

PHILIPPINES—

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that fronts the sea. This was the first forest I ever worked in where fruit bats were common throughout. A medium-sized species slept singly or in couples hanging up in the lower canopy, and these bats were continually flying ahead of us. They were of a species that feed, fight, and squeal amid the small green fruits in the kapok trees each night. A large species of fruit bat also occurred, with a community roost in a big tree about 300 yards from camp, and from this the bats spread out each evening to do their feeding.

Some of the cornfields still had dried bleached stalks standing. How different were the birds in them from the birds of a cornfield in the United States. Instead of bluejays, blackbirds, and pheasants, there were white cockatoos, which, the people told us, compete with the human population for the younger ears of corn. Wood-swallows and bee-eaters, both of groups unknown in the New World, used the cornstalks as vantage points from which to fly out and capture large insects on the wing. Still more incongruous was a medium-sized kingfisher whose favorite perching places were fenceposts along the cornfield where it watched for insects and lizards on the ground.

GIANT FOSSIL CLAMSHELLS

Near the forest the limestone is close to the surface. It's still closer in the forest, and this probably has saved the trees. An incidental result is that the cornfields near the woodland are rich in fossil giant clamshells (*Tridacna*). The shells or fragments of these huge bivalves, more than two feet long, seem to resist disintegration better than the rock in which they're embedded.

As in so many places in the tropics the introduced shrub, lantana, forms great masses on wasteland. These harbor many birds. The bright orange-red flowers are favorite feeding places of the yellow-bellied sunbird, and the ripe fruits are one of the foods of the glossy starling, an all-black bird with an eye so brilliantly red that in the sunshine it looks like an added adornment. A lantana patch near camp was a favorite roosting place for the little black-and-brown weaver bird that roams the countryside in loose flocks in search of weed and grass seeds on which to feed. On our first two mornings here a dark peregrine falcon, relative of our duck hawk, swept over our dooryard throwing the hens into a panic. It's a dark endemic form of falcon we would have liked to collect, but in a watch on subsequent mornings we failed to find it. However, we did see another chicken predator in action. It was a crow, indistinguishable in the field from our crow except perhaps by voice. "Wak" the natives call it, and that's a very good rendition of its call.

The bird fauna of the forest is poor here. There are none of the woodpeckers, hornbills, nuthatches, chickadees, or leaf-warblers so characteristic of many Philippine forests. It's interesting to see a well-developed forest with so many ecological niches empty. Because species are few, one would expect the few that do occur to be exceptionally abundant compared with their status on the larger islands, but this does not seem to be the case.

Bird song is not noticeable, which is to be expected on a small island with a poor fauna. The birds do not need song to prevent species mixup at breeding time. In the forest there is always the chatter of the bulbul, which is harsher than that of its relative on Negros, and the bird is less given to singing than that on Negros.

The screeching of cockatoos is also a familiar sound. The babbling of the rufous and black coucal (a cuckoo) and the loud *gua-how* followed by a chuckle of the black koel (another cuckoo) also sound in the forest. The only real songster is a black-and-white thrush, *Copsychus*, that has a series of fine sweet whistles that would rate it a songster in any company.

MONOTREMES, MARSUPIALS BYPASSED BY EVOLUTION

By BARBARA POLIKOFF

Several members of the blue-jean set were standing in front of the new exhibit in Hall 15 when I went to see it for the first time. Their remarks, coming one on top of another, many having nothing to do with the exhibit at all, caused a small clamor that would have made a disciplinarian's heart sink. But I managed to hear the comment of one boy who had just discovered that the new-born opossum finds its way into its mother's pouch when it is so small that it can fit comfortably in a teaspoon. After he had absorbed the full wonder of this discovery he announced to one of his colleagues, "Someday I'm going to study this stuff." In the age when jet planes and deep-sea diving has excited the ambitions of so many boys, this is quite a tribute.

THEME IS PRIMITIVISM

The new exhibit, planned by D. Dwight Davis, Curator of Vertebrate Anatomy, and prepared by Joseph B. Krstolich, Artist, is devoted to explaining the remarkable features of the two most primitive groups of mammals: the monotremes (most famous is the duck-billed platypus) and the marsupials (best known is the kangaroo). Unlike modern mammals such as the dog and the horse that give birth to fully formed offspring, the animals belonging to these two groups have a much more primitive reproductive cycle. The monotremes lay eggs and are in this respect more like reptiles than mammals. The marsupials, a step

above the monotremes in the evolutionary scale, do not lay eggs but they still lag behind the modern mammals. As the small scholar discovered, their offspring are so undeveloped at time of birth that they require the protection of the mother's pouch for several months before they can venture out on their own.

The monotremes and marsupials have other characteristics that indicate their primitivism. A comparison of the shoulder girdle bones of a monotreme with those of a lizard shows that there is a close resemblance between the two, much closer than the resemblance that exists between the bones of monotremes and mammals. The opossum, a marsupial that is as large as a cat when it is full grown, has a brain that is practically devoid of convolutions, resembling the brain of a lizard more than that of a cat. The convoluted brain is found in the mammals that go beyond the marsupials in the scale of evolution.

FLOURISHED IN THE AMERICAS

As the section of the exhibit devoted to zoogeography shows, about 80 million years ago marsupials and monotremes flourished in North and South America as well as in Australia and New Guinea. At that time there was no connection between any of these land areas. When modern mammals developed in North America, they completely dominated the more primitive marsupials, wiping them out except for the persistent little opossum that was somehow able to survive the onslaught. When a connection was established between North and South America, the modern mammals traveled from north to south and obliterated the majority of the marsupials that flourished there. Because Australia and New Guinea are still isolated as they were 80 million years ago, marsupials still exist there in great variety.

The flying squirrel, a modern mammal, and the flying phalanger, a marsupial, are included in the exhibit as a good example of a common but nonetheless extraordinary phenomenon—that of two animals that closely resemble each other although they belong to different groups that are found in different parts of the world, the result of parallel evolution that occurs when animals have similar habits.

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