Preface to Volume 1

THE vertebrate skin is a complex interface between the external world and the organism's internal milieu. In fishes, reptiles, birds and mammals its derivatives of scales, scutes, feathers or hair serve as protection against mechanical injury, environmental chemicals and infection by disease organisms. Their chemically inert integument is a relatively impermeable barrier to most substances. In amphibians, by contrast, the typically moist, delicate skin is both vulnerable to, and physiologically intimate with, the environment. It constitutes a major route of exchange between the animal and its surroundings for a variety of substances — respiratory gases, water and salts. Also, it is richly supplied with glands and is a virtual pharmacopeia. There is hardly any other organ in any animal that contains such a diverse array of biochemicals. These are involved in defense and reproduction at least, although other functions also may be subserved as the use made of many integumental components is unknown. Within the Amphibia the variance across taxa in the structure and physiology of the integument is correlated with a broad diversity of habitats, niches, life history traits and evolutionary constraints.

Volume 1, "The Integument" begins with an examination of the morphology, cellular constitution and development of the skin. Thus, Chapters 1 and 2 provide readers with a fundamental understanding of the anatomical accoutrements with which amphibians interact physiologically with their environment. Chapter 3 is devoted exclusively to the complex structure and physiology underlying amphibian skin pigmentation. Chapters 4–8 present a review of biophysical and biochemical parameters that govern the skin's physiological role in the exchange of gases, ions and water. In Chapter 9 the various cutaneous secretions are elucidated and in Chapter 10 the skin's role in reproduction is analyzed. Chapter 11 treats the integument of *Xenopus laevis* as a model of functional adaptation of the skin and its secretions, especially in its role in defense.

Each chapter of Volume 1 stands on its own as a comprehensive review. However, as editors we have attempted to smooth transitions and coordinate separate contributions.

Some cutaneous attributes will be examined in a later volume on Sensory Perception, and have not been treated in detail in the present one. These include an assessment of cells and organs involved in the lateral line system, in chemical, thermal and mechanoreception, and in perception of magnetic and electric fields. Similarly, the rose of the skin in certain aspects of reproduction (Chapter 10) sets the stage for a more detailed treatment in a volume on Social Behaviour, now in progress.

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