Considerations with regard to Hereditary Influence.

By Henry Maudsley, M.D. Lond.

(Continued from vol. viii, p. 512.)

Es glaubt der Mensch sein Leben zu leiten, sich selbst zu führen, und sein Innerstes wird unwiderstehlich nach seinem Schicksale gezogen.*

Goethe's 'Egmont.'

Passing on from the consideration of influences which, before an individual's birth, and during the act of his generation, seem to have much to do with the determination of his destiny, it remains only to indicate the circumstances which may affect his nature during embryonic life. And although the effects which may then be produced are not truly hereditary, but in strict language connate, it is generally quite impossible to discriminate between them and such as are really inherited. There is no need to quote here any of the multitude of examples on record, testifying to the influence of the mother upon the embryo during gestation. It might be amusing, but it would scarce be profitable, to relate how that when Persina, Queen of Ethiopia, as Heliodorus tells, saw a very beautiful image of Andromeda, she brought forth a child, which was not only not an Ethiopian, but which was very like the image; how that children were born during the French Revolution who, as they grew up, were subject to unnatural terrors, and easily became insane, as Esquirol witnesses; and how that Hippocrates saved a woman who had a black child of a white husband, and who was thereupon accused of adultery, by attributing the result to the portrait of an Ethiopian on which the woman had gazed. Suffice it to say, that the direct influence of the mother's state of mind upon the embryo, has been popularly accepted at all times. Good use was made of the fact by the Jewish patriarch, who certainly never lacked advancement from want of worldly cunning, when he peeled the rods and "set them up before the flocks in the gutters in the watering troughs, when the flocks came to drink," so that the flocks "brought forth cattle ringstraked, speckled, and spotted," "and the man increased exceedingly."

Although it has been denied by good physiologists, chief amongst whom is Müller, that the so-called mother's marks are due to the influence of maternal states of mind, and there seems to be a great probability that the popular opinion upon that matter is a popular fallacy, yet it is admitted that a powerful mental shock in the mother may so far interfere with the nutritive processes of the em-

* Man fancies that he determines his life, that he guides himself; and all the while his nature is an irresistible part of his destiny.

https://doi.org/10.1192/bjp.9.48.506 Published online by Cambridge University Press

bryo, as to cause a positive arrest of its development. It is natural to suppose, therefore, that important, though less marked, effects upon the delicate and developing nervous system of the fœtus, may proceed from less violent and sudden mental disturbance in the mother. There are not wanting facts which testify to such influence by the mother on the mental potentiality of the fœtus. In no other way is it possible at times to explain cases in which children have become insane at early ages, or in which infants have been maniacal almost immediately after birth. In the same category with such unhappily constituted creatures might be placed some of those children who are born plainly non-viable, and who perish in convulsions soon after their entrance into the world. Convulsions and fury are but different manifestations of the degeneration of vital force; and as the convulsions of an epileptic paroxysm may on some occasions be replaced by a maniacal attack, so the instability of infantile nerve-element may be displayed in madness or in convulsions. It is probable that the illegitimate infant sometimes owes its peculiar liability to a still-birth, or to madness, to an instability of organic element, produced by the agitation of its mother's mind during her gestation, as well as to the desperate shifts to which she is put in order to conceal its existence. How dark, indeed, is the outlook, and how malign must be the influence, of a mind which oscillates between a memory quivering with remorse, a turbulent agitation of present feeling, and forecastings gloomy as the grave! The mother's terror and grief at her necessities make terror and grief a part of the necessity to which her child is doomed. On the other hand, it is not inconceivable that a woman of strong mind might bring good out of the evil of an unmarried pregnancy, thus supplying another reason for illustrious bastards. If she calmly accepts her position, and soberly determines to abide by the consequences, to suffer and be strong—that is not an unhealthy frame of mind. To be self-denying, self-reliant, and self-contained, is to have arrived at a high degree of mental development; and an infant formed within such a mould, or rather *informed* by such a force, may well be supposed to acquire admirable constitutional qualities. It will be possessed of an innate adaptation to the trying circumstances of life—it will be in a sort of pre-established harmony with nature.

Every one readily perceives the marked effects of the passions upon the processes of organic life, and finds no difficulty, therefore, in admitting the probability of the mother's passions influencing her fœtus; but it may be doubted whether sufficient importance is generally attached to the quiet and gradual manner in which the organic life incorporates habitual frames of mind and grows to habitual modes of exercise. There is an evident law by which the organism developes in accordance with circumstances, so that an individual who at first acts artificially in a certain way, often comes

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in the end to act naturally in that way, the act through organic adaptation becoming his nature. Many persons who begin by being false and hypocritical, end by being true to their acquired natures and sincere; they are then the worst hypocrites, for they are unconscious hypocrites, the falsest liars, for they know not when they are lying. Throughout life, indeed, conscious formation for unconscious action is a law of mental development. Many conscious efforts, for example, are needed in childhood to learn to walk; but in after life walking becomes an unconscious act, which scarce even demands a conscious effort to begin it. In like manner habits of thought are formed, and a strong character is one in which through conscious exercise a habit of willing has been formed, so that the will becomes almost "reflex." The culture of the mind has an ennobling influence upon the body, especially upon the countenance, and the evil passions in which an individual indulges are written down there by an unerring handwriting. Now it is of great importance to bear in mind that this law of organic adaptation operates through generations, so that the acquired nature of the individual by no means ends with him. On the contrary, it is certain that in some cases the habit or acquisition of the parent becomes the instinct of the offspring. Is it then anywise extravagant to conclude that the habitual frame of a mother's mind during gestation, must affect, in an important way, for good or for evil, the nervous potentiality of the child which she bears?

Do the circumstances of parturition themselves exert any considerable influence on the child's nature? Some observers have thought that they do. The only circumstances, however, which can justly be supposed to affect the child at that time, are the mechanical impediments which a large fœtal head, a small or deformed pelvis, or other accidental conditions, may place in the way of successful parturition. There seems to be no doubt that parturition takes place with greater ease and expedition amongst barbarians than in civilized communities. Travellers tell of the negro women retiring for such purpose for a short time from her labour into the bush, and then returning to her work; and we have the authority of the Abbe Frère, and that of Prichard, for the fact that the skulls of civilized people are larger than those of their barbarous ancestors. Nevertheless, if it be true that positive injury to the fœtal brain may be produced in certain labours of extreme difficulty, it is as true that in the great majority of difficult parturitions, as far as evidence reaches, no such mischievous effect is produced. And the supposition which connects in causative relation the difficulties of parturition with the greater frequency of diseases of the brain among the children of the civilized, is as negligent in what it omits as it is unwarranted in what it assumes. For there are very many circumstances which have gone to constitute the whole of the ante-

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cedent influence exercised upon the offspring up to the time of its birth, and which are plainly more numerous in civilization than in barbarism, the influence of which should not be forgotten.

Thus far the circumstances which seem to be of consequence to an individual before his generation, during his generation, during embryonic life, and during parturition, have been indicated. In so complex a matter it will evidently be exceedingly difficult to distinguish the cause of any effect; for the cause may be far back in the distant past, or it may be only in the immediate past; it may be the inheritance of generations or only the unwelcome acquisition of the preceding generation. Nothing is strictly predicable; it is not absolutely certain that the child will inherit the infirmity of a vicious parent, nor is it absolutely certain that the child of a virtuous parent will not be infirm; that which is the true test of a science, the power of predicting results, here fails altogether. Still, beyond the reach of particular uncertainties, one conviction does issue with certainty from such considerations; it is a conviction of the wondrous power of what might seem to be the most trivial circumstances in determining the destiny of the future. How many a false deed would have remained unacted; how many a wicked lie unuttered, could the authors of them but have sincerely realised the eternal nature of action! On every moment hangs eternity, on every act immortality.

Intermixture of species and varieties.—It might naturally be supposed that the results of the intermixture of different species and varieties of animals, and of the different varieties of men, would furnish some data for the determination of the ways of hereditary action. The results are, however, so various, complex, and seemingly inconstant, that it has not hitherto been possible to use them with any success. When animals of different species are induced to cohabit, it often happens that there is no conception, and when conception does take place, abortion not unfrequently follows. Whenever real hybrids are produced, they are either barren or so little fruitful that the stock soon becomes extinct. Nature thus distinctly refuses to intermingle species; in organic as in inorganic nature there are properties of different elements which are hostile to combination. Strangely enough, however, too great similarity between the elements is also hostile to proper combination in organic nature. Families which breed in and in, until all variety is lost, and each individual is saturated with a certain family likeness of composition, become degenerate, sterile, and die out. Mixed offsprings originating from different sorts of animals within the limits of the same species, are said to exceed the parent races in vigour and in the tendency to multiplication; and in the human race the best result seems undoubtedly to proceed from two individuals belonging to the same variety, who yet differ considerably in character of body and mind.

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When each possesses the qualities which the other wants, so that they complement one another, then the individual produced by their union under favorable circumstances realises in its nature the unity which they together make. It is a stable and excellent compound, a manifest development of organic nature. The statement as regards man is true only of individuals belonging to the same variety of the race; it is certainly not true of the union of the highest variety with a much lower variety, as, for example, of an European with a Bosjesman. Though the result in that case might be an exaltation of the Bosjesman it would certainly be a degeneration of the European; and although the Bosjesman and the European are not supposed to belong to different species, the result would unquestionably be very much like that which does proceed from the union of different species. Major Burton, indeed, says of the half-breeds of North America, that they are, like the mulatto, quasi-mules or hybrids, physically and morally degenerate, and often sterile. As their mission evidently is to die out with tolerable rapidity, it would appear that the tendency of natural law, in the intermixture of varieties of mankind, is to perpetuate the higher types.*

The infertility of hybrids, when we reflect upon it, would appear really to be a result of the operation of a law which is recognised as fundamental in organic development, namely, the law of progression from the general to the special, from the general tissue to special tissues, and from the general structure to special organs. For if hybrids were fertile, it is evident that species, which implies special organic adaptation to conditions of existence, must by intermingling be abolished. But as the special plan of being is in exact harmony with the external conditions, whether determined to such development by them or not, it is plain that the general plan could not be in such exact and excellent harmony with the external, and must either adapt itself thereto, in other words, develope into the special type, or must perish from inability of adaptation. It is very important to keep in mind that ascending vital manifestation through the animal kingdom thus signifies an increasing speciality and complexity of the relations of the individual with external nature. Even the superiority of the greatest philosopher over the ignorant clown or the miserable savage, lies essentially in the greater speciality and complexity of his relations with external natnre; the ideas in his mind are developed as correlates of the laws in nature, and such

* According to Mr. Huxley, all that the hypothesis of Darwin requires, in order to place it "bevond the reach of all possible assault," is a demonstration of the possibility of developing from a particular stock, by selective breeding, two forms which should either be unable to cross with one another, or whose cross-bred offspring should be infertile with one another. Is not this practically the result in the case of half-breeds? And is it not possible by selective breeding, to obtain in time, from healthy human beings, idiots which cannot cross, or whose cross-bred offspring is infertile?

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ideas are produced by a cerebral reaction to, and assimilation of, the impressions of nature. He illustrates, in fact, the operation of the law of natural selection; and it can admit of little doubt that but for his labours and moral action, the less favoured clown would degenerate into something very like a different species, and be compelled to give way to the higher species or more special organic adaptation which the philosopher represents. It is true that the union of a philosopher and a savage might be expected to be fruitful; but if we suppose the union of him with a being more degenerate than the savage, as, for example, an idiot, then the result would resemble that which follows the union of different species of animals.

Thus the differences between the varieties of men may be carried to such a degree as to render union between them unfruitful, and so far to render the differences equivalent to those which exist between species.

Such reflections would appear to suggest that there is some general plan or law in nature which, beyond the reach of individual peculiarities, governs the intermixture of different varieties of animals or of different individuals of the same variety—that there is the indication of some far-off event towards which the whole creation moves. Let us conceive, for illustration, the idea of a perfect dog, a dog which shall be strong and courageous as the bulldog, sharp-sighted and swift as the greyhound, of a scent as delicate as that of the bloodhound, and sagacious as the poodle, which shall, in short, have all the virtues of all the varieties of dogs. The imagination may represent to itself all the varieties of dogs as resulting from the splitting up of such an ideal dog; and the aim of canine development may be supposed to be to reconstitute this ideal in nature, to realise it in the concrete. Accordingly the introduction, in interbreeding, of any element which is wanting, and the addition of which will carry the result forwards towards the ideal, will be more likely to have a lasting effect upon the offspring than with the introduction of an inferior or degenerate element into a superior type. The courage of the bulldog will be more apt to abide in the offspring of it and a greyhound, than the want of scent of a greyhound to endure in the offspring of it and a bloodhound. How, indeed, should that which is a defect, or something wanting, have an equal probability of persistence in the order of nature with that which is perfecting, that which is exemplifying, the increasing speciality of adaptation to the external!

Similar speculations may be applied to the interbreeding of different varieties of mankind. Having formed the conception of an ideal man, it may be supposed that every element contributed by the parent which may tend to carry the result forward to the ideal, will have a much better guarantee of permanence than any element which is a degeneration from the ideal. In the struggle of the individual mind for development, there is simply a reflection in consciousness of

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the deeper law which is in operation throughout organic nature; it needs no lengthy disquisition to prove that the human mind, in the aspirations of growth, is accustomed to set up an ideal of itself, the perfections of which it then labours to imitate. This it does simply because of the natural law of progression from the most simple and general form of life to that most complex and special development thereof, which is represented by the highest mental cultivation. Thus, then, this striving after a mental ideal is not merely a human and conscious manifestation, but is the evidence of a law, in the operation of which mankind is but an event; a law which extends far beyond the earliest commencement of man upon earth, and will continue probably beyond his latest existence. It is in accordance with this law that we assume the existence of an effort, so to speak, throughout nature to eliminate sooner or later any element which, in the propagation of life, is unfavorable to the plan of progress, just as on a small scale in the individual organism tainted with the syphilitic virus there is a continual effort to get rid of the poison and to revert to the sound type. If we endeavour to rise beyond that narrowness of view which regards everything as entirely in reference to the self, it must appear that, in the conception of a general plan of nature, a vice of disposition is no less morbid a taint than a vice-produced poison, and is as little likely to be endured longer than is necessary. But as the inferior race of man perishes when brought into contact with the superior race, or as monsters and other imperfect individuals are nonviable or unfruitful, so in the union of an individual of a superior character with another of an inferior character, other things being equal, the good, viable, perfecting elements of the former will endure, while the bad, defective, nonviable elements of the latter will tend towards extinction.

Hereditary action in disease.—The pathological action of hereditary influence is quite as difficult and obscure a subject as the physiological action thereof. Indeed, it is not altogether improbable that, if the latter were well understood, it might be possible to predict with tolerable accuracy the phenomena of the former. For the laws of health and disease are not different laws; and any science which professes to explain the laws of health, is radically imperfect if it cannot explain those of disease. A mental philosophy which ignores the lunatic, as so many systems of philosophy have done, is a mental philosophy which cannot be surely established; and the physiology which quietly dismisses an interference with its system as disease, is no science at all. Disease is as much a part of the history of life as health; and to die is quite as natural as to be born. The study, therefore, of the laws of morbid hereditary action might profitably be undertaken with the hope of throwing some light upon physiological action.

Observation shows that some diseases are transmitted from parent

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to offspring with greater frequency than others, but that no disease is transmitted with absolute certainty: every disease may, in fact, pass from parent to child, but no disease must necessarily do so. Inasmuch, however, as reproduction is a general function, it has naturally been said that general disease will be most likely to pass by hereditary transmission. But as a single organ of the parent may in some mysterious manner transmit its infirmities through the spermatozoon to the offspring, why should hereditary influence be limited to general diseases? There is neither blood nor nerve to be found in the spermatozoon, but it contains somehow the potentiality of every histological element of the individual from whom it proceeds. Clearly, then, it may contain also the morbid disposition of any such potentiality. If a minute quantity of the virus of smallpox and a similarly minute quantity of the virus of typhoid fever were submitted to the experienced pathologist, he would be utterly unable to distinguish between them; but let them be introduced into a human body, and how great and manifest are the differences between their effects! In the smallest appreciable quantity of organic matter, or even in an inappreciable quantity thereof, there may plainly exist most various conditions which are not recognisable by our present science, but which very distinctly declare themselves when the due conditions of development are supplied.

It is furthermore evident that the actual disease is never transmitted by the parent; that which is inherited by the offspring is the potentiality of the disease or the conditions of its production under certain circumstances. When tubercle is said to be transmitted by hereditary influence, there is no tubercle in the spermatozoon, and when cancer descends in like manner there is no actual cancer in the elements of the semen. In however decided a manner a disease may descend, its appearance in the offspring must be a question of time and condition. It may manifest itself in the fœtus before birth, as with syphilis; or in the child immediately after birth, as is sometimes the case with tubercle; or perhaps not till late in life, as generally happens with cancer; but it certainly never does exist as an actual disease in the elements at the time of conception. Before the tissues are themselves developed, degenerate conditions of them or specific deposits in them, plainly cannot take place. The conditions of a disease of any structure are, then, in the so-called hereditary transmission of disease, intimately or indissolubly bound with the potentiality of the structure which there is in the spermatozoon; and the disease cannot declare itself before the development of that potentiality into an actuality, and will only declare itself on the supervention of that condition of the actual structure, which, together with favorable external circumstances, constitute the conditions of its development.

In the natural course of the development of the body a certain

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tissue makes its appearance at a certain time, or at another period of life undergoes a certain exaltation of its functional activity. If there is not, by reason of an inherent infirmity, force sufficient to develope rightly the tissue, histological elements of an inferior order or lower species may be produced—and that is a diseased product. Or after the tissue has been produced, it may not be capable of the functional exaltation which is natural to it at a certain period. There is an instability of organic element which renders it unequal to the strain which is put upon it, and the unsuccessful attempt to respond is displayed in the degenerate tissue of the morbid material.* Diseases, especially those which are hereditary, are then more liable to appear at certain ages, because the organs or tissues in which they do appear then arrive at a certain activity. In infancy, for example, the lymphatic and nervous systems predominate, whilst the skin is soft and tender; and accordingly infancy is liable to scrofula, nervous affections, particularly convulsions, and variola. As years go on the muscular system developes more and more, and with the approach of puberty the arterial system attains to a greater predominance. Hence there is at that period a tendency to inflammatory diseases and hæmorrhage, and the foundations of phthisis are sometimes then laid. So far the organic activity has been directed chiefly to physical development; but after puberty, the sexual activity declares itself in the brain by exciting new desires and ideas, so that in addition to hysterical affections, hereditary mania with love notions is apt to appear. In manhood, rheumatism and gout; in more advanced age, abdominal diseases, hypochondria and melancholia; and in old age, relaxation of the nervous system and apoplexy, testify to the respective predominance of the different tissues and organs at these different periods.†

At the time of its birth an infant may suffer from pathological hereditary action in three different degrees, which, although they run insensibly into one another, it is convenient to distinguish. It may have a particular organic disposition, so that under certain circumstances the disease will certainly be produced, when it would not appear in a perfectly sound constitution under the same circumstances. There exists in such case a constitutional predisposing cause. Secondly, the actual germ of the disease may appear to be present, and may develope of its own energy, however favorable the external circumstances. And, thirdly, the disease itself may exist. As we travel backwards, however, from the time of birth to the period of conception, there must obviously be a time when there was no actual disease, no actual germ, but only the organic predisposition or particular constitutional idiosyncracy.

* This is treated of in an article on "The Theory of Vitality" in last number of 'Brit. For. Review' (October, 1863).

† Petit.

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Let us consider the first of these conditions. Life in every form, physical and mental, is a relation; its phenomena result from the reciprocal action of an individual organism and external force; and disease, being a particular manifestation of life, is necessarily a relation also. Health is the consequence of a successful adaptation to the conditions of existence in the struggle of life, while disease is produced by a failure in such adaptation; hence health implies development and the continuance of the organism, and disease leads downwards to death. Now, the harmonious relation which must exist between the organism and the external in health, may obviously be disturbed either by a cause in the organism or by a cause in the external circumstances, or by a cause which springs partly from one and partly from the other. So that, assuming life, disease might properly be defined as an altered (unharmonious or discordant) relation of organic element to external nature, depending for its production on either singly, or on both conjointly. It is the last form of production that we are at present concerned with; we have a cause of disease arising from a natural infirmity of the organism, and from an order of circumstances positively unfavorable to the inherent feebleness. Were the organism in a state of perfect soundness, and in possession of that reserve power which it then has of adapting itself within certain limits to the condition of the external, those circumstances might not be sufficient to disturb the relation, and thus to initiate disease. Or, again, if the circumstances were of an extremely favorable character, and yet there did not exist an organic infirmity, it is possible that even then with due care the relation might not be disordered so far as to produce disease. But when there is plus unfavorable action from without with minus sound action or reaction from within, the sure conditions of disorder are established, and the evil must declare itself. Plainly, then, in such case the individual does not inherit the disease, nor does he inherit the certainty of it; all that he does inherit is a certain organic disposition which, on the occurrence of a certain order of external circumstances, will surely give rise to disease.

When we speak of the hereditary transmission of insanity, it is this first degree of pathological action that is implied. A particular disposition of nerve element has been inherited, which renders the individual liable to suffer from the ordinary circumstances of an average life. A person of the soundest constitution, whilst suffering temporarily from nervous exhaustion by reason of some great mental anxiety or some physical cause, may, if certain unfavorable external conditions happen to occur at that time, break down in mind, just as a strong man temporarily heated and exhausted by a great exertion may, from exposure to a powerful draught, get an acute pneumonia. In him the organic infirmity was a temporary and accidental production, and he needed only to have exercised due care whilst suffering,

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to have avoided the unfavorable conditions, and he would have escaped the disease. But in the individual who has inherited an unfortunate disposition of nerve element, there is an innate and ever present infirmity; and the careful avoidance of unfavorable circumstances becomes a continual and almost hopeless task. For the organic infirmity may exist in every variety of degree, from a condition scarce distinguishable from perfect soundness to that worst of conditions in which insanity is produced on the first play of external circumstances, when, in fact, the infant becomes insane immediately after its birth. It is evident, also, that although great care will be necessary at all times when there is an organic predisposition to insanity, it will be especially necessary at those periods of life when there is a change in the physiological activity of the organism. For a considerable change in the relations of an infirm organism to the external, whether the cause be in one or in the other, must necessarily always be very critical. The times of puberty, of childbirth, and the climacteric period, will especially demand the most favorable collocation of external circumstances.

When the germ of a disease exists in the offspring at the time of its birth, it may happen that no external circumstances, however favorable, succeed in preventing its development. Still, even in that case, it is not to be supposed that the actual virus of the disease is transmitted in generation, though the certainty of the disease be so transmitted.

In the third degree of morbid hereditary action, the disease itself may exist in the infant at the time of birth. Under such circumstances, it may sometimes have been communicated by the mother during gestation. Thus, the mother suffers from smallpox, and the child is born with the smallpox, or she suffers from syphilis, and the child is born syphilitic. The disease is then not really hereditary, as it is not the result of any organic disposition transmitted in generation—it is connate. Practically, however, it is impossible to maintain the distinction; for a disease which is supposed to be connate may often be partly hereditary also. Thus, when M. Esquirol states that during the French revolution many idiotic children were born, he assumes the cause of the idiotcy to be in the terror and agitation which the mothers underwent during gestation. When, however, the child of an insane person is an idiot, the evil is strictly hereditary. But who can justly say, in the first case, how much may be owing to the parental mind before and during generation; and, again, who can say in the latter case that part of the ill effect is not produced during gestation? Without doubt, if our knowledge of the subject were definite and satisfactory, it would be necessary to distinguish between the infirmity which a child has inherited from infirm parents, that which has been communicated by sound parents during generation, and that which has had its origin during gesta-

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tion; but in the present vague and uncertain state of knowledge, such precision can be nothing more than a devout imagination.

An accurate account of hereditary morbid action is rendered further impossible by the combination which seems to take place between diseases in generation. The father has one disease, and the mother has another; but the child has neither the disease of the father nor that of the mother, but a different disease of its own. Has it then inherited it? Here manifestly we come upon the law which has been found to be of so much importance in physiological action, the law, namely, of invention or combination—the variety-making law which is in regular operation throughout organic nature. There may be in generation a pathological as well as a physiological compound produced; and the compound in pathology as in chemistry, may not resemble in properties its constituents. The interbreeding of diseases may, like the interbreeding of different species of animals, give rise to hybrids; and there is not at present any exact knowledge of what forms the hybridism of disease may assume. When the parents are syphilitic some are of opinion that scrofula is produced in the child. When the parents are scrofulous, the child may have tubercle in its meninges or its mesenteric glands. When mania in the father combines with melancholia in the mother, the result, when there is one, is neither mania nor melancholia, but idiotcy—a further degeneration, as it were, in the retrograde metamorphosis of vital compound. Lugol finds insanity to be by no means rare among the parents of the scrofulous and tuberculous; and in one chapter of his work treats of hereditary scrofula from paralytic, epileptic, and insane parents. Whether or not it be true, as Virchow maintains, that there is not a single morbid product but what is a physiological element in some part of the organism at some period of life, it is evident that we may legitimately expect in pathological combination variety in the character of the morbid result and in the seat of it. The metamorphosis of morbid kinds in hereditary action is at any rate a subject which is deserving of investigation; and it is not improbable that its careful study might throw some light upon the obscurity of physiological action in generation.

Hereditary action in moral phenomena.—Dismissing now the phenomena which testify to the existence of laws governing hereditary influence with a full conviction of their certainty, though unable to discover what they are, it remains only to indicate their important bearing on certain facts in human life, in the consideration of which their influence is scarce sufficiently weighed. In truth, man finds it necessary to make divisions in his knowledge of nature; and then, fancying that the fact in nature must be conformable to his idea, believes that such divisions actually do exist. But nothing like a line of division does exist between one part of nature and another; and even the distinction made between life and death is a distinction

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which human finiteness alone demands. One fact in nature, or one part of nature, however seemingly insignificant, has, properly looked at, relations to the all; and the laws which govern the motions of the smallest atom that floats in the sunbeam, or the minutest molecule that vibrates within the little world of an organic cell, are bound in inextricable harmony with the laws by which spheres revolve in their orbits, or those which govern the marvellous creations of god-like genius.*

The consideration of the order of physical facts, as concerned with man's nature, cannot fail to suggest reflections on their relation to his moral nature. As it appears that disobedience to the physical laws of nature by parents may be the cause of intellectual or moral idiotcy in children; and as it is certain that infraction of moral law may result in physical infirmity, it is plain that we cannot justly consider the moral and physical laws quite separately. The idiot, if we reflect, is not an accident; nor is the irreclaimable criminal an unaccountable casualty. They belong to the order of physical facts, and cannot be ignored by a philosophy which undertakes the conscientious explanation of natural phenomena. Moral responsibility and physical law must be brought into harmony if each is to preserve its reality; and the want of 'innate idea' in the idiot, and the absence of 'moral sense' in the persistent criminal, must receive their natural explanations.

It has been previously said that the phenomena of life result from the action and reaction between the individual and the nature which is external to him. As such relation becomes more special and complex in the higher forms of life, we designate it as cognition and action, or science and art. Experience teaches the individual that for the maintenance and successful development of his nature he must observe attentively the relations of things around him, and conform to the laws under which they exist; or, in other words, to the increased speciality of external impressions corresponding internal adaptations must take place. He burns his finger, and learns the properties of fire; he is poisoned by the marsh miasm, and he is moved to avoid or to drain the marsh; he observes the direction of the magnetic needle towards the pole, and he learns to navigate the seas; he studies the physical laws, and in the relation between him and external nature strives to place himself in conformity with them. Thus he has behind him the physical forces; thus he obtains the true development of his nature; and thus does the development of nature through him take place. Art, in truth, is not the reproduction of nature, but the development of nature through man; it is

* Denn wo Natur im reinen Kreise waltet
Ergreifen alle Welten sich.—*Goethe.*

Wherever nature works in one pure circle, all worlds are comprehended.

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not the imitation of nature, but nature with a human element added. The perfection of art corresponds to the degree of science or knowledge acquired, and the degree of science represents the speciality and complexity of human adaptation to external nature.

An individual has not, however, merely to deal with inorganic matter and physical forces, but he has to deal with organic matter and so-called vital forces. Every other being is external nature to him. It is evident, then, that he must study, not only the laws of the physical forces, but also the modes of action of human force; it would be almost as foolish for any one to ignore the law of gravitation in the affairs of life as to ignore the passions of human nature in the conduct of life. The laws to which every one should conform in his intercourse with human nature are called moral laws; they are the natural laws governing his relations with that which is the highest development of nature. Any one may certainly disobey these laws, as he may disobey the physical laws, but he cannot do so with impunity; suffering will teach the error of disobedience to them as it teaches the error of disobedience to physical law. An individual, therefore, looking round at the external nature in harmonious relation with which he should develope, and wishful to form for himself rules of conduct, might thus subdivide natural laws:

Subdivision of the laws of nature, which are to be recognised, as the condition of successful intercourse with it.

a. Moral Laws; or the natural laws which are concerned with the intercourse between man and man, the knowledge of which is Moral Science.

b. Organic Laws; concerned with the production and development of organic bodies, the knowledge of which is Biology.

c. Chemical Laws; concerned with chemical combinations, and formularised as Chemical Science.

d. Physical Laws proper; concerned with ordinary matter and formularised as Physics.

Suppose, now, that any one should determine to confine his observations to one department of natural laws, and to study these without regarding their relations to other laws—should determine, for example, to examine into the laws of organic action without reference to chemistry or to physics—and what must be the result? Barren as the east wind, and even in so far as any result was obtained, positive error. An organic science is admitted by every one who has any knowledge of the subject, to be impossible, save on the basis of physical and chemical science; and by some it is soberly maintained that physiology is nothing more than applied physics and applied chemistry. And what better hope can there justly be of a moral science which is constructed independently of biology? It has already been shown that the drunkenness of parents may become the idiotcy

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of children; and it is acknowledged that the propensity to drunkenness, like the propensity to thieving, or other crimes, may descend through generations. The moral character of a young fox which is born where foxes are hunted, is different from that of the young fox whose ancestors have never been hunted; there is in the former case much more cunning independently of individual experience. In like manner those who are born of inveterate criminals inherit a nature which exhibits an elective affinity for crime. Moral character is experimentally fashioned by us in the interbreeding of animals; and 'Ethology' has been proposed by Mr. J. S. Mill as an appropriate name for the science of the formation of character among mankind. Differences in the moral sensibility of the individual are again notably produced by bodily causes. The presence in the blood of some matter which should be excreted from it, influences the feelings and renders the ideas of the relations of external things inaccurate and unjust; and while temporary causes may thus produce temporary effects, causes which are constantly operating produce permanent effects. Seeing, then, that morality might even be described as applied biology, how is it possible to study moral science quite independently of biological science? The sciences are not distinct and independent growths like different trees on a certain soil, but interdependent like the branches and trunk of one tree. Cut off one science from the rest, and it is as a branch cut off from the vine which beareth no fruit, but speedily withereth away. In a vital unity with one another they reflect the unity of nature.

If the sciences are thus closely interdependent it becomes an important question whether they admit of different methods of investigation. It is generally acknowledged that an acquaintance with physical laws is obtained only by the careful observation and interpretation of nature; and the system, which at one time prevailed, of looking into the mind and of then transferring the feelings which were found there into objective realities as laws or principles of nature, has been abandoned in physical science. The inductive method has received universal sanction in its application to the physical, chemical, and organic laws of external nature; every one is content to allow that in the large department of nature over which these laws hold sway, he must regulate his conduct according to the generalisations which he has arrived at by means of observation and experiment. No unerring internal sense, no implanted or innate ideas are assumed to be available for obviating the necessity of tedious investigation or correcting the errors of hasty generalisation. But it is supposed to be different with regard to moral generalisations. A special 'moral sense' and certain 'innate ideas,' or the innate capacity of certain ideas, are generally assumed in moral phenomena. Morality is not, according to such view, a science arrived at by induction, but a revelation resting on principles inherent in the consti-

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tution of man anterior to all observation. While the individual must labour to discover and develope his just relations to the whole of inorganic and a great part of organic nature, he has within himself principles of action with regard to that part of the organic world which humanity constitutes.

If the view which has been before taken of morality as a science existing in vital and indissoluble unity with other sciences be correct, there is obviously a great presumption against any proposition which disclaims the adoption of the inductive method. It will appear, *à priori*, improbable that the individual should have implanted in him certain guiding principles with reference to a particular department of nature. It will be furthermore impossible to define the extent of this special department; and there will arise the danger of a want of harmony, or of a positive contradiction, between the unalterable innate principles and the generalisations which are obtained by observation and ratiocination. Thus, for example, moral responsibility, which is the necessary correlate of the existence of a 'moral sense,' is irreconcilable with that which scientific investigation of the phenomena of hereditary action teaches with regard to the nature of certain constitutions. To look for moral action from certain natures is, in a scientific point of view, as vain and unreasonable as to look for grapes on thorns, or figs on thistles. Genius is not the individual's merit, and the moral idiot is so, not by virtue of his own choice, but by virtue of natural law.

It is not the place here to bring forward examples of the contradictory principles of morality which have prevailed amongst different nations for the purpose of exhibiting positive evidence of the non-existence of a universal moral sense; it is sufficient to say that the most earnest believers in the moral sense have been obliged to abandon the notion that it discerns what is right or wrong in the particular case. But as there is a right or wrong in the particular case, there must be some way of ascertaining it otherwise than by moral instinct; and if that other method is sufficient in one case, it is difficult to understand why it should not be sufficient in other cases, why, in fact, it should not be *the* method. There is good reason to believe, as has been already indicated, that this method, which is really the inductive method, is sufficient of itself, and alone meets all the difficulties of the subject.

What conclusions then, does the unbiassed observation of individuals teach with regard to the nature of moral sensibility? In the first place, it compels the admission that a special moral sense is not the invariable endowment of every human being; that the sense to discern what is right and what is wrong does not exist in like manner as the sense which discerns objects or the sense which hears sounds. In the second place, it is a necessary induction from the facts that there do exist differences between the moral sensibilities of

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different individuals. Wherein then lies the difference between men in regard to their moral sensibilities? It is not owing merely to a greater or a less sensitiveness of nerve element, as it unquestionably happens that some who will faint at the sight of blood, weep at a harsh word, and in other ways evince their exceeding sensibility, may be cunning, vicious, deceitful, and in a moral point of view contemptible. On the other hand, an individual of somewhat obtuse sensibility, who cannot shed tears of compassion over a dead or dying ass, cannot fall into hysterical incoherencies on the news of a friend's death, cannot be grievously afflicted by the sufferings of a pet terrier, may yet be sound-hearted, honorable, utterly incapable of deceit, and painfully disgusted at the exhibition of it in another. Though a person of great sensibility might not unnaturally be supposed to feel ideas more acutely than one of duller sensibility, it does not thence follow that it will be a moral feeling of them; rather is it to be presumed that the former, being possessed with a feeling by which self is so vividly affected, will lose in accuracy of perception according to the degree of feeling, and will be unable to rise from the representative ideas of perception, and the attendant emotional affection, to the conception of ideas of the various relations of the object and the moral feeling which should accompany such general or abstract ideas. Thus a great sensibility may even act as a bar to the progression from the egoistic state of mental development to the altruistic stage. And it is accordingly a matter of observation, that some who possess great sensibility, and even considerable æsthetic feeling, are in a moral point of view very questionable mortals.

It cannot, again, be justly said that the moral differences between men are determined altogether by the degree of intellectual development. Given two individuals of exactly similar physical constitution, and it might perhaps be successfully argued, that the moral stature would be dependent upon the intellectual culture. But when the facts of life are appealed to, it is abundantly manifest that cleverness is not synonymous with moral feeling, nor dulness synonymous with vice. No rascality equals in selfish earnestness, cruel deliberation, and unfeeling abandonment, that of the educated criminal. The obtuse and ignorant labourer who, in a dull flare of half brutal passion, murders his wife, in all likelihood feels a horror of himself afterwards, and is burdened with the misery of an unaccustomed reflection, while the educated and polished scoundrel, with cool ingenuity and artistic execution, accomplishes crime after crime, and appears to be untroubled by the shadow of a remorse. The stories of the greatest criminals reveal, indeed, such a grievous absence of moral sensibility, that it might be truly said that an ingenious and educated mind, with the absence of moral sense, are the due conditions of a great criminal. The unlearned rogue, again, has a sort of

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professional conscience, and will hold it a disgrace to betray his comrade, while the man of education, who has given himself up to a selfish and deceitful system of personal aggrandisement, is stayed by no sense of thieves' honour, and will with the utmost unconcern calmly undermine his nearest friend: all considerations seem to be absorbed in the cleverness of the intellectual game which he is playing. Devoting himself to a well-considered plan of accomplishing his self-centred purposes, he is emancipated from the restraints of moral feeling, and uses without compunction weapons which a better man would disdain. It is very certain that there may be great intellectual development of a sort without correlative moral development.

Meeting, then, as we unquestionably do, with sensibility of disposition without moral feeling, and insensibility of disposition with good moral feeling, intellect without morality, and stupidity with morality, it is an unavoidable conclusion that the moral sense or moral sensibility is not a constant gift of nature, but, like the musical sense, or great æsthetic feeling, an excellent endowment of some constitutions—that it may exist in different degrees in different persons, and that it may unhappily in some cases be absent altogether. It is certainly not a special sense which is present, even when it is not exercised—has not a potential existence in each individual—but it appears to be an excellent quality in the constitution of nerve element, whereby this reacts or vibrates to certain impressions in the high harmony of moral feeling; or, in other words, it is an altruistic feeling of the mind, whereby the individual places himself in the position of others and realises their relations. Hence it is that, as being the most delicate quality of nerve element, moral sensibility quickly suffers from anything which affects the condition of the nervous substance of the brain; as, for example, a blow on the head, a poison in the blood, or disease of the brain; while moral alienation is the most constant symptom, and, according to Esquirol, the proper characteristic, of mental derangement. Like a large and well-formed brain, then, or like a sound constitution, a good moral sense is a blessing to be thankful for, and certainly not any merit of the individual, who in such matter might well put up the prayer of the Arabian philosopher:—"O God, be kind to the wicked; to the good thou hast already been sufficiently kind in making them good."

If the moral sense be not an invariable endowment of every human being, but an acquisition in the course of human development through the ages, how is it determined in the individual? The obvious answer is, that what is innate in one man and not in another, must be determined by some law of hereditary influence; what other law, in fact, than that by which parental virtues and parental vices are not disappointed of their effects, but the good

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man leaves an inheritance to his children's children, while the sins of the wicked are visited upon his children unto the third and fourth generations? When the fathers have eaten sour grapes, it is not a meaningless outburst of poetical imagination, but an actual law of nature, that the children's teeth are set on edge; and it may be acknowledged with Sir T. Browne as a truth, which observation establishes, that there is "a contrariety of vice unto the individual's nature," when "honesty and virtue lay in the same egg with him."

A life passed in obedience to the physical and moral laws of nature, notably fulfils those conditions which are necessary to the production of the greatest vigour and well-being while itself endures, and furthermore establishes such conditions as are most favorable to the production of future sound and vigorous life. The parent in such case may be said to transmit his virtue to his offspring in a pre-established harmony of constitution with natural laws, an innate tendency, as it were, to conform to them. And this tendency or heritage is, in reality, that potentiality which, according to the mode of its display, has been described as moral sense or innate idea; for the principles which account for the origin of the moral sense will be found to be applicable also to the production of so-called innate idea. The mode of origin of this innate potentiality, whether of moral feeling or of idea, affords indeed an example of that incorporation of conscious acquisition as unconscious stored-up power, which is constantly taking place in the individual life; it is as when those who migrate from their native land to other climes endow their progeny with an inherent adaptability to the new conditions; or it is as when the young fox or young dog inherits as an instinct the cunning which the parent has acquired by experience.

It might seem unnecessary to lay stress upon the great importance of an individual's inborn character, his *nature;* but it is remarkable how much this is generally overlooked or disregarded. The influence of systematic culture upon any one may unquestionably be great, but that which determines the possible extent of culture, the foundation upon which all the modifications of art must rest, is the inherited nature. Many an experience in life teaches the individual happily situated as regards his parentage how incalculable is his debt; and many an experience reveals to the observers of him who is unhappily situated as regards his parentage how certainly evil reproduces evil through generations. When the favorably endowed being has been compelled to act hastily, or under difficult and trying circumstances to which he was not consciously equal, or under great temptation to wrong, or in any other case in which his art was unavailable or ineffective, with what a lively thankfulness might he sometimes bless the nature which he has inherited, the reserve force of a sound and vigorous character which his parents have endowed

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him with, and which has enabled him, as his leisurely consideration proves, to have done rightly when he knew not what he was doing! Again, how often is a man indebted to the nature which lies beneath his art for benefits which he does not appreciate? When, for example, he elaborately displays himself in accordance with certain rules of his art of self-formation, and thus represents himself as such and such a creature, it is often a positive blessing to him that, notwithstanding his efforts, his inherited nature peeps through all artifice, and reveals to men that he is not the fantastical fool which he would consciously appear.

Though industrious mediocrity labour earnestly day after day, from the rising of the sun to the going down of the same, yet will it not attain to the intuition of genius; what man is there that can by taking thought add one cubit to his stature? "Where natural logic prevails not, artificial too often faileth. Where nature fills the sails, the vessel goes smoothly on; and when judgment is the pilot, the insurance need not be high. When industry builds upon nature, we may expect pyramids; where that foundation is wanting, the structure must be low. They do most by books, who could do much without them; and he that chiefly owes himself unto himself, is the substantial man."* The man of great genius sometimes writes what appears to be mystical, or perhaps unmeaning, and mortals of much inferior mental capacity will helplessly wonder, complacently smile, or sneeringly deride. And yet the truth of the matter often is that the seemingly mystical man, being really a man of genius, is constitutionally in harmony with nature, and instinctively or intuitively feeling his harmonious relations, expresses them without a clear consciousness. Accordingly, others coming afterwards and labouring consciously to acquire that which the happily endowed being has inherited in his nature, by degrees find out the genuine and true signification which there was in his apparent mysticism. It is not the merit of genius that its insight should be great, as it is not the fault of idiotcy that its intellect should be deficient; in the mysterious course of events a particular organic compound has been formed, and the display of its properties is determined by a necessity as rigorous, though not as manifest, as that which governs the activity of a chemical compound or the blossoming of a particular plant.

Like considerations should rightly be borne in mind when dealing with the moral sense. As in the man of genius there is the innate capacity of the highest ideas, and as in the congenital idiot there is the innate incapacity of any ideas, while between the two extremes every gradation exists; so there is in certain constitutions the innate capacity of moral development, or, as might be said, an innate moral sense, while in others there is an innate incapacity of moral development, or an innate immoral sense —and between the extremes there exists every gra-

* 'Religio Medici.'

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dation. And although we may not be able to point out those laws of hereditary action by which an excellent result ensues, there is the strongest reason to believe that a conscious or unconscious conformity to physical and moral laws through preceding generations is essential. This, at any rate, is certain, that those who systematically through life ignore moral obligations do curse their posterity with an innate deficiency, or complete absence, of moral sense. Even the merchant or man of business, who, forgetful of the reality of moral law, has laboured with persistent selfishness to gather together riches in the hope and expectation of founding a family, fails for the most part in his purpose, because he has striven to build a house, not upon the rock of eternal law, but upon the shifting sands of short-sighted selfishness.

That innate idea and moral sense should have been pronounced the invariable endowments of all mankind, has been due simply to this fact, that it is the men of a certain intellectual culture who write books and promulgate systems. These philosophers have in this matter, as is customary with them, converted the subjective phenomena of their consciousness into objective realities, and have declared that which was true of their minds to be true for all humanity. All, meanwhile, that they were really entitled to say was, that moral sense is something which is necessarily acquired in the course of human development through the ages. Let us briefly point out, then, the probable manner of its acquisition.

The infantile condition of mankind, as exhibited by barbarians, never offers a pleasing spectacle; for the innocent simplicity and stern virtues of the savages, like their superior strength, exist only in the imagination of the novelist. Cruel, sensual, and deceitful, they are as ignorant of the laws which should regulate human intercourse, as they are of the physical laws. The experience of suffering which sooner or later moves a people to an observation of the physical laws, reveals the necessity of some laws to regulate intercourse between man and man. As a social being man early perceives that the uncontrolled indulgence of the desires of the individual is incompatible with the rights of others, and will not be endured by them. Whosoever, obeying only his own instinct of self-conservation, strives for all the gratification which he can obtain, regardless of others, arouses the antagonism of their self-conservative instincts, and suffers for his inconsiderate selfishness. But as man is not, like the animals, entirely under the sway of his instincts, but is endowed with an intelligence which discloses to him his manifold relations to others, he soon learns that the true good of each individual is attainable only by a regard to the good of all; and he accordingly makes certain simple generalisations, which are the crudest recognition of moral law, just as his simple generalisations respecting inorganic nature are the crudest recognition of physical law. If we suppose the simple savage to take to his arms a squaw of whom he has children, then

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the feeling which he had for himself alone will expand so as to include his family; he would now resent an injury to his family as he formerly resented an injury to himself. But he has sufficient intelligence to perceive that what would be an injustice and something to be resented if inflicted upon his family, is an injustice which will be resented if inflicted upon another's family. There arise then a desire and a determination that the offender should be punished. Hence it is that the primitive justice of mankind is always a simple vengeance—it is the *lex talionis*, the eye for the eye and the tooth for the tooth. But as the fierce vengeance of the Jewish law developes into the gentle holiness of the moral code of the New Testament, so an advancing nation proceeds gradually from the primitive justice of stern retaliation to the moral justice which strikes regretfully, rather in sorrow than in anger. That which begins as a moral cognition becomes in the course of generations, under favorable circumstances, an instinct of the being; and it is then called a moral sense. It is a painful illustration of the difficulty, if it is not a proof of the hopelessness, of implanting a moral sense in mankind generally, that even at this stage of civilization the brutality of the savage's nature should now and then break triumphantly forth, and brand that which is the highest development of humanity in an opprobrious sense as humanitarianism.

Regarding, then, the genesis of intelligence in mankind, it is evident that, in the order of existence, intellectual cognition does and must precede moral feeling. The moral endowment of the individual must depend, therefore, greatly upon the age and the country in which he is born; he will to some extent reflect the spirit of the times. Born in an age of great intellectual culture, he may possess a moral sensibility and the capacity of certain so-called innate ideas; born in the lower stages of human development, he will probably possess neither one nor the other. But within the general influence of the condition of the age, the moral nature of the individual will be determined by his ancestral conditions. If he has the misfortune to be born with little or no moral sense, education and a favorable collocation of circumstances are the means to be used to remedy the deficiency. An endeavour must be made to implant during a single life that which should have been forming through generations; the individual has to begin for himself that which his ancestors should have laid the deep foundations of. Even then, however, unfortunate as he unquestionably is in view of the difficulty of implanting a moral element in one generation, he is not beginning entirely from the beginning; for he has in his external circumstances the advantage of the development of humanity. The social conditions by which he is surrounded exert their influence upon him from the moment of his birth; in the language which he is taught and uses, there are summed up the results of ages of human experience; in moral science, indeed, as in physical

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science, he is the inheritor of the acquisitions of the past. It is impossible to dissociate from any individual the influence of the culture of humanity; and it is impossible, therefore, to draw from the individual life a just argument as to the mode of origin of the moral sense. A true induction must include much wider ground than the individual.

If the foregoing account of the origin of the moral instinct or sense be correct, it may be asked how it is that it has not long since developed into a feeling of all the moral relations of nature. Much might be said in reply; but the reasons may be shortly described, as, first, an erroneous method of moral culture, and, secondly, the imperfect state of intellectual development. If any one will take the trouble to ascertain what it is which really influences those who are abandoned, and seemingly destitute of any morality, when they do not indulge the passion of the moment, but exhibit a self-denial which a monkey would not do, he will learn that there is no moral feeling in such primitive morality, but simply a rational conviction of the ultimate advantage of such conduct to themselves. The worst classes have their morality, though it is not the world's morality; and it does influence their conduct because it is founded on the principle of utility. It may appear strange, but it is nevertheless true, that a thief will refrain from injuring his fellow-scoundrel, and will feel positively uncomfortable if he has done so, though he has injured society all his life without any compunction, and that, not simply because he fears the other may find him out and retaliate, but actually because he has a conviction that such immorality will not in the course of nature go unpunished. He fears that he will have 'bad luck' in consequence. Now, would it not be an excellent thing, and, indeed, the proper system, to instil into his mind and into every mind the conviction that all sin must in the long run inevitably bring bad luck? It is no dream of the fancy, but an actual law of nature, that it does sooner or later thus revenge itself; and the belief does operate to a much greater extent than is commonly supposed in preserving the morality of the world. Acknowledged or unacknowledged it is, too, the fundamental principle of all practical morality. Let it then be recognised as the basis of a science; let the conviction be produced in the minds of men of the advantages of morality in this life, of the actual necessity thereof for the avoidance of suffering and the prevention of misery; and is there not reason to suppose that the moral feeling would be strengthened, and become more widely diffused in human nature? When morality is acknowledged to be a science which must be built up on the inductive method, men will find their profit in practising it, as they now find their profit in applied physical science.

A second consideration is the condition of intellectual development. That a science of morality should receive but little acceptation among men need excite no surprise when we consider its

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relation to the other sciences. The period since the first systematic application to the true method of gaining knowledge by the observation and interpretation of nature can scarce yet be counted by centuries; and as moral science relates to the highest and most complex department of nature, it plainly cannot be rightly built up except on the foundation of the less complex sciences. In the order of the development of nature moral development is the last and highest manifestation; the inductive philosophy demands, therefore, that it should be the last and highest study. Past experience completely confirms in this respect philosophical theory. When moral phenomena are treated of as belonging to a distinct and independent order of things, facts invariably drag the unwilling dogmatiser into the domain of organic law; his head may be in the clouds, but his feet must be on the earth; dealing with one part of nature he cannot escape the laws of the rest of nature. To an acquaintance with the physical laws mankind are rapidly passing; they are laying, therefore, the true foundations of a moral science which must influence conduct as it will supply plain utilitarian reasons for moral principles which the intuition of the inspired has always recognised.

Some sanguine mortals seem already to discern the dawn of a brighter era, whilst others of less ardent faith may see on the distant horizon the gathering clouds which are destined to overspread the whole heavens. Let the pessimist and the optimist each cherish undisturbed his favorite fancy. What unhappily admits of no dispute is that even at the present advanced stage of civilisation it is not the blessing to an individual which it should be when he is born with a fair amount of moral sensibility. The world receives him, and, instead of placing him in circumstances in which the very delicate shoot might be sheltered from rude storms, and find the most favorable nourishment so as to develope into a holy moral life, it rather surrounds him with circumstances in which it is a mercy and a miracle if the tender shoot is not at once blasted. Lies disguised as conventionalities, hypocrisies as respectabilities, the direst selfishness as legitimate trade, are nothing less than actual poisons; and it would be almost as easy to make an animal breathe and live in an atmosphere of carbonic oxide as to make the moral sense live and develope under such killing conditions. Inasmuch as men, with a profession of faith in their mouths, which angels might adopt, do notably act in a way which devils could not disdain, it would appear that there must be some unrecognised good in thus making of human life an organised hypocrisy and a systematic inconsistency. Between nations it would be deemed puerile or fanatical to speak of morality; patriotism is in such case the highest virtue, and it is deemed a greater merit to a statesman to have maintained the honour of his country than to have maintained the honour of humanity. And yet if moral laws do exist in nature, a simple-

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minded mortal might consider that they concerned nations just as much as individuals! Let us return to the developing savage; he has already passed from the stage of individual selfishness to that of family selfishness; and we may now suppose him to undergo further development, and arrive at a love for his tribe. By how much love of family is a greater virtue than love of self, by so much is love of tribe a greater virtue than love of family. But his tribe increases and multiplies, becomes a powerful nation, enslaves other peoples, takes possession of their lands, and, if they resist, blows the rebels from the ends of guns; it has become a mighty empire, on which the sun never sets. Unfortunately, this ideal savage cannot stay his development at that stage of selfishness which patriotism represents; he actually sympathises with the down-trodden and afflicted, thinking that the love of humanity surpasses the love of country in as great degree as the love of country surpasses the love of family. Such an one would surely be rejected by the nineteenth century as an impracticable fanatic. Does not such a state of matters prove, however, that there is great need of a moral science?—a science which shall be formed by careful induction, shall recognise the activity as well as the passivity of man, and make human action consistent with human profession. Perhaps, in place of asking how it is that men have not fully recognised their moral relations, it might more justly be asked how it is that they have contrived to develope so much moral feeling. Had it not been that in the helpless infancy of human reason the intuition of the prophets came to the rescue, the outlook for humanity must have been exceeding dark.

In conclusion, then, it may be added that the supposition that definite laws of organic combination do exist and determine the nature of the individual as surely, though not yet as clearly, as the laws of chemical combination determine the nature of a chemical compound, can afford no possible excuse for the selfish indolence of an inactive fatalism. Rather is there imposed on every one a very serious responsibility, seeing how much the destinies of coming generations is in the power of the present generation. Neither the evil nor the good which a man does is interred with his bones; and long after the individual has gone to sleep, posterity may be receiving the benefit of his virtues or paying the penalty of his vices. If we could only read his words in their natural sense, it would appear that Solomon simply gave the results of his observation and reflection when he said that the "good man leaves an inheritance to his children's children;" and it is a simple scientific truth that the "sins of the father are visited upon the children unto the third and fourth generations;" *denn alle Schuld rächt sich auf Erden.**

* For all sin is avenged upon earth.

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