

BOOK REVIEW

L. VAN DER PIJL, *Principles of Dispersal in Higher Plants*. VII + 154 pages, 8vo., with 26 figs, Springer-Verlag (Berlin-Heidelberg-New York), 1969. Price (cloth) DM 36,- or U.S. \$ 9.00.

This book has many good points and some excellent ones. The main theme – dispersal biology, not just dispersal mechanisms! – is pursued throughout, sometimes with deliberate disregard of problems associated with comparative morphology, the emphasis being laid on the function of various adaptive mechanisms rather than on the semophyletic “origin” of these structures. Many recorded facts and observations, including several original ones, have never been compiled in this way before. The critical way in which the author discusses the older literature on the subject is another useful asset. The author’s personal experience with tropical and extra-tropical floras and their different associated animal worlds adds local colour to his sometimes very refreshing and novel approach to the many problems of dispersal. It is gratifying to see that each form of dispersal is discussed in relation to various ecological factors, not every conventional category being treated as a single and invariable form of dispersal mechanism: geocarp, for instance, treated on pp. 79–80, is not considered to be always an expression of “antidispersal” tendencies (atelechory) alone, but may have some other adaptive meaning (in *Ficus* it is associated with pollination by blastophagids, p. 23; in *Cucumis humifructus* with the ant-bear or aardvark, p. 46, etc.). A lucid explanation is given of the reasons why a classification of angiospermous fruits is bound to fail, because the various modes of dispersal mould the morphological features into a number of sometimes convergent dispersal types which often clash with a formal, morphological classification in terms of carpels, placentation, hypo- and epigyny, mode of dehiscence, etc. The new treatment of such stale subjects as anemochory, myrmecochory, epi- endozoochory, barochory and autochory opens up several new perspectives and is certainly worth the attention of students of ecology. The discussion (on p. 36–39) of the subject of “mimetic” seeds (and fruits), a kind of speciality of the author, is well-documented and to me appears to be very convincing. All these good points make the book a “must” for taxonomists, ecologists, phytogeographers and even physiologists, both botanical and zoological ones, but also for more popular science libraries, for teachers and for use at the secondary school (and U.S. lower college) level.

It is perhaps unfortunate that Dr. Van der Pijl has been co-author of two excellent books on flower pollination, because one is involuntarily inclined to compare his own more recent contribution with the other publications and finds some points of criticism which reduce its value to some extent. In the first place, many a physiologist reader will deplore it as an omission that although the emphasis is on ecology (as it should be), some more physiological aspects such as dormancy (especially “staggered” dormancy as an adaptive feature in arid regions), vernalisation, germination in light or in darkness, and the effect of inhibiting substances on germination (sometimes of temporary auto-inhibition), should have been treated in greater detail. Several reviews and compilations of these topics are available and a concise but penetrating discussion of the items concerned within the general framework of adaptive dispersal mechanisms would, in the reviewers opinion, have added to the value and scope of this book.

In the second place, one can overdo the certainly laudable attempt to disregard purely morphological problems in a book of this kind. It must be confusing to at least some readers to learn (p. 108–117) that the “sarcotesta” was the primary lure in endozoochory and that all other forms of edible parts associated with seeds other than the “true” aril, such as arillodes, caruncles and strophioles, are transitional stages in a continuous series leading from the sarcotesta to the aril (fig. 24 on p. 113). Some of these structures are derivatives of an integument, but other ones definitely not. The treatment of this particular subject is somewhat contradictory to the general trend of the book which emphasises the adaptation of different kinds of

floral and fruiting organs and accessory structures to a similar function in dispersal. It is certainly questionable if the sarcotesta is the only "primitive" stage. The fructification of the mesozoic *Caytoniales* apparently contained a fleshy and edible part (cupule?) surrounding a number of seeds which I think is a primitive true aril, and *Juniperus* provides an analogous case in which accessory organs become edible for endozoochory. The "edible" layer of a *Gnetum* seed is an aril (chlams) originally surrounding the bitegmic ovule (and later the seed) and not a sarcotesta, etc. '.

Another point is the quality of the English. No Anglo-Saxon would object to a few peculiarities or even barbarisms adding a slight foreign flavour to a scientific, or at least semi-scientific, book of this kind, and he would not mind figuring out the somewhat more elliptic figures of speech either, but the meaning of certain sentences in van der Pijl's book is sometimes definitely obscured by inaccurate phrasing or by a not so fortunate choice of words. The reader is sometimes left wondering whether the author was trying to be facetious or if he is stating something in earnest: "*Obviously influenced by his work on sea-dispersal, GUPPY was a strong advocate of utilization alone*" (p. 3); "*FEEKES pointed out that tumbleweeds can carry in their complexes many diaspores*" etc. (p. 93); "... *small and large seeds have many backgrounds!*" (p. 108); "*In sunny California, native opportunity (sic!, one of the very few printing errors) was left open, but there was a large influx from the eastern Mediterranean region*", etc. Considering the rather luxurious form of publication (and the price) it is to be regretted that the original manuscript was not vetted more rigorously before it was sent to the press.

Although such blemishes somewhat detract from the value of this book, I can but strongly recommend it for all its better points and its originality. The printing, reproductions and binding are of the usual high standard we expect from the publishing firm, but the price is definitely somewhat prohibitive for a book of this kind.

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