

Heredity

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BEFORE THE NINETEENTH CENTURY little was known of the science of heredity. It was during that century that the interest of the general public became turned to this subject and the general tendency was to attempt to explain everything in the nature of man from hereditary characteristics. . The qualities inherited from father, mother and the line of ancestors were supposed to furnish the explanation of the individual and his actions. The fact that the process of fertilization and the development of the organism from the germ-cells was studied so exhaustively by means of the microscope contributed much to the growth of this science. The guiding line of thought was that one half of the inherited traits come from the father, the other half from the mother, and that these, taken together, form the traits of the new individual. The problem of heredity became a kind of mathematical task, enhanced still further by the discovery of the Mendelian laws of heredity. According to these laws it is possible to calculate how many descendants of cross-bred plants and animals will have either mixed characteristics or those of the one or the other ancestor. Such experiments were often applied to the human being and in our twentieth century the science of heredity has developed into a great system of disciplined calculation.

Added to this came the discovery that in the most minute particles of the germ-cells, in the so-called chromosomes, the qualities of the body that will develop later on are, to a certain extent, prefigured. The theory of heredity then became a study of the "mosaic of the minutest particles of the chromosome" that is present in the germ cells.

The greatest obstacle confronting the doctrine of heredity, however, is that the human being presents all kinds of exceptions and deviations. As a matter of fact, little has been investigated in the human being as such, experiments with animals and plants having simply been transferred and applied to man. A more exact study of the nature of the human being reveals that certain fundamental and essential features have received little or no consideration. It is of this that we shall speak here.

The first point is the great differences in what seems to have been transmitted by the two parents. Observation of inherited illnesses gives an unambiguous verdict here. Let us take one example. Hemophilia occurs only in males. The blood has little congealing power and the condition is characterised by a tendency to bleed profusely from quite insignificant wounds or even bruises.

It has been found, however, that the women from such families, although they themselves do not get this illness, transmit it to their sons. On the other hand, the children of men suffering from hemophilia do not inherit it. In other words: the man gets the illness and does not pass it on. The same thing has been observed in cases of other illnesses, for example, colourblindness to red and green.

These facts are well-known to-day but they ought really to give an entirely new starting-point to the science of heredity, namely, the study of the difference between what is transmitted by the father and what is transmitted by the mother.

Unbiased study of the biographies of outstanding personalities will often indicate which qualities they have received from the paternal and which from the maternal side. In this connection the following words of Goethe are very apt and full of meaning: "From my father I have stature and an earnest conduct of life; from my mother a happy nature and the love of telling fables." The physiological as well as the psychological aspect is very subtly described in these words. 'Stature' has to do with the structure of the physical body. "The 'earnest conduct of life' has to do with the character of the individual's life of soul. The 'happy nature' is the particular temperament and the vitality that goes with it. The 'love of telling fables' has to do more with the psychical qualities of the life of feeling and imagination.

In the Meditations of Marcus Aurelius we also find a passage concerning his father and mother and what he thinks he owes to them:

"By the recollection of my father's character I learned to be both modest and manly. As for my mother, she taught me to have regard for religion, to be generous and open-handed, and not only to forbear from doing any body an ill turn but not so much as to endure the thought of it."

The father influences those qualities, both spiritual and physical, which tend towards specification; the mother, the more general, vitalising elements and the qualities of soul and heart. This leads to the question: In what does the difference between the two sexes essentially consist? The science of evolution, especially that of embryology, shows that woman's body exhibits a stage of development which passes through that of man's but then proceeds to further elaboration. This may be demonstrated in every detail. It appears that the male body is more specialised, more differentiated than the female. The process of puberty itself differs in male and female. In the boy there is a rapid growth of the extremities which, to begin with he cannot properly control. On the other hand, intelligence in the male during this time develops one-sidedly and interest unfolds for specialties, for instance, mechanics and mathematics. There is also strong differentiation in the life of soul of the male. In correspondence with the unproportioned growth of the limbs, the will becomes more material; at the same time, thinking becomes abstract, the life of feeling shuts itself off and the boy withdraws more into himself.

In the girl, however, the process takes exactly the opposite course. In the life of soul there is a tremendous enhancement of emotion and feeling. In the body an extension of the functions of the circulatory system takes place. There is either anemia or excessive activity of the blood. This often expresses itself in irregularities of the metabolism and periods. This indicates the assimilation of a rhythm that is a lunar rhythm. In other words: a cosmic rhythm that has hitherto been outside man now becomes a human rhythm.

In the male we find a process of adaptation to the earthy element, expressing itself in various hardenings and ossifications. The change of voice during puberty is caused by a hardening of cartilage in the larynx. The generative organs descend, that is to say they adapt themselves to gravitation, and the same thing happens with the limbs.

In the girl, the change is expressed in such a way that we have to do, not with hardening, but with a kind of swelling. The direction of the whole process here is not downwards, but upwards.

In heredity too the sexes play the same roles. The male transmits the elements that shape, harden, and differentiate. The female transmits all that tends to generalization and the elements that point to the cosmos.

If the female element were alone decisive we should remain embryonic all our lives and the form of the body would be round and undifferentiated, resembling the embryonic sheathes, but endowed with tremendous vitality. If the male element were alone decisive we should all be like men at birth; everything would be too strongly formed, too 'bony' and akin to what asserts itself for the first time at death.

This line of thought also explains why certain illnesses are not transmitted in heredity by the male who gives complete expression to them in himself and hence cannot pass them on. On the other hand, the female heals her own organism out of the cosmic vitality but gives space to heredity during the formation of a male organism.

These differences should not only be studied in the human being but also in the animal. It is, for example, exceedingly interesting to notice the difference between two mules, one of which is born from a male ass and a female horse and the other from a female ass and a male horse.

Such experiments have seldom been carried out because people have erroneously based their thought on the similarity of the inherited characteristics and have therefore not found this wonderful material for observation worthy of attention. Matters which become perceptible in this domain, however, should be placed at the very starting point of the theory of heredity.

The second important point to which attention should be paid is that in the human being a third factor is added to what comes from the father and mother. This third factor cannot be completely derived from the qualities and characteristics of the parents. Heredity plays a much greater part in the animal kingdom than it does in the human being. The animal is a product of two factors: heredity and adaptation to the external environment. Heredity here works in such a way that it places the animal, all ready and fully adapted, into its proper environment. It is not so in the case of the human being.

In the human, being there is a perpetual struggle against heredity and also a defense against the influence of the environment. It is quite obvious that the individual is nothing else than that which asserts itself between these two factors and is capable of independent development. If we are exactly like our ancestors we are not individuals in the real sense. Similarly, if we become images of our environment, then we have lost our individual

qualities. Man is a being who perpetually asserts his individuality as a third factor, between heredity and adaptation.

Every biography illustrates this and it should be perceptible immediately to every unbiased observer. Darwinism had a correct understanding of the animal. Darwin, Huxley and others rightly explained the animal as a product of heredity and adaptation. The human being is not to be explained by Darwinism and modern science is still at sea with regard to his real nature.

The development of the child illustrates the above-mentioned struggle of the individuality quite dearly. The first period, up to the time of the change of teeth, is a struggle with heredity. The inherited body is re-formed and the emergence of the second teeth is an indication that this re-forming has come to an end. From the second dentition until puberty the individual characteristics of the child develop in a free, unrestrained, 'human-universal' way. This is particularly evident in artistic activity. At puberty, adaptation to external conditions becomes necessary. The differentiation in the extremities leads also to differentiation in the external activities of work and vocation. A blacksmith and a watchmaker need quite different kinds of movements. The troubles of puberty should be regarded merely as a special instance of the need for adaptation to the other sex.

Birth to 7th year: Heredity.

7th to 14th year: relative freedom of the individuality.

14th to 21st year: Adaptation to the environment which is becoming increasingly interesting.

In these three epochs the individuality has to carry on a struggle against heredity and adaptation. Not until adult life is reached does the individual begin to be victorious.