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The Fighting Behaviour of Marine Iguanas

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The fighting behaviour of marine iguanas

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[Plate 24]

The Marine Iguana (*Amblyrhynchus cristatus*) is a species endemic to the Galapagos Islands. It lives in large aggregations along the rocky shore lines throughout the archipelago. It is the only iguanid specialized for feeding on marine algae, which they crop at low tide from the exposed rocks or even by diving down to the bottom of the sea.

The animals are extremely gregarious and sometimes hundreds of iguanas bask on the lava rocks in bodily contact with each other. Besides this mutual attraction, however, no specific forms of social interaction like grooming, mutual feeding rituals, etc. are to be observed. This is in striking contrast to the social behaviour of birds and mammals which use such patterns for bond formation. These bond-forming behaviour patterns are mainly derivates of maternal behaviour, which seem to be preadapted for this purpose. Reptiles lack maternal behaviour and this may in part explain their inability to form a closer bond between adults.

During the breeding season the male marine iguanas become territorial. They defend a small area of lava rock against other males, whilst females are allowed to stay. If a male rival approaches the territory, its owner displays. He opens his mouth, nods with the head and walks stiff leggedly up and down in front of the rival, showing his lateral aspect. The dorsal crest is erected and the gular regions extended. If the rival answers by the same display, fighting is initiated. The opponents rush at each other. But in spite of the biting intentions shown during the display they never bite each other, but instead lower their head and butt. The hornlike scales on the roof of the head interlock and the animals try to push the other away. This can continue for a while, with pauses in between, during which the opponents display frontally. The struggle ends when one of the rivals is pushed from the rock or when he gives up by assuming a submissive posture (lying flat on his belly.) The winner then stops fighting and waits in threat display for the rival to leave. The fight is a highly ritualized tournament in the course of which the stronger wins, without hurting the loser.

Only if one introduces a male artificially into the territory of another male, can damaging fights be observed. Then the territory owner rushes at the introduced individual, which does not show the introductory ceremonies that normally release ritualized fighting. The introduced individual is bitten as a consequence.

Females fight in some places of the archipelago for the rare egg-laying sites. In contrast to the males, their fighting is far less ritualized. It begins with threat display and head-pushing, but soon they bite and shake each other viciously. They have less developed hornlike scales than the males.

Ritualized fighting is fairly widespread in animals that are capable of inflicting serious

damage to the conspecific. Poisonous snakes never bite each other, but the rivals wrestle according to the fixed rules. Cichlid fishes have developed various forms of mouthfighting and thus avoid mutual damage. In a number of species, e.g. in wolves, fighting starts as a damaging fight, but ends by a submissive posture of the loser, which inhibits further aggression (Lorenz 1963). The existence of ritualized combats shows clearly that the killing of a conspecific is generally avoided in vertebrates. Only animals without weapons or animals that can easily retreat after the exchange of bites have no such social inhibitions. This is, for example, true for the hamster (*Cricetus cricetus*) where the loser has no difficulty in running away. The winner never follows far. In captivity, species of this type often kill each other. From the fact that ritualized fighting occurs we can learn furthermore that there is a strong selection pressure towards aggressivity. Otherwise aggressivity would have been counterselected in species that can do damage to a conspecific. However, they developed the most complicated fighting techniques instead, in order to permit fighting, as a mechanism for spacing-out (Eibl-Eibesfeldt 1951, 1961).

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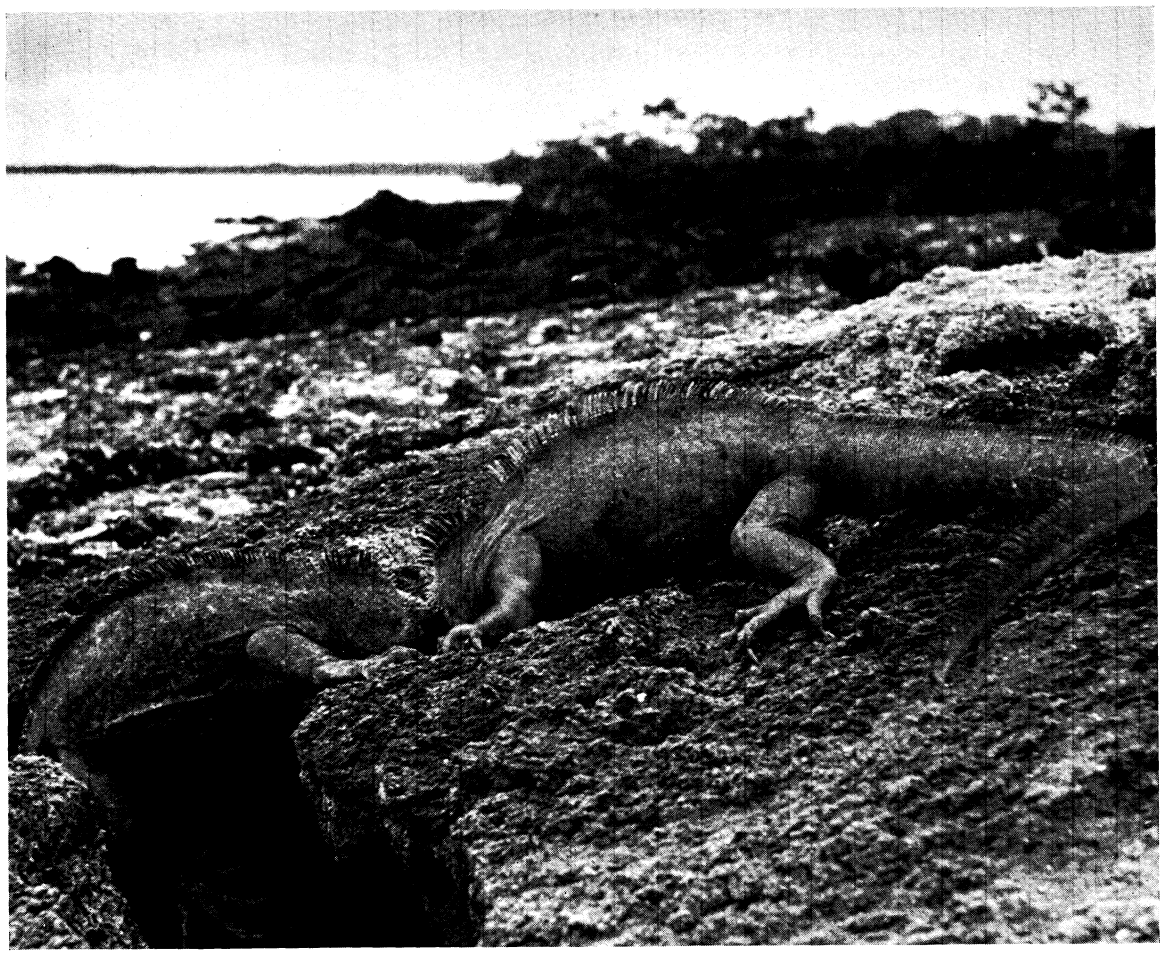

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FIGURE 1. Marine iguanas fighting by head-pushing.

FIGURE 2. The submissive posture of the loser (on the left).

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