

PRISCACARA oxyprion, a common perch-like fish that lived around 50 million years ago in lakes of what is now central North America. Several hundred fossil species of perch-like fishes have been discovered, and some of the best can be seen in the gallery on vertebrate origins that opened last month at the American Museum of Natural History in New York. Its opening marks the completion of the museum's seven-year redesign, restoration and replenishment of its fossil halls. Of the 600 specimens on display, around 85 per cent are genuine fossils, not casts — an unusually large proportion for any collection.



who were originally captivated by the utopian promises and now face mounting access charges as they 'keep up with the Joneses' in cyberspace. In one of the most informed pieces in the volume, Ira Fuchs, the founder of BITNET, observes that many of the proposed pricing schemes for the Internet unwittingly hit financially vulnerable institutions the hardest, especially primary and secondary schools. This is because an unusually large percentage of the transmissions made by schools contain multimedia imagery, which travel in large packets that can easily congest the Internet, regardless of the speed at which they are transmitted. Encouraged by both public and private sector investment in the 1980s and early 1990s, schools built substantial information infrastructures that ultimately aimed to meet all their instructional needs. At that time, school administrators were led to believe that government would either continue subsidizing the information infrastructure or would regulate the markets in which it is transacted. But the advent of Internet privatization has put this tacit commitment in doubt, leading schools to think twice about their own commitment to the electronic medium.

The role of government in our electronic future is the most sensitive issue faced by the volume's contributors. Will the Clipper Chip turn government into 'Big Brother', or will an automated civil service permit ordinary citizens to dispense with government bureaucrats altogether? Realistically, however, apart from the role of utility regulator that Fuchs suggests, governments will probably be forced to extend the scope of intellectual property law into arenas traditionally reserved for peer-reviewed processes. Brian Kahin, an attorney affiliated with Harvard's Kennedy School of Government, argues that the relative ease of electronic communication often makes it difficult to decide who deserves credit for

an idea once it has been embedded in hypertext and circulated through cyberspace. Nevertheless, the lack of clear credit assignments threatens to undermine the norms of intellectual life as scholars move increasingly on-line. Our utopian visionaries may object that intellectual life would be better off were it not parcelled out into property rights, but we have yet to see what the alternative would look like in practice. □

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Mature offerings

Michael Proctor

The Anther: Form, Function and Phylogeny. Edited by William G. D'Arcy and Richard C. Keating. *Cambridge University Press: 1996. Pp. 351. £55, \$80.*

POLLINATION biologists, palaeobotanists and developmental morphologists may view anthers very differently — and in any field it is all too easy not to look outside one's own speciality. It is perhaps not so much that, in the words of the editors, "the anther [has] received relatively little scientific attention" as that the attention has been divided and there has been too little communication across the divisions. The number of references cited in this book seem to confirm this.

The Anther grew from a symposium at the 1993 International Botanical Congress at Yokohama, but is much more than a routine conference volume. D'Arcy's opening chapter provides an excellent and wide-ranging introduction to the structure and function of stamens. The book concludes with a review by Keating of methods for anther investigations (from optical and

electron microscopy, histochemistry and DNA techniques, to palynology and pollination biology), and a bibliography compiled by Lynch and Gregory of nearly 1,500 references on stamen morphology, indexed by subject and plant family. In between are chapters on the evolution of stamens, which draw on both fossil evidence (Crepet and Nixon) and cladistics (Hufford); diversity in angiosperm stamens (Endress); anther adaptation in relation to pollination (Bernhardt); and various other topics.

All in all, it is an immensely stimulating collection. Crepet and Nixon's account of recently studied fossil flowers from Turonian deposits in North America enlarges our ideas about Cretaceous angiosperm radiation; the small size of many of the flowers they describe will surprise plenty of readers. Cladistics is useful in making systematic inferences from comparative data, but the conceptual tree structure inherent in the method has its hazards when at any period in geological time we must be looking at much parallel development in diverse floras. Are stamens and carpels homologous (that is, of common descent)? Burger argues persuasively that they are not, and that laminar stamens in Magnoliales are secondary characters. And what is the calcium-oxalate package doing in Solanaceous (and a few Ericaceous) anthers?

The Anther is a splendid source of both information and ideas, well edited and nicely produced. It touches on several areas of angiosperm biology where we need to think laterally, and perhaps to abandon some comfortable but outworn intellectual ideas and recognize that the fossil history of the angiosperms and pollination biology (and the role of the anther in both) are more complex, more interesting and more challenging than we have tended to assume. □

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