

naturally be expected, having its own proper, peculiar form, why this apparently needless, useless waste of energy in this straight down the crooked lane and all round the square way of working. Why this particular process? How came it about? There is only one answer, that all the various forms of animal life that have ever lived on the surface of the earth have been evolved out of preceding organisms, by a regular gradation from the lowest organism, which originated by spontaneous generation, up to the highest, culminating in man. It is utterly impossible to give any other answer or any other theory that will account for all the phenomena. Arrested development (rudimentary organs) are proofs positive of the evolution theory, the embryo teeth and feet of whales, embryo feet in serpents, eyes which do not see in fish living in rivers underground in the dark, the embryo and rudimentary human tail, paps in the human male, and numerous other instances of arrested development (rudimentary organs). All these are perfectly consistent with and proofs of evolution, but which it is impossible to account for in any other way.

In some cases we find these rudimentary organs are inconvenient, in others positively dangerous. Scientific authorities name many of a similar character to one in man that is perfectly useless, while it subjects the possessor to the needless danger that the presence of a substance no bigger than a cherry stone would cause instant death.

Professor Youmans, editor of the Popular Science Monthly, says that the fundamental doctrine of evolution is that the universe and all that it contains did not come into existence in the condition that we now know it, nor in anything like that condition. It implies that the heavens as they appear above, the earth as it exists beneath us, the hosts of living creatures that occupy it, and humanity as we now know it are merely the final terms in an immense series of changes which have been brought about in the course of immeasurable time. It affirms vast changes in vast periods. That these changes have been according to a method, and that this method has been of the nature of an unfolding. The essential changes of evolution have been comprehensively formulated, as from the simple to the complex, from the homogeneous to the heterogeneous, from the general to the special. It is a scientific induction, that is, an idea formed after the facts are known, and based upon them.

That the solar system was gradually formed in the way the nebular hypothesis implies, and that its facts can be explained by that hypothesis and no other, is now the general belief of astronomers. Consisting of 150 bodies, revolving and circulating, according to one grand method, it has been pointed out that there are no less than 370 facts concerning the distribution, form and motions of the sun and planets which are the simple consequences of the nebular hypothesis, and can be accounted for in no other way.

Geology has given us a vast mass of facts and inductions which establish with certainty one proposition, viz, that our planet is not what it was millions of years ago, but has undergone a series of developing changes, resulting in the present order of things. The law of specialization, the general being before the special, is the law of all development. The egg is at first a simple unit, and gradually part after part of the new structure is evolved, that which is most fundamental appearing earliest, until the being is complete in all its outer and minor details.

The principle is exhibited in the physical history of the globe, which was first a featureless globe of fire, then had its oceans and dry land, in course of time received mountains and rivers, and finally all those diversities of surface which now characterize it. The climates began with universal tropics, culminating at last in the diversities of the present day.

We may remark in passing that the science of geology was thrust back 600 years by the enslavement of the human mind to the superstition of geology.

The study of the course of organic life upon the earth shows that it conforms to the same great plan. The life of the globe a few millions of years ago was a very different thing from what it is now. Different races of plants and animals have appeared and disappeared in slow succession, and their remains are found entombed in successive rock formations.

The facts are a part of geology, and have been arrived at by the same processes of observation and induction that have revealed the order and history of the stratified systems. The course of life upon the globe has conformed to a method, and that method is universally described as a process and a development. It shows an advance from the simple to the complex, from the general to the special, from the lower to the higher. In short, it is an evolution in the strictest sense of the word.

There was first a period of no life—the azoic age. Then appeared the lower forms of life, vegetable and animal. Then higher and higher kinds until man, the highest of all, appeared last. The progress evinces continuity, harmony, and gradation. The beginning of an age has always been in the middle of a preceding age, and the marks of the future coming into view are prophetic of that future. The age of mammals was foreshadowed by the appearance of mammals long before in the course of the reptilian age, and the age of reptiles was prophesied in types that lived in the early carboniferous age.

The lower forms that perish do not reappear. No group or species have ever come into existence twice. But every species has come into existence coincident, both in space and time, with a pre-existing closely allied species. That the great advancing movement of organic life has been a divergence, an opening out, or an evolution, is incontestable, and is admitted by the highest biological authorities. It is proved by the fact that if we go back a million of years or so there is an obvious converging of types, or the different kinds of animals are nearer together in character, and as we recede still further into the past the approximation becomes still closer.

Humanity is not now what it was in ages long past. During some scores of thousands of years of man's presence upon earth an immense series of changes have taken place in the history of the race. Only a few thousand years ago Europe was barbarous, and its inhabitants warred and worked with implements of stone, society was rude, low, homogeneous and undeveloped. Its movement has been a slow unfolding into diversity and speciality. There has been an increase of human capabilities, a rise in intelligence, an advance of morals, a growing capacity for social co-operation, a multiplication of arts and industries, an untrammelled power over nature, an emergence of institutions, in short, evolution of civilization. This is a broad deduction from the facts of history, from the facts of pre-historic archaeology, and it is fast taking the place of the teachings of theology that the course of humanity has been a degeneracy, which was firmly believed until science reversed the method of studying the subject as taught by the Bible.

Haeckel teaches the certainty that all natural bodies which are known to us are animate, that the distinction which has been made between animate and inanimate bodies does not exist. When a stone is thrown into the air and falls to the earth, according to definite laws, or when in a solution of salt a crystal is formed, the phenomena is neither more nor less a mechanical manifestation of life than the growth and flowering of plants, than the propagation of animals or the activity of their senses, than the perception or the formation of thought in man.

If the objections which are raised to the general doctrine of evolution were not theological objections their utter childishness would be manifest even to the most childlike of believers.

Man is essentially a questioning animal concerning all phenomena that come under his experience and observation. An answer he must have, and a false one if a true one is not at hand. In man's primal state the only answer he gets to all questions is. God made it, God did it. This is the Christian answer to this very day. But as his higher positive knowledge the results of observation, experience, and reflection, the answer that God made it, God did it, grows less and less frequent. He gets truth instead of mythology.

Darwinism marks the hegira of science from the idolatries of special creation to the purer faith of evolution. There were lately found in the mud deposits of one of the lakes of Germany, in the lowest deposit, forms of organic life of the simplest kind and of one kind only. In tracing the strata of the deposit upward from the bottom toward the top the first simple form began to differentiate gradually and slowly, and to assume by degrees other forms, until at the top there were a number of what are called distinct species.

There is evidence which is perfectly satisfactory to competent judges that we have clearly learned the actual historical process by which the horse came into existence during the tertiary epoch. The evidence is based on the analogy of known developmental facts that a three-toed hipparion form which lived in the miocene epoch gave rise, by the suppression of the phalanges of the rudimentary toes and some other slight modifications, to the apparently one-toed tertiary horse. The pedigree of the ox, the sheep, etc., have been traced in the same way.

Comparative anatomy shows us an uninterrupted succession of all possible stages of transition from the simplest organ to the most highly perfected apparatus, so that we can form a pretty correct idea of the slow and gradual formation of even such an exceedingly complex organ as the human eye.

The like gradual progress which we observe in the development of the organ during the course of individual development must have place in the historical origin of the organ.

Darwin says many persons when contemplating perfect organs, which apparently were purposely invented and constructed by an ingenious creator for a definite purpose, but which in reality have arisen by the simple action of natural selection, experience difficulties in arriving at a rational understanding of them, which are similar to those experienced by the uncivilized tribes of nature when contemplating the latest complicated productions of engineering. Savages who see a ship of the line or a locomotive engine for the first time look on those objects as the production of a supernatural being, and cannot understand how a man, an organism like themselves, could have produced such an engine. Even the uneducated classes of our own race cannot comprehend such an intricate apparatus in its actual workings, nor can they understand its purely mechanical nature.

The theory of evolution applies itself to the solution of the greatest of scientific problems, that of the creation, the coming into existence of things, more especially the origin of organic forms and of man at their head.

It is here the right as well as the duty of free inquiry to fear no human authority and boldly raise the veil from the image of the creator, unconcerned as to what natural truth may be concealed beneath.

It was a favorite saying of Voltaire: "Let us suppose for the sake of argument that there is no God. It will still be necessary to invent him, because there is no other way to account for the phenomena of nature." Voltaire would scarcely have said this had he lived in our day, since the evolution philosophy has shown how and in what manner nature possesses within herself the promise and potency of all created things and performs all the operations spontaneously of herself, and altogether without the meddling of the Gods.

As contrasted with other systems, we may well adhere to that purer evolution philosophy—that great conception which had dawned upon the patriarchs of philosophy, which has been embalmed in the immortal poem of Iuvenius, which has been submerged but not drowned in the muddy waters of Hebrew and Christian mythology.