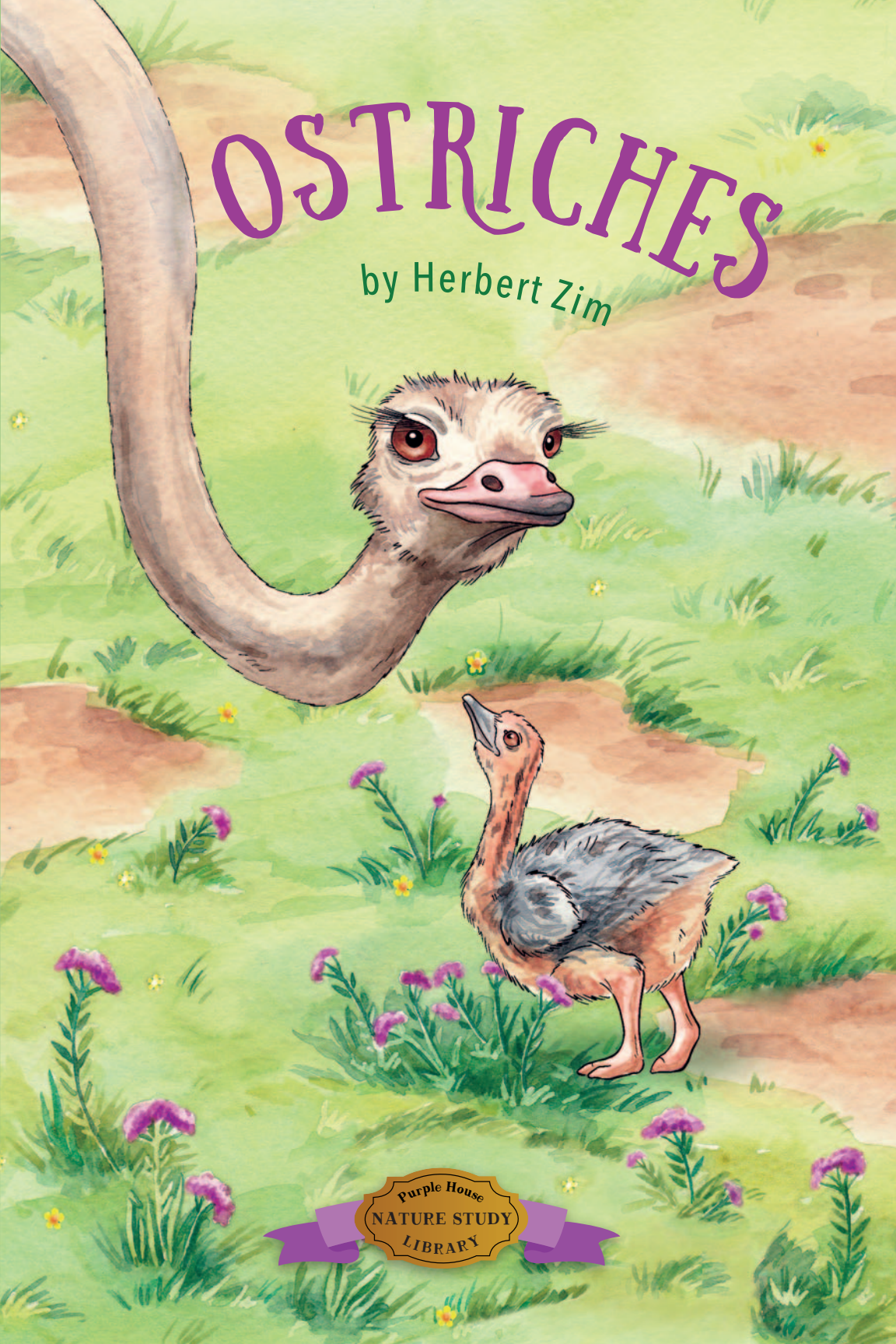


# OSTRICHES

by Herbert Zim



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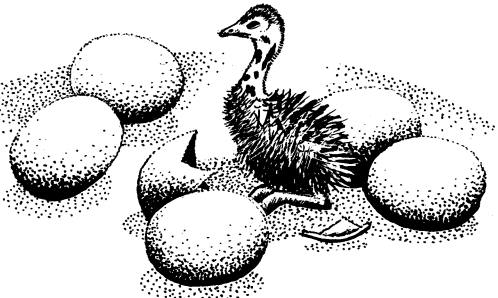
# OSTRICHES

by  
HERBERT ZIM

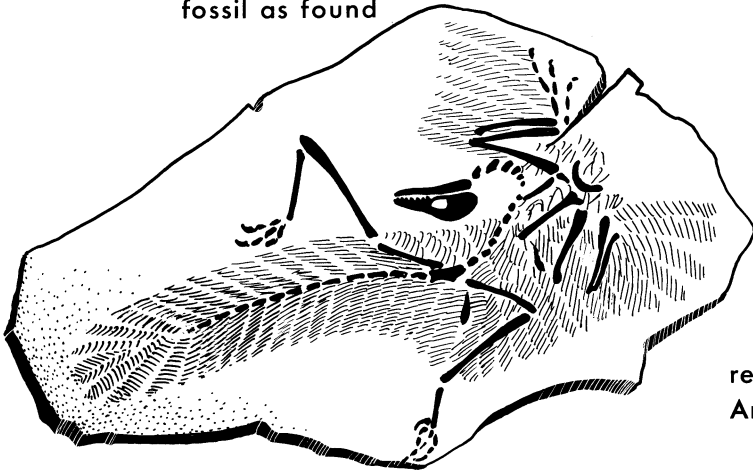
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RUSSELL FRANCIS PETERSON



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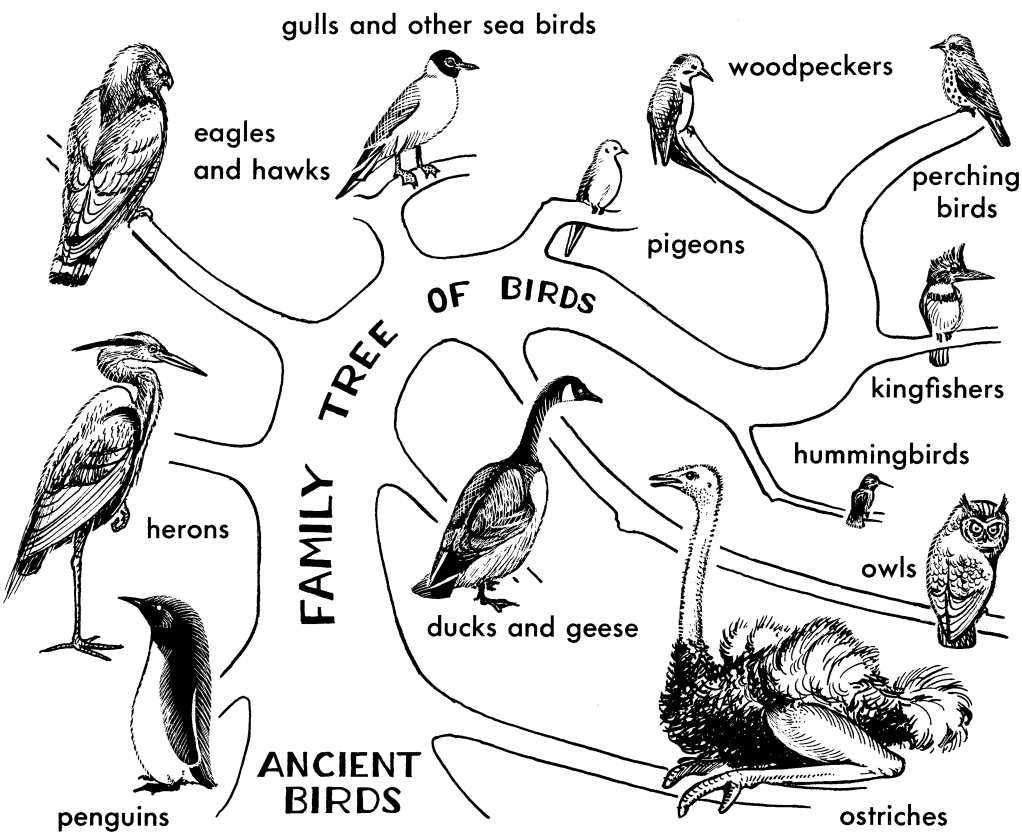
fossil as found



restoration of  
Archaeopteryx

swamp about a hundred million years ago. The fossil imprints of its feathers and bones show that it had well-formed wings and feathers and could certainly fly. Birds have flown ever since.

The few birds which do not fly today are descendants of those which did fly in the distant past. There are two groups of flightless birds now alive—the penguin group and the ostrich group. These birds lost the power of flight a long time ago, before birds had developed into the many different and varied kinds we know.



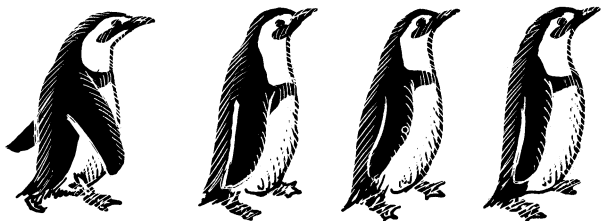
Ostriches and their kin are classified by experts as the most simple group of living birds. The only group that is classified lower on the family tree of birds is the group of toothed birds, all of which died off millions of years ago. So ostriches and their relatives form the oldest and simplest group of birds alive today.

This does not mean that ostriches are simple in the same way that a bicycle can be considered a simpler vehicle than a car. It means that the development of most birds has, over millions of years, moved in a different way from the development of ostriches.

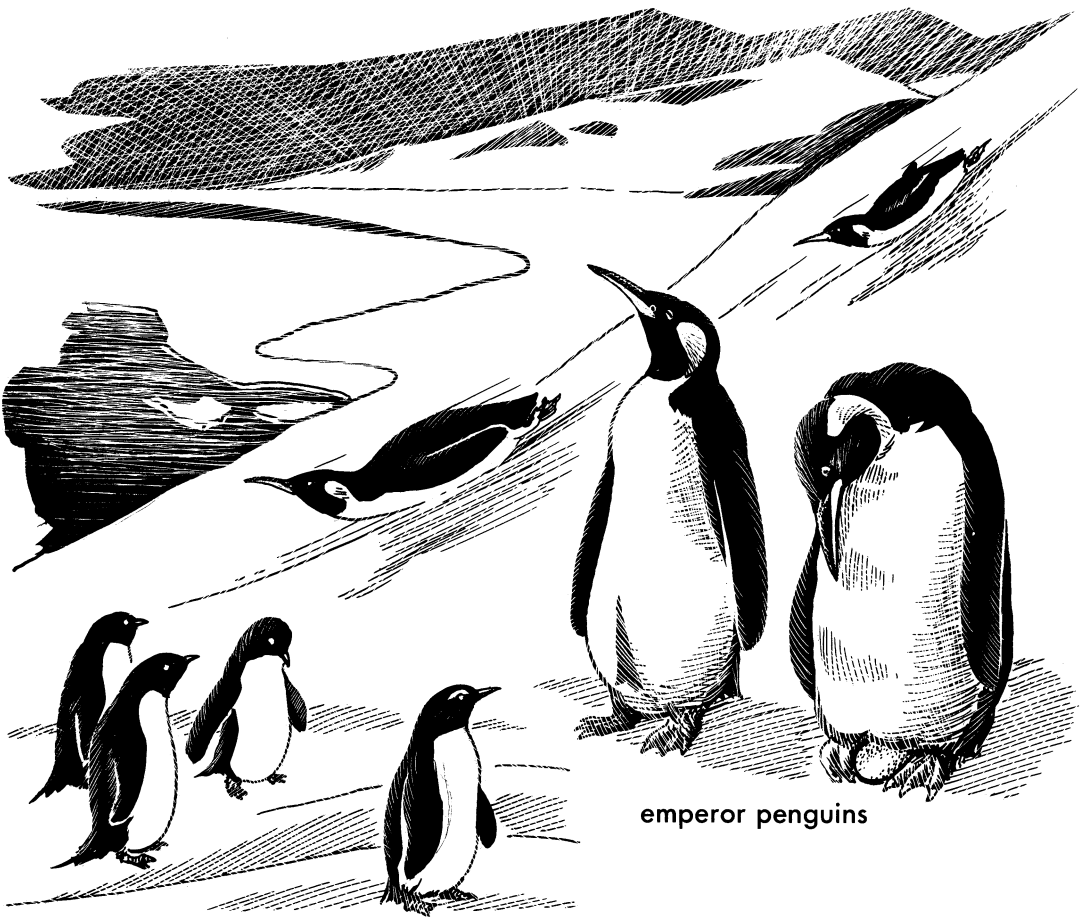
Most flightless birds are leftovers from past ages. They are interesting but are less well adapted to life today.

The members of the penguin group, the first flightless birds, live mainly in the south temperate and antarctic areas. They are excellent swimmers, with wings that are reduced to flippers. Penguin wings cannot bend like wings of all other birds. They move at the shoulder joint only. In the water, penguins are quick and agile. On

Gentoo penguins







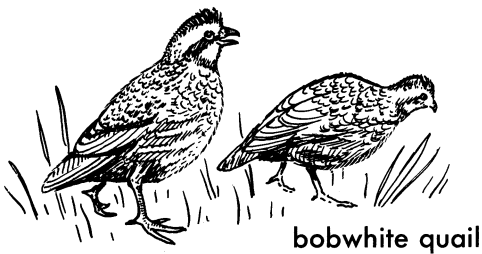
Adélie penguins

emperor penguins

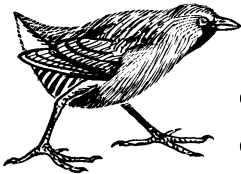
land, they move slowly, with a clumsy, amusing gait.

The ostriches and their kin—rheas, cassowaries, emus, and kiwis—form the second and larger group of flightless birds. It is curious that they, too, live mainly in the Southern Hemisphere.

Scientists feel sure that once, long ago, the ancestors of the ostriches could fly. But the way ostriches lived and the way they fed, century after century, put less and less value on the use of wings and more and more value on their legs. So the ostriches that lived, bred, and survived gradually became those which were flightless. Many other kinds of birds have come to depend on their legs more than their wings. Quail and roadrunners are good examples. However, these birds can fly if they have to. In the ostrich group, the power of flight has been completely lost.



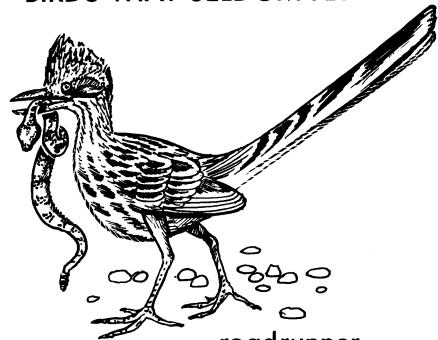
bobwhite quail



Carolina rail

Other rails cannot fly at all.

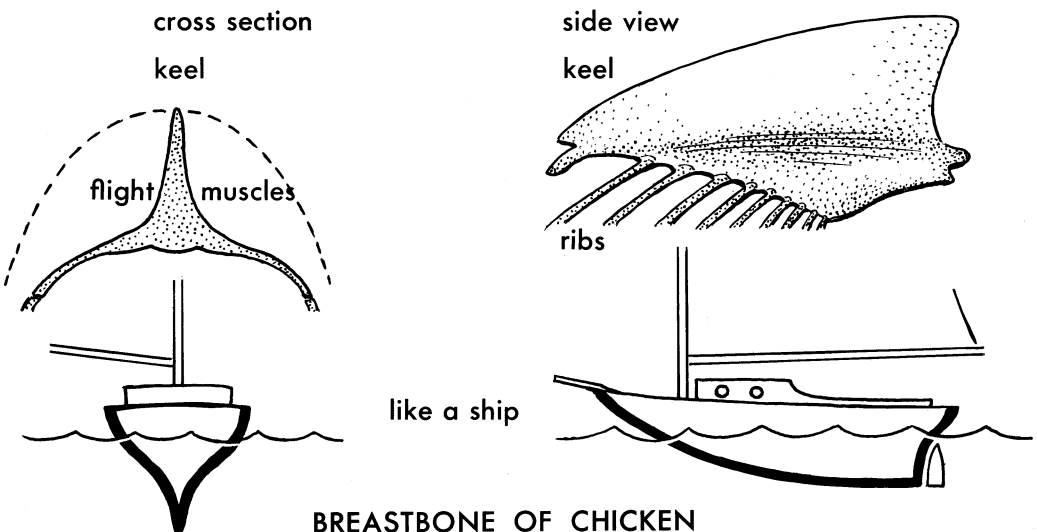
#### BIRDS THAT SELDOM FLY



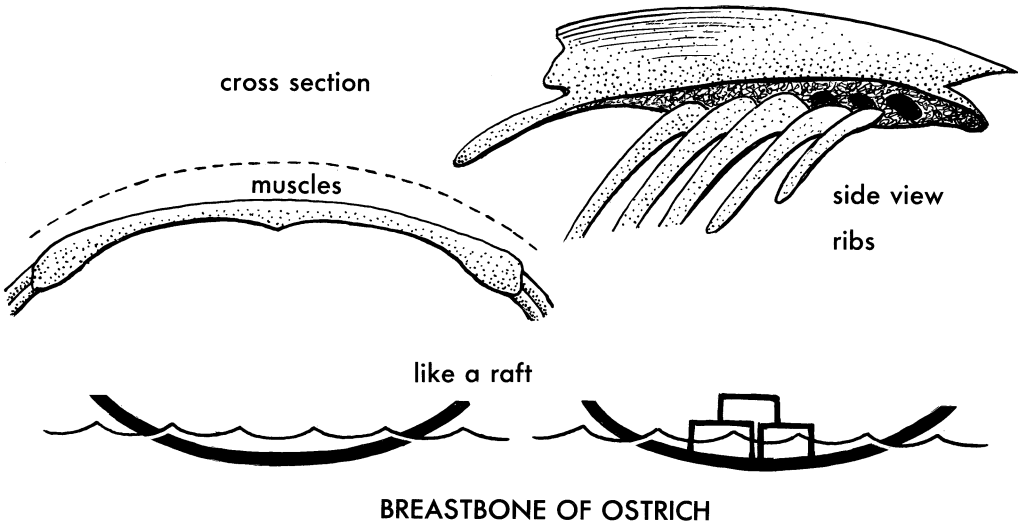
roadrunner

Ostriches and their kin make up a large group of birds called a superorder. In this group are eight orders of birds—five alive and three extinct. One authority lists a total of nineteen species of flightless birds in these five orders.

The most important difference between the ostrich group and other birds is that ostriches and their relatives have a breastbone without a keel. You have seen this keeled breastbone when you have eaten chicken, duck, or turkey, all of which are flying birds. A high ridge extends the length of the







breastbone, and to this ridge are attached the powerful pectoral muscles which birds use in flight. These pectoral muscles are, of course, the white meat which so many people like.

The ostrich group has a flat breastbone that looks more like a raft than like a boat with a keel. This raftlike breastbone gives the scientific name to this entire group of birds. They are classified as *Ratitae*, from the Latin word *ratis*, a raft.



Ostriches are amazing birds. To begin with, they are one of the few birds that cannot fly. Even their anatomy is unusual, since the ostrich has no wishbone.

Dr. Zim explains the unique bone structure of the ostrich and many other striking facts about this large bird, which can weigh up to 350 pounds!

The ostrich has many relatives—the extinct moas, the tiny kiwis of New Zealand, plus cassowaries, emus, rheas, and more. Did you know that ostriches have two toes, rheas have three, and kiwis four?

Dr. Herbert Zim was a naturalist, author, and educator. His books are prized for their accuracy and engaging material.



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