

lipid molecules between the boundary layer surrounding the protein and the main bilayer phase in terms of specific protein binding sites for phospholipids, but the problem of defining a binding site for a hydrophobic molecule in a hydrophobic phase is not discussed. The properties of the lipid in the boundary layer are also treated extensively in contributions on the use of ESR and NMR methods. These chapters contain much useful information about the molecular properties of specific membrane systems, and the apparent conflicts which arise from the different time scales relevant to the two methods are clearly explained. It appears that we are approaching the stage at which it will be possible to make useful generalizations about the elusive annulus.

A different source of information about the regions of the polypeptide chain which are located in the lipid phase is provided by

hydrophobic photoactivated reagents. The critical review by Khorana and colleagues gives a valuable perspective on this newly developed field. Unfortunately the mobility of the probes within the bilayer is such that the site of labelling depends more on the reactivity of the group than on its location.

Throughout both volumes there is an emphasis on experimental methods and results. There are appendices on assay methods and syntheses of reagents, and one chapter is devoted to phase transitions of a large number of synthetic lipids. *Lipid-Protein Interactions* is full of well-organized information on a fragmented subject and it paves the way for a further volume to integrate the puzzle in a few years time. □

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New light on Newgrange, County Meath

J.N. Graham Ritchie

Newgrange: Archaeology, Art and Legend. By Michael J. O'Kelly. Pp.240. ISBN 0-500-39015-0. (Thames and Hudson: 1982.) £16. To be published in the USA in August 1983.

NEWGRANGE in County Meath, built around 3200 BC, is one of the great cathedrals of megalithic religion and is counted high among the archaeological and tourist wonders of Ireland. One Sunday in 1967 I found the tomb closed to the public and, with some trepidation, scaled the fence to marvel at the excavations and the richly decorated kerbstones on the perimeter of the mound that covers the cruciform passage-grave (the burial vault). Professor M.J. O'Kelly's work had been under way for six years by that stage and was to continue until 1975. The visitor today sees a different monument, new and exciting, partly restored in the light of the 14 seasons of excavation work that are distilled into this volume.

Excavation reports, like the results of any scientific endeavour, are something of an acquired taste; but O'Kelly, who sadly died only last year, envisaged the book both as an explanation for the interested visitor as well as the definitive account of the work. It includes a discussion of Newgrange in early Irish literature as well as descriptions of the visits of early antiquaries since the first opening of the tomb in recent times in 1699. These important sections, as well as a detailed corpus of the decorated stones, have been provided by Mrs Claire O'Kelly.

Two other reports in the same genre come to mind: Richard Atkinson's pioneering attempt to present Stonehenge

to the general reader, first published in 1956 (*Stonehenge*, Hamish Hamilton and later Penguin Books), and Leslie Alcock's "*By South Cadbury that is Camelot . . .*" (Thames and Hudson, 1972). *Newgrange* is heavier going than either of these books, and many visitors will continue to prefer the portability, layout and price of Mrs O'Kelly's *Illustrated Guide to Newgrange and the Other Boyne Monuments* (published privately in 1978). Fellow archaeologists, however, will applaud O'Kelly's presentation of a complex excavation in such a compact form; several allied research topics have been or will be published separately. At a time when so much of the information gained through excavation remains unpublished, it is both an achievement and an example to present the work of so many years within the compass of a single volume.

The photographs throughout demonstrate the high quality of the excavation, as well as providing insights into the humour and humanity of the excavator. The decorated stones, some of the earliest attempts at all-over patterning in the British Isles with elaborate spirals, lozenges and chevrons, are recorded in detail for the first time; the corpus is a fine piece of dispassionate illustration, marred only by insensitive lettering. Fully documented too is the exciting discovery that the passage-grave was deliberately aligned to allow the rays of the rising midwinter sun to penetrate the central chamber through the opening known as the "roof-box".

The finds made at Newgrange, like those from the excavation of many famous ritual sites, are unremarkable. Thus the detailed catalogue of them seems rather out of

place, especially in a volume designed to appeal to the general visitor. One of the most interesting aspects for the professional, in view of recent discussion about animal remains within the deposits of chambered tombs, is the realization that at Newgrange the bones of rabbits and mountain hares were not deliberate additions to the original tomb-deposits but result from animal activities since the tomb was first opened.

We know when the tomb and covering mound were put up because of a series of radiocarbon determinations; such "dates" have to be calibrated to allow them to be compared to calendar years in order to take account of refinements since the method of dating was first formulated. O'Kelly has chosen to write in radiocarbon years bc, as is the convention for uncalibrated dates BC. Although he makes this clear in the preface, few readers will be able to make the necessary adjustments without recourse to tables. To write as though radiocarbon time existed, as O'Kelly and many others do, creates a barrier to the clear presentation of the past to the general reader. To the prehistorian, however, the publication of this fine volume is a poignant reminder of the loss of a great archaeologist. □

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Developing a subject

C.J. Leaver

The Molecular Biology of Plant Development. Edited by H. Smith and D. Grierson. Pp.617. ISBN 0-632-00727-3. (Blackwell Scientific/California University Press: 1982.) £35, \$69.

PLANT molecular biology is a new discipline which is evolving from earlier studies in plant physiology and biochemistry. After years of benign neglect and chronic under-funding, it has become a fashionable growth subject with strong biotechnological interest. The sudden demand for graduates with a background in plant biology and an ability to clone and sequence DNA has led to a shortage of qualified individuals. There is thus an increasing number of botanists wishing to learn more about the molecular approach and an even larger number of molecular biologists eager to understand plant development. The title of this book will therefore ensure that it sells well to a broad range of students of all ages.

It is, then, unfortunate that the book contains relatively little *bona fide* molecular biology and, in fact, reflects our