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ANIMAL BEHAVIOUR

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by Niko Tinbergen

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Contents

Introduction

THE study of animal behaviour began with early man's first systematic attempts to draw conclusions and make predictions from his observations of the creatures around him. Yet today it remains as one of the most complex and challenging branches of all science. In fact, at present we seem closer to understanding the origins of life itself than we are to understanding how and why most living things behave as they do.

The complexity of animal behaviour study does not depend on elaborate mathematical treatments, on delicate instruments or giant computers—the paraphernalia that people usually associate with science. Although these devices have their place, they are after all only a means of wringing facts from nature, and an experienced student of animal behaviour armed with binoculars and hidden in a blind can gather in a few hours enough facts about his subject to keep him pondering for a year. The challenge is mainly to the intellect, to the judgement and patience of the observer rather than to his technical ingenuity.

This would seem to place animal behaviour study pretty far from particle physics, but both fields are, in truth, plagued by the same problem: what would the animal (or particle) be doing if the observer were not present as a slight disturber of its environment? Attempts to resolve this problem range all the way from laboratory experiments, conducted under the most rigidly controlled conditions, to field observations in which the student makes elaborate efforts to conceal himself so that the animal will be left as undisturbed as possible to go about its business amidst the many natural variables of its environment. Neither approach is sufficient by itself; both are necessary.

The emphasis that the behaviourist places on keeping an animal's surroundings undisturbed springs from his conviction that its behaviour is meaningful only in the sense that it has enabled the species to survive and evolve to its present status under prevailing environmental conditions. A tiger's teeth and a fish's fins have evolutionary significance not only in their shape but also in how and where they are used. Modern students of animal behaviour, among whom Dr. Tinbergen is a leader, have repeatedly shown that relatedness of different animal species is just as surely expressed by comparing their behaviour patterns as by comparing their body forms.

Being comparative, behaviour study is not a field for the narrow specialist. Dr. Tinbergen's distinguished work includes analysis of the homing of wasps, the courtship of butterflies and the nesting behaviour of sea birds. His wide experience and deep insights are here combined in a fascinating volume which constitutes not only a challenge but an encouragement to every reader. Anyone, Dr. Tinbergen seems to say, with a sharp eye and ear, a measure of patience and a healthy scepticism about jumping to conclusions, can profitably study animals and may conceivably make observations of lasting value to science.

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HUDDLED ON A LEAF, a tiny tropical frog has marks resembling a bird dropping, a protective coloration that demands complete stillness. Like the katydid and caterpillar seen on these pages, this frog is active at night, therefore its survival depends on its habit of resting without stirring for long hours during the daylight, its legs tucked inconspicuously underneath it.

Pretending to Be Inedible

Many animals gain protection by imitating, both in physical structure and behaviour, objects regarded as inedible by predators. A twig caterpillar (*right*), for example, has evolved the physical dimensions and markings of a real twig, but unless it remains as still as part of the tree, a predator will not be fooled and the insect will be eaten. Similarly, the creature must have the inclination to choose a suitable background in which to act like a twig. Thus, the background itself will influence the kind of behaviour that the animal uses. Nandid fish in the Amazon basin, for instance, resemble dead leaves and can float motionless among them for hours. Also, certain drab-coloured butterflies in America's tropics fly in such a way as to act like falling leaves, while some grasshoppers resemble fresh grass, others dried grass, and still others the stubble of burnt grass.

HOLDING A RIGID POSE, a twig caterpillar branches off a limb in the same manner as a real twig. If touched, this creature will fall to the ground, remaining motionless like a dead twig.

SPRAWLED ABOVE ITS KILL, a leopard rests on a branch after carrying a Thomson's gazelle into a tree where scavenging hyenas and jackals cannot reach it. The leopard will feed often from this carcass, regardless of its state of decay, until the entire animal is consumed. But if the leopard suspects another animal has eaten from the remains, it will not touch it again.

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