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## THE KIWI, ONE OF WORLD'S STRANGEST BIRDS, SHOWN IN NEW HABITAT GROUP

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A kiwi is a strange looking bird. Roughly speaking, it resembles a brown long-necked chicken without tail or wings and with a long curlew-like bill. It is almost uniformly covered with long filamentous feathers very similar to those of a cassowary or emu except that there is no after-shaft present.

Two living species of kiwis are known, both of them with three geographic forms. Mantell's kiwi is the most common. They are found only on the islands of New Zealand—North Island, South Island, and Stewart Island. Several additional species are known from fossils, two of them from the late Tertiary of New Zealand and Queensland in Australia, showing that in earlier times they had a much wider range. Others have been found in Pleistocene deposits where their bones are contemporary with those of the extinct giant moas.

For many years following the discovery of the kiwi in 1813, zoologists were inclined to wonder if such a strange bird really did exist. It was not until the only specimen available at that time was exhibited to the London Zoological Society in 1833 that doubters were convinced that there indeed was a relict, a survival of an ancient and primitive type of bird.

That there should be many who were incredulous was not surprising in those early days when the sifting of zoological fact from legend was so important. Uncertainty remained whether rocs, unicorns, dragons, and mermaids might not have existed in reality, and the kiwi was no less strange than any of these. It still merits the distinction of being one of the most extraordinary birds living anywhere in the world today.

In the Hall of Birds (Hall 20), installation was completed last month of a habitat group showing Mantell's kiwi in its natural environment. The snow-capped volcano of Mount Egmont in the southwestern part of North Island, New Zealand, dominates the background which is seen through the filigree tracery of tree ferns, epiphytic plants,

large in proportion to its own size. Here the danger of over-specialization becomes apparent. The size of the egg results in the kiwi chick's being hatched in a relatively advanced state of development compared to other young birds, a factor that is undoubtedly favorable to the maintenance of the species as a whole. The difficulty of producing such a large egg is another matter, however, and sometimes has fatal results. Not infrequently female kiwis containing fully developed eggs have been found dead in their nesting burrows.

As in the case of the ocean-loving phalaropes of northern hemisphere shores, and of the tinamous of South America, the relationship of the sexes is largely reversed from the normal. A female kiwi is about one-fourth larger than her mate and is the dominant member of the pair. To the male falls the duty of incubation and he devotes about six weeks to the job. After her egg is laid, the female only enters the burrow to sleep. She is however, much more aggressive than her mate in defense of the



Eggs Weigh One-fourth as Much as the Bird

No other bird, or animal of any kind, produces an egg or offspring so large in proportion to the size of the mother as does the kiwi, subject of the above new habitat group in the Hall of Birds (Hall 20). In the illustration, due to the exigencies of photography, it is not possible to include the mountain background of the exhibit.

and mosses that give character to the humid temperate forest at the base of the mountain. An eroded bank in the forest exposes arching roots of a gigantic tree and provides a secluded recess that a kiwi has chosen for her nest. Here on a bed of dried fern fronds lie the white eggs, which are notable in comparison with all other birds' eggs for their truly unusual size.

A kiwi is only about the size of a chicken, but its egg is more than ten times as large as a hen's egg. It weighs approximately one-fourth as much as the bird that lays it. This is unique among all vertebrates, there being no bird, or other animal for that matter, that produces an offspring or egg so

nest, and with her long, straight, sharp claws she can inflict a serious wound by kicking forward as an ostrich or cassowary does. After the young birds are hatched, it is the male that is the more solicitous in attending, feeding, and brooding them.

Kiwis are primarily nocturnal. Contrary to the general rule that the eyes of birds that are active by night are enlarged, the kiwis' are small and beady, and their sight is poor. The senses of touch and smell are highly developed, however, and the olfactory lobes of the brain are larger than in other birds. The nostrils are situated at the tip of the bill, whereas in other birds they are near its base. In fact, so much do kiwis



rely on touch and smell for registering impressions of the world about them that they sometimes walk along tapping the ground with their long bills, touching obstructions in a manner that is reminiscent of a blind man tapping along with his cane.

Kiwis feed largely on earthworms which they procure by probing in the debris of the forest floor like a woodcock. Here their sense of touch and smell stand them in good stead and while feeding they audibly sniff and snuffle. They are very expert in coaxing an earthworm out of his burrow with a gentle steady pull just as a robin does on our lawns. Kiwis are also very fond of the tender shoots of one of the terrestrial orchids, and of various berries, seeds and fruits.

#### NAME "KIWI" SIMULATES CALL

The sounds that kiwis make are hardly melodious, that of the male being high and shrill, while the female emits various low, hoarse, hissing moans. The word "kiwi," which is the name that the native Maoris use for the bird, is derived from the sound of the male's call.

Kiwis are related to ostriches, rheas, emus, and cassowaries. With the tinamous of South America they form a group distinct from all other living birds. In common with their ostrich-like allies they have no central keel on the sternum, and thus belong to the group known as Ratitae from the Latin word *ratis* meaning raft or flat-bottomed boat. The keel is, of course, that part of the skeleton to which the muscles of flight are attached. Since all these birds are flightless, their pectoral muscles are small and have no need for a large area of attachment.

Degeneration, or rather retrogressive specialization, has been carried to an extreme in the kiwi. In New Zealand for ages it has had no predatory enemies and this may partly account for its entirely non-functional wing. Only a humerus and one digit remain. All the other parts of the forearm and hand have been lost in conformity with the principle that, in the course of evolution, conservation of material often accompanies the disuse of a structure. There are no recognizable wing quills and likewise no tail feathers.

#### EFFECTS OF ISLAND HABITAT

Kiwis well illustrate the principle that animals living on islands tend to become degenerate in some respects and overspecialized in others, due to the lack of pressure of the environment, both physical and biotic. The dodo, discussed in *FIELD MUSEUM NEWS* (January, 1939), is a similar example. Others that might be mentioned are the great auk of the North Atlantic, the extinct elephant-birds of Madagascar, and the moas of New Zealand.

Although kiwis were much persecuted during the late nineteenth century, the government of New Zealand has now established rigid protection, and there is some chance that they may long exist in the

forests and preserves such as surround beautiful Mount Egmont.

The Canterbury Museum at Christchurch, South Island, through the good offices of Mrs. Oscar Straus, of New York (a Field Museum Contributor), collected numerous plant accessories and made studies that were of very great assistance in building the habitat group. Mr. Michael Lerner, of New York, gave full color photographs of Mount Egmont that aided in making the background, painted by Staff Artist Arthur G. Rueckert, more accurate and realistic. The foreground plants and other features were constructed by and under the supervision of Mr. Frank H. Letl, Preparator of Accessories. Staff Taxidermist John W. Moyer mounted the specimens and prepared casts of eggs that were lent for that purpose by the American Museum of Natural History, New York.

### MARRIAGE CUSTOMS

BY ALEXANDER SPOEHR  
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Men all over the world come in all shapes, sizes, and shades of white, brown, and black. Their hair may be straight, wavy, or kinky. They speak a bewildering variety of languages. They build different kinds of houses, eat varying kinds of food, wear all sorts of odd clothing, live by different standards, and worship different gods. But one thing men have in common: sooner or later most of them get married. In itself marriage seems a simple enough matter; yet it brings all sorts of troublesome problems in its wake.

There is the mother-in-law business for one thing. How to act toward one's mother-in-law is a problem in any society. In some, it is solved in what seems a sensible manner: a man has nothing at all to do with his mother-in-law. A Crow Indian avoids his mother-in-law, and she shuns him with equal thoroughness. He does not speak to her and in conversation does not mention her name. This is not because they dislike each other—on the contrary, they respect and may like each other very much. Their avoidance is simply one way of preventing conflict.

#### UNCLES AS FAMILY DISCIPLINARIANS

Among the peoples of the world, one finds a great variety, as well as a similarity, in customs relating to marriage and kinship. Some societies count descent through women instead of men. In such groups it is common for the disciplining of children to be in the hands of the mother's brother rather than the children's father. Among the Creek Indians it was unthinkable for a father to punish his child; this was always left to the mother's brother, who maintained a strong interest in his sister's children and saw to it that they behaved properly and obeyed their parents.

Every society sets up rules as to whom one cannot marry. With us these rules

apply only to close kin. Other peoples extend such regulations to more remote relatives and in addition specify the person one must marry. A common practice is called the *sororate*, whereby a widower is expected to marry the sister of his deceased wife. But the people who are most explicit in restricting the choice of a man's spouse are probably the Aranda tribe of Australia, whose kinship practices have intrigued anthropologists for years. Among the Aranda a man normally marries his mother's mother's brother's daughter's daughter (his second cousin). This seems a complicated arrangement, though the Aranda finds it natural enough.

#### ODD CHILDBIRTH PRACTICE

However, a stranger custom associated with the family is the *convade*. Under this plan, when a woman has given birth to a child she gets up shortly after and goes about her daily work as well as she can, while her husband is confined to bed to lie in comfort and receive visiting friends. This curious practice is found in widely separated parts of the globe. It was followed by the Basques of the Pyrenees until a century or so ago, and is found among the Brazilian Indians, who believe that any deviation from this tradition would bring sickness to the new-born babe.

In every community the family is a universal element. The problems it must face in maintaining itself and in caring for and educating children are much the same over the world, although the ways these problems are solved and the customs associated with family life may vary greatly.

### RATTLESNAKES BORN IN MUSEUM

On June 26 Mr. E. C. Tobiasz collected three massasaugas (*Sistrurus catenatus catenatus*) at Wooddale, Du Page County, Illinois, for the Division of Reptiles. The unusual girth of two of these soon aroused suspicion that they would reproduce this season. Sure enough, on the morning of August 20, seven living and four dead baby snakes were found in the cage. The seven active young rattlesnakes were fully ready to defend themselves and even attempt to rattle with their minute "buttons." On the morning of August 30 the other female produced eleven living young. This mother obligingly chose a time which permitted the taking of scientific notes on the birth process. Although held under suspicion for a time, the third adult proved to be a male. On the average, male rattlers are bigger than females, whereas in other snakes the reverse condition prevails, according to Mr. Clifford H. Pope, Assistant Curator of Amphibians and Reptiles.

Eighty-four leaflets, presenting scientific subjects in popular style, have been published by Field Museum Press.





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