

A PECULIAR RAILROAD ACCIDENT.

Unfortunately, railroad accidents are not of great rarity in the United States. One of the most peculiar accidents which has occurred in some time took place at White Pigeon, Mich., February 23, on an embankment on the main line of the Lake Shore and Michigan Southern Railway, close to a junction. An engine pushing a snow-plow came into collision with a freight engine standing still, and the snow-plow ran under the locomotive of the freight train, which rose in the air and landed on top of the other engine pushing the plow, as shown in our engraving. Two trainmen riding on the top of the plow were killed, and the engineer of the engine which landed on top escaped unhurt. The fireman also jumped, and escaped with slight bruises.

THREE CHARACTERISTIC TYPES OF AMERICAN DINOSAURS.

BY J. CARTER BEARD.
THEIR EVOLUTION.

Modifications in the structure of animals, fitting them to procure with the least possible difficulty the food upon which they subsist, afford unerring keys to the history of the development and character of their environments.

Selecting an extreme case for illustration, the tardigrades, the gradual change in the surroundings of the tribe can be readily enough reasoned out in the transformation of one branch of the phyllophagous bruta, the enormous megatheriums, with their peculiar conformation, allowing them to sit upright, kangaroo-like, and reach from the earth, pull down and devour the foliage of the trees, to animals measuring less than three feet in length, the sloths, with radically different methods of procuring the same kind of food. So perfectly have the latter become fitted to a leaf-eating, arboreal life; so complete is the adaptation of the sloth to the nature and habit of growth in the trees in which it lives, that its organism, in its entirety and in every least part, demands a vast primeval forest of many-branched trees where the animal can pass its whole life, migrating from one contiguous bough to another, in search of fresh food supplies, without having any more cause to feel its deficiency in not being able to progress over the ground, to which it need never descend, than the seal or the dolphin in not being able to range over field and forest.

The reverse of this rule is obviously true. The more perfectly we become acquainted with the nature of the food supplies of any species or of any race of animals, the more unerringly we can trace the evolution and describe the development of the type which forms the subject of investigation. A remarkable uniformity is observable in the conformation of the great terrestrial reptiles of the Mesozoic era. Its character reminds

us, in a general way, of the plan of structure of the megatherium, inasmuch as the comparative weight and strength and development of the hind quarters of the great reptiles afford absolute proof that they also must have sat upright, tripod fashion, supported by their hind legs and powerful and massive tails.

In the case of the megatherium, it is quite possible that the peculiarities of its structure point to the selection of some particular sort of vegetation. Mr. Woodbine Parish thought it was the agave, or American aloe, upon which it fed, but in the case of the



WRECK OF TWO ENGINES AND A SNOW-PLOW, WHITE PIGEON, MICH.

dinosaurs there was no alternative.

The sparsely-branched and columnar forms of vegetable growth which afford little accommodation to arboreal animals consisted principally of Gymnosperms, especially of Cyads, which at this period reached their highest development, mingled with palms, tree ferns, many species of Filicinæ of lesser size, giant equisetums, liverworts, club mosses, and some herbaceous and some aquatic plants. The straight, upright shafts of the larger forms of plant life arose from the naked soil, for grasses had not yet clothed the earth.

Almost the only food supply the vegetable world afforded was the leaves, shoots, and young twigs of such trees as then grew, and to reach these required the great stature and peculiar build of the herbivorous dinosaurs.

The bipedal habit acquired by browsing upon the tall vegetation also gave them an extended range of vision, and to some extent insured their safety against the stealthy and undetected approach of enemies, principal among which was probably the large carnivorous

dinosaur shown in our illustration, *Ceratosaurus nascicornus*, which reached a length of twenty-two feet. By assuming an upright position, this and other dinosaurs were, it is likely, sometimes able to elude their prey.

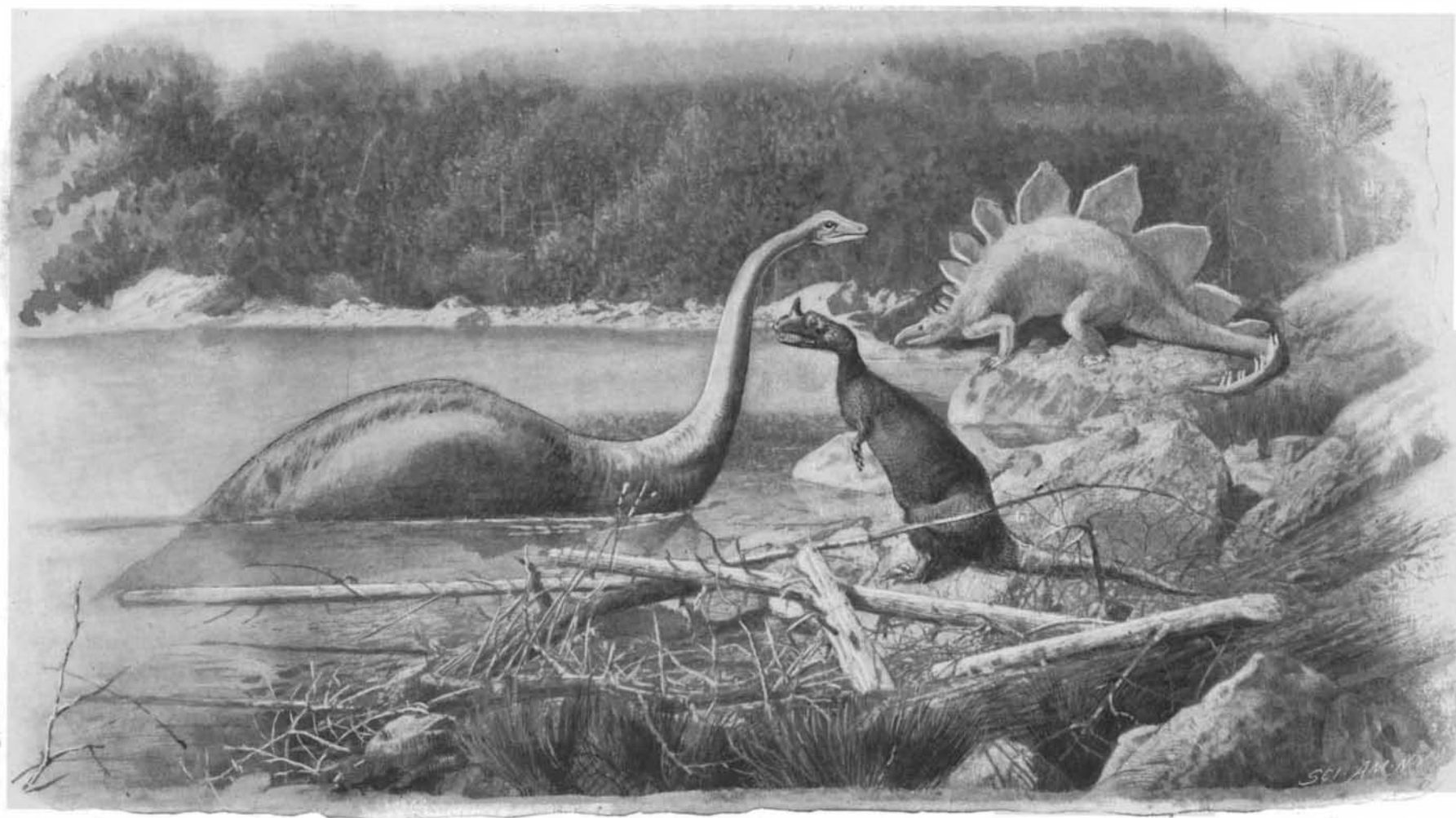
DESCRIPTION OF THE THREE TYPES.

Largest of all quadrupeds that ever trod the earth, the enormous brontosaurus, which reached the length of from sixty to perhaps seventy feet, and certainly weighed more than twenty tons, presents one of the most perplexing problems ever offered the paleontologist. How such an immense mass of almost brainless living flesh, with, so far as is known, no means of defense or refuge of escape, except taking to the water, in which he could be followed by powerful, agile, and more intelligent foes, escaped almost immediate extinction passes conjecture. How such an animal could stand upright upon dry land, under the terrible stress and pull of gravitation, which would put to the severest test the strength of cohesion of the mere flesh, muscle and bone of which he was built, is a question not easily answered. Paleontologists have lately been inclined to believe that the brontosaurus never came ashore, but an animal with four well-developed legs and feet formed for walking seems scarcely built for an exclusively aquatic life, and nothing that is known in natural history affords a parallel for such a state of things. The great beast, with its great body, long neck and disproportionately small head, is in the water at the left of the illustration.

Nearer to the foreground on shore is seen the great horned dinosaur, *Ceratosaurus nascicornus*, dwarfed in appearance here by comparison with the much larger brontosaurus beyond him. Small as he looks, however—and must look, to be in proper proportion to his companion—he measures no less than twenty-two feet, a rather formidable size for such a beast of prey. In addition to the large and trenchant array of teeth with which his massive jaws are furnished, he bears a stout horn, like that of a rhinoceros, projecting from a space just above his nostrils, and which must have added materially to his powers of offense and of defense.

The fore limbs are extremely small, it will be noticed, in proportion to the rest of the animal, and could never have been used for support, though they might have been of assistance to the ceratosaurus in retaining a hold upon his prey. The animal must, in progressing, have always walked upright, dragging his massive tail behind him.

But, without doubt, the strangest animal ever known to have existed upon the face of the earth is the gigantic armored dinosaur shown somewhat in the distance upon the bank of the lake in our picture. This is the



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