



(the *ornithopod*) may be so closely related to true birds through the archaopteryx that they may be placed in the same biological classification. The logical conclusion of such a close relationship is that dinosaurs are not extinct; they live on as birds.

In any event, about 100 million years ago, two types of birds made their appearance. One was a small gull-like bird that was apparently a strong flier. The other, a penguin-like diving bird, was large with powerful swimming legs and only vestiges of wings.

Birds not only have powerful breast muscles for driving their wings, but also have numerous individual feathers for true flight and maneuverability. The individual feathers can be renewed and replaced as needed. If the membrane-like wing of a flying reptile were damaged, the creature was probably permanently out of commission. Birds therefore had great advantages in the air. They replaced the flying reptiles and achieved unparalleled success in the skies of the Earth.

THE THEORY OF EVOLUTION

The Cambrian explosion of marine animals is not only the most dramatic event in the history of life; it is also the best documented. The evidence is there, preserved in sedimentary rocks on every continent in the world. For this reason, it forces us to examine the theory of evolution, the theory which is most commonly thought to explain the fossil evidence of Cambrian marine animals and the development of other forms of life. After studying this theory, we will take a new look at the fossil evidence in an effort to determine if the theory of evolution explains the how and the why of the Cambrian explosion.

FIGURE 8.8.

The archaopteryx, *center*, may be a transitional form between reptiles and birds. A fossil cast is sketched at far left beside the simulated reconstruction. Some scientists hypothesize that the "feathered reptile" or "reptilian bird" may have evolved into the true birds and that dinosaurs are therefore not extinct. They live on as birds. The primitive reptile, right, may be the ancestor of both the dinosaurs and the archaopteryx.