exhibited by

them. So also, as regards the moral qualities and dispositions of the parents, it may be observed that these are also occasionally in a corresponding manner as it were split and distributed singly among the different members of the family. For instance, one child may be remarkable for the energy, another for the courage, another for the honesty, another for the benevolence, which peculiarly characterised one or other of the parents, while he did not possess to any large extent any of the other qualities. The same may be observed with regard to the transmission of deficiencies from the parents to the children. Professor de Quatrefages, in his valuable work on the progress of anthropology, has pointed out something analogous to this in the case of animals of cross-breeds, some of whose progeny will exhibit the breed of one parent, some that of the other. Indeed, in many respects and in various ways, but particularly as regards the transmission of qualities from parent to offspring, the study of natural history is calculated to throw much light upon the study of man. Botany, too, may be made serviceable in this respect.

As regards the descent of physical qualities of different kinds, this is far easier to trace than is the transmission of those which are intellectual and moral. Any person is capable of perceiving the likeness of a child to one of its parents, and the disposition of particular children to particular diseases of one or other of the parents is also perceptible. The latter is especially the case with regard to insanity. It is also well known that diseases in their transmission will miss a generation and re-appear in the grandchildren. This mode of the descent of physical qualities which are perceptible, may afford us an insight into the theory of the transmission of those which are intellectual and moral, and which are not obvious to any but very attentive observers.

The fact indeed of the resemblance of a person to an ancestor, whether parent, grandparent, or more remote relation, may afford a correct insight as to the hereditary transmission of qualities. I have known two instances of persons bearing a striking resemblance to very remote ancestors, whose portraits were well known. In other cases a near resemblance may be perceived to collateral relations, uncles, aunts, great uncles, great aunts, and cousins. May we not suppose that endowments and qualities of different kinds manifest themselves among the different descendants and other relations of a person possessing a remarkable talent or disposition to a great extent? In the case of animals of a cross-breed the tokens of the mixture will appear in very remote generations, when by subsequent breedings it might be supposed all trace of the original cross would have been lost. In the case of man, where a marriage with one of quite a different blood—a mulatto, for instance—has taken place, a com-

paratively remote descendant will occasionally exhibit a striking resemblance to his mulatto ancestor, although the intermediate ancestors exhibited no strong traces of this relationship. In this instance, moreover, some or one only of the children of the particular family will be marked in the way alluded to, while the others will be without any traces of this description.

The colour of the hair affords also a striking indication of the mode in which qualities descend from parents to children; one child will have hair of the colour of that of the father, another of that of the mother, while the hair of the other children will resemble in colour that of one of the grandparents, great grandparents, uncles, or aunts. In some instances no resemblance to the hair of any of his relations is perceptible. In a manner closely analogous may be the transmission of endowments and qualities in general, whether physical, moral, or intellectual.

It may not unreasonably also be supposed that the particular physical, moral, and mental condition of the parents at the time of procreation may have extensive influence on the character of the children, and may account for the extensive diversity among children of the same family. So events happening at the time of the conception of the child and the particular pursuits of the parents may have great influence on the character of the children. Also the comparative age of the parents may have its effect in this respect, high-spirited children springing from parents who were young and vigorous, children grave and sedate from elderly parents.

In the breeding of certain animals great care and skill are exercised in so uniting particular qualities that the offspring may be endowed with those of the most valuable kind. May there not be certain mental and moral qualities in the human race which, when they are possessed by the parents, may lead to the production of offspring in whom are united a class of qualities most valuable to be found together? Indeed, most of the value of many endowments depends on their coexistence in the same mind.

Another inquiry of much interest, and no less importance, is as to whether artificial acquirements as well as those which are natural, can be, or ever are, transmitted by parents to their offspring. Many facts have been cited to prove, especially in the case of animals,* that they can be, and frequently are.

The most extraordinary circumstance, however, connected with the hereditary transmission of endowments and qualities of different kinds, and the most difficult to afford any satisfactory explanation of, is the case which not unfrequently presents itself of a direct contrariety being observable between the cha-

* "Intelligence and Perfectibility of Animals", by Leroy.

acter of one or both of the parents and that of one or more of the children, not only moral but intellectual. We sometimes observe that robust children have sprung from weak parents, and occasionally, when both the parents are above the common stature, some or all of the children will be considerably below it. The same contrariety is also presented with regard to moral and intellectual disposition and capacity. Thus parents remarkable for their piety and probity occasionally produce children some of whom are as remarkable for their impiety and dishonesty. It has been urged that a neglected or injudicious education may be the main cause of the failing alluded to. But in these cases there has been evidence not only of the bad conduct, but the decidedly bad disposition of the child, directly contrary to that of the parent. And in cases where every effort has been made by education and moral training to counteract the evil disposition, the same conduct has been evinced. Besides this, where all the members of the family have received the same training, some of them only have gone wrong.

The case of the virtuous children of parents who are thoroughly vicious and ill-disposed is still more remarkable. In these instances education and example have done all in their power to corrupt the minds of the offspring, and to render them as degraded as those of their parents. Good disposition and industry and inclination to virtue have nevertheless manifested themselves, and have overcome all the obstacles which bad training presented; and the children have grown up to be as great a benefit to society as the parents were a bane. The only influence upon the children at all calculated to be beneficial, but which is wholly insufficient to account for the contrariety in disposition pointed out, is the disgrace and ruin which the ill-conduct of their parents brought upon them and their families.

But the occasional instances of contrariety in intellectual as well as in moral character between parents and children are not less remarkable. It has long been a matter of observation that the son of a man of genius is frequently below par in point of capacity. And perhaps quite as often the man who is below par produces a son who is a decided genius. In the majority of instances, indeed, distinguished men will be found to have sprung from parents who were only of average capacity. In these cases it may be said, as already observed, that they inherited their talent from some gifted ancestor. Be this as it may, what I now wish to remark upon is the striking and undoubted fact that a direct contrariety as regards their comparative amount of intelligence and capacity is frequently exhibited between parents and children. Further than this, there is very often to be observed a corresponding contrariety not merely as regards the amount of

capacity possessed by the parents and children respectively, but as regards the peculiar quality of it. Thus the sons of a man of exquisite taste will evince no turn of mind of that kind, but will show a capacity for mathematics. And the children of a great mathematician will be wanting in this respect, but possess tastes the most refined. How are all these direct and sudden contrarieties, physical and moral as well as intellectual, to be accounted for?

It appears to me that the only true and philosophical mode of explaining the peculiarly interesting phenomenon in question is by resorting to the supposition that there may be existent in our constitution certain operations and influences analogous to or corresponding with those of tide or reflux, exhaustion and repletion, action and reaction, wearing out and revivifying, in the natural world, ever in process as regards the origination, development, and growth of our moral and intellectual qualities and endowments as well as in the properties of our physical frames, which possess a never-failing influence as regards the transmission of these qualities, and their manifestation in the offspring in the various ways which I have endeavoured to point out. Thus a particular moral or mental endowment may go on growing for generations until it reaches its climax, when it will at once decline.

Subjects of this kind must possess a deep interest for every philosophical inquirer, although unfortunately, mortifying as may be the confession, more especially as regards the highest of them, speculation is the utmost that we can effect in our efforts to unravel the mystery. By some scientific men, indeed, speculation is condemned as unsatisfactory in its results and unscientific in its mode of proceeding. But to condemn speculation is to condemn the greatest and most ingenious philosophers to whom science is indebted, and in not a few instances the more uncertain and apparently wild were their speculations the richer and more solid have been the fruits which those speculations ultimately produced. To condemn speculation in philosophy is to censure alike Des Cartes, and Hobbes, and Behmen, and Newton, and Locke, and in truth nearly all the originators of everything that is most valuable in science, physical, moral, or intellectual. To forbid speculation is to take away the scaffolding by means of which the rising edifice is erected, and at once to put an end to instead of accomplishing its completion.

DISCUSSION.

Dr. COLLYER remarked that he had seen on the western coast of Mexico, in the state of Jalisco, whole tribes of men whose bodies were spotted, known as "*los Pintos*." These were Indians, with the

brownish red skin, on which were indigo-coloured spots of various sizes, from that of a sixpenny piece to that of half-a-crown. General Alvares, himself an educated Indian, informed him that these spotted people had a tradition that it arose from the period of a volcanic eruption some five hundred years since, he supposed on the principle of *mental impression* of the mother, or vital photography, being conveyed to the body of the child. There were also—which deserved serious consideration—hereditary taints of insanity or abnormal cerebral function, and were transmitted from remote ancestral abuses of the laws of nature or arising from defective organization, as in idiocy. What made them so remarkable was their *suspension* from active manifestation for one or more generations; then from some exciting cause the original abnormality will again crop out from the latent condition. The proximate causes of hereditary peculiarities mostly arose from the state of mind (nervous system) and the health of the body generally of the parents during the procreative function; those unquestionably materially influenced the future offspring. Education so essentially modified the brain's condition, even in the lower animals, that the offspring came into the world with a predisposition to certain talents, as was shown in thorough-bred dogs and horses. The limit to this perfectibility was always in relation to the special organisation of the animal. If time would admit, it would be in his power to show how genius and other specialities are oftentimes of a most remote origin, implanted by some one in our ancestral line, which only required to be brought under favourable conditions of *excitement*, so that it might be enabled to emerge from its latent state, as in the case of gout and other diseases.

Captain BURTON thanked Mr. Harris for his valuable paper. Mr. Harris was an anthropologist, and that was saying much. But Captain Burton could not agree with Mr. Harris on any one point. The question was simply one of census. We wanted some thousand (better some hundred thousand) contemporary cases before we could make up our minds. The hospitals have annihilated the idea that the impression upon the pregnant mother influences the offspring. Captain Burton believed that a census of eminent men would annihilate all Mr. Harris's theories.

Mr. HUGHES assumed that the fact of transmission of various mental and bodily qualities and peculiarities was allowed, but it appeared to him that the subject brought forward by Mr. Harris for discussion was how to account for the admitted facts. Mr. Harris propounded the theory that there was an ebb and flow of properties in a succession of individuals—an appearance, increase, a climax, and decline of qualities, independent of external circumstances. The only argument brought forward in favour of this opinion was one drawn from analogy. Nations rose, attained their greatest, and fell; species appeared, became abundant, and disappeared. According to Mr. Harris's view, this ought to be due to some property or condition inherent in the nation or species. But such does not seem to be the true explanation. If we watch the rise and fall of a great nation, we find that, while

they have to struggle against powerful neighbours or against unfavourable conditions of any kind, mental and bodily vigour is called forth and fostered; when luxurious habits following success produce effeminacy, a vigorous race, in the stage of growth perhaps, comes in contact with them, overthrows them, and they are gone. Nor have we any reason to believe that species would die out of themselves provided no stronger species, developed alongside of them, came to destroy them or their food, and no exceptional geographical changes rendered it impossible for them to survive. Some forms of life of simple habits, such as the plain little lingula or the foraminifera, have existed from very early times. The cephalopoda, on the other hand, could not hold their own with stronger carnivorous animals, and are nearly gone. So by analogy we may explain the facts observed in families. In the struggle for success mental and bodily vigour is exercised, strengthened, and transmitted. Success once achieved, luxury is too often followed by effeminacy, and the mental and bodily vigour declines.

The CHAIRMAN thought the paper a very valuable one. There was, however, one objection to it, viz., that it contained so many exceptions to the general rule; but he (the Chairman) supposed that this was really inherent in the subject itself. There was one point to which he would allude. According to Gall, when the physical constitution is transmitted from parents to children the latter participate in the same proportion in their moral qualities and intellectual faculties. The last part of this proposition (as to the intellectual faculties) was also maintained by Buzareingues. Gall's assertion has since been disproved. It is no doubt sometimes the case, but the reverse frequently happens. It is also a fact that when children differ altogether from their parents in physique they often resemble them in their moral qualities. He (the Chairman) did not speak of his own authority, but on that of Prosper Lucas, author of the celebrated work "*L'Hérédité Naturelle*," and the authors mentioned by him.

Dr. King, Mr. J. W. Jackson, Mr. Wake, Mr. George St. Clair, and Mr. Charlesworth also joined in the discussion, and the author replied.

On the PHYSICAL, MENTAL, and PHILOLOGICAL CHARACTERS of the WALLONS. By RICHARD S. CHARNOCK, Ph.D., F.S.A., Vice-President Anthropological Institute, and C. CARTER BLAKE, Doct. Sci., F.G.S., Hon. Mem. Anth. Instit., Lecturer on Comparative Anatomy Westminster Hospital.

ACCORDING to the census of 1849 one-third of the people of Belgium speak the Picard and Wallon, and the other two-thirds the Flemish, but this does not at all establish what is the country occupied by the Wallons, which has been differently defined. We note the following from some of the best authorities: "The