

ciation of its force from assigning to it the subordinate rank of a secondary form attached to the Subjunctive.

Some general remarks by President Felton, upon the connection of the Greek and Latin modal forms as illustrated by the Sanskrit, led Professor Agassiz to offer some remarks, expressing a general disbelief in the supposed derivation of later languages from earlier ones, he regarding each language and each race as substantially primordial, and ascribing the resemblances and coincidences of language to a similarity in the mental organization of the races. Whereupon President Felton pointed out some of the lexical and inflectional coincidences among affiliated languages, which were in his opinion utterly inexplicable upon any supposition other than that of historical relation.

Professor Bowen made some general observations on the supposed hereditability of peculiar traits of bodily and mental organization, and especially of mental disease.

There has been, he thought, an increasing tendency of late years to enlarge the number of such traits, and to insist more and more upon the certainty of their transmission. It has even been proposed to prohibit by law the intermarriage of persons who have mental or bodily defects or diseases which might be transmitted to their offspring. And as to insanity, there is too much reason to fear that persons have been actually driven mad through the fear, which has been carefully inculcated upon them, of having inherited insanity. It will be admitted, that, if there is anything which can foster and rapidly develop some latent tendency towards mental disease, it is dreading, and brooding over the dread, of that great calamity, regarded as an inevitable event, which must sooner or later happen. In the opinion of many, crime and sin are no longer imputable to individual men and women, but to what the lawyers call "the act of God," which entailed upon the offenders inevitably a wicked temper, a perverted will, or a diseased brain. The only proper name to be given to this doctrine is *physiological fatalism*. It rests upon a perversion of one of the darkest sayings of the old Jewish Scripture, that the sins of the fathers shall be visited upon the children, even to the third and fourth generation; — a seemingly harsh doctrine, though, in the meaning which was probably intended, it

is certainly true ; and which, at any rate, is not so terrific as that perversion of it, which teaches, that not merely the sins, but the congenital defects and diseases, implanted in us before birth, shall be visited upon our innocent offspring, not for two or three generations only, but for all future time.

Professor Bowen maintained that the assumed evidence upon which this theory rests is unscientific and unsatisfactory, and can be confronted by a great amount of testimony leading to an opposite conclusion. He began by admitting, or taking for granted, every *fact* which is commonly adduced in its support, — excluding, of course, such a statement of that fact as may involve any theory respecting its nature. Thus, it is a fact that insane persons can generally find among their ancestors, or their relatives in the ancestral line, one or more persons who also have been insane. The illogical, because hypothetical, statement of this fact is, that the former *inherited* their insanity from the latter. It is also a fact, that children often bear a certain measure of resemblance, in body, mind, or character, to their parents or grandparents ; and the hypothetical statement of this fact is, that they have inherited these traits.

Now, one of three suppositions must be true ;— either, 1. there is a law of nature that bodily and mental peculiarities shall be transmitted by inheritance ; or, 2. there is a law that they shall not be so transmitted ; or, 3. there is no law about the matter, and it is mere accident whether parental or ancestral peculiarities reappear in the offspring or not. The physiological fatalists maintain the first of these suppositions ; Professor Bowen said he believed the second ; but, as against the fatalists, it is enough to substantiate by satisfactory evidence the third.

The mistake of those who favor the doctrine of hereditary descent arises from the common error, — an Idol of the Tribe, as Bacon calls it, — which consists in regarding only the affirmative cases ; “and though there be a greater number and weight of instances to be found on the other side, yet these it either neglects and despises, or by some distinction sets aside and rejects.” “Such is the way of all superstition,” Bacon continues ; “but with far greater subtilty does this mischief insinuate itself into philosophy and the sciences. . . . It is the peculiar and perpetual error of the human intellect, to be more moved and excited by affirmatives than by negatives ; whereas, it ought properly to hold itself indifferently disposed towards both alike. Indeed, in the establishment of any true law of nature, the negative instance is the more forcible of the two.” Dr. Johnson pithily described this popular

fallacy, when he said, that the one dream which comes to pass is remembered and quoted, while the ninety and nine which do not come to pass are forgotten. Just so, one case of an insane child or grandchild, nephew or niece, of an insane person, is quoted as proof of the doctrine of hereditary transmission; while the twenty other offspring of the same person, who never showed a trace of insanity, are forgotten. It is difficult to adduce evidence on this point; for while it is comparatively easy to trace back the pedigree of a madman, and find insanity somewhere in his family, either in the direct or collateral line, since statistics prove that at least one out of a thousand in the whole community suffer more or less from this disease, — it is not so easy to trace the line forward, to lay bare the history of a whole family, and to prove that no one of them, at any time or in any degree, has suffered from insanity. Only in the case of a prominent historical family, where all the facts are on record, or are generally known, is such evidence attainable.

Fortunately, there is one case of this sort that bears directly on the question. George III. may be said to have been constitutionally insane, the malady breaking out several times in the course of his life with great violence. In 1788, in 1801, and again in 1804, the disease appeared, each attack incapacitating him for the exercise of his royal functions for several months. In 1810, there was a fourth and final attack, the disease then darkening into hopeless imbecility, and continuing for ten years, the remainder of his life. It is now stated, also, though the fact was not divulged in his lifetime, that he had an earlier attack, in 1764, when for some weeks he was under restraint. But if we trace back his lineage for six generations, as far as James I. of England, not one of his ancestors can be found to have ever suffered from this complaint. Besides, he had seven brothers or sisters, and seven uncles or aunts; and as several of these married and had families, he had a goodly number of cousins and of nephews or nieces. Yet it does not appear that one of these ever showed a trace of insanity. Evidently, then, George III. did not inherit the disease. Did he transmit it? Here the evidence is equally abundant and satisfactory. This insane king had fifteen children; and as many of these had families, either legitimate or illegitimate by English law, there was a crowd of grandchildren. The Duke of Clarence alone had, by Mrs. Jordan, ten children. A very hurried search will enable one to enumerate 15 children, 22 grandchildren, and, including the children of the present Queen, 18 great-grandchildren, — say, in all, 55 descendants. Yet in

this large number there does not seem to have been *one* undoubted case of insanity; and as kings and princes live in glass houses, if there had been one such case, we should probably have heard of it. Not one *undoubted* case, we say; for there is a doubtful one. The oldest of the FitzClarences, created Earl of Munster, committed suicide in 1842; and as he had shown great despondency for six weeks before his death, so that a physician was at last called in, a coroner's jury, if one had sat in his case, might have brought in a verdict of insanity; and the physiological fatalists, remembering his grandfather, would probably have called it a case of hereditary insanity, overlooking the fifty-four other descendants of George III., who have appeared as sane as other people.

One such example as this of George III. appears conclusive against the doctrine of the necessary hereditary transmission of mental disease. We thus exorcise the terrific phantom which, as already said, has probably driven many persons mad. There is more than one prophecy, the mere announcement of which has caused its own fulfilment. But the case is not a solitary one. Observation among the families of his own acquaintance, Professor Bowen remarked, *always made on the principle of collecting the negative as well as the affirmative instances*, had satisfied him, that the rule — that is, the law of nature — is *against* the hereditary transmission. If there are apparent exceptions, the *majority* of the descendants manifesting the same disease as the parent or ancestor, they are explicable through the action of sympathy, unconscious imitation, or exaggerated fears proceeding from the cause just mentioned. Cases enough can be cited of the recurrence of the phenomenon from such causes, wherein the persons concerned were not related by blood, so that inherited disease was out of the question.

Thus, up to 1839, there had not been for sixty years a case of suicide by precipitation from the top of the London monument. In that year, a young woman named Moyes threw herself off from it and was killed. Within three months, a boy only sixteen years old, whose previous conduct had shown nothing unusual, jumped off with the same result. To prevent another case, the keeper was required to accompany every person who ascended the stairs. But before the year was ended, another young woman, never before thought to be insane or to have any cause to wish for death, contrived to elude him by going to the other side of the balcony, where she also jumped off and was killed. Then, at last, the iron railing of the balcony was carried up and united to the stone work above, making a sort of cage which had no exit except by the stairs.

If these three suicides had been brothers and sisters, their case would have been put down as a strong instance of family insanity. Then may not the repetition of suicide or other insane acts by members of the same family be the result of this sympathetic propensity, or blind imitateness, roused into keener action by the example being set near home, rather than the result of inherited mental disease? If so, how forcible is the lesson that we ought in every way to discourage and disprove this doctrine of the heritability of insanity! Other cases are not wanting. One was reported to the Paris Academy of Medicine, that, a soldier at the Hôtel des Invalids having hanged himself on a post, his example was soon followed by twelve other invalids, and only by removing the fatal post was the suicidal epidemic at last arrested.

Thus far we have treated only of insanity. But the question is a broader one. Do any peculiarities of mental or bodily organization, appearing for the first time in one generation, tend to perpetuate themselves by the law of hereditary descent? Besides the *specific* traits, which every animal has in common with the species to which it belongs, it has also *individual* traits or peculiarities, always prominent enough to enable us easily to distinguish every individual from its fellows of the same kind, even if they are the offspring of the same parents, and sometimes so strongly marked as to deserve the name of monstrosity or disease. Does nature tend to perpetuate or efface this distinction between specific and individual traits? The question is one of great importance and the highest generality, affecting the basis of zöological science. If this distinction is feebly marked and transitory, then there is no fixed system or plan in the animal kingdom, and nothing for science to do except to chronicle a succession of fleeting peculiarities and shifting boundaries. If, on the other hand, the distinction is broad and stable, if what Blumenbach calls the *nisus formativus* necessarily tends to perpetuate the species by restricting the law of hereditary transmission to the specific traits, and excluding it from the individual peculiarities, then the dominion of law, the unchangeable purposes of the Creator, extend alike over the inorganic and the organic kingdoms, and nature becomes one consistent, permanent, and intelligible whole. Undoubtedly apparent exceptions occur, through a complexity of circumstances which science cannot always unravel. Sometimes a specific trait is wanting, and the result is a monstrosity, a *lusus naturæ*; but nature takes care to kill out such monsters, usually in the first generation. Sometimes an individual peculiarity of the parent, not so strongly marked as to deserve

the name of a monstrosity, reappears in the offspring. But such cases are infrequent, exceptional, and, at the utmost, not continued beyond two or three generations. They are casual repetitions, such as are always possible in the perpetual shifting and shuffling of individual traits; they are not the results of hereditary transmission. Otherwise, — if a law of nature favored the transmission, — all individual peculiarities would successively disappear, being merged in specific traits, and each new birth would present successively a more perfect copy of its parent, until at last, all differences being effaced, individuals of the same species could no more be distinguished from each other, than a heap of silver coins freshly struck from the same die at the mint. But God's creative processes are not thus mechanical; infinite variety, no less than perfect order, is a law of nature.

The first argument, then, against the doctrine of hereditary resemblance, is founded on this admitted fact of the marvellous variety in nature. Among millions of human faces, no two can be found so nearly alike as to be mistaken one for another. All judicial inquiries, all property in animate beings, rest upon the universal recognition of this fact. Otherwise, a jury could never be satisfied that *this* man is the horse-thief, and *this* horse is the very animal that he stole. Herein is one striking difference between the organic and the inorganic kingdoms; that whereas, in the latter, the laws of nature work with absolute uniformity, the typical form, the typical act, being always exactly reproduced; in the former, the organic kingdom, the operation of the law is infinitely varied, and Nature never exactly repeats herself. As instances of the former, take the chemical composition of a drop of water whencesoever obtained, the fall of a heavy body from a height, the forms assumed by various crystallizing substances. In these cases, the similarity is perfect; man's machine-work offers but a faint copy of the marvellous accuracy of nature's action and workmanship. For an instance of the latter, take Leibnitz's challenge to his companions, to find any two leaves upon the same tree or bush, one of which should be the precise counterpart of the other. They could not. But the dividing line is strongly marked and permanent between the personal or individual traits that are thus infinitely varied, and the specific traits which are reproduced with great, but not absolute uniformity. The most striking proof that there is a law of nature prohibiting the repetition of abnormal forms is found in the fact, that, as the most fertile source of such forms is from the crossing of distinct races, nature invariably makes the product of such crosses sterile or very short-lived.

How came it, then, ever to be supposed, that nature favors the hereditary transmission of personal traits of mind, character, and external form. From the popular fallacy, already exposed, which leads the observer to fasten upon the few affirmative, to the exclusion of a crowd of negative, instances. The different features of mind and body are very numerous, and every one of them may show likeness or unlikeness with the corresponding feature in the parent. Analyze any case of supposed strong resemblance, and it will be found to consist in one or two features only, to the exclusion of six or eight others, which are wholly unlike those of the parent. Thus, a strongly marked nose, together with eyes of a peculiar shape and hue, are enough to make out what is called a marked case of family likeness; though mouth, chin, forehead, complexion, hair, outline of the face, and shape of the head may be as unlike as if they belonged to a stranger by blood; and though even eyes and nose of the same pattern may be found, almost as often as we choose to look for them, among the community at large. Again, as likeness to a grandparent is held to prove hereditary transmission just as much as likeness to the immediate parent, and as everybody has at least two parents and four grandparents, there is no cause for wonder, if, among these six progenitors within two generations, a counterpart should be found for every feature of the offspring, though accident, and not inheritance, formed the law of distribution. For, excluding malformation, there are not more than half a dozen varieties of each feature which are strongly marked enough to constitute a ground of likeness. Thus, a nose peculiar enough to be a recognized point of likeness, and yet not deformed, must be decidedly either aquiline, Roman, Grecian, flat, pug, or a *nez retroussé*. Here are but six possible forms, and according to the law of chances, we might expect to find a counterpart for any one of them among the six progenitors. It is because resemblance between parent and offspring is found much less frequently than, according to these considerations, we should have a right to expect it, even if the forms were distributed at random, or without any law at all, that we are led to believe the law of nature, if there be one in the case, favors unlikeness rather than resemblance; or that Nature *takes care to vary* her work, as she certainly does with the leaves of the same oak-tree, among which you may hunt for hours without finding two whose indented outlines are at all similar.

But supposed family likeness more frequently consists in the *general expression of the countenance*, in which respect, a large family often bear

a marked resemblance to each other, while their features, taken separately, are wholly unlike. This similarity of expression, however, is not congenital, but is gradually superinduced upon Nature's work, through living together a long while in sympathy and confidence under similar influences and education, whereby, as is often remarked, husband and wife, after a long life of matrimony, come to resemble each other. And if this is the case even with adults, who come together only after age has given rigidity to the face and stereotyped its expression, how much more readily will the plastic features of infancy and children yield to similar influences and adopt the family pattern. Hence it is, that this likeness of expression generally cannot be seen in early infancy, and appears very faintly at first, but deepens and strengthens as the child advances in years. Through the same cause, also, the handwriting of the different members of the same family is often strikingly similar, though they may have learned how to write from different teachers; and probably no one will maintain handwriting to be hereditary.

All that has been said of the external features is applicable, also, *mutatis mutandis*, to traits of mind and character. The hereditary transmission of the latter is even less probable than of the former, on account of the acknowledged almost immeasurable diversity of mental traits, and because the few points of similarity can be more probably referred to the influence of education, imitation, involuntary sympathy, and other like bonds which draw together and assimilate parent and child, however originally unlike. But in spite of these causes all tending to create ultimate resemblance, we still find genius and stupidity, temper, affection, and taste so very unequally and capriciously distributed among members of the same family, that the diversities can be attributed only to nature's own ordinance established for this very purpose. Analyze any case presented as evidence of the opposite theory, and we see more plainly than ever the error of laying stress upon the affirmative points, while the negative instances are overlooked or forgotten.

Mr. George Combe cites an author who attributes the fatality which attended the House of Stuart "to a certain obstinacy of temper, which appears to have been hereditary and inherent in all the Stuarts except Charles II." But this perverse wilfulness seems more probably attributable to the education received, every Stuart being trained by a Stuart, and by an Anglican clergy then fanatically attached to the dogmas of the divine right of kings, and the subject's duty of passive obedience. Charles II. had his training in the hard school of adversity and exile,

where he became more pliant. But how many other points of resemblance can be found in the succession of Stuart kings? Compare the first of them who sat on an English throne, the slobbering, pedantic, cowardly, fondling James I., with his grave, decorous, and melancholy son, treacherous as a prince, but rigidly moral as a man, and dying at last the death of a martyr and a saint. Or compare this martyr-king with his good-for-nothing though good-natured son, Charles II., or the latter with his brother, the stupid and cruel bigot, James II. Only in "the good Queen Anne," as she was sometimes called, weak and prejudiced, but motherly and fondling, and much under the influence of favorites, do we find a reproduction of some characteristic traits of her great-grandfather James I. Take any other line of European kings, and as great diversities of character and ability may be found among them as among the Stuarts. On the whole, the doctrine of the hereditary transmission of mind and character may be said to be contradicted by all history, as well as by every day's experience.

The President, Dr. Bigelow, remarked that undoubtedly many of the errors in science, and still more in popular belief, arose from hasty generalization, and the acceptance of a few striking or remarkable facts, to the exclusion of a greater number of common negative or uninteresting facts, thus establishing as general rules things which were only exceptions to such rules. The medical profession, however, were agreed, as the result of general observation, that although most diseases terminate with the individual, yet that certain peculiarities, not only of bodily structure, but of tendency to disease, are transmissible by inheritance. Thus a sixth finger, near-sightedness, squinting, and peculiarities of complexion, features, and stature, are more or less transmissible from one generation to another. So also, among diseases, consumption, scrofula, gout, some eruptive complaints, nervous affections, and, to a certain extent, carcinoma, apoplexy, and insanity. The hereditary predisposition is most marked when both parents are subjects of the peculiarity or disease. Dr. Bigelow cited some cases in which, both parents having been affected with a disease, all the children had eventually died of the same disease. If procreation could be regulated by authority, he did not see why the