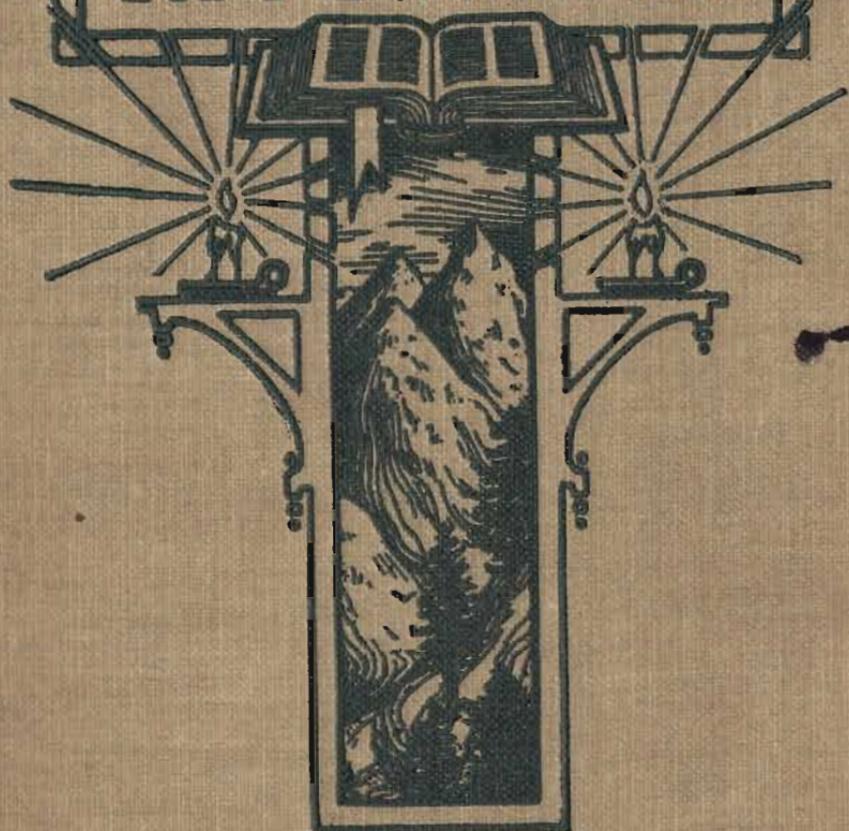
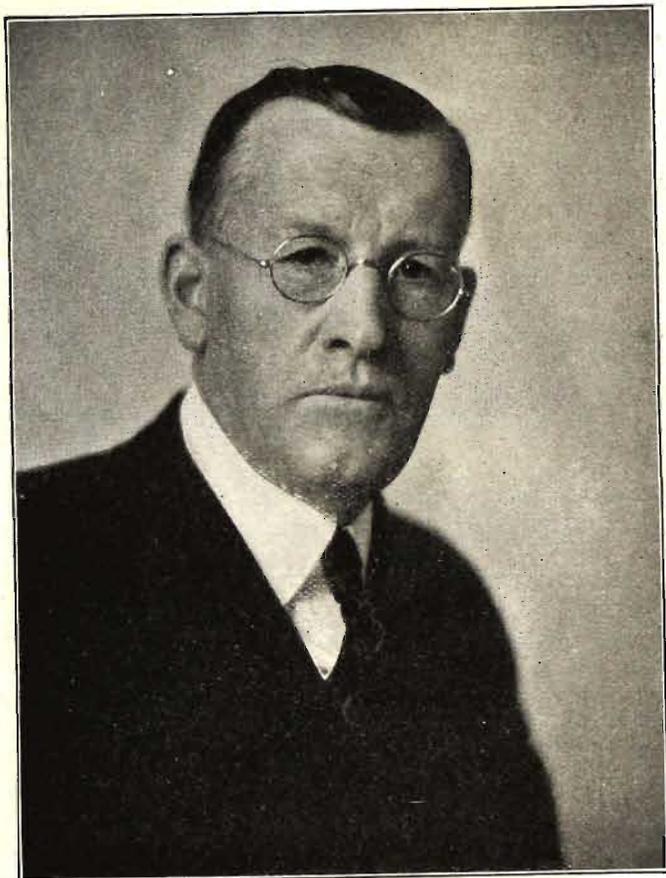


GOD'S TWO BOOKS



PRICE



Geo. McCready Price

God's Two Books

Or Plain Facts About Evolution,
Geology, and the Bible

By George McCready Price

Professor of Geology, Pacific Union College, California;

Author of "The Fundamentals of Geology;" "Q. E. D.,
or New Light on the Doctrine of Creation;" "Back to the
Bible;" "Poisoning Democracy;" etc.

"Mock on, mock on, Voltaire, Rousseau!
Mock on, mock on, 'tis all in vain!
You blow the dust against the wind,
And the wind blows it back again."
— *William Blake.*

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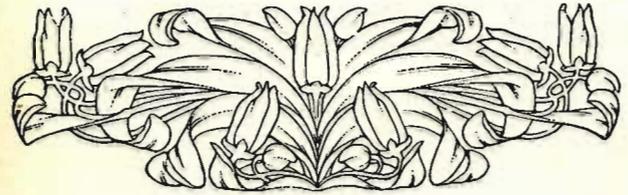
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GOD'S TWO BOOKS

CHAPTER I

Introduction

IT seems high time that the church of Christ got her bearings amid the many conflicting claims put forth in the name of modern science. It is time that she caught the inspiration there is for her in the fact that all the more recent discoveries, and a more sane, a more truly scientific estimate of the older discoveries, are reaffirming, in a manner as unexpected as it is conclusive, the divine harmony shown in the two great revelations which the Creator has given us of himself.

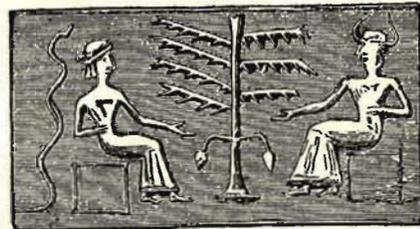
It is no new crisis that now confronts the church. Down through all the ages these great questions regarding our origin, our relation to the Ruler of the universe, have continued to force themselves on thoughtful minds; and on the answers given to them have been built all the great systems of man-made religion, from those of Chaldea and India down to the Theosophy and so called "New Thought" of our day. It is a common mistake to regard the religions of Greece and Rome, of Egypt and Babylon, or those of modern India and China, as consisting merely



THE GRAVE THAT "SHALL NEVER BE OPENED"

This stone tomb is in Hannover, Germany, and is a little over a hundred years old. It was made of large slabs of stone bound together by iron bands, and surmounted by a block weighing a ton and a half. On it was this inscription, "This grave is purchased for eternity; it shall never be opened." But a little birch seed found its way into a crevice between the massive stones, where, covered by dust and moistened by rain, it soon began to grow. The hidden power of God in the tender plant broke the iron bands asunder, and moved the stones from their original position. The tree still lives, and waves victorious branches over the rent sepul-

of forms and ceremonies and idol-worship. This both the ancient and modern systems may have been, or may be, to a large class of their unthinking devotees. But in their beginnings, and to all their more intelligent followers, they were much more than this. Rather should it be said that all of them originated as philosophical systems for explaining the phenomena of nature, the origin of things, and man's relationship to the universe. The forms and ceremonies of worship came in only incidentally and as a secondary matter. There is abundant evidence that each of these systems of man-made religion took those degenerate relics



THE SERPENT AND THE TREE OF LIFE

Babylonian Cylinder

"The wicked serpent," "the serpent of the darkness," was mentioned in Sumerian texts, and Mr. Boscawen has lately found a Babylonian fragment, forming part of the third tablet in the Creation-series, in which the fall of man seems to be described in plain terms.—A. H. Sayce, "The 'Higher Criticism' and the Verdict of the Monuments," pages 103, 104, fourth edition.

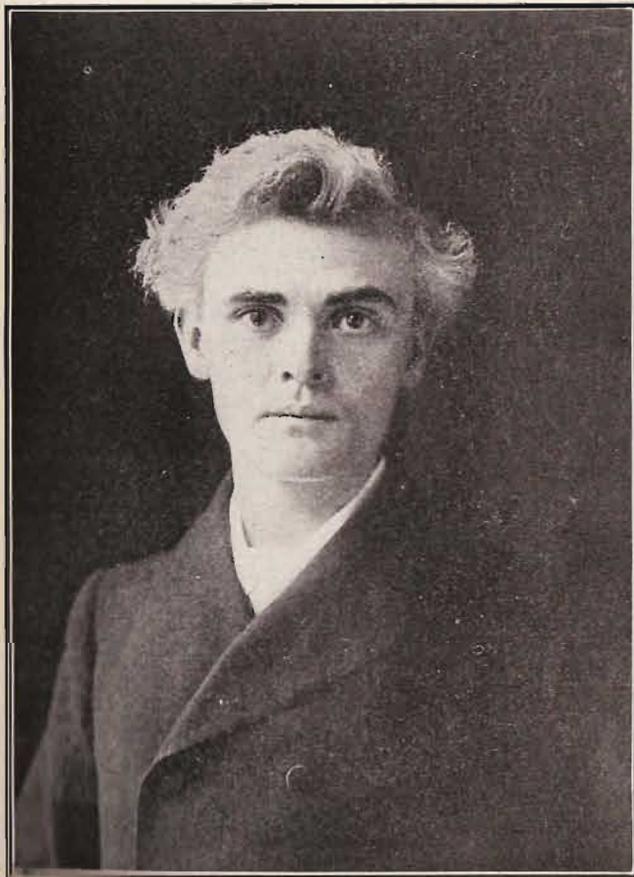
of purer and more ancient forms of faith nearest at hand, and, after changing and adapting them to suit its theories of cosmogony and philosophy, gradually incorporated and

char, which man in his impotent and limited knowledge declared should "never be opened." The mighty power of God in a tiny plant that a child could have broken off for a toy whip to lash his wooden horse, laughs to scorn the finished work of man to shut out God from his own creation.



ADOLF HARNACK (1851-)

A modern leader of theological thought in Germany.



DR. R. J. CAMPBELL (1867-)

Formerly pastor of the City Temple, London, England. Author of
"The New Theology," etc.

assimilated them, and thus grew into the system of religion as we know it.

Nor is such a process confined to ancient history. During the last half century we moderns have seen the birth and rapid growth of another great system of religion — we can call it nothing else — that of Evolution. To-day its leading thoughts, in opposition to the literal creation of the Scriptures, are nearly universal over the civilized world. In India and Japan the educated classes are as familiar with the current teachings of geology and biology as we are in America or Europe. The general idea that life has been on our globe for untold millions of years, that our modern forms of plants and animals have sprung by natural development from other older forms, and these again from still older ones, has become so much a part of the modern system of education that to many it seems the most self-evident thing in the world. And, after standing aloof from one another for some time, Evolution as a philosophy and current Protestantism as a religion have undergone a process of blending which has resulted in the "Theistic Evolution," "New Theology," etc., now so universally taught in the universities, colleges, and seminaries of the Western world, as well as from many Protestant pulpits.

As already intimated, this modern instance is not by any means the first or only one where men have tried to solve these deepest questions of life, and origin, and duty, independent of a revelation from the only Being who really knows. The nations of antiquity all tried their hand at it. The Greeks especially filled several centuries quite full of speculations about the origin and make-up of the universe.

Those of Plato and Aristotle, for example, became quite popular, and shaped the science and philosophic thought

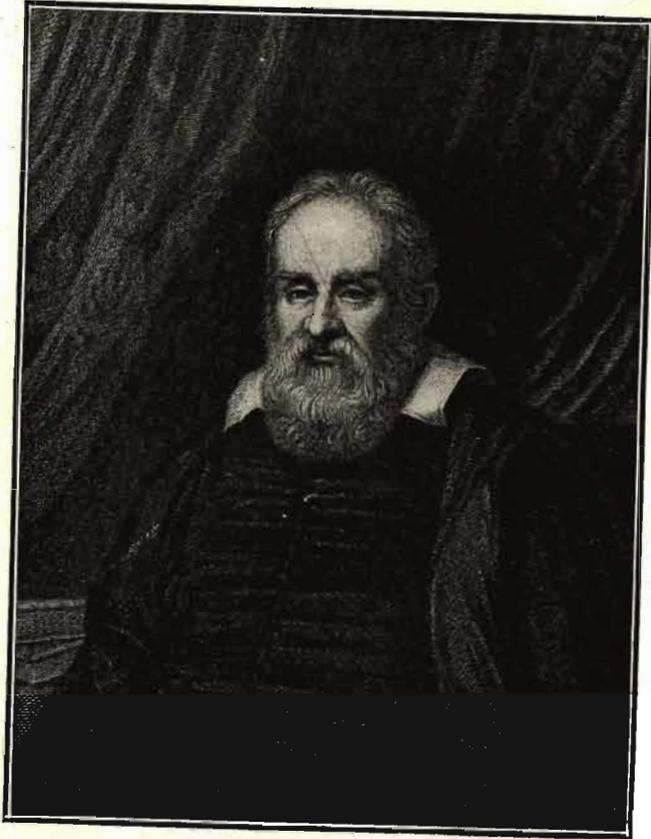
*And if, my friend, this onward, upward movement
Has held since earth from blazing gas began,
Explain me why this miracle of improvement
Must stop when reaching man.*

*For if 'tis easy in the opening portals
Of science thus man's climb from slime to solve,
'Tis quite as easy to suppose from mortals
That angels may evolve!*

— INDEPENDENT, AUG. 9, 1906.

of many succeeding centuries. It is true we have long outgrown the crude scientific guesses of those days; and, like the Ptolemaic astronomy, which said that the earth was the center of the universe, and that the sun and stars all circled about it, they have long since been consigned to the limbo of literary curiosities. With them also have gone numerous chemical and geological theories of the seventeenth and eighteenth centuries, equally contrary to the Word of God.

But what assurance have the modern advocates of the Evolution doctrine that their now popular theory will not also be outgrown and discarded for something more in harmony with the better-known facts of science, and more in harmony with the Bible? It certainly has no more inherent finality about it than any of the previous theories already mentioned. Evolution is precisely like all other cosmogonies



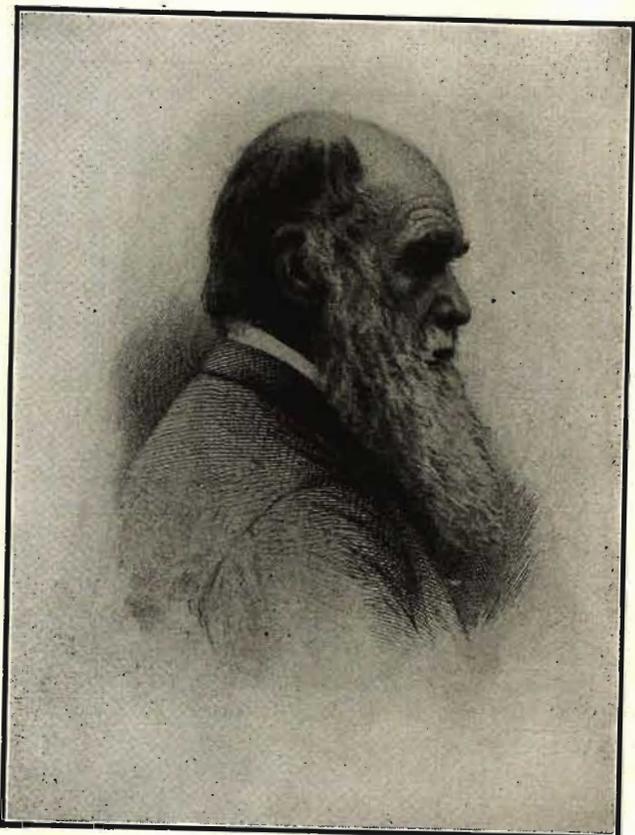
GALILEO (1564-1642)
"Eppur si muove!"

Up to his time the astronomers had been following blindly for over a thousand years the false hypothesis of Ptolemy that the earth is the center of the universe, and that the sun and all the stars revolve about it. Accumulated discoveries had made this theory so top-heavy with absurdities that it was a great relief

in being an attempt to solve the riddle of the universe by unassisted human reason. What probability is there that it has succeeded at this any better than its predecessors? In one form or another it may be now almost universally accepted among scientific men; but were not the astronomical theory of Ptolemy and the philosophy of Aristotle absolutely universal for over a thousand years?

We must not forget the long centuries during which the follies of alchemy were regarded as science, and the paramount influence of the planets over human destiny was exalted into a kind of religion. Already the discoveries of recent years have made many of the foundation principles of the current geology and Evolution as hard for well-informed scientists of the twentieth century to believe as the "deferents" and "epicycles" of Ptolemy were to Kepler and Newton. How long may it be ere it will be evident that we have outgrown the geological absurdities about the successive forms of life that have peopled the globe, as we have the first crude speculations and the infant lispings of all the other sciences? And who will then care for the brilliant theories which entertained the people during the early part of the twentieth century? The shores of time are strewn with the sad wrecks of human philosophies and cosmogonies, built with the greatest care by giant minds, who were confident that they could thread the channels of the great unknown without a Pilot.

when Galileo took these facts and proved the sun to be the center of the solar system. Modern geology is in about the same condition that astronomy was then, and sadly needs some one to reconstruct it on a basis of common sense and true scientific reasoning. When thus reconstructed, it will be found to be in perfect harmony with the Bible.



CHARLES DARWIN (1809-1882)

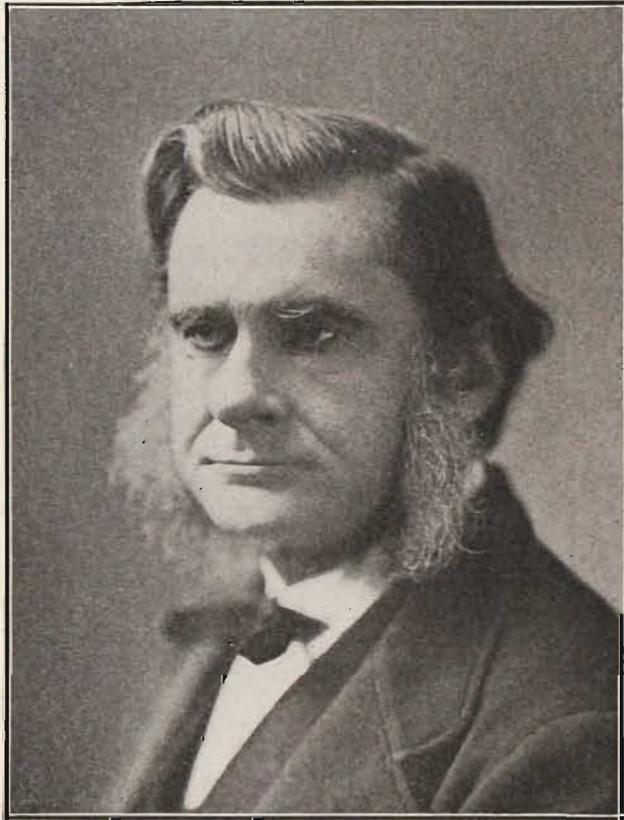
He had seen the idea develop and become recognized that the world had been peopled during successive ages by different sets of plants and animals, and that the geological changes of the past were of the same sort as the changes said to be now going on in our modern world. Surely, thought he, why not suppose that these early types gradually developed into those that succeeded

It may be well right here to glance briefly at the general history and teachings of the Evolution theory. A more complete history of the doctrine and presentation of its teachings has been given elsewhere, but a brief outline seems essential here in understanding its bearings upon religion.

Modern Evolution is much older and broader than Darwinism. It can be readily traced back to the eighteenth century, perhaps further; for back of Darwin lie geology and the nebular hypothesis. With the latter we have nothing to do now, though it may be remarked in passing that it is a crude and now almost universally discredited theory of how our solar system may have condensed, from a great mass of matter scattered through space, into the sun and its family of planets, including the earth. But older than even this is geology, which by such men as Leibnitz (1646-1716), Buffon (1707-1788), Cuvier (1769-1832), and William Smith (1769-1839), was gradually gaining the confidence of many educated men in asserting that the world had been peopled for untold ages by successive assemblages of plants and animals, until, at a comparatively "modern" date, man was created and placed upon it.

The next stage in the development of the theory came when Lyell, about 1830, began teaching the quietistic theory; viz., that all the successive geological changes could

them? The modern world has grown tired of his pet theory of "Natural Selection" for explaining *how* this development was brought about, for no such gradual change of one species into another has ever yet been proved. But almost all modern scientists still cling to the doctrine of Descent or development *somehow*, though "Darwinism" is expressly repudiated by many of them, and there is little agreement among them as to how this development was brought about.



THOMAS H. HUXLEY

One of the most clear and fascinating writers that ever handled the English language. To this fact, as well as to his manifest candor and honesty, we must attribute in large measure the quick success attained by the doctrine of Darwinism. He was the victim of too much faith in the unproved assumptions of geology as then taught, though he saw more of the illogical reasoning lying

be understood as the result of causes similar to those now in every-day operation around us. That is, the geology of Lyell not only denied the Bible record of a universal world-catastrophe, the deluge, but it smoothed the way for regarding all the operations of Providence, even creation, as only similar to the commonplace things taking place about us every day.

Here, then, was the whole skeleton or outline of the Evolution theory, needing only something to articulate together its several parts. This was supplied by the works of Charles Darwin, who published his "Origin of Species" in 1859. His theory was only an elaboration in more detail of the general thought that each successive stage of the geological series was not a new creation of plants and animals, but that each of these new sets, appearing (as the geologists said) so abruptly and mysteriously, probably grew naturally out of the preceding.

For scores of years those scientists who believed in these successive "ages" of geology had felt the necessity of some such explanation of this mysterious phenomenon, but had hitherto failed to find any plausible theory to fit the case. But now Darwin's theory of natural selection supplied the long-felt want, and, assisted by the brilliant pleading of such men as Huxley, Spencer, Haeckel, and Tyndall, the hypothesis made so brave a showing that the chain of evidence was declared to be complete. The result has been this strange phenomenon of practically the whole educational world receiving this flimsy tissue of guesses as the proved facts of science, and either abandon-

ing the basis of the science than any other man of his time. Spencer wrote nearly as strongly in criticism of what he called "Biological Geology," but was more pedantic and less bewitching in his literary style, and far less open to the claims of religion.

ing all their religious hopes, as in the philosophy of Spencer and Haeckel, or else changing and adapting their religious views in such a way as to harmonize with this idea, as in the system of such men as Lyman Abbott, Le Conte, or Huxley; for, considered from the standpoint of old-fashioned Christianity, there is no material difference between the modern Theistic Evolution and the agnosticism of T. H. Huxley.

The sad results to the church of accepting the Evolution doctrine are thus vividly set forth by the New York *Independent* of June 24, 1909:

When we found that the world was more than six thousand years old, that there was no universal flood four thousand years ago, that Adam was not made directly from dust, and Eve from his rib, and that the tower of Babel was not the occasion of the diversification of languages, we had gone too far to stop. The process of criticism had to go on from Genesis to Revelation, with no fear of the curse at the end of the last chapter. It could not stop with Moses and Isaiah; it had to include Matthew and John and Paul. Every one of them had to be sifted; they had already ceased to be taken as unquestioned, final authorities, for plenary inspiration had followed verbal inspiration just as soon as the first chapter of Genesis had ceased to be taken as true history. The miracles of Jesus had to be tested as well as those of Elijah. The date and purpose of the Gospel of John had to be investigated historically as well as that of the prophecy of Isaiah; and the conclusion of historical criticism had to be accepted with no regard to the old theologies. We have just reached this condition, and there is repeated evidence that it makes an epoch, a revolution, in theologic thought. . . . To this present teaching, which has invaded all our denominations, Jesus is the world's prime teacher, but it can assert nothing more. There

is, it declares, no reasonable proof of his birth from a virgin, no certainty of a physical resurrection; the Gospels must be analyzed, for they contain mythical elements, non-historical miracles, unverified assertions. . . .

But this doubt, even this questioning or denial, changes the old, evangelistic theology. It questions or denies the Trinity, the resurrection, the sacrifice of the cross, even all miracles, and it undermines all authority of inspiration or even revelation, and sends us back to human reason, with such divine guidance as may be allowed; the authority of the Bible and the authority of the church both to be validated only by human reason.

There is really no half-way position possible for the church of to-day. At the beginning of the nineteenth cen-

I know nothing about the origin of man except what I am told in the Scripture,—that God created him. I do not know anything more than that, and I do not know anybody who does. I would say with Lord Kelvin, "There is nothing in science that reaches the origin of anything at all."—SIR WILLIAM DAWSON.

tury, when the species found by the geologists in the rocks were all supposed to be extinct species and different from the forms now alive on the earth, many well-meaning church people admitted the "ages" of geology, but assigned them to a period long anterior to the present creation. But as the living species of sea-shells, fishes, insects, mammals, and plants became better known, and the identity of the living with the fossil forms was proved in case after case,

the church people began to say that the "days" of creation mentioned in Genesis were immense periods of time, corresponding to some of the successive "ages" of the geologists. Hugh Miller, Dawson, and others, were the means of making this explanation quite popular for many years. But while a trace of similarity may thus be made out for the two, no reputable scientist could now be found who would admit anything more than a fancied resemblance between these days of Genesis and the "ages" of the geologists; so that the scientists and the theologians alike admit that the Mosaic record can not thus be made to harmonize with the results of modern geology, and they have long since given up the attempt to do so, concluding that the first chapters of Genesis are only a myth, or at the most a beautiful poem.

But why should we not draw courage from the very universality of the false views regarding creation now prevailing? God will not, he can not, allow this situation to continue. My faith in the Bible compels me to believe that God must soon vindicate before the world the harmony of his two books, just as in the sixteenth century he vindicated the Bible as the supreme spiritual authority, and restored it to its rightful place as the guide of the church. To-day a skeptical world has arrayed God's two books against each other, and men justify themselves in rejecting the one because they say it does not agree with the other. *Other reforms have been based on various parts of the Bible here and there; the one now due is based on the first part of the Bible.* Hence, with the cloud under which this part of the Bible now rests in the minds of most people, the logic of the situation demands that God shall vindicate

his record of the flood and of creation in a marvelous way before this generation. His two books must be shown to agree, so that the world may be left without excuse.

The present volume is at least an honest effort to indicate the lines that this vindication must take, and to show some of the inspiring lessons already deciphered from God's larger book of nature confirmatory of his written Word. It does not profess to be complete; but at least it indicates the direction in which the most returns are to be looked for in connection with this field of study. There have been scientific commotions and revolutions in the past; but when the world once awakens to the meaning of the modern discoveries, an outline of which is given in the following pages, there must follow a return to old-fashioned Bible Christianity such as the world has not seen since the sixteenth century. Nothing is settled until it is settled aright; and the only way in which these matters can be settled is by showing the absolute harmony between the book of nature and God's written Word.

CHAPTER II

Moral and Social Aspects of the
Evolution Theory¹

IT is rightly considered that the supreme test of any doctrine, religious, social, or scientific, is its bearing upon life and human action. "Ye shall know them by their fruits." Accordingly we may ask, What are the fruits or the natural results of the Evolution theory? The brief outline of the moral and social consequences of the theory given in the following pages may serve to show the implacable conflict there is between this theory and the teachings of Christianity. The arguments on this point may be conveniently grouped under three heads:

(a) Evolution denies man's moral responsibility for the sin and misery of our world.

(b) It denies, or seeks to render useless, the gospel remedy for this state of things.

(c) Its logical and practical results in every-day life appear in social and civil evils which threaten the foundations of civil and religious liberty.

These three divisions of the argument must now be considered in order:

(a) The trend of the Evolution theory nowadays is toward agnosticism and atheism. Matter is thought to have existed forever and to have possessed inately the properties by which it could develop into such forms as now appear upon the earth. There was no need for a Creator or for any

¹ For a more detailed statement of the arguments used in this chapter see the author's "Back to the Bible," chapters 6-8 and 10-12.

such miraculous act as creation. Our world and all that is in it has resulted from purely natural causes, and the supernatural is thus comfortably disposed of.

This conception, however, is by no means universal, even among avowed Evolutionists, for to many minds it is no more difficult to believe in the eternal existence of God than in the eternal existence of matter, or the ability of God to create than of matter to develop into living forms. Many feel that one is really no more miraculous than the other, and that the sum of evidence and of human experience supports the idea of a divine Creator. They believe also that this Author of the universe is at once all-powerful, all-wise, and all-good or just — in complete harmony with the Creator revealed in the Christian's Bible. However, on looking at themselves or the world around them, they see a strange conflict with these ideal attributes. Sin and misery abound on every hand. As Shelley expresses it,

"All my knowledge is that joy is gone,
And this thing woe crept in among our hearts,
There to remain."

This universal experience of misery and consciousness of sin is also in complete harmony with the Bible; for one of the most fundamental ideas contained in the latter is that man has sinned, and is not now in harmony with his Creator. Take this general thought out of the Bible, and what is there left?

To a believer in God there are but three possible suppositions regarding the evil and misery of our present world:

1. The Creator may have made us out of hand in our present condition of misery and evil.

2. Or he may have produced our race by development from ruder and still lower conditions, and we be now on the road to a yet higher plane of development.

3. Or God may have created man "very good," "upright," in perfect harmony with the highest moral ideals, but man may have lost the blessing and happiness necessarily conditioned on such a state, by violating fundamental moral law; just as a perfectly healthy man might lose his health by violating physical law.

The first of the above-mentioned suppositions is evidently not within the limits of discussion; for it charges a wise Creator with purposeless folly in deliberately making a being out of harmony with his own fundamental character.

The second, however, demands our very closest attention, for it is the real theistic Evolution doctrine regarding the origin of man and his moral nature. Every scheme of Evolution which endeavors to explain man's physical frame and moral nature otherwise than by gradual development out of savage and bestial antecedents, is so far inconsistent with itself and with the general principles of the doctrine, that we may ignore it altogether. Le Conte has well expressed the moral teachings of the Evolution theory, as follows:

"What we call evil is not a unique phenomenon confined to man," and is not in any way whatever connected with man's free will as an intelligent being rebelling against his Creator. It "must be a great fact pervading all nature, and a part of its very constitution," the present conditions being but the outworking of principles implanted in nature long ages before man's existence. ("Evolution and Religious Thought," page 365.)

But unless the existence of God be denied, where is there any essential difference between this idea and the first supposition, which we have already rejected? It makes misery, evil, and sin the endowment of the Creator, just the same, something which he imparted to the universe when he started it evolving. It pushes the origin of evil further back in time, but it ends in either making evil the deliberate endowment of the Creator, bequeathed to his universe at its beginning, or else assumes that he was conditioned and hampered by the material on which he was working. Some ingenious acrobat in logic may endeavor to dodge these conclusions, but there is really no alternative for the consistent thinker.

On the one hand, we can not believe that an all-wise and all-good Creator would deliberately make himself responsible for such a state of things, by implanting evil tendencies in his creatures, and then punishing them, even by the law of cause and effect, for living out the dictates of their hereditary natures. On the other hand, we may well refuse to discuss any pantheistic scheme which so identifies the Creator with the materials of his universe as to make him in any way hampered or conditioned by such material; or which, in other words, makes evil a something inherent in the nature of the universe and inseparably associated with it.

We may indeed safely ignore any philosophy which would make the Creator anything else than all-wise, and non-conditioned by any possible contingency. But with this granted, we must admit that the principles which such a Being has put into his works must be an expression of his character.

The "tooth-and-claw" phase of nature, and especially

the depraved, evil condition of human nature — “here where men sit and hear each other groan,” — must in some way express the character of our Designer, unless some free, conscious intelligence (such as man himself) has marred God's work and perverted the natural endowment of his creatures. If retaliation for injuries received, if pride and lust, are perfectly natural to the human heart, as we must all sadly confess they are, they must in some recondite manner express the character of our Creator, if he made us as we are, or on any lower or more undeveloped plane of being out of which these characters have naturally sprung; and therefore these things can not be really evil; they can not be immoral.

Let us be plain. Moral duties, in the broadest sense of the word “moral,” are such as inhere in the relationship between the creature and his Creator. Hence, if our Creator has endowed any of us with certain instincts and propensities, our moral duty to him obliges us not to repress and subdue, but to exercise and develop, these instincts and propensities to their utmost possible extent. It would be immoral to do otherwise — “sinful,” if you please. Hence, the hatred, lust, and pride so natural to the human heart are in no sense wrong or punishable if they represent a natural endowment given us by our Creator, no matter through what process he formed us.

But every one knows that these instincts and passions bring misery and ruin alike to the subjects and objects of their force. Misery and woe are the inevitable results of their exercise. Hence we can go further and say that a being who would thus punish his creatures, even by the law of cause and effect, for doing as he taught them or endowed

them, would be all that we understand by the word “fiend.” But such is the god of the Evolutionist, if he acknowledges a god, and there is no way of evading this issue.

There is no need of saying that there must be something wrong with a notion of man's origin that leads to such a frightful conclusion. And surely the moral issue, as set forth above, is a surer way of gauging the truth or falsity of the Evolution theory than the long, complicated methods connected with “variation” and “selection,” “heredity” and “environment,” and the other biological problems, even supposing the theory apparently capable of the most exact proof. In short, we need offer no apology for thus measuring this scientific hypothesis by other and far more certain standards of truth.

(b) Having now shown that the Evolution doctrine denies man's responsibility for the sin and misery of our world, we must consider the second of the arguments with which we began this chapter; viz., that it also denies, or seeks to render useless, the gospel remedy for this state of things.

Our Lord's mission, as expressed by himself, was to “seek and to save that which was lost,” not merely those who were lost, “that which was lost,” — the world and all it contains. But where is the loss if man has been continually progressing from a crude beginning? If Evolution be true, our race has known only gain. And a thousand-fold more progress must have been made previously, from the bestial condition up to the civilization of the Roman empire, when Christ spoke these words, than the race has ever made since. And surely in that case the principles of progression themselves would secure the ultimate redemption and perfection of the race without the intervention of

a divine Mediator, and the death of a divine Sacrifice. Surely the Evolution theory converts into a gigantic farce the old, old story of the cross, and makes the whole Scripture a jargon of unmeaning folly.

"For God so loved the world, that he gave his only-begotten Son, that whosoever believeth in him should not perish, but have everlasting life." The amazing sacrifice required to effect a remedy for the horrible condition called sin is an everlasting protest against the idea that man could be developed or educated out of it in any other way. Like oil and water, the two systems will never mix. The Evo-

Nothing is more abhorrent to a reasonable man than an appeal to a majority; for it consists of a few strong men who lead, of knaves who temporize, of the feeble who are hangers-on, and of the multitude who follow without the slightest idea of what they want. — GOETHE.

lution theory is the modern scientific way of man's being his own savior; the Christian religion points us to "the Lamb of God, which taketh away the sin of the world."

(c) One more count against the theory remains to be noted in this chapter, for we have also asserted that its practical outworkings are threatening the very foundations of civil and religious liberty.

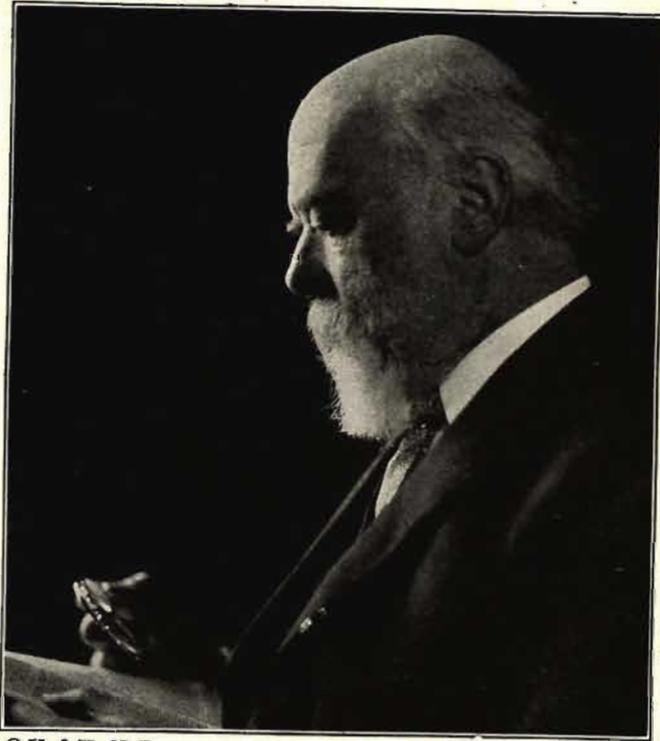
Those who have watched the general trend of civilized society during the last half century or so can not shake off the terrible foreboding that creeps over them as they watch

the grim, red Terror loading its pistol and sharpening its dirk while awaiting the opportune time to strike. Statesmen feel as sure of the inevitable result as of to-morrow's dawn; their efforts are all of a nature to postpone as long as possible the inevitable crash, praying and hoping that the deluge may not come in their day. And the generally accepted doctrine that all progress, whether in the individual or the race, is to be reached only by a ceaseless struggle for existence and survival at the expense of others, has certainly stimulated to an intense degree the popular unrest and discontent of the present day.² On every side we see it intensifying as never before the ingrained selfishness of human nature, and, in every pursuit of life, embittering the sad struggle for place and power. Perhaps above any other one cause the ethics of this doctrine has been the chief means of firing the blood and quickening the pace of the present strenuous age, until the only apparent outcome will be the wreck and anarchy of Revolution, all the more hopeless and horrible this time because it will be universal over the globe, conterminous with the bounds of civilization.

Thus far all are comparatively agreed. Among the various conflicting remedies for these tendencies we can distinguish two that accord well with the theory we are discussing, and which are, in fact, the outgrowth of the universal belief in the doctrine of Evolution:

1. The subordinating of every minor interest to the supreme idea of corporate progress, the progress of the state or the progress of the world. This involves the curtailing of individualism wherever it conflicts with the fancied necessities of the whole.

² See Sir William Dawson's "Modern Ideas of Evolution." (1890.)



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SIR OLIVER LODGE

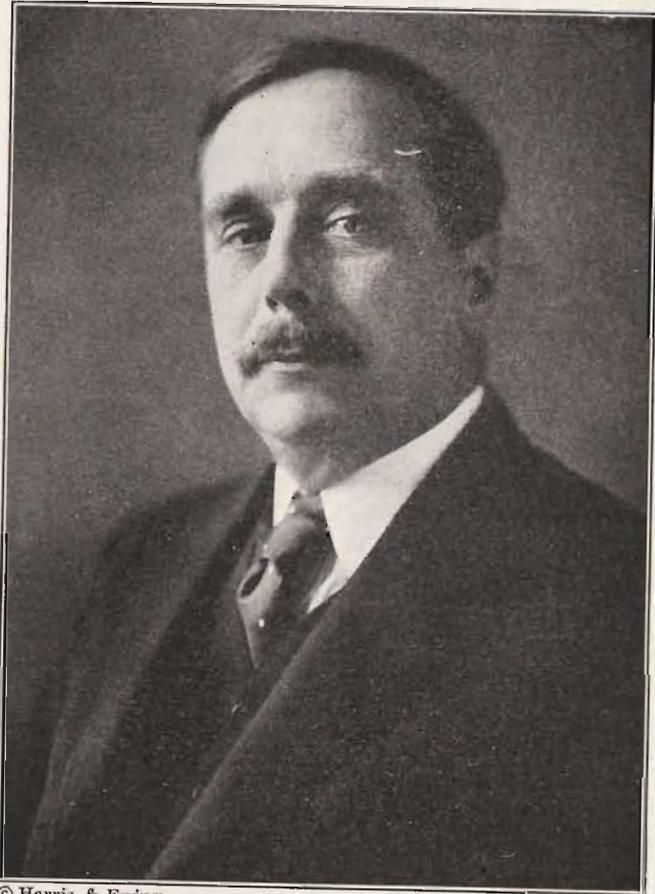
The following from this well-known scientist and writer well illustrates the paganized teachings which have become widely popular in our day, largely as the result of the widespread acceptance of the Evolution doctrine. Says Sir Oliver Lodge: "As a matter of fact, the higher man of to-day is not worrying about his sins at all, still less about their punishment. His mission, if he is good for anything, is to be up and doing; and in so far as he acts wrongly or unwisely, he expects to suffer. He may unconsciously plead for mitigation on the ground of good intentions, but never either consciously or unconsciously will any one but a cur ask for the punishment to fall on some one else, nor rejoice if told that

2. Ecclesiastical blending or co-operation in securing results desired by the leading religionists.

It is not alone the Peace Congress delegates who are working for the "parliament of man, the federation of the world," or for the republic of the world, as it is variously expressed. Consciously or unconsciously, every public-ownership man, every Socialist, every imperialist, every trust magnate, is contributing something to the swelling cry of those enthusiastic but deluded voices that are now seeking to carry out over the whole world what has been re-enacted over and over again all down through the years whenever a community or a nation found themselves unable to govern themselves, and with hurrahs and clapping of hands invited a Cæsar or a local chieftain to assume the task. The dismal failure to accomplish the object sought, which has so inevitably followed with mathematical precision in the past, seems not in any way to abate the zeal of the political enthusiasts of the present, for few have ever read history to any profit. But the point to be especially noted here is that practically every Socialist, every imperialist or world federationist, bases his whole argument ultimately on the evolutionary progress of the race or the world.

A socialized gospel, which seeks to transform society *en masse* by means of ethical goody-goody platitudes and truisms, has very widely taken the place of the old-time gospel of salvation for the individual, as preached by Paul, Luther, Wesley, Spurgeon, and Moody. This socialized religion is much concerned with the environmental influences

it already has so fallen." — "Man and the Universe," page 204. According to this dictum, all true Christians are mere curs — dogs; for the essence of the gospel of Christ is that "Christ died for our sins," and God "hatb laid on him the iniquity of us all"



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H. G. WELLS

Mr. Wells is a novelist and essay writer, whose recent book professing to give an outline of the world's history is merely propaganda for the Evolution doctrine and the ape origin of man.

surrounding men and women, apparently basing its entire program on the idea, now almost universally discredited by scientists, that the effects of environment are accumulated and faithfully transmitted in heredity. And it is not a very long step from this position to that where the church as a body will seek by legislation to transform the world into her way of thinking and acting. If the kingdom of God is to be set up here on earth by the church before she can expect her absent Lord to return to her, she must hasten to prepare the world to receive him as its King.

For many years these things have been discussed by the pulpit and the press, with the greater number of all the real efforts of the church for the good of the world devoted more to the salvation of the state than of the individual, till the contagion of this trust fever has quickened their pulses, and in the "Federal Council of the Churches of Christ in America" we already see a very important step taken in the direction of at least a federal union of all the "orthodox" churches for the enforcement of those things that are held by them in common. But in the light of the history of the first centuries, when a similar work was carried on and developed into the Catholic Church, with the enforcement of its regulations by civil law, what can be expected from a similar work in our day but a revival of that curse of all the ages save our own, religion by law?

And it is not at all difficult to trace it all largely to the scientific and philosophic teachings of the day; for it is the younger men, those educated in an atmosphere of Evolution and "Higher Criticism," and accustomed from youth to sneer about the "nursery yarns" of Genesis, who are leading out along these lines. In the Dark Ages, when the

Bible was shut away from the people, their ignorance of its truths resulted in crime and lawlessness on every side, and in their having no protection against their civil and ecclesiastical oppressors. To-day, the destruction of faith in the Bible by this false science is accomplishing the same results as the destruction of the Bible itself. On every hand we see iniquity abounding, and the people with no care for, or knowledge of, their danger from the religio-political combinations now forging the chains for their enslavement.

A world-wide organization or combination for the salvation of society as a mass, which must result in a religio-political despotism, is the logical outcome of the Evolution theory; its triumph is only a question of time; and its strength and universality when established can be estimated only by the popularity of the teaching which for a half century has been preparing the world for just such a state of things, by teaching that the struggle for existence is the normal and not an abnormal condition of society; that man has developed from the lowest beginnings through this process, and can therefore complete the work of self-regeneration and purification without any outside "supernatural" help, or "restitution of all things."

The fall of man is the very foundation of revealed religion. If this be taken away, the Christian system is subverted, nor will it deserve so honorable an appellation as that of a cunningly devised fable. — JOHN WESLEY, "WORKS," Vol. I, p. 176.

*But John Wesley's philosophy of life
was "Think, and let think."*

CHAPTER III

The Evidence of Archeology

THUS far we have been reasoning from the known to the unknown; from the more perfectly to the less perfectly understood. We have tested the Evolution theory by comparison with standards of truth concerning the value of which every Christian is perfectly assured, standards infinitely more certain than any conclusions arrived at by the gropings of the unaided human thought. We have seen that the theory of man's having been made through a long series of developing germs, mollusks, quadrupeds, and savages, up to his present state, is not only contrary to the express statements of the Bible regarding creation, but, if true, would make the Creator a tyrant and a fiend, and is thus contrary to the whole tone and spirit of Christianity from Genesis to Revelation; and that, furthermore, its general acceptance is preparing the way, as nothing else could ever have done, for a religio-political despotism crushing out individual freedom of thought.

The arguments in favor of organic Evolution are confessedly very obscure and intricate; and now, having tested the general trend of the doctrine by other and far more certain standards of truth, we have found it wanting on at least three distinct counts.

But this much being now settled, and the theory having been found to be somehow a terrible delusion, we must next seek to find out just how and where the mistake has been made; just how the scientific mind has been tricked

and its reason beguiled into believing it; for we can not think that men like Mivart, Fiske, Romanes, and Huxley were guilty of palming off upon the world what they themselves knew to be only a delusion.

Our next means of testing the theory under examination must be in the field of history and archeology. If man has sprung from the lower forms of life up through the savage to the civilized condition, we ought to be able to find many things confirming it in the conditions revealed at the dawn of history. And it is really most natural thus to work backward upon the supposed history of development; for there are certainly some leading facts about man's early history that are many times more certain than most of the supposed generalizations of biology and geology.

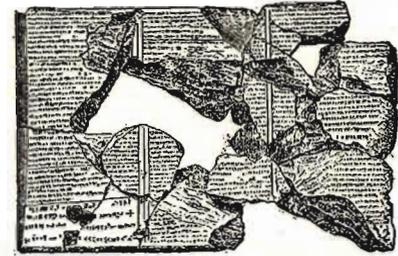
What, then, are the conditions revealed as the curtain rises on the first scenes of recorded human history? Briefly, and without attempting to offer much proof for the statements made, we may say that we have well-civilized tribes scattered over all the continents, in Peru, Mexico, the central plain of North America, western Europe, Egypt, Babylonia, Assyria, and the East, each possessing a civilization seldom equaled, save in very modern times, and in some respects not excelled by any, and yet of such a character, and so undeniably related to one another, as to prove that these scattered civilizations must have had a common source in some other civilized state before they were thus dispersed. It is also very strongly suggested in many ways that this primal home of civilized man before his dispersion is somehow lost in the geological changes which have taken place. In addition we shall find that the history of languages confirms the record of Babel; while all nations have not only

traditions of the flood, but of an Edenic beginning; and at this first glimpse we get of human society, they give us in their social customs, and embalmed in the dry husks of their dead formalism and idolatry, gleams of lofty ideals and forms of prayer to one supreme God, the Creator, — all traces of a more intellectual, a more truly human state in the dim forgotten past, the afterglow of a once brighter day.

We may first note, then, that about fifteen or twenty centuries before the Christian

era, there were peoples possessed of a good degree of civilization spread over practically all the northern hemisphere, and over some tropical countries. The monuments of Peru, Mexico, and Yucatan, which are the astonishment of every traveler, testify to this fact for the localities which they represent. Without giving a detailed account of these stupendous remains, we may note that there are many points about these peoples which connect them closely with ancient Egypt and the far East.

1. The Central American architecture in many ways resembles that of Egypt.



A CHALDEAN DELUGE TABLET

"The Babylonians divided their history into two great periods: the one before, the other after, the Flood." ("Babel and Bible," by Frederick Delitzsch, page 42.) And the Babylonians had just ten "kings" before the Flood, just as the Bible has ten antediluvian patriarchs. No reputable scholar now doubts that these accounts of the deluge represent a real historical fact.

2. The Peruvians, Aztecs, and other American tribes embalmed their dead, as did the Egyptians and some others of the ancient Oriental nations.

3. The hieroglyphic writings of the Mayas, so abundant

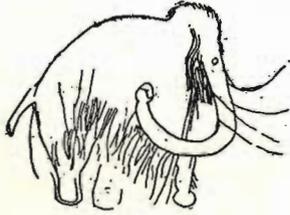
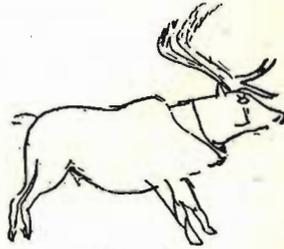
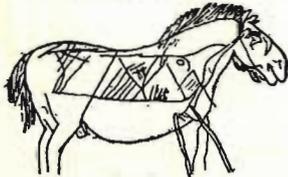


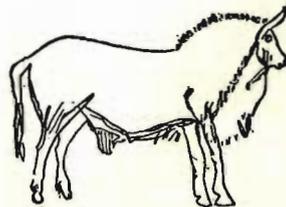
Figure of a mammoth chiseled on the walls of caves in southern France. This great elephant must have been contemporaneous with the man who drew his picture



Reindeer



Horse with saddle



A gnu, or perhaps a bison

PICTURES OLDER THAN THE FLOOD

on the walls of their ruins in Central America, are closely related to those of Egypt.

4. "It is a very remarkable fact," says Alfred Maury, "that we find in America traditions of the deluge coming infinitely nearer to that of the Bible and the Chaldean religion than among any people of the Old World."

5. The skeletons of the Peruvians, mound-builders, etc.,

show a remarkable degree of what scientists call "platicnemism," or flattening of the tibiae or leg bones, a striking peculiarity found also in many of the skeletons of western Europe, some of which, as we shall afterward see, are at least very early postdiluvian.

6. The races in America give us very numerous representations of the elephant (or the mammoth), which show a close resemblance to the drawings of the same animal on the cave walls of southern France, which certainly carry us back near to the time of the deluge, or perhaps beyond.

Taken together, the above facts clearly prove:

(a) That the ancient American races are closely connected with the most ancient civilizations of the Old World.

(b) That they were in a civilized state themselves before they separated from the latter.

(c) That this dispersion must have occurred long centuries before the Christian era, probably —

(d) Very soon after the flood — the latter being a well-defined event for which we shall find abundant scientific proof.

If we go to the Old World, we have first the *dolmens*, or *cromlechs*, scattered over almost all Europe, North Africa, and parts of Asia. Some will insist that it was a rude state of life to which these people had attained. Certainly they had a hard lot, and possessed few of the comforts and luxuries of life. But we can not believe that these people who thus took such pains to construct elaborate and substantial tombs for their dead, involving with their rude implements a degree of skill and patient labor which we can scarcely imagine — we can not believe that these people were possessed of any narrow outlook on life, or were of

the happy-go-lucky type which we call savages. It is true they had no electric lights or morning papers, no telegraphs or telephones, not even brandy or cigars, all of which are, in the fancy of some superficial thinkers, the criteria of civilization. But we must own that they possessed what we call pluck to an unexampled degree.

Works left by the very earliest races on all the continents testify that these people possessed a strength of mind and body unequalled at the present time. Surely it required indomitable courage to attempt, and much patient perseverance to carry out, these works, before which any modern race of men, I care not who, would quail utterly, and which they would refuse to attempt, if limited, like these their ancestors, to the rude implements which they could individually manufacture from the rocks and ores. Compared with the men who built the Sphinx and the Pyramids in Egypt, Birs Nimrud at Babylon, the temples and teocallis in Cambodia and Java, and the almost identical, though larger ones in Mexico and Central America, Stonehenge in England, or even the mound of Cahokia in Illinois, we moderns are sadly degenerate in physical and moral courage.

We must also own that these ancient observers of nature, thus scattered almost contemporaneously over all the continents, who understood all the leading principles of astronomy, including the rotundity of the earth, twenty centuries or so before the Christian era, and who in their wonderful works display a mastery of all the leading principles of civil and mechanical engineering, were not without mental training, albeit they had no sumptuously bound books, and no morning papers delivered at their door. With no facilities to help them, they accomplished wonders; we accom-

plish less with every facility. Have we evolved from them by development, or have we degenerated?

But let us glance briefly at some of the details of one of these peoples, ancient Egypt. It is only one out of a half dozen or more, but is more familiar to us, because its climate, together with some other causes, has contributed to preserve to our times a better record of those ancient days. But, like that of the contemporary peoples elsewhere, there is no evidence that the civilization of Egypt was de-

The Mosaic age, instead of coming at the dawn of ancient Oriental culture, really belongs to the evening of its decay. The Hebrew legislator was surrounded on all sides by the influences of a decadent civilization.—A. H. SAYCE.

veloped in that country itself, and abundant evidence to show that it must have been received full-grown from some other locality — doubtless through Babylon from the antediluvian world.

A writer in *Blackwood's Magazine* thus expresses it:

As we have not yet discovered any trace of rude, savage Egypt, but have seen her in her very earliest manifestations already skilful, erudite, and strong, it is impossible to determine the order of her inventions. Light may be thrown upon her rise and progress, but our deepest researches have hitherto shown her to us only as the mother of a most accomplished race. How they came by their knowledge is matter for speculation; that they possessed it is matter of fact. We never find them without the ability to organize labor, or shrinking from the very boldest efforts in digging

canals and irrigating, in quarrying rock, in building, and in sculpture.

In the words of Ernest Renan:

Egypt at the beginning appears mature, old, and entirely without mythical and heroic ages, as if the country had never known youth. Its civilization has no infancy, and

That Babylonian law should have been already codified in the age of Abraham deprives the "critical" theory, which makes the Mosaic law posterior to the prophets, of one of its two main supports. The theory was based on two denials—that writing was used for literary purposes in the time of Moses, and that a legal code was possible before the period of the Jewish kings. The discovery of the Tel el-Amarna tablets disproved the first assumption; the discovery of the code of Khammurabi has disproved the second. Centuries before Moses the law had already been codified, and the Semitic populations had long been familiar with the conception of a code. The answer of archeology to the theories of modern "criticism" is complete; the law preceded the prophets, and did not follow them.—A. H. SAYCE, "MONUMENT FACTS," pages 69, 70, 83.

its art no archaic period. The civilization of the old monarchy did not begin with infancy. It was already mature.

The Egyptians were evidently a cultured people when they entered the Nile valley. And not the least proof of this culture is the moral and religious ideals they then had. As another author expresses it:

The civilization of Egypt at its first appearance was of a higher order than at any subsequent period of its history, thus testifying that it drew its greatness from a fountain higher than itself. It was in its early days that Egypt worshiped one only God; in the latter ages this simple and sublime belief was buried under the corruptions of polytheism.—*"Atlantis," page 131, by Ignatius Donnelly.*

But in this proof of a very intimate connection with those who handed down in unbroken line this sublime truth from the long-lost Eden, the Egyptians were not alone. Those marvelous books of the ancient Hindus, "embodying the earliest system of philosophy which we possess," reveal a

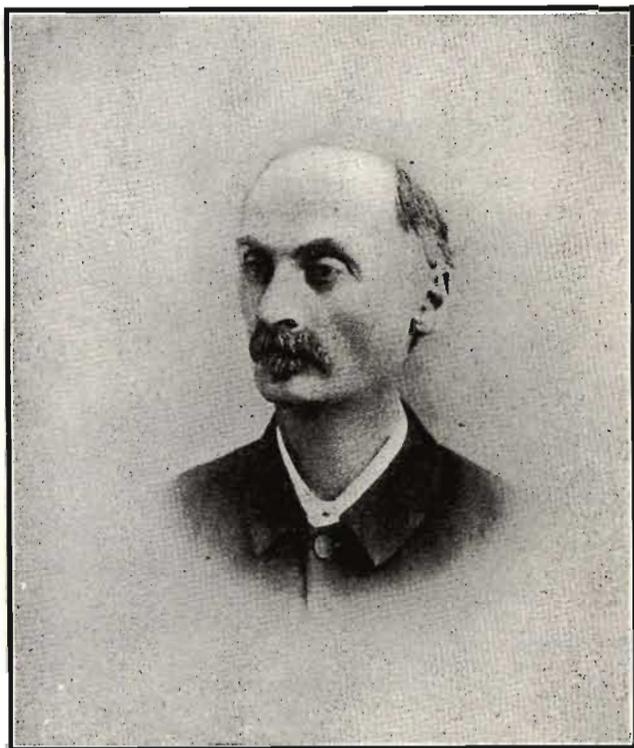
Centuries before Abraham was born, Egypt and Babylonia were alike full of schools and libraries, of teachers and pupils, of poets and prose-writers, and of the literary works which they had composed.—A. H. SAYCE.

similar state of affairs, as do the clay tablets of ancient Babylonia.

"The religion of the Veda knows no idols," says Max Müller; "the worship of idols in India is a secondary formation, a degradation of the more primitive worship of ideal gods."

The following, also, from the Duke of Argyll, is to the point:

We have found in the most ancient records of the Aryan language proof that the indications of religious thought are higher, simpler, and purer as we go back in time, until at last, in the very oldest compositions of human speech which



A. H. SAYCE (1846-)

Professor in Oxford University, England

Probably the most accomplished living authority on the inscriptions recovered from the ancient civilizations of the Orient. He started out in life as a "Higher Critic," but his discoveries in the inscriptions confirming the Old Testament records soon turned him face about, until perhaps no single writer has done so much to bring discredit upon not only the results but the *methods* of the "Critics" as this "versatile and Protean scholar." It is supremely amusing to see how Professor Cheyne ("Found-

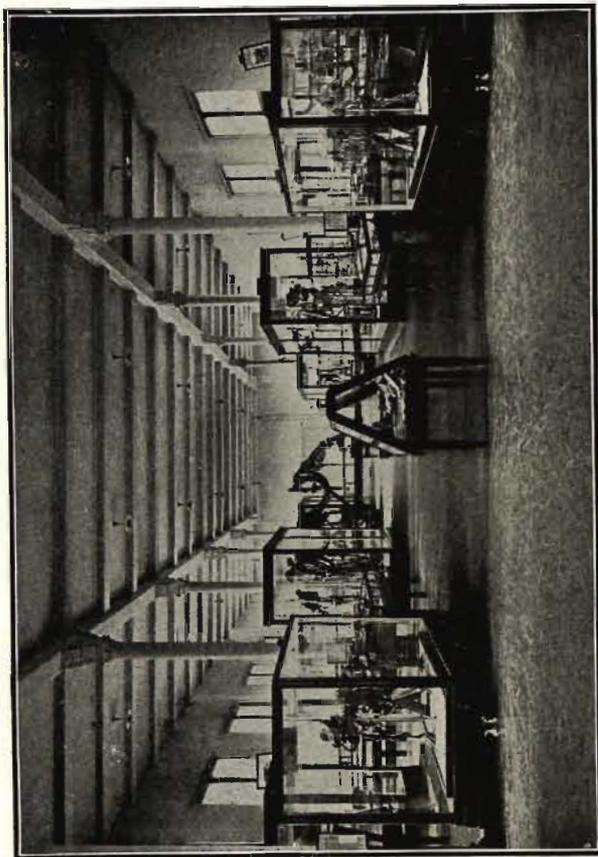
have come down to us, we find the Divine Being spoken of in the sublime language which forms the opening of the Lord's prayer. . . .

All we can see with certainty is that the earliest inventions of mankind are the most wonderful that the race has ever known.

The first use of fire; the discovery of the methods by which it can be kindled; the domestication of wild animals; and, above all, the processes by which the various cereals [oats, wheat, barley, etc.] were first developed [?] out of some wild grasses,— these are all discoveries with which, in ingenuity and importance, no subsequent discoveries can compare. They are all unknown to history — all lost in the light of an effulgent dawn.

To those who have never thought much along these lines it may not seem that the domestication of the horse, ox, sheep, goat, etc., and the cultivation of the grains, is anything very wonderful. But with a little further thought it will be seen that we have in these arts, or discoveries, or whatever we choose to call them, the broad and efficient foundations of civilized life, without which civilization of any kind (in our present state of climate, etc.) is impossible. But when we put with this the very important additional fact that civilization is always an inheritance, that in no single case since the dawn of history has a savage race ever thrown off its savagery, and developed an agricultural life and a civilization of and among themselves, without having learned it from some other people, we see the records of Genesis confirmed, and realize that man did not start on

ers of Old Testament Criticism," pages 231-241) almost begs him to "be a good boy" and come back to them (the Critics), and think of the good (?) to "scientific" criticism his talents might accomplish by so doing. For answer the reader ought to study Sayce's "Monument Facts and Higher Critical Fancies."



THE HALL OF FOSSIL VERTEBRATES
American Museum of Natural History, New York City

this earth as a savage, but only a "little lower than the angels." Through luxury and loss of moral self-control, nations have time and again relapsed into barbarism, or semi-barbarism; but the moral development which must necessarily precede civilization has never yet been self-originated by any people in any age. As, in biology, life can come only from antecedent life, so are civilization and moral development only received from those who already possess them.

Returning now to the problem of the domestic animals and plants referred to in the above-quoted words of the Duke of Argyll, we have, we think, proof absolutely conclusive that they must first have been acquired by man in that vastly more favorable climate and soil of the ancient world, before the great world-catastrophe of the deluge. The most common domestic food plants are not found wild in any spot on earth, and will not long survive without human care in any climate or soil that we now possess. Where did they come from, if not from that Eden world before the deluge, when, as geology shows us, "the whole northern hemisphere enjoyed a kind of perpetual summer;" when palms and other tropical plants grew in England; and luxuriant ivies, grape-vines, oaks, walnuts, and magnolias grew in Greenland "within eleven degrees of the pole"? (James Geikie, "Historical Geology," page 76.) We confidently affirm that no other explanation is possible.

Why is it that the origin of maize, rye, oats, barley, and wheat,—the plants essential to civilization,—"is totally lost in the mists of a vast antiquity"? Surely we must shut our eyes to all the evidence in the case if we deny that this origin, and hence the origin of civilization, is lost some-

where in the geological changes which we know positively have taken place since man was upon the earth. Only by the dispersion of the survivors of a world-catastrophe, it seems to me, can we account for this simultaneous appearance in different countries of full-grown civilizations, without the slightest indication or indeed the possibility that any of those peoples developed it of themselves.

Again we quote from one who felt the irresistible power of this argument:

We can not consider all these evidences of the vast antiquity of the great inventions upon which our civilization mainly rests, including the art of writing, which, as I have shown, dates back far beyond the beginning of history; we can not remember that the origin of all the great food-plants, such as wheat, oats, barley, rye, and maize, is lost in the remote past; and that all the domesticated animals, the horse, the ass, the ox, the sheep, the goat, and the hog, had been reduced to subjection to man in ages long previous to written history, without having the conclusion forced upon us irresistibly that beyond Egypt and Greece, beyond Chaldea and China, there existed a mighty civilization, of which these states were but the broken fragments.—“*Atlantis*,” page 455.

Very little more remains to be said about man's earliest history. Here are two facts about the history of languages which, taken together, are a good commentary on the record of Babel in Gen. 11: 4-8:

It must be recollected that language is not merely the conventional instrument of thought, but, to a great extent, its creator, and the mold in which it is cast. The mold may be broken, and races abandon old and adopt new languages by force of external circumstances, such as conquest, or contact with, and absorption by, superior races; but there

is no instance of its being so transformed from within as to pass into a totally different type. Nor can we very well see how root-words once attached to fundamental ideas, such, for instance, as the simpler numerals, should come to be forgotten, and new and totally different words invented.—S. Laing, “*Modern Science and Modern Thought*,” page 102.

Languages, as well as history, point backward to a lost civilization and a golden age.—NIEBUHR.

And yet this same author, Evolutionist though he is, is constrained to acknowledge that —

the best authorities tell us that a list of fifty to one hundred languages could be made of which no one has been satisfactorily shown to be related to any other.—*Id.*, page 100.

No comment on these two facts is needed here. They certainly confirm in a very striking way the Biblical record, and are in accord with the old Babylonian inscription that “He [God] gave a command to make strange their speech;” also the tablet of Nebuchadnezzar, concerning “the most ancient monument of Borsippa,” that “since a remote time people had abandoned it, without order expressing their words.”

We can not go into the subject of the world-wide traditions of the deluge. This chapter is already too long, and our readers all know of the Chaldean deluge tablets, since the discovery of which no reputable scientist has denied that

Found in the Babylonian Bible
 and
 full then in the old world,

they must represent an actual fact which had burned itself into the memory of all the early races of the world. In the words of Lenormant, "Far from being a myth, the Biblical deluge is a real and historical fact." Our subsequent chapters on geology will develop the evidences of it as a scientific fact.

So much then for the testimony of history and archeology on the subject of Evolution. It is needless for us to sum up the matter by saying that they lend no countenance to this theory. Such a statement would be altogether too tame. Rather must we say that we could scarcely wish for better evidence that "God hath made man upright; but they have sought out many inventions."

CHAPTER IV

Darwinism

WHAT is a species? An answer to this somewhat perplexing question is essential to a proper understanding of this phase of the doctrine of Evolution.

"A species," says Huxley, "is the smallest group to which distinct and invariable characters can be assigned." The Standard Dictionary says that the term is used for "a

The attempt to find the transition from animal to man has ended in a total failure. The missing link has not been found, and will not be found. Man is not descended from the ape. It has been proved beyond a doubt that during the past five thousand years there has been no noticeable change in mankind.—VIRCHOW, IN AN ADDRESS, VIENNA, 1902.

classificatory group of animals or plants subordinate to a genus, and having members that differ among themselves only in minor details of proportion and color, and are capable of fertile interbreeding indefinitely." It also adds: "In the kingdoms of organic nature [plants and animals] species is founded on identity of form and structure, both external and internal, and specifically characterized by the power of the individuals to produce beings like themselves, who are also in turn productive."

To make the matter a little more plain, we quote from

the late Prof. J. Le Conte, whose writings on the subject of Evolution have had a wide circulation:

There are two bases on which species may be founded. Species may be based on form, morphological species; or they may be based on reproductive functions, physiological species. By the one method a certain amount of difference of form, structure, and habit, constitute species; according to the other, if the two kinds breed freely with each other, and the offspring is indefinitely fertile, the kinds are called varieties; but if they do not, they are called species.—“*Evolution and Religious Thought*,” page 233.



THE DOMESTIC YAK (*Bos grunniens*) OF INDIA

This so-called species is very different in appearance from our domestic cattle (*Bos taurus*), and yet the two breed freely together, proving that they are not distinct species, but only varieties. Many similar examples might be given.

contrasted with varieties or races.” This is a very important point, for a great many uncandid writers on the subject of Evolution have tried to evade this test entirely.

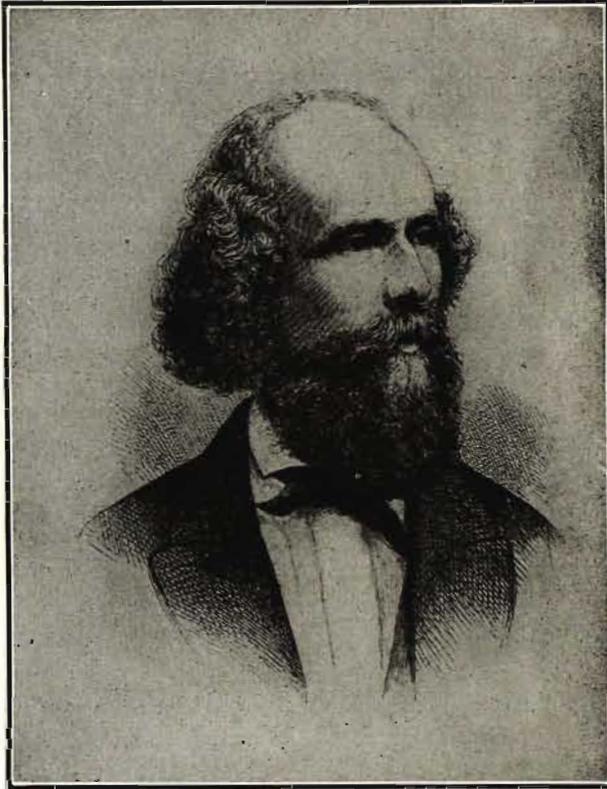
Darwinism, then, professes to show how the species now in existence probably originated from previous simpler species by processes now in operation around us, the chief one of which is known as “natural selection.”

There are, indeed, many proofs that various types now classed as distinct species must have had a common origin.

For instance, the yak and the zebu of India, and the bison which formerly inhabited the great North American plain, are all classed as distinct species, and, indeed, are in many points strikingly dissimilar from one another and from our common domestic oxen. And yet from the physiological test given above they can not really be true species, for it is a well-known fact that they will all breed freely together, those of India having been crossed with domestic cattle from time immemorial, while in the old colonial days of America the same was frequently done with the bison. Hence we may feel almost certain that these species at least, perhaps all or nearly all of the dozen or so species of the genus *Bos*, have all descended from some common ancestors. There are some twenty or more species of wild pigs scattered over the Old World, which we are assured by the highest authority would probably “breed freely together.” (“*Mammals, Living and Extinct*,” pages 284, 285.) Moreover, we know that the extremely diverse types of dogs, scattered in all climates, are not only perfectly cross-fertile among themselves, but breed freely with wolves and others of the *canidæ*, so that this whole family may possibly represent but one original stock. Hence, a broad view of species would lead us to trace a real genetic relationship between many quite diverse types of animals, just as we are assured that the Negro, white, and yellow races of mankind are all descended from a common stock.

But Darwinism goes very much further than this. Let me state the theory as given by Le Conte:

According to Darwin, and all[?] biologists of the pres-



JOSEPH LE CONTE (1823-1901)

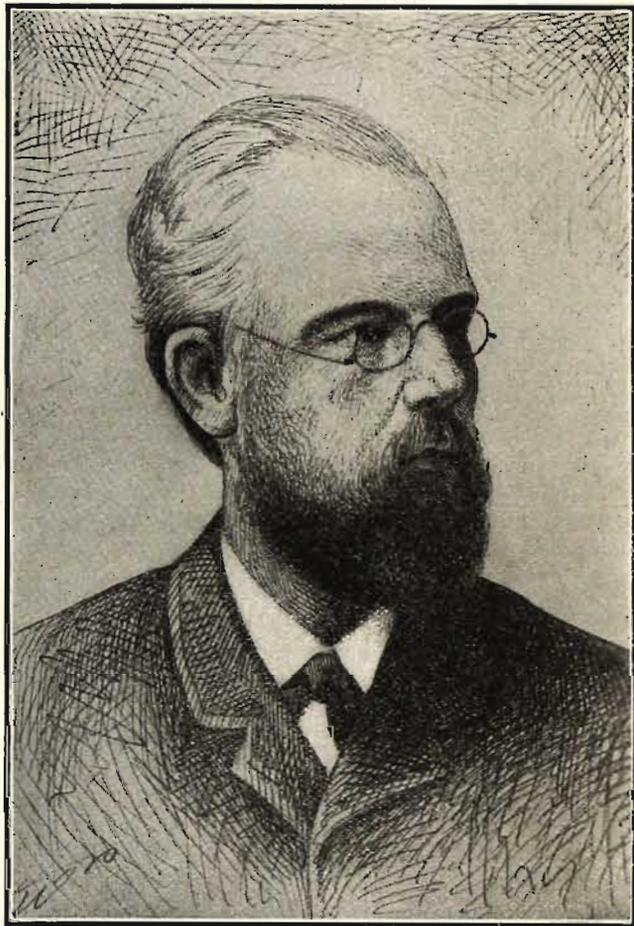
For over thirty years Professor in the University of California

His genial personality and charming literary style did much to popularize the study of geology in America, and made people forget his somewhat dogmatic manner and faulty reasoning when advocating the Evolution doctrine. His writings have done much to make "Theistic Evolution" acceptable to the religious people everywhere.

ent day, species are variable, without limit, if only the causes of change are constant and slow enough in their operation, and the time long enough. A species must be in harmony with its environment; for that is the condition of its existence. Now, if the environment change, the species must tend to change slowly, from generation to generation, so as to readjust its relations in harmony with the changing environment. If the change of environment be slow, the readjustment may be successful, and the species will change gradually into another form, so different that it will be called a different species, especially if the intermediate gradations be destroyed. If the change in the environment be too rapid, many species, especially the more rigid, will be destroyed, while the more plastic may survive by modification. Thus, at every step in the evolution of the organic kingdom, some species have died without issue, while others have saved themselves by changing into new forms in harmony with the new environment. Comparing to a growing tree, some branches overshadowed die, while others push on for light, forming new lateral buds, and dividing as they grow. By continued divergent change, species gradually become genera; genera, families, etc. Thus, varieties, species, genera, families, orders, classes, etc., are only different degrees of differences formed all in the same way. Varieties are only commencing species, species commencing genera, and so on. In a perfect classification, varieties, species, genera, families, orders, classes, etc., are only different degrees of blood-kinship.—*Evolution and Religious Thought*, pages 72, 73.

Now in this statement of the case we may note three assumptions which are contrary to both the Bible and true science. I give them here in outline, and shall then briefly discuss them somewhat. These assumptions are:

1. That species are variable without limit.
2. That the time at our command, that is, the time since life has been on the globe, has been long enough to



AUGUST WEISMANN (1834-1914)

Professor in the University of Freiburg, in Baden

develop in this way all the countless forms of life now in existence.

3. That the general tendency of unlimited variations through almost unlimited time would be always in an upward direction, i. e., toward a more complex development.

Regarding the first of these assumptions, we may briefly say that there has not yet been a single new species, among either plants or animals, produced by either natural or artificial selection, since man began to observe and experiment. When we say "new species," we mean new physiological species as defined above by Le Conte and the Standard Dictionary. In fact, most scientists acknowledge that, however plastic they may imagine them to be in the abstract, and especially in times long past, species are now fixed within certain limits, beyond which we have never yet been able to carry any product of variation.

Before passing on to the second and third assumptions mentioned above, as involved in the Darwinian argument, we must note briefly the great and surprising change of attitude on the part of the scientific world within the past few years.

It started about 1887, when Weismann, Wallace, Lankester, and others began to show that changes in the individual brought about by environment or by use and disuse

August Weismann's great and lasting contribution to science has been in showing that characteristics acquired by a parent are not transmitted to offspring. And yet in point of strict logic and of scientific proof, this idea of the transmission in heredity of acquired characters is absolutely essential for any and every scheme of biological Evolution. As Herbert Spencer expressed it: "Close contemplation of the facts impresses me more strongly than ever with the two alternatives—either there has been inheritance of acquired characters, or there has been no Evolution."—*Contemporary Review*, February-March, 1893.

of organs, are positively not transmitted to offspring. Other Evolutionists, with Herbert Spencer among them, would not at first listen to such an idea at all, and were very emphatic in pointing out that natural selection alone can explain neither the origin of varieties, nor the first steps in advance toward usefulness. "An organ must be already useful before natural selection can take hold of it to improve it." It can not make a thing useful to start with, but can only make more useful what already exists. Until these developing limbs or organs were decidedly useful to the individual or the species, they would be only a hindrance, to be removed by natural selection, instead of being preserved and improved. But, in this view of the case, what single organ of any species would there be that must not thus have appeared long before it was wanted?

The elaborate discussions of these questions, which have been going on now for more than a score of years, have only emphasized the fact that each side was right in the objections which it urged against the general doctrine of Evolution as presented by Darwin. The one party, clinging tenaciously to the Darwinian factor of natural selection, have shown that use and disuse do not apply to plants, while even among animals there are numerous examples of complicated structures which have arisen somehow, "without the aid of use-inheritance, nay, in spite of its utmost opposition." (Ball's "Effects of Use and Disuse," pages 15, 16.) The other party, though modifying considerably the old Lamarckian factors of use and disuse, have become dismayed at the prospect of having to explain Evolution without them, because, in the case of every organ of every distinct type, "there was a time when there were no others"

(Le Conte, "Evolution and Religious Thought," page 94), Herbert Spencer declaring that "either there has been inheritance of acquired characters, or there has been no Evolution." Or, as it is expressed in a quotation with which Hugo de Vries closes his recent book, "Species and Varieties" (pages 825, 826), "Natural selection may explain the survival of the fittest, but it can not explain the arrival of the fittest."

Between these two parties there is certainly very little left of Darwin's doctrine; for if an individual positively can not transmit to his posterity what he has acquired in his lifetime, how can he transmit what he has not got himself, and what none of his ancestors ever had? And if natural selection can not start a single organ of a single type, what is the use of discussing its supposed ability to improve them after the machinery is all built?

No wonder Sir William Dawson could say, in 1891, that "Darwinism seems to have entered on a process of disintegration;" or that a German author more recently could say that "Darwinism, for scientific circles, at least, is at its last gasp. — *Nature*, Nov. 28, 1901, pages 76, 77.

Still more recently we have the following summary of this modern scientific civil war by the veteran Von Hartmann, as quoted from a German magazine:



THE ORANG-UTAN
(*Simia satyrus*)

In the sixties of the past century the opposition of the older group of savants to the Darwinian hypothesis was still supreme. In the seventies the new idea began to gain ground rapidly in all cultured countries. In the eighties, Darwin's influence was at its height, and exercised an almost absolute control over technical research. In the nineties, for the first time, a few timid expressions of doubt and opposition were heard, and these gradually swelled into a great chorus of voices, aiming at the overthrow of the

Darwinian theory. In the first decade of the twentieth century, it has become apparent that the days of Darwinism are numbered.

However, it is somewhat difficult to understand some of these recent sweeping condemnations of Darwinism (many more like the above might be given); for after learning that a certain learned man has repudiated the theory, we generally find that

he still believes in Evolution somehow — perhaps has invented a theory of his own¹ to account for what seems to be axiomatic in these days; viz., that in some unknown way the higher forms of life have been produced naturally out of the lower. The Hugh Millers and Dawsons are prac-



THE GORILLA (*Gorilla savagei*)

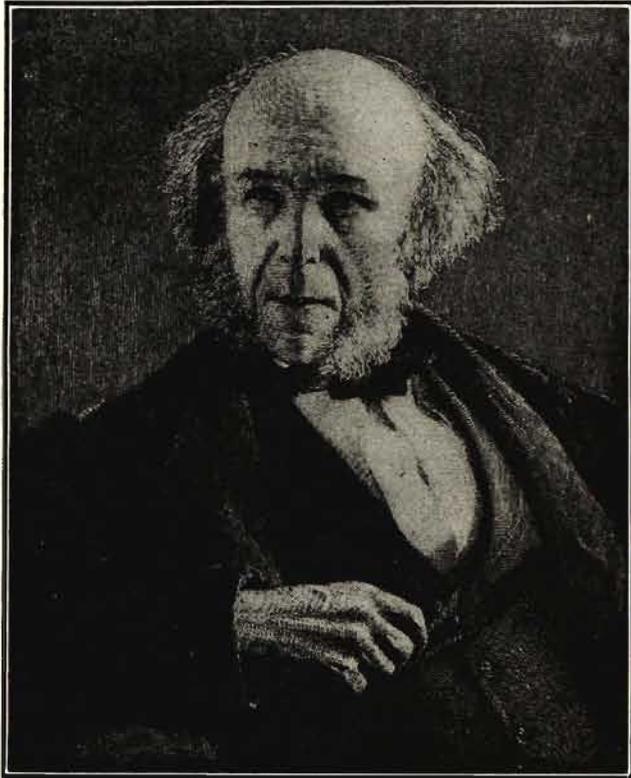
¹ A reviewer of Weismann's latest book objects to its title, "The Theory of Evolution," and says that it should rather be "My Theory of Evolution." Some of the strongest arguments against Darwinism have been formulated by De Vries and T. H. Morgan, who have substituted the theory of the "survival of definite variations." We see nothing to object to in the general argument of these writers, that new types "are born, not made by Darwinian methods," save that their much-talked-of new species have not yet gotten across the *pons asinorum* of the physiological test; for, though quite different in appearance, they are yet perfectly cross-fertile with their genetic relatives.

tically all dead. But why is this? Why will intelligent, educated men, many of them undoubtedly lovers of the Bible, thus cling to some intricate, unproved, and unprovable theory of the origin of organic forms, contrary to all known facts?

There can be but one answer. It lies in the second of the assumptions in the quotation from Le Conte previously mentioned — an assumption which all moderns take as an axiomatic fact. They all believe in geology as currently taught; they take for granted that geology has demonstrated that life has been on our globe for millions of years, and that there has been a succession of life here from the low to the high; and they think some form of connected, genetic development more reasonable than separate, successive creations, on the instalment plan. Darwin could never have found a half dozen schoolboys to listen to him, if the Geikies and Dana, Lyell and Hutton, Smith and Cuvier, had not for several generations got the educated public to accept as science the absurd pretensions of their geology.

But before touching on this second of the assumptions of Darwinism about geological time, we wish to say a few brief words regarding the third; viz., that the general results of variation must tend always in an upward direction. On the contrary, all our experience tends to show that degeneration has marked the history of every living form since their ancestors were embalmed in the rocks at the time of the deluge. Or, even considered abstractly, the variations induced or perpetuated by an unsuitable environment, such as of food, climate, etc., must inevitably tend toward the degeneration of every organic type thus affected. Natural selection, or the survival of the fittest, may tend to delay or

Contrary to facts, see fishes of the Ordovician and fishes of later periods.



HERBERT SPENCER

He spent a lifetime endeavoring to build up a "Synthetic Philosophy" of the universe, in which the evolution of man from the lower animals is one of the incidents. It had a certain vogue while he lived, but like Haeckel's works, it is rapidly losing its popularity, and will some day "be relegated to the lumber-room of science," if it is not there already. See Dennert's "At the Death-bed of Darwinism," pages 24, 25.

partly to neutralize this tendency of a hard environment to bring about degeneration of the type, but the invariable tendency of an unfavorable environment in either plants or animals is not to develop, but to degrade.²

Coming back now to the subject of geological time, we must content ourselves in this chapter with an effort to make plain the connection and logical relation between geology and Evolution. The merits of the former as a science, and the facts of the true geology — for there must be a true science of the rocks — we shall discuss in the subsequent chapters. Our object here is to show that without the baseless assumptions of geology there could not possibly be any theory of Evolution. Science would, as never before in the history of our race, stand face to face with the sublime yet awful fact of creation by the direct act of the infinite God. For what is the use of talking about the origin of species if geology can not prove that there has actually been a succession and general progress in the life upon the globe? What if no single fossil form can be proved to be intrinsically older than any other form, or than man himself, and thus these buried plants and animals be only the classification series in the life of the antediluvian world? Is it worth while talking about the development of superior types by natural selection during the paltry few thousand years thus available? Or, even granting unlimited time, by ignoring the Biblical record, what sort of scheme of Evolution can we construct, if geology can not furnish us ready-made the succession of life from the low to the high, as the skeleton or framework on which to build it? No one would dream of attempting such a feat.

² See the author's "Outlines of Modern Science and Modern Christianity," pages 213 - 220. Also the recently issued Catholic Encyclopedia, article, "Evolution."



A. G. WERNER (1749-1817)

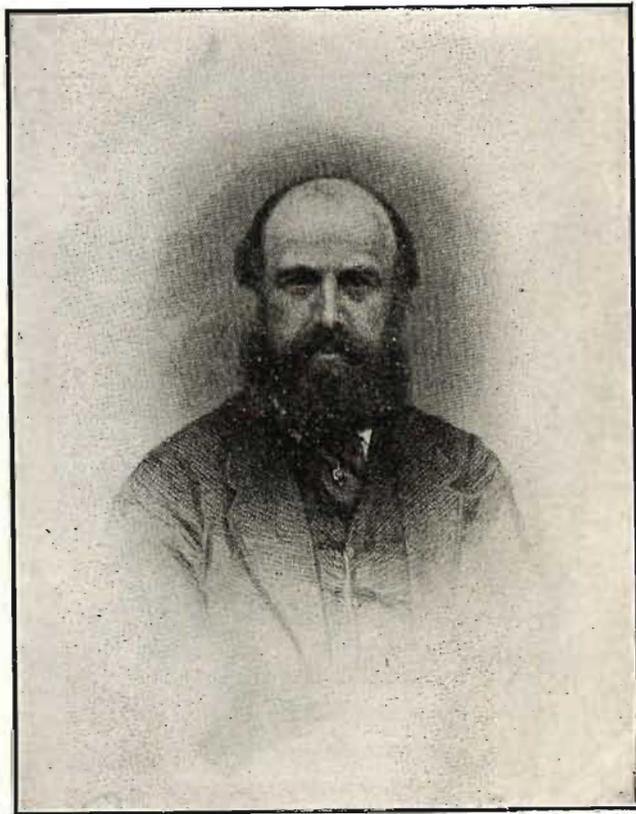
The most picturesque personality in the early days of modern science. By his enthusiastic teaching he gathered as students, and sent out as evangelists, a devoted army of disciples who "were as certain of the origin and sequence of the rocks as if they had been present at the formation of the earth's crust" (Geikie); and for many years as they traveled over Europe and America, they always seemed to find the rocks (minerals) in the same relative order as Werner had shown them in Saxony. Poor

Remembering, then, that the geological succession of life is merely the framework or skeleton of the Evolution theory, but utterly without a shred of evidence in its support, as we shall prove later, and that, from the Biblical standpoint, this same succession of life-forms from the low to the high is just the taxonomic or classification series in the life of the antediluvian world, we begin to see about how the case stands. If geology has not the most absolute proof that the fossils have really occurred in a definite chronological order, then we may well smile at the curious feat in logic of attempting to bring in this geological succession as evidence in favor of Darwinism. Surely some strange things passed for scientific proof during the past century.

To those who are accustomed to clear thinking in history, law, religion, literature, mathematics, etc., it becomes a real intellectual amusement to trace the utterly unscientific way in which this life-succession idea has been built up.³ The earlier geologists, Werner, for example, found the rocks occurring in a certain order in a few localities in Germany, and forthwith drew the astonishing conclusion that they must occur in this definite order all over the world, and really encircled the earth, like onion coats, in successive layers. It was the granites, limestones, sandstones, etc., that were thus arranged in chronological order. But in some

³ See "The Fundamentals of Geology," by the author, chapter 2.

Werner had never been outside the narrow confines of his own native country, and he died in ignorance of the thousands of subsequent discoveries that have made his "Neptunism" and his onion-coats the laughing-stock of modern science. Perhaps it was fortunate for him and for the world that he never could be induced to put his theories in writing. The three little green peas in the little green pod had more data for supposing the universe to be green than he had for telling how the world was made.



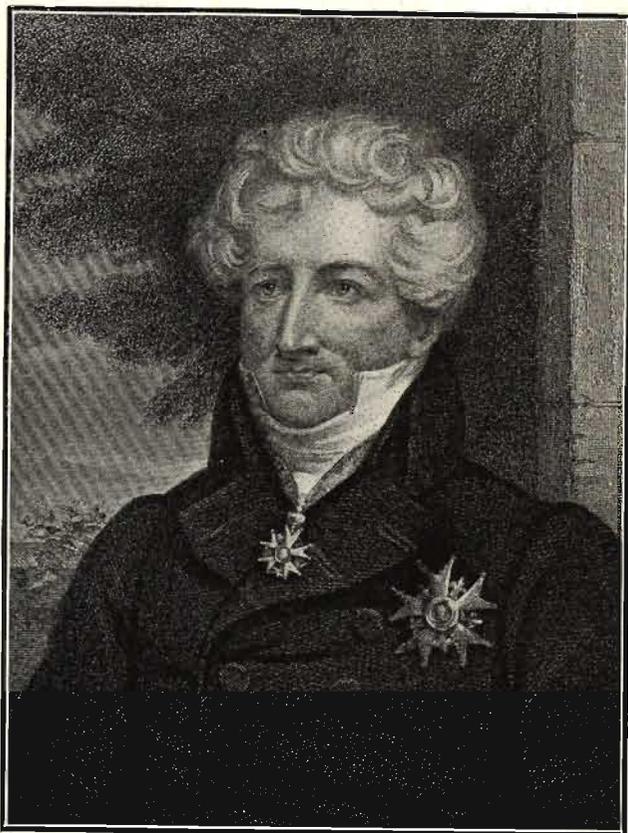
WILLIAM SMITH (1769-1839)

Called the "father of geology." He was a land surveyor who conceived the idea that the rocks could be traced out over England by the fossils they contain, and that these rocks always succeeded one another in the same relative order. He knew nothing of the rest of the world, and never professed that these fossils must always occur in this particular order all over the world, much

of these limestones, sandstones, and loose soils, Smith and Cuvier found certain fossils occurring in the different strata, and they jumped to an equally amazing generalization, that the fossils must always occur in this definite order all over the world. Werner's onion-coat hypothesis was still retained; though, instead of having successive ages of limestone making, sandstone making, etc., they had ages of fishes, of reptiles, of mammals, etc. For Werner's idea that only certain kinds of limestone (or whatever) were to be found next to the primitive or Archæan, the geologists now substituted the notion that only certain kinds of fossils were thus situated. As this crude idea was also gradually refuted by investigation, and it was found that any kind of rock (fossil) whatever may occur next to the Archæan, geologists failed to reconstruct their theories to accord with this new fact, but clung to the order of succession already outlined, involving now the equally absurd notion that while one type of life, say trilobites, were living and dying in one locality, another and very diverse kind of life, say numulites, could not have been living and dying in another locality on the other side of the globe. Even to-day the science has not yet outgrown the childish nonsense of this last alternative.

But another astonishing trick of logic must now be men-

less that they represented a real order of creation. But Werner's onion-coats were becoming discredited somewhat, and so geologists were eager to find some better way of distinguishing the various rocks than by their mineral or mechanical make-up; and this new idea of Smith's seemed so simple and useful that it was eagerly adopted in England. And as the great Cuvier was at this very time teaching the same thing in France, it was not long before their onion-coats of fossils were substituted for the mineral onion-coats of Werner. This absurd notion is still the great incubus on modern geology, and has furnished the general outline for the doctrine of Evolution.



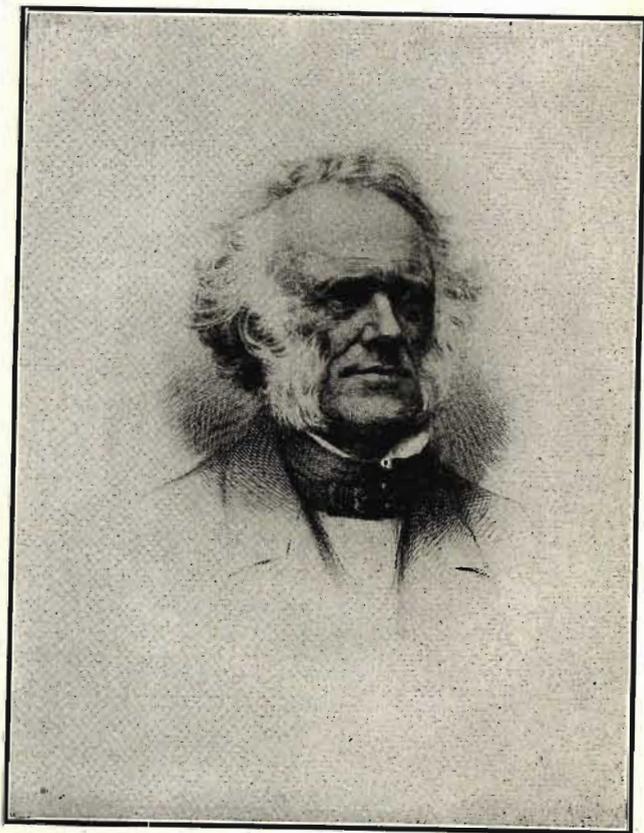
GEORGES CUVIER (1769-1832)

In geology his name is chiefly associated with the doctrine of Catastrophism, in which he taught that the world has experienced a great many successive creations and complete destructions or catastrophes. By his scholarly work in comparative anatomy and zoology he had made himself the greatest scientist of his age, so

tioned; for, of course, the whole geological succession has never been found in any one locality; only a very small fraction have ever been found together in any given vertical section of strata. In piecing together samples from distant localities, Agassiz and others adopted as a guiding test the modern embryonic life of the individual, and arranged the details and the exact order in which the members of any given group must have appeared, by comparison with this embryonic development. Now, in our own days, the Evolutionists, led by Haeckel and Spencer, prove their theory of Evolution by showing that the modern embryonic life of the individual is only "a brief recapitulation, as it were from memory," of the geological succession in time, and have berated the Bible for half a century because it did not agree with such a method of scientific research.

Now, with "Darwinism at its last gasp," and its days "numbered," and with even the mirage of geology, its supposed foundation, fading from our vision, it is surely with renewed courage and faith that we turn to the dear old Book which has told the one story all these years. They only are truly scientific who take God's written Word as the key in studying his larger book of nature. How appropriate that, at such an intellectual and religious crisis as this, the Lord should send a special message to the world

that when he began to write on geology and described the exact order of these successive creations and destructions, his word became law for nearly half a century. Instead of the mineral onion-coats of Werner, he substituted onion-coats of fossils, and the world has blindly followed this absurd idea for nearly a century. His doctrine of Catastrophism went into oblivion under the teachings of Lyell and the other uniformitarians, but his successive ~~ages~~ series of advancing forms of life have been carefully nursed and joined together into the modern doctrine of Evolution.

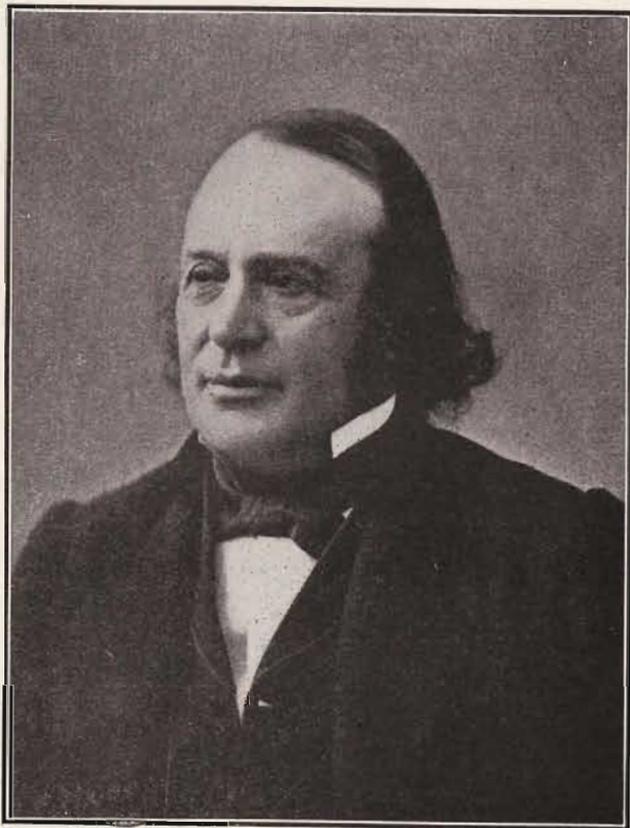


SIR CHARLES LYELL (1797-1875)

Lyell came on the stage when the world was getting tired of the waste of energy involved in Cuvier's theory of Catastrophism. He collected much data regarding the work that the elements are continually doing in our modern world, following out the same line of thought as Hutton had given to the world some forty years before. He taught that the present action of the elements is the

about his created works: "Fear God, and give glory to him; for the hour of his judgment is come; and worship him that made heaven, and earth, and the sea, and the fountains of waters." Rev. 14: 7. And, above all, how appropriate that the Creator is now giving anew to the world his Sabbath as the souvenir, or reminder, of a creation brought about, not on the instalment plan, as the geologists have taught, but in six literal days,—a reminder also of his power to re-create or redeem us from sin and its consequences!

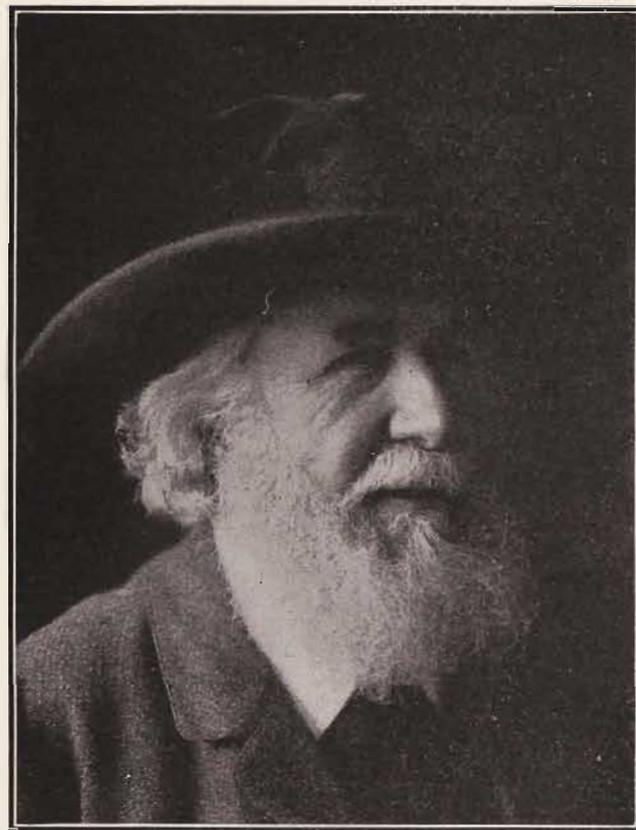
same as the world has always experienced. This theory, known as Uniformitarianism, or the quietistic theory, has held the science of geology in bondage for over half a century, and only a few of the more advanced thinkers yet realize that it is childishly inadequate to explain the awful vicissitudes recorded in the rocks. He died in 1875, and was buried in Westminster Abbey. Had it not been for such men as Cuvier and Lyell, the modern teachers of Evolution, Darwin, Spencer, and Huxley, would never have been listened to for half an hour.



The Macmillan Co., London

LOUIS AGASSIZ (1807-1873)

Using the then recently discovered embryonic development of typical fishes and other animals for his models, he arranged the fossils from scattered localities so as to resemble this modern embryonic development; and to-day such men as Haeckel and Spencer take the *results* of this artificial arrangement, with all its curiously inconsequential reasoning, as the strongest proof (?) of their theory of Evolution.



PROF. ERNST HAECKEL (1834-1919)

Professor of Zoology at Jena

His "Riddle of the Universe" and other works have had a wide circulation in English and German, even throughout Japan and India, though he is not nearly so popular as he once was. His favorite line of argument is the famous "biogenetic principle," previously stated by Von Baer, Agassiz, and Fritz Müller, by which

CHAPTER V

Some Geological Definitions

HAVING now seen that Evolution has its stronghold in geology, that, in fact, geology furnishes practically all of its supposed foundation, we must next undertake an investigation of this much-misunderstood branch of science. To prepare our non-scientific readers to understand the discussions which are to follow, we must here explain some of the more common terms and expressions.

Geology is the science of the rocks. The term "rock" is used in this science —

to denote any naturally-formed mass of mineral matter, whether it be hard or soft, compact or loose. Hence, blown

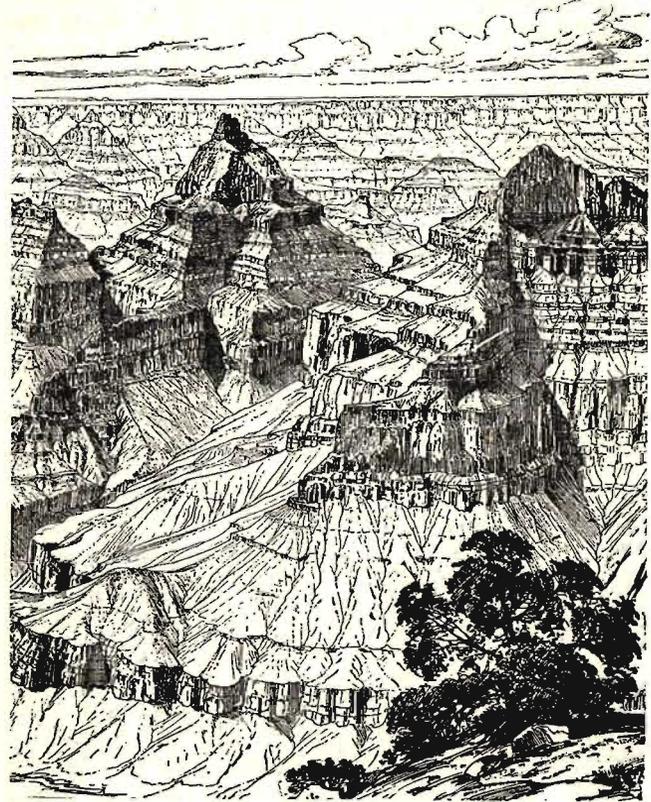
it is claimed that the modern embryonic development of the individual is a brief recapitulation, as it were from memory, of the geological succession in time; and on this "principle" he has constructed family trees of descent for man and all the other forms of life. But it is amazing that modern scientific literature should so long be burdened with such vicious reasoning, for this so-called "biogenetic principle" is only reversing the way in which the geological succession itself was manufactured; for we must never forget that the geological succession is wholly an artificial thing, and has no foundation whatever in actual fact. Agassiz and the other early geologists arranged the details and the exact order of their (alleged) successive life-forms by comparison with the embryonic development of the modern individual, and now Haeckel and Spencer have tricked the world into believing they can "prove" their doctrine of Evolution by showing that the modern embryonic development of the individual follows this (artificial) succession in time. No wonder most scientists have got tired of such whirligig reasoning.

Professor Dennert declares that unless "a definite end be put to this family-tree nuisance" by Haeckel and others, the books containing them will soon "be relegated to the lumber-room of science, there to turn yellow among dust and cobwebs."

(78)

sand, mud, clay, gravel, and peat, are, in the geological sense, "rocks," quite as much as granite, sandstone, or limestone.

Rocks are broadly divided into two classes, igneous, or fire-formed, and aqueous, or water-formed, rocks. Regard-



COLORADO CANYON

ing the former class, we shall have little to say, as they are only incidentally connected with the line of thought upon which we are working. They include, however, not only the trap, basalt, etc., of true volcanic origin, but also the slates, quartzites, gneisses, schists, and granites, which are also termed metamorphic, or changed, rocks, because produced, in some cases at least, from ordinary water-formed rocks by the action of a much more moderate degree of heat.

Aqueous rocks are called sedimentary, because produced from a sediment deposited in water. They are also said to be stratified, because formed in successive strata, or layers, one on top of another. Ordinary gravel, sand, and mud belong to this class; and these, when hardened or consolidated, become, respectively, conglomerate, sandstone, and shale. They are said to be fossiliferous, when they contain fossils, or remains of plants or animals embalmed in their substance.

In regard to the age of a series of layers found in their natural condition —

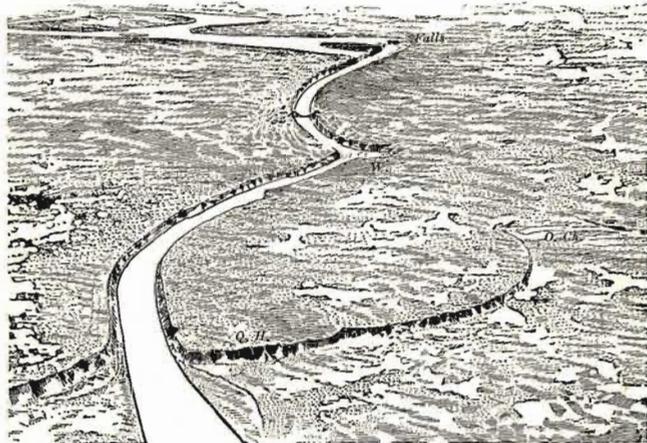
those at the bottom must obviously be the oldest, because they must have been deposited before those lying above them. . . . In all such cases, the beds at the bottom are the oldest, and those at the top the newest. This arrangement of one bed, or stratum, above another, in the order in which they were laid down, is called the order of superposition.— *Sir A. Geikie*.

Since it is almost solely in regard to time that the geologists make their blunders; i. e., in false notions and reasonings regarding the time or relative age of these various successive layers, we must right here be on our guard. When we find one bed, or stratum, lying above another, the lower one is, of course, the older of the two; but

GEOLOGICAL AGES AND PERIODS
(As commonly understood)

Cenozoic	Quaternary	Age of Man, 50,000 years
	Tertiary	Age of Mammals, 3,000,000 years
Mesozoic	Cretaceous	Age of Reptiles, 7,000,000 years
	Jurassic	
	Triassic	
Palæozoic	Permian	Age of Amphibians and Coal Plants, 5,000,000 years
	Carboniferous	
	Devonian	Age of Fishes, 2,000,000 years
	Silurian	Age of Invertebrates, 10,000,000 years
	Cambrian	
Azoic	Algonkian	(No fossils)
	Archæan	

whether laid down ten minutes earlier or ten million years earlier, how are we to determine? — The common way is by the fossils they contain, as will be explained later; but, as this method is based on a series of pure, unfounded assumptions, its results have no weight whatever for us who want facts, not theories. Hence we are compelled to say that there is absolutely no way of telling how long



Bird's-eye view of the Niagara gorge. It is thought that the falls have been steadily receding from the high bluff at Queens-ton Heights (Q. H.), and Lyell estimated the rate at about one foot per annum, or about thirty-five thousand years in all. More recently, however, G. K. Gilbert, of the United States Geological Survey, has estimated the average rate of recession at five feet per annum, and says that "the maximum length of time since the birth of the falls by the separation of the lakes is only seven thousand years, and even this small measure may need significant reduction." Sir William Dawson says about the same thing; and hence there is no difficulty in believing that it could easily have taken place within the limits of Biblical time. When we once get rid of the successive ages of uniformitarian geology, and admit the possibility of the Biblical deluge, all the old stock problems of the science are solved with little difficulty.

the lower layer was deposited before the next succeeding; though, if the two are conformable to one another in bedding, and the bottom one shows no evidence of erosion upon its surface before the other was deposited, the strong probability is that no great time elapsed between the laying down of the two layers.

Another point to be noted here is that regarding the consolidation, or hardening, of strata. It not infrequently happens that the upper bed or beds are much harder than those below them. This would not prove that the upper one was much the older, but would rather show that some kinds of rock harden, or consolidate, much more quickly than others. Indeed, some substances, such as limestone, become hard, or set, almost immediately on being precipitated from water, and a mixture of fine sand and iron filings will, if exposed to the weather, quickly become a hard mass, not readily distinguishable from some of the oldest deposits on the globe. Hence, the degree of solidification in a given series of beds is of very little use in determining their relative age.

Regarding the term "the earth's crust," Sir A. Geikie says:

This name came into use when people supposed the inside of the planet to be an intensely hot, liquid mass, with a cool and comparatively thin crust outside. A great deal of dispute has arisen as to whether the main mass of the inside of the earth is liquid or solid; but those who dispute, whatever their views may be, agree to use this phrase, "the earth's crust," as meaning that part of the earth which men can observe, from the top of the highest mountain to as far below the deepest mine as they can reasonably infer that the rocks must be.

To this conventional definition we can all readily agree; though, since we are informed by one of the highest scientific journals in the world, that "modern analysis tends to the conclusion that our globe is solid throughout" (*Nature*, Feb. 28, 1901, page 414), we may decline to admit that it is now, or has ever been in the past, a "pulsating crust," rising and falling *ad libitum*.

One of the most marvelous, and, indeed, most perplexing facts about the rocks remains yet to be noted. In almost every corner of the world we find examples, perhaps ex-



Upturned strata, Elk Mountains, Colorado

tending over miles of the surface, of strata, not lying in the horizontal position in which they were deposited, but squeezed, fractured, and crumpled up in such an astonishing manner that they may be standing on their edges, or even completely overturned. We do not wish to convey the impression that all the cases of this nature described in the text-books, are really of this character. As we shall find hereafter, some supposed examples of this nature are of such enormous magnitude, and rest on such doubtful evidence as to reality, that it is not necessary to so understand them. But, on a small scale, we have numerous examples of this folding and crumpling of strata. What caused this contortion of the rocks nobody knows.

For a few important definitions pertaining to this subject, such as "fault," "dip," "strike," "outcrop," "anticline," and "syncline," we must refer the reader either to text-books on the subject, or to some good dictionary, such as the *Standard*, where such terms will be found explained with more minuteness than we can employ here, perhaps also accompanied by illustrations, without which a mere verbal description is of little use.

Regarding the way in which the strata are generally treated, in order to assign each to its proper age in the long-drawn-out past that the geologists have taught us to believe in, we give the following from Sir A. Geikie:

According to the law of superposition the undermost stratified rocks are the oldest. We can reach but a little way down into the earth. The deepest mines or borings descend but a very few thousand feet below the surface. If, therefore, these rocks still lay flat as they were deposited, we should be able to make ourselves acquainted only with those near the surface. But in consequence of the way in which the rocks have been bent, broken, and upheaved, we see, not only the topmost parts of the series, but even some of the oldest masses. Instead of lying flat, the rocks are very commonly found to slope into the earth more or less steeply, and we can walk over their upturned edges, like the backs of so many rows of books. So far, therefore, from the bottom rocks being still buried under thousands of feet of solid rock, beneath which they once lay, they are often found rising into the summits of lofty mountain ranges. The geologist, consequently, does not need to sink deep bores and pits to find out the order of the rocks under his feet. By making careful sections from what can be observed at the surface, he can usually determine that order with certainty, and when he has done so, he knows which are the oldest parts of his chronicle, and which are the newest.—*Primer of Geology*, pages 137, 138.

a study of the Tertiary Buttes in
Western S.D. will convince the reader that
the author has new standard geology in use here.

We may admit this last statement, in a kind of general way, for any particular and limited locality; but when the geologists, in their usual fashion, begin to compare the rocks in distant localities, and affirm that the rocks in one country occurred chronologically, say, in between two other sets of beds in some other country, where no trace of such rocks is to be found at all, we demur; for the evidence is founded wholly on assumptions and fanciful guesses, as we shall hereafter see. But it is in this very way that the "formations," or sets of rocks, are pieced together from strata found here and there, and all together assigned to some imaginary age or period in "the dark backward and abysm of time."

This idea is the hardest for the young student to grasp of any in the whole range of geology; but, as no progress whatever can be made until this *pons asinorum* is crossed, it will be necessary to elucidate it as best we can. To do this, we quote from James Geikie:

The term "formation" is used very laxly by geologists. Sometimes it signifies a group of strata of inconsiderable or merely local importance, and occasionally the word is applied to a single stratum. Those writers, however, who are more careful in matters of terminology, restrict the term "formation" to those great groups of strata which are characterized by the presence of fossils having a *facies* [general aspect] so peculiar to themselves that it not only serves to mark off the strata from overlying and underlying deposits, but to distinguish them wherever they occur throughout the globe. . . . By a "formation," then, it will be understood that we mean all the deposits . . . which accumulated over the surface of our globe . . . at a time when the world was characterized by the presence of some particular and peculiar fauna and flora.—"Historical Geology," pages 12, 13.

Without stopping to discuss the arbitrary assumption contained in this last sentence, it will be seen that the formations, or sets of rocks, are not to be found all together in any one place in such relation that, by the law of superposition or stratigraphical evidence, one can be said to be older than another. Nor is a single formation, perhaps, completely found in any one place, but the rocks from perhaps half a dozen different countries have to be classed together to make the formation or group complete. Each of these groups, or formations, is confidently assumed to represent a period of time; all the various rocks over the globe having similar groups of fossils are classed together into one of these sets, or formations, and are supposed to have been laid down contemporaneously; and then, according to the prearranged scheme of life,—succession from the low to the high,—these various groups are fitted into their appropriate places in this great imaginary ladder of life. And the geologist will assure us that we have in this arrangement a correct, scientific history of our globe.

How much progress would have been made in physics, astronomy, or chemistry, if we had not followed a more logical style of reasoning than this? One can not help thinking that it would almost give Bacon and Newton uneasy slumbers if they knew what a burlesque on their methods had been taught for nearly a hundred years under the name of geology. And yet people have actually blamed the Bible because it did not agree with conclusions thus obtained!

CHAPTER VI

A Belated Science¹

IT is a singular and notable fact that, while most other branches of science have emancipated themselves from the trammels of metaphysical reasoning, the science of geology still remains imprisoned in *a priori* theories.—“*The Glacial Nightmare and the Flood*,” Preface, vii, by Sir Henry Howorth.

This quotation, from a prominent English scientist, is a most unqualified impeachment of modern geology (as currently taught) as fit to rank among the inductive sciences. Certainly, the inductive method and the *a priori* method of reasoning are exact opposites. Hence, it is an abuse of language to speak of the current geology as one of the inductive sciences. Astronomy, physics, chemistry, were in this condition ages ago, and long continued thus; but, one after another, at the magic call of common sense and true Baconian methods, they “have emancipated themselves from the trammels of metaphysical reasoning.” But, sad to say, this belated science of geology “still remains imprisoned in *a priori* theories.” In fact, up to and even past the middle of the nineteenth century, no reputable scientist outside of geologists themselves would allow that its leading principles were inductively obtained or capable of scientific proof. Both Huxley and Spencer used very caustic language in speaking of the methods employed by geologists in obtaining their conclusions, while the calm and masterly esti-

¹ For a fuller statement of the geological argument see “The Fundamentals of Geology,” by the author.

The author is apparently not familiar with the practical applications of the science of geology to mining, petroleum, artesian supply, etc.

mate of Whewell was that little or no advance toward a real and stable science, like those of astronomy, physics, and chemistry, etc., had yet been made by geology. “We hardly know,” he says, “whether the progress is begun.

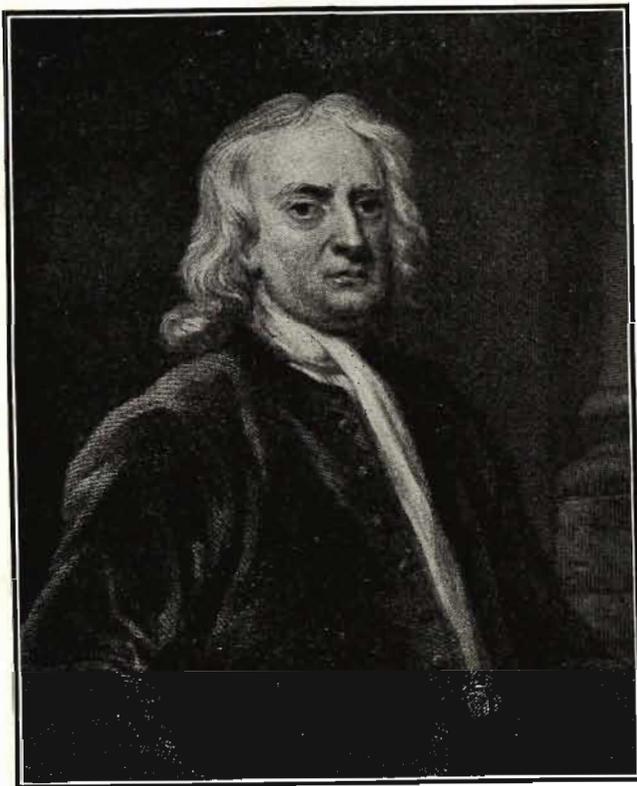
In the present condition of our knowledge and of our methods (sic), one verdict—“not proven and not provable”—must be recorded against all grand hypotheses of the paleontologist, respecting the general succession of life on the globe.—T. H. HUXLEY, IN “DISCOURSES BIOL. AND GEOL.,” PAGES 279-288.

Though the onion-coat hypothesis is dead, its spirit is traceable, under a transcendental form, even in the conclusions of its antagonists.—HERBERT SPENCER, IN “ILLUSTRATIONS OF UNIVERSAL PROGRESS,” PAGE 343.

The history of physical astronomy almost commences with Newton, and few persons will venture to assert that the Newton of geology has yet appeared.”—“*History of the Inductive Sciences*,” Vol. II, page 580, third edition, 1858.

Here the matter remains even to-day. Geology has not yet been regenerated, as have all the other sciences; it has made absolutely no advance in its general plan since a systematic study of the rocks first began a century or more

See Eddings, Parson, Reinebeck, Davis, Chamberlain, Huntington, Washington, Clark, and many other investigators in geological field.



SIR ISAAC NEWTON (1642-1727)

This "Prince of Philosophers" was not only the discoverer of gravitation and one of the founders of astronomy and physics, but he was among the first to state the limits and relative value of inductive and deductive methods of reasoning, and the way in which they should be employed in science. If modern geologists could only be induced to adopt his "Regulæ Philosophandi" (rules of reasoning) as already established in the other sciences, we

ago. The crude generalizations, which the pioneers then hastily adopted to explain some local phenomena in a few corners of Western Europe, have developed into iron dogmas, which still dominate geological thought, in spite of a thousand modern discoveries contradicting them. This and some following chapters will be written to amplify and illustrate these acknowledged facts.

A priori (literally, from what is before) is a term used to denote a method of reasoning which proceeds from cause

It is a singular and a notable fact, that while most other branches of science have emancipated themselves from the trammels of metaphysical reasoning, the science of geology still remains imprisoned in "a priori" theories.—SIR H. H. HOWORTH.

to effect, from a general principle to its logical conclusion. Geometry is an example of this method. Even in natural science it has an honored place, when we have arrived at a broad general truth which is absolutely certain. The opposite of this is to reason from observed effects so as to discover the cause behind them; to take a number of scattered facts in nature, and, by correlating them together, trace out the principles or laws embracing them. This is the inductive method, the modern scientific method, the method of Bacon

might soon have a chance to forget some of the blunders now masquerading under the name of science.

It should be remembered that Newton was a reverent Christian, and has left us some splendid commentaries on the prophecies of Daniel, for which he was severely criticized by Voltaire.



JAMES HUTTON (1726-1797)

In point of general education Hutton was not as ignorant as was William Smith, the "Father of Geology;" nor was he as closely tied down to the narrow circle of his birthplace as Werner. He understood what there was of chemistry at that time, and had traveled somewhat on the Continent. His "Theory of the Earth" (1785), the prototype of Lyell's "Elements of Geology," had this virtue about it that it urged that geology ought not to be considered a cosmogony. An adherence to this principle would have saved the world from many tons of what will some day be yellow waste paper.

Hutton's theory was that the same forces acting upon the surface of the earth to, acted in times past as to weathering of rocks, deposition of sediments, erosion of valleys etc.

and Newton, and is the way in which everything worth knowing in nature has been discovered. But, by the confession of Howorth, who is himself a voluminous and highly respected writer on geology, this belated science needs to face square about, as the other sciences have long since done, and proceed by wholly different methods. The reason for this change, and the manner of bringing it about, is the task before us. The buried dead of our earth's past have written their own epitaphs on the rocky tombstones of the earth; and the reading of these epitaphs makes up the larger part of the science of geology. But it is certain that by false methods of reasoning, methods which, as Howorth says, have "all the infirmity of the science of the Middle Ages," we can never hope to read them aright, or discover from them a single fact or principle of which we can be certain regarding the conditions of their life or their burial.

As we have found that Darwinism is based on three false assumptions, one of which is geology, so the latter science, as taught, is itself based on a trio of assumptions which we must now examine.

The first of these is that of *uniformity*, sometimes called the quietistic theory, which says that the action of the elements during all past time has been uniform with the present in character, perhaps even in degree, and that the landscape spread before us now in mountain and valley, river and lake, is but the final result of activities identical in character and methods with those that are now going on around us.

The first thought which probably occurs here to the reader is that this theory is a point-blank denial of the Biblical deluge. This alone is sufficient to make it more

all of which are seen in the sediments of to day.

not according to facts, see ripples in sandstone, sun cracks in clays, foot prints, fossil plants and animals, rain drops, etc.

than suspicious to the believer of Genesis; he knows there must be something wrong with such a doctrine. But our task now is to determine in a scientific way just where and how it is wrong. This, however, is not hard to do; for it is easy to see that this theory of uniformity is an assumption at the beginning, not a conclusion or induction at the close, of our investigation of the rocky records of the past. It is certainly not a conclusion from any fact or series of facts in nature; for how can we be sure that the elements have always acted in the regular, methodical way they have since human observation began? (There is nothing in the rocks to support such an idea, but everything to the contrary.) And it is strangely out of harmony with the modern spirit of inductive science to start out with this preliminary assumption of a great general fact, the truth or falsity of which ought only to come in as a law arrived at as a generalization from the sum total of our investigations.

We are not ignorant of how the forces of nature now act, the degrees of their intensity, and the results of their work. Hence, instead of prejudicing the case at the beginning of our investigations by assuming this uniformity during all past time, we say confidently that the only scientific method is to make the truth or untruth of this general law a subject for investigation. Whether the air, the rivers, and the sea have always acted as we now see them act, it is our business to find out. To assume this general principle as a preliminary to our investigations of the past is forever to keep our science in the swaddling-clothes of deductive methods. If this science is good for anything at all, it is surely capable of deciding for us very positively whether or not the tools of nature have always worked

The author suggests no other way for streams to act than they do now.

at the same rate and with the same force as at present; and the candid investigation of this problem is without doubt the most important question that can engage our attention as students of this science.

We may all agree that the laws or methods of nature are unchangeable; but who shall define for us the limits of natural law? When we assume, as modern geologists do, that things have always happened, and must always happen, as we see them now occur about us, we are surely getting very unscientific in our self-conceit. How is it that we, the creatures of a day, know the limits of nature's powers, or that we dare boast of having mastered all her marvelous laws? We know not any one with the courage to affirm this in the abstract, though it seems that we are, many of us, inclined to arrive at conclusions, or adopt methods of reasoning, which tacitly involve these preposterous assumptions. This doctrine of uniformity is in effect assuming to possess this knowledge of all natural law, and is deciding beforehand what ought to be left as a subject for investigation — both of which are the antitheses of true inductive methods.

Whenever a human body is found dead in the open field, a coroner is called upon to investigate the matter, and find out, if possible, how death occurred. This coroner is, or should be, a man thoroughly acquainted with the normal action of the tissues and organs of the human body; for only by employing such knowledge can he hope to decide aright regarding the cause of the person's death. But let us suppose that this coroner has seen hundreds of bodies cut up in the dissecting room, when death has resulted from all sorts of disease, as well as old age, and that in all his

How can the author imagine a time when water did not run down hill? When wind over a body of water did not produce waves, or stir up dust when blowing over dry land? When water running over loose soil did not produce gullies or ravines? When water did not expand or freeze? If he does not know he can suggest why they should be what at a particular time.

This paragraph is a fine example of the authors' ability to set up absurd "straw men" and then to proceed with great vigor to demolish them. He is like the circus performer who lifts great weights, but his wonder is gone when he learned when we find the supposed weights are hollow.

subsequent practise he has made autopsies upon great numbers of bodies of persons who have likewise died from every imaginable disease; but that never in all his experience has he yet seen one where death has resulted simply from loss of blood, or bleeding to death. Such a thing, if not a probable case, will at least do as an illustration. What would we think of such a man if he were to proclaim to all that he had never seen a case where death had resulted from other than natural causes, and that he had no reason

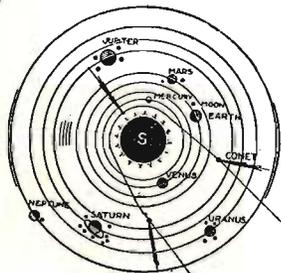


DIAGRAM OF OUR SOLAR SYSTEM

to believe that such had ever occurred? "This man is very old. He must be over eighty. There is very little blood in the body, as is usual in old age. But all the organs and tissues seem to be in a healthy condition, and they evidently all gave out together. There has never been a crime of any kind about here in the memory of the oldest inhabitant,

and I do not believe this is anything but a natural death. People can't live forever, even if they have no disease." Such language would certainly sound very strange, and the crude methods of such an investigation would be very evidently absurd, but not really more so than this assumption of a uniform action of the elements during all past time.

Geologists are only coroners at large. On every bed, nay, on every fossil, we must hold a *post mortem*, and determine, independently of all theories, how these creatures died, and how the bed was deposited. Uniformitarians

would certainly make poor coroners, or, for that matter, poor investigators of law, or history, or anything else.

The second postulate of geology which every true lover of inductive methods must object to assuming as a preliminary to all investigation, is that our globe originated by the hot process, in any manner whatever,— whether according to the theory of Kant, La Place, Mädler, Lockyer, or Faye, — for they are all alike in teaching that our globe was once fluid throughout. See Chamberlain.

The pro and con of this, as a theory in itself, is altogether aside from our present subject, but we must note how this assumption of a certain method of origin for our earth

"The heavens declare the glory of God; and the firmament showeth his handiwork."— BIBLE.

forms an integral part of the whole structure of modern uniformitarian geology. Of course this also is contrary to the origin of our world as given in Genesis. But even from the scientific standpoint, what have we to do with the origin of our world in this science of geology — a science based principally on an investigation of the fossiliferous rocks, and which can tell us about as much concerning the real condition of our earth's interior as a fly can discover of the pulp of an orange by walking over an inch or two of its surface, and sucking at its rind here and there. As Prof. T. G. Bonney expresses it, "We can see about as much of the earth's interior as of a cricket-ball's stuffing through a few pin scratches on the leather." Hence it is surely the height

of absurdity to make any theory regarding our earth's origin a postulate, or starting-point, on which to build anything that we wish to palm off as inductive science.

That these two propositions — viz., uniformity, and the molten-interior-of-the-earth theory — are, wherever used in our text-books, pure assumptions and not conclusions of geology, few will, I think, deny. But these, useless and

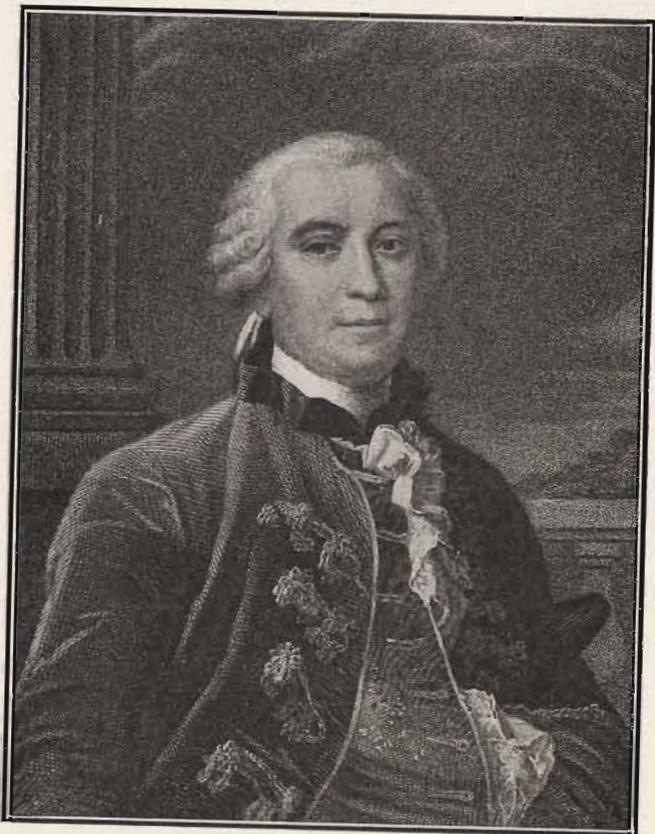


Kindness of the Scientific American

Nebulosity about Nova Persei. From a photograph by Prof G. W. Ritchey with the two-foot reflecting telescope of the Yerkes Observatory. Exposure three hours and fifty minutes.

improbable, *per se*, though we may regard them, and far-reaching as they doubtless are in warping the conclusions of the scientific investigation of the rocks, are yet quite subordinate in their baleful effects on the science to the all-pervading power of the third postulate of this curiously deductive system; viz., that there has been a succession of life on the globe from the low to the high, and that relics of these successive life-forms are pigeonholed in the rocks to reveal this fact to us. In succeeding chapters we shall see how this idea, beginning as a crude and hasty generalization from a very few imperfectly understood facts, almost instantly expanded into the iron dogma that it is to-day; how it has continued to pervert the teachings of science for a hundred years, in spite of discoveries which have long since put it out of court even as a hypothesis; and how this idea, in fixing upon any fossil type or types as intrinsically older than all or any others, involved, from the very first, the utterly preposterous notion that, while one kind of fossils was being deposited in one locality, another and very diverse kind of life positively was not living or being fossilized in another distant locality — preposterous, we say, for who will claim to possess the supernatural knowledge of the past involved in such a statement?

Where are the fossils of
Jurassic and Cretaceous Reptiles
being deposited to-day?



COUNT DE BUFFON (1707-1788)

Buffon undertook to explain everything in the universe; and he succeeded about as well for his day, and according to the meager scientific knowledge then available, as some modern writers have in our time, who persist in ignoring the only reliable guide we have for such a task, the Revelation given by the One Being

died in 1788

CHAPTER VII
The Successive Ages

ABOUT a century and a half ago, the French naturalist, Buffon, who, by the way, was not a practical geologist, put forth the generalization that, over all the continents, the remains of the large land quadrupeds occur near the surface, showing that they lived in these regions at no very remote age; whereas, the deeper lying remains of marine creatures found as fossils are either entirely extinct, or are related to forms now found only in far-distant corners of the world.

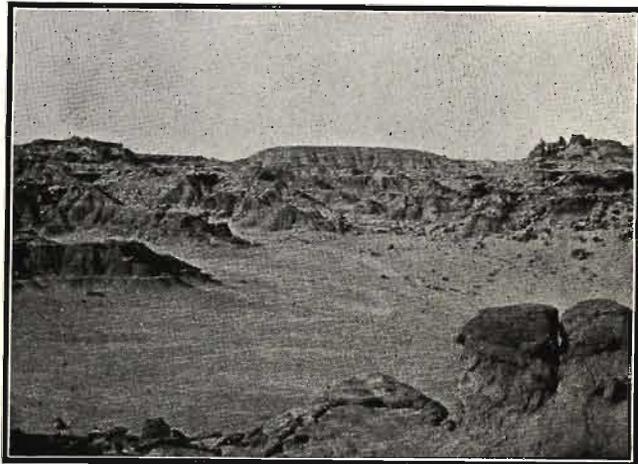
Crude and inaccurate as such a notion really is when applied to the world as we now know it, it had enough of plausibility to recommend it to the scientists of that time, who knew only the rocks of a few corners of Europe, and were ignorant of the plants and animals to be found in other parts of the world. This hasty generalization became the foundation of the idea that the world has been peopled by successive assemblages of plants and animals; though, if Buffon had lived on the plain east of the Rocky Mountains, his rule of thumb about the order in which the fossils occur would make the huge Cretaceous dinosaurs of Colorado and Wyoming, and the giant amphibians of the Permian rocks of Texas, as much modern deposits as any Tertiary or Pleistocene; for in thousands of cases they occur as near the surface, and occupy as completely all the surface rocks, as

who really knows. His scheme of successive ages of creation, professedly based on his crude geology, makes him the real father of the theory of life succession, and thus of biological evolution.

only on the assumption that forces
worked formerly as now.

do any of the so-called "recent" deposits of France, Germany, or England, which Buffon had in mind.

Of course there is one way of proving the relative ages of strata which we can all acknowledge to be truly scientific. When we find undisturbed strata lying one above another, the lower one is evidently the older of the two; but whether



SCENE IN THE BAD LANDS

Where many remarkable fossils have been found laid down ten minutes earlier or ten million years earlier, how are we to tell, except by assuming the succession of life *en bloc*, and deciding the matter according to the fossils they contain? In doing this, we are also tacitly assuming uniformity, or that these beds, with change of flora and fauna, did not occur by any abnormal action of the elements which might wash different kinds of contemporary faunas and floras into their present positions. No one pretends

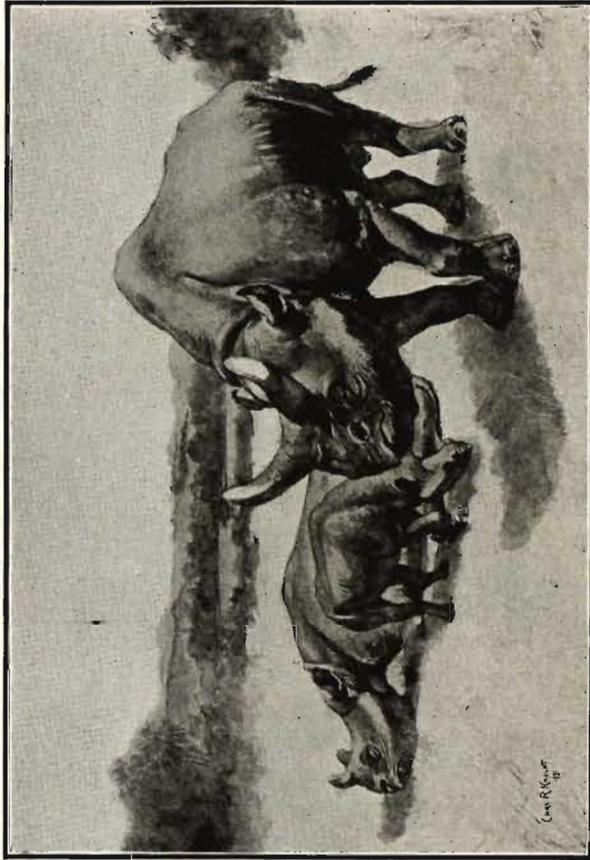
Only on the assumption that forces did not
work formerly as now.

that this test of superposition is of any service in comparing the rocks of distant or disconnected regions. How then shall we correlate the rocks of distant lands, except we assume that there has been a succession of life upon the globe in a particular order?

All admit that everywhere there are, at the base of the fossil-bearing strata, rocks which are non-fossiliferous; and all agree in calling them Archæan. Now, where we find certain fossils next to the Archæan, with perhaps hundreds of feet of beds superimposed upon these lower ones, and containing successively very diverse kinds of fossils, the presumption is — assuming uniformity — that these beds next to the Archæan are very, very old. But to say that there have been successive ages over all the globe, or that these lower fossils really lived for ages before others, even than some that may occur above them in this particular locality, is to assume, either —

1. That these hypothetically oldest beds encircled all the Archæan rocks, like Werner's onion-coats; or,—
2. That, while these beds were forming in this locality, other and very diverse kinds of plants and animals positively were not living or being buried in other distant localities.

It would appear that this onion-coat hypothesis was still entertained by Smith and Cuvier, and the other early nineteenth-century geologists, having been inherited from Werner. Though now professedly repudiated, it was not given up till they had the details of their "phylogenetic series" all arranged according to the start they got from one or two localities in Western Europe. It was bad enough to conclude that, because the fossils occurred in a certain order in a few localities in England or France, therefore



RESTORATION OF TITANOTHERIUM, AN EXTINCT HOOFED MAMMAL OF WESTERN AMERICA

The picture shows a bull, a cow, and a calf.

From the original water-color, based on mounted skeleton and skulls in American Museum

they must throughout the whole world occur in this particular order, which is only the "onion-coat" hypothesis applied to the fossils; but the only remaining alternative—viz., that while certain types of fossils were forming in a certain locality, say New York State, other and very diverse fossils positively could not have been forming in other distant localities, say, China and Australia — is scarcely less scientific. The supernatural knowledge of the past, or, rather, the dogmatism, involved in the latter position is so manifestly unscientific that no one has ever attempted to defend it, so far as we know; and, accordingly, we must conclude, with Herbert Spencer in his trenchant remarks on "Illogical Geology," that, "though the onion-coat hypothesis is dead, its spirit is traceable, under a transcendental form, even in the conclusions of its antagonists." — *Illustrations of Universal Progress*, page 343.

To illustrate the matter, we may consider a more concrete example. The Cretaceous coals of British Columbia are often found next to the granite, or Archæan; in Nova Scotia very similar coal beds, classed as Carboniferous, also occur next to the Archæan. Now, how are we to prove, in any true, scientific sense of the word, that these coal measures of Nova Scotia are older, and according to the popular arrangement, almost immeasurably older, than the quite similar (in appearance) coal beds of British Columbia? We doubt if there is a man in America who would, offhand, undertake to frame any sort of answer at all to such a question, save that the Nova Scotia beds are Carboniferous, and those of British Columbia are Cretaceous, and that therefore the former are immensely older than the latter. The more we consider the matter, the more

clearly we see that nothing more scientific than this can possibly be given; that, in fact, we can not undertake to compare these localities, as to age, without assuming entire the succession-of-life idea. They both rest on the Archæan. How are we to be sure that, when the Carboniferous plants were living in Nova Scotia, the Cretaceous flora did not exist in British Columbia? It would be hard for us to believe in the mental soundness of the man who would profess to have this supernatural knowledge of the past.

Instead of the long popular notion that only certain kinds of rocks are to be found next to the primitive, or Archæan, it is now a well-established principle that any kind of fossils whatever, even "young Tertiary" rocks, may rest upon the Archæan or Azoic series, or may themselves be so metamorphosed and crystalline as to resemble the most ancient rocks on the globe. As Dana expresses it:

Crystalline, or metamorphic, schists may occur in all the formations, from the earliest to the latest.—"*Manual*," page 408.

Or, as Zittel puts it:

The last fifteen years of the nineteenth century witnessed very great advances in our knowledge of rock-deformation and metamorphism. It has been found that there is no geological epoch whose sedimentary deposits have been wholly safeguarded from metamorphic changes; and, as this broad fact has come to be realized, it has proved most unsettling, and has necessitated a revision of the stratigraphy of many districts in the light of the new possibilities.—"*History of Geology, Etc.*," page 360.

We quote yet again from Dana, what he says about the "difficulties encountered in attempts to ascertain the true chronological succession:"

A stratum of one era may rest upon any stratum in the whole of the series below it, . . . the intermediate being wanting. The Quaternary in America in some places rests on Archæan rocks; in others, on Silurian or Devonian; in others, on Cretaceous or Tertiary.—"*Manual*," page 399.

Hence with our minds divested of all preconceived ideas, and "this broad fact" well "realized," where shall we look for the place to start our life-succession? That is, where in the whole world would we now go to find those kinds of fossils which we could prove, by independent arguments, to be absolutely older than all others? It may seem very difficult for the world to discard a theory so long an integral part of all geology; but until it can be shown that this "broad fact" of Zittel's and Dana's is no fact at all, there would seem to be no possible escape from the acknowledgment that the doctrine of any particular fossils being essentially older than others is a pure invention, with absolutely nothing in nature to support it.

For those acquainted with the ordinary methods of determining the age of rocks, no words of mine are needed to show how completely everything else is subordinated to this hypothesis of certain fossils having succeeded one another in regular order, or how the fossils themselves have become the one and only test of age. There was at one time in geology an "old red sandstone" and a "new red sandstone," and whenever a red sandstone was found, it was classed with the one or the other. But no one now regards color as of any particular help in classifying rocks. Thus James Geikie says:

When a geologist speaks of green-sand beds, he simply means certain strata that belong to the Cretaceous formation, which may or may not consist of green sand. In short,

such terms are mere names and not descriptions.—“*Historical Geology*,” page 31.

The same may be said of texture and mineral composition. Dana says they are to be used “always with distrust,” and are “usually to be disregarded.” (“*Manual*,” page 400.) Thus, what was once called “old red sandstone,” and now called Devonian, is about as often limestone or shale as sandstone; while the “chalk,” or Cretaceous, in scores of cases contains no chalk at all. In short, we all know that the geological names of groups or systems of rocks mean only rocks containing certain kinds of fossils.

Hence, since the life-succession theory originated from the idea that only certain kinds of fossils were to be found at the bottom, or next to the Archæan, and it is now settled that any kind of fossils whatever may be thus situated, it is as clear as sunlight that the life-succession idea is based on a myth, (and that there is no way of proving what kind of fossil was buried first.)

But this is not all; for not only may “a stratum of one era rest upon any stratum in the whole of the series below it,” as Dana says, “the intermediate being wanting,” but it may rest conformably. The lower may be Devonian, Silurian, or Cambrian, and the upper Cretaceous or Tertiary, and thus millions on millions of years have elapsed after the first and before the following beds were laid down; but the conformability is perfect, and the beds have all the appearance of having followed in quick succession. Sometimes, too, these age-separated formations are lithologically the same, and can only be separated by their fossils. We may be permitted to quote two typical examples, both from the

But the Devonian or Silurian never lies above the Cretaceous or Tertiary, except in occasional outcrops, where the succession is perfect.

Canadian Northwest. The first is from the region about Banff, in Alberta, just east of the Rockies, as described in the Government Report for 1886:

East of the main divide the lower Carboniferous is overlaid in places by beds of lower Cretaceous age, and here again, although the two formations differ so widely in respect to age, one overlies the other without any perceptible break, and the separation of the one from the other is rendered more difficult by the fact that the upper beds of the Carboniferous are lithologically almost precisely like those of the Cretaceous [above them]. Were it not for fossil evidence, one would naturally suppose that a single formation was being dealt with.—“*Annual Report*,” *New Series*, Vol. II, part A, page 8.

Surely this is a most fearful example of the power of tradition to blind the minds of investigators to the meaning of the very plainest facts.

Here is another example from the District of Athabasca:

The Devonian limestone is apparently succeeded conformably by the Cretaceous, and, with the possible exception of a thin bed of conglomerate, of limited extent, which occurs below Crooked Rapid, on the Athabasca, the age of which is doubtful, the vast interval of time [?] which separated the two formations, is, so far as observed, unrepresented, either by deposition or erosion.—*Id.*, Vol. V, part D, page 52.

The country over which these Devonian rocks were followed in quick succession by the Cretaceous, is not less than one hundred fifty miles long, by half as many miles wide—several thousand square miles, at the least. Here, then, is another most important evidence that the millions of ages alleged to have elapsed between these two formations, had no real existence.

The contact of the Devonian and Cretaceous was not seen over this entire region, but only along streams at occasional points. The occurrence of conglomerate marks an interval.

Nor if one has seen the Devonian and dated Shale as well as the Cretaceous Permian shale.

This statement entirely disregards the orderly succession of strata in the Appalachian region extending from the Cambrian to the Permian.

J. G. Smith

But let us proceed. There is another way of testing the rationality of this life-succession idea. If these alleged ages had no real existence, and if certain fossils are not essentially older than certain others, one might reasonably expect that we would now and then find them reversed as to position, i. e., with the "younger" below and the "older" above. Accordingly, we have the following very necessary(?) caution, from Prof. H. Alleyne Nicholson:

It may even be said that in any case where there should appear to be a clear and decisive discordance between the physical and the paleontological [fossil] evidence as to the age of a given series of beds, it is the former that is to be distrusted rather than the latter.—"*Ancient Life History*," *Etc.*, page 40.

That is, whenever the fossils do occur in this reversed order, we must try to explain the puzzle by some other theory—the life-succession must not be questioned. To meet all ordinary cases of this character, where the differences involve only a few formations, representing only a few ages, or a few million years, the theory of pioneer "colonies" was invented by Barrande, in 1852. But for extreme cases, say where Silurian or Cambrian fossils occur above Jurassic, Cretaceous, or Tertiary, there is in such a predicament always supposed to be what is termed a "thrust-fault," or "fold," often many miles in horizontal displacement, and it may be two or more miles in vertical displacement—inventions which deserve to rank with the notorious "epicycles" of Ptolemy, and must do so some day.

Hundreds of examples of these reversed conditions are to be found in the ponderous volumes of the Government

Survey Reports of this and other countries. For a more extended discussion of this subject, as well as a consideration of other phases of the geological argument, the reader may consult the author's "*The Fundamentals of Geology*," already referred to elsewhere. Here it must suffice to give a few illustrative examples.

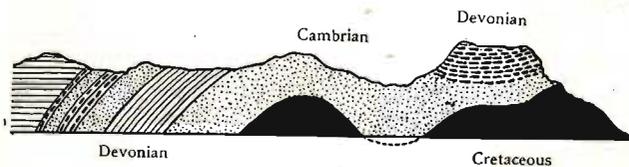
In the southern part of Alberta, east of the Rockies, and extending down across the national boundary line into the United States, is a portion of country some ten thousand square miles in area, at least, perhaps larger, where Cambrian fossils are found above Cretaceous. The inevitable "thrust-fault" is thus described by R. G. McConnel, one of the officers of the Canadian Geological Survey. He has just been speaking of "a series" of these "gigantic thrust-faults:"

One of the largest and most important of these occurs along the eastern base of the chain, and brings the Cambrian limestones of the Castle Mountain group over the Cretaceous of the foot-hills. This fault has a vertical displacement of more than fifteen thousand feet [three miles], and an estimated horizontal displacement of the Cambrian beds of above seven miles in an easterly section. The actually observed overlap as shown, amounts to nearly two miles. The angle of inclination of its plane to the horizon is very low, and, in consequence of this, its outcrop follows a very sinuous line along the base of the mountains, and *acts exactly like the line of contact of two nearly horizontal formations.*

The best places for examining this fault are at the gaps of the Bow [River] and of the south fork of Ghost River. . . . The fault plane here [Bow River] is nearly horizontal, and the two formations, viewed from the valley, *appear to succeed one another conformably.* . . . At the gap of the south fork of the Ghost River, where the fault

was next examined, the Cretaceous shales, after dipping below the surface, rise again about a mile further up the valley, and remain exposed for some distance before they finally disappear.—“*Annual Report, New Series, Vol. II, part D, pages 33, 34.*”

The accompanying illustration is taken from the sections given in the Report. It will, we think, be perfectly clear to most of our readers that there is nothing here at all to indicate a real fault, save that some poor Cretaceous fossils happened to be deposited here over several miles of country



ROCKS IN THE WRONG ORDER IN ALBERTA, CANADA

According to the theory, these Cretaceous rocks ought to be on top and the Cambrian and Devonian deep down underneath. Their present position, with every physical appearance of having been deposited in this order, together with the immense area over which they extend (several hundred square miles, at least), is conclusive proof that the life succession is a myth. Dozens of examples like this have already been discovered in the Alps, Grampians, Appalachians, etc.

before others classed as Cambrian. As almost the entire geological series, and untold millions of years, are supposed to lie in between the Cambrian and the middle Cretaceous, such an enormous difference precluded the idea of pioneer “colonies” of the latter in the former, or any similar way out of the difficulty. Hence the invention of this fairy tale about the Cambrian rocks sliding up on top of the soft Cretaceous over this vast area was the only remaining alternative; for, according to the theory, they could not

possibly have been deposited as we find them, though the line between them “acts exactly like the line of contact of two nearly horizontal formations,” and though they “appear to succeed one another conformably.”

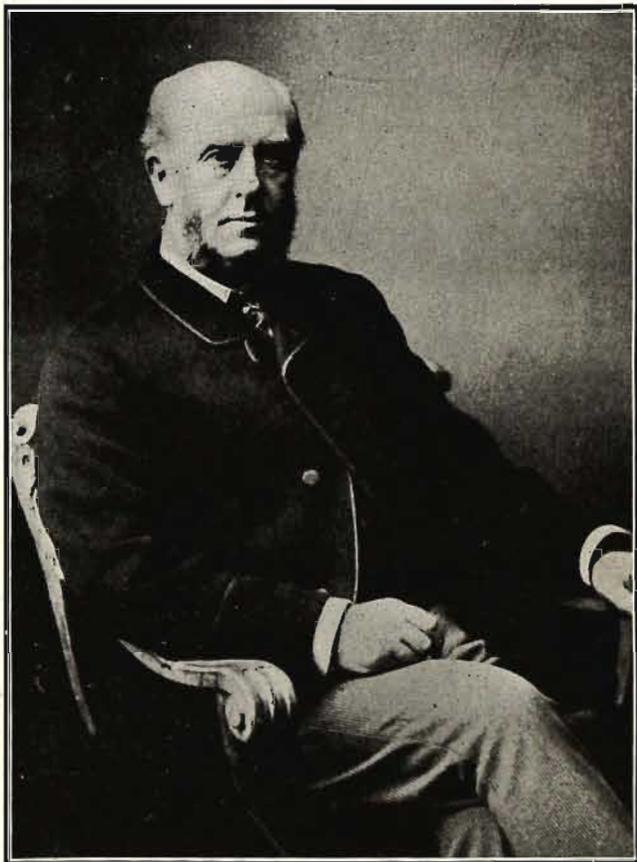
More recent studies show that the whole of the Glacier National Park is composed of Algonkian mountains ringed all around with underlying Cretaceous beds, the latter dipping under these mountains from the plains on the east, and also dipping under from the west in the Flathead Valley. Thus the Glacier National Park is like a huge Paleozoic outlier, with Cretaceous beds underneath it and all around it, a fact which at one sweep wipes out the whole scheme of successive geological “ages.”

The mountains in eastern Tennessee are declared to present “an almost identical structure” with the above. In the Highlands of Scotland is another famous case where some of the very “oldest” rocks are on top of “younger” ones over an extent of country many miles in length from north to south, and ten miles from east to west in the direction of the so-called “thrust.” Dana says that “the thrust planes look like planes of bedding, and were long so considered.”—“*Manual, pages 111, 534.*” In the Alps are very numerous examples of similar conditions, Dana mentioning one case where the rocks are “upside down over an area of four hundred fifty square miles” (Id., page 364); another case is recorded where the mountain masses are said to have “traveled from east to west a distance of about twenty-five miles from the Rhine valley to the Linth,” and another case of nineteen miles (see *Nature*, Jan. 24, 1901, page 294)—all necessi-

8
Reversed strata occur only where lateral forces resulting in folding and faulting occur.

This is a fairy tale only in the mind of the author. Any one may see the real story when he looks at the trouble.

This is the "Chief Mountain" outcrops which may be seen.

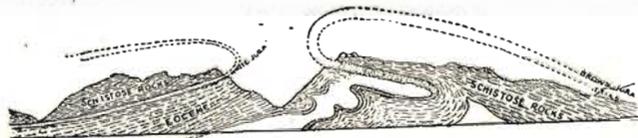


SIR ARCHIBALD GEIKIE

Director General of the British Geological Survey, 1867 to 1871.

He is so delightfully candid and childlike in his reasoning that when he finds a series of rocks in an order the direct reverse of the time-honored theory of life succession, with every physical

tated and described in minutest detail merely because some beds of fossils happen to be found in an order of sequence contradicting the traditional theory. The accompanying illustration from Geikie's "Text-Book" shows how much more natural it is to suppose that the rocks were really laid down just as we find them, the Eocene first and the Triassic and Jurassic afterward. A stranger to the theory of life-succession would never think of anything else.



REVERSED CONDITION OF STRATA, GLARUS AND ST. GALL, SWITZERLAND

How much more natural to suppose that these two sets of "schistose rocks" were once joined together, and that the two sets of Jurassic ("Brown Jura" and "White Jura") were also once joined together, and have since been separated by the washing away of the part connecting them, than to invent these enormous folds merely to save the theory of life-succession. The length of the section represented here is about ten or twelve miles.

So wholly immune to doubt or suspicion of their favorite theory are most geologists, that they often exhibit themselves in the most ludicrous light when describing these (to them) astonishing conditions. Thus Sir Archibald Geikie, in speaking of some sections of rocks in Ross Shire, which he himself had at first described as naturally conformable, declares:

Had these sections been planned for the purpose of deception, they could not have been more skilfully devised;

appearance of having been laid down naturally in this order, he holds up his hands in amazement, and thinks he "may be excused if he begins to wonder whether he himself is not really standing on his head!!!"—*Nature*, Nov. 13, 1884, pages 29-35.

The "supposition" is wrong, but the facts are contrary to the supposition.

... and no one coming first to this ground would suspect that what appears to be a normal stratigraphical sequence is not really so. When a geologist finds things in this condition, he may be excused if he begins to wonder whether he himself is not really standing on his head.— *Nature*, Nov. 13, 1884, pages 29-35.

No further comment on these facts is needed. Some day, when the world wakes up to a realization of what these numerous reversed conditions mean, the present theory of successive ages will be added to the already large collection of discarded geological theories, to become the amusement of the future student of the history of the science.

The last point which we need to make in this connection is that the rivers of the world, such as those of India, the Danube in Europe, or the Colorado in America, in cutting across the country act precisely as if they knew nothing of the varying ages of the rocks in the different parts of their courses, but treat them all alike, as if they were of the same age, and as if they began sawing at them all at the same time.

Let us sum up the facts we have learned about the way in which the fossils occur: —

1. Any kind of rock, i. e., containing any kind of fossils, may rest on the Archæan, and may be so metamorphosed and crystalline as to resemble the very "oldest" rocks.
2. Any kind of beds may rest in such perfect conformability on any other so-called "older" (beds over vast stretches of country that) "were it not for fossil evidence, one would naturally suppose that a single formation was being dealt with," the beds having all the appearance of having followed one another in quick succession.
3. That in very many cases, and over thousands of square

miles of country, these conditions are exactly reversed, and such very "ancient" rocks as Cambrian limestones are on top of the comparatively "young" Cretaceous, while the line between them "acts exactly like the line of contact of two nearly horizontal formations," and in a natural section cut out by a river the two "appear to succeed one another conformably." This single fact alone is sufficient to destroy the whole basis on which the life-succession theory rests.

4. That the rivers of the world, in their courses across the country, completely ignore the varying ages of the rocks in the different parts of their channels, and act just as if they began sawing at them all at the same time.

Now we know not what additional fact can be demanded or imagined to complete the demonstration that this monstrous, unscientific notion of a life-succession, invented a hundred years or so ago in a little corner of Europe, to explain some local phenomena, is hopelessly out of joint with the facts regarding the fossiliferous strata as we now know them.

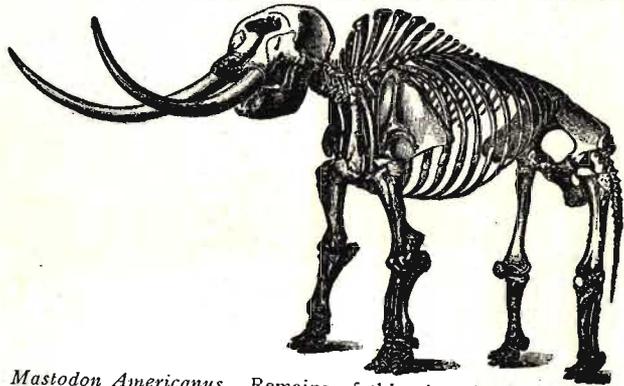
The author shows no knowledge of the processes of stream development.

this is not quoted

CHAPTER VIII

Extinct Species

THERE is yet another way in which to test the value of this assumed life-succession. In Eocene times, we are told, England was a land of palms. In fact, the rocks of this formation contain cycads, gourds, proteads (like the Australian shrubs and trees), the fig, cinnamon, screw-pine, and various species of acacias and palms. These rocks



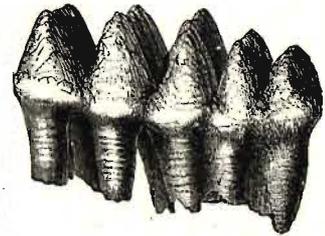
Mastodon Americanus. Remains of this gigantic elephant have been found over nearly all the United States and Canada. The tooth was about six inches long on the crown.

abound in England and western Europe. Then, again, in the Pleistocene deposits of the same countries, which are said to be immensely younger than the others by many long ages, we find the various species of elephant and rhinoceros, with a hippopotamus, lion, and hyena identical with the species now living in the tropics, together with numerous other gigantic animals.

(118)

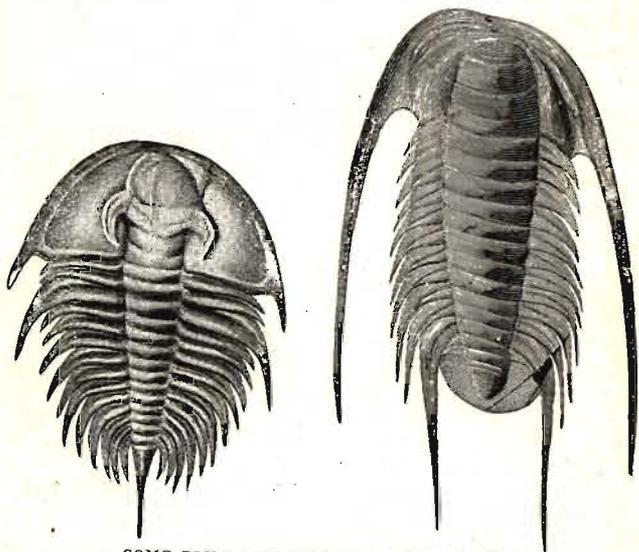
Now the problem is, How are we to prove that these various forms of animal life just mentioned (Pleistocene) did not live at the same time as the trees and plants (Eocene) given in the previous list? Lions and monkeys, hippopotami and hyenas, elephants and rhinoceroses, now live beneath the palms, acacias, mimosas, and other tropical plants represented in the Eocene and Miocene beds. What is there to hinder us from believing that they all lived there together in that olden time? Surely it would be the very irony of scientific fate if forms now so closely connected in life should in death be so divided.

To present it in another form, Why should we be asked to believe that these acacias, cinnamons, palms, etc., lived and died ages or millions of years before the lions, elephants, rhinoceroses, hippopotami, came on the stage to feed upon them or enjoy their shade; and then, after these unnumbered ages had dragged their slow length along and vanished into the dim past, and all these semitropical trees had shifted to the tropics or been turned into lignite, these lions, elephants, and hippopotami came into existence in these same localities, when no such plants existed anywhere in Europe? Surely they ought to give us some pretty substantial reasons for such a violation of our universal modern experience. Geologists generally boast that they have outgrown the crude ideas of Werner and his school when they spoke of ages of limestone making or of sandstone



TOOTH OF MASTODON

making; but it seems that they have not yet attained to that broad view of the essential unity of nature where the flora and fauna of our world are seen to be just as indissolubly connected with each other; for nature could as easily be persuaded to produce for a whole age nothing in the shape of rock but limestone or conglomerate, as to



SOME TRILOBITES FROM CAMBRIAN ROCKS

accommodate her powers to such an unbalanced state of affairs as is spoken of above, with the plants in one age and the complementary animals in another.

There is but one possible argument to justify this separation of these Eocene plants and the Pleistocene mammals into separate ages, and we must now examine it for what it is worth.

It is said that all the animals of these early Tertiary beds are extinct species, also a good many of the plants; while the hyena, lion, hippopotamus, etc., of the Pleistocene are identical with the living species; and there is much evidence in favor of the mammoth being the direct ancestor of its nearest surviving relative, the Indian elephant. This being so important a point, and having such a vital connection with the whole question of a life-succession, we may be allowed to go into the subject at some length, even at the risk of appearing tedious to some of our readers.

As is well known, these Tertiary and Pleistocene deposits resemble one another so much in everything except their fossils, and occur generally in such detached and fragmentary beds, that they are distinguished from one another and arranged in the accustomed order of time by the per cent of "living" and "extinct" shell-fish which they contain.

In the words of Dr. David Page: —

As there is often no perceptible mineral distinction between many clays, sands, and gravels, it is only by their imbedded fossils that geologists can determine their Tertiary or post-Tertiary character. — "Introductory Text-book," page 189.

If we were sure that these species became extinct one by one, as some are doing now, and that nothing has ever happened to cause many to become extinct at one time, it might be a rough guess at the relative age of a deposit to ascertain about what percentage of its forms belonged to extinct species. But it is hardly necessary to point out how all this presupposes uniformity, a doctrine which we have found to be not only a pointblank denial of the Biblical

This evidently does not refer to the gradual deposit of the Pleistocene.

Humans for the author to prove even that such a doctrine denies anything in the Bible.

deluge, but even from the scientific standpoint a problem to be investigated and decided according to the evidence of the rocks, not a thing to be taken for granted previous to all investigation. It then occurs to us that the same methods of reasoning would make the subfossil remains of the bison on the Western prairies almost infinitely older than those of the lion, hippopotamus, etc., in the Pleistocene beds of Europe; for (except for some few specimens artificially preserved, and which may be ignored in this connection) the bison is to-day absolutely extinct, while the Pleistocene mammals are still abundant in the tropics, and show no signs of surrender in the struggle for existence. Similar comparisons might be made with the great wingless birds of Madagascar, Mauritius, and New Zealand, with very many other examples, all tending to show that the mere fact of certain species being extinct, and others being now alive, is no trustworthy guide in determining the relative age of their remains, until we first find out how and when they happened to become extinct.

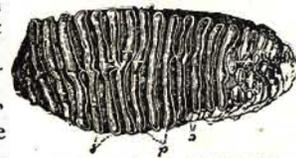
Why was it that the lion, hippopotamus, rhinoceros, and elephant shifted from England to the tropics? How was it that some of these, the mammoth and rhinoceros, got caught in the merciless frosts of northern Siberia so suddenly that their flesh has remained untainted all these years, and is now, whenever exposed, greedily devoured by the dogs and wolves, it being as fresh as meat in a refrigerator?

A warm, temperate vegetation, as well as the corals and other animals of warm waters, is found within eleven degrees of the north pole, and all scientists acknowledge that the elephants and other animals preserved in the frozen soil of Siberia lived where we now find their remains; while Dana

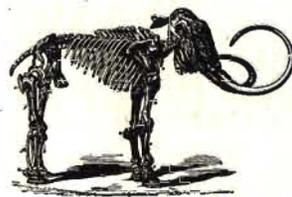
says that "the encasing in ice of huge elephants, and the perfect preservation of the flesh, shows that the cold finally became suddenly extreme, as of a single winter's night, and knew no relenting afterward." — "Manual," page 1007. Howorth adds that "this change of climate must have been sudden, and must also have been continental." — "The Mammoth and the Flood," page 94.

Admitting this sudden change of climate over half the world or so, is it not evident that this same cause, whatever it was, may have brought about a good many other changes, and the extinction of numerous other species which are so often supposed to imply the lapse of untold ages of time? If a large amount of money has disappeared, we may have lost it at various times and places by carelessness; but if a notorious criminal has been around in the meantime, it would rather need evidence on the opposite side to prove that the money was not taken by this criminal. This principle of the economizing of energy was laid down long ago by Newton, the founder of modern science, when he said that —

more causes of natural things ought not to be admitted than are sufficient for explaining their phenomena; and, therefore,



TOOTH OF THE MAMMOTH
(Showing the top surface)



SKELETON OF THE MAMMOTH
(*Elephas primigenius*)

The evidence is
the contrary. The
mammoth was a hairy
and lived long in a cool climate.

to natural things of the same kind, the same causes ought to be assigned as far as possible. *Compare this with the multiple hypothesis method for fossils.*

On this point we shall have more to say hereafter. The principle on which we wish to insist here is that the mere fact of certain species being alive, and others extinct, gives no clue whatever as to the relative age of their remains, until we first ascertain how and when this extinction was brought about. Ignoring for the present the Biblical information regarding the deluge, we shall presently see that there is ample scientific evidence that a sudden and radical change in the climate of the northern regions (the whole world, in fact) has occurred since man appeared upon it, to say nothing of the other great changes in land and water occurring at this very same time. Yet no allowance, so far as we know, has ever been made for these changes as causes of extermination of all forms of life. But what nonsense is it, while completely ignoring this great world-catastrophe, to arrange the lucky survivors off on the percentage system, as if such an event had never happened. It would be much more reasonable and scientifically accurate to arrange the books of the Greek and Latin classics in chronological order, according to the percentage of their words which have survived into the English language. Indeed, it would be much like a coroner, at the inquest following a railway disaster, professing to arrange the exact order in which the various victims had perished by the proportionate number of surviving relatives which each had left behind him. The completely worthless character of such evidence of age becomes, if possible, more apparent when we consider that very many of these so-called extinct forms are perhaps not really distinct (physiological) species from their living rep-

*See an admirable guide by
See Huxley on 'The Pleistocene
etc.'*

representatives of to-day; for, in spite of all that we have learned about variation, there seems to be little or no allowance ever made for the effects of a certainly greatly changed environment. If the fossil forms among shell-fish, etc., are not precisely like the modern in every respect, they are always classed as separate species, in utter disregard of the striking anatomical differences between the huge Pleistocene mammals and their dwarfish descendants of to-day, which for a hundred years or so were positively said to be distinct from one another, but are now acknowledged to be identical.

Of course no one denies that the strata teem with forms extinct for thousands of years, forms which we moderns have never seen alive. Other forms do not appear familiar to our modern eyes, because larger or of somewhat different form; but to say that they are actually distinct species from their modern representatives, or that no human being has ever seen them alive, are statements utterly incapable of proof. Up to about the year 1869 it was stoutly maintained that man had never seen any of these fossil forms alive. But no one now maintains this view; for human remains have now been found along with undisturbed fossils of the Pleistocene, or even middle Tertiaries, while the drawings and paintings on the cave walls of southern France represent reindeer, mammoths, etc., side by side, and are so wonderfully accurate that no one can doubt that they were copied from life. Hence, the only question now (from a scientific standpoint) is, With how much of that ancient fossil world were these equally fossil men acquainted?

If man lived in Miocene times, when, even according to the geological arrangement, a luxuriant vegetation spread over all the arctic regions, what possible evidence is there

to show that his companions, the rhinoceros, hippopotamus, mammoth, etc., were not also living then, and browsing off just such plants, when the arctic frosts caught them in the grip of death, and preserved their mummies untainted for our astonishment and scientific information? Things which are equal to the same thing are equal to each other. Why should not the plants and animals contemporary with



A kind of polyp-coral found as a fossil in the rocks near Point Barrow, in the arctic regions, proving that these now icy waters were once warm like those now in the tropics, for corals can not live in water colder than 68° or 70° .

the same creature (man) be acknowledged to be contemporary with one another? If man was positively contemporary with the Miocene vegetation (we are still arguing from the popular scientific standpoint), and the Pleistocene mammals are now acknowledged on all sides to have been contemporary with man, what is there to forbid the idea that the Pleistocene mammals and the Miocene flora were contemporary with one another?

For nearly half a century, geologists have never had the courage to face this problem fairly and squarely, with

all preconceived prejudices about uniformity cast aside. Is it possible that all the Tertiaries and the Pleistocene may be *really a unit after all*? The trouble would then be that, with this much conceded, the whole phylogenic series would tumble with it, and become only the taxonomic or classification series of that ancient world with which those fossil men were acquainted. To appropriate the words of another, we know of nothing against this view save "the almost pathetic devotion of a large school of thinkers to the religion founded by Hutton, whose high priest was Lyell, and which in essence is based on *a priori* arguments like those which dominated medieval scholasticism, and made it so barren."

Baron Cuvier's work in the line of comparative osteology has never been surpassed, perhaps never equaled, since, and he is generally admitted to have been the greatest naturalist and comparative anatomist of that, or perhaps of any time; yet he maintained most positively that *all* those which we now call the Pleistocene mammals were distinct species from the modern ones; and it is only in recent years and with extreme reluctance that many of them have been admitted to be identical with the ones now living. This shows how utterly unsafe it is to trust to the current assertions about all the Mesozoic and Paleozoic species being extinct; for even now, in spite of all that we have learned about the surprising possibilities of variation, little or no allowance for the potent influences of a changed environment seems ever to be made when the fossil forms are being considered. They are not all physiological species that can be separated as morphological species, and the skeleton, often only a fragment of it, is all that we have to depend upon in the



KARL ZITTEL (1839-1904)

Late Professor of Geology and Paleontology in the University of Munich; Director of the Natural History Museum of Munich, etc.

One of the greatest of modern geologists. He was a candid reasoner, indulged in no fantastic speculations, and did not believe in calling a thing a scientific fact until it is established beyond question. His "History of Geology" is the best work we have dealing with the strange history of this science.

case of the fossils. If the numerous varieties of the domestic dog were all extinct and known to us only as fossils, we would doubtless not only have a dozen new specific names invented immediately, but such extreme types as pug and greyhound, St. Bernard and Scotch terrier, might even be erected into distinct genera; and, of course, they would all have to be arranged in single file, to show their geological succession in time.

Zittel gives us a peep behind the scenes which helps us somewhat to estimate the value of a percentage of extinct species as a test of age. He pictures the uncritical work of the earlier writers on paleophytology, or the science of fossil plants, how —

many of the fossil genera and species had been based on insufficient grounds of distinction, and how often miserably preserved fossil remains, whose identification was impossible, had been used for the erection of new genera or made the basis of some wonderful new hypothesis. Many of the special papers on fossil plants had been contributed by authors with insufficient botanical training, and were in consequence an untrustworthy foundation for any inductive reasoning regarding the past periods of vegetation and their climatic conditions.—"History of Geology," page 373.

August Schenk, late professor of botany in Leipzig (1868-91), by more critical methods, "practically initiated a reform in paleophytology." Zittel declares that "now, the author of a paper on any department of paleophytology is expected to have a sound knowledge of systematic botany" (Id., page 375), and adds, "It can not be said that paleozoology [the science of fossil animals] has yet arrived at this desirable standpoint." But he justifies this charge of want of confidence by saying that —

comparatively few individuals have such a thorough grasp of zoological and geological knowledge as to enable them to treat paleontological researches worthily, and there has accumulated a dead weight of stratigraphical-paleontological literature wherein the fossil remains of animals are named and pigeonholed solely as an additional ticket of the age of a rock deposit, with a wilful disregard of the much more difficult problem of their relationships in the long chain of existence. The terminology which has been introduced in the innumerable monographs of special fossil faunas, in the majority of cases makes only the slenderest pretext of any connection with recent systematic zoology. If there is a difficulty, then stratigraphical arguments are made the basis of a solution. Zoological students are, as a rule, too actively engaged and keenly interested in building up new observations to attempt to spell through the arbitrary paleontological conclusions arrived at by many stratigraphers, or to revise their labors from a zoological point of view.—*Id.*, pages 375, 376.

This scathing impeachment of the trustworthiness of the current specific and generic distinctions established for the fossil animals, has no doubt a special reference to the case of the lower forms of life; for if, in spite of the masterly and withal careful work of Cuvier, Owen, Wallace, Huxley, and Ray Lankester, there are still grounds for such grave doubts of the values of specific distinctions in the case of the mammals, whose general structure and life history¹ are so well known and their almost countless examples of variation so well studied out, what must it be in the case of the lower vertebrates, and especially of the invertebrates, whose general life history is in so many instances only dimly understood, and the limits of their variations absolutely unknown? Remembering this, what is our amazement when

¹ Individual history from birth to death.

we read in this same volume by Professor Zittel (page 400) that the modern tendency is toward the erection of the closest possible distinctions between genera and species, until recent paleontological literature is fairly inundated with new names; and all this with the purpose, unblushingly avowed, of enhancing the value of such distinctions as a means of determining the relative ages of strata, and to bring the ontogenetic and phylogenetic development of the various forms into more apparent agreement.

Though Zittel himself plainly does not approve of these methods, there is no doubt that the practise referred to is quite general throughout modern paleontological literature. We can only look upon it as a most fearful example of intelligent men being hypnotized by their theory into blind obedience to its suggestions and necessities.

Not long ago we had occasion to write to a well-known geologist about a Lower Cambrian mollusk which appears strikingly like a modern species. We here give an extract from his reply which bears directly upon this point. We withhold the name, for it was given in a half-confidential manner, but may say that the author's work on the Paleozoic fossils is recognized on both sides of the Atlantic:

Some geologists make it a point to give a new name to all forms found in the Paleozoic rocks, i. e., a name different from those of modern species. I was taken to task by a noted paleontologist for finding a pupa [a kind of land snail] in Devonian beds; but I could not find any point in which it differed from the modern genus.

Such disclosures speak volumes to those able to understand, and lead one to receive with a smile the familiar assertion that all the species of the Paleozoic and other

older rocks are extinct. And we can now form a truer estimate of the high scientific accuracy of Lyell's ingenious division of the Tertiary beds according to their contained



RING-TAILED LEMUR

(*Lemur catta*)

The lemurs are now confined to Madagascar and a few other localities that skirt the Indian Ocean. Their fossils are found only in the Eocene rocks of Europe and America. How they managed to skip all the other formations from the Eocene to the modern we are not informed.

length, but it may suffice to say that during the last half century or more a steady progress of discovery has resulted in showing case after case where families and genera long boldly said to have been extinct since Paleozoic time are found in thriving abundance and in little altered condition in

percentages of living or extinct mollusks. But, O, "tell it not in Gath!"

Going back now to our main subject, which was a denial of the reality of a life-succession and of the "ages" of the common text-books, we must bear in mind that the present classification of the fossils was outlined in all its general detail when little or nothing was known of the contents of the depths of the ocean, or even of the land forms of Africa, Australia, and other foreign countries. Zittel shows how, up to 1820, little or nothing of a scientific character was known of any of the classes of living animals save *mammals*. We need not go into this subject at

unsuspected places all over the world. Nor need we here dwell on the obvious absurdity of these inhabitants of the modern seas and the modern land, skipping all the uncounted millions of years from Paleozoic times down to the recent; for, though found in profuse abundance in these older rocks, not a trace of many of them is to be found in all the subsequent deposits. The lemurs, for example, are found fossil in the Eocene rocks, and are living to-day in Madagascar. The cestraciont sharks, alive now in the seas between Japan and Australia, are found as fossils only in the Mesozoic rocks, and thus skip the whole Tertiary period. The Dipnoans, or lung-fishes, jump from the Jurassic to the modern; the numerous species of *Globigerina*, etc., found in the chalk, have also skipped the whole Tertiary period; the Crinoids did the same; while some of the starfishes have skipped all the uncounted millions of ages (?) from Paleozoic times down to the recent, as have also the Cyathophylloid corals. The list indeed might be extended to almost any length, if some one only had the courage to attempt to spell through the dead weight of new names under which the real meaning of the story of the rocks now lies buried.

To sum the matter up in two sentences: The early geologists assumed that the rocks over all the world must occur in precisely the same order as they did in England, France, and Germany; we have found that they may occur in any order whatever, often reversing this order entirely. They assumed that all the fossil types of life were absolutely extinct species; modern biology has proved the identity with living types of thousands of forms scattered through all the rocks, from the Pleistocene to the Cambrian, and the list is every day increasing. All of which reminds us of the

Only where vertical deformations have occurred.

old tale of the three little green peas in the little green pod, who, noticing that their little world was all green, and they themselves green also, shrewdly concluded that the whole universe must be green likewise. The current notion about the successive geological ages rests upon methods as crude and assumptions just as false as those of the little green peas.

It is practically certain that numerous forms of life, exhibiting no distinct characters of their own, are constituted into distinct species for no other reason than that they occur in formations widely separated from those holding their nearest kin. . . .

It is by no means improbable that many of the older genera, now recognized as distinct by reason of our imperfect knowledge concerning their true relationships, have in reality representatives living in the modern seas. — ANGELO HEILPRIN, "GEOGRAPHICAL AND GEOLOGICAL DISTRIBUTION OF ANIMALS," pages 103, 104, 207, 208.

CHAPTER IX

Leading Facts About the Rocks

CHAPTER VI opened with a statement from Howorth that "the science of geology still remains imprisoned in *a priori* theories." The three leading postulates, or hypotheses, unproved and unprovable, on which we found the science to rest were:

1. The uniformly quiet and regular action of the elements.
2. The originally molten condition of our globe.
3. The successive ages, certain kinds of life only existing at certain times, and succeeding each other in a regular and definite order.

Having thus established our general argument that the modern evolutionary geology is thus the reverse of an inductive science, being based on at least highly questionable postulates and axioms, surely every friend of true science will welcome any prospect of refounding it on a truly inductive basis. The facts on which a safe and true induction can be based must now occupy our attention.

In Chapter VII, in discussing the postulate of the successive ages, we developed the following very remarkable facts about the way in which the rocks occur, which effectually dispose of the venerable myth that they occur only in a regular order of progress from the low to the high:

1. The "broad fact," as stated by Zittel and Dana, that any kind of rocks whatever — i. e., containing any

kind of fossils — may rest on the Archæan, or may themselves be metamorphosed and crystalline.

2. That any kind of beds may rest in such perfect conformability on any other so-called older beds over vast stretches of country, that, "were it not for fossil evidence, one would naturally suppose that a single formation was being dealt with," while "the vast interval of time" intervening is "unrepresented either by deposition or erosion."

3. That in very many cases and over many square miles of country these conditions are exactly reversed, and such very ancient rocks as Cambrian limestones occur on top of the comparatively young Cretaceous, while the line between them "acts exactly like the line of contact of two nearly horizontal formations," and in a natural section cut out by a river, the two "appear to succeed one another conformably."

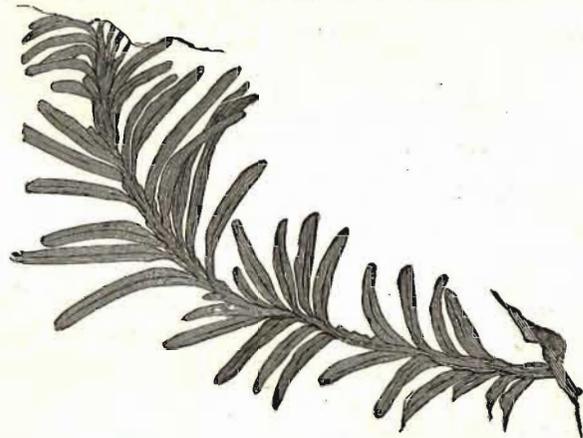
4. That many of the rivers of the world in working across the country completely ignore the varying ages of the rocks in the different parts of their channels, and act precisely as if they began sawing at them all at the same time.

Now when we say that these facts taken together put the life-succession theory utterly out of court as a possible explanation of the facts of the rocks, we are only stating a very obvious truth in a very mild way. They certainly show that no one kind of fossil can be proved to be intrinsically older than any other kind; hence, that no one kind of fossil life can be proved to be older than man himself.

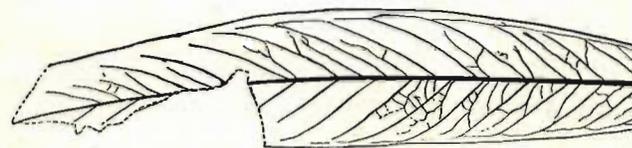
But this is merely negative evidence; and, while it should utterly dispose of the life-succession theory for all coming time in the minds of all persons capable of appreciating scientific evidence, it is obvious that we have not by this

Thompson's Golden Age of Erosion.

method disposed of the problem presented by the rocks themselves. These rocky medals of past events, struck by nature while these acts were in performance, are themselves



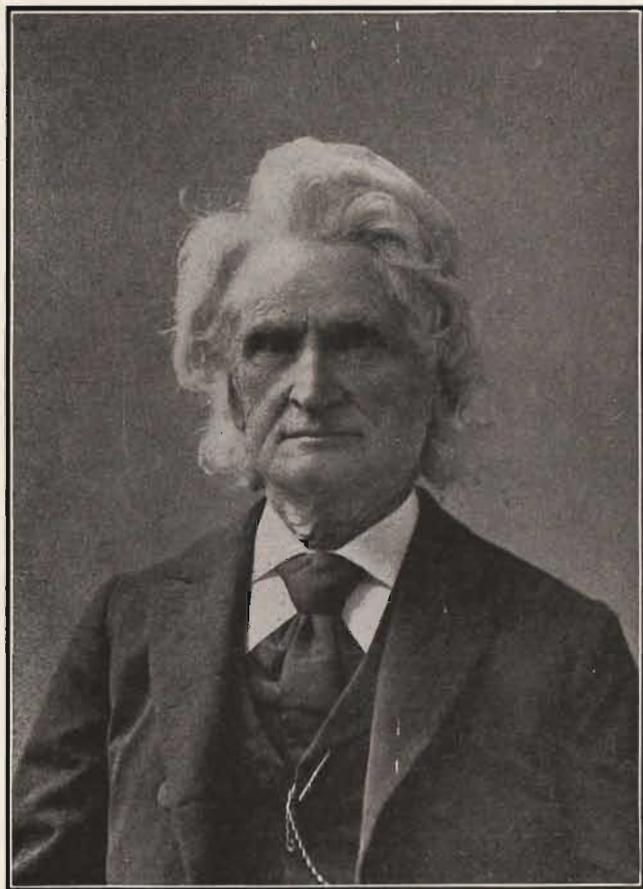
Sequoia smittiana, similar to the "big trees" of California; very common in the Cretaceous rocks of Greenland.



Leaf of a fossil *Eucalyptus*, also found in the Cretaceous rocks of Greenland. The sassafras, tulip tree, magnolia, poplar, willow, maple, birch, elm, etc., all flourished in profusion away within the arctic circle, about as far north as explorers have ever gone.

on our hands, and must be put together in such a way as to lead to a safer and more modern induction than any of the theories of Cuvier, Smith, or Werner.

In addition to these facts already enumerated, there are



JAMES D. DANA, LL. D. (1813-1895)

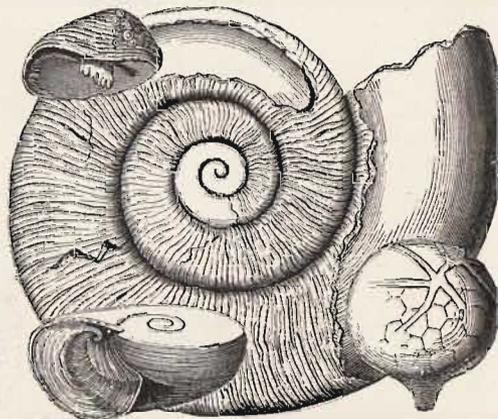
Late Professor of Geology and Mineralogy in Yale University

His writings are clear, transparently candid and honest, and he was without doubt the best-known writer on geology in America.

some four or five other facts about the fossil world which are just as essential in the framing of a sound and safe induction. These facts must now be given:

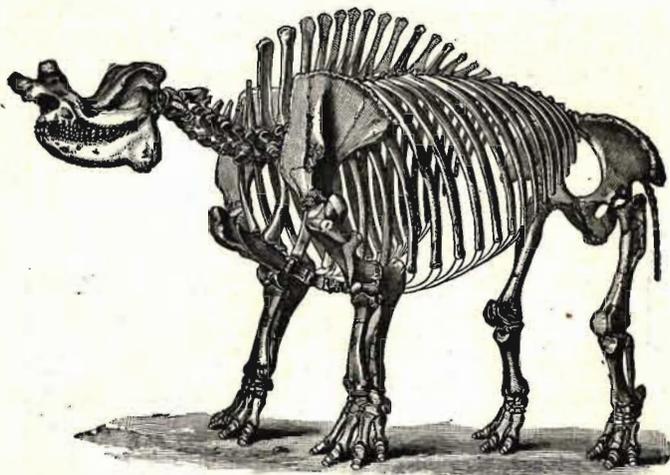
The animal and vegetable relics found in the polar regions uniformly testify that a warm climate has in former times prevailed over the whole globe.—NORDENSKIÖLD, IN GEOLOGICAL MAGAZINE, VOL. XII, PAGE 531.

1. All of the fossils (save a very few of the so-called Glacial age, and they admit of other easy explanation) give us proofs of an almost eternal spring having pre-

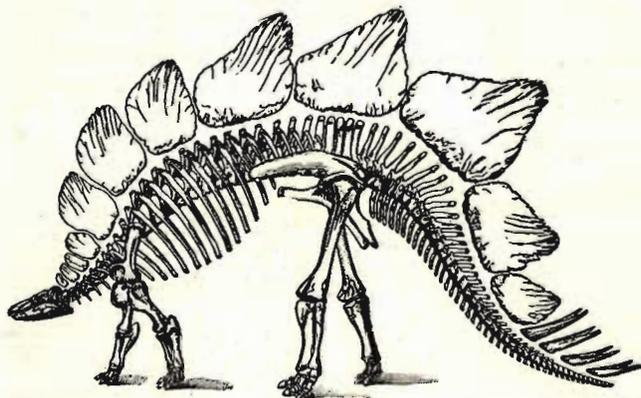


vailed in the arctic regions, and semitropical conditions in north temperate latitudes; in short, they give us proofs of a singular uniformity of climate over the globe, which we can hardly conceive possible, let alone account for.

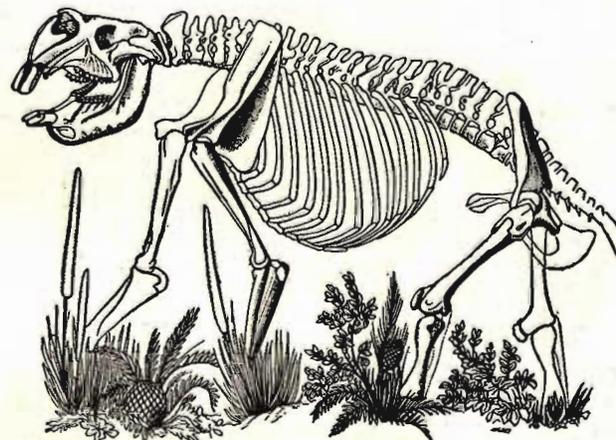
A large mollusk (*Maclurea magna*), often eight inches in diameter, with other Paleozoic fossils. From the Silurian rocks.



The gigantic *Brontops robustus*, from the upper Missouri. Its body was about twelve feet long.

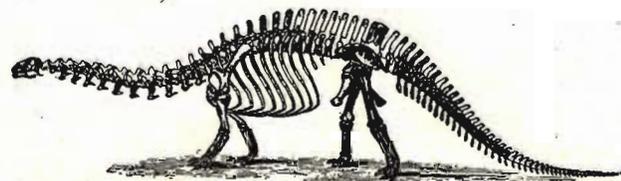


Another Dinosaur (*Stegosaurus unguatus*). Some of the plates on its back were two feet long.



Diprotodon australis. A monstrous kangaroo from Australia, "as large as a hippopotamus, and somewhat similar in habits, the skull alone being a yard long."—*Dana*.

The proofs of this are unnecessary, as they are to be found on almost any page of any modern text-book of the science. That these genial and mild conditions prevailed up to and until the mammoth and his fellows were caught in



Brontosaurus excelsus, from Wyoming. It was about sixty feet long and fifteen feet high. Found in Jurassic rocks. Other Dinosaurs were eighty feet long, "while at the same time they had a height of body and massiveness of limb that, without evidence from the bones, would have been thought too great for muscle to move."—*Dana*.

the merciless frosts of our present arctic climate, there is not a particle of doubt. As Howorth says, the "Drift period" and the Pleistocene end together, and join on to the modern, while "the genial climate" then prevailing, as Dana declares,

was *abruptly* [Italics Dana's] terminated; for carcasses of the Siberian elephants were frozen so suddenly and so completely at the change that the flesh has remained untainted. — "The Geological Story Briefly Told," page 230, edition of 1875.

The evidence is absolutely conclusive that all the time since creation down to this fatal hour was characterized by a surprisingly mild and uniform climate over all the earth. The modern period is characterized by terrific extremes of heat and cold; and now little or nothing can exist where previously plant and animal life flourished in profusion.

This radical and world-wide change in climate, therefore, demands ample consideration when seeking a true induction as to the past of our globe. That it was no gradual or secular affair, but that the climate "became suddenly extreme, as of a single winter's night," the Siberian mummies are unanswerable arguments; that it occurred within the human epoch, all are now agreed.

Our second great general fact about the fossil world seems to be a natural corollary from this one about climate. It is this:

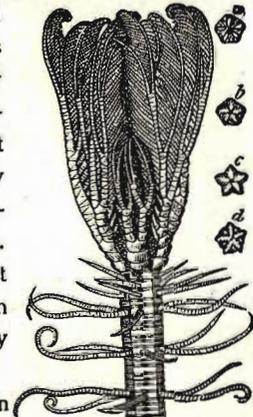
2. The fossils, regarded as a whole, supply us with types larger of their kind and more thrifty looking than their nearest modern representatives, whether of plants or animals — radiates, mollusks, insects, fishes, amphibians, reptiles, birds, or mammals.

This fact also is so well known that it needs no proof. The vain fancy of inherent progress upward is about as far as possible from the truth as brought to light by the fossils. Variation there is and variation there has been, sometimes even the elastic rebound toward former conditions or powers which is being so much studied now by the school of DeVries as "mutations" or "saltations." But with one voice do the rocks testify that the general results of such variation have not been upward. Rather must we confess as a great biological law that degeneration has marked the history of every living form.

Our third general fact has been already alluded to in the latter part of the previous chapter, about "Extinct Species." We can give only an outline of the argument here.

3. Viewing the rocks again as a whole, they are found to contain in great profusion splendidly developed representatives of about all existing types of plants and animals; but to get the fossil representatives of many modern types, e. g., numerous invertebrates, with other lower forms of animals and plants, we must go back to the Mesozoic or Paleozoic rocks; for they are not found in any of the more recent deposits.

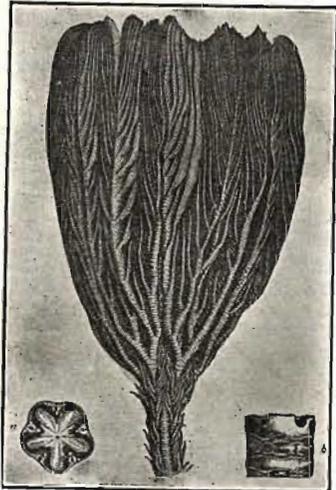
To illustrate the matter somewhat, let us take the case



A MODERN CRINOID, OR
SEA-LILY (*Pentacri-
nus decorus*)

Like those found in the Triassic and Jurassic rocks. Somehow or other they forgot to leave any fossils in the rocks of all the intervening ages.

of the Crinoids, already spoken of. They are now found in all of our deep waters. We find them also in great profusion in the Paleozoic and Triassic and Jurassic rocks, but not a sign of them, so far as we know, in any younger ones. The same may be said of the chalk found in the



PENTACRINUS FASCICULOSUS
Crinoid, English Jurassic

Cretaceous rocks, most of the species of which are identical with those of the ooze now found over the modern sea bottom. We are told that the greater part of Europe and America has been fathoms deep under the sea, time and time again, since Jurassic and Cretaceous times, and all the while enjoying a similarly mild climate. Why is it that these numerous types of life skipped all these other formations, and that we find no trace

of either Crinoids or chalk over these thousands of miles of subsequent deposits? Or, considering how many of their characteristic types are alive in our modern seas, why are not the chalk and crinoidal limestones of the Mesozoic and Paleozoic rocks just as recent as the nummulitic limestones of the Eocene, or any other rocks?

It is no answer at all to say that, though the general types are identical, yet many of the species are different. No one

has had the courage to attempt to spell through the flood of new names with which the science of the last half century has been inundated; but we would like more satisfactory proof of this assertion than the traditions and customs of a hundred years, and the exigencies of a fanciful theory; for we can not forget during how many years similar statements were persistently made regarding the great mammals. This worn-out argument of Cuvier's about extinct species has kept up a running fight with common sense for many decades, and, though driven backward from one point to another over the long, thin line of this taxonomic series of the ancient world, it still contests every inch of ground.

Let us try the tree-ferns and cycads of the coal beds of the Paleozoic and Mesozoic. In northern regions they do not occur later than the Triassic and Jurassic, and doubtless it is the same with the rocks in the tropics, where the modern species now live in fair abundance. But how did they come to shift to the tropics so many millions of years before the palms, etc., of the Tertiaries thought it time to do the same? The climate had not changed a degree. How did they come to scent the Glacial age so much earlier than their more highly organized fellows?

The "Challenger" Expedition some years since fished up some living Cyathophylloid corals from the bottom of the ocean, where they are now building away as in the olden time. Geologists were well acquainted with limestones composed largely of their fossils, in Spitzbergen and elsewhere.

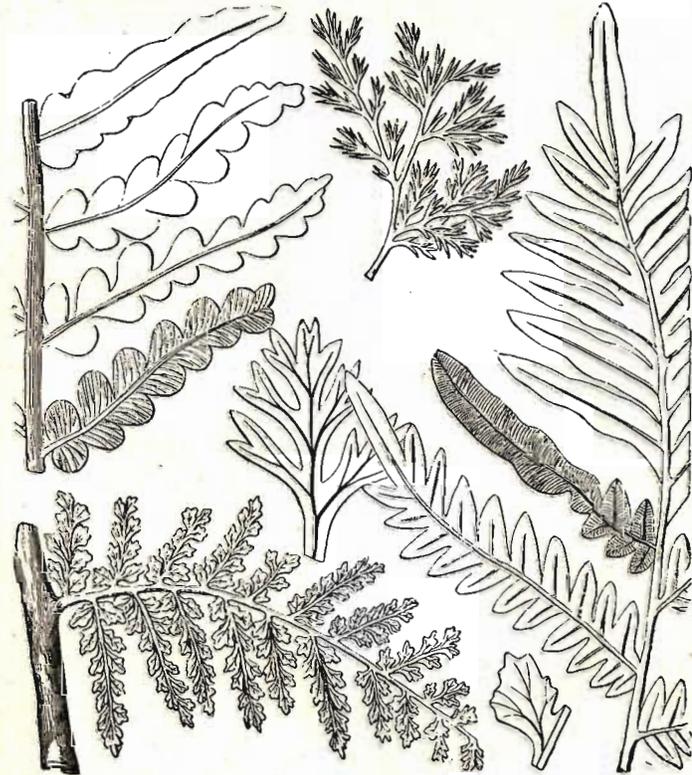


ENCRINURUS
MONILIFORMIS
Crinoid, English Triassic



Another living Crinoid (*Pentacrinus caput-medusae*), from the West Indies.

They were labeled "Carboniferous," or "Permian," and all these corals were thought to be extinct since then. But where have these creatures kept themselves during all the intervening ages, while the continents were seesawing up and down? Or why are not the rocks containing their fossils as recent as any of the other rocks?



FERNS FROM THE CARBONIFEROUS

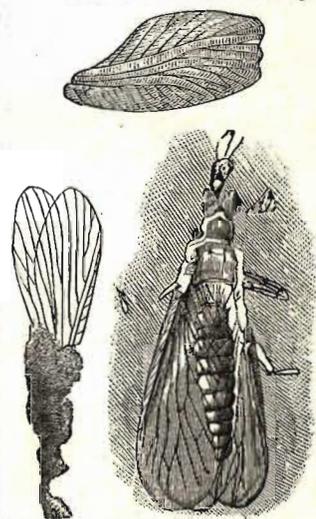


CYCLOPHTHALMUS BUCKLANDI

A fossil scorpion of the coal-measures of Bohemia. The scorpions skip the Permian, Triassic, Jurassic, and Cretaceous rocks.

down unchanged from the Carboniferous rocks, and forgot to leave any fossils in all the intervening ages.

And so we might go on. There is hardly a family found in the older rocks which does not have its living representatives of to-day, and with, we believe, a fair proportion of the species identical, though in hundreds, perhaps thousands, of cases these species, genera, or even whole orders, have somehow skipped all the intervening formations. Of course they go under different names in the literature,



INSECTS FROM THE CARBONIFEROUS

We have spoken of the Dipnoans, or lung-fishes, that have jumped from the Jurassic to the modern. But their cousin, the Polypterus of the upper Nile, has performed a much more wonderful feat, for his ancestors are found only in the Devonian rocks. In this he is scarcely alone, for the king-crabs (*Limulus*) and the scorpions have come

for "some geologists make it a point to give a new name to all forms found in the Paleozoic rocks, i. e., a name different from those of modern species." Such doubtless will be the case just so long as, to repeat the words of Zittel,—



CESTRACION PHILIPPI

This is a modern specimen; its fossils are found in the Mesozoic rocks.

recent systematic zoology. — "*History of Geology*," pages 375, 376.

This fact, number 3, as stated, is a most important one in formulating any general induction about the fossil world.

Our fourth leading fact relates to the condition in which

AMBLYPTERUS
MACROPTERUS

A Ganoid of the Carboniferous system.



NUMMULITES LAEVIGATA

The Sphinx in Egypt, with some of the stones in the Pyramids, are made of nummulitic limestone, and the shells of these fossils, protruding as they do from the surface of these monuments, are called "Pharaoh's beans" by the Arabs.

we find the fossils, just as in an ordinary *post mortem* the presence of a bullet hole through the brain, or of arsenic in the stomach, ought to have quite a little influence on the verdict — and probably would do so in the minds of all save medical uniformitarians.

4. Samples of all the groups of rocks give us fossils in such a state of preservation, and heaped together in such astonishing numbers, that we can not resist the conviction that the vast majority of these deposits were formed in some sudden and not modern manner, catastrophic in nature.

The supreme importance of this point makes it necessary that we should enter somewhat into details. One of the many geological myths dissipated by the work of the "Challenger" Expedition, which Zittel says "marks the grandest scientific event of the nineteenth century," is that about the condition of the ocean bottom, and the work now being carried on there. The older text-books taught that, not only was the bottom of the ocean thickly strewn with the remains of the animals which died there and in the waters above, but also that the oceanic currents were constantly wearing away in some places and building up in others over all the ocean floor, and hence producing true stratified deposits. Accordingly, it was said that it was only necessary for this bed of stratified deposits to be lifted above the surface to produce the ordinary rocks that we find everywhere about us. But we now know, thanks to the "Challenger" Expedition, that the ocean currents have, as Dana says, "no sensible mechanical effects, either in the way of transportation or abrasion," and that beyond the narrow "continental shelf" surrounding the land, there is over the ocean bottom absolutely nothing save the fine ooze formed from minute particles of organic matter, like chalk. There is no gravel, no sand, no clay, no stratified or bedded structure of any kind whatever. (Dana, "Manual," page 229.)

We can, however, readily admit that stratified deposits

are now forming on this narrow "continental shelf" about the shore of our existing seas and oceans, extending out to the one-hundred-fathom line, and also about the mouths of large rivers. But we think a study of the kind of organic remains to be recovered from these modern formations will remove many false ideas.

It must be granted that the fishes themselves, to say nothing of land animals, stand a very poor chance of being buried intact. Thus Nordenskiöld, the veteran arctic explorer, so accustomed to those regions where animal life flourishes in such profusion, remarks with amazement on the difficulty of finding the remains of animals or fish that have recently died, every relic of their existence having apparently disappeared. He concludes by saying:



LEBIAS CEPHALOTES
Cycloids from the French
Miocene.

It is strange, in any case, that on Spitzbergen it is easier to find the vertebræ of a gigantic lizard of the Trias than bones of a self-dead seal, walrus, or bird, and the same also holds good of more southerly inhabited lands.

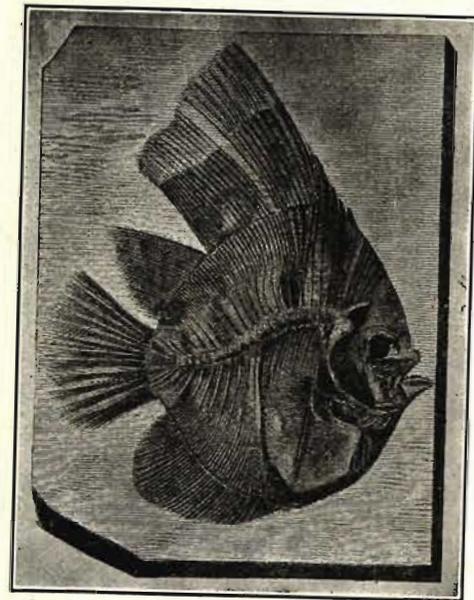
We might expect to find about the mouths of such rivers as the Hudson, Seine, or Thames, numerous fossiliferous remains of dogs, cats, and other domestic animals. And yet, in spite of the thousands of carcasses consigned to these waters, none of their remains have been found in recent excavations in the Thames deposits. (*Popular Science Monthly*, Vol. XXI, 1882, page 693.)

Dana explains the matter somewhat in the following language:—

Vertebrate animals, as fishes, reptiles, etc., which fall to pieces when the animal portion is removed, require speedy

burial after death to escape destruction from this source [decomposition and chemical solution from air, rain-water, etc.] as well as from animals that would prey upon them.—
“Manual,”
page 141.

These carcasses of land animals brought down by the rivers are evidently devoured by fishes before



PLATAX ALTISSIMUS

A Ctenoid of Monte Bolca (Eocene)

they have time to be buried by sediment. If a vertebrate fish should die a natural death, which of itself must be a rare occurrence, the carcass would soon be devoured whole or bit by bit by other creatures near by. Possibly the lower jaw, or the teeth, spines, etc., in the case of sharks, or a bone

or two of the skeleton, might be buried unbroken, but a whole vertebrate fish entombed in a modern deposit is surely a unique occurrence. But every geologist knows that the remains of fishes are, in countless millions of cases, found in an excellent state of preservation. They are literally entombed in whole shoals, with the beds containing them miles on miles in extent, and scattered over every portion of the globe.

Thus Buckland, in speaking of the fossils of Monte Bolca, which are quite typical of other cases, says:

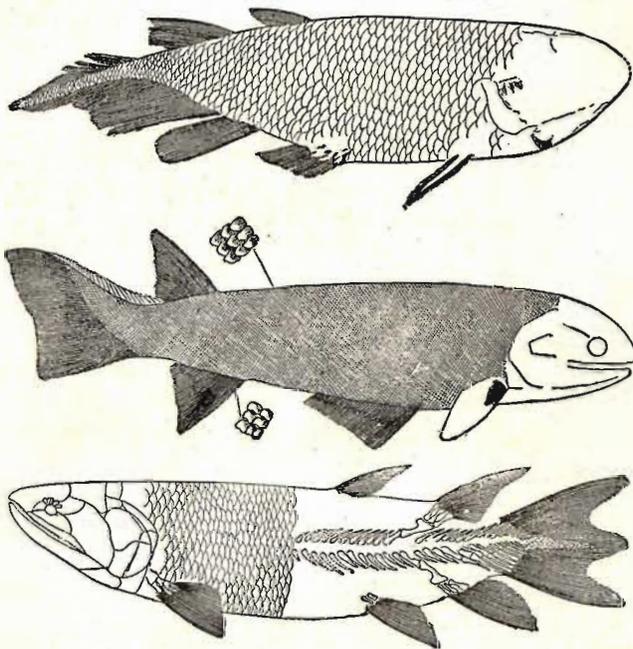
The skeletons of these fish lie parallel to the laminæ of the strata of the calcareous slate; they are always entire, and so closely packed on one another that many individuals are often contained in a single block. . . . All these fish must have died suddenly on this fatal spot, and have been speedily buried in the calcareous sediment then in the course of deposition. From the fact that certain individuals have even preserved traces of color upon their skin, we are certain that they were entombed before decomposition of their soft parts had taken place.—“*Geology and Mineralogy*,” Vol. I, pages 124, 125, edition 1858.

In hundreds of cases shales and slates are so full of fish-oil that they will burn almost like coal, while some geologists claim that some deposits of cannel-coal were formed by the distillation of this fish-oil from the super-saturated mass.

There is a series of strata found in all parts of the world, which used to be called the “old red sandstone,” and is now known as the Devonian. In these beds, almost wherever we find them, the remains of fishes occur in such profusion and preservation that the “period” is often known as the “Age

of Fishes." Dr. David Page, after enumerating nearly a dozen genera, says:

These fishes seem to have thronged the waters of the period, and their remains are often found in masses, as if



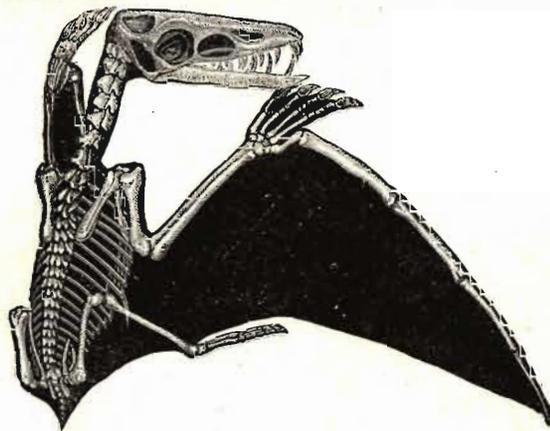
GANOID FISHES FROM THE DEVONIAN ROCKS

they had been suddenly entombed in living shoals by the sediment which now contains them.

Hugh Miller's classic description of these rocks as they occur in Scotland may be taken as representative of numerous other Devonian rocks in all parts of the world:

We read in the stone . . . a wonderful record of violent death falling at once, not on a few individuals, but on whole tribes. . . .

At this period of our history, some terrible catastrophe involved in sudden destruction the fish of an area at least a hundred miles from boundary to boundary, perhaps much



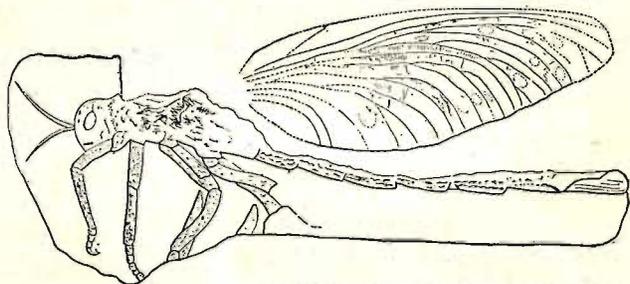
A reptile (*Pterodactylus crassirostris*) about a foot long, with about three feet spread of wing. It had a large brain, and as it probably lived on fruits and nuts, it is interesting from corresponding more nearly to the "serpent" in the garden of Eden than anything yet discovered. From the Jurassic of Europe. Other species of Pterodactyl were many times larger.

more. The same platform in Orkney as at Cromarty is strewn thick with remains, which exhibit unequivocally the marks of violent death. The figures are contorted, contracted, curved; the tail in many instances is bent round to the head; the spines stick out; the fins are spread to the full, as in fish that die in convulsions. . . .

In this attitude nine tenths of the Pterichthes of the lower old red sandstone are to be found.—"Old Red Sandstone," pages 48, 221, 222.

The conditions indicated here are evidently those of deep water, with sediment falling so rapidly through it from above as literally to bury these fish alive. But this author expresses his astonishment at the quiet conditions in the waters, indicated by the fineness of the sediment, and the perfect condition of the fossil remains, combined with the amazing extent of the catastrophe.

In what could it have originated? By what quiet but potent agency of destruction were the innumerable existences



A gigantic dragon-fly (*Titanophasma fayoli*), from the Carboniferous rocks of France. It was about sixteen inches long.

of an area perhaps ten thousand square miles in extent annihilated at once, and yet the medium in which they had lived left undisturbed by its operations? Conjecture lacks footing in grappling with the enigma, and expatiates in uncertainty over all the known phenomena of death.—*Id.*

Surely Howorth is talking good science when he says that his masters Sedgwick and Murchison taught him — that no plainer witness is to be found of any physical fact than that nature has at times worked with enormous energy and rapidity, and that the rocky strata teem with evidence of violent and sudden dislocations on a great scale.—“*Nightmare*,” *preface*, page 15.

We have spoken only of the fishes, but what other class of the animal kingdom will not point us a similar lesson? Reptiles and amphibians, to say nothing of the larger mammals, are also found in countless myriads, packed together as if in natural graveyards. Everybody knows of the enormous numbers and splendid preservation of the great reptiles of the Western and Southern States, untombed by Leidy, Cope, and Marsh. One patch of Cretaceous strata in England, the Wealden, has afforded over thirty different species of Dinosaurs, Crocodiles, and Pleisosaurs. De la Beche, the first director of the Geological Survey of Great Britain, speaking of animal remains in general, though with especial reference to these gigantic monsters of the Mesozoic rocks, says that —

a very large proportion of them must have been entombed uninjured, and many alive, or, if not alive, at least before decomposition ensued.—“*Theoretical Geology*,” page 265, 1834.

The Invertebrates also bear eloquent testimony to the fact of very abnormal conditions having prevailed when their remains were entombed. Whether we speak of insects or crustaceans, of mollusks, corals, or crinoids, it is the same old story of abnormal deposits, entirely different from anything that is being made to-day.

Where, for instance, in the modern seas will we find the remains of coral polyps now being intercalated between beds of clays or sands over vast areas as we find them in the Lias and Oolite of England and elsewhere? In some cases they are even between beds of conglomerate. Corals, though not living at very great depths, require clear, pure waters, and it would require a tremendous catastrophe to intercalate a

bed of coral remains a few feet or a few inches in thickness over the vast areas that we find them. Crinoids require the same clear water, but much deeper, some of the modern kinds living over a mile down. But every student of the science knows that the subcarboniferous limestone of both Europe and America, so noted for its crinoids and corals, is constantly found intercalated between shales or sandstones, or between the coal-beds themselves, as at Springfield, Illinois, or in the lower coal measures of Westmoreland County, Pennsylvania. Surely no sane man will claim that these beds of crinoids or corals, perhaps only a few inches in thickness, grew *in situ*. In some tables given by Dana ("Manual," pages 651, 652), compiled from four different localities, we count no fewer than twenty-three beds of limestone thus interbedded with sand, shale, or coal. Similar combinations of beds are not now forming anywhere on earth in modern deposits, and have not been within the historic period.

We have not space to speak of the fossil bivalves, whose valves are quite often found applied, as if buried alive, before the shells had time to open; or of the hosts of brachiopods, usually found with the valves closed, and the interior often hollow, showing that no mud had had time to work through the hole near the hinge-joint which always exists after the animal dies. These telltale conditions should be to us what a bullet hole found in the skull, or arsenic in the stomach, of a subject of a *post mortem* ought to be to those holding an inquest. The plants in the coal-beds tell the same story. The mummies of the mammoth, in northern Siberia, also attest a thoroughly abnormal condition of affairs, not simply by their encasing in the frozen soil undecomposed, but also

by their incredible abundance, for "the soil of certain portions of the tundras seems to be almost crammed with such remains." (R. Lydekker, Smithsonian Report, 1899, pages 361-366.)

But whither shall we turn to avoid finding similar phenomena? The vast deposits of mammals in the Rocky Mountains unearthed of late years may occur to the reader. As Dana says, these places "have been found to be literally Tertiary burial-grounds." We need not attempt the details of these, nor of those other deposits in Europe where the great Tertiary mammals have been found mixed up with human remains, for we would only weary the reader with a monotony of abnormal conditions of deposit, unlike anything now being produced this wide world over. We shall be stating the case very mildly indeed if we conclude that the vast majority of all the fossils, by their profuse abundance and their astonishing preservation, tell their own story of "speedy burial after death," or before, and are entirely different in character from those now being laid down along our coasts and by our rivers and lakes.

In this *post mortem* on the fossils of the rocks, we can not do otherwise than render the verdict of death by violence; and the Biblical deluge alone is adequate to explain the facts in the case. Our modern scientific knowledge simply confirms the record in Genesis of a marvelously beautiful world wiped out of existence and buried by a violent cataclysm.



PROF. EDUARD SUESS (1831-)

Professor in the University of Vienna

One of the foremost living geologists. He thinks that the old notion of a "pulsating crust," with the land continually on the go, up and down, here and there, is a great error; and one of his chief contributions to modern science has been in showing that we have nothing now going on in our modern world like the great exchange of land and water recorded in the rocks. If geologists could only understand this great fact, they would realize that it means the logical bankruptcy of the Uniformitarianism of Lyell and Hutton.

CHAPTER X

The Verdict

IN the preceding chapter we devoted considerable attention to the packed graveyards found in every corner of the globe, full of the strange forms from that olden world which were buried by sea water where now are wide-spread plains or mountain ranges. The really multitudinous arguments against the popular theories suggested by these conditions we have not the space to catalogue, much less develop in detail. But even these strangely abnormal deposits are not in themselves and considered singly the most conclusive proofs that our world has witnessed an awful aqueous catastrophe — the scientific complement of the Biblical deluge. The absolutely unanswerable argument in this behalf can only be understood by rising to that high and general view of the matter which takes in the whole world's surface, and the whole field of geological facts.

The broad general fact is that the remains of man, and thousands of living species of plants and animals, are found in stratified rocks, spread out by flowing water, often sea water; but the place of these deposits, now high and dry, it may be thousands of feet above the sea-level, has not been occupied by the sea since the dawn of scientific observation. Land and sea have at some time been all mixed up together, or have exchanged places. And, according to the best authorities of the day, such as Zittel, Fuchs, and Suess,¹ nothing in the nature of a gradual tendency to-

¹ See chapter 13 of "The Fundamentals of Geology," by the author.

ward such a mutual exchange of land and water, is now going on anywhere on earth. Hence we have no natural way to account for this exchange of land and water, except by saying that something happened to our world long ago, before the dawn of recorded history, which was thoroughly different in kind as well as in degree from anything now going on.

It is not necessary for us to discuss here the questions relating to the antiquity of man, as it is popularly understood. The question of how far back in geological time man actually lived is for us, who have discarded the myth of the successive geological ages, wholly a false way of looking at the subject. Why should we attempt to decide whether Pliocene or Miocene or Eocene shells are found with these fossil human remains?

That man lived in Western Europe contemporary with those giants of that older world, the elephant and the musk-ox, the rhinoceros and the reindeer, the lion, the cape hyena, and the hippopotamus, at a time when most of our mountains had no existence, but their places were occupied by great stretches of ocean, while a soft, vernal climate mantled all the northern regions and clear within the arctic circle, are truths which all admit. Such facts are now found in the text-books for our children in the public schools.

The really important fact is that human remains are found fossil, just the same as other forms of life, and that there is absolutely no way of proving that these fossil men are not as old as any other fossils. Whatever proves the latter old does the same for the former; but if we insist on the comparatively modern character of these fossil human remains, we must admit the same for all other fossils, be-

cause, as already shown, *inductive science insists that the fossil world was a unit, and that man was contemporary with all alike.* True science can never take us back of this state when all existed contemporaneously together; for it would require a supernatural knowledge of the past to discriminate among the fossils, and say that any particular group existed before the others, and occupied the world exclusively for ages before the others came into existence. As we have seen, all efforts thus to lay out a history of organic creation have ended in a miserable failure, because such efforts are along lines so false that they are rapidly making geology a laughing-stock to the other sciences founded on the principles of Bacon and Newton. The fossil world is a unit, and simply represents the ruins of an older state of our present world; and whatever geological changes they indicate, must have taken place *since man was on the earth*; for there is no possible line of scientific reasoning whatever to convince us that any single type of fossil is older than the human race.

Even if we wish to consider the matter simply from the popular scientific standpoint, we have a formidable list of cosmic changes that geologists admit have taken place since "middle Tertiary time," which is the period now usually given as the one containing the first human fossils. Here is the list of what the popular text-books teach has taken place since man was on the earth:

1. Man must have seen the entire elevation or at least the completion of all the great mountain ranges of the world, such as the Rockies, Andes, Alps, Himalayas, etc.
2. The relative distribution of land and water has — since man's existence as commonly stated — changed com-

pletely. The land and water have practically changed places over the greater part of the globe.

3. Man lived while the arctic regions had a mild, soft climate, and he lived to see these conditions so suddenly changed that some of his contemporary brute companions were caught in the waters and frozen so speedily that their flesh has remained untainted. Other considerations show that this change of climate affected the whole world.

4. But contemporaneous with these physical changes there dropped out of sight on all the continents those huge beasts whose remains are now found buried in the stratified rocks, deposited by flowing water, and which, exhibited in the museums of every land, are the astonishment of all the world.

Referring to the complete extinction from the American continent of the mammoth, rhinoceros, the mastodon, the great tiger, and thirty odd species of the horse tribe, with some others, a celebrated naturalist asks: —

What then has exterminated so many species and whole genera? The mind at first is irresistibly hurried into the belief of some great catastrophe; but thus to destroy animals, both large and small, in southern Patagonia, in Brazil, on the Cordillera of Peru, in North America, and up to Bering Straits, we must shake the entire framework of the globe.—*Darwin, "Voyage of the Beagle," pages 172-176.*

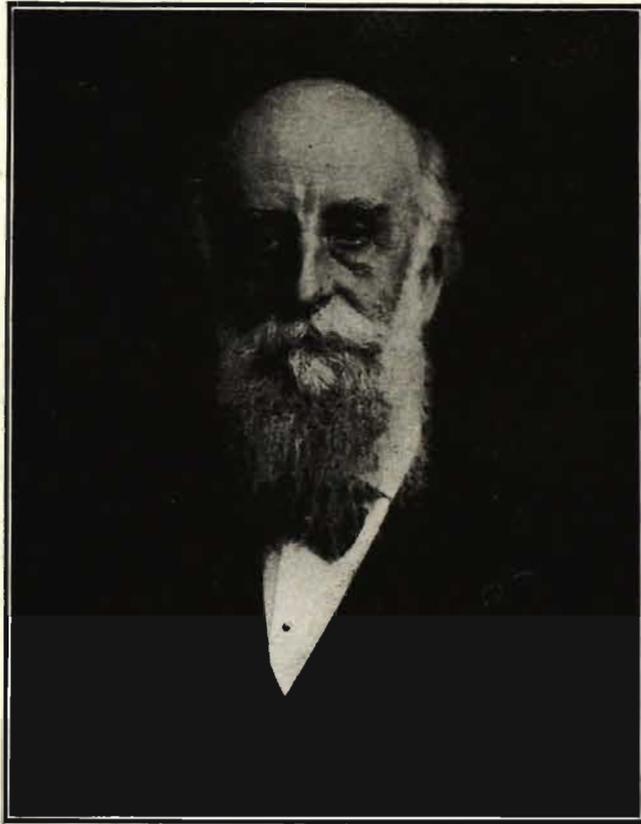
From the purely scientific standpoint, it may not be easy to understand how the world could so far have recovered from a universal and complete catastrophe of this nature. There may be difficulties here, from the simple standpoint of science, as to the extent and completeness of this event, i. e., as to how much of all the fossiliferous deposits were due to this event, and how much may have been laid down previously. It may be difficult thus to draw the line, and

assign limits to this catastrophe and the work it did, but the main general fact is placed forever beyond question or cavil.

In view of the perfect collapse of the theory of successive ages, in view of the fact that modern living species are found fossil in all the rocks, of the amazing change in climate which the earth has experienced, of the dwindling of all forms of life and the extinction of thousands of genera, and in view of the crowded graveyards in which we find their remains, it seems almost like a deliberate insult to our

If it shall turn out that Moses knew more about geology than Humboldt, . . . then I will admit that infidelity must become speechless forever.—
ROBERT INGERSOLL, "TILT WITH TALMAGE."

intellectual honesty to be approached with offers to explain these things on any so-called natural action of the forces of nature. It is now as certain as any other common scientific or historical fact, as certain as the fall of Rome, the burning of Moscow, or the earthquake of Lisbon, that our once magnificently stocked and climated world was destroyed by some sudden and awful cataclysm. With this an assured fact, it is not difficult for the Christian to go a step farther, and say that it must have been just as complete a destruction, brought about by the same means, and recovered from in just the same manner, as pictured in the book of Genesis. So, with renewed courage and faith, we turn again to this dear old Book, which has told the one consistent story all these centuries. Thus, with the succes-



DR. LYMAN ABBOTT (1835-)

Editor of the *Outlook*, and a leader of the New Theology in America

sion-of-life idea consigned to the limbo of all other crude guesses, with all the fogs of pseudo-science clearing away, the human mind to-day, as never before within historic time, stands face to face with that most awful yet sublime fact, a literal creation, the immediate act of the Infinite God.

The saddest thing about the whole situation as it now stands is the sorry picture presented by those individuals — I had almost said whole churches or denominations — who for twoscore years or so have been vying with each other in repudiating the Mosaic record, and in their frantic haste to reconstruct the whole Christian system in accordance with the Evolution doctrine. No picture, in all the dreary ages of incessant efforts made by each generation to evade the claims of their pitying Creator and Redeemer, can equal this of the learned, cultured, modern church, so eager to believe a lie concerning her Lord, so quick to write her own bill of divorcement.

Now, with the tide already turned, with the fossil witnesses already crowding together like a very theater crush in testimony to the truth of the Biblical record, will the church retrace her steps? Will she retract her fulsome flatteries heaped upon those reckless scientific speculators who for a half century or so have been pronounced little less than demigods? Will she endeavor to extricate herself from the stultifying position she now occupies? Alas! the analogy of history is against such a hope. Scientists and naturalists may be depended upon to recognize the truth concerning a literal creation far more quickly than those professed exponents of the Christian religion who have talked so glibly about "Theistic Evolution" and the "New Theology."

CHAPTER XI

Creation as Taught in the Two Books

IT was one of the sneers of Macaulay that natural theology is not a progressive science. Natural theology may be defined as the knowledge of the being and character of God which we can gather from reason and nature alone, without the help of revelation. Strangely enough, this brilliant but often superficial essayist claimed that the early Greek philosophers had the same evidences of design in creation, and were as favorably situated to decide the great problems of origin and destiny, and to judge of the character of God from his works, as are the people of our day. It will be our aim in this chapter to draw some conclusions from the facts given on the preceding pages to show how these modern discoveries from the one book confirm the record of a literal creation given in the other, and thus indirectly answer the claim of Macaulay that the ancient Greeks had as much light on this point as we have.

There are other proofs of the inspiration of the Bible and of the character of God much stronger than any evidence that can be gathered from the material world. The strongest proof of Christianity, and thus also of the inspiration of the text-book of Christianity, is a loving and lovable Christian. "Ye shall know them by their fruits," said the Great Teacher of this religion. Perhaps the next strongest evidence in this direction is seen by comparing what Christianity has done for peoples and nations with what its rejection has brought upon others. Especially when this subject is con-

sidered in the light of prophecy, does it become an unanswerable and overwhelming argument for the truth of the religion which we love, and for the revelation upon which it is based. But all these are beyond the scope of this chapter. The countless evidences of design in nature, thus proving a Divine Mind back of them all, have been often set forth, and are somewhat aside from our subject. In the preceding pages we have justified the record of the flood as told in the two books; here we shall carry the vindication, the proof of mutual harmony, back to the record of an immediate creation.

There are several prophecies which point to a great increase of light in the last days regarding this subject of creation. One of these is in Rev. 14:7, where a great world-wide proclamation, going "to every nation, and kindred, and tongue, and people," calls upon all men to "worship him that made heaven, and earth, and the sea, and the fountains of waters." Doubtless, as has been pointed out many times by others, this prophecy foretells a great reform on the Sabbath, which is the special memorial of creation, and the sign of allegiance on the part of God's people toward him as their Creator. And how peculiarly appropriate is this message when considered as addressed to this age of Evolutionists! Who can doubt that the many discoveries, in which our modern age has had the wondrous works of creation opened up before them, have been permitted largely to help us to appreciate what creation means, and thus to appreciate the appropriateness of the divine memorial of this event? How appropriate that God's people should make use of these discoveries to call a careless and skeptical world back to the worship of him whom they have

largely forgotten or ignored, in spite of these astonishing evidences multiplying on every hand!

From many other prophecies which have often been discussed, we know that the crowning test of the ages' turns upon this very question of our relationship to the Creator, and his relationship to us. Hence, is it not reasonable to expect that the Creator would, for this last generation, greatly strengthen the argument for a literal creation, which

The Sabbath-rest was a Babylonian, as well as a Hebrew institution. Its origin went back to pre-Semitic days, and the very name, Sabbath, by which it was known in Hebrew, was of Babylonian origin. In the cuneiform tablets the "Sabattu" is described as "a day of rest for the soul."
—A. H. SAYCE, IN "THE 'HIGHER CRITICISM' AND THE VERDICT OF THE MONUMENTS," PAGE 74.

may be read from the works of his hands? Of course his written Word testifies of a literal, direct creation; but many modern people do not believe this written Word, while they do profess to believe in the teachings of nature. Hence, might we not expect that before the climax of the ages God would give almost a scientific demonstration of this all-important fact of a literal creation? To leave the world absolutely without excuse, would not God be under obligation (we speak it reverently) to give such an argument after the scientists' own favorite kind as would convince them of this grand event, and of their obligation to him on

that account, the Sabbath being the appropriate sign, or seal, of his authority and of this relationship?

It seems almost self-evident that the great scientific discoveries of the present age have been timed and planned largely for the purpose of working out just such a demonstration of a literal creation before the eyes of this generation of Evolutionists. And how appropriate it is that the gospel for this time should be given in such a setting as this! How timely is such a message as this of Rev. 14: 7, when addressed to the scientists of this age, who have for nearly

This Sabbath of the Babylonians, thus proved to have been known centuries before the time of Moses, is evidently only another relic handed down from Eden.

half a century pointed their jokes at the "nursery yarns" of Genesis, and have claimed that they could easily explain the origin of the world and of everything in it by purely natural law. Now that their hopeless failure to do this becomes more strikingly evident with each passing year, why should not the people of God gather fresh courage for their Master's work, and use these modern discoveries as proofs, not only of their Creator's power and wisdom in creating all things in the beginning, but as promises of that glorious world which his love will re-create for us, when there shall be no more tears, "neither sorrow, nor crying, neither shall there be any more pain; for the former things are passed away"?

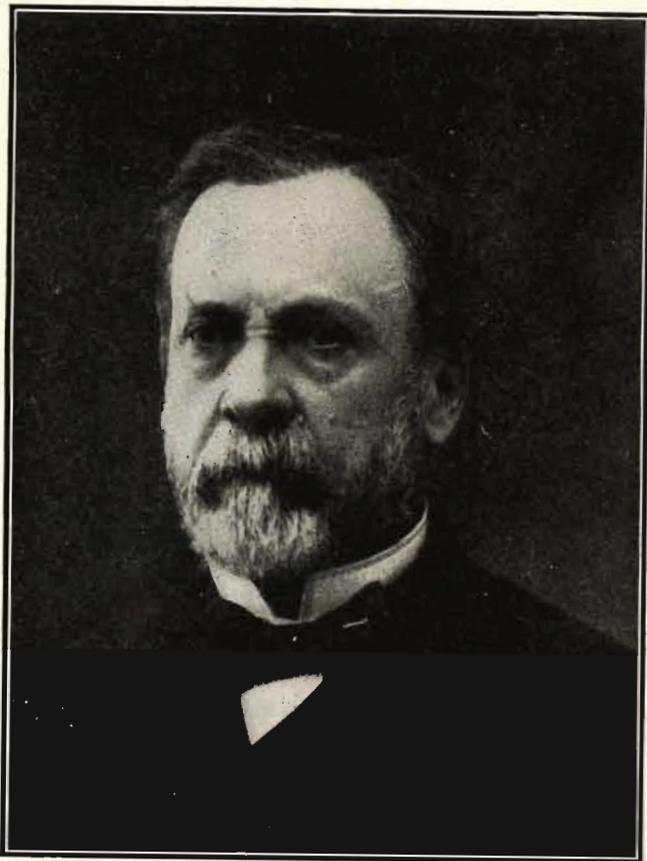
What do we mean by creation? and what would serve as proofs of there having been a real creation, such as the Bible records? Omitting the subject of absolute creation, that is, the creation of the materials of which our world is composed, and restricting our study to the creation of plant and animal life, we may sum up the matter by giving as the teaching of the Bible the general truth that creation was completed at some definite time in the past, that "the works were finished from the foundation of the world" (Heb. 4: 3), and thus that the work of creation is not now going on. *Mountains, Valley, Lakes, etc., are yet forming.*

During the past century or so, as we have seen, there has been a constant effort on the part of science to explain creation as only similar to things now going on around us, as only one in kind with the action of natural law in the world to-day. Hence, though we may not be able to show the exact process of creation, we may take it as constituting undeniable proof of creation, in the Biblical sense, if we can show that in many various ways nature furnishes us proofs that the origin of things must have been radically different, not merely in degree, but in kind, from anything going on to-day in the world around us.

The ancients did not see anything very wonderful in the thought of creation as the work of some omnipotent Being, some omniscient Mind, nor did they know enough of the alphabet of nature to be able to decipher the record of creation which God has written in the dewdrops and in the orbs of the sky, in flower, shrub, and tree, and especially in man, who, revelation declares, was made in the likeness of his Creator. The telescopic wonders in the worlds above, the microscopic and chemical revelations from the world in

which we move and of which we are a part, become only so many thousands of ways in which we moderns are in advance of the ancient Greeks in a knowledge of the works of God, and by reason of which we can appreciate a thousand-fold more than did they the evidence thus furnished of the Creator's wisdom and power. They believed in the four elements,—earth, air, fire, and water,—and thought that frogs and mosquitoes and many other forms of life sprang up spontaneously from the moist earth. No wonder they saw nothing in creation very different from what was going on around them. How extravagant, then, for any one to say that they were as favorably situated as we for understanding the works and appreciating the character of the Creator!

Century after century dragged its slow length along, until it really seemed that the world would never awake to an understanding of God's great book of nature. Spontaneous generation continued to be taught and believed in until well along in the nineteenth century. Not until the time of the pious Pasteur, who said that he always prayed when about his work in the laboratory, was it settled once for all that life can not arise from the not living except by direct creation. Life comes now only from antecedent life. And the same law holds good in the spiritual realm. This was Christ's word to Nicodemus: "Ye must be born from above." We are like the dead, inorganic matter all around us. We have no real life in ourselves; and only by life coming down and taking possession of us and imparting its life to us can we truly live. We are just as helpless to evolve spiritual life in and of ourselves as is the clod of the valley unable to produce life by chemical and physical ac-



LOUIS PASTEUR (1822-1895)

His great work was in disproving the doctrine of spontaneous generation, and in demonstrating that life can come only from antecedent life.

tion alone. Science to-day acknowledges that life can come from the not living only by a direct creation, and thus vindicates the Biblical record, which says that life came into existence on our world at the express command of God.

But long before this much of a vindication of Genesis had been worked out, the spirit of evil had laid the foundation for a more subtle deception than any that he had yet sprung upon the world. Early in the nineteenth century, or even before, he began to teach that life had been on the globe for countless ages, that it began with the very

Posterity will one day laugh at the foolishness of the modern materialistic philosophers. The more I study nature, the more I stand amazed at the works of the Creator. I pray while I am engaged in my work at the laboratory.—PASTEUR.

lowest forms of life, and, gradually, in some way or another, new and higher forms of life came in to replace the old, until the higher forms were reached, and finally man, the flower and fruitage of this long-continued growth or development, came into existence. At first it was said that each successive form of life was due to a new and separate creation. Then, as this began to seem absurd, what was more natural than to claim that the higher forms developed naturally out of the lower preceding ones?

It was supposed that geology had proved that there had actually been this succession of life on the globe, and that all the geological changes took place in the past by simple, every-day changes, like those now going on around us.

Why not say that the origin of the higher species from the lower must have taken place in the same natural, commonplace way, by forces and processes now in operation? So Charles Darwin volunteered to show how this development of species into other species is now going on; and the world clapped its hands in applause, and decided that creation is only a figure of speech, and the record of Genesis at the most only a beautiful myth or an allegory. Strangely enough, it was the last point in this argument that was the first to be refuted by science. Darwinism was found to be a huge mistake by its very friends who were searching for evidence in its favor. As we have seen, they could not find a single instance where species are now originating from other species. The world was ransacked in the frantic search; but to-day it is only the simple truth to say that most scientists have got tired of looking for success in such an effort.

In the meantime, as we have also shown, the geologists had been at work uncovering some of the Lord's buried witnesses. These testified to conditions of death and burial wholly different in kind and degree from anything now going on. Then, to put the climax on it all, it was discovered that this whole succession of life itself was only a huge blunder, founded on a long series of disgraceful mistakes; until it is now evident that there is absolutely no way of proving that one kind of fossil is older than another or than man himself. The inevitable conclusion follows that what geology has been fooling with all these years is only the ruins of that ancient antediluvian world which was destroyed for its wickedness by the flood, as recorded in the seventh and eighth chapters of Genesis. And back of it all,

looming up against the dawn as the mists of Evolution and pseudo-science clear away, appears that most august thought of the human mind, now demonstrated as the very climax of scientific discovery, "In the beginning God created the heaven and the earth."

Let us summarize the situation. Everybody knows how completely it is demonstrated that life can come only from antecedent life. The spontaneous generationists have practically given up the fight. But not all are equally aware that the Darwinists are in about the same fix. Not a single example has ever been proved of one species having produced another distinct species. In addition, we have the recent demonstration that the popular geological ages are a hoax, being founded on a long series of gross blunders; and this demonstration has been welcomed and acknowledged by most men who have had a chance to look into the matter. But if a true or inductive system of geology removes every possible scheme of Evolution, and makes it childish nonsense in the eyes of every one capable of appreciating evidence, it also in the very nature of things, proves the reality of the deluge, and thus not only strengthens faith in the Bible in general, but practically demonstrates the reality of a literal creation at some one definite time in the past. *For if life demands a real creation, if each separate species demands a real creation, and if no one species can be proved to be older than another, then why is not a literal creation of all the forms of life at approximately one time demonstrated as a scientific fact for every one capable of logical reasoning?*

There is no way of mistaking the meaning of all this, no way of failing to see why the Creator has allowed all these discoveries to accumulate in our day, why he has reserved

such demonstrative evidence of his creation to arm his church with tangible facts of the world's own favorite kind, as she goes out to proclaim anew the truth of creation to this scoffing age of Evolutionists, promising that soon her absent Lord will return to re-create from this ruin of a world, a new earth, — the everlasting abode of righteousness and peace. This is the situation now before our world. A century of scientific research has taught our age to appreciate, as no other age could have done, the force of the evidence urged upon us by thousands of discoveries, that creation was wholly different from anything now going on about us. And who can not appreciate the beauty and appropriateness of bringing to light at this time the evidence of this event, related as it is to our re-creation, or redemption through Christ, and to the promise of a new heaven and a new earth, wherein the nations of the redeemed shall dwell forevermore?

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