

a number of years, there would then be more real bird protection achieved than perhaps we enthusiasts talk about, or even dream about; and a generation would have grown up able and willing to estimate the R.A.O.U. and its work at full value.

Feeding Habits of the Shining Bronze-Cuckoo.—Mr. K. A. Hindwood's article on the feeding and egg-laying habits of parasitic species of Cuckoos, published in the July part of *The Emu* (1930), adds considerably to our knowledge of the yet somewhat obscure phases of the habits of Cuckoos. For many years I have devoted time to observing the habits of the two species of parasitic Cuckoos, namely, the Shining Bronze Cuckoo (*Lamprococcyx lucidus*) and the Long-tailed Cuckoo (*Eudynamis taitensis*), which annually visit New Zealand and the outlying islands. The eggs of the former species have been found in the nests of four native birds, and in the nests of the introduced House-Sparrow and English Thrush. The eggs of the Long-tailed species have occurred in the nest of the English Thrush and native Grey-Warbler (*Pseudogerygone igata*), which is generally the foster-parent of both the visitors. When observing the Cuckoos with field-glasses, capturing and consuming the larvæ, I noticed minute particles and a large piece of something drop from the limb of the tree on which the Cuckoo under observation was feeding. There were five Cuckoos feeding on the larvæ within a space of two chains. The larvæ are those of the common native Magpie-moth (*Deilemera annulata*), which deposits its eggs in December and January on the naturalised climbing "Cape Ivy" (*Senecio mikanioides*) and other species of *Senecio*. I changed my position as the birds moved, in order to observe them closely. I noted when the birds descended into the dense vegetation they remained some minutes in or on it, capturing the larvæ. When they rose and settled on a tree limb to consume them, the birds were also a considerable time doing so. On searching on the walk and grass under the trees where they fed, I found a number of parts of the fresh skins of these hairy larvæ. Some were torn; others were almost intact. I also found several agglomerated pellets composed of empty skins of these hairy-coated larvæ. The pellets when fresh are moist, and these were coated with a saliva-like substance. I found the fresh pellets and skins directly under the tree-limb where one of the birds fed. At a distance of 12 yards I observed the actions of the Cuckoos when feeding very clearly. Two of the birds I watched were adults; three were young, in distinctly immature plumage. The Cuckoos unquestionably when thus feeding collect a number of the larvæ in the

mouth before perching on some limb, where they "munch" them until the viscera and intestinal matter is compressed from them, when they eject the skins, especially those of adult larvæ. I occasionally saw them wiping their beaks on the tree-limb after "munching" the larvæ.

Professor Abbey, in his valuable work, "The Balance of Nature," thus wrote of the European Cuckoo (*Cuculus canorus*):—"For devouring hairy caterpillars, even 'woolly bear,' and particularly gooseberry caterpillars, combined with all the hairy gentry that feast and fatten on foliage in woods, coppices, hedgerows, fields, fruit plantations and gardens, this bird is unequalled. It also eats flies, beetles, grasshoppers, surface larvæ, such as leather-jackets and wireworms, millipedes and molluscs; but its chief food is caterpillars. The young are mostly reared by the foster-parent on smooth caterpillars until they are able to obtain their own food." The food supplied to the young of the Shining Bronze-Cuckoo by the Grey Warblers in New Zealand consists of smooth-skinned larvæ of the numerous species of moths and beetles feeding on the evergreen succulent foliage of trees and shrubs in the bush. I find the elytra of beetles, the wings of flies, and the remains of woodlice in the nest and on the ground under the site of their nests.

It is a pleasing phase of bird-life to observe these actively industrious little Warblers catering laboriously all day and in all weathers to appease the voracious demands of their incongruous parasite. As the young Cuckoo generally grows rapidly, and the nest space becomes too limited, it leaves the nest and stations itself on as heavy a tree-limb as it can reach, where it is able to turn around and announce in all directions, in pitiful tones, that help is needed. Sir Walter Buller, in the 1888 edition of his classic, "History of the Birds of New Zealand," states that birds flying past occasionally stop and "drop a morsel into its imploring throat." I have many times during many years watched Grey Warblers feeding young Cuckoos, yet have only twice seen an English Thrush feeding a young bird which was also being daily fed by Warblers. The Thrush is one of the foster-parents of the Cuckoo in the Homeland. Is it some phase of heredity and previous experience that guides or impels the Thrush to feed the Cuckoo when it is not an inmate of its own nest? In captivity, the English Thrush is known to be one of the most gentle and social species of cage birds. In both cases, when I observed the Thrush feed the Cuckoo, the latter was nearing maturity. When young cuckoos become self-supporting they cease to call, and live silently feeding most of the day. As their wings develop, they are able to fly long distances in quest of the succession of foods occurring in the areas they visit.—W. W. SMITH, New Plymouth, N.Z.