

BARYLAMBDA, ONE OF THE EARLIEST LARGE MAMMALS, ADDED TO PALEONTOLOGICAL HALL

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A skeleton of *Barylambda*, an extinct hoofed mammal of unusual interest, has recently been reinstalled in Ernest R. Graham Hall (Hall 38) by Mr. James H. Quinn, Chief Preparator in Paleontology. Unlike and unrelated to any present day animal, it lived some 50,000,000 years ago in what is now west-central Colorado. The skeleton was collected by a Museum expedition in 1933.

Barylambda was one of the most heavily-built animals of all time, standing some four feet high, with an over-all length of about eight and a half feet, and with a width across the hips almost equal to three-quarters of its height. Its bones were extraordinarily massive, indicating the possession of immense muscular power. The head was small in comparison to the size of the body, the legs terminated in broad, spreading, five-toed feet, and the tail was long, large and somewhat flattened from side to side. A realistic restoration painting by Mr. John Conrad Hansen accompanies the exhibited skeleton. This painting, reproduced in the figure, shows an animal that is, as a whole, decidedly unfamiliar to modern eyes, although there is a vague suggestion of the bear in its trunk and legs.

EXTINCT ANIMAL'S HABITS DEDUCED

A reasonably accurate estimate of the habits of an extinct animal can usually be formed from an adequate knowledge of its skeleton and from study of the conditions under which the rocks in which it was found were laid down. In this case the skeleton was found in a formation of mud-stone containing many stream channel deposits of sandstone and some silty layers. This indicates that west-central Colorado was at that time a broad flood-plain with rivers and streams from the Rocky Mountains (lower then than now) meandering back and forth across it, laying down sheets of mud in times of flood. Numerous concentrations of crocodile, turtle, and gar-pike bones occurring in the formation demonstrate the former presence of standing water in the form of cut-offs, ponds, and small lakes. The climate was evidently warm and the vegetation heavy. *Barylambda* was well fitted for such an environment. The powerful body was admirably adapted to forcing a way through the tangled vegetation of river-bottom areas, while the broad, spreading feet were suited to supporting its great weight on soft, treacherous ground. The very large, compressed tail strongly suggests that the animal was a capable swimmer almost as much at home in the water as on the land. The low-crowned teeth were fitted for a diet of the soft, succulent vegetation undoubtedly abundant at that time.

About ten million years before *Barylambda*'s day, there had occurred the great-

est revolution of life that the earth has seen. The "Age of Reptiles" had come to a close with the passing of the dinosaurs and other giant reptiles that had dominated land and sea throughout that vast stretch of time. This dramatic and world-wide extinction had ushered in the opening epoch of the "Age of Mammals"—the Paleocene, in the latter part of which *Barylambda* lived.

FIRST MAMMALS WERE SMALL

At the beginning of this epoch the known mammals were of small to medium size, a carry-over from the decidedly subordinate

of medium to large size—a structural limitation which precluded such evolutionary trends as the development of flesh-eating, tree-climbing, or burrowing forms—they achieved a notable degree of diversification, which seems to have reached a climax in late Paleocene time.

A LOST POTENTIAL "TRUFFLE HOUND"

Haplolambda, a contemporary of and similar in general appearance to *Barylambda*, was rather more slender in the legs and had a less massive tail. *Sparactolambda*, another contemporary, was one of the most extra-



Restoration by John Conrad Hansen

ONE OF THE EARLIEST OF LARGE MAMMALS

Barylambda faberi, reconstructed by an artist to show how it must have appeared in life according to the evidence furnished by Field Museum scientists. The animal, unrelated to any modern creatures, lived in Colorado 50,000,000 years ago.

role they appear to have played during the Age of Reptiles. Once they had succeeded to the position of dominance, however, diversification and specialization along many lines went on rapidly, resulting finally in the animal world we know today. One of these lines of specialization was the acquisition of large size, an evolutionary trend that has especially characterized various orders of the great hoofed mammal stock. The familiar living examples, such as elephants, rhinos, and hippos, have been preceded by a great variety of extinct groups, of which *Barylambda* and its relatives—comprising the order Pantodonta—were the earliest.

HOW DIVERSIFICATION OCCURS

All groups of animals tend to occupy as many different habitats as circumstances and their structures will permit; the more vigorous and successful the group, the more habitats it occupies and the more diversified its members become. The pantodonts were no exception. Within the bounds imposed by the fact that they were hoofed mammals

ordinary of mammals. It was considerably smaller and much lighter in build than *Barylambda*, and possessed a normal tail and a proportionately larger head. The peculiar features center in the structure of the teeth and feet. The latter were five-toed and terminated in blunt claws—decidedly odd equipment for a member of the hoofed mammal stock. The upper canine or "eye tooth" was a greatly enlarged, downwardly projecting, dagger-like tusk; while the lower canine was altogether unique in structure and consisted of a sharply pointed hook in front followed by a long, blade-like part behind. A reasonable interpretation of this remarkable combination of characters seems to be that the animal fed to a large extent on underground roots and tubers. These were laid bare by the claws, caught up by the hooks of the lower canines, further uprooted by pulling and jerking movements of the head and neck, and sliced off by the upper canines cutting against the blades of the lowers. As a colleague

once remarked, it is a pity that *Sparactolambda* became extinct; it would have made such an admirable "truffle hound."

It is an interesting fact that claw-bearing forms with presumably similar habits have independently been evolved in two other orders of hoofed mammals—in an extinct family distantly related to the horses, and in an extinct South American group. Representative skeletons of both of these are on exhibition in Hall 38.

In the Eocene, the epoch that followed the Paleocene, the pantodonts declined in importance. *Coryphodon* of North America and western Europe, a form which resembled *Sparactolambda* in general build although lacking the peculiar specializations of its Paleocene relative, is the only known representative of the order in the early part of the epoch. It was the first of the group to be discovered, the original specimen having been dredged up off the east coast of England more than a hundred years ago. Relatives of *Coryphodon* lingered on in Mongolia until Oligocene time, some 25,000,000 years ago, anachronisms from an earlier stage of earth history in a mammalian world that was fast assuming a modern aspect.

Most of our knowledge of the remarkable Paleocene forms has been gained from specimens collected by Field Museum expeditions to western Colorado which have followed up discoveries by enthusiastic and able amateur collectors of that region, notably Mr. Edwin B. Faber and Mr. Alfred A. Look, of Grand Junction. The finding, last year, of an extensive deposit of *Coryphodon* bones has provided extensive material of this early Eocene form, with the result that the Museum now possesses an unrivaled representation of this interesting group of extinct mammals.

MANGANESE ORE

Manganese ore is a vital strategic material essential for the prosecution of the war. For every ton of steel made, fourteen or fifteen pounds of a rich alloy of manganese and iron equivalent to thirty pounds or more of rich ore must be consumed to purify the metal.

By the methods now in use, this alloy can be made only from rich ore, of which but little is found in this country. Last year 97 per cent of the manganese ore consumed was imported from Russia, Africa, India, Cuba, Brazil, and, in smaller quantities, from other places. While by far the largest quantity was used for conditioning steel, much goes into alloys and other compounds of great strategic importance, and the uses of manganese for promoting civilian comfort and convenience are many.

Fortunately, although but little of the richest ore has been found here, there are abundant supplies of ore of lower grade ample for all our needs if only we knew

how to use them. The metallurgists of the Bureau of Mines and some others have now devised several ways of economically handling these low grade ores, and as soon as the needed plants for treating them can be built—which unfortunately will take considerable time—the United States will be independent of foreign supplies.

Manganese is seventeenth in abundance of the elements composing the crust of the earth (only aluminum and iron among the common metals are present in larger quantity). It is widely disseminated and present in small quantity in most soils and rocks, but segregations of manganese minerals rich enough to be ores are less common than might be expected. Nearly all the ores are dark brown to black mixtures of oxides of the metal. Their appearance is so commonplace that they may easily be mistaken for worthless rock. Many of them are shown in the ore collections in Frederick J. V. Skiff Hall (Hall 37). —H.W.N.

THINGS YOU MAY HAVE MISSED

"Spiritual Aids to Navigation" in Solomon Islands

Radio direction finders, periscopes, and other modern aids to aviation and navigation are commonplace in the Solomon Islands area since the navies and air forces of the United States and Japan have come into conflict with each other there.

However, the primitive natives of these islands, who make long voyages in their large war and trading canoes, place their faith in spiritual aids to navigation, some of which are on exhibition in Case 42 of Joseph N. Field Hall (Hall A) at Field Museum. These are grotesquely carved wooden figures in semi-human form. They are placed on the bow of a canoe, just above the water line, in a position in which they seem to peer down into and through the water with vigilant eyes that never blink from fatigue. The Solomon Islanders regard these images as representatives of a protecting deity, a spirit which is supposed to watch for reefs, rocks, and all other hidden

dangers of the sea, and to guide the vessel away from such perils.

The natives place the same confidence in these inanimate lookouts that we place in living seamen, especially trained to watch and listen from forepeaks and crow's-nests, aided by the most up-to-date mechanical devices to locate the approach of enemy submarines and airplanes. Apparently Nature, at her worst, although she must frequently have betrayed them, has never disillusioned the natives in their faith, but probably man's warfare today may change their minds as to the infallibility of their spirit-imbued wooden protectors.

MUSEUM WORKERS' FAMILIES HAVE 65 KIN IN WAR

Some idea of the impact of the war on the human resources of a group of average American families is revealed by a survey of the personnel of Field Museum. Because the Museum personnel embraces one of the widest assortments of occupations and professions possible in a group of its size, ranging from scientists and technicians in many specialized branches, to "white collar" workers of various kinds, and both skilled and unskilled labor, it is felt that they represent a fair cross-section segment, typical on a small scale, of the general urban population.

In the survey conducted it was found that, in addition to 23 Museum employees out of a total of 208 who have left for war service, the remaining 185 employees have 42 close blood relatives in the Army, Navy, Marine Corps and Coast Guard—21 sons, 19 brothers, and two sisters (one an army nurse, and one a WAAC member).

Thus, combining the 23 employees and the 42 close relatives, the 208 families represented in the Museum personnel have contributed 63 men and two women, or a total of 65 persons to war service. Of the 208 families, six each have two men in service, and one has four. The total number of families directly affected is 56 or 27 per cent.

Of the 65 in service, 21 have commissions in Army, Navy, or Marine Corps, 41 are enlisted personnel, and three are in special categories. The Army has 36 of the group, the Navy 17, the Marines 6, the Coast Guard 4, the Merchant Marine one, and the Office of Strategic Services one.

TRAYLOR AND RINALDO PROMOTED

Mr. Melvin A. Traylor, Jr., Associate in Ornithology at Field Museum, who enlisted in the U. S. Marine Corps three months before Pearl Harbor, and was soon promoted from Private to Corporal, has now been commissioned as a Second Lieutenant, according to advices from the Marine Corps.

Mr. John B. Rinaldo, Associate in Southwestern Archaeology, who has been in the U. S. Army for more than a year, has been promoted from the rank of private to that of Staff Sergeant.



PACIFIC ISLANDERS' PILOT

Carved wooden deity which, when mounted on canoe prow, is credited with protecting Solomon Island navigators from perils of the sea.



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