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HEREDITY, CULPABILITY, PRAISEWORTHINESS, PUNISHMENT AND REWARD

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MODERN studies in heredity are yielding results whose social bearings can not be overestimated; and of these bearings not the least significant are those that relate to responsibility. To make these bearings clear we have, first of all, to grasp the current views about man.

It is often stated that man is a gregarious species; this illustrates the old point of view. Now we say: "Man is a congeries of elementary species or *biotypes* and hybrids between such; and some or most of these biotypes are gregarious." It is the necessary abandonment of the view that mankind is fundamentally uniform and homogeneous that involves such a change of our fundamental conceptions. There is, indeed, no statement that can be made about man that is universally true; and here is where our social codes, our laws, our works on ethics find their real limitations. We hear it said: "Human nature is pretty much the same the world over"—yes, in its *variety*.

Let us consider some of the evidence for such biotypes in man. Every one is familiar with the ordinary anthropological races; the white-skinned, black-skinned, brown-skinned, yellow-skinned and red-skinned. And inside each of these races no less marked subraces or strains may be distinguished. Take the white race alone. There are the blue-eyed subrace of Scandinavia and the brown-eyed subrace of the Mediterranean coast; the straight-haired western Finns and the curly-haired strains found in spots of Scotland; the tall strain of Ayrshire and Galloway and the short strain of Polish Jews; the dolicocephalic Corsicans and the brachycephalic Dalmatians. Coming to America we find, similarly, in southern California that a subrace that is nonresistant to tuberculosis and bronchitis has been partially segregated; in a valley of the Berkshire Mountains is isolated a nearly pure strain of feeble-mindedness, including much epilepsy and migraine; in eastern Massachusetts is a partially pure strain of deaf-mutism. We have evidence of localities (frequently much inbred) where are being isolated more or less pure-bred strains of albinos, of dwarfs, of syndactyls and polydactyls, of the non-resistant to cancer, of myopics, of hermaphrodites, of melancholics, of eminent scholars (*e. g.*, the Dwight-Edwards-Woolsey complex of the Connecticut Valley), of military men and statesmen (*e. g.*, the "first families" of Virginia), of sea captains and naval officers (*e. g.*, the Hull-Foote family of Connecticut) and so on. Such "families" have just the same

biological significance as the blue-eyed or long-headed races; they are properly called biotypes. If some of these biotypes do not persist for more than a few generations it is because of the constant cross-breeding that is going on between biotypes. When a blue-eyed Irish girl marries a south Italian the children are all brown-eyed—the potential blue-eyed biotype is brought to an end by hybridization. So when a great color artist marries a woman who belongs to a non-artistic family the children may not belong to the artistic biotype; but, under appropriate matings, the characteristic of the biotype may reappear in later generations.

The objection is raised to this view that it overlooks the importance of opportunity in determining the vocation in which one finds success. This objection is founded on the fundamental theory that all men have equal capacities for all things and the reason why one person succeeds in one occupation and another in a different occupation is because they have different opportunities. And the objection vanishes when this theory falls. A year in a Berlin conservatory of music would be a great opportunity for some people; but not for me. How often is the dearest wish of a man to have his son take up the profession in which he himself has succeeded frustrated by the son's entire lack of taste or capacity for such a profession. "Opportunity" assumes an innate capacity for taking advantage of it. Hence, those who have had a "superior opportunity" must have had a germ plasm specially adapted thereto. Those who regret a lack of early opportunities really (within limits) regret their inability to respond more adequately to such stimuli—such culture—as came to them. Now, "all men" are born into thousands of distinct biotypes and what is true of those of one biotype is not true of others. A single standard "before the law" is as unbiological as it is cruel.

Consideration of the inequalities of persons "before the law" involves an examination of the foundations of law and society. Again and again, in various parts of the world, men have come together in communal life for physical and moral support, responding to a gregarious instinct. A leader is selected to enforce these communal customs that past experiences have proved to be favorable to the community. Moral law is merely this: behavior that is favorable for the specific community is "good"; behavior that is harmful for the community is "bad." Good and bad thus refer to conduct which is judged in its relation to the experiences, traditions and ideals of the given community.

Now, conduct is reaction to a stimulus; what the reaction shall be depends not only on the stimulus, but also on the nature of the reacting protoplasm; particularly, in man, of the senso-neuro-muscular complex. While in the young the relation of stimulus to reaction is relatively simple, during development there appears, most markedly in gregarious

species, an inhibitory mechanism by which the expected reaction may be stopped. The inhibitory mechanism (aside from its usefulness to the individual) is a device for protecting the community from reactions that, however favorable originally to the individual, are antisocial. Children at birth have the inhibitors undeveloped, but they have a marvelous capacity for acquiring them in some or all forms. Many a person, however, unfortunately for himself and society, is incapable of acquiring the full complement of them; he tends constantly or periodically, throughout life and despite the best training, to react directly to the stimulus that falls upon him, antisocial though the reaction may be. Such a person may have perfect "society manners" and be faithful in conjugal relations but on occasion will take from shops articles for which she has no need; or another is regarded as a valuable member of his community, a leading member of the bar and a pillar of the church, but about once a year consumes a nearly lethal quantity of alcoholic drinks; or another is an agreeable, generous, affectionate young fellow who, about once a month, secretly sets fire to buildings in order to feed an irresistible love of the excitement produced by the flames; or a young girl who does well at school starts out from a comfortable home ostensibly to go to Sunday School, but makes it a practise of spending the afternoon in the rooms of some marines; or a lad of refined home, beloved of his parents and loving them, slips out of doors instead of going to bed at night and sleeps in entry ways or wanders out into the country and spends the night in a barn. These are examples, among hundreds that could be cited, of a lack of specific inhibitions. The stimulus can not be shunted off; it must lead to the specific response. Just as the amœba throws out its pseudopods along the path of the incident ray and so moves from the source of light; as the moth flies towards the candle; as the carrion fly is directed in its movements by the scent wafted to it from afar, so such persons perform their unsocial acts as part of their necessary reactions.

In another set of cases every reaction to a stimulus is of a socially desirable sort. All desires for the property of others, all inclinations to avenge insult by violence, all tastes and appetites, including the sex instinct, are readily inhibited—are under perfect control. And why are they under control? Because, first, the person who has the inhibitors came from a fertilized egg that carried the determiners for them; and, secondly, was surrounded by influences that were favorable to their development. In what sense can these people be held to be equal before the law with those considered in the preceding paragraph?

Even in numerous elements of mood and behavior the influence of the hereditary make-up is striking. One person is prevailingly elated, jovial, irrepressible; another quiet, depressed, melancholic; another, still, alternates in these moods and when elated he believes he can do

anything, but when depressed a sense of helplessness overpowers him. Again, one person is original and independent while another is always imitative. Here is a famous lecturer who has quelled mobs with his eloquence but who is prevailingly diffident; while there is a woman who has lived always in the backwoods and is as forward as a Canada Jay. Sincerity or insincerity, generosity or stinginess, gregariousness or seclusiveness, truthfulness or untruthfulness, are all qualities whose presence or absence is determined largely by the factor of heredity. The way a person reacts to a given stimulation is, thus, determined by the germinal determinants that have fallen to his lot and the training and experience that have favored or repressed the complete development and fruition of such determiners. The self-control which he realizes he is exercising at any moment is a part of his involuntary reaction. And the individual can no more alter his reaction than he can pull himself up by his boot-straps.

How opposed is the conclusion, to which we seem logically forced, to the theory of organized society as carried out in its laws and in its treatment of persons. Here are two men, one whose reactions are all social; the other whose reactions are prevailingly antisocial. The first we praise, we heap with honors, we supply with the good things of life. The other we condemn, we hold him culpable, we confine him to a cell seven feet by four with little air and less daylight, and we feed him with the poorest food. We are rewarding the one and "punishing" the other. Yet each has turned out the necessary product of his own organism under the conditions in which it has developed. Neither exercised any selection of the elementary constitution of his organism, which was decided at the time the two germ cells united; neither had any control over the conditions of early development of the determiners, over his early education and the development of the germs, if any, of inhibitions. If the reactions of the organism are socially "good," fortunate that person; if he "elects" to study hard and prolong his education he does so because of a liking or ambition for which he is in no way responsible. Society does well to care for the good organism, to preserve it from overwork, from accident, from corroding influences. If, on the other hand, the reactions of the organism are socially "bad," unfortunate that person; if he "selects" bad companions and runs away from school, his reaction is in such case a necessary consequence of his make up. Society does well to restrict the product of the bad organism, protect society from it, or, if it seems best, to send it to the scrap heap. No doubt there are persons who are trainable, but have not had their inhibitions cultivated. It is sometimes possible to develop these dormant germs even relatively late in life. The infliction of pain is occasionally of educative value even in youth at the age of puberty. In other words punishment for crime may have, in some cases, a deter-

rent effect. But to punish the organism for an anti-social or "bad" reaction just because it is "bad" and in proportion to its badness (as we habitually do in the courts) is just as reasonable as the act of the little child who flogs his broken hobby horse because it no longer goes.

When a crime is committed society's first query is: Who is culpable? Let us find him and he shall be punished. The police officer bribed the gunman to slay the Jew. Who is culpable? The gunman? He reacted to the bribe in a fashion that was predetermined from his make-up and training. In his sordid way the policeman knew whom he could bribe. We can not blame the gunman any more than we blame the tiger. The police officer, then? No, he reacted to the stimulus of greed and fear that was predetermined from his make-up and training; the bear at bay would do the same. The responsibility goes back to society that permits the combinations to be made that react in this fashion and after such combinations are made fails to protect itself against their reactions. But, if these offenders are not culpable may they not be freed? By no means. These organisms are, as their product proves, bad; send them to the scrap heap. In general, if the trespasser has been apprehended, consider both the stimulus and the reaction. If it appears probable that there are undeveloped inhibitors the state should supply the training that may develop them. If not, the person should be permanently segregated from society, while his life should be made as happy and useful as possible; or else he should be entirely cut off. Especially should he not be permitted to reproduce his defects.

A word as to the rewards that society gives to those who are its effective and good members. Wages, salaries, profits, honors are such rewards. Because I am only half as good to society as another I get only half the reward. May I therefore complain? No, society is justified in making distinctions in its rewards. But I have no claim on a reward for attaining which I have done nothing except what I could not help doing; that I am good in any degree is no virtue of *mine*. Yet, from another point of view, the organism that is I has a virtue in so far as it reacts socially, and it may well call society's attention to the importance to society of its output and, in that measure, of the importance to society that it should be adequately supported. The man who invented a machine for making horseshoe nails made a fortune out of it, but he had no claim to that fortune; his germ-plasm had the determiners for inventiveness—his father also made machinery and was even interested in horseshoe nails. Society should certainly see that so good an inventor is properly supported. Indeed, society should see that the prize of special reward is held up before those who need its stimulus; but society may well fix a limit to such special rewards and not permit profits beyond such a limit. The successful lawyer and physician have no absolute claim to their large fees. Society in general recognizes the

value of their reactions and wants to see the reacting organism adequately sustained. That boldness, swiftness, certainty of manipulation and that precise knowledge which belong to the great surgeon are not due to himself, but were, in their elements, antecedent to him. He could not help his valuable innate qualities, his knowledge is largely a heritage of the past, his education has been possible because of his educability and because of preexisting knowledge. He can not base his claim for a large fee on any virtue for which he is responsible; but only on the ground that society should adequately sustain his obviously "good" organism. Of the question, in what that adequacy consists, society must be the final arbiter.

Thus the recognition of the part that heredity plays in determining human behavior leads us to see more clearly how secondary the individual is to society, leads us to avoid placing "blame" on the bad and fulsome praise on the good, leads us to recognize the true worth and the real limitations of education, religion and other good influences, and leads us to conclude that the greatest advance that humanity can make is to secure an increasing proportion of fit marriages producing the largest number of effective, socially good offspring to carry on the world's work.

So much I wrote last December and sent to the editor; but shortly after there appeared in *Science* (January 10) the address by Professor Edwin G. Conklin on "Heredity and Responsibility" and the editor suggested that, since Conklin's views and mine were not wholly in accord, that I should discuss our points of difference. Immersion in other work has caused a delay of four or five months.

For the most part Conklin and I are fundamentally in agreement. Certainly no farmer believes that the yield of his crop is predetermined in the seed he plants; nor are reactions controlled solely by one's germinal determiners. The most able artist needs training; but training is vain if there be no capacity whose development is to be cultivated. The importance of training, for the trainable, no one ranks higher than I. Thus I agree heartily with Conklin's statement:

The factors which determine behavior are not merely the present stimulus and the hereditary constitution, but also the experiences through which the organism has passed and the habits it has formed.

Only I would add: The effect of the experiences and the capacity for forming habits are, to a degree, determined by the hereditary constitution; just as my bantam chicks develop into bantam hens no matter how well I feed them.

But in his discussion of responsibility I am able to detect a difference of opinion between my way of looking at things and Conklin's. When he says it is the duty of society to produce proper environmental

stimuli for the child I agree completely but when he states that we have half-used talents that we may greatly improve, I feel like adding "if only the proper stimulus is afforded" (such as Dr. Pepper afforded Dr. Conklin when Dr. Pepper reminded him that he *could* do what he *had* to do).

But in the last two paragraphs of his address Dr. Conklin's views diverge more widely from mine, and I confess I can not follow him. We are agreed that through bad environment or culture potential inhibitions may fail of development; but I can not see how a man is responsible for the consequences of this bad culture of inhibitions any more than he is for not knowing how to read if he has never been taught. And my reaction to his inquiry: "Is it not a fact that belief in our responsibility energizes our lives and gives vigor to our mental and moral fiber" would be a denial. The moral fiber of my dog leaves little to be desired, and there is much in the devotion of many an untaught denizen of Central Africa that can not be matched in the descendant of any Puritan; yet it is fair to doubt if their actions are energized by a "belief in their responsibility." I do not think that "shifting all responsibility from men to their heredity or to that part of their environment which is beyond their control helps to make them irresponsible" or alters to any appreciable degree their behavior; the Puritan will be a Puritan still; the wayward girl will be wayward still. My view is that a person really can not react otherwise than he does under the circumstances in which he finds himself placed; a person, therefore, who accepts the theory that he is not "responsible" can not fail to continue to react in the same old way; except in so far as the idea *may* cause him (if he reacts that way) to put himself in the way of getting his environment improved. If I am not (but others are) responsible for my conduct then I must seek good intellectual and moral influences. And if my neighbor is not responsible for his conduct, but I with others am, why then I must bestir myself to help train him and his children. Man has become in truth his brother's keeper. As the farmer cultivates his crops and rejoices to see them grow, so every man of us lends his service to the culture of his fellow men. But as the corn stalk is powerless in and of itself to add one kernel to its ear, as the spaniel can not train himself to become in any degree a terrier, so I can not find any mechanism in man by virtue of which he can react to a given stimulus in a way opposed to that indicated by his inherent traits and functions, including the culture that they have experienced during their development.