

Cambridge University Press

978-0-521-36602-1 - Physiological Strategies for Gas Exchange and Metabolism

Edited by A. J. Woakes, M. K. Grieshaber and C. R. Bridges

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Animals live in a wide range of habitats, and many often face a shortage of oxygen, an essential requirement for life. This book, written by experts in their fields, explains the problems animals face, from annelid worms living in oxygen-deficient muds in the sea, to the active bird whose requirement for oxygen during flight makes great demands on its respiratory system.

The approach taken is essentially comparative, with individual authors chosen so that their own areas of expertise complement the whole subject. Each chapter starts with a short review and this is then supplemented by the latest research results. The resulting book provides a wider synthesis and integration of data with existing ideas and theories than is possible in traditional journals. Researchers studying respiratory physiology as well as students studying zoology and physiology will find this book of great interest.

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PHYSIOLOGICAL STRATEGIES
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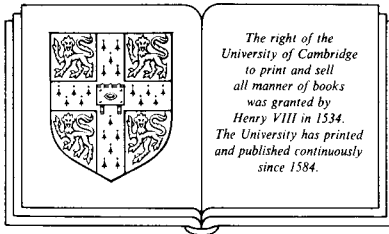
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PREFACE

In the course of evolution animals have adopted a variety of strategies in their 'fight for survival'. The aim of this volume is therefore to present a comparative view of some of the physiological strategies evolved in both invertebrates and vertebrates in their successful colonization of a particular environment. Comparisons are drawn from both aquatic and terrestrial physiology and range from the cellular or biochemical level to that of the whole organism. It is hoped that this comparative viewpoint will make the understanding of such processes clearer and also stimulate research in these fields.

Initially this volume arose out of two symposia organized by the Animal Respiration Group of the Society of Experimental Biology and hosted by the second International Congress of Comparative Physiology and Biochemistry held at Louisiana State University, Baton Rouge, Louisiana, USA, on August 1–5, 1988. Review lectures were presented along the lines of the two major themes of this book: (i) strategies in oxygen and carbon dioxide transport and (ii) respiratory adaptations to limited oxygen supply. These, together with two invited review papers, then formed a basis for the review chapters that appear in the present volume.

The success of this venture, culminating in the publication of this volume in the Seminar Series of the SEB, could not have been achieved without the help of many of our colleagues. We are therefore grateful to the contributors to this volume and for the efforts of a number of anonymous referees who helped in the reviewing of the manuscripts. We would also like to thank T. H. Dietz and W. B. Stickle of LSU for the local organization of the meeting, and extend our thanks to the SEB and the Royal Society for providing travel support for SEB members.

A. J. Woakes, M. K. Grieshaber and C. R. Bridges
Editors for the Society for Experimental Biology