DYNAMICAL CHAOS

EDITED BY

M.V. BERRY, F.R.S., I.C. PERCIVAL, F.R.S.,

AND N.O. WEISS

A major advance in the mathematical science of recent decades has been the discovery that systems can behave unpredictably even when their evolution is causally determined by known laws. The development of the subject is the result of a synergism between pure mathematics and natural science, aided by computation (especially graphics). An intense international research effort is now directed at understanding in detail the many varieties of chaotic behaviour and the many settings in which they can occur.

This spectrum of ideas stimulated a Royal Society Discussion Meeting in February 1987, and this book contains the papers presented at the meeting. The range of topics is wide. In mathematics, there are accounts of ways in which the characteristics of chaotic systems can be inferred from time series, simple geometrical models exhibiting chaos, and detailed descriptions of chaos based on number theory and renormalization transformations. In biology, there are applications to normal and anomalous heart rhythms and to population dynamics. Several papers deal with turbulence. In physics, there are applications to the mechanics of the Solar System, magnetic confinement of particles, and the quantum theory of molecules.

262 pages clothbound ISBN 0 85403 333 5


Price including packing and postage

£19.95 (U.K. addresses) £21.00 (Overseas addresses)

Publications Sales Department, The Royal Society,
6 Carlton House Terrace, London SW1Y 5AG
ENVIRONMENTAL EFFECTS OF NORTH SEA OIL AND GAS DEVELOPMENTS

Edited by
J.P. Hartley and R.B. Clark

Over the past 25 years the North Sea has witnessed a remarkable upsurge in exploration for oil and gas and has now become one of the world’s major hydrocarbon producing areas. Over the same period there has been increasing public and scientific awareness of the damage that can be caused by man’s activities. The North Sea is bordered by heavily industrialized nations and it is no exception to these environmental concerns.

This volume comprises invited papers presented at a two day Discussion Meeting held at the Royal Society, London, on 19 and 20 February 1986 and includes the discussion that followed each paper. The meeting aimed at defining the nature and extent of the environmental effects of 25 years of oil and gas operations in the North Sea. To achieve this, the North Sea was treated as a series of closely coupled systems, each of which was the subject of a paper in which published and unpublished information was reviewed.

217 pages clothbound ISBN 0 85403 332 7


Price including packing and postage
£38.00 (U.K. addresses) £40.00 (Overseas addresses)

Publications Sales Department, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG
BIOLOGICAL CONTROL OF PESTS, PATHOGENS AND WEEDS:
DEVELOPMENTS AND PROSPECTS

Edited by
R.K.S. WOOD, F.R.S., AND M.J. WAY

Losses of crop plants caused by pests, pathogens and weeds may be controlled by deploying against them other biological agents either directly or indirectly by enhancing the activity of indigenous natural agents. Biological control is sometimes an attractive alternative to chemical control and when control by breeding and selection of plants is not possible or impractical. Increasingly it is also recognized as a vital component of integrated pest and disease management programmes. Biological control has been most successful against insect pests. Nevertheless, and despite its virtues, the range and scale of biological control is still limited compared with other methods. Within the past few years, however, growing concern about the environment, and developments in biotechnology and recombinant DNA techniques have stimulated interest in expanding greatly the scope of biological control and its role in increasing the efficiency of crop production.

This book contains papers by leading authorities on biological control presented at a meeting in London on 18 and 19 February, 1987. It reviews past achievements and the prospects for commercial development for use on a much larger scale, and also analyses interactions between pests, pathogens and weeds and the biological control agents that act and are used against them.

266 pages clothbound ISBN 0 85403 347 5


Price including packing and postage
£47.50 (U.K. addresses) £50.00 (Overseas addresses)

The Royal Society
6 Carlton House Terrace, London, SW1Y 5AG
CONTENTS

Grenfell, B. T. & Anderson, R. M.
Pertussis in England and Wales: an investigation of transmission
   dynamics and control by mass vaccination
   pages 213–252

Liu, Y. & Nicholls, J.
Steps in the development of chemical and electrical synapses by pairs
   of identified leech neurons in culture. [Plates 1 and 2]
   253–268

Kienker, P.
Equivalence of aggregated Markov models of ion-channel gating
   269–309

Muscatine, L., Falkowski, P. G., Dubinsky, Z., Cook, P. A. &
McCloskey, L. R.
The effect of external nutrient resources on the population dynamics
   of zooxanthellae in a reef coral
   311–324

Rahav, O., Dubinsky, Z., Achituv, Y. & Falkowski, P. G.
Ammonium metabolism in the zooxanthellate coral, Stylophora
   pistillata
   325–337