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MURAL DEPICTS FLYING REPTILES AND PRIMITIVE BIRDS OF JURASSIC AGE

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The painting shown in the accompanying illustration, and exhibited in Ernest R. Graham Hall (Hall 38), represents a scene on the shore of a lagoon that existed some 150,000,000 years ago in that period of the earth's history known as the Jurassic. The successive layers of sediment that were deposited in its quiet waters now furnish the lithographic stone quarried near Solenhofen, Bavaria. The exquisitely preserved fossils found in the quarries furnish a remarkably complete picture of the animals and plants that lived around the ancient shores, and a few of the most interesting of these have been selected for reproduction.

The plants shown are all cycads, members of an early group of seed bearing plants. The two types of reptiles belong to extinct orders. The birds are the earliest that have yet been found; since they were about the size of a crow they furnish an excellent size scale for the painting.

The reptiles in the left foreground that have been disturbed by the birds in the act of examining a stranded crustacean are dinosaurs of the genus *Compsognathus*. Contrary to popular belief all dinosaurs were not large. These diminutive relatives of the giant *Tyrannosaurus* were very near the minimum of size for their group. They were active, quick-moving flesh-eaters that probably preyed on other small reptiles, certain types of invertebrates, and such birds as were unwary enough to be caught by them.

The flying reptiles or pterosaurs are represented by the peculiar *Rhamphorhynchus*, an

animal with a long head, large, forwardly inclined teeth and a long tail that ended in a peculiar leaf shaped expansion of the skin. The long tail is a heritage from generalized reptilian ancestors. In other pterosaurs, more specialized in character, it was greatly

deposits, a fact which leads to the supposition that the majority of them frequented shores and probably fed chiefly on fish. These creatures reached their zenith during the Jurassic. In the succeeding Cretaceous period they rapidly dwindled in numbers, their place being taken by the more efficient birds.

The birds represented in the painting belong to the genus *Archaeornis* and, although fully recognizable as birds, they are by far the most primitive members of their class yet discovered. Their skeletons show many features that have been retained from their reptile ancestors. Thus the head is furnished with sharp, conical teeth, the articulations of the backbone are of the reptilian type, and the fingers of the arm are free and clawed. The tail is perhaps the most interesting single feature of the animal. In modern birds this appendage is very short, compact and carries the tail feathers spread out fan-wise. In *Archaeornis* the tail is long and reptile-like with the feathers carried on the sides, one pair to each vertebra. The breast bone was weak and the wing expanses short. These structural

features indicate rather poorly developed powers of flight. It is probable that *Archaeornis* lived mainly in the trees and used its clawed fingers as an aid in climbing around branches and leaves.

The painting is one of the series of twenty-eight murals by Charles R. Knight, presented to Field Museum by Ernest R. Graham. In addition to their portrayal in this painting the animals are also represented by casts exhibited in Ernest R. Graham Hall.



Life in the Air 150,000,000 Years Ago

Mural painting in Ernest R. Graham Hall restoring the strange flying reptiles and lizard-like birds of which fossil remains have been found in Bavarian quarries of lithographic stone.

reduced. Flight was accomplished by means of a membrane of skin extending from the arms to the sides of the body. The main support for the membrane was furnished by the enormously elongated fourth finger. The fact that there was thus only one supporting axis for the entire wing was probably a serious defect in the flying mechanism of these animals. Any tear in the membrane would have seriously, if not totally, incapacitated the individual affected. Remains of pterosaurs are usually found in salt water

A Rock That Bends

Although rigidity is a property usually expected of all rock, there is a specimen of sandstone in Clarence Buckingham Hall (Hall 35) that is flexible and can be bent easily. This flexible sandstone, called itacolomite, is found only in Brazil and North Carolina. It is made up of grains of sand which were once held together by a mineral cement which has since dissolved. Usually when the cement of a sandstone dissolves the rock disintegrates into loose sand. In this

rock the sand grains cannot fall apart as they are so shaped that they interlock or dovetail. The absence of cement allows play between the grains and makes possible the bending of the rock.

Basket Maker Art

The earliest people inhabiting the Southwest, about whom a great deal is known, are called Basket Makers. Although they were not highly civilized, yet they possessed many artistic impulses. Even their everyday household articles were beautiful. On

exhibition in Hall 7, in a case devoted solely to Basket Maker material, there is shown an exquisite carrying band or tump-line head-piece. The design on this specimen is painted on the surface of the band and not woven in. Although made 1,500 or 2,000 years ago, the colors are still very bright.

Japanese Ambassador Visits Museum

Hiroshi Saito, the Japanese Ambassador to the United States, was a visitor at Field Museum on June 28.



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