Book Review

Identification of Flowering Plant Families. When the second edition to Dr. Hutchinson's *Families of Flowering Plants* was published in 1959, many people feared lest the high cost of a two-volume work would cut off students from the very valuable keys it contained. Now the effective remedy is available, a separate volume of revised keys at a very reasonable price.* It is safe to assume that for a long time to come this book will provide the most generally useful means of identifying the family of any flowering plant. Dr. Hutchinson recognizes that no single man can construct keys which will work for all known species: there will always be exceptional plants that evade his scrutiny. It must be realized that there is no set of family descriptions that cater for all the anomalies, and very many existing generic descriptions are quite inadequate and out of date. It is the author's own personal knowledge and experience that has enabled him to make keys as good as these undoubtedly are.

The reviewer can only express praise and admiration in general terms. When he becomes particular he is inevitably more concerned with error or ambiguity, and just as inevitably he looks at the groups he knows best. The families of "Tubiflorae" are notoriously defiant of precise definition. On page 72 we have a nasty group of four alternatives:–

> Anthers mostly free from each other; ovary completely 2-locular with the placentas on the septa. [This splits into Scrophulariaceae and Salpiglossidaceae].
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> Anthers often coherent; ovary imperfectly 2-locular by the variously intrusive parietal placentas the latter placed right and left of the floral axis. [Gesneriaceae].
>
> Anthers free but more or less connivent; ovary mostly 2-locular and then the loculi ad- and abaxial (antero-posterior); leaves often compound and usually ending in a tendril; woody plants very rarely herbaceous; seeds often winged, transverse to the length of the fruit. [Bignoniaceae].
>
> Anthers often connivent in pairs; ovary 1–4-locular; fruit often with a hard endocarp; seeds not winged. [This splits to Pedaliaceae, Acanthaceae and Dichapetalaceae].

I have chosen this excerpt for examination rather unfairly: the task it has to perform is horribly difficult and I am not sure that Dr. Hutchinson's key is worse than anyone else's. Clearly the prime character, condition of the anthers, is not very satisfactory. The use of 'mostly' and 'often' shows that using this character alone mistakes are likely to occur. Then the positional arrangements in the ovary are confusing as expressed here. They did not really need mention at all, for if the placentas are right and left of the floral axis, the loculi formed by their meeting in the middle are ab- and adaxial: there is no difference between Gesneriaceae and Bignoniaceae.

Plants that are liable to cause trouble in this part of the key, or in other parts dealing with same group of families, are (a) Scrophulariaceae with connivent anthers (e.g. *Digitalis*); (b) Gesneriaceae with regular flowers (*Ramonda*, *Tengia*, *Depanthus*, *Conandron*); (c) shrubby members of the tribe Acantheae (sensu Bremekamp), such as *Sclerochiton* and *Acanthus* spp.,

* Key to the Families of Flowering Plants of the World. J. Hutchinson. Oxford University Press, 1967. viii + 117 pp. 9½ ins. 18/- (paper), 30/- (boards).

which have neither tumid nodes nor cystoliths. Elsewhere *Heliotropium* also misses its family, Boraginaceae, because the style is not gynobasic.

Such criticism leads to two reflexions. First, these are revised keys: were these weaknesses present before? The answer is that, with minor verbal changes, this part of the key dates from 1926! I cannot remember ever having found these difficulties in practice, probably because I don't use family keys for this group, which I know pretty well. But I have always considered Hutchinson's keys the best available and I've thought it important that students should have such keys. What I have not done and obviously ought to have done is to make my more detailed knowledge of a particularly awkward group available for their improvement. There is another point: recently I published keys to the Old World genera of Gesneriaceae, and in doing so I followed my own concept of the family. But keys are concerned with practical identification, not views on affinities. I ought to have included the plants which would be run down to Gesneriaceae in Hutchinson or any of the other books of family keys, not just those that I think should be classified there. Unilocular Scrophulariaceae like *Dopatrium junceum* and *Rehmannia* need to go into the key to Gesneriaceae; they are the exceptional cases with which no family keys can cope without becoming unduly cumbersome. Thus, by the rebound of my criticisms on to myself, Hutchinson's book continues the instruction that Hutchinson himself gave me in my early years at Kew.

The recognition of any additional families as distinct entities should have required the most rigorous justification. How could Salpiglossidaceae pass such a test? It is designed to hold members of the Solanaceae having the "corolla distinctly zygomorphic ('irregular')". "Distinctly" is a relative term, but if the ordinary species of *Petunia* (which surely goes alongside *Salpiglossis*) are distinctly zygomorphic, then so is *Nicotiana otophora* and some forms of *N. glutinosa*, yet most species of *Nicotiana* clearly have actinomorphic corollas. Both regular and irregular corollas are found within Boraginaceae, Scrophulariaceae and Gesneriaceae: to split Solanaceae on this character is merely asking for trouble. True, we do not yet know the exact circumscription of Salpiglossidaceae, but if it is to contain genera placed by Bentham in the corresponding tribe, *Anthocercis* and *Nierembergia* for instance, then the key will not work. Solanaceae is, in fact, a family that shows most clearly the gradual evolution of zygomorphy (the androecium running a step ahead of the corolla in this respect); yet it is held firmly together by other characters including the oblique position of the cavities of the ovary and the presence of internal phloem in the stems.

The establishment of Prionotidaceae for those small genera normally placed in Epacridaceae, despite having a few characters of Ericaceae, is equally unwelcome. I strongly suspect that the computer of Watson and his colleagues (Journ. Linn. Soc. London. Bot. 59: 491, 1966) was ill-advised in recommending the merger of tribe Prionoteae of Epacridaceae with the tribe Epacrideae, but Hutchinson's recognition of this tiny group as a separate family is even less acceptable. Surely this does not mean that he denies its close relationship to Epacridaceae? We shall never see the structure of a family if we split off every group that does not exactly conform to a neat definition.

It is a great pity that a book of such wide general utility should carry highly

personal views that still await their full justification. Notwithstanding this criticism we shall all use Dr. Hutchinson's key when faced with a plant whose family we cannot guess: in a very large percentage of cases we shall get the right answer. Too critical an attitude on points of detail cuts no ice in the face of proven utility.

There is a rather large omission on page 102, for which an erratum slip can be obtained from the publishers. Even this, however, has gone somewhat awry in the matter of indentation and needs careful reading. The popularity of the work has already necessitated reprinting and this omission is corrected in the copies now on sale.

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