

# Mysteries of the angiosperm

W. G. Chaloner

*Palaeobiology of Angiosperm Origins: Problems of Mesozoic Seed-Plant Evolution.* (Cambridge Earth Science Series.) By Norman F. Hughes. Pp. vii+242. (Cambridge University: Cambridge, London and New York, January 1976.) £7.80.

THE past decade has seen a renewed surge of interest in the evolutionary origin and diversification of the angiosperms. Four major books (Hutchinson 1969, Taktajan 1969, Sporne 1974 and Stebbins 1974) have dealt with the problem, placing varying degrees of emphasis on comparative studies of living forms, with a proportionate lack of emphasis on the fossil record. This approach takes its most extreme form in Stebbins' assertion that "the fossil record of angiosperms can be more misleading than enlightening as a means of interpreting the major trends of their evolution". Hughes offers an encouraging refutation of Stebbins' morbid view. His book is a palaeontologist's unrepentantly partisan survey of the fossil record of angiosperms, and of the reputedly relevant gymnosperms of the past 200 Myr. He has as little time for comparative studies of living forms as Stebbins has for fossils.

Two important facts emerge from his thorough and well-illustrated analysis. First, there is no acceptable evidence of angiosperms before the early Cretaceous. Second, all those characteristic attributes of angiosperms which have a sporting chance of surviving in a fossil (wood with vessels, dicot-type leaves, multiaperturate tectate pollen and seeds enclosed in a fruit) appear within the timespan of one geological stage, during or close to the Aptian (late early Cretaceous). A vital contribution here has been the palynological evidence, repeated synchronously at widely separated sites, showing the sequential change from monaperturate to multiaperturate pollen types.

Hughes places great emphasis on the data-handling aspect of the angiosperm evolution problem. He is rightly concerned that a question-begging nomenclature should not conceal the inadequacies of our fossil record. But in some instances this is carried to alarming lengths. He worries over the application of 'dicot' to Cretaceous woods

or leaves, because the number of cotyledons is not directly evident in the fossils (he prefers the label 'dubiocot'). One wonders whether as a palaeontologist, he objects to attributing Cretaceous skeletal material to the mammals, since that designation is equally based on an attribute so singularly lacking in the fossil record?

The author offers us no snap answer to the mystery of angiosperm origins. But he has faith that the fossil record, properly documented, will eventually yield an answer. He hints that he believes the angiosperms to be polyphyletic, and that most of the major Mesozoic gymnosperm groups are under suspicion of duplicity. While we are awaiting that answer, this book is a most readable source of well-ordered factual information, and a strong goad to a renewed assault on one of the most rewardingly unsolved problems of biology. □

## Jurassic-Cretaceous geology in Russia

John W. Neale

*The Jurassic-Cretaceous Boundary and the Berriasian Stage in the Boreal Realm.* Edited by V. N. Saks. Pp. vi+345+46 plates. (Israel Program for Scientific Translations: Jerusalem; Wiley: Chichester, September 1975.) £17.50.

ONE welcomes the translation of this impressive work which starts with a historical review of classification about the Jurassic-Cretaceous boundary, followed by detailed descriptions of the lithology, faunal succession, ethology and taphonomy of each relevant section in the Boreal Realm of the USSR. Western European developments are covered, although some up-dating is necessary in the light of recent publications, and correlation between the various areas is suggested. It is refreshing to find oneself in accord with this authoritative team of Russian workers in their reservations and strictures on the use of the term 'Ryazanian' and their preference for 'Berriasian'.

An extended review of the ammonites, belemnites, bivalves, brachiopods and foraminifera, read in conjunction with the 46 plates at the back, provides a fascinating insight into the Russian faunas. Although individual specialists may take issue with some of the generic or trivial assignments, this part provides an invaluable

guide to current Soviet thought on the interpretation of these groups. Both here and elsewhere a considerable number of new fossil species has been described by the editor/author whom the Russians transliterate as 'Sachs', so that the use of this form is obligatory in the attribution of these taxa and is correctly used in the translation. It is a pity that the translators feel obliged to follow western precedent and use 'Saks' on the cover and elsewhere in the running text. That 'Sachs' and 'Saks' are one and the same is a potential source of confusion, particularly to the non-specialist.

Otherwise, the translation is good, the occasional infelicities only serving to suggest the flavour of the original. Incidentally, both original and translation show a curious anomaly—in table 24, in which the *Bojarkia mesezhnikovi* zone is placed in the Valanginian in contrast to its firm placing in the Berriasian elsewhere. Interesting chapters on palaeogeography (although the maps take no account of continental drift and are rather small in the translation) and on palaeogeographic zoning, close the book. This handsome, if somewhat expensive, volume is beautifully produced and besides being an exciting mine of information to dip into, will remain an indispensable work of reference for many years to come.

## Ecology and Evolution of Communities

Martin L. Cody and Jared M. Diamond, editors

This book contains 18 major original papers, offering new models, methods and applications for analysing and interpreting a wide variety of empirical data. *Part I, The Evolution of Species Abundance and Diversity*; Richard Levins, Egbert G. Leigh, Jr, John W. MacArthur, Robert M. May, Michael L. Rosenzweig. *Part II, Competitive Strategies of Resource Allocation*; William M. Schaffer and Madhav D. Gadgil, Henry H. Hespenheide, Arthur M. Shapiro, Henry S. Horn. *Part III, Community Structure*; Martin L. Cody, James R. Karr and Frances C. James, Eric R. Pianka, James H. Brown, Jared M. Diamond, Ruth Patrick, Joseph H. Connell. *Part IV, Outlook*; G. Evelyn Hutchinson, Edward O. Wilson and Edwin O. Willis. *Belknap Press* £17.70

## Anatomy of the Guinea Pig

Gale Cooper MD and Alan L. Schiller MD

This is a thorough description of guinea pig anatomy illustrated with over 400 drawings by Dr Cooper, covering: external anatomy; the skeletal, muscular, cardiovascular, lymphatic, central nervous, peripheral nervous, respiratory, digestive, urogenital and endocrine systems; the ear; the eye and orbital contents. *Commonwealth Fund* £20.00

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