

The Great Man and Their Environment

William James

The Will to Believe - 1896

A remarkable parallel, which I think has never been noticed, obtains between the facts of social evolution on the one hand, and of zoölogical evolution as expounded by Mr. Darwin on the other.

It will be best to prepare the ground for my thesis by a few very general remarks on the method of getting at scientific truth. It is a common platitude that a complete acquaintance with any one thing, however small, would require a knowledge of the entire universe. Not a sparrow falls to the ground but some of the remote conditions of his fall are to be found in the milky way, in our federal constitution, or in the early history of Europe. That is to say, alter the milky way, alter the federal constitution, alter the facts of our barbarian ancestry, and the universe would so far be a different universe from what it now is. One fact involved in the difference might be that the particular little street-boy who threw the stone which brought down the sparrow might not find himself opposite the sparrow at that particular moment; or, finding himself there, he might not be in that particular serene and disengaged mood of mind which expressed itself in throwing the stone. But, true as all this is, it would be very foolish for any one who was inquiring the cause of the sparrow's fall to overlook the boy as too personal, proximate, and so to speak anthropomorphic an agent, and to say that the true cause is the federal constitution, the westward migration of the Celtic race, or the structure of the milky way. If we proceeded on that method, we might say with perfect legitimacy that a friend of ours, who had slipped on the ice upon his door-step and cracked his skull, some months after dining with thirteen at the table, died because of that ominous feast. I know, in fact, one such instance; and I might, if I chose, contend with perfect logical propriety that the slip on the ice was no real accident. "There are no accidents," I might say, "for science. The whole history of the world converged to produce that slip. If anything had been left out, the slip would not have occurred

just there and then. To say it would is to deny the relations of cause and effect throughout the universe. The real cause of the death was not the slip, *but the conditions which engendered the slip*,—and among them his having sat at a table, six months previous, one among thirteen. *That* is truly the reason why he died within the year."

It will soon be seen whose arguments I am, in form, reproducing here. I would fain lay down the truth without polemics or recrimination. But unfortunately we never fully grasp the import of any true statement until we have a clear notion of what the opposite untrue statement would be. The error is needed to set off the truth, much as a dark background is required for exhibiting the brightness of a picture. And the error which I am going to use as a foil to set off what seems to me the truth of my own statements is contained in the philosophy of Mr. Herbert Spencer and his disciples. Our problem is, What are the causes that make communities change from generation to generation,—that make the England of Queen Anne so different from the England of Elizabeth, the Harvard College of to-day so different from that of thirty years ago?

I shall reply to this problem, The difference is due to the accumulated influences of individuals, of their examples, their initiatives, and their decisions. The Spencerian school replies, The changes are irrespective of persons, and independent of individual control. They are due to the environment, to the circumstances, the physical geography, the ancestral conditions, the increasing experience of outer relations; to everything, in fact, except the Grants and the Bismarcks, the Joneses and the Smiths.

Now, I say that these theorizers are guilty of precisely the same fallacy as he who should ascribe the death of his friend to the dinner with thirteen, or the fall of the sparrow to the milky way. Like the dog in the fable, who drops his real bone to snatch at its image, they drop the real causes to snatch at others, which from no possible human point of view are available or attainable. Their fallacy is a practical one. Let us see where it lies. Although I believe in free-will myself, I will waive that belief in this discussion, and assume with the Spencerians the predestination of all human actions. On that assumption I gladly allow that were the intelligence investigating the man's or the sparrow's death omniscient and omnipresent, able to take in the whole of time and space at a single glance, there would not be the slightest objection to the milky way or the fatal feast being invoked among the sought-for causes. Such a divine intelligence would see instantaneously all the

infinite lines of convergence towards a given result, and it would, moreover, see impartially: it would see the fatal feast to be as much a condition of the sparrow's death as of the man's; it would see the boy with the stone to be as much a condition of the man's fall as of the sparrow's.

The human mind, however, is constituted on an entirely different plan. It has no such power of universal intuition. Its finiteness obliges it to see but two or three things at a time. If it wishes to take wider sweeps it has to use 'general ideas,' as they are called, and in so doing to drop all concrete truths. Thus, in the present case, if we as men wish to feel the connection between the milky way and the boy and the dinner and the sparrow and the man's death, we can do so only by falling back on the enormous emptiness of what is called an abstract proposition. We must say, All things in the world are fatally predetermined, and hang together in the adamantine fixity of a system of natural law. But in the vagueness of this vast proposition we have lost all the concrete facts and links; and in all practical matters the concrete links are the only things of importance. The human mind is essentially partial. It can be efficient at all only by *picking out* what to attend to, and ignoring everything else,—by narrowing its point of view. Otherwise, what little strength it has is dispersed, and it loses its way altogether. Man always wants his curiosity gratified for a particular purpose. If, in the case of the sparrow, the purpose is punishment, it would be idiotic to wander off from the cats, boys, and other possible agencies close by in the street, to survey the early Celts and the milky way: the boy would meanwhile escape. And if, in the case of the unfortunate man, we lose ourselves in contemplation of the thirteen-at-table mystery, and fail to notice the ice on the step and cover it with ashes, some other poor fellow, who never dined out in his life, may slip on it in coming to the door, and fall and break his head too.

It is, then, a necessity laid upon us as human beings to limit our view. In mathematics we know how this method of ignoring and neglecting quantities lying outside of a certain range has been adopted in the differential calculus. The calculator throws out all the 'infinitesimals' of the quantities he is considering. He treats them (under certain rules) as if they did not exist. In themselves they exist perfectly all the while; but they are as if they did not exist for the purposes of his calculation. Just so an astronomer, in dealing with the tidal movements of the ocean, takes no account of the waves made by the wind, or by the pressure of all the steamers which day and night are moving their thousands of tons upon its surface. Just so the marksman, in sighting his rifle, allows for the motion of the wind, but not for the equally real motion of the earth and solar system. Just so a

business man's punctuality may overlook an error of five minutes, while a physicist, measuring the velocity of light, must count each thousandth of a second.

There are, in short, *different cycles of operation* in nature; different departments, so to speak, relatively independent of one another, so that what goes on at any moment in one may be compatible with almost any condition of things at the same time in the next. The mould on the biscuit in the store-room of a man-of-war vegetates in absolute indifference to the nationality of the flag, the direction of the voyage, the weather, and the human dramas that may go on on board; and a mycologist may study it in complete abstraction from all these larger details. Only by so studying it, in fact, is there any chance of the mental concentration by which alone he may hope to learn something of its nature. On the other hand, the captain who in manoeuvring the vessel through a naval fight should think it necessary to bring the mouldy biscuit into his calculations would very likely lose the battle by reason of the excessive 'thoroughness' of his mind.

The causes which operate in these incommensurable cycles are connected with one another only *if we take the whole universe into account*. For all lesser points of view it is lawful—nay, more, it is for human wisdom necessary—to regard them as disconnected and irrelevant to one another.

And this brings us nearer to our special topic. If we look at an animal or a human being, distinguished from the rest of his kind by the possession of some extraordinary peculiarity, good or bad, we shall be able to discriminate between the causes which originally *produced* the peculiarity in him and the causes that *maintain* it after it is produced; and we shall see, if the peculiarity be one that he was born with, that these two sets of causes belong to two such irrelevant cycles. It was the triumphant originality of Darwin to see this, and to act accordingly. Separating the causes of production under the title of 'tendencies to spontaneous variation,' and relegating them to a physiological cycle which he forthwith agreed to ignore altogether,[2] he confined his attention to the causes of preservation, and under the names of natural selection and sexual selection studied them exclusively as functions of the cycle of the environment.

Pre-Darwinian philosophers had also tried to establish the doctrine of descent with modification; but they all committed the blunder of clumping the two cycles of causation into one. What preserves an animal with his peculiarity, if it be a useful one, they saw to be the nature of the environment to which the peculiarity was

adjusted. The giraffe with his peculiar neck is preserved by the fact that there are in his environment tall trees whose leaves he can digest. But these philosophers went further, and said that the presence of the trees not only maintained an animal with a long neck to browse upon their branches, but also produced him. They *made* his neck long by the constant striving they aroused in him to reach up to them. The environment, in short, was supposed by these writers to mould the animal by a kind of direct pressure, very much as a seal presses the wax into harmony with itself. Numerous instances were given of the way in which this goes on under our eyes. The exercise of the forge makes the right arm strong, the palm grows callous to the oar, the mountain air distends the chest, the chased fox grows cunning and the chased bird shy, the arctic cold stimulates the animal combustion, and so forth. Now these changes, of which many more examples might be adduced, are at present distinguished by the special name of *adaptive* changes. Their peculiarity is that that very feature in the environment to which the animal's nature grows adjusted, itself produces the adjustment. The 'inner relation,' to use Mr. Spencer's phrase, 'corresponds' with its own efficient cause.

Darwin's first achievement was to show the utter insignificance in amount of these changes produced by direct adaptation, the immensely greater mass of changes being produced by internal molecular accidents, of which we know nothing. His next achievement was to define the true problem with which we have to deal when we study the effects of the visible environment on the animal. That problem is simply this; Is the environment more likely to *preserve or to destroy him*, on account of this or that peculiarity with which he may be born? In giving the name of 'accidental variations' to those peculiarities with which an animal is born, Darwin does not for a moment mean to suggest that they are not the fixed outcome of natural law. If the total system of the universe be taken into account, the causes of these variations and the visible environment which preserves or destroys them, undoubtedly do, in some remote and roundabout way, hang together. What Darwin means is, that, since that environment is a perfectly known thing, and its relations to the organism in the way of destruction or preservation are tangible and distinct, it would utterly confuse our finite understandings and frustrate our hopes of science to mix in with it facts from such a disparate and incommensurable cycle as that in which the variations are produced. This last cycle is that of occurrences before the animal is born. It is the cycle of influences upon ova and embryos; in which lie the causes that tip them and tilt them towards masculinity or femininity, towards strength or weakness, towards health or disease, and towards divergence from the parent type. What are the causes there?

In the first place, they are molecular and invisible,—inaccessible, therefore, to direct observation of any kind. Secondly, their operations are compatible with any social, political, and physical conditions of environment. The same parents, living in the same enviring conditions, may at one birth produce a genius, at the next an idiot or a monster. The visible external conditions are therefore not direct determinants of this cycle; and the more we consider the matter, the more we are forced to believe that two children of the same parents are made to differ from each other by causes as disproportionate to their ultimate effects as is the famous pebble on the Rocky Mountain crest, which separates two rain-drops, to the Gulf of St. Lawrence and the Pacific Ocean toward which it makes them severally flow.

The great mechanical distinction between transitive forces and discharging forces is nowhere illustrated on such a scale as in physiology. Almost all causes there are forces of *detent*, which operate by simply unlocking energy already stored up. They are upsetters of unstable equilibria, and the resultant effect depends infinitely more on the nature of the materials upset than on that of the particular stimulus which joggles them down. Galvanic work, equal to unity, done on a frog's nerve will discharge from the muscle to which the nerve belongs mechanical work equal to seventy thousand; and exactly the same muscular effect will emerge if other irritants than galvanism are employed. The irritant has merely started or provoked something which then went on of itself,—as a match may start a fire which consumes a whole town. And qualitatively as well as quantitatively the effect may be absolutely incommensurable with the cause. We find this condition of things in ail organic matter. Chemists are distracted by the difficulties which the instability of albuminoid compounds opposes to their study. Two specimens, treated in what outwardly seem scrupulously identical conditions, behave in quite different ways. You know about the invisible factors of fermentation, and how the fate of a jar of milk—whether it turn into a sour clot or a mass of koumiss—depends on whether the lactic acid ferment or the alcoholic is introduced first, and gets ahead of the other in starting the process. Now, when the result is the tendency of an ovum, itself invisible to the naked eye, to tip towards this direction or that in its further evolution,—to bring forth a genius or a dunce, even as the rain-drop passes east or west of the pebble,—is it not obvious that the deflecting cause must lie in a region so recondite and minute, must be such a ferment of a ferment, an infinitesimal of so high an order, that surmise itself may never succeed even in attempting to frame an image of it?

Such being the case, was not Darwin right to turn his back upon that region

altogether, and to keep his own problem carefully free from all entanglement with matters such as these? The success of his work is a sufficiently affirmative reply.

And this brings us at last to the heart of our subject. The causes of production of great men lie in a sphere wholly inaccessible to the social philosopher. He must simply accept geniuses as data, just as Darwin accepts his spontaneous variations. For him, as for Darwin, the only problem is, these data being given, How does the environment affect them, and how do they affect the environment? Now, I affirm that the relation of the visible environment to the great man is in the main exactly what it is to the 'variation' in the Darwinian philosophy. It chiefly adopts or rejects, preserves or destroys, in short *selects* him.[3] And whenever it adopts and preserves the great man, it becomes modified by his influence in an entirely original and peculiar way. He acts as a ferment, and changes its constitution, just as the advent of a new zoölogical species changes the faunal and floral equilibrium of the region in which it appears. We all recollect Mr. Darwin's famous statement of the influence of cats on the growth of clover in their neighborhood. We all have read of the effects of the European rabbit in New Zealand, and we have many of us taken part in the controversy about the English sparrow here,—whether he kills most canker-worms, or drives away most native birds. Just so the great man, whether he be an importation from without like Clive in India or Agassiz here, or whether he spring from the soil like Mahomet or Franklin, brings about a rearrangement, on a large or a small scale, of the pre-existing social relations.

The mutations of societies, then, from generation to generation, are in the main due directly or indirectly to the acts or the example of individuals whose genius was so adapted to the receptivities of the moment, or whose accidental position of authority was so critical that they became ferments, initiators of movement, setters of precedent or fashion, centres of corruption, or destroyers of other persons, whose gifts, had they had free play, would have led society in another direction.

We see this power of individual initiative exemplified on a small scale all about us, and on a large scale in the case of the leaders of history. It is only following the common-sense method of a Lyell, a Darwin, and a Whitney to interpret the unknown by the known, and reckon up cumulatively the only causes of social change we can directly observe. Societies of men are just like individuals, in that both at any given moment offer ambiguous potentialities of development. Whether a young man enters business or the ministry may depend on a decision which has to be made before a certain day. He takes the place offered in the counting-house,

and is *committed*. Little by little, the habits, the knowledges, of the other career, which once lay so near, cease to be reckoned even among his possibilities. At first, he may sometimes doubt whether the self he murdered in that decisive hour might not have been the better of the two; but with the years such questions themselves expire, and the old alternative *ego*, once so vivid, fades into something less substantial than a dream. It is no otherwise with nations. They may be committed by kings and ministers to peace or war, by generals to victory or defeat, by prophets to this religion or to that, by various geniuses to fame in art, science, or industry. A war is a true point of bifurcation of future possibilities. Whether it fail or succeed, its declaration must be the starting-point of new policies. Just so does a revolution, or any great civic precedent, become a deflecting influence, whose operations widen with the course of time. Communities obey their ideals; and an accidental success fixes an ideal, as an accidental failure blights it.

Would England have to-day the 'imperial' ideal which she now has, if a certain boy named Bob Clive had shot himself, as he tried to do, at Madras? Would she be the drifting raft she is now in European affairs[4] if a Frederic the Great had inherited her throne instead of a Victoria, and if Messrs. Bentham, Mill, Cobden, and Bright had all been born in Prussia? England has, no doubt, to-day precisely the same intrinsic value relatively to the other nations that she ever had. There is no such fine accumulation of human material upon the globe. But in England the material has lost effective form, while in Germany it has found it. Leaders give the form. Would England be crying forward and backward at once, as she does now, 'letting I will not wait upon I would,' wishing to conquer but not to fight, if her ideal had in all these years been fixed by a succession of statesmen of supremely commanding personality, working in one direction? Certainly not. She would have espoused, for better or worse, either one course or another. Had Bismarck died in his cradle, the Germans would still be satisfied with appearing to themselves as a race of spectacled *Gelehrten* and political herbivora, and to the French as *ces bons*, or *ces naifs*, *Allemands*. Bismarck's will showed them, to their own great astonishment, that they could play a far livelier game. The lesson will not be forgotten. Germany may have many vicissitudes, but they—

"will never do away, I ween,
The marks of that which once hath been"—
of Bismarck's initiative, namely, from 1860 to 1873.

The fermentative influence of geniuses must be admitted as, at any rate, one factor in the changes that constitute social evolution. The community *may* evolve in many

ways. The accidental presence of this or that ferment decides in which way it *shall* evolve. Why, the very birds of the forest, the parrot, the mino, have the power of human speech, but never develop it of themselves; some one must be there to teach them. So with us individuals. Rembrandt must teach us to enjoy the struggle of light with darkness, Wagner to enjoy peculiar musical effects; Dickens gives a twist to our sentimentality, Artemus Ward to our humor; Emerson kindles a new moral light within us. But it is like Columbus's egg. "All can raise the flowers now, for all have got the seed." But if this be true of the individuals in the community, how can it be false of the community as a whole? If shown a certain way, a community may take it; if not, it will never find it. And the ways are to a large extent indeterminate in advance. A nation may obey either of many alternative impulses given by different men of genius, and still live and be prosperous, just as a man may enter either of many businesses. Only, the prosperities may differ in their type.

But the indeterminism is not absolute. Not every 'man' fits every 'hour.' Some incompatibilities there are. A given genius may come either too early or too late. Peter the Hermit would now be sent to a lunatic asylum. John Mill in the tenth century would have lived and died unknown. Cromwell and Napoleon need their revolutions, Grant his civil war. An Ajax gets no fame in the day of telescopic-sighted rifles; and, to express differently an instance which Spencer uses, what could a Watt have effected in a tribe which no precursive genius had taught to smelt iron or to turn a lathe?

Now, the important thing to notice is that what makes a certain genius now incompatible with his surroundings is usually the fact that some previous genius of a different strain has warped the community away from the sphere of his possible effectiveness. After Voltaire, no Peter the Hermit; after Charles IX. and Louis XIV., no general protestantization of France; after a Manchester school, a Beaconsfield's success is transient; after a Philip II., a Castelar makes little headway; and so on. Each bifurcation cuts off certain sides of the field altogether, and limits the future possible angles of deflection. A community is a living thing, and in words which I can do no better than quote from Professor Clifford,[5] "it is the peculiarity of living things not merely that they change under the influence of surrounding circumstances, but that any change which takes place in them is not lost but retained, and as it were built into the organism to serve as the foundation for future actions. If you cause any distortion in the growth of a tree and make it crooked, whatever you may do afterwards to make the tree straight the mark of your distortion is there; it is absolutely indelible; it has become part of the tree's nature.... Suppose, however, that you take a lump of gold, melt it, and let it cool....

No one can tell by examining a piece of gold how often it has been melted and cooled in geologic ages, or even in the last year by the hand of man. Any one who cuts down an oak can tell by the rings in its trunk how many times winter has frozen it into widowhood, and how many times summer has warmed it into life. A living being must always contain within itself the history, not merely of its own existence, but of all its ancestors."

Every painter can tell us how each added line deflects his picture in a certain sense. Whatever lines follow must be built on those first laid down. Every author who starts to rewrite a piece of work knows how impossible it becomes to use any of the first-written pages again. The new beginning has already excluded the possibility of those earlier phrases and transitions, while it has at the same time created the possibility of an indefinite set of new ones, no one of which, however, is completely determined in advance. Just so the social surroundings of the past and present hour exclude the possibility of accepting certain contributions from individuals; but they do not positively define what contributions shall be accepted, for in themselves they are powerless to fix what the nature of the individual offerings shall be.[6]

Thus social evolution is a resultant of the interaction of two wholly distinct factors,—the individual, deriving his peculiar gifts from the play of physiological and infra-social forces, but bearing all the power of initiative and origination in his hands; and, second, the social environment, with its power of adopting or rejecting both him and his gifts. Both factors are essential to change. The community stagnates without the impulse of the individual. The impulse dies away without the sympathy of the community.

All this seems nothing more than common-sense. All who wish to see it developed by a man of genius should read that golden little work, Bagehot's *Physics and Politics*, in which (it seems to me) the complete sense of the way in which concrete things grow and change is as livingly present as the straining after a pseudo-philosophy of evolution is livingly absent. But there are never wanting minds to whom such views seem personal and contracted, and allied to an anthropomorphism long exploded in other fields of knowledge. "The individual withers, and the world is more and more," to these writers; and in a Buckle, a Draper, and a Taine we all know how much the 'world' has come to be almost synonymous with the *climate*. We all know, too, how the controversy has been kept up between the partisans of a 'science of history' and those who deny the existence of anything like necessary 'laws' where human societies are concerned. Mr.

Spencer, at the opening of his *Study of Sociology*, makes an onslaught on the 'great-man theory' of history, from which a few passages may be quoted:—

"The genesis of societies by the action of great men may be comfortably believed so long as, resting in general notions, you do not ask for particulars. But now, if, dissatisfied with vagueness, we demand that our ideas shall be brought into focus and exactly defined, we discover the hypothesis to be utterly incoherent. If, not stopping at the explanation of social progress as due to the great man, we go back a step, and ask, Whence comes the great man? we find that the theory breaks down completely. The question has two conceivable answers: his origin is supernatural, or it is natural. Is his origin supernatural? Then he is a deputy god, and we have theocracy once removed,—or, rather, not removed at all.... Is this an unacceptable solution? Then the origin of the great man is natural; and immediately this is recognized, he must be classed with all other phenomena in the society that gave him birth as a product of its antecedents. Along with the whole generation of which he forms a minute part, along with its institutions, language, knowledge, manners, and its multitudinous arts and appliances, he is a *resultant*.... You must admit that the genesis of the great man depends on the long series of complex influences which has produced the race in which he appears, and the social state into which that race has slowly grown.... Before he can remake his society, his society must make him. All those changes of which he is the proximate initiator have their chief causes in the generations he descended from. If there is to be anything like a real explanation of those changes, it must be sought in that aggregate of conditions out of which both he and they have arisen." [7]

Now, it seems to me that there is something which one might almost call impudent in the attempt which Mr. Spencer makes, in the first sentence of this extract, to pin the reproach of vagueness upon those who believe in the power of initiative of the great man.

Suppose I say that the singular moderation which now distinguishes social, political, and religious discussion in England, and contrasts so strongly with the bigotry and dogmatism of sixty years ago, is largely due to J. S. Mill's example. I may possibly be wrong about the facts; but I am, at any rate, 'asking for particulars,' and not 'resting in general notions.' And if Mr. Spencer should tell me it started from no personal influence whatever, but from the 'aggregate of conditions,' the 'generations,' Mill and all his contemporaries 'descended from,' the whole past order of nature in short, surely he, not I, would be the person 'satisfied with vagueness.'

The fact is that Mr. Spencer's sociological method is identical with that of one who would invoke the zodiac to account for the fall of the sparrow, and the thirteen at table to explain the gentleman's death. It is of little more scientific value than the Oriental method of replying to whatever question arises by the unimpeachable truism, "God is great." *Not* to fall back on the gods, where a proximate principle may be found, has with us Westerners long since become the sign of an efficient as distinguished from an inefficient intellect.

To believe that the cause of everything is to be found in its antecedents is the starting-point, the initial postulate, not the goal and consummation, of science. If she is simply to lead us out of the labyrinth by the same hole we went in by three or four thousand years ago, it seems hardly worth while to have followed her through the darkness at all. If anything is humanly certain it is that the great man's society, properly so called, does not make him before he can remake it. Physiological forces, with which the social, political, geographical, and to a great extent anthropological conditions have just as much and just as little to do as the condition of the crater of Vesuvius has to do with the flickering of this gas by which I write, are what make him. Can it be that Mr. Spencer holds the convergence of sociological pressures to have so impinged on Stratford-upon-Avon about the 26th of April, 1564, that a W. Shakespeare, with all his mental peculiarities, had to be born there,—as the pressure of water outside a certain boat will cause a stream of a certain form to ooze into a particular leak? And does he mean to say that if the aforesaid W. Shakespeare had died of cholera infantum, another mother at Stratford-upon-Avon would needs have engendered a duplicate copy of him, to restore the sociologic equilibrium,—just as the same stream of water will reappear, no matter how often you pass a sponge over the leak, so long as the outside level remains unchanged? Or might the substitute arise at 'Stratford-atte-Bowe'? Here, as elsewhere, it is very hard, in the midst of Mr. Spencer's vagueness, to tell what he does mean at all.

We have, however, in his disciple, Mr. Grant Allen, one who leaves us in no doubt whatever of his precise meaning. This widely informed, suggestive, and brilliant writer published last year a couple of articles in the Gentleman's Magazine, in which he maintained that individuals have no initiative in determining social change.

"The differences between one nation and another, whether in intellect, commerce, art, morals, or general temperament, ultimately depend, not upon any mysterious properties of race, nationality, or any other unknown and unintelligible abstractions, but simply and solely upon the physical circumstances to which they are exposed. If it be a fact, as we know it to be, that the French nation differs

recognizably from the Chinese, and the people of Hamburg differ recognizably from the people of Timbuctoo, then the notorious and conspicuous differences between them are wholly due to the geographical position of the various races. If the people who went to Hamburg had gone to Timbuctoo, they would now be indistinguishable from the semi-barbarian negroes who inhabit that central African metropolis;[8] and if the people who went to Timbuctoo had gone to Hamburg, they would now have been white-skinned merchants driving a roaring trade in imitation sherry and indigestible port.... The differentiating agency must be sought in the great permanent geographical features of land and sea; ... these have necessarily and inevitably moulded the characters and histories of every nation upon the earth.... We cannot regard any nation as an active agent in differentiating itself. Only the surrounding circumstances can have any effect in such a direction. [These two sentences dogmatically deny the existence of the relatively independent physiological cycle of causation.] To suppose otherwise is to suppose that the mind of man is exempt from the universal law of causation. There is no caprice, no spontaneous impulse, in human endeavors. Even tastes and inclinations *must* themselves be the result of surrounding causes."[9]

Elsewhere Mr. Allen, writing of the Greek culture, says:—

"It was absolutely and unreservedly the product of the geographical Hellas, acting upon the given factor of the undifferentiated Aryan brain,... To me it seems a self-evident proposition that nothing whatsoever can differentiate one body of men from another, except the physical conditions in which they are set,—including, of course, under the term *physical conditions* the relations of place and time in which they stand with regard to other bodies of men. To suppose otherwise is to deny the primordial law of causation. To imagine that the mind can differentiate itself is to imagine that it can be differentiated without a cause."[10]

This outcry about the law of universal causation being undone, the moment we refuse to invest in the kind of causation which is peddled round by a particular school, makes one impatient. These writers have no imagination of alternatives. With them there is no *tertium quid* between outward environment and miracle. *Aut Caesar, aut nullus! Aut* Spencerism, *aut* catechism!

If by 'physical conditions' Mr. Allen means what he does mean, the outward cycle of visible nature and man, his assertion is simply physiologically false. For a national

mind differentiates 'itself' whenever a genius is born in its midst by causes acting in the invisible and molecular cycle. But if Mr. Allen means by 'physical conditions' the whole of nature, his assertion, though true, forms but the vague Asiatic profession of belief in an all-enveloping fate, which certainly need not plume itself on any specially advanced or scientific character.

And how can a thinker so clever as Mr. Allen fail to have distinguished in these matters between *necessary* conditions and *sufficient* conditions of a given result? The French say that to have an omelet we must break our eggs; that is, the breaking of eggs is a necessary condition of the omelet. But is it a sufficient condition? Does an omelet appear whenever three eggs are broken? So of the Greek mind. To get such versatile intelligence it may be that such commercial dealings with the world as the geographical Hellas afforded are a necessary condition. But if they are a sufficient condition, why did not the Phoenicians outstrip the Greeks in intelligence? No geographical environment can produce a given type of mind. It can only foster and further certain types fortuitously produced, and thwart and frustrate others. Once again, its function is simply selective, and determines what shall actually be only by destroying what is positively incompatible. An Arctic environment is incompatible with improvident habits in its denizens; but whether the inhabitants of such a region shall unite with their thrift the peacefulness of the Eskimo or the pugnacity of the Norseman is, so far as the climate is concerned, an accident. Evolutionists should not forget that we all have five fingers not because four or six would not do just as well, but merely because the first vertebrate above the fishes *happened* to have that number. He owed his prodigious success in founding a line of descent to some entirely other quality,—we know not which,—but the inessential five fingers were taken in tow and preserved to the present day. So of most social peculiarities. Which of them shall be taken in tow by the few qualities which the environment necessarily exacts is a matter of what physiological accidents shall happen among individuals. Mr. Allen promises to prove his thesis in detail by the examples of China, India, England, Rome, etc. I have not the smallest hesitation in predicting that he will do no more with these examples than he has done with Hellas. He will appear upon the scene after the fact, and show that the quality developed by each race was, naturally enough, not incompatible with its habitat. But he will utterly fail to show that the particular form of compatibility fallen into in each case was the one necessary and only possible form.

Naturalists know well enough how indeterminate the harmonies between a fauna and its environment are. An animal may better his chances of existence in either of

many ways,—growing aquatic, arboreal, or subterranean; small and swift, or massive and bulky; spiny, horny, slimy, or venomous; more timid or more pugnacious; more cunning or more fertile of offspring; more gregarious or more solitary; or in other ways besides,—and any one of these ways may suit him to many widely different environments.

Readers of Mr. A. R. Wallace will well remember the striking illustrations of this in his Malay Archipelago:—

"Borneo closely resembles New Guinea not only in its vast size and its freedom from volcanoes, but in its variety of geological structure, its uniformity of climate, and the general aspect of the forest vegetation that clothes its surface; the Moluccas are the counterpart of the Philippines in their volcanic structure, their extreme fertility, their luxuriant forests, and their frequent earthquakes; and Bali, with the east end of Java, has a climate almost as dry and a soil almost as arid as that of Timor. Yet between these corresponding groups of islands, constructed, as it were, after the same pattern, subjected to the same climate, and bathed by the same oceans, there exists the greatest possible contrast when we compare their animal productions. Nowhere does the ancient doctrine that differences or similarities in the various forms of life that inhabit different countries are due to corresponding physical differences or similarities in the countries themselves, meet with so direct and palpable a contradiction. Borneo and New Guinea, as alike physically as two distinct countries can be, are zoologically wide as the poles asunder; while Australia, with its dry winds, its open plains, its stony deserts, and its temperate climate, yet produces birds and quadrupeds which are closely related to those inhabiting the hot, damp, luxuriant forests which everywhere clothe the plains and mountains of New Guinea."

Here we have similar physical-geography environments harmonizing with widely differing animal lives, and similar animal lives harmonizing with widely differing geographical environments. A singularly accomplished writer, E. Gryzanowski, in the *North American Review*,^[11] uses the instances of Sardinia and Corsica in support of this thesis with great effect He says:—

"These sister islands, lying in the very centre of the Mediterranean, at almost equal distances from the centres of Latin and Neo-Latin civilization, within easy reach of the Phoenician, the Greek, and the Saracen, with a coast-line of more than a

thousand miles, endowed with obvious and tempting advantages, and hiding untold sources of agricultural and mineral wealth, have nevertheless remained unknown, unheeded, and certainly uncared for during the thirty centuries of European history.... These islands have dialects, but no language; records of battles, but no history. They have customs, but no laws; the *vendetta*, but no justice. They have wants and wealth, but no commerce, timber and ports, but no shipping. They have legends, but no poetry, beauty, but no art; and twenty years ago it could still be said that they had universities, but no students.... That Sardinia, with all her emotional and picturesque barbarism, has never produced a single artist is almost as strange as her barbarism itself.... Near the focus of European civilization, in the very spot which an *à priori* geographer would point out as the most favorable place for material and intellectual, commercial, and political development, these strange sister islands have slept their secular sleep, like *nodes* on the sounding-board of history."

This writer then goes on to compare Sardinia and Sicily with some detail. All the material advantages are in favor of Sardinia, "and the Sardinian population, being of an ancestry more mixed than that of the English race, would justify far higher expectations than that of Sicily." Yet Sicily's past history has been brilliant in the extreme, and her commerce to-day is great. Dr. Gryzanowski has his own theory of the historic torpor of these favored isles. He thinks they stagnated because they never gained political autonomy, being always owned by some Continental power. I will not dispute the theory; but I will ask, Why did they not gain it? and answer immediately: Simply because no individuals were born there with patriotism and ability enough to inflame their countrymen with national pride, ambition, and thirst for independent life. Corsicans and Sardinians are probably as good stuff as any of their neighbors. But the best wood-pile will not blaze till a torch is applied, and the appropriate torches seem to have been wanting.[12]

Sporadic great men come everywhere. But for a community to get vibrating through and through with intensely active life, many geniuses coming together and in rapid succession are required. This is why great epochs are so rare,—why the sudden bloom of a Greece, an early Rome, a Renaissance, is such a mystery. Blow must follow blow so fast that no cooling can occur in the intervals. Then the mass of the nation grows incandescent, and may continue to glow by pure inertia long after the originators of its internal movement have passed away. We often hear surprise expressed that in these high tides of human affairs not only the people should be filled with stronger life, but that individual geniuses should seem so exceptionally

abundant. This mystery is just about as deep as the time-honored conundrum as to why great rivers flow by great towns. It is true that great public fermentations awaken and adopt many geniuses, who in more torpid times would have had no chance to work. But over and above this there must be an exceptional concourse of genius about a time, to make the fermentation begin at all. The unlikeliness of the concourse is far greater than the unlikeliness of any particular genius; hence the rarity of these periods and the exceptional aspect which they always wear.

It is folly, then, to speak of the 'laws of history' as of something inevitable, which science has only to discover, and whose consequences any one can then foretell but do nothing to alter or avert. Why, the very laws of physics are conditional, and deal with *ifs*. The physicist does not say, "The water will boil anyhow;" he only says it will boil if a fire be kindled beneath it. And so the utmost the student of sociology can ever predict is that *if* a genius of a certain sort show the way, society will be sure to follow. It might long ago have been predicted with great confidence that both Italy and Germany would reach a stable unity if some one could but succeed in starting the process. It could not have been predicted, however, that the *modus operandi* in each case would be subordination to a paramount state rather than federation, because no historian could have calculated the freaks of birth and fortune which gave at the same moment such positions of authority to three such peculiar individuals as Napoleon III., Bismarck, and Cavour. So of our own politics. It is certain now that the movement of the independents, reformers, or whatever one please to call them, will triumph. But whether it do so by converting the Republican party to its ends, or by rearing a new party on the ruins of both our present factions, the historian cannot say. There can be no doubt that the reform movement would make more progress in one year with an adequate personal leader than as now in ten without one. Were there a great citizen, splendid with every civic gift, to be its candidate, who can doubt that he would lead us to victory? But, at present, we, his environment, who sigh for him and would so gladly preserve and adopt him if he came, can neither move without him, nor yet do anything to bring him forth.[13]

To conclude: The evolutionary view of history, when it denies the vital importance of individual initiative, is, then, an utterly vague and unscientific conception, a lapse from modern scientific determinism into the most ancient oriental fatalism. The lesson of the analysis that we have made (even on the completely deterministic hypothesis with which we started) forms an appeal of the most stimulating sort to the energy of the individual. Even the dogged resistance of the reactionary conservative to changes which he cannot hope entirely to defeat is justified and

shown to be effective. He retards the movement; deflects it a little by the concessions he extracts; gives it a resultant momentum, compounded of his inertia and his adversaries' speed; and keeps up, in short, a constant lateral pressure, which, to be sure, never heads it round about, but brings it up at last at a goal far to the right or left of that to which it would have drifted had he allowed it to drift alone.

I now pass to the last division of my subject, the function of the environment in *mental* evolution. After what I have already said, I may be quite concise. Here, if anywhere, it would seem at first sight as if that school must be right which makes the mind passively plastic, and the environment actively productive of the form and order of its conceptions; which, in a word, thinks that all mental progress must result from a series of adaptive changes, in the sense already defined of that word. We know what a vast part of our mental furniture consists of purely remembered, not reasoned, experience. The entire field of our habits and associations by contiguity belongs here. The entire field of those abstract conceptions which were taught us with the language into which we were born belongs here also. And, more than this, there is reason to think that the order of 'outer relations' experienced by the individual may itself determine the order in which the general characters imbedded therein shall be noticed and extracted by his mind.[14] The pleasures and benefits, moreover, which certain parts of the environment yield, and the pains and hurts which other parts inflict, determine the direction of our interest and our attention, and so decide at which points the accumulation of mental experiences shall begin. It might, accordingly, seem as if there were no room for any other agency than this; as if the distinction we have found so useful between 'spontaneous variation,' as the producer of changed forms, and the environment, as their preserver and destroyer, did not hold in the case of mental progress; as if, in a word, the parallel with darwinism might no longer obtain, and Spencer might be quite right with his fundamental law of intelligence, which says, "The cohesion between psychical states is proportionate to the frequency with which the relation between the answering external phenomena has been repeated in experience." [15]

But, in spite of all these facts, I have no hesitation whatever in holding firm to the darwinian distinction even here. I maintain that the facts in question are all drawn from the lower strata of the mind, so to speak,—from the sphere of its least evolved functions, from the region of intelligence which man possesses in common with the brutes. And I can easily show that throughout the whole extent of those mental departments which are highest, which are most characteristically human,

Spencer's law is violated at every step; and that as a matter of fact the new conceptions, emotions, and active tendencies which evolve are originally produced in the shape of random images, fancies, accidental out-births of spontaneous variation in the functional activity of the excessively instable human brain, which the outer environment simply confirms or refutes, adopts or rejects, preserves or destroys,—selects, in short, just as it selects morphological and social variations due to molecular accidents of an analogous sort.

It is one of the tritest of truisms that human intelligences of a simple order are very literal. They are slaves of habit, doing what they have been taught without variation; dry, prosaic, and matter-of-fact in their remarks; devoid of humor, except of the coarse physical kind which rejoices in a practical joke; taking the world for granted; and possessing in their faithfulness and honesty the single gift by which they are sometimes able to warm us into admiration. But even this faithfulness seems to have a sort of inorganic ring, and to remind us more of the immutable properties of a piece of inanimate matter than of the steadfastness of a human will capable of alternative choice. When we descend to the brutes, all these peculiarities are intensified. No reader of Schopenhauer can forget his frequent allusions to the *trockener ernst* of dogs and horses, nor to their *ehrlichkeit*. And every noticer of their ways must receive a deep impression of the fatally literal character of the few, simple, and treadmill-like operations of their minds.

But turn to the highest order of minds, and what a change! Instead of thoughts of concrete things patiently following one another in a beaten track of habitual suggestion, we have the most abrupt cross-cuts and transitions from one idea to another, the most rarefied abstractions and discriminations, the most unheard-of combinations of elements, the subtlest associations of analogy; in a word, we seem suddenly introduced into a seething caldron of ideas, where everything is fizzling and bobbing about in a state of bewildering activity, where partnerships can be joined or loosened in an instant, treadmill routine is unknown, and the unexpected seems the only law. According to the idiosyncrasy of the individual, the scintillations will have one character or another. They will be sallies of wit and humor; they will be flashes of poetry and eloquence; they will be constructions of dramatic fiction or of mechanical device, logical or philosophic abstractions, business projects, or scientific hypotheses, with trains of experimental consequences based thereon; they will be musical sounds, or images of plastic beauty or picturesqueness, or visions of moral harmony. But, whatever their differences may be, they will all agree in this,—that their genesis is sudden and, as it were, spontaneous. That is to say, the same premises would not, in the mind of another individual, have

engendered just that conclusion; although, when the conclusion is offered to the other individual, he may thoroughly accept and enjoy it, and envy the brilliancy of him to whom it first occurred.

To Professor Jevons is due the great credit of having emphatically pointed out[16] how the genius of discovery depends altogether on the number of these random notions and guesses which visit the investigator's mind. To be fertile in hypotheses is the first requisite, and to be willing to throw them away the moment experience contradicts them is the next. The Baconian method of collating tables of instances may be a useful aid at certain times. But one might as well expect a chemist's notebook to write down the name of the body analyzed, or a weather table to sum itself up into a prediction of probabilities of its own accord, as to hope that the mere fact of mental confrontation with a certain series of facts will be sufficient to make *any* brain conceive their law. The conceiving of the law is a spontaneous variation in the strictest sense of the term. It flashes out of one brain, and no other, because the instability of that brain is such as to tip and upset itself in just that particular direction. But the important thing to notice is that the good flashes and the bad flashes, the triumphant hypotheses and the absurd conceits, are on an exact equality in respect of their origin. Aristotle's absurd Physics and his immortal Logic flow from one source: the forces that produce the one produce the other. When walking along the street, thinking of the blue sky or the fine spring weather, I may either smile at some grotesque whim which occurs to me, or I may suddenly catch an intuition of the solution of a long-unsolved problem, which at that moment was far from my thoughts. Both notions are shaken out of the same reservoir,—the reservoir of a brain in which the reproduction of images in the relations of their outward persistence or frequency has long ceased to be the dominant law. But to the thought, when it is once engendered, the consecration of agreement with outward relations may come. The conceit perishes in a moment, and is forgotten. The scientific hypothesis arouses in me a fever of desire for verification. I read, write, experiment, consult experts. Everything corroborates my notion, which being then published in a book spreads from review to review and from mouth to mouth, till at last there is no doubt I am enshrined in the Pantheon of the great diviners of nature's ways. The environment *preserves* the conception which it was unable to *produce* in any brain less idiosyncratic than my own.

Now, the spontaneous upsettings of brains this way and that at particular moments into particular ideas and combinations are matched by their equally spontaneous permanent tiltings or saggings towards determinate directions. The humorous bent is quite characteristic; the sentimental one equally so. And the personal tone of

each mind, which makes it more alive to certain classes of experience than others, more attentive to certain impressions, more open to certain reasons, is equally the result of that invisible and unimaginable play of the forces of growth within the nervous system which, irresponsibly to the environment, makes the brain peculiarly apt to function in a certain way. Here again the selection goes on. The products of the mind with the determined aesthetic bent please or displease the community. We adopt Wordsworth, and grow unsentimental and serene. We are fascinated by Schopenhauer, and learn from him the true luxury of woe. The adopted bent becomes a ferment in the community, and alters its tone. The alteration may be a benefit or a misfortune, for it is (*pace* Mr. Allen) a differentiation from within, which has to run the gauntlet of the larger environment's selective power. Civilized Languedoc, taking the tone of its scholars, poets, princes, and theologians, fell a prey to its rude Catholic environment in the Albigensian crusade. France in 1792, taking the tone of its St. Justs and Marats, plunged into its long career of unstable outward relations. Prussia in 1806, taking the tone of its Humboldts and its Steins, proved itself in the most signal way 'adjusted' to its environment in 1872.

Mr. Spencer, in one of the strangest chapters of his *Psychology*,^[17] tries to show the necessary order in which the development of conceptions in the human race occurs. No abstract conception can be developed, according to him, until the outward experiences have reached a certain degree of heterogeneity, definiteness, coherence, and so forth.

"Thus the belief in an unchanging order, the belief in *law*, is a belief of which the primitive man is absolutely incapable.... Experiences such as he receives furnish but few data for the conception of uniformity, whether as displayed in things or in relations.... The daily impressions which the savage gets yield the notion very imperfectly, and in but few cases. Of all the objects around,—trees, stones, hills, pieces of water, clouds, and so forth,—most differ widely, ... and few approach complete likeness so nearly as to make discrimination difficult. Even between animals of the same species it rarely happens that, whether alive or dead, they are presented in just the same attitudes.... It is only along with a gradual development of the arts ... that there come frequent experiences of perfectly straight lines admitting of complete apposition, bringing the perceptions of equality and inequality. Still more devoid is savage life of the experiences which generate the conception of the uniformity of succession. The sequences observed from hour to hour and day to day seem anything but uniform, difference is a far more conspicuous trait among them.... So that if we contemplate primitive human life as

a whole, we see that multiformity of sequence, rather than uniformity, is the notion which it tends to generate.... Only as fast as the practice of the arts develops the idea of measure can the consciousness of uniformity become clear.... Those conditions furnished by advancing civilization which make possible the notion of uniformity simultaneously make possible the notion of *exactness*.... Hence the primitive man has little experience which cultivates the consciousness of what we call *truth*. How closely allied this is to the consciousness which the practice of the arts cultivates is implied even in language. We speak of a true surface as well as a true statement. Exactness describes perfection in a mechanical fit, as well as perfect agreement between the results of calculations."

The whole burden of Mr. Spencer's book is to show the fatal way in which the mind, supposed passive, is moulded by its experiences of 'outer relations.' In this chapter the yard-stick, the balance, the chronometer, and other machines and instruments come to figure among the 'relations' external to the mind. Surely they are so, after they have been manufactured; but only because of the preservative power of the social environment. Originally all these things and all other institutions were flashes of genius in an individual head, of which the outer environment showed no sign. Adopted by the race and become its heritage, they then supply instigations to new geniuses whom they environ to make new inventions and discoveries; and so the ball of progress rolls. But take out the geniuses, or alter their idiosyncrasies, and what increasing uniformities will the environment show? We defy Mr. Spencer or any one else to reply.

The plain truth is that the 'philosophy' of evolution (as distinguished from our special information about particular cases of change) is a metaphysical creed, and nothing else. It is a mood of contemplation, an emotional attitude, rather than a system of thought,—a mood which is old as the world, and which no refutation of any one incarnation of it (such as the spencerian philosophy) will dispel; the mood of fatalistic pantheism, with its intuition of the One and All, which was, and is, and ever shall be, and from whose womb each single thing proceeds. Far be it from us to speak slightingly here of so hoary and mighty a style of looking on the world as this. What we at present call scientific discoveries had nothing to do with bringing it to birth, nor can one easily conceive that they should ever give it its *quietus*, no matter how logically incompatible with its spirit the ultimate phenomenal distinctions which science accumulates should turn out to be. It can laugh at the phenomenal distinctions on which science is based, for it draws its vital breath from a region which—whether above or below—is at least altogether different from that

in which science dwells. A critic, however, who cannot disprove the truth of the metaphysic creed, can at least raise his voice in protest against its disguising itself in 'scientific' plumes. I think that all who have had the patience to follow me thus far will agree that the spencerian 'philosophy' of social and intellectual progress is an obsolete anachronism, reverting to a pre-darwinian type of thought, just as the spencerian philosophy of 'Force,' effacing all the previous distinctions between actual and potential energy, momentum, work, force, mass, etc., which physicists have with so much agony achieved, carries us back to a pre-galilean age.

[1] A lecture before the Harvard Natural History Society; published in the Atlantic Monthly, October, 1880.

[2] Darwin's theory of pangenesis is, it is true, an attempt to account (among other things) for variation. But it occupies its own separate place, and its author no more invokes the environment when he talks of the adhesions of gemmules than he invokes these adhesions when he talks of the relations of the whole animal to the environment. *Divide et impera!*

[3] It is true that it remodels him, also, to some degree, by its educative influence, and that this constitutes a considerable difference between the social case and the zoölogical case, I neglect this aspect of the relation here, for the other is the more important. At the end of the article I will return to it incidentally.

[4] The reader will remember when this was written.

[5] Lectures and Essays, i. 82.

[6] Mr. Grant Allen himself, in an article from which I shall presently quote, admits that a set of people who, if they had been exposed ages ago to the geographical agencies of Timbuctoo, would have developed into negroes might now, after a protracted exposure to the conditions of Hamburg, never become negroes if transplanted to Timbuctoo.

[7] Study of Sociology, pages 33-35.

[8] No! not even though they were bodily brothers! The geographical factor utterly vanishes before the ancestral factor. The difference between Hamburg and Timbuctoo as a cause of ultimate divergence of two races is as nothing to the difference of constitution of the ancestors of the two races, even though as in twin brothers, this difference might be invisible to the naked eye. No two couples of the

most homogeneous race could possibly be found so identical as, if set in identical environments, to give rise to two identical lineages. The minute divergence at the start grows broader with each generation, and ends with entirely dissimilar breeds.

[9] Article 'Nation Making,' in Gentleman's Magazine, 1878. I quote from the reprint in the Popular Science Monthly Supplement December, 1878, pages 121, 123, 126.

[10] Article 'Hellas,' in Gentleman's Magazine, 1878. Reprint in Popular Science Monthly Supplement, September, 1878.

[11] Vol. cxiii. p. 318 (October, 1871).

[12] I am well aware that in much that follows (though in nothing that precedes) I seem to be crossing the heavily shotted bows of Mr. Galton, for whose laborious investigations into the heredity of genius I have the greatest respect. Mr. Galton inclines to think that genius of intellect and passion is bound to express itself, whatever the outward opportunity, and that within any given race an equal number of geniuses of each grade must needs be born in every equal period of time; a subordinate race cannot possibly engender a large number of high-class geniuses, etc. He would, I suspect, infer the suppositions I go on to make—of great men fortuitously assembling around a given epoch and making it great, and of their being fortuitously absent from certain places and times (from Sardinia, from Boston now, etc.)—to be radically vicious. I hardly think, however, that he does justice to the great complexity of the conditions of *effective* greatness, and to the way in which the physiological averages of production may be masked entirely during long periods, either by the accidental mortality of geniuses in infancy, or by the fact that the particular geniuses born happened not to find tasks. I doubt the truth of his assertion that *intellectual* genius, like murder, 'will out.' It is true that certain types are irrepressible. Voltaire, Shelley, Carlyle, can hardly be conceived leading a dumb and vegetative life in any epoch. But take Mr. Galton himself, take his cousin Mr. Darwin, and take Mr. Spencer: nothing is to me more have died 'with all their music in them,' known only to their friends as persons of strong and original character and judgment. What has started them on their career of effective greatness is simply the accident of each stumbling upon a task vast, brilliant, and congenial enough to call out the convergence of all his passions and powers. I see no more reason why, in case they had not fallen in with their several hobbies at propitious periods in their life, they need necessarily have hit upon other hobbies, and made themselves equally great. Their case seems similar to that of the Washingtons, Cromwells, and Grants, who simply rose to their occasions. But apart from these

causes of fallacy, I am strongly disposed to think that where transcendent geniuses are concerned the numbers anyhow are so small that their appearance will not fit into any scheme of averages. That is, two or three might appear together, just as the two or three balls nearest the target centre might be fired consecutively. Take longer epochs and more firing, and the great geniuses and near balls would on the whole be more spread out.

[13] Since this paper was written, President Cleveland has to a certain extent met the need. But who can doubt that if he had certain other qualities which he has not yet shown, his influence would have been still more decisive? (1896.)

[14] That is, if a certain general character be rapidly repeated in our outer experience with a number of strongly contrasted concomitants, it will be sooner abstracted than if its associates are invariable or monotonous.

[15] Principles of Psychology, i. 460. See also pp. 463, 464, 500. On page 408 the law is formulated thus: The *persistence* of the connection in consciousness is proportionate to the *persistence* of the outer connection. Mr. Spencer works most with the law of frequency. Either law, from my point of view, is false; but Mr. Spencer ought not to think them synonymous.

[16] In his Principles of Science, chapters xi., xii., xxvi.

[17] Part viii. chap. iii.