

# 1,500,000,000 Years of Life Portrayed In Great Hall Of Paintings

*Paleontology*

By Frank Thone

FIFTEEN hundred million years of life on this planet will be unrolled as a single connected epic in a series of three majestic new halls planned for the Field Museum of Natural History in Chicago. Fossils, rocks, mounted plant and animal specimens, paintings and statuary will be so arranged that he who walks may read the cosmic Book of Genesis which has never ceased to be written since that ageless day when the heavens and earth rose out of chaos.

This project, Roman in the magnificence of its scope, Greek in the simplicity and directness of its principal theme, Gothic in the meticulous detail of its execution, will be put through with modern American speed. As a matter of fact, the first third of it is already practically completed, and the whole idea will have become a reality by 1933.

The hall, now in its final stages of development, will give an idea of the scale and swing of the entire concept. This is the Ernest R. Graham Hall of Historical Geology, named for the donor who made possible the arrangement of this group of exhibits. The visitor finds himself in a walled and ceilinged space so nearly Assyrian in its proportions that one hesitates to call it a room.

The free space in the center is occupied by mounted skeletons of the enormous vegetarian dinosaurs that bulk as high and wide as a freight car, and with their interminable necks and trailing tails are as long as a freight train—a tolerably short freight train, at least. With them are the smaller, but still huge, carnivorous dinosaurs that preyed on their bulking carcasses—creatures with barn-door mouths and railroad-spike teeth. With them also are much later comers,

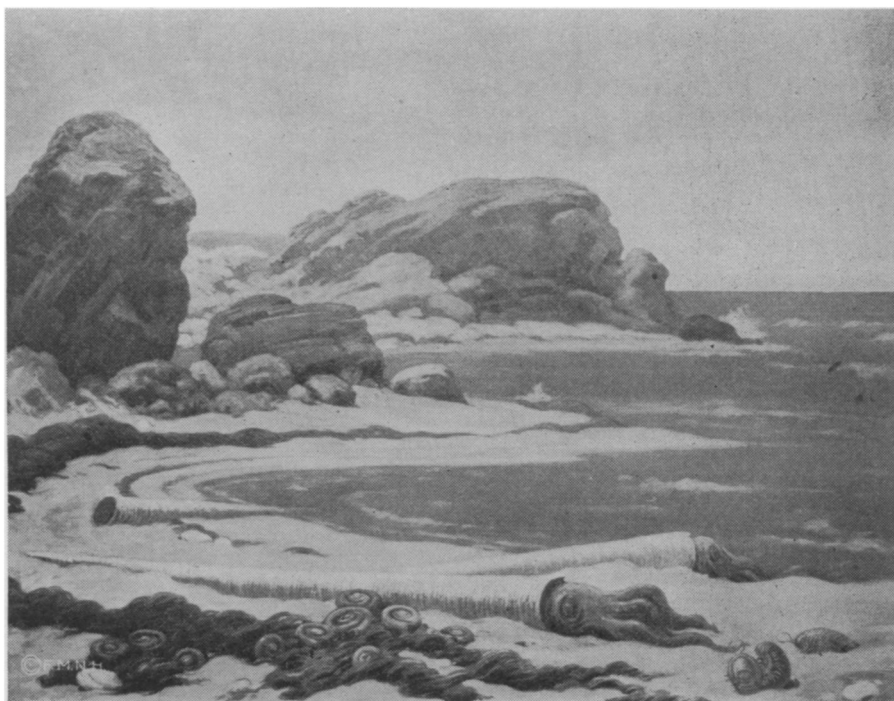
such as the mammoths and mastodons and the extinct giant Irish deer, the most magnificent animal of his tribe that ever walked the earth.

Around the wall, so arranged that they get the benefit of the light from the lofty windows, are cases of smaller exhibits of fossil animal and plant remains; but the dominating note in the whole great room is the series of paintings on the walls. They are the work of Charles R. Knight, the eminent New York artist who has devoted his life to the painting of beasts and landscapes no human eye ever saw. Through the frames of these pictures you can look down vistas of uncounted millenia of past time, and brushing aside the mists of antiquity you can see mososaur and mammoth and moa, with their flesh and scales and feathers all put back by the careful imagination of the scientist-painter, against the background of primeval sea or tundra or

jungle, just as they knew it when they lived.

At first it may appear that these great paintings are simply a disconnected group of scenes, taken at random from the old earth's immemorial past. But if you look a little longer you soon see that there is a definite system in their arrangement, and that they are not only related to each other but to the exhibits of skeletal and fossilized material ranged beneath them. They are in an orderly series, set in the natural evolutionary sequence, so that each picture with its associated group of exhibits constitutes a chapter in the geological history of the earth.

A walk through the hall is a reading of a great book, and how much you get out of it will depend on how much of a hurry you are in. You may have only a few minutes before traintime, and so stride through rapidly, as you would leaf over a big



**"Let the waters bring forth"  
—Low tide on an Ordovician  
beach, with orthocerans and  
trilobites.**

**"Monstrous dragons of the prime"—Terrified tortoise makes a meal for a Mosasaurus; hopeful pterosaurs wait for the scraps.**



book you didn't have time to read carefully. Or you may have leisure to saunter slowly, or to return for many visits, taking a little at a time, as you would carefully chew over a volume that interests you, paragraph by paragraph.

The first page of this heroic-size picture-book of the world's history suggests conditions as they may have been "in the beginning," when earth and clouds and sea struggled to separate themselves. Black, bare and forbidding, the crags and cliffs rear themselves out of the sullen and lifeless sea, earth and water still reeking with the throes of continental birth. This picture, necessarily the most imaginative of the series, is probably valid whether one holds with European geologists to the old Laplacian hypothesis of an originally molten earth, or believes with the American school in the Chamberlin-Moulton theory of an earth gathered together out of drifting "planetesimal" particles in space, like a gigantic snowball. For even such an agglomerated planet would probably be so heated up by the bombarding rain of particles, and heave and strain itself so much in the age-long adjustments of newly acquired loads, that its surface would be pretty hot for a long time.

But at last the sea stops boiling and simmers down to a reasonable coolness, and some kind of life becomes possible in the waters. And here comes Knight's second picture, wherein he sets down what may be imagined of the first abiding-place of living things on the earth.

This painting seems to have been inspired very strongly by the beautiful travertine terraces at Mammoth Hot Springs in Yellowstone National Park. It is not improbable that the first life appeared in such warm springs—for in spite of their con-

stant bubbling, the hot springs of the Yellowstone country and a thousand other places on this planet are not boiling. They may be too hot for you and me, but for the more primitive children of nature, especially certain bacteria and blue-green algae, they are at just the right temperature. The physiological processes of these plants seem to be simpler in some respects than those of any other group of living things, so that some scientists have conjectured that the brilliant microscopic plants that paint hot spring basins with their massed and matted bodies may be the least modified of all the varied descendants of the archancestral types of organic life. The artist has adopted this hypothesis, and in this picture we see the beginnings of the drama of life, more than a thousand million years ago.

Then the artist takes a leap ahead in time for many millions of years, and shows us a sea-beach of the Ordovician period. The sea is a normal sort of a sea now, and the rocks and sand of the beach are such as you might find on the coast of Maine or California today. But the creatures left by the receding tide are quite another story. The dominating animals are a couple of huge creatures that look like octopuses stuffed into the ends of big megaphones. In effect, they are just that. They are relatives of the modern octopuses and squids, and even closer relatives of the present-day nautilus. These nautiluses with uncoiled shells have left abundant evidences of their one-time existence in the oldest rocks. To scientists the tribe is known as the *Orthoceros* group: the name means "straight-horn."

Even more interesting are the two queer creatures burrowing in the sand, just out of reach of the arms of the orthocerans. They look like gigantic editions of the little pillbugs you can

find under almost any board or stone in a damp place, and they are at least distant cousins of theirs. They are trilobites, earliest representatives of the great and widely distributed crustacean family, whose edible members we know today as lobsters, crabs and shrimps. Like the orthocerans, the trilobites are now completely extinct.

Again a gap of millions of years, and the artist brings us to the site of Chicago. But there is no city there, no Lake Michigan, no rolling prairies. Where the hills of green land now stand like solidified waves, there is a level plain of green water. The sea flowed here, a shallow, tropical sea: and the place that is some day to be northern Illinois is a vast complex of coral reefs. The outcrops of this coral rock can still be seen in the southern suburbs of Chicago, with the curved cups of the horn coral persisting where they grew uncounted ages ago.

Another great leap forward in time, and Mr. Knight has us among the dinosaurs, those most fascinating and awesome of all the big beasts we are thankful that we don't have to meet in the dark. There is a painting of the immense *Apatosaurus*, one of the tribe of pin-headed, sea-serpent-tailed monsters that were the hugest animals that ever walked on four legs and next to modern whales the largest animals that ever lived.

The youthful days of the shielded dinosaurs are shown in another scene, where a covey of young saurians, recently hatched from the egg, are disporting themselves on the sand and nibbling at the low herbage. Dinosaurs, like all reptiles, were egg-laying animals, and presumably all young dinosaurs first saw the light of day in a nest in the sand or earth. But it was not until a few years ago that Roy Chapman Andrews scored one of the prime triumphs of paleontology by actually (*Turn to page 378*)

## Fifteen Hundred Million Years of Life—Continued

finding dinosaur eggs in the Mongolian desert.

The weirdest dinosaurs that ever walked fill another frame. These were the Stegosaur, strange, high-hipped monsters with huge bony plates as big as sidewalk slabs standing up edgewise in a double row along their backs. These presumably prevented their hungry neighbors from attacking them in the most vulnerable spot, the spine. Two pairs of wickedly curved natural sabers on the swinging tail served as discouragers to flank attacks.

There were saurians in the sea and in the air as well as on land in the days when the reptiles ruled the earth. One picture shows a great sea-turtle making panic-stricken efforts to escape the gaping jaws of a Mososaurus, the one and original genuine sea-serpent. Indifferent to the fate of the poor turtle, perhaps even hopeful of picking up a few scraps when he has been hacked up by the great saurian's teeth, a flock of pterosaurs swoop and circle overhead.

The last great leap of the artistic-scientific seven-millennium boots brings us down to comparatively modern times. Mammals have arrived. But some of them are mighty queer to look at.

The favorite, of course, is the tremendous mastodon, the woolly elephant that roamed the northern lands during the Ice Age and apparently thrived on the cold. Prehistoric man knew and hunted this animal, ate his flesh and carved pictures of himself on his own ivory tusks.

There are two other animals, American this time, that certainly survived on the earth when man had put in his appearance, though whether man was here on this continent to see them and hunt them remains a very much disputed question. One of these was the giant ground-sloth, whose only surviving relatives, the Ai and the Unau, live in trees in Central and South America, and in crossword puzzles in the United States. The other was a giant armadillo, with a war-like spiked club on the end of his tail for the more cordial reception of bears, saber-tooth tigers, and such roving gentry. Another big armadillo lacked the spiky club-head, but had row on row of lesser spikes or knobs the full length of his tail, which probably answered the purpose about as well.

The bears are represented, too: a pair of shaggy cave-bruins, looking

out on a cold world and wondering, as a bear always does, where there is something to eat. Cave-men knew these bears as they knew the mastodons. They hunted them; and if they were anything like our modern Indians in their mental makeup they also "made medicine" in their honor, considering them the incarnation of mighty spirits.

In a way, the most thrilling picture of the whole collection is that of the giant Irish deer, higher than a tall man's head at his magnificent shoulders, and with his palmated antlers, more like the horns of a moose than those of a deer, spreading out nearly six feet on either side of his great head. A proud man was the tribal king in Ireland who could mark down one of these splendid animals as meat for his people and as a trophy for himself.

But all this show of beasts is by way of preface to the entrance of that strange creature who finds himself in the natural world, sees that he is a part of it, and yet feels that in some way he is apart from it and will not rest until he has made it subject to him—man. Man also is to be represented fully in a Hall of Prehistoric Man. The story here will not be told in paintings but by groups of life-sized figures executed by Frederick Blaschke, an able sculptor.

So far, one sculptured group has been completed, out of several that are planned. This is the Neanderthal cave, showing elders, youths and children of the earliest human race of which we have enough skeletal remains to undertake a restoration with anything like full confidence.

The artist has not tried to flatter these our remote grandparents—or more likely, remote great-uncles and aunts. Neither has he tried to degrade them and show them as more ape-like than they were. They're not as pretty as we might like to have all the portraits in the family album, but they're human nevertheless, and they are carrying on a lot of activities of a decidedly human character. They have formed a human family, they make and wear clothes (admittedly of a sketchy character, but still clothes), they make and use tools and weapons, they have a division of labor among the group.

They have not yet domesticated any animal, not even a dog; but they have tamed something vastly more important than any animal. They

have captured and controlled Fire. Ugly as he undeniably is, Uncle Neanderthal is Prometheus. With all our high-brow modern cleverness, our Archimedes learning the rules of the lever, our Newton binding the universe together with invisible cords of power, our Einstein turning the heavens inside out, we have never done anything more important for the race than that. Call Uncle Neanderthal a bonehead if you like: he knew enough to come in out of the rain, and indoors he had for his comfort, tamed and shackled and tractable, the most powerful and terrible of all the spirits of the forest—Fire.

This much you can see in the Hall of the History of the Earth if you go to the Field Museum now. There will be more groups of early human beings, especially those splendid six-footers the Crô-Magnon race, the first artists in the world. Further sculptured families will bring the story told in this hall down to the earliest dawn of known history, perhaps 10,000 B. C.

The third of the halls will be known as the Chauncey Keep Hall of Physical Anthropology. Here the story will be told of human life on the earth as it is today. The skeletons of man and his nearest animal analogues will stand side by side for comparison and measurement, and a series of twenty full-length life-size figures will illustrate the physical characteristics of all the principal living races of men.

*Science News-Letter, June 14, 1930*

### Crushes Steel

THE strength of the prehistoric dinosaur is dwarfed beside that of a huge testing machine installed recently at the University of Illinois.

This machine crushes steel and concrete with as much ease as a man mashes a piece of dirt beneath his foot. It stretches iron rods as if they were taffy candy. In fact, it can exert as much as 3,000,000 pounds pressure in either tension or compression, either to pull things apart or to squeeze them together.

Building beams 35½ feet long can be tested. The screw that is used to concentrate the great pressure is more than 57 feet long and one foot in diameter. The machine stands nearly 50 feet above floor level and extends 14 feet below. It weighs 140 tons.

*Engineering*

*Science News-Letter, June 14, 1930*