

that the oldest buildings in Europe — in the Orkneys and in Malta — are still there simply because of the ease with which the local stone could be worked so that it was not worth the trouble of pulling the huts down again to build more up-to-date residences. Muir then moves on to burial chambers and stone monuments. He makes some rather doubtful remarks about Stonehenge but does not mention the unlikely theory (albeit sanctified in the Geological Museum) that the "blue stones" were brought from Wales by ice rather than by human muscle.

The third and most interesting part of the book deals with what the author calls "The Rise and Fall of Building Stone" in the great mediaeval cathedrals and castles. The biggest problem was the cost of transport before the coming of canals and railways, when the movement of heavy materials was largely restricted to natural waterways. The local stone was mostly Jurassic limestone or Devonian sandstone, though other local rocks were obviously used when convenient. Muir describes quarrying methods, and the mason's art in relation to changing architectural styles, and relates economic and social history to the remarkable phenomenon of great stone buildings which only ended (as I see it) with gunpowder, Ann Boleyn and the Reformation.

There is much less in the book about domestic architecture, the triumph of which was surely the cottages and walls of the Cotswolds with the "sunlight" in their local Middle Jurassic limestones, and even less on post-mediaeval building in stone. The use of Permian Magnesian Limestone in the Houses of Parliament is mentioned, though not the disastrous effects of the acid London atmosphere in turning them into Epsom Salts!

Muir talks disparagingly of brick (also apparently a form of "stone"), but does not, in my view, say enough about the uppermost Jurassic Portland Stone which Wren used to rebuild church and state in London after the great fire of 1666 and which then spread throughout southern Britain as the pale face of bureaucracy. Thus, characteristically, it is used in Swansea for the Guildhall, whilst the prison is built more prosaically of the local Pennant Sandstone. Banks, on the other hand, seem to depend on the Aberdeen granites to give them a proper air of dependability, while Cornish granites provide our hard-wearing kerb-stones.

For its intended audience this is a fascinating book, well-written and easy to read. Personally, I would have liked to have had also a simpler guide, little more than: "Salisbury Cathedral — Chilmark Stone" and then where Chilmark is and the geological age of its building stone. □

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Fascinating family

Frances C. James

Blackbirds of the Americas. By Gordon Orians. *University of Washington Press: 1985. Pp.163. \$24.95, £18.*

WHEN American ornithologists use the term "blackbird", they mean a member of the subfamily Icterinae, a group confined to the Western Hemisphere. Among the 94 species are not only the familiar red-winged blackbird, the brown-headed cowbird and the common grackle, whose immense roosts are a nuisance to farmers, but also many colourful species of New World orioles and meadowlarks, and the tropical oropendolas and caciques. The lineage is as diverse in social behaviour and breeding biology as it is in physical appearance and distribution.

Gordon Orians' fascination with blackbirds has taken him from Canada to Argentina, from marshes to deserts, from savannas to tropical forests. In this attractive volume, he introduces American blackbirds to the layman, the bird-watcher who has mastered the field guide and wants to learn more. His informal

writing style, in combination with the many striking drawings by Tony Angell, makes the book seem friendly, even though it is densely packed with information. And the comparative approach, à la David Lack, leads to new perspectives on the subject matter.

In an attempt to touch more generally on what evolutionary biologists do, Orians describes his own experiments and those of others. He discusses applications of optimal foraging theory and kin selection theory to interpretations of behavioural data, and confesses that the work was not designed to test these constructs but merely to use them to organize information. Here both the strengths and weaknesses of a controversial area of biology are revealed. The sceptical layman may well decide that biologists are still a long way from the goal of understanding mechanisms of adaptation.

The book is dressy, rich in detail and yet easy to read. References and appendices are included for the reader who wants to go further. Orians has fully achieved his objectives, perhaps even more than he intended. □

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For the future

Lynton K. Caldwell

World Resources 1986: An Assessment of the Resource Base that Supports the Global Economy. World Resources Institute and International Institute for Environment and Development. *Basic Books/Harper & Row:1986. Pp.353. Hbk \$32.95, £22.95; pbk \$16.95, £11.95.*

THIS reference source is the first volume of a projected annual series. Aspects of ten resource-environment topics are reviewed, with data tables for each of them and also for selected materials, minerals and basic economic indicators. Subsequent volumes will cover other aspects of the subject and a new one, on biogeochemical cycles, is planned for 1987.

Among the topics covered are population; human settlements; food and agriculture; forests and rangelands; wildlife and habitat; energy; freshwater; oceans and coasts; atmosphere and climate; and policies and institutions. The editors acknowledge the difficulty of organizing a volume in which all the material is interrelated, but while some division by topic was unavoidable and artificial the reader is assisted by a detailed table of contents, an index and frequent cross-referencing.

A further difficulty in compiling a book such as this is the frequent inadequacy of

the information available. The editors found "gaping holes in basic knowledge", and the prospects for closing these gaps are often diminished by lack of reliable indicative criteria and of comparability of the data. One of the main objectives of the *World Resources* series is to help remedy these deficiencies, and to provide assessments of the global resource base that can be relied upon in the formulation of national and international policies for resources and environment.

World Resources 1986 is an impressive compilation, well-designed for ready reference. Some minor textual errors are inevitable in a production of this kind, but I found no misleading errors of substance. It is not, however, the only source of information on world resources and environment. Since 1984 the Worldwatch Institute, under the direction of Lester R. Brown, has published an annual *State of the World* report — but although the two publications deal with many of the same issues they are complementary rather than competitive. Both are predicated on the proposition that the world environment is rapidly deteriorating under human mismanagement, but can be saved if timely action is taken. Both avoid the "gloom and doom" approach to the predicament of mankind. In 1984 the World Resources Institute sponsored The Global Possible Conference, principal papers from which were published in 1985 by Yale University Press. Similarly, the Worldwatch volume is advocacy for an