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NEW EXHIBIT SHOWS PREHISTORIC BIRDS RESTORED AS THEY APPEARED IN LIFE

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Present-day birds show in great detail the adaptations and specializations that have produced the 27,000-odd distinct kinds that are known now to inhabit the earth. The relationships of the various living groups could not be well determined without the evidence afforded by fossilized skeletons of birds long extinct. For this reason fossil birds present a field that is most tantalizing to the ornithologist.

While perfectly preserved and complete fossils of birds are extraordinarily rare, compared with fossils of other vertebrate groups, the total of the paleontological evidence is by no means inconsiderable. Six orders, thirty-one families, about 250 genera, and 1,000 species of extinct birds are known, and a great many birds still living have a record which goes back to the Pleistocene epoch, one or two million years ago. This is equal to considerably more than half the number of kinds of birds that now inhabit North America.

Two years ago plans were made to present some of this evidence of the past history of birds, and recently an exhibit showing reconstructions of eight of the most important types of fossil birds was placed on view in Hall 21. The restorations were made by the writer, and ably modeled in plaster, wax and composition by Messrs. Gus Schmidt and Frank Gino, Works Progress Administration sculptors assigned to the Museum. It is believed that there is no other exhibit similar to this in existence.

Archaeopteryx lithographica is by all odds the most famous fossil bird. It is known only from one specimen preserved in the British Museum. Its very close, almost indistinguishable, relative—*Archaeornis siemensi*—also known from only one specimen, in the Berlin Museum, is more perfectly preserved, and so, although less famous, it is the one that has been restored.

These birds were found in the lithographic stone of Bavaria. They lived during the Jurassic period (about 135,000,000 years ago), and are important because they fulfill

the requirements of "missing links" perfectly. They are halfway between reptiles and birds, but by reason of possessing feathers (the only definitive character that separates birds from all other living creatures) they are called birds.

Archaeornis had well developed teeth, free moving undifferentiated fingers at the bend of the wing, and a long jointed lizard-like tail with a pair of stiff feathers arising from each caudal vertebra. It had well

feet long, resembling a gigantic loon, was flightless but more perfectly adapted for life in the water than any other known bird, probably even more so than a penguin.

Diatryma and *Phororhacos* were large, flightless, predatory, crane-like birds that lived, respectively, in Wyoming during the Eocene period (50,000,000 years ago) and in Argentina during the Miocene (about 10,000,000 or 12,000,000 years ago). *Diatryma* was a formidable creature about

seven feet tall and more powerfully built than an ostrich. *Phororhacos* had many relatives. About sixteen genera and thirty-five species are known. At a single locality some fourteen kinds have been discovered, and while it may be that these were not all contemporaries, the plains of Patagonia undoubtedly teemed with large carnivorous flightless birds.

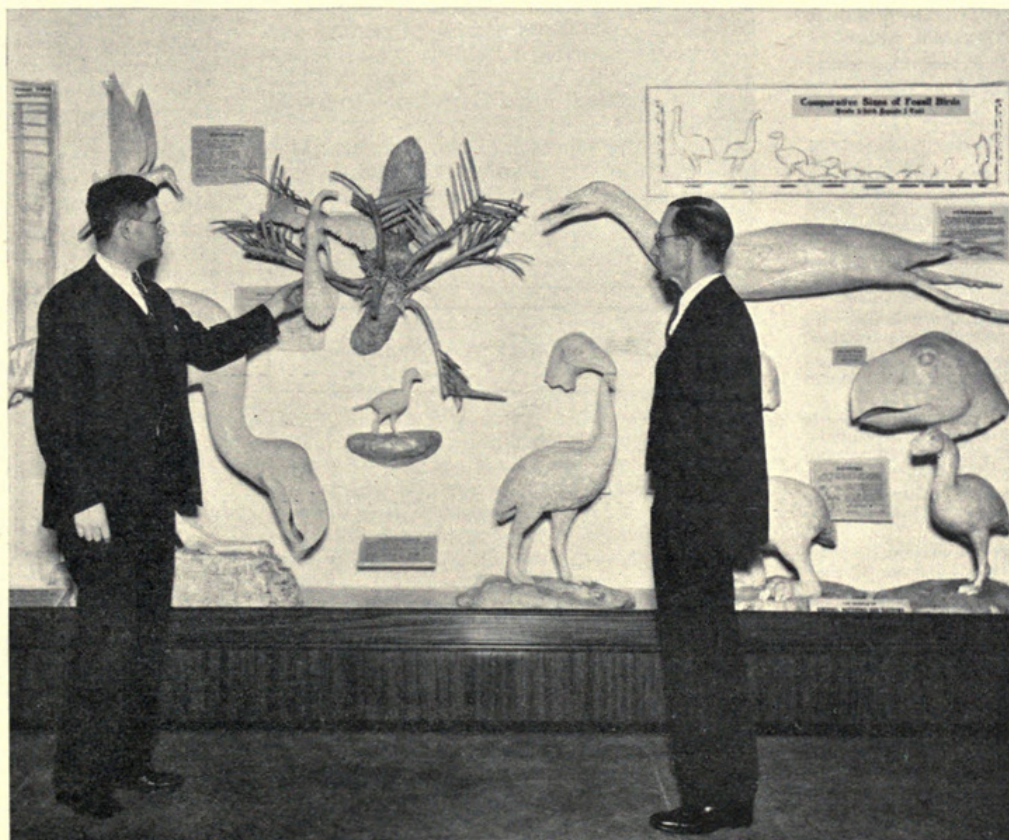
The moa of New Zealand (*Dinornis*), and the elephant-bird of Madagascar (*Aepyornis*) are interesting not only because they were the largest birds that ever existed, but because both of them were probably exterminated when their island retreats were first populated by man.

Gallinuloides, a very perfectly preserved but small and obscure, quail-like bird from the Eocene of Wyoming, completes the exhibit. It was probably the forerunner of the guans and curassows that now inhabit Central and South America.

The exhibit is accompanied by diagrams and drawings of the skeletons from which the restorations were made. These were prepared by Mr. John Janecsek.

Contribution from Mrs. Raymond

Mrs. James Nelson Raymond made a gift of \$2,000 to the Museum in December, bringing to \$6,000 the total amount contributed during 1937. Her gifts are for the support of activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures which she founded and endowed in 1925. She has made many additional contributions during the years since that time.



Fossil Birds

Exhibit "brings to life" some of the earth's earliest feathered inhabitants. Mr. Rudyerd Boulton, Curator of Birds, who is responsible for these restorations, is seen at left, making final check on installation with Dr. Wilfred H. Osgood, Chief Curator of Zoology. The birds are: (left to right, top row) *Ichthyornis*, *Archaeornis*, *Hesperornis*, and (lower row) *Phororhacos*, *Gallinuloides*, *Dinornis*, *Aepyornis*, and *Diatryma*. The last three named are represented also by the separate life-size models of heads at right. Descriptions of all of these species will be found in the accompanying article.

developed wings but no sternum, and consequently no "keeled breastbone" for the attachment of flight muscles. It could not flap its wings effectively and so could not fly in the true sense of the word. It probably lived on cliffs and among the cycad-like vegetation that flourished in its time, using its fingers to aid it in climbing upwards and then setting its wings and gliding downwards like a flying squirrel.

Next in importance are two other toothed birds, *Ichthyornis* and *Hesperornis*, which lived in what is now Kansas during the Cretaceous period (about 75,000,000 years ago). Both were obviously fish eaters, and *Ichthyornis*, about the size of a large tern, was powerful in flight. *Hesperornis*, five



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