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THE SUPERORGANIC

By A. L. KROEBER

A WAY of thought characteristic of our western civilization has been the formulation of complementary antitheses, a balancing of exclusive opposites. One of these pairs of ideas with which our world has been laboring for some two thousand years is expressed in the words *body* and *soul*. Another couplet that has served its useful purpose, but which science is now often endeavoring to rid itself of, at least in certain aspects, is the distinction of the *physical* from the *mental*. A third discrimination is that of the *vital* from the *social*, or in other phraseology, of the *organic* and the *cultural*. The implicit recognition of the difference between organic qualities and processes and social qualities and processes is of long standing. The formal distinction is however recent. In fact the full import of the significance of the antithesis may be said to be only dawning upon the world. For every occasion on which some human mind sharply separates organic and social forces, there are dozens of other times when the distinction between them is not thought of, or an actual confusion of the two ideas takes place.

One reason for this current confusion of the organic and the social is the predominance, in the present phase of the history of thought, of the idea of evolution. This idea, one of the earliest, simplest, and also vaguest ever attained by the human mind, has

received its strongest ground and fortification in the domain of the organic; in other words, through biological science. At the same time, there is an evolution, or growth, or gradual development, apparent also in other realms than that of plant and animal life. We have theories of stellar or cosmic evolution; and there is obvious, even to the least learned, a growth or evolution of civilization. In the nature of things there is little danger of the carrying over of the Darwinian or post-Darwinian principles of the evolution of life into the realm of burning suns and lifeless nebulae. Human civilization or progress, on the other hand, which exists only in and through living members of the species, is so unmistakably similar to the evolution of plants and animals, that it has been inevitable that there should have been sweeping applications of the principles of organic development to the facts of cultural growth. This of course is reasoning by analogy, or arguing that because two things resemble each other in one point they will also be similar in others. In the absence of knowledge, such assumptions are justifiable as assumptions. Too often, however, their effect is to predetermine mental attitude, with the result that when the evidence begins to accumulate which could prove or disprove the assumption based on analogy, this evidence is no longer viewed impartially and judiciously, but is merely distributed and disposed of in such a way as not to interfere with the established conviction into which the original tentative guess has long since turned.

This is what has happened in the field of organic and social evolution. The distinction between them, which is so obvious that to former ages it seemed too commonplace to remark upon, except incidentally and indirectly, has been largely obscured in the last fifty years through the hold which thoughts connected with the idea of organic evolution have had on minds of the time. It even seems fair to say that this confusion has been greater and more general among those to whom study and scholarship are a daily pursuit than to the remainder of the world.

And yet many aspects of the difference between the organic and that in human life which is not organic, are so plain that a child can grasp them, and that all human beings, including the

veriest savages, constantly employ the distinction. Everyone is aware that we are born with certain powers and that we acquire others. There is no need of argument to prove that we derive some things in our lives and make-up from nature through heredity, and that other things come to us through agencies with which heredity has nothing to do. No one has yet been found to assert that any human being is born with an inherent knowledge of the multiplication table; nor, on the other hand, to doubt that the children of a negro are born negroes through the operation of hereditary forces. Some qualities in every individual are however clearly debatable ground; and when the development of civilization as a whole and the evolution of life as a whole are compared, the distinction of the processes involved has too often been allowed to lapse.

Some millions of years ago, it is currently taught, natural selection, or some other evolutionary agency, first caused birds to appear in the world. They sprang from reptiles. Conditions were such that the struggle for existence on the earth was hard; while in the air there were safety and room. Gradually, either by a series of almost imperceptible gradations through a long line of successive generations, or by more marked and sudden leaps in a shorter period, the group of birds was evolved from its reptilian ancestors. In this development, feathers were acquired and scales lost; the grasping faculty of the front legs was converted into an ability to sustain the body in the air. The advantages of resistance enjoyed by a cold-blooded organization were given up for the equivalent or greater compensation of the superior activity that goes with warm-bloodedness. The net result of this chapter of evolutionary history was that a new power, that of aerial locomotion, was added to the sum total of faculties possessed by the highest group of animals, the vertebrates. The vertebrate animals as a whole, however, were not affected. The majority of them are as totally without the power of flight as their ancestors were millions of years ago. The birds, in turn, had lost certain faculties which they once possessed, and presumably would still possess were it not for the acquisition of their wings.

In the last few years human beings have also attained the power of aerial locomotion. But the process by which this power was attained, and its effects on the species, are as utterly different from those which characterized the acquisition of flight by the first birds as it is possible for them to be. Our means of flying are outside of our bodies. A bird is born with a pair of wings, but we have invented the aeroplane. The bird renounced a potential pair of hands to get his wings; we, because our new faculty is not part of our congenital make-up, keep all the organs and capacities of our forefathers but add to them the new ability. The process of the development of civilization is clearly one of accumulation: the old is retained, in spite of the incoming of the new. In organic evolution, the introduction of new features is generally possible only through the loss or modification of existing organs or faculties.

In short, the growth of new species of animals takes place through, and in fact consists of, changes in their organic constitution. As regards the growth of civilization, on the other hand, the one example cited is sufficient to show that change and progress can take place through an invention without any such constitutional alteration of the human species.

There is another way of looking at this difference. It is clear that as a new species originates, it is derived wholly from the individual or individuals that first showed the particular traits distinguishing the new species. When we say that it is derived from these individuals we mean, literally, that it is descended. In other words, the species is composed only of such individuals as contain the blood of particular ancestors. Heredity is thus the indispensable means of transmission. When, however, an invention is made, the entire human race is capable of profiting thereby. People who have not the slightest blood kinship to the first designers of aeroplanes can fly and are flying today. Many a father has used, enjoyed, and profited by the invention of his son. In the evolution of animals, the descendant can build upon the inheritance transmitted to him from his ancestors, and may rise to higher powers and more perfect development; but the ancestor is, in the very nature of things, precluded from thus profiting from his

descendant. In short, organic evolution is essentially and inevitably connected with hereditary processes; the social evolution which characterizes the progress of civilization, on the other hand, is not, or not necessarily, tied up with hereditary agencies.

The whale is not only a warm-blooded mammal, but is recognized as the remote descendant of carnivorous land animals. In some few million years, as such genealogies are usually reckoned, this animal lost his legs for running, his claws for holding and tearing, his original hair and external ears that would be useless or worse in water, and acquired fins and fluke, a cylindrical body, a layer of fat, and the power of holding his breath. There was much that the species gave up; more, on the whole, perhaps than it gained. Certainly some of its parts have degenerated. But there was one new power that it did achieve: that of roaming the ocean indefinitely.

The parallel and also contrast is in the human acquisition of the identical faculty. We do not, in gradual alteration from father to son, change our arms into flippers and grow a tail. We do not enter the water at all to navigate it. We build a boat. And what this means is that we preserve our bodies and our natal faculties intact, unaltered from those of our fathers and remotest ancestors. Our means of marine travel is outside of our natural endowment. We make it and use it: the original whale had to turn himself into a boat. It took him countless generations to attain to his present condition. All individuals that failed to conform to type left no offspring; or none that went into the blood of the whales of today.

Again, we may compare human and animal beings when groups of them reach a new and arctic environment, or when the climate of the tract where the race is established slowly becomes colder and violently colder. The non-human mammal species comes to have heavy hair. The polar bear is shaggy, his Sumatran relative sleek. The arctic hare is enveloped in soft fur; the jack-rabbit in comparison is shabbily thin and moth-eaten. Good furs come from the far north, and they lose in richness, in quality, and in value, in proportion as they are stripped from animals of the same species that inhabit milder regions. And this difference is racial,

not individual. The jack-rabbit would quickly perish with the end of summer in Greenland; the caged polar bear suffers from temperate warmth within the massive coat which nature has fastened on him.

Now there are people who look for the same sort of inborn peculiarities in the Eskimo, the Samoyed, and the Yahgan; and find them, because they look for them. That the Eskimo is furry, no one can assert: in fact, we are hairier than he. But it is asserted that he is fat-protected—like the blubber-covered seal that he lives on; and that he devours vast quantities of heat-giving meat and oil because he must. The true amount of his fat, compared with that of other human beings, remains to be ascertained. He probably has more than the European; but probably no more than the normal full-blood Samoan and Hawaiian from under the tropics. And as to his diet, if this is seal and seal and seal all winter long, it is not from any congenital craving of his stomach, but because he does not know how to get himself anything else. The Alaskan miner, and the arctic and antarctic explorer, do not guzzle blubber. Wheat-flour, eggs, coffee, sugar, potatoes, canned vegetables—whatever the exigencies of their vocation, and the cost of transportation permit—make up their fare. The Eskimo is only too anxious to join them; and both he and they can thrive as well on the one diet as on the other.

In fact, what the human inhabitant of intemperate latitudes does, is not to develop a peculiar digestive system, any more than he grows hair. He changes his environment, and thereby is able to retain his original body unaltered. He builds a closed house, which keeps out the wind and retains the heat of his body. He makes a fire or lights a lamp. He skins a seal or a caribou of the furry hide with which natural selection or other processes of organic evolution have endowed these beasts; he has his wife make him a shirt and trousers, boots and gloves, or two sets of them; he puts them on; and in a few years, or days, he is provided with the protection which it took the polar bear and the arctic hare, the sable and the ptarmigan, untold periods to acquire. What is more, his baby, and his baby's baby, and his hundredth descendant are

born as naked, and unarmed physically, as he and his hundredth ancestor were born.

That this difference in method of resisting a difficult environment, as followed respectively by the polar bear species and the human Eskimo race, is absolute, need not be asserted. That the difference is deep, is unquestionable. That it is as important as it is often neglected, it is the object of this essay to establish.

It has long been the custom to say that the difference is that between body and mind; that animals have their physiques adapted to their circumstances, but that man's superior intelligence enables him to rise superior to such lowly needs. But this is not the significant point of the difference. It is true that without the much greater mental faculties of man, he could not achieve the attainments the lack of which keeps the brute chained to the limitations of his anatomy. But the greater human intelligence in itself does not cause the differences that exist. This psychic superiority is only the indispensable condition of what is peculiarly human: civilization. Directly, it is the civilization in which every Eskimo, every Alaskan miner or arctic discoverer is reared, and not any greater inborn faculty, that leads him to build houses, ignite fire, and wear clothing. The distinction between animal and man which counts is not that of the physical and mental, which is one of relative degree, but that of the organic and social, which is one of kind. The beast has mentality, and we have bodies; but in civilization man has something that no animal has.

That this distinction is actually something more than that of the physical and mental, appears from an example that may be chosen from the non-bodily: speech.

On the surface, human and animal speech, in spite of the enormously greater richness and complexity of the former, are much alike. Both express emotions, possibly ideas, in sounds formed by bodily organs and understood by the hearing individual. But the difference between the so-called language of brutes and that of men is infinitely great; as a homely illustration will set forth.

A newly-born pup is brought up in a litter of kittens by a fostering cat. Familiar anecdotes and newspaper paragraphs to

the contrary, the youngster will bark and growl, not purr or miaow. He will not even try to do the latter. The first time his toe is stepped on, he will whine, not squeal, just as surely as when thoroughly angered he will bite as his never-beheld mother did, and not even attempt to claw as he has seen his foster-mother do. For half his life seclusion may keep him from sight or sound or scent of another dog. But then let a bark or a snarl reach him through the restraining wall, and he will be all attention—far more than at any voice ever uttered by his cat associates. Let the bark be repeated, and interest will give way to excitement, and infallibly he will answer in kind, as certainly as, put with a bitch, the sexual impulses of his species will manifest themselves. It cannot be doubted that dog speech is as ineradicably part of dog nature, as fully contained in it without training or culture, as wholly part of the dog organism, as are teeth or feet or stomach or motions or instincts. No degree of contact with cats, or deprivation of association with his own kind, can make a dog acquire cat speech, or lose his own, any more than it can cause him to switch his tail instead of wagging it, to rub his sides against his master instead of leaping against him, or to grow whiskers and carry his drooping ears erect.

Let us take a French baby, born in France of French parents, themselves descended for numerous generations from French-speaking ancestors. Let us, at once after birth, entrust the infant to a mute nurse, with instructions to let no one handle or see her charge, while she travels by the directest route to the interior heart of China. There she delivers the child to a Chinese couple, who legally adopt it, and rear it as their son. Now suppose three or ten or thirty years passed. Is it needful to discuss what the growing or grown Frenchman will speak? Absolutely not a word of French; and absolutely pure Chinese, without a trace of accent and with Chinese fluency; and nothing else.

It is true that there is a common delusion, frequent even among educated people, that some hidden influence of his French-talking ancestors will survive in the adopted Chinaman: that it is only necessary to send him to France with a batch of real Chinamen,

and he will acquire his mother's tongue with appreciably greater facility, fluency, correctness, and naturalness than his Mongolian companions. That a belief is common, however, is as likely to stamp it a common superstition as a common truth. And any reasonable biologist, in other words, an expert qualified to speak of heredity, will pronounce this favored answer to this problem in heredity, pure superstition. He might merely choose a politer phrase.

Now there is something deep going here. No amount of association with Chinese would turn our young Frenchman's eyes from blue to black, or slant them, or flatten his nose, or coarsen or stiffen his wavy, oval-sectioned hair; and yet his speech is totally that of his associates, in no measure that of his blood kin. His eyes and his nose and his hair are his from heredity; his language is non-hereditary—as much so as the length to which he allows his hair to grow, or the hole which, in conformity to fashion, he may or may not bore in his ears. It is not that speech is mental and facial proportions physical; the distinction that has meaning and use is that human language is non-hereditary and social, eye-color and nose-shape hereditary and organic. By the same criterion, dog speech, and all that is vaguely called the language of animals, is in a class with men's noses, the proportions of their bones, the color of their skin, and the slope of their eyes, and not in a class with any human idiom. It is inherited, and therefore organic. By a human standard, it is not really language at all, except by the sort of metaphor that speaks of the language of the flowers.

It is true that now and then a French child would be found that under the conditions of the experiment assumed, would learn Chinese more slowly, less idiomatically, and with less power of expression, than the average Chinaman. But there would also be French babies, and as many, that would acquire the Chinese language more quickly, more fluently, with richer power of revealing their emotions and defining their ideas, than the normal Chinese. These are individual differences, which it would be absurd to deny, but which do not affect the average, and are not to the point. One Englishman speaks better English, and more of it, than another,

and he may also, through precocity, learn it much sooner; but one talks English no more and no less truly than the other.

There is one form of animal expression in which the influence of association has sometimes been alleged to be greater than that of heredity. This is the song of birds. There is a good deal of conflicting opinion, and apparently of evidence, on this point. Many birds have a strong inherent impulse to imitate sounds. It is also a fact that the singing of one individual stimulates the other—as with dogs, wolves, cats, frogs, and most noisy animals. That in certain species of birds capable of a complex song the full development will not often be reached in individuals raised out of hearing of their kind, may probably be admitted. But it seems to be clear that every species has a song or call distinctively its own; that this minimum is attainable without association by every normal member of the singing sex, as soon as conditions of age, food, and warmth are proper, and the requisite stimulus of noise, or silence, or sex development, is present. That there has been serious conflict of opinion as to the nature of bird song, will ultimately be found to be chiefly due to the pronouncement of opinions on the matter by those who read their own mental states and activities into animals—a common fallacy that every biological student is now carefully trained against at the outset of his career. In any event, whether one bird does or does not in some degree “learn” from another, there is not a fragment of even alleged evidence that bird song is a tradition, that like human speech or human music it accumulates and develops from age to age, that it is inevitably altered from generation to generation by fashion or custom, and that it is impossible for it ever to remain the same: in other words, that it is a social thing or due to a process even remotely akin to those affecting all constituents of human civilization.

It is also true that there is in human life a series of utterances that are of the type of animal cries. A man in pain moans without purpose of communication. The sound is literally pressed from him. A person in supreme fright may shriek. We know that his cry is instinctive, unintended, what the physiologist calls a reflex

action. The true shriek is as liable to escape the victim pinned before the approaching engineerless train, as him who is pursued by thinking and planning enemies. The woodsman crushed by a rock forty miles from the nearest human being, will moan like the run-over city dweller surrounded by a crowd waiting for the speeding ambulance. Such cries are of a class with those of animals. In fact, to really understand the "speech" of brutes, we must think ourselves into a condition in which our utterances would be totally restricted to such instinctive cries—"inarticulate" is their general though often inaccurate designation. In any exact sense, they are not language at all.

This is precisely the point. We undoubtedly have certain activities of utterance, certain faculties and habits of sound production, that are truly parallel with those of animals; and we also have something more that is entirely different and without parallel among the animals. To deny that something purely animal underlies human speech, is fatuous; but it would be equally narrow to believe that because our speech springs from an animal foundation, and originated in this foundation, it therefore is nothing but animal mentality and utterances greatly magnified. A house may be built on rock; without this base it might be impossible for it to have been erected; but no one will maintain that therefore the house is nothing but improved and glorified stone.

As a matter of fact, the purely animal element in human speech is small. Apart from laughter and crying, it finds rare utterance. Our interjections are denied by philologists as true speech, or at best but half admitted. It is a fact that they differ from full words in not being voiced, generally, to convey a meaning—nor to conceal one. But even these particles are shaped and dictated by fashion, by custom, by the type of civilization to which we belong, in short by social and not by organic elements. When I drive the hammer on my thumb instead of on the head of the nail, an involuntary "damn" may escape me as readily if I am alone in the house, as if companions stand on each side. Perhaps more readily. So far, the exclamation does not serve the purpose of speech and is not speech. But the Spaniard will say "carramba" and not "damn";

and the Frenchman, the German, the Chinaman, will avail himself of still different expression. The American says "outch" when hurt. Other nationalities do not understand this syllable. Each people has its own sound; some even two—one used by men and the other by women. A Chinaman will understand a laugh, a moan, a crying child, as well as we understand it, and as well as a dog understands the snarl of another dog. But he must learn "outch," or it is meaningless. No dog, on the other hand, ever has given utterance to a new snarl, unintelligible to other dogs, as a result of having been brought up in different associations. Even this lowest element of human speech, then, this involuntary half-speech of exclamations, is therefore not indeed caused but at any rate shaped by social influences.

Herodotus tells of an Egyptian king, who, wishing to ascertain the parent tongue of humanity, had some infants brought up in isolation from their own kind, with only goats as companions and for sustenance. When the children, grown older, were revisited, they cried the word "bekos," or, subtracting the ending which the normalizing and sensitive Greek could not endure omitting from anything that passed his lips, more probably "bek." The king then sent to all countries to learn in what land this vocable meant something. He ascertained that in the Phrygian idiom it signified bread, and, assuming that the children were crying for food, concluded that they spoke Phrygian in voicing their "natural" human speech, and that this tongue must therefore be the original one of all mankind. The king's belief in an inherent and congenital language of man, which only the blind accidents of time had distorted into a multitude of idioms, may seem simple; but naïve as it is, inquiry would surely reveal crowds of civilized people still adhering to it.

This however is not our moral to the tale. That lies in the fact that the one and only word attributed to the children, "bek," was, if the story has any authenticity whatsoever, only a reflection or imitation—as the commentators of Herodotus long since conjectured—of the cry of the goats who were the children's only associates and instructors. In short, if it is allowable to deduce any inference

from so apocryphal an anecdote, what it proves is that there is no natural and therefore no organic human language.

Thousands of years later another sovereign, the Mogul emperor Akbar, repeated the experiment with the intent of ascertaining the "natural" religion of mankind. His band of children were shut up in a house. When, the necessary time having elapsed, the doors were opened in the presence of the expectant and enlightened ruler, his disappointment was great: the children trooped out as dumb as deaf-mutes. Faith dies hard, however; and we may suspect that it would take a third trial, under modern chosen and controlled conditions, to satisfy some natural scientists that speech, for the human individual and for the human race, is wholly an acquired and not a hereditary thing, entirely outward and not at all inward—a social product and not an organic growth.

Human and animal speech, then, though one roots in the other, are in their nature of a different order. They resemble each other only as the flight of a bird and of an aeronaut are alike. That the analogy between them has frequently deceived, proves only the guilelessness of the human mind. The operative processes are wholly unlike; and this, to him who is desirous of understanding, is far more important than the similarity of effect. The savage and the peasant who cure by cleaning the knife and leaving the wound unattended, have observed certain indisputable facts. They know that cleanness aids, dirt on the whole impedes recovery. They know the knife as the cause, the wound as the effect; and they grasp, too, the correct principle that treatment of the cause is in general more likely to be effective than treatment of the symptom. They fail only in not inquiring into the process that may be involved. Knowing nothing of the nature of sepsis, of bacteria, of the excretion of organic poisons, those agencies of putrefaction and retardation of healing, they fall back on agencies more familiar to themselves, and use, as best they may, the process of magic intertwined with that of medicine. They carefully scrape the knife; they oil it; they keep it bright. The facts from which they work are correct; their logic is sound enough; they merely do not distinguish between two irreconcilable processes—that of

magic and that of physiological chemistry—and apply one in place of another. The student of today who reads the civilizationally moulded mind of men into the mentality of a dog or ape, or who tries to explain civilization—that is, history—by organic factors, commits an error which is, it is true, less antiquated and more in fashion, but of the same kind and nature, and of similarly disastrous consequence.

It is only in small measure a question of high and low as between man and animal. Many purely instinctive activities of the beasts lead to far more complex and difficult achievements than some of the analogous customs of this or that human nation. The beaver is a far better architect than many a savage tribe. He fells larger trees, he drags them farther, he builds a closer house; he constructs it both below and above water; and he does what many nations never attempt to do: he makes himself a suitable topography for a habitat by erecting a dam. But the essential point is not that after all a man can do more than a beaver, or a beaver as much as a man; it is that all that a beaver accomplishes he does by one means, and a man by another. The rudest savage, who builds but a shack of a wind-pierced hut, can be taught, innumerable times has been taught, to saw and nail together boards, to mortar stone on stone, to sink foundations, to rear an iron frame. All human history concerns itself primarily with just such changes. What were the ancestors of ourselves, of us steel-building Europeans and Americans, but hut-dwelling savages a few thousand years ago—a period so short that it may barely suffice for the formation of an occasional new species of organism? And on the other side, who would be so rash as to affirm that one generation or a hundred or ten thousand of example and instruction would in the least measure convert the beaver from what he is into a carpenter or a bricklayer—or, allowing for his physical deficiency in the lack of hands, into a planning engineer?

The utter divergence between social and organic forces will perhaps never be fully grasped until the mentality of the so-called social insects, the bees and ants, is thoroughly realized. Social the ant is, in the sense that she associates; but she is so far from

being social in the sense of possessing civilization, of being influenced by non-organic forces, that she would better be known as the anti-social animal. The marvelous powers of the ant cannot be underestimated. There is no one to whom the full exploitation of their understanding will be of more service than to the historian. But he will not use this understanding by applying his knowledge of ant mentality to man. He will use it to fortify and render precise by intelligent contrast, his conception of the agencies that mould human civilization. Ant society is as little a true society, to any student imbued with the rudiments of the historical spirit, as the demon worshiped in a grotesque pagan idol is to the devout Catholic or Mohammedan the true God; as a deliberate caricature is a portrait; as a spurious imitation is identical with the counterfeited ware.

Take a couple of ant eggs of the right sex—unhatched eggs, freshly laid. Blot out every individual and every other egg of the species. Give the pair a little attention as regards warmth, moisture, protection, and food. The whole of ant "society," every one of the abilities, powers, accomplishments, and activities of the species, each "thought" that it has ever had, will be reproduced, and reproduced without diminution, in one generation. But place on a desert island or in a circumvallation two or three hundred human infants of the best stock from the highest class of the most civilized nation; furnish them the necessary incubation and nourishment; leave them in total isolation from their kind; and what shall we have? The civilization from which they were torn? One tenth of it? No, not any fraction; nor a fraction of the civilizational attainments of the rudest savage tribe. Only a pair or a troop of mutes, without arts, knowledge, fire, without order or religion. Civilization would be blotted out within these confines—not disintegrated, not cut to the quick, but obliterated in one sweep. Heredity saves for the ant all that she has, from generation to generation. But heredity does not maintain, and has not maintained, because it cannot maintain, one particle of the civilization which is the one specifically human thing.

The mental activity of the animals is instinctive; the content,

at least, of our own minds comes to us through tradition, in the widest sense of the word. Instinct is what is "pricked in"; an unalterable pattern inherent in the goods; indelible and inextinguishable, because the design is nothing but the warp and the woof, coming ready-made from the loom of heredity.

But tradition, what is "given through," handed along, from one to another, is only a message. It must of course be carried; but the messenger after all is extrinsic to the news. So, a letter must be written; but as its significance is in the meaning of the words, as the value of a note is not in the fiber of the paper but in the characters inscribed on its surface, so tradition is something superadded to the organisms that bear it, imposed upon them, external to them. And as the same shred can bear any one of thousands of inscriptions, of the most diverse force and value, and can even be tolerably razed and reinscribed, so it is with the human organism and the countless contents that civilization can pour into it. The essential difference between animal and man, in this illustration, is not that the latter has finer grain or the chaster quality of material; it is that his structure and nature and texture are such that he is inscribable, and that the animal is not. Chemically and physically, there is but little difference between a lump of pulp and a sheet of paper. Chemically and physically, it is of the slightest consequence to trouble about such minute difference. But chemically and physically there is still less difference between the treasury note stamped with "one" and that stamped with "one thousand"; and yet less between the check with an honored signature and that written with the same pen, the same ink, the same strokes even, by a forger. The difference that counts between the valid and the counterfeit check, is not the broader or the narrow line, the continuous curve of a letter in place of the broken one, but the purely social one that one signer has a valid account in the bank and the other has not; which fact is surely extrinsic to the paper and even to the ink upon it.

Exactly parallel to this is the relation of the instinctive and traditional, the organic and the social. The animal, so far as social influences are concerned, is as unsuitable as a dish of porridge

is for writing material; or when like the beach sand, it is inscribable, by domestication, it can retain no permanent impression, as a species, and lends itself to no use. Hence it has no society, and therefore no history. Man, however, comprises two aspects: he is an organic substance, that can be viewed as a substance, and he is also a tablet that is written upon. One aspect is as valid and as justifiable as another; but it is a cardinal mistake to confuse the two views.

The mason builds in granite and roofs with slate. The child learning its letters knows nothing of the qualities of its slate, but puzzles whether to write *c* or *k*. The mineralogist gives no precedence to one of the stones over the other; each has a constitution, a structure, properties, and uses. The educator ignores the granite; but, though he uses the slate, he does not therefore rate it higher, or deny the serviceability of the other material; he takes his substance as he finds it. His problem is whether the child should begin with words or letters; at what age, for what hours, in what sequence, and under what conditions, its education toward literacy should commence. To decide these issues upon crystallogical evidence because his pupils write upon a variety of stone would be as futile as if the geologist were to employ his knowledge of rocks for inferences as to the soundest principles of pedagogy.

So, if the student of human achievement were to try to withdraw from the observation of the natural historian and the mechanical philosopher the human beings upon whom is inscribed the civilization which he himself investigates, he would be ridiculous. And when on the other hand, the biologist proposes to rewrite history, in whole or in part, through the medium of heredity, he reveals himself in no more favorable light. True, he has the sanction of much precedent. But that an act has been done a thousand times, and is encouraged by the plaudits of tens of thousands, may make it safe, convenient, and harmless, or even profitable to the performer; it cannot render an inherently impossible attempt possible, nor convert a useless deed into a serviceable one.

There have been many attempts to make precise the distinction

between instinct and civilization, between the organic and the social, between animal and man. Man as the clothing animal, the fire-using animal, the tool-using or tool-making animal, the speaking animal, are all summations that contain some approximation. But for the conception of the discrimination that is at once most complete and most compact, we must go back, as for the first precise expression of so many of the ideas with which we operate, to the uniquely marvelous mind that impelled Aristotle. "Man is a political animal." The word political has changed in import. We use instead the Latin term social. This, both philosopher and philologist tell us, is what the great Greek would have said were he speaking in English today. Man is a social animal, then; a social organism. He has organic constitution; but he has also civilization. To ignore one element is as short-sighted as to overlook the other; to convert one into the other, if each has its reality, is negation. With this basic formulation more than two thousand years old, and known to all the generations, there is something puny, as well as obstinately destructive, in the endeavor to abrogate the distinction, or to hinder its completest fruition. The attempt today to treat the social as organic, to understand civilization as heredity, is as essentially narrow minded as the alleged mediaeval inclination to withdraw man from the realm of nature and from the ken of the scientist because he was believed to possess an immaterial soul.

But, unfortunately, the denial, and for every denial a dozen confusions, still persist. They pervade the popular mind; and thence they rise, again and again, into the thoughts of avowed and recognized science. It seems, even, that in a hundred years we have retrograded. A century and two centuries ago, with a generous impulse, the leaders of thought devoted their energies, and the leaders of men their lives, to the cause that all men are equal. With all that this idea involves, and with its correctness, we need not here concern ourselves; but it certainly implied the proposition of equality of racial capacity. Possibly our ancestors were able to maintain this liberal stand because its full practical imports did not yet face them. But, whatever the reason, we have certainly

gone back, in America and in Europe and in their colonies, in our application of the assumption; and we have receded too in our theoretic analysis of the evidence. Hereditary racial differences of ability pass as approved doctrine, in many quarters. There are men of eminent learning who would be surprised to know that serious doubts were held in the matter.

And yet, it must be maintained that not a single piece of evidence has yet been produced to support the assumption that the differences which one nation shows from another—let alone the superiority of one people to another—are racially inherent, that is organically founded. It does not matter how distinguished the minds are that have held such differences to be hereditary—they have only taken their conviction for granted. The historian can, and occasionally does, turn the case inside out with equal justification; and he then sees every event, every inequality, the whole course of human history, confirming his thesis that the distinctions between one group of men and another, past and present, are due to social influences and not in any measure to organic causes. Real proof, to be sure, is as wanting on one side as on the other. Experiment, under conditions that would yield satisfying evidence, would be difficult, costly, and perhaps contrary to law. A repetition of Akbar's interesting trial, or some modification of it, intelligently directed and followed out, would yield results of the greatest value; but it would not be tolerated by any civilized government.

There have been some attempts to investigate so-called racial distinctions with the apparatus of experimental psychology. The results incline clearly toward confirmation of the doctrine of the non-existence of organic differences. But too much stress may not as yet be laid on this conclusion, because what such investigations have above all revealed is that social agencies are so tremendously influential on every one of us that it is very difficult to find any test that, if distinctive racial faculties were inborn, would fairly reveal the degree to which they are inborn.

It is also well to remember that the problem of whether the human races are or are not in themselves identical, has innumerable practical bearings, which relate to conditions of life and to views

that have intense emotional relations, so that an impartially abstract predisposition is rather rarely to be encountered. It is practically futile, for instance, to even touch upon the question with an American from the Southern states, or one tinged by Southern influences, no matter what his education or standing in the world. The actual social cleavage which is fundamental to all life in the South, and which is conceived of mainly as a race question, is so overshadowing and inevitable, that it compels, for the individual almost as firmly as for his group, a certain line of action, an unalterable and conscious course of conduct; and it could not well be otherwise than that opinions which flagrantly clash with all one's activities and with all the associated ideals, should arouse hostility. It is then but natural if the Southerner frequently receives the profession of racial equality, when it can be made to carry the conviction of sincerity to him, as an affront; and that he often meets even the most abstract, impersonal, and judicial consideration of the issues involved, with resentment, or, where this is checked by courtesy, with internal dissatisfaction.

The attitude of the Englishman in India, of the continental European in his colonies, is perhaps less extremely manifested; but all accounts indicate that it is no less settled.

On the other hand, the avowed and thoroughgoing Socialist or Internationalist must take the opposite stand, however unsympathetic it may be to him personally, or renounce all the aspirations that he holds dear. His inclination therefore, if generally less clearly defined, is no less predetermined and persistent.

Impartiality is thus not to be expected in this great case, except in some measure on the part of really detached and therefore uninfluential students; so that the maximum of assertion and rancor, and minimum of evidence, which prevail, are to be accepted as regrettable indeed, but as unavoidable and scarcely to be censured.

The problem being in the present state of our knowledge unprovable, is really also not arguable. What is possible, however, is to realize that a complete and consistent explanation can be given, for all so-called racial differences, on a basis of purely civiliza-

tional and non-organic causes; and to attain also to the recognition that the mere fact of the world in general assuming that such differences between one people and another are inborn and ineradicable except by breeding, is no evidence whatever in favor of the assumption being true.

The final argument, that one can actually *see* such national peculiarities born into each generation, and that it is unnecessary to verify the assumption because its truth is obvious to every one, has the least weight of all. It is of a kind with the contention that might be made that this planet is after all the fixed central point of the cosmic system because everyone can see for himself that the sun and stars move and that our earth stands still. The champions of the Copernican doctrine had this in their favor: they dealt with phenomena to which exactitude was readily applicable, about which verifiable or disprovable predictions could be made, which an explanation either fitted or did not fit. In the domain of human history this is not possible, or has not yet been found possible; so that an equal neatness of demonstration, a definitiveness of proof, a close tallying of theory with the facts to the exclusion of all rival theories, is not to be hoped for at present. But there is almost as fundamental a shifting of mental and emotional point of view, as absolute a turning upside down of attitude involved when the current thought of today is asked to view civilization as a wholly non-organic affair, as when the Copernican doctrine challenged the prior conviction of the world.

Most ethnologists, at any rate, are convinced that the overwhelming mass of historical and miscalled racial facts that are now attributed to obscure organic causes, or at most are in dispute, will ultimately be viewed by everyone as social and as intelligible only in their social relations. That there may be a residuum in which hereditary influences have been operative, it would be dogmatic to deny; but even this residuum of organic agencies will perhaps be found to be operative in quite other manners than those which are customarily adduced at present.

The opinion may further be uncompromisingly maintained, that for the historian—him who wishes to understand any sort

of social phenomena—it is an unavoidable necessity, today, to disregard the organic as such and to deal only with the social. For the larger number who are not professional students of civilization, insistence upon these articles would be an unreasonable demand, under our present inability to substantiate them by proof. On the other hand, the social as something distinct from the organic is an old enough concept, and is a plain enough phenomenon about us in daily life, to warrant the claim that it cannot be outright dispensed with. It is perhaps too much to expect any one wedded, deliberately or unknowingly, to organic explanations, to discard these wholly before such incomplete evidence as is available to the contrary of these explanations. But it does seem justifiable to stand unhesitatingly on the proposition that civilization and heredity are two things that operate in entirely separate ways; that therefore any outright substitution of one for the other in the explanation of human group phenomena is crass; and that the refusal to recognize at least the logical possibility of an explanation of human achievement totally different from the prevailing tendency toward a biological one, is an act of illiberality. When once such recognition, of the rationality of this attitude of mind which is diametrically opposed to the current one, shall have become general, far more progress will have been made on the road towards a useful agreement as to the truth, than by any present attempts to win converts by argument.

One of the minds endowed with as eminent power of perception and formulation as any of our generation, Gustave Le Bon, whose name ranks high even if his regardless fearlessness has gained him but little of an avowed following, has carried the interpretation of the social as organic to its consistent consequence. His *Psychology of Peoples* is an attempt to explain civilization on the basis of race. Le Bon is really a historian of extraordinarily keen sensitiveness and perspicacity. But his professed attempt to resolve the civilizational materials with which he deals, directly into organic factors, leads him on the one hand to renounce his skilful interpretations of history until only intermittent flashes remain; and on the other hand, to rest his professed solutions ultimately on such mystic

essences as the "soul of a race." As a scientific concept or tool, a race soul is as intangible and useless as any phrase of mediaeval philosophy, and on a par with Le Bon's ready declaration that the individual is to the race as the cell is to the body. If instead of soul of the race, the distinguished Frenchman had said spirit of civilization, or tendency or character of culture, his pronouncements would have commanded less appeal, because seeming vaguer; but he would not have had to rest his entire thought upon a supernatural idea antagonistic to the body of science to which he was trying to attach his work; and if non-mechanistic, his efforts at explanation would at least have earned the respect of historians.

As a matter of fact, Le Bon clearly operates with social phenomena, however insistently he gives them organic names and proclaims that he has resolved them organically. That "not the 18 Brumaire but the soul of his race established Napoleon," is biologically, and under any aspect of the science that deals with mechanical causality, a perfectly meaningless statement; but it becomes excellent history as soon as for "race" we substitute "civilization," and of course take "soul" in a metaphorical sense.

When he says that "cross breeding destroys an ancient civilization" he affirms only what many a biologist would be ready to maintain. When he adds: "because it destroys the soul of the people that possesses it," he gives a reason that must inspire any true scientist with a shudder. But if we change "cross breeding," that is, the mixture of sharply differentiated organic types, into "sudden contact or conflict of ideals," that is, mixture of sharply differentiated social types, the profound effect of such an event is indisputable.

Again, Le Bon asserts that the effect of environment is great on new races, on races forming through cross breeding of peoples of contrary heredities; and that in ancient races solidly established by heredity the effect of environment is nearly nil. It is obvious that in an old and firm civilization the actively changing effect of geographical environment must be small because the civilization has long since had ample opportunity to utilize the environment for its needs; but that on the other hand when the civilization is

new—whether because of its transportation, because of its proceeding fusion from several elements, or from mere internal development—the renewing of relationship between itself and the surrounding physical geography must go on at a rapid rate. Here again good history is turned into bad science by a confusion that seems almost deliberately perverse.

A people is guided far more by its dead than by its living, Le Bon says. He is trying to establish the importance of heredity on national careers. What, though unrecognized by himself, lies at the bottom of his thought, is the truth that every civilization rests in the past, that however much its ancient elements are no longer living as such, they nevertheless form its trunk and body, around which the live sap-wood of the day is only a shell and a surface. That imposed education, a formal and conscious thing, can not give the substance of a new or another civilization to a people, is a verity that Le Bon has seized with vigor. But when he deduces this maxim as an inference from the unbridgeable abyss that eternally exists between races, he rests an obvious fact, which no person of discrimination has yet disputed, upon a mystical assertion.

It might nearly have been foreseen, after the above citations, that Le Bon would lay the "character" of his "races" to "accumulation by heredity." It has already been shown that if there is anything that heredity does not do, it is to accumulate. If, on the other hand, there is any one method by which civilization may be defined as operating, it is precisely that of accumulation. We add the power of flight, the understanding of the mechanism of the aeroplane, to our previous accomplishments and knowledges. The bird does not; he has given up his legs and toes for wings. It may be true that the bird is on the whole a higher organism than his reptilian ancestor, that he has traveled farther on the road of development. But his advance has been achieved by a transmutation of qualities, a conversion of organs and faculties, not by an increasing summation of them.

The whole theory of heredity by acquirement rests upon the confusion of these two so diverse processes, that of heredity and

that of civilization. It has been nourished, perhaps, by unsatisfied needs of biological science, but it has never obtained the slightest unchallengeable verification from biology, and has in fact long been assailed, by a sound and vigorous instinct, as well as in consequence of the failure of observation and experiment, from within that science. It is a doctrine that is the constant blazon of the dilettante who knows something of both history and life, but has no care to understand the workings of either. Le Bon's studies being an attempt to explain one by the other, his utilization, sooner or later, of the doctrine of heredity by acquisition or accumulation, could almost have been predicted.

From a different and less aggressive temperament springs the wail that Lester Ward has voiced for a wide and aspiringly earnest element. Heredity by acquirement must take place, he argues, or there would be no hope of permanent progress for humanity. To believe that what we have gained will not be at least in part implanted in our children, removes the incentive to effort. All the labor bestowed upon the youth of the world would be in vain. Mental qualities are not subject to natural selection; hence they must be accumulated in man by acquirement and fixed by heredity. This view may be heard again and again from people who have arrived at the attitude through their own reflections, who have probably never read Ward directly or indirectly, and whose world seems to crash when its foundation of heredity is shaken. It is, if not a deep view, a common one; and for that reason Ward's formulation is, however worthless intrinsically, representative and significant. It reveals the tenacity, the insistence, with which many conscientious intellects of the day will not and can not see the social except through the glass of the organic. That this habit of mind can itself be depressing, that it forever prelimits development and eternally chains the future to the poverties and paucities of the present, does not dawn upon its devotees; is in fact probably the fixity which gives it its emotional hold.

It would seem probable that the greatest of the champions of acquired heredity, Herbert Spencer, was led to his stand by a similar motive. The precise method by which organic evolution

takes place is after all essentially a biological problem, and not a philosophical one. Spencer, however, like Comte, was a sociologist as much as a philosopher. That he should have contested so stubbornly what in itself is a technical question of biology, is hardly intelligible except on the supposition that he felt the question to bear vitally on his principles; and that, in spite of his happy coinage of the term which has been prefixed as a title to the present essay, he did not adequately conceive of human society as holding a specific content that is non-organic.

When R. R. Marett, in opening his *Anthropology*—one of the most stimulating books produced in this field—defines the science as “the whole history of man as fired and pervaded by the idea of evolution,” and adds that “anthropology is the child of Darwin—Darwinism makes it possible,” he is unfortunately depicting the actual condition of this science with some truth; but as a program or an ideal his delineation must be challenged. Anthropology may be biology; it may be history; it may be an attempt to ascertain the relations of the two; but as history, the study of the social, shot through with the idea of organic evolution, it would be a jumble of diverse methods, and therefore no science in any sense of the term.

Of all the comminglings of the cultural with the vital, that which has crystallized under the name of the eugenics movement is the most widely known and of directest appeal. As a constructive program for national progress, eugenics is a confusion of the purposes to breed better men and to give men better ideals; an organic device to attain the social; a biological short cut to a moral end. It contains the inherent impossibility of all short cuts. It is more refined but no less vain than the short cut which the savage follows, when, to avoid the trouble and danger of killing his foe in the body, he pierces, in safety and amid objurgations uttered in the convenience of his own home, a miniature image addressed by the name of the enemy. Past ages have had their dragons of superstition to fight. Our battles against this ever re-arising brood dawn no smaller and as unceasing; and it would be shallow to try to defer or soften the inevitable conflict by withholding from this move-

ment its true designation. Eugenics, so far as it is more than an endeavor at social hygiene in a new field, is a fallacy. It is a mirage like the philosopher's stone, the elixir of life, the ring of Solomon, or the material efficacy of prayer; and to those who are led by its learned modernity to receive it earnestly, it is a destructive snare. There is little to argue about it. If social phenomena are only organic, eugenics is right, and there is nothing more to be said. If the social is something more than the organic, eugenics is only an error and unclear thought; at whose childlikeness the future will smile, and then pass on.

Galton, the founder of the eugenics propaganda, was one of the most truly imaginative intellects produced by his country. Pearson, its distinguished living protagonist with scientific weapons, possesses one of the keenest minds of the generation. Hundreds of men of ability and eminence have professed themselves converts. It is plain that a simple fallacy must have presented itself in an envelope of enticing complications to be acceptable to them. Such men have not confounded important things that are intrinsically distinct, without a good reason. The explanation that Galton, Pearson, and the majority of the most creative of their followers were professional biologists, and therefore inclined to see the world through the lenses of the organic, is insufficient. Mere interest in one factor does not lead thinking minds practically to deny the existence of other factors. What then is the reason of the confusion into which they have precipitated themselves?

The cause seems to be a failure to distinguish between the social and the mental. All civilization in a sense exists only in the mind. Gunpowder, textile arts, machinery, laws, telephones are not themselves transmitted from man to man nor from generation to generation, at least not permanently. It is the perception, the knowledge and understanding of them, their *ideas* in the Platonic sense, that are passed along. Everything social can have existence only through mentality. Of course, civilization is not mental action itself; it is carried by men, without being in them. But its relation to mind, its absolute rooting in human faculty, is more than plain.

What, then, has occurred is that biology, which correlates and

often identifies the physical and the mental, has gone one natural but as yet unjustified step further, and assumed the social as mental; whence the explanation of civilization in physiological and mechanical terms was an unavoidable consequence.

Now, the identification by modern science of the physical and mental is certainly correct. That is, it is justifiable as a method which can be consistently employed toward a coherent explanation of phenomena, and which leads to intellectually satisfactory and practically useful results. The correlation of the two sets of phenomena is made, or admitted, by all psychologists; it clearly holds for all faculties and instincts; and it has some definite physiological and chemical corroboration, though of a more crude and less completely established kind than is sometimes imagined. At any rate, this correlation is an unchallenged axiom of those who concern themselves with science: all mental equipment and all mental activity have an organic basis. And that is sufficient for present purposes.

This inseparability of physical and mental must be true also in the field of heredity. It is well known that where instincts are definite or specialized, as in insects, they are inherited as absolutely as are organs or structure. It is a matter of common experience that our own mental traits vary as much and as frequently tally with those of ancestors, as physical features. There is no logical reason, and nothing in the observation of daily life, that operates against the belief that an irascible temper is as heritable as the red hair with which it is traditionally associated, and that certain forms of musical aptitude may be as wholly congenital as blue eyes.

Of course there is much false inference in these matters, as regards man, through the interpretation of accomplishment as evidence of the degree of faculty. The discrimination of the two is not always easy; it frequently requires painstakingly acquired knowledge of facts, as well as careful judgment; and popular reasoning is likely to be scant of both. A powerful congenital faculty may establish the father successfully in a pursuit. This in turn may give an environmental influence, or a deliberate training, that will elevate the mediocre son, so far as his attainments are concerned,

far above what his unaided natural faculties would have secured for him, and above many another individual of greater inherent capacities. The earning of a million is normally an indication of ability; but it normally requires intenser ability to earn a million after starting with nothing than to begin with a million received as a gift and increase it to three. That a musician is more frequently the son of a musician than not, at least when relative numbers are taken into account, is in itself no evidence at all that musical talent is heritable, for we know of purely social influences, such as Hindu caste, which attain similar results with far greater regularity than any one can assert heredity plus social influences to bring about among ourselves.

But it would be as unreasonable to exaggerate this caution into an outright denial of mental heredity, as to disregard it entirely.

There is then nothing in an off-hand survey of the situation to lead to a disbelief, and a large body of common experience to confirm the conviction, that characters of mind are subject to heredity much like traits of the body.

In addition, there is some proof, which, although not extensive, is hard to resist. Galton, in a fairly large series of records, has found the amount of regression—a quantitative index of the potency of heredity—to be the same for artistic faculty as for bodily stature. In another work he has investigated the blood relatives of eminent men, with the finding that eminence occurs among them with a frequency and in a degree exactly like the influence of heredity in respect to physical characters. Pearson has ascertained that the correlation—the degree of resemblance, quantitatively expressed, of phenomena available in numbers—between brothers is substantially the same for conscientiousness as for the shape of the head, for intellectual ability as for hair color, and so forth for other mental or moral and physical qualities. There is of course the possibility that in the data that underlie these results, as well as Galton's, there has been some confounding of temper with bad manners, of native intelligence with training of the intellect, of congenital artistic faculty with cultivated taste. But the attention of those who made the records seems to have been pretty definitely even

though perhaps not always consciously directed to innate individual traits. Further, all the figures for the inheritance of these psychic characteristics agree as closely as could be expected with the corresponding ones relating to bodily features. The case may therefore be fairly regarded as substantially proved, at least until new evidence is available.

In spite of a wide acceptance of these demonstrations, especially by those predisposed to sympathize with biological progress, they have also met with some opposition, and with more ignoring than their bearing on a question of general interest warranted. In part this negative attitude may be due to a persistence of religious beliefs, in the main already superseded but not yet defunct, that center around the old concept of the soul, and which see in every linkage of mind and body an effacement of the cherished distinction of body and soul. But this belated conservatism will not account for all the failure of the Galton-Pearson demonstrations to meet universal acceptance or arouse wide enthusiasms.

The remainder of the opposition has been caused by Galton, Pearson, and their adherents themselves, who have not confined themselves to their well-supported conclusions, but have pressed on to further inferences that rest only on assertion. That heredity operates in the domain of mind as well as that of the body, is one thing; that therefore heredity is the mainspring of civilization, is an entirely different proposition, without any necessary connection, and certainly without any established connection, with the former conclusion. To maintain both doctrines, the second as a necessary corollary of the first, has been the habit of the biological school; and the consequence has been that those whose intellectual inclinations were otherwise, or who followed another method of research, have avowedly or tacitly rejected both propositions.

The reason why mental heredity has nothing to do with civilization, is that civilization is not mental action but a body or stream of products of mental exercise. Mental activity, as biologists have dealt with it, being organic, any demonstration concerning it consequently proves nothing whatever as to social events. Mentality relates to the individual. The social or cultural, on the

other hand, is in its very essence non-individual. Civilization, as such, begins only where the individual ends; and whoever does not in some measure perceive this fact, though as a brute and rootless one, can find no meaning in civilization, and history for him must be only a wearying jumble, or an opportunity for the exercise of art.

All biology necessarily has this entire reference to the individual. A social mind is as meaningless a nonentity as a social body. There can be only one kind of organicness: the organic on another plane would no longer be organic. The Darwinian doctrine relates, it is true, to the race; but the race, except as an abstraction, is only a collection of individuals; and the bases of this doctrine, heredity, variation, and competition, deal with the relation of individual to individual, from individual, and against individual. The whole key of the success of the Mendelian methods of studying heredity lies in isolating traits and isolating individuals.

But a thousand individuals do not make a society. They are the potential basis of a society; but they do not themselves cause it; and they are also the basis of a thousand other potential societies.

The findings of biology as to heredity, mental and physical alike, may then, in fact must be, accepted without reservation. But that therefore civilization can be understood by psychological analysis, or explained by observations or experiments in heredity, or, to revert to a concrete example, that the destiny of nations can be predicted from an analysis of the organic constitution of their members, assumes that society is merely a collection of individuals; that civilization is only an aggregate of psychic activities and not also an entity beyond them; in short, that the social can be wholly resolved into the mental as it is thought this resolves into the physical.

It is accordingly in this point of the tempting leap from the individually mental to the culturally social which presupposes but does not contain mentality, that the source of the distracting transferences of the organic into the social is to be sought. A more exact examination of the relation of the two is therefore desirable.

In a brilliant essay written, under Pearsonian influence, on

heredity in twins, Thorndike arrives anew, and by a convincing use of statistical evidence, at the conclusion that so far as the individual is concerned heredity is everything and environment nothing; that the success of our path in life is essentially determined at birth; that the problem of whether each one of us shall outstrip his fellows or lag behind them, is settled when the parental germ cells unite, and already long closed when the child emerges from the womb, all our careers run under the light of the *sua* being nothing but an unwinding, longer or shorter according to accident beyond our control, of the thread rolled on the spool before the beginning of our existence.

This finding is not only thoroughly elucidated by the author, but has the support of our common experience in life. No one can deny some measure of truth to the proverbial sow's ear that cannot be made into a silk purse. Every one numbers among his acquaintance individuals of energy, of address and skill, of what seems an uncanny prescience, or of a strength of character, that leave no doubts in our judgment that whatever their lot of birth, they would have risen above their fellows and been marked men and women. And on the other hand, we also admit regretfully the maladroit and sluggish, the incompetent and commonplace, who, born in any station, would have been of the mediocrities or unfortunates of their time and class. That Napoleon, set in another land and era, would not have conquered a continent, is sufficiently certain. The contrary affirmation may with fairness, it seems, be said to evince an absence of understanding of history. But the belief that under other circumstances this eternal beacon flame might have remained a household lamp, that his forces would never have been called forth, that a slight change of the accidents of epoch, place, or surroundings might have left him a prosperous and contented peasant, a shopkeeper or a bureaucrat, a routine captain retired on a pension—to maintain this argues a lack or a perverted suppression of knowledge of human nature. It is important to realize that congenital differences can have no effect on the course of civilization. But it is equally important to realize that we may and must concede the existence of such differences and their inextinguishability.

According to a saying that is also almost proverbial, and true to the degree that such commonplaces can be true, the modern school-boy knows more than Aristotle; but this fact, if a thousand times so, does not in the least endow him with a fraction of the intellect of the great Greek. Socially—because knowledge must be a social circumstance—it is knowledge, and not the greater development of one individual or another, that counts; just as, to measure the true force of the greatness of the person, the psychologist or genetist disregards the state of general enlightenment, the varying degree of civilizational development, to make his comparisons. A hundred Aristotles among our cave-dwelling ancestors would have been Aristotles in their birthright no less; but they would have contributed far less to the advance of science than a dozen plodding mediocrities in the twentieth century. A super-Archimedes in the ice age would have invented neither firearms nor the telegraph. Bach born in the Congo instead of Saxony could have composed not even a fragment of choral or sonata, though we can be equally confident that he would have outshone his compatriots in some manner of music. Whether or not a Bach ever had birth in Africa, is another question—one to which a negative answer cannot be given merely because no Bach has ever appeared there; a question that in fairness we must admit to be unanswered, but in regard to which the student of civilization, until demonstration has been made, can make but one reply and pursue only one course: to assume, not as an end but as a condition of method, that there have been such individuals; that genius and ability occur with regular frequency, and that all races or large enough groups of men average alike and the same in qualities.

These are extreme cases, whose clearness is little likely to arouse opposition. Normally, the difference between individuals is less imposing, the types of society more similar, and the two elements involved are separable only by the exercise of some discrimination. It is then that the endless confusions begin. But if the factor of society and that of natal personality are distinct in the glaring examples, they are at least distinguishable in the more subtly shaded and intricate ones; provided only we wish to keep them apart.

If this is true, it follows that all so-called inventors of appliances or discoverers of thoughts of note were unusually able men, endowed from before birth with superior faculties, which the psychologist can hope to analyze and define, the physiologist to correlate with functions of organs, and the genetic biologist to investigate in their hereditary origins until he attains not only system and law but verifiable power of prediction. And, on the other hand, the content of the invention or discovery springs in no way from the make-up of the great man, or that of his ancestors, but is a product purely of the civilization into which he with millions of others is born as a meaningless and regularly recurring event. Whether he in his person becomes inventor, explorer, imitator, or user, is an affair of forces that the science of mechanical causality is concerned with. Whether his invention is that of the cannon or the bow, his achievement a musical scale or a system of harmony, his formulation that of the soul or that of the categorical imperative, is not explainable by the medium of mechanistic science—at least, not by any methods at the command of biological science—but finds its meaning only in such operations with the material of civilization as history is occupied with.

Darwin, whose name has been cited so frequently in the preceding pages, provides a beautiful exemplification of these principles. To deny this great man genius, mental eminence, inherent superiority to the mass of the human herd, would be fatuous. In Galton's famous classification, he would attain, by universal consent, at least to grade G, by an overwhelming majority no doubt to the still higher—the highest—grade X. That is, he was an individual born with capacities such as but fourteen, or more likely one, or still fewer, persons in every million possess. In short, he would have towered above his fellows in any and every society.

On the other side, no one can sanely believe that the distinction of Darwin's greatest accomplishment, the formulation of the doctrine of evolution by natural selection, would now stand to his credit had he been born fifty years sooner or later. If later, he would have been infallibly anticipated by Wallace, for one thing; by others, if an early death had cut off Wallace. That his giant

restless mind would have evolved something noteworthy is as likely as it is a fact away from the point: the distinction of the particular discovery which he did make, would not have been his. Put on earth, by contrary supposition, a half century earlier, his central idea would not have come to him; as it failed to come to his brilliant predecessor, the evolutionist Lamarck. Or, it would have risen in his own mind, as it did in all its essentials in that of Aristotle, only to be at once discarded as logically possible indeed, but as unworthy of actual consideration. Or, finally, the thought might indeed have germinated and grown in him, but been ignored and forgotten by the world, a mere unfruitful accident, until European civilization was prepared, a few decades later, and hungry as well as prepared, to use it—when its rediscovery and not its barren formal discovery would have been the event of historical significance. That this last possibility is no mere idle conjecture is evidenced by its actually taking place in the case of one of the greatest of Darwin's contemporaries, his then unknown brother in arms, Gregor Mendel.

It is inconceivable that the independent occurrence of the idea of selection as the motive force of organic evolution, synchronously in the minds of Darwin and Wallace, should have been an affair of pure chance. The immediate acceptance of the idea by the world, proves nothing as to the intrinsic truth of the concept; but it does establish the readiness of the world, that is, of the civilization of the time, for the doctrine. And if civilization was prepared and hungry for the doctrine, the enunciation seems to have been destined to come almost precisely when it did come. Darwin carried with himself the germ of the idea of natural selection for twenty long years before he dared put forward the hypothesis which previously he had felt would be received with hostility, and which he must have thought insufficiently armed. It was only the briefer expression of the same insight by Wallace that led Darwin to publicity. Can it be imagined, if Wallace had met death at sea among the Malay islands, and Darwin, unspurred by his competitor colleague's activity, had carried his theory in hesitant privacy a few years longer and then suddenly succumbed to mortal illness, that we of the civilized world of today should have lived all

our intellectual lives without a definite mechanism for evolution and therefore without any active employment of the evolutionary idea—that our biologists would be still standing where Linnaeus, Cuvier, or at most Lamarck stood? If so, the great currents of history would be absolutely conditioned by the lodgement or dislodgement of a bacillus in a particular human frame on a certain day; which conviction would certify to as much understanding as we should credit to him, who, finding in the high Andes the ultimate source of the tiny streamlet farthest removed in tortuous miles from the Atlantic ocean, should set his foot in the bubbling spring and believe that so long as he held it there the Amazon ceased to drain a continent and to pour its tide into the sea.

No. Wallace's crowding on Darwin's heels so that his too was a share, though a minor one, of the glory of the discovery, evidences that behind him trod still others, unnamed and perhaps forever themselves unconscious; and that had the leader or his second fallen by one of the innumerable accidents to which individuals are subject, the followers, one or several or many, would have pressed forward, would have been pressed forward, it would be better to say, and done their work—immediately, as history reckons time.

The total failure of Mendel's revolutionizing experiments in exact heredity to achieve the least recognition during their author's life, and for years after, has already been alluded to as an instance of the inexorable fate in store for the discoverer who anticipates his time. He is fortunate indeed if he is permitted to live out his lot in obscurity; and to escape the crucifixion which seemed a meet punishment for the first circumnavigator of Africa who saw the sun on his north. It has been said that Mendel's essay, in which are contained all the vital principles of the science that now bears his name, was published in a remote and little known source, and therefore failed for a generation to come to the notice of biologists. The last assertion may be challenged as unproved and inherently improbable. It is far more likely that biologist after biologist saw the essay, that some even read it, but that, one and all, it remained meaningless to them—not because they were unusually

stupid men, but because they lacked the transcendent superiority of the occasional individual to see issues that lie ahead of those with which the world of their day is wrestling. Slowly, however, time rolled on and unconsciously a change of content of thought was preparing. Darwin himself had been concerned with the origin and nature of variations. When the first shock of overpowering novelty of his central discovery had begun to be assimilated by scientific conscience, this variation question trended to the front. The investigations of De Vries and Bateson, though their recognized outcome seemed only a destructive analysis of one of the pillars of Darwinism, were accumulating knowledge as to the actual operation of heredity. And then suddenly in 1900, with dramatic eclat, three students, independently and "within a few weeks of each other," discovered the discovery of Mendel, confirmed its conclusions with experience of their own, and a new science was launched on a career of splendid fulfillment.

There may be those who see in these pulsing events only a meaningless play of capricious fortuitousness; but there will be others to whom they reveal a glimpse of a great and inspiring inevitability which rises as far above the accidents of personality as the march of the heavens transcends the wavering contacts of random footprints on clods of earth. Wipe out the perception of De Vries, Correns, and Tschermak, and it is yet certain that before another year had rolled around, the principles of Mendelian heredity would have been proclaimed to an according world, and by six rather than three discerning minds. That Mendel lived in the nineteenth century instead of the twentieth, and published in 1865, is a fact that proved of the greatest and perhaps regrettable influence on his personal fortunes. As a matter of history, his life and discovery are of no more moment, except as a foreshadowing anticipation, than the billions of woes and gratifications, of peaceful citizen lives or bloody deaths, that have been the fate of men. Mendelian heredity does not date from 1865. It was discovered in 1900 because it could have been discovered only then, and because it infallibly must have been discovered then.

The whole history of inventions is one endless chain of parallel

instances. An examination of patent office records, in any other than a commercial or anecdotic spirit, would alone reveal the inexorable order that prevails in the advance of civilization. The right to the monopoly of the manufacture of the telephone was long in litigation; the ultimate decision rested on an interval of hours between the recording of concurrent descriptions by Alexander Bell and Elisha Gray. Though it is part of our vulgar thinking to dismiss such conflicts as evidences only of unscrupulous cupidity and legal inadequacy or as melodramatic coincidences, it behooves the historian to see beyond such childlike plays of the intellect.

The discovery of oxygen is credited to both Priestley and Scheele; its liquefaction to Cailletet as well as to Pictet, whose results were attained in the same month of 1877 and announced in one session. Kant as well as La Place can lay claim to the promulgation of the nebular hypothesis. Neptune was predicted by Adams and by Leverrier; the computation of the one, and the publication of that of the other, had precedence by a few months.

For the invention of the steamboat, glory is claimed by their countrymen or partisans for Fulton, Jouffroy, Rumsey, Stevens, Symmington, and others; of the telegraph, for Steinheil and Morse; in photography Talbot was the rival of Daguerre and Niepce. The doubly flanged rail devised by Stevens was reinvented by Vignolet. Aluminum was first practically reduced by the processes of Hall, Héroult, and Cowles. Leibnitz in 1684 as well as Newton in 1687 formulated calculus. Anaesthetics, both ether and nitrous oxide, were discovered in 1845 and 1846, by no less than four men of one nationality. So independent were their achievements, so similar even in details and so closely contemporaneous, that polemics, lawsuits, and political agitation ensued for years, and there was not one of the four but whose career was embittered, if not ruined, by the animosities arising from the indistinguishability of the priority. Even the south pole, never before trodden by the foot of human beings, was at last reached twice in one summer.

A volume could be written, with but few years' toil, filled with endlessly repeating but ever new accumulation of such instances. When we cease to look upon invention or discovery as some mys-

terious inherent faculty of individual minds which are randomly dropped in space and time by fate; when we center our attention on the plainer relation of one such advancing step to the others; when, in short, interest shifts from individually biographic elements, which can be only dramatically artistic, didactically moralizing, or psychologically interpretable, and attaches whole heartedly to the social, evidence on this point will be infinite in quantity, and the presence of a majestic order pervading civilization will be irresistibly evident.

Knowing the civilization of an age and a land, we can then substantially affirm that its distinctive discoveries, in this or that field of activity, were not directly contingent upon the personality of the actual inventors that graced the period, but would have been made without them; and that, conversely, had the great illuminating minds of other centuries and climates been born in the civilization referred to, instead of their own, its first achievements would have fallen to their lot. Ericsson or Galvani eight thousand years ago would have polished or bored the first stone; and in turn the hand and mind whose operation set in inception the neolithic age of human culture, would, if held in its infancy in unchanging catalepsy from that time until today, now be devising wireless telephones and nitrogen extractors.

Some reservations must be admitted to this principle. It is far from established, rather the contrary, that extraordinary ability, however equal in intensity, is identical in direction. It is highly unlikely that Beethoven put in Newton's cradle would have worked out calculus, or the latter have given the symphony its final form. We can and evidently must admit congenital faculties that are fairly specialized. Everything shows that the elementary mental faculties, such as memory, interest, and abstraction, are by nature very uneven in individuals of equivalent ability but distinctive bent; and this in spite of cultivation. The educator who proclaimed his ability to convert a native memory for absolute numbers or for mathematical formulas into an equally strong retention of single tones or of complex melodies, would be distrusted as a charlatan or a fanatic. But it does not essentially matter if

the originating faculty is one or several in mind. If Eli Whitney could not have formulated the difference between the subjective and the objective and Kant in his place would have failed to devise a practical cotton gin, Watt or Fulton or Morse or Stephenson could, in the place of the former, have accomplished his achievement, and Aristotle or Aquinas the task of the latter. It is possibly not even quite accurate to maintain that the individualities of the unknown inventor or inventors of the bow and arrow and those of firearms could have been interchanged, for the first production of the bow necessarily involved mechanical and even manual faculty, while the discovery of gunpowder and of its applicability to weapons may have required the different ability to perceive certain peculiar qualities of a more highly dynamic or chemical nature.

In short, it is a debatable point, though one of the greatest psychological interest, how far human faculty is divisible and subdivisible into distinct kinds. But the matter is not vital in the present connection, for there will hardly be any one rash enough to maintain that there exist as many distinguishable faculties as there are separate human beings; which in fact would be to assert that abilities do not differ in intensity or degree but only in direction or kind; in short, that while no two men were alike, all were absolutely equal in potential capacity. If this view is not correct, then it matters little whether the kinds of ability are several or many, because in any case they will be very few compared with the endless number of human organisms; because there will accordingly be so many individuals possessing each faculty, that every age must contain persons with low and mediocre and high measure of intensity of each; and the extraordinary men of one sort in one period will therefore still be substitutable for those of another time in the manner indicated.

If, therefore, any one's interpretation of mentality is disturbed by some of the particular equivalences that have been suggested, he can easily find others that seem more just, without dissenting from the underlying principle that the march of history, or as it is current custom to name it, the progress of civilization, is independent of the birth of particular personalities; since these, appar-

ently averaging alike, both as regards genius and normality, at all times and places, furnish the same substratum for the social.

Here, then, we have an interpretation which allows to the individual, and through him to heredity, all that the science of the organic can legitimately claim on the strength of its actual accomplishments; and which also yields the fullest scope to the social in its own distinctive field. The accomplishment of the individual measured against other individuals depends, if not wholly then mainly, on his organic constitution as compounded by his heredity. The accomplishments of a group, relative to other groups, are uninfluenced by heredity because sufficiently large groups average alike in organic make-up.

This identity of average is incontestable for some instances of the same nations in closely successive ages—as Athens in 550 and 450, or Germany in 1800 and 1900—during which brief periods their hereditary composition could not possibly have altered to even a small fraction of the degree in which cultural achievement varied; it is certainly probably even for people of the same blood separated by long intervals of time and wide divergences of civilization; and it is, while neither proved nor disproved, likely to be substantially true, as suggested before, for the most distant races.

The difference between the accomplishments of one group of men and those of another group is therefore of another order from the difference between the faculties of one person and another. It is through this distinction that one of the essential qualities of the nature of the social is to be found.

The physiological and the mental are bonded as aspects of the same thing, one resolvable into the other; the social is, directly considered, irresolvable into the mental. That it exists only after mentality of a certain kind is in action, has led to confusion of the two, and even to their identification. The error of this identification is a fault that tends to pervade modern thinking about civilization, and which must be overcome by self-discipline before our understanding of this order of phenomena that fill and color our lives can become either clear or serviceable.

If the relation of the individual to culture here outlined is a

true one, a conflicting view sometimes held and already alluded to, is unentertainable. This view is the opinion that all personalities are, while not identical, potentially equal in capacity, their varying degrees of accomplishment being due solely to different measures of accord with the social environment with which they are in touch. This view has perhaps been rarely formulated as a generic principle; but it seems to underlie, though usually vaguely and by implication only, many tendencies toward social and educational reform, and is therefore likely to find formal enunciation at some time.

This assumption, which would certainly be of extensive practical application if it could be verified, seems to rest ultimately upon a dim but profound perception of the influence of civilization. More complete that this influence of civilization is upon national fortunes than upon individual careers, it nevertheless must influence these latter also. Mohammedanism—a social phenomenon—in stifling the imitative possibilities of the pictorial and plastic arts, has obviously affected the civilization of many peoples; but it must also have altered the careers of many persons born in three continents during a thousand years. Special talents which these men and women possessed for delineative representation may have been suppressed without equal compensation in other directions, in those whose endowment was unique. Of such individuals it is undoubtedly true that the social forces to which they were subject depressed each of them from successful attainment to more mediocre. And without question the same environment elevated many an individual to high rank above his fellows whose special abilities, in some other age and country, would have been repressed to his private disadvantage. The personality born with those qualities that lead to highly successful leadership of religious brigands, for instance, is undoubtedly assured of a more prosperous and contented career in Morocco than in Holland of today.

Even within one nationally limited sphere of civilization, similar results are necessarily bound to occur constantly. The natural logician or administrator born into a caste of fishermen or street sweepers is not likely to achieve the satisfaction in life, and cer-

tainly not the success, that would have been his lot had his parents been Brahmins or Kshatriyas; and what is true formally of India holds substantially for Europe.

But, that a social environment may somewhat affect the fortunes and career of the individual as measured against other individuals, does not prove that the individual is wholly the product of circumstances outside of himself, any more than it means that the opposite is true and that a civilization is only the sum total of the products of a group of organically shaped minds. The concrete effect of each individual upon civilization is determined by civilization itself. Civilization appears even in some cases and in some measure to influence the effect of the individual's native activities upon himself. But to proceed from these realizations to the inference that all the degree and quality of accomplishment by the individual is the result of his moulding by the society that encompasses him, is pure assumption, extreme at that, and directly at variance with all observation, both as immediate apperception and as it survives critical analysis.

Therefore it is possible to hold to the historical or civilizational interpretation of social phenomena without proceeding to occupy the position that the human beings that are the given channels through which civilization courses, are only and wholly the products of its stream. Because culture rests on specific human faculty, it does not follow that this faculty, the thing in man that is supra-animal, is of social determination. The line between the social and the organic may not be randomly or hastily drawn. The threshold between the endowment that renders the flow and continuance of civilization possible and that which prohibits even its inception, is the demarcation—doubtful enough once, in all probability, but gaping for a longer period than our knowledge covers—between man and animal. The separation between the social itself, however, the entity that we call civilization, and the non-social, the pre-social or organic, is the diversity of quality or order or nature which exists between animal and man conjointly on the one hand, and the products of the interactions of human beings on the other. In the previous pages the mental has already been

subtracted from the social and added to the physically organic which is subject to the influence of heredity. In the same way it is necessary to eliminate the factor of individual capacity from the consideration of civilization. But this elimination means its transfer to the group of organically conceivable phenomena, not its denial. In fact nothing is further from the path of a just prosecution of the understanding of history than such a negation of differences of degree of the faculties of individual men.

In short, social science, if we may take that word as equivalent to history, does not deny individuality any more than it denies the individual. It does refuse to deal with either individuality or individuals. And it bases this refusal solely on its denial of the validity of either factor for the achievement of its proper aims.

It is true that historical events can also be viewed mechanically, and expressed ultimately in terms of physics and chemistry. Genius may prove definable in unit characters or the constitution of chromosomes, and its particular achievements in osmotic reactions of nerve cells. The day may come when what took place in the tissue of Darwin's brain when he first thought the concept of natural selection, can be profitably studied, or even approximately ascertained, by the physiologist and chemist. Such an achievement, shockingly destructive as it may seem to those whom revelation appals, would be not only defensible, but worth while—of enormous interest, even, and possibly of the highest utility. Only, it would not be history; nor a step toward history or social science.

To know the precise reactions in Darwin's nervous system at the moment when the thought of natural selection flashed upon him in 1838, would involve a very genuine triumph of science. But it would mean nothing historically, since history is concerned with the relation of doctrines such as that of natural selection to other concepts and social phenomena, and not at all with the relation of Darwin himself to social phenomena or other phenomena. This is not the current view of history; but, on the other hand, the current view rests upon the endlessly recurring but obviously illogical assumption that because without individuals civilization

could not exist, civilization therefore is only a sum total of the psychic operations of a mass of individuals.

There are those, of mechanistic proclivities and interests, who hold that it is only when historical events are explained on a basis like that assumed in our example, that history will have any significance. They have pressed their view, sometimes by assertion, more often by implication, until it has come to be widely accepted. But it is true only if a single method of thought is the sole one to be accorded validity and justifiability. If the ability to weigh the moon renders Shelley's poetry a useless superfluity, well and good: there is nothing more to be said. There actually are people fanatic enough to take such a stand. But if scientific methods give science, and artistic exercise yields literature, and the two do not exclude each other because they do not come into conflict and are not even comparable; if the justification of each is in its results and not in any toleration extended by the other; and if the truly unforgivable sin with the crown of futility is not to practise one without regard to the other but to try to practise one by means of the other;—then, too, it is at least conceivable that there may be a third activity, neither science nor art in their strict senses, but history, the understanding of the social, which also has an aim that cannot be denied and whose justification must be sought in its own results and not by the standard of any other activity. That is all that history as an intellectual manifestation can ask; but that it must ask. Mechanistic science has accomplished wonders in a brief space by adhering ever more rigidly to its own peculiar methods, and allowing no limits to be set to its application of these methods. Yet that a tool has proved its service for a purpose, does not affect the value of other purposes or the utility of other tools for these other purposes. Whenever the mechanistic scientist proposes to accomplish all the work of the human understanding by his science, he is taking the stand either of his predecessor of ruder days who mingled the objects and means of science and theology, or science and art, or science and morals; or of that other often cited but perhaps imaginary predecessor who, when spiritual power made him arrogant, denied the right of existence of science as a goal or science as a method;

proclaiming that divine truth was the only and sufficient truth. Intolerance is ever born anew. But science has escaped from alleged persecution, and then from timid servility, only so recently, that it should remember not to attempt oppression and negation in its turn.

History, then, justifies itself in proportion that it is mechanistically "unscientific"; that it has its own method, its own equivalent to the causality of science; and, in one sense, its own material. Not that there is a range of subjects that can be delimited and assigned respectively to science and to history. In fact, the applicability of science to any and all domains of human cognizance must be expressly affirmed. But the same phenomenon can after all be viewed with different ends. The social is scientifically resolvable; but it is resolvable through the individual—the organic and psychic individual. History deals with the social by resolving it into the social without the medium of the individual.

Science will attack historical material—social material—by converting it into organic terms—whether psychical or physical does not matter, so long as the ever present individual physiological aspect or basis of the social phenomena is dealt with. These organic results will then be ready for interpretation by the methods of physics and chemistry. Thus the material will be made part of that great unit, the system that justifies and elevates science to its high plane—the system that is pervaded by the principle of mechanical causality as its essence. But history, without denying this principle, without concerning itself with it or with the methods that flow from it, keeps its intent fixed upon the unaltered and irresolved facts of the social plane, upon historical data apperceived and utilized directly.

As, then, there are two lines of intellectual endeavor in history and in science, each with its separate aim and set of methods; and as it is only the confounding of the two that results in sterile negation; so also two wholly disparate evolutions must be recognized: that of the substance which we call organic and that of the other substance called social. Social evolution is without antecedents in the beginnings of organic evolution. It commences late in the development of life—long after vertebrates, after mam-

mals, after the primates even, are established. Its exact point of origin we do not know, and perhaps shall never know; but we can limit the range within which it falls. This origin occurred in a series of organic forms more advanced, in general mental faculty, than the gorilla, and much less developed than the first known race that is unanimously accepted as having been human, the man of Neandertal and Le Moustier. In point of time, these first carriers of the rudiments of civilization must antedate the Neandertal race by far, but must be much posterior to other extinct human ancestors of the approximate intellectual level of the modern gorilla and chimpanzee. Evidence fails, and in the present connection the determination would be of little moment.

The beginning of social evolution, of the civilization which is the subject of history, thus coincides with that mystery of the popular mind: the missing link. But the term "link" is misleading. It implies a continuous chain, a strand that is the same in texture before and beyond the break in knowledge. But with the unknown bearers of the primeval and gradually manifesting beginnings of civilization, there took place a profound alteration rather than an improved passing on of the existing. A new factor had arisen which was to work out its own independent consequences, slowly and of little apparent import at first, but gathering weight, and dignity, and influence; a factor that had passed beyond natural selection, that was no longer wholly dependent on any agency of organic evolution, and that, however rocked and swayed by the oscillations of the heredity that underlay it, nevertheless floated unimmersibly upon it.

The dawn of the social thus is not a link in any chain, not a step in a path, but a leap to another plane. It may be likened to the first occurrence of life in the hitherto lifeless universe, the hour when that one of infinite chemical combinations took place which put the organic into existence, and made it that from that moment on there should be two worlds in place of one. Atomic qualities and movements were not interfered with when that seemingly slight event took place; the majesty of the mechanical laws of the cosmos was not diminished; but something new was inextinguish-

ably added to the history of this planet; as when a perpetually reeling thread becomes two from one.

Or, one might compare the inception of civilization to the end of the process of slowly heating water. The expansion of the liquid goes on a long time. Its alteration can be observed by the thermometer as well as in bulk, in its solvent power as well as in its internal agitation. But it remains water. Finally, however, the boiling point is attained. Steam is produced: the rate of enlargement of volume is increased a thousand fold; and in place of a glistening percolating fluid, a volatile gas diffuses invisibly. Neither the laws of physics nor those of chemistry are violated; nature is not set aside; but yet a saltation has taken place: the slow transitions that accumulated from zero to one hundred have been transcended in an instant, and a condition of substance with new properties and new possibilities of effect is in existence.

Such, in some manner, must have been the result of the appearance of this new thing, civilization. We need not consider that it abolished the course of development of life. It certainly has not in any measure done away with its own substratum of the organic. And there is no reason to believe that it was born full fledged. All these incidents and manners of the inception of the social are after all of little consequence to an understanding of its specific nature, and of the relation of that nature to the character of the organic substance that preceded it in absolute time and still supports it. The point is, there was an addition of something new in kind, an initiation of that which was to run a course of its own.

We may sketch the relation which exists between the evolutions of the organic and of the social (fig. 8). A line, progressing with the flow of time, rises slowly, but ever gatheringly. At a certain point, another line begins to diverge from it, insensibly at first, but ascending ever farther above it on its own course; until, at the moment where the curtain of the present cuts off our view, each is advancing, but far from the other, and uninfluenced by it.

In this illustration, the continuous line denotes the level inorganic; the broken line, the evolution of the organic; the line of dots, the development of civilization. Height above the base is

degree of advancement, whether that be complexity, heterogeneity, degree of coördination, or anything else. A is the beginning of time on this earth as revealed to our understandings. B marks the point of the true missing link, of the first human precursor, the first animal that carried and accumulated tradition. C would denote the state reached by what we are accustomed to call primi-

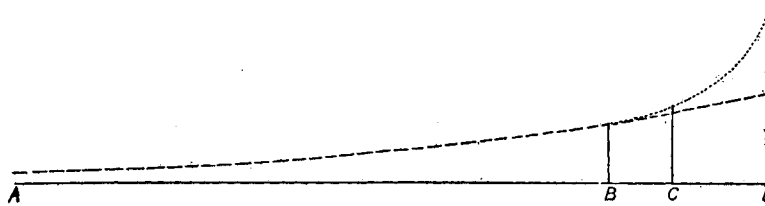


Fig. 8.

tive man, that Neandertal *homo* who was our forefather in culture if not in blood; and D, the present moment.

It is inevitable that if there is any foundation for the contentions that have been set forth, an arguing from one of these lines to the other must be futile. To assert, because the upper line has risen rapidly just before it is cut off, that the one below it must also have ascended proportionally more in this period than in any before, is obviously unconvincing. That our institutions, our knowledge, the exercising of our minds, have advanced dizzyingly in twenty thousand years is no reason that our bodies and brains, our mental equipment and its physiological basis, have advanced in any corresponding measure, as is sometimes argued by scientists and generally taken for granted by men at large. If anything, it might rather be an evidence that the lower, organic line has fallen off in its rate of ascent. The bodies and minds in this line have continued to carry civilization; but this civilization has met the struggle of the world in such a way that much of the stress has been directed from these bodies and minds. We do not argue that the progress of organic evolution is *prima facie* indication that inorganic matter is more complex, more advanced in its combinations, or in any sense "higher," than it was fifty million years ago; much less that organic evolution has taken place through an inorganic evolu-

tion as cause. And no more can we infer from social development to a progress of the hereditary forms of life.

In fact, not only is the correlation of the lines of organic and social development as unjustifiable theoretically as it would be to argue from the compressibility or weight of water to that of steam; but all the evidence known directs us to the conviction that in recent periods civilization has raced at a speed so far outstripping the pace of hereditary evolution, that the latter has, if not actually standing still, afforded all the seeming, relatively, of making no progress. There are a hundred elements of civilization where there was one in the time when the Neandertal skull enclosed a living brain; and not only the content of civilization but the complexity of its organization has increased a hundredfold. But the body and the associated mind of that early man have not, by any scale that can be applied, attained a point a hundred times, nor even twice, as fine, as efficient, as delicate, or as strong, as they were then; it is doubtful if they have improved by a fifth. There are, it is true, those who make the contrary assertion. Yet it seems the fair-minded must avow that such assertions rest not on any objective interpretation of the facts, but on a wish to find a correlation, a desire to make the thread of evolution a single, unbranching one, to see the social only as organic.

Here, then, we have to come to our conclusion; and here we rest. The mind and the body are but facets of the same organic material or activity; the social substance—or unsubstantial fabric, if one prefers the phrase,—the existence that we call civilization, transcends them utterly for all its being forever rooted in life. The processes of civilizational activity are almost unknown to us. The self-sufficient factors that govern their workings are unresolved. The forces and principles of mechanistic science can indeed analyze our civilization; but in so doing they destroy its essence, and leave us without understanding of the very thing which we seek. The historian as yet can do little but picture. He traces and he connects what seems far removed; he balances; he integrates; but he does not really explain, nor does he transmute phenomena into something else. His method is not science; but neither can the

scientist deal with historical material and leave it civilization, nor anything resembling civilization, nor convert it wholly into concepts of life and leave nothing else to be done. What we all are able to do is to realize this gap, to be impressed by its abyss with reverence and humility, and to go our paths on its respective sides without self-deluding attempts to bridge the eternal chasm, or empty boasts that its span is achieved.

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