INTRODUCTION

By A. J. M. LEEUWENBERG

Because this book is the first of the second edition of "Die Natürlichen Pflanzenfamilien" to encompass the combined efforts of a group of authors with different specializations, the format is entirely different from that of the volumes which have preceded it. Each author has written his contribution(s) as a separate unit and this has inevitably led to a different sequence than usual.

When in 1959 the editor of this volume started the revision of the African *Loganiaceae*, it very quickly became evident that the delimination of the family had been the subject of much controversy. Some authors, such as SOLEREDER (1892) and LEENHOUTS (1963), made a single large family of it. Others split it into a number of smaller entities – in this respect, HUTCHINSON (1959, 1973) went the farthest when he split the *Loganiaceae* into eight small families, raising six of the tribes accepted in the present monograph to the rank of family and placing the remaining four in twos in two other families.

That it was absolutely necessary to study all the genera of the family in order to obtain sufficient certainty as to its delimitation soon became clear. During the early years the editor received much support from LEENHOUTS, and it did not take long to realize that the two investigations were complementing each other and that the results of the one confirmed the conclusions of the other and *vice versa*. In the course of time the editor was able to enlist the help of colleagues specializing in other fields of botany and in phytochemistry and this has resulted in long-standing and fruitful cooperation and has led to the appearance of many publications. This book can be seen as a condensation of the results arising from this joint effort.

The editor of this volume would like to thank the authors who have made the publication of this book possible. He is also grateful to the editors of the series for so readily accepting the modified plan of the book which has resulted in a completely new format. On behalf of all the contributors to the present monograph, the editor would like to take this opportunity of expressing their thanks to all those who have contributed directly and indirectly to the succesful completion of this work, especially to the artists responsible for the excellent illustrations and to the Directors and the Curators of the almost one hundred Museums and Herbaria whose collections have been studied in the course of their research. Unfortunately, it is not possible to enumerate them all here.

The present book begins with the taxonomy of the *Loganiaceae*, and with this as the starting point it surveys the results of various investigations which have been carried out on material belonging to representatives of the entire family – investigations which have been carried out by different specialists who have published their findings elsewhere. Many of the genera have recently been revised, but all of them are re-described in the present monograph on the basis of material investigated for that very purpose and a new key to the genera and also a new family diagnosis have been made. In addition, pollen from representatives of each genus has been

studied and wood samples of most, but unfortunately not all, genera have been examined. At the same time, data on the architecture, cytology, embryology, and phytochemistry have been gathered and evaluated in the light of the present knowledge. Since all these studies have resulted in a certain degree of completeness, the present authors have thought it desirable to publish a summary of their findings. The investigations will be continued and will, it is hoped, lead to a further deepening of our insight.

The first chapter is a general discussion on relationships. It is a synthesis based on all the currently available data and can be considered as something unique, as it is founded on results from different fields of research. It is followed by chapters written by various specialists on taxonomy, vegetative architecture, wood anatomy, pollen morphology, embryology, cytology, phytochemistry, and uses; a survey of the morphology is included in the chapter on taxonomy.

1. GENERAL DISCUSSION OF RELATIONSHIPS BETWEEN TAXA INSIDE AND WITH TAXA OUTSIDE THE FAMILY

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The sequence of tribes and genera has been established by the comparative morphological studies. The forms themselves are the starting point and of none of the genera is it suggested that they should be considered as primitive or derived. The list of tribes and genera given here (p. 13) indicates as far as possible the morphological relationships of the taxa with each other. But, because such a list can never give as much information as a two- or three-dimensional scheme, it is only a partial expression of the morphological relationships. The *Spigelieae* in this list are not to be considered the basis of the family, but rather as being morphologically related to the *Loganieae*, while the *Loganieae* in turn are to be looked upon as being allied to the *Strychneae*, and so on.

The data obtained from study of the wood anatomy and pollen morphology largely confirm the sequence shown in this list. In a few cases, however, the results of the investigations are at variance, e.g. in *Logania* and in the *Buddlejeae*. Moreover, the wood anatomy differs more frequently from the comparative morphology than does the pollen morphology. *Desfontainia* and *Neuburgia*, for example, are genera with aberrant wood anatomy. For the time being, however, it is preferred to maintain the arrangement given, especially as so few other data are available regarding these contentious taxa. From the totality of available information it can be deduced that the *Loganiaceae* are a relict group – a family which must have originated early on in the history of the earth and which also had a much wider distribution than at present. The distribution over the continents of the genera which compose the tribes points in this direction. This is especially true for the genera which go to make up the *Antonieae* and *Potalieae*. Unfortunately, there are no fossil remains which can be recognised with certainty as being Loganiaceous by which this supposition can be checked. For this reason also, it is difficult to determine where the centre of origin of the family lies.

The *Spigelieae* are related with each other through their herbaceous habit, their connate leaf sheaths or stipules, their thin corolla, their mostly (sub)inferior ovary, and their usually bilobed capsule. *Polypremum* in particular resembles *Logania* in having a corolla with imbricate aestivation. The latter genus, which has some herbaceous species, shows no conspicuous similarities to other tribes. A resemblance is also observed between the *Spigelieae* and the *Hedyotideae* of the *Rubiaceae* in the habit, stipules, and flowers. The wood anatomy of *Spigelia* is reminiscent of that of *Hedyotis*, the type genus of the above-mentioned tribe of the *Rubiaceae*. *Polypremum* was placed in this very same tribe by G. DON (1834), while the genus *Mitrasacmopsis* of the *Hedyotideae* shows such close resemblance to *Mitrasacme* that its author (JOVET 1935) erroneously inserted it here. As its name suggests, it resembles *Mitrasacme* by its partly inferior ovary and bilobed fruit. See further the publications by LEENHOUTS (1963) and VERDCOURT (1975) on the subject.