

A CHARACTER STUDY.
THE INFLUENCE OF HEREDITY AND ENVIRONMENT UPON CHARACTER.

GRADUATING THESIS.

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References.

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Character is that quality of moral force inherent in an individual, which leads to a line of conduct conformable to that quality. Character is a positive, not a negative virtue, and is developed through daily habits of self discipline and high thinking, consciously and unconsciously practiced from childhood. The man of character moves among his fellow men surrounded by an atmosphere of moral influence of decided but unobtrusive force unless the occasion demands it, which makes itself felt wherever his duty may call him. It is to such men and women that individuals and communities turn in times of stress, and it is such men and women we would have our children become. What decides the character of an individual. The great factors are heredity and environment, and the influence of each on character will now be briefly presented.

Heredity is the link that binds the successive generations together. It is this which makes it possible for each generation to start in life with the same opportunity to make it noble, that the preceding one had, however it may have failed in this privilege. Were it not for heredity each generation would be obliged to begin its evolution anew, but heredity holds the characters which one generation receives and hands them down as a legacy to the future. Heredity has always been recognized as a fact, and it is more palpable today than it ever was before. But as the subject has been studied in the light of the descent theory it has been assuming in the last fifteen years a very different aspect from that which it has had in pre-

vious centuries.

For a century or more scientists have been advancing various theories of heredity. It is really the greatest marvel of nature that a child should be like its parents. In regard to most of these theories it is doubtful whether they were ever accepted by any persons beside their authors; even their authors may have had their confidence in them shaken. Remembering this, it is somewhat surprising that the theory advanced by Weismann has not only received support from others beside its author, but has become adopted with great unanimity as forming the true basis of heredity.

The essence of his theory, as taken from "The Method of Evolution" by Conn, is as follows:

If we consider the process of reproduction in the simplest unicellular forms, the problem of heredity explains itself. In such a case we have the whole animal made of a simple mass of protoplasm and its reproduction consists simply in dividing into equivalent halves. When such a mass of living matter divides into halves it is easy to see that the halves will be alike since each is half of the same living cell. There is here no such thing as mother and daughter, and the likeness between the two individuals resulting from the division is a logical result of the process. When, however, a higher animal reproduces, the process is radically different. The animal does not divide into halves, but one single cell, a very minute part of the adult, is set apart to develop into a new individual. This reproductive cell is the egg. It is a very extraordinary body, in that its internal structure is such that it contains potentially the adult. The egg of a star fish placed under proper conditions, will develop into a star fish, while a very similar egg placed under the same conditions will develop into a sea urchin. If these two eggs, placed under iden-

tical conditions, develop, one into a star fish and the other into a sea urchin, it is clear that the difference in the adults must be represented by corresponding differences in the eggs.

When an egg begins to develop, the first step is the division into halves. Now just as we can understand how the two halves of an uni-cellular animal are alike, since each is half of the same individual cell, so we can easily understand how each half of this divided egg may be like the other half. So if the original egg possessed the power to develop into an adult with certain definite characters, so each half can be easily understood to have similar power, provided the division is such as to divide the heredity material into equivalent halves.

The essence of this theory of Weismann is that a certain period in the early developing egg, the heredity material becomes separated into two parts. In one part the cells begin to develop by the process of differentiation, and this portion called the somoplasm, is concerned in the building up of the body of the new individual. This part goes on dividing and becomes differentiated more and more with each division. As it divides the newly formed parts are set apart to form the different organs of the individual, and each part at the proper time receives that part of the heredity material that is concerned in forming the organ in question. In time this half of the egg forms the new individual which we call the second generation. Meantime the other half of the egg has a very different history. It retains the simple method of division so that no differentiation of its substance occurs. Each of the cells which arise from this half therefore contains identical heredity matter, and each of these cells will consequently possess the same characters as the original egg. Now this half of the egg does not contribute to form the body of the second generation. It simply remains inside the body of the individ-

ual that is developing from the other half of the egg. It thus happens that the new individual has inside its body a certain amount of material derived from the original egg, and which has not become changed at all during the egg development. The heredity substance has increased in amount by growth, but it has not changed its character. This substance becomes lodged in the ovaries and the cells of the cells of the ovaries in time become eggs. When the individual becomes adult, one of the ovary cells is separated from the body as an egg, and under proper conditions produces a new individual. It is clear however, that this new individual arising from the second egg, will be like the first individual arising from the first egg, since as we have seen, the second egg contains identical germ material, derived from the undifferentiated half of the first egg. In subsequent development the process is repeated. In this way it is seen that the genuine substance is continuous from generation to generation. Each individual carries in his body a certain amount of this germ substance which is ordinarily stored in the reproductive gland. Successive generations are alike because they are controlled in their development by bits of the same germ plasm. So far as concerns individual traits, therefore, each individual receives some original material which he hands down to the next generation, but he hands nothing of his own accord.

There is no difficulty in thus understanding the likeness of succeeding generations, but in accordance with the theory developed they would not only be alike but identical. The only variations that would be possible would be such as would be produced in the individual by the direct influence of his environment upon him. This would be disastrous to any theory of evolution. It would make congenital variations impossible, and would result in an absolute constancy of suc-

ceeding generations. An evolution of species would be impossible. This difficulty is met by a second factor in the reproductive process, -- sexual reproduction, in which there is always a union of two different bits of germ substance, commonly derived from two different individuals. In as much as the fertilized egg is composed of germ material derived from two different sources and united together, it is most probable that the resulting individual will be a compromise between the two parents. The mixture of germ material will be unlike either of them alone, and hence the resulting individual will show congenital variations. When two complex substances are mixed there is almost an infinite possibility of variety in the mixture. Sexual reproduction appears thus to be a factor whose purpose in nature is to introduce variation and which has thus made evolution a possibility. Congenital variation will thus have a strong tendency to appear in subsequent generations, since a variation once in the germ plasm would be sure to remain unless some other combination should neutralize it. On the other hand, no variation appearing in the body of the individual as the result of the action of the environment upon it will be retained. It is only the characters of the germ plasm that determine the inheritance of the subsequent generations. The body of the individual simply has charge of this germ material, and no change in the character of the individual can affect it. In other words, acquired characteristics cannot be transmitted to heredity. The only influence an individual has over the inheritance of his children is in the choice of the germ plasm which unites with his own to form the next generation.

Thus far the discussion of heredity has been one of all forms of animal life. Now in the discussion of environment I want to confine myself to the human race, and of that, people of school age.

We see a fatality in heredity which may seem hopeless, in cases in which criminality, lawlessness and vice seem to be inherited. But I want to show the great effect of environment and education upon character, regardless of, and in spite of inherited characters. Education and training can do much, remembering always that the body and the brain the child is born with are what we have to educate. By no means could a Newton be born in a Hottentot family, nor an Aristotle from a father and mother with facial angles of 50°. However, put a child of high mental inheritance in a lawless, vicious environment, and he will be a vicious immoral child, while a child less fortunate by birth may develop an upright noble character by means of favorable training and environment.

By environment may be understood all the influences affecting an individual from the time the two bits of germ plasm from which he develops, unite, but here I use it in the sense of post-birth influences, and it is indeed still broad in its scope. No part of a child's environment is so important as the treatment he receives at his parents' hands, or from those persons having charge of him in the plastic years of his life. The home is the determining influence in a child's life. Imagine a child breathing the fetid air of an ill ventilated, drunken home, hearing nothing but oaths and obscene words from dissolute parents, mingling with foul mouthed, mischief plotting companions, taught that to lie and steal and fight make the ideal man! Put a child blessed with royal inheritance in such an environment and what must be his fate.

Look at the general run of criminals, and in a general way see whether a criminal ancestry or vicious training plays the leading role. When doing so we should remember that vicious parents are likely to give their children a training such as would probably predispose the

best born children to vicious and lawless lives. So when we see crime running in families we must not jump at the conclusion that germ inheritance is to blame. The infamous Juke family of 709 individuals distributed over six generations, produced 77 offenders in one county in forty five years. The history of this family is a disgusting record of debauchery and crime. It would seem at first that we have here a case of inherited criminality. If we look more closely, we find that the training received by the members of the family, their post-birth acquisitions may account for their rich harvest of criminals. They lived in log or stone houses similar to slave hovels, all ages, sexes, relations and strangers bunking indiscriminately. Domesticity was impossible. The young Juke was thus early familiarized with vice and crime; he was deprived of intercourse with decent children; he had no examples of thrift or industry or honesty, or chastity; he was without moral restraint or social discipline. That his criminal career was the result of what happened to him after birth, rather than his mental inheritance, is suggested by several cases where early marriage and removal from the community was followed by a decent career. For example, a Juke girl who had a thoroughly vicious ancestry, and had been arrested for vagrancy in her fifteenth year, married a steady industrious man, settled down into a home and took the position of a reputable woman. That anti-birth acquisitions may have played a part by making the health and physique and mental development of the Juke children such as would unfit them for regular lives and self control, and make them easy victims of impulse and appetite, is shown by the large percentage of disease and poverty and the general lack of hygiene and personal care. The Juke children may have been burdened with a germ inheritance that would make them likely candidates for criminal careers; they were certainly reared in an environment which

would favor the acquisition of immoral and criminal habits.

One would suppose that if criminals possessed the mental characteristics which act as causes to crime, the class of youthful criminals would include a large number of descendants of criminals. Yet only 2% of the inmates of English industrial schools were found to be descendants of criminal ancestry. In fact the juvenile offenders seem to be the product of bad training, rather than of a special criminal inheritance. Over three-fourths of the homes from which these children come are not morally fit for a child to live in. Where children of this very same class are taken and well cared for, they do not become criminals to any greater extent than average children.

To show the effect of some of the ordinary things of life upon character as indicated by college work, data have been gathered from 88 students at K. S. A. C. Half of the 88 are among those whose college work is very creditable, and the others from among those who go to swell the ranks of the poorer class of students. Both classes of students were asked to answer the same list of questions, all of which referred to their earlier environment. Some of the indications of the influence of such environment on character have been noted:

First as to the more general environment, country life is shown to be more favorable for strength of character than is town or city life; there being 26 among the 44 poorer students whose lives had been spent in town, and in the same number of good students only 9 who had lived in similar environment.

As to work done in early life, no matter of what sort, a large majority of the good students have done work that was steady and compulsory but still enjoyable, while the irregular, voluntary and enjoyable work has been done by the largest percent of the poorer students. It is also shown that work of any kind was irksome to three

times as many of the good students as of the bad. This argues strongly for the element of effort in the formation of character, those making the greatest effort having proportional strength of character.

Among the students questioned, who were allowed to go at will, there are 17 in the list of the better students, and 30 in the other list; while among those kept closely at home 28 are good students and 14 poor ones. The argument here does not need elaboration.

The matter of indulgences is rather important in the formation of character. Only 22 of the good students had rather ample spending money while 32 of the poor students were indulged in this way. If a greater number of cases could have been cited the difference would probably have been more apparent. Forty-four of the poorer students were freely indulged in sweetmeats, and boughten playthings while only 24 of the better students had the same treatment; also among the good students were 15 who made their playthings and 5 among the others who did so.

This matter of indulgences is one in which it is hard to be temperate; to deny a child for the sake of his future good; but these matters influence his character greatly and ought to receive careful consideration.

The conclusions from these data show that the character of the child is affected not only by an environment which is extremely vicious, or happy in its nature, but in the life of ordinary children every day is pregnant with possibilities for his future. Every word spoken to him, every deed he does, every scene his eye rests upon, leaves its mark upon his character. "The child is father of the man" is indeed a true saying, and in the thorough realization of this may we accept our precious responsibility of moulding the lives of the children, with the attitude of persons receiving a sacred trust.

The following is a tabulated list of the questions and results. The first column marked even refers to the good students, and the second to the poor students.

Work done in early life.

Steady, voluntary, enjoyable, -	even	11	odd	9.
" compulsory, irksome, -	"	4	"	1.
" " enjoyable, -	"	14	"	4.
Irregular, voluntary, enjoyable,	"	9	"	21.
" compulsory, "	"	3	"	7.
" " irksome,	"	2	"	1.
" voluntary, "	"	1	"	0.

Kept at home closely,	even	28	odd	14.
To go at will,	"	17	"	30.

Ample spending money,	even	11	odd	18.
Plenty " "	"	11	"	14.
Free access to store,	"	6	"	10.
Sweetmeats in abundance,	"	11	"	22.
Many playthings,	"	13	"	24.
No indulgences	"	6	"	4.
Made playthings	"	15	"	6.

Environment.

Country,	even	35	odd	18.
Town,	"	11	"	26.
