and also in the early morning on the flight paths of the duck. These birds generally fly in flocks, of 5 to 15 birds in each flock. The bird-catchers fly the kites in such a way that they can easily put the threads with hooks on the flight paths of the birds by alternately pulling and releasing the kite's string. Some of the ducks during their flight to and from the lake of the Zoo become entangled with the fishing hooks and are caught.

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8. THE JUVENILE PLUMAGE OF THE LITTLE EGRET COMPARED WITH THAT OF THE WHITE-PHASE INDIAN REEF HERON

(*With a text-figure*)

The Little Egret, *Egretta garzetta* (Linn.), is mainly an inland species which is replaced by the polymorphic Indian Reef Heron, *Egretta gularis* Bosc, on the western coast of India. Whether these two are separate species or merely the inland and coastal races of the same species, has not been satisfactorily resolved as yet. In their recent study on the systematics and evolutionary relationships among the herons, Payne and Risley (1976) have considered *E. garzetta* and *E. gularis* as members of a superspecies.

The Little Egret resembles the white-phase Reef Heron. A far-inland population of the Little Egret can be clearly distinguished from an exclusively marine Reef Heron population, as the former is characterized by the presence of a black beak whereas the latter has a yellow beak. However, in the transitional zone where both the marine as well as the inland waters are important sources of food, the distinction between the two species based on the beak colour breaks down and the white birds with the beak colour ranging from jet black to yellow can be seen interbreeding with the grey morphs of the Reef Heron in the same heronry (Parasharya & Naik, *unpublished*). That there is a considerable overlap between the tarsus length of the Reef Heron and Little Egret has been demonstrated earlier (Ali & Ripley 1968, Hancock & Elliot 1978). In view of these, we thought it desirable to check the contention of Ali & Ripley (1968) that the Little Egret has 'snow-white' chicks in contrast to the Reef Heron whose white chicks are dappled with grey.

MATERIALS AND METHODS

A heronry in the grounds of the Municipal Hill Garden Zoo, Ahmedabad (23° 04′ N, 72° 38′ E) located about 92 kilometres from the sea coast was visited on 28 September 1982. The Little Egret was breeding there along with the Large Egret (*Egretta alba*), Median

Egret (*Egretta intermedia*), Cattle Egret (*Bubulcus ibis*), Night Heron (*Nycticorax nycticorax*), Pond Heron (*Ardeola grayii*) and Little Cormorant (*Phalacrocorax niger*). After careful observations of adult birds attending their nests, four nests of the Little Egret were identified and from these nests six 2 to 3-week old chicks (three from one nest and one from each of the other nests) were collected and transported to an aviary in the Saurashtra University Campus, Rajkot, where the birds were maintained for a detailed study. We have had for a comparison several white morphs of the Indian Reef Heron in their juvenile plumage in the aviary; these birds were collected from a Reef Heron colony in Gogha (Naik *et al.* 1981) on the west coast of the Gulf of Khambhat.

Results

The three siblings of the Little Egret had a number of white feathers with grey streaks and dapples; only the head, breast, abdomen and thigh had all the feathers pure white, the other regions having had most of the white feathers streaked, or dappled, with grey at the distal ends. Out of the other three nestlings collected, one had feathers with grey streaks and dapples

Fig. 1. A nestling of the Little Egret showing grey streaks and dapples on the plumage.

as described above, whereas the remaining two nestlings had exclusively pure white feathers all over their body.

The juvenile plumage in the white morphs of Reef Heron had variable amount of grey in the form ranging from fine streaks to large dapples. Some of these birds resembled the Little Egrets with grey streaks and dapples described hereinbefore.

Discussion

The juvenile plumage of Little Egret is not always pure white, though it might be so in some individuals. On the other hand, the white-phase Reef Heron always has some amount of grey in the form of streaks and dapples in its juvenile plumage (Naik & Parasharya 1983) we have handled a large number of chicks of the Reef Heron without ever finding a chick with pure white plumage.

The white juvenile plumage is extremely variable within the Little Egret-Reef Heron complex and the Little Egret represents one end of the broad spectrum of variability. This is true with respect to the other physical characteristics, such as beak and leg colour (Parasharya & Naik, *unpublished*) as well.

The Little Egret and Reef Heron are allopatric in the transitional zone between inland and coast and we have circumstantial evidences that these two species interbreed there (Parasharya & Naik, *unpublished*). If the pure-white juvenile plumage is the genotypic characteristic of the Little Egret, as against the grey-splashed juvenile plumage of the Reef Heron, it is possible that the Little Egret would have only the pure-white juvenile plumage represented in its populations that are far removed from the sea coast. Both the pure-white as well as grey-splashed juvenile plumages, however, may be encountered in the populations relatively closer to the coastal areas, because of a regular gene flow from coastal populations of the Reef Heron. Our investigations currently in progress, are directed towards checking this possibility.

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