

THE ROYAL SOCIETY OF EDINBURGH



PROCEEDINGS

Section **B** (Biological Sciences)

ISSN-0308-2113

PUBLISHED BY THE ROYAL SOCIETY OF EDINBURGH
22 GEORGE STREET, EDINBURGH, EH2 2PQ

1980

EDITORIAL BOARD

W. W. FLETCHER
University of Strathclyde

W. C. BOWMAN
University of Strathclyde

J. MORTON BOYD
Nature Conservancy Council

R. I. CURRIE
Dunstaffnage Marine Research Laboratory,
Oban, Argyll

G. J. F. DUTTON
University of Dundee

C. H. GIMINGHAM
University of Aberdeen

J. C. GOULD
Central Microbiological Laboratory, Western
General Hospital, Edinburgh

K. E. HALNAN
Hammersmith Hospital, London

J. HAWTHORNE
University of Strathclyde

R. M. S. SMELLIE
General Secretary
Royal Society of Edinburgh

D. M. HENDERSON
Royal Botanic Garden, Edinburgh

C. A. HOPKINS
University of Glasgow

A. M. MACLEOD
Edinburgh

J. D. MATTHEWS
University of Aberdeen

R. J. ROBERTS
University of Stirling

F. W. ROBERTSON
University of Aberdeen

J. A. F. ROOK
Hannah Research Institute, Ayr

J. E. SMITH
University of Strathclyde

A. WATSON
Institute of Terrestrial Ecology,
Blackhall, Banchory

W. H. RUTHERFORD
Executive Secretary
Royal Society of Edinburgh

THE ROYAL SOCIETY OF EDINBURGH,
EUROPEAN SOCIETY FOR COMPARATIVE SKIN BIOLOGY
AND
THE SKIN BIOLOGY CLUB

SYMPOSIUM
Surface ecosystems and the interactions within
them which overcome skin defence mechanisms

Edited by
D. McEwan Jenkinson and R. J. Roberts

Contents

Opening remarks by R. G. WHITE v

Introduction by D. MCEWAN JENKINSON vii

Mammals

The topography, climate and chemical nature of the mammalian skin surface 3
by D. MCEWAN JENKINSON

Comment on the defence system of the mammalian epidermis 23
by A. GEDEON MATOLTSY

The inhabitants of the mammalian skin surface 25
by D. H. LLOYD

Skin response to protein A 43
by M. I. WHITE and W. C. NOBLE

Experimental chronic dermatophilosis 47
by D. DAVIS and M. PHILPOTT

Birds

The avian skin in relation to surface ecology 57
by R. I. C. SPEARMAN

The inhabitants of avian skin with special reference to ectoparasitic infestations
and diseases of poultry skin 75
by R. N. TITCHENER

Fish

The skin surface ecosystem of teleost fishes 87
by R. J. ROBERTS and A. M. BULLOCK

Factors influencing the structure, function and biota of the salmonid epidermis 93
by A. D. PICKERING and R. H. RICHARDS

Composition and formation of flame cell caps: A substratum for the
attachment of micro-organisms to sea horse epidermis 105
by J. BEREITER-HAHN, K. S. RICHARDS, L. ELSNER and M. VÖTH

Amphibia/Reptiles

Skin biology of reptiles and amphibians 115
by E. ELKAN and J. E. COOPER

The surface fauna of *Xenopus* skin 127
by R. C. TINSLEY and M. WHITEAR

Arthropods	
The arthropod cuticle and its inhabitants by K. MELLANBY	133
Mouthparts of ectoparasites and host damage by H. V. SMITH and R. N. TITCHENER	139
Helminths/Nematodes	
The biology of the external surfaces of helminth parasites by L. H. CHAPPELL	145
Penetration of mouse and human skin by cercariae of <i>Schistosoma mansoni</i> ; immunological and histological observations by H. V. SMITH, A. MCQUEEN and J. R. KUSEL	173
Yeast/Fungi/Bacteria	
Interactions between micro-organisms on skin by W. C. NOBLE	185
Inhibitors produced by propionibacteria and their possible roles in the ecology of skin bacteria by E. A. EADY and K. T. HOLLAND	193
An <i>in vivo</i> staining technique for the demonstration of micro-organisms on the stratum corneum by S. A. MALCOLM	201
Conclusions by D. MCEWAN JENKINSON	209