

## BOOK REVIEWS

*Flore et végétation des Alpes*. Claude Favarger, with illustrations by P. A. Robert. Vol. I. Étage alpin. 7" x 5", pp. 271 with 32 coloured plates and 35 line-drawings, 1956. Vol. II. Étage subalpin. 7" x 5", pp. 274 with 32 coloured plates and 41 line-drawings, 1958. Delachaux & Niestlé S.A., Neuchâtel and Paris. Each volume 15 Swiss francs.

These two volumes form part of a series of handbooks entitled 'Les Beautés de la Nature,' which is analogous to the British New Naturalist series, and which presents up-to-date and illustrated accounts of European plants and animals. They are written by Dr. Favarger, who is Professor of Botany at the University of Neuchâtel in Switzerland and who is well known for his studies on the cytotaxonomy of alpine plants; and they are illustrated by the artist Paul-A. Robert. The area covered is that of the Swiss Alps, and the alpine regions of France, Italy and Austria are not specifically dealt with, apart from the Jura.

The first volume deals with the alpine vegetation (i.e. the vegetation above the tree-line) and the second with the sub-alpine vegetation (i.e. the vegetation of the Coniferous forest zone). Each volume is prefaced by a discussion in which the environment and demarcation of these vegetational zones are carefully and critically examined. The species which occur are then described, not at random, but in relation to the plant communities – the associations – in which they occur; and information about taxonomy and phytogeography is skilfully interwoven with the description of the plant community and its environment. The concept of the association, as developed by the Braun-Blanquet school of phytosociologists, is utilised as a background to the discussion, but it is not obtruded, and it is always clarifying rather than confusing. An interesting series of notes is also presented about the various families of flowering plants represented in the Alpine flora; and there is a final chapter on conservation.

In this work Professor Favarger shows himself to be a first-rate field botanist, and also a writer with a lucid and elegant style. He has succeeded admirably in combining clear presentation with scientific accuracy; and he has managed to arrange his material in such a way as to interest both the amateur and the professional. He has also been fortunate in his artistic collaborator. There are many good line drawings; but the real success is scored with the coloured plates. In each of these, M. Robert has depicted three or four species growing together in their natural habitat. These plates are at the same time, clear, accurate and pleasing; and the colour rendering is extremely good. They are an admirable aid to identification; and they also give an excellent impression of the colour and beauty of alpine flowers. To anyone with some knowledge of French and a desire to learn about the flora of the Alps, these volumes can be confidently recommended.

D. H. VALENTINE

*A Cytogenetic study of the Genus Geum*. W. Gajewski, pp. 416. *Monographiae Botanicae* (Warsaw), 4 1957.

Although the volume of work relevant to the biosystematics (experimental taxonomy) of the European flora is by now very large, there are still remarkably few European genera of any size which can be said to be at all thoroughly investigated by modern experimental methods. Professor Gajewski's impressive study is therefore all the more welcome, for it provides detailed information on the cytogenetic relationships of the European species in particular of the genus *Geum*, a group in which some of the earliest studies of experimental species-hybridisation were made by Marsden-Jones in this country.

*Geum*, as defined by Gajewski, contains 56 species, of which 25 are in the type sub-genus *Geum*, well represented in Europe. This is the sub-genus to which belong the only two British species, *G. urbanum* L. and *G. rivale* L. The almost complete inter-fertility of these two species is a familiar fact to British botanists. Gajewski's work shows that this ability to hybridise is found very widely in the genus; thus apparently all species of sub-genus *Geum* can hybridise amongst themselves, and some can also hybridise with at least some species of four other sub-genera of *Geum*. Moreover, the great majority of interspecific hybrids in sub-genus *Geum* show some degree of fertility; and crosses of *G. rivale* with several other species in addition to *G. urbanum* show almost normal fertility.

Gajewski draws the following general conclusion from his experimental study of the genus: 'The conclusion to be drawn . . . is that incompatibility [i.e. sterility] barriers often depend on factors which are not distributed within a genus in a manner strictly correlated with the morphological differentiation between species.' He goes on to reject any attempt to re-draw the morphologically-based species to fit any genetic species criterion, and points out that on the Turesson terminology of eco- and coeno-species, whole groups of *Geum* species constitute single coenospecies, and some pairs of species must be considered as single ecospecies.

Such cases, where the units delimited on a genetic criterion (whatever precise criterion is chosen) will not coincide with the traditionally-demarcated taxa using morphological criteria, are of course by no means rare in flowering plants, and are responsible for the understandable reluctance of botanists in general to use the term 'species' for any genetically-defined population unit. Gajewski's terminological difficulty can be resolved by accepting the practical necessity of a set of special-purpose terms for biosystematics separate from but related to the orthodox taxonomy. The deme terminology of Gilmour and Gregor would admirably fulfil this function; *Geum rivale* and *G. urbanum* are two species constituting (in the biosystematic terminology) a single hologamodeme.

Gajewski's work is in English throughout, and provided with a valuable bibliography. The absence of any index or summary is the only adverse criticism which can reasonably be directed against this first-class modern monographic study, which must rank with the 'classic' studies of Babcock on *Crepis*, and Clausen, Keck and Hiesey on *Layia* and other American taxa. It deserves to be widely known and studied by modern taxonomists everywhere.

S. M. WALTERS

[Since writing this review, I have received from Prof. Gajewski a reprint of a short paper summarising his *Geum* work: 'Evolution in the Genus *Geum*', *Evolution*, **13**, 378, published in September, 1959. S.M.W.]

*Hegi's Illustrierte Flora von Mittel-Europa*, Volume III/1, Edition 2, K. H. Rechinger. Pp. 452, with 191 text figures, and 18 plates (14 in colour). Carl Hanser Verlag, Munich, 1957-1958. Price DM.98 (bound in cloth).

Hegi's magnificent *Illustrierte Flora von Mittel-Europa*, of which the first edition was completed in 1931, has become an indispensable work in every library concerned with the European flora. Its scope was planned to cover all aspects of the biology, as well as descriptions, of the flowering plants and ferns to be found over a wider area than the title suggests, and the work is graced with a wealth of illustrations. It ranks amongst the most ambitious of botanical publications and it is also one of the most useful.

Publication of the first edition extended over a period of some 25 years, and, as successive parts appeared, treatment became more elaborate. The work first planned in 6 volumes appeared in 13 - the last three having been divided, and a supplementary volume of indexes added. The standard had so improved that the early instalments of 1906 to 1912, which had been received so enthusiastically when they appeared, later seemed inadequate by comparison with the later volumes. In 1935 and 1939, the first two volumes were replaced by second editions. These increased the number of pages by about 25%, and the number of figures by over 50%, but the general treatment was not greatly modified. After the war there was a change of publisher, and preparations were commenced for new editions of Volume III in two parts instead of one, and of the first part of Volume IV (which was already divided). It is the first of this series which is now available.

Prepared by Dr. K. H. Rechinger, the new edition of Volume III, part 1, is virtually an entirely new work. The plates and some of the text figures are repeated, but the text is entirely rewritten and rearranged on an improved plan. In the old Hegi much important material was set in long paragraphs of small print in which there was no change of type. Scientific names were set in the same type as descriptions so that there was considerable difficulty in picking out the information required. In the new version all this is changed. By the use of bold type and italics as well as roman, by breaking the accounts into paragraphs dealing with separate subjects or taxa, and using a little more space, the presentation is now all that could be desired. English users with a limited knowledge of German will find it very much easier to use.

Another general change which will be welcomed is the inclusion in headings to the families, genera and species, of references to the place of publication of the names adopted, and also often of the synonyms. The whole work is thoroughly documented with citations of important literature, in which accounts in English periodicals and books are more freely cited than is usual in Continental works. Thus, for example, Buchanan-White, Moss, Meikle and Warburg are quoted in connection with *Salix*, though I do not see any reference to Linton's *Monograph*. Excellent keys are provided to each genus, though these could be rendered more time-saving by the addition of page references or species numbers. To run down a plant quickly in a key and then be forced to use the index, or turn over numerous pages, to find the description, is an unnecessary strain on the user's patience which could easily be remedied in future parts. Consideration might also be given to breaking up the longer keys into sections, so that those who already know to which part of a large genus a species belongs can avoid having to start at the beginning of the key every time.

In this new work it is not only the information about systematics, morphology, and distribution which has been brought up to date, but also the relatively new studies of cytogenetics, plant-sociology, and pollen analysis have been added. Chromosome numbers are given throughout (sometimes in neat formulae, e.g.,

*Rumex acetosa* :  $n = 7$  (♀),  $\frac{15}{2}$  (♂), and cytological work discussed. Dr. E. Oberdorfer has assisted with the information on ecology and sociology, and Dr. M. von Rochow with pollen studies. The collaboration of many other botanists is acknowledged including Dr. A. Schreiber, who is responsible for the accounts of *Ulmaceae*, *Moraceae*, *Cannabaceae* and *Urticaceae*, and Dr. H. Meusel, who supplied distribution maps. But it is evident that the main credit for this fine work must go to Dr. Rechinger. In the first edition it took only 209 pages to cover the families which take 436 pages in the new work. In 1912 we were provided with only 90 illustrations in the text; there are now 191. The number of plates remains unchanged, and a few of them are no longer in colour, but they are printed on a more suitable and more flexible paper, which gives better impressions and enables the pages to be turned over more easily.

The work includes accounts of *Salix* and *Rumex*, of which Dr. Rechinger has long made a special study. The treatment of *Salix* covers 92 pages and is on lines which should contain few surprises for those who have kept up to date with recent literature. Particularly useful features are the figures of the leaf types, and separate keys based on leaf characters, the female and male catkins. The account of *Rumex*, which took 22 pages in the old edition, now takes 49, and is far and away the best available treatment of the species found in Europe. Much of the material has been collected together from Dr. Rechinger's earlier papers which have stood the test of time, and the result is a clear, well illustrated revision which it would be difficult to praise too highly.

English users of this book who are now accustomed to the numerous changes in nomenclature which have been introduced in our own books in recent years, will find relatively little that is unfamiliar in the names of species occurring in Britain described in this new volume of Hegi. The major adjustment which has taken place here during the last decade has to a considerable extent brought our own system into line with that of the Continent, and the advantages become apparent when it is possible to consult a book such as this without being constantly checked by unfamiliar names. It should however be noted that Dr. Rechinger gives our common Bog Myrtle as *Gale palustris* (Lam.) Chev. with reasons for separating *Gale* from the genus *Myrica* sensu stricto. Contrary to the practice now general in Britain, trivialia are spelled with an initial capital where appropriate.

The weakest feature of this book from the standpoint of British botanists is the treatment of distribution in Britain. This is common to most Continental works and is largely attributable to our own failure to provide the necessary information – a shortcoming which will be remedied when the *Atlas* which the Society has in preparation appears. For example, the northern limit of *Rumex conglomeratus* is considerably exaggerated in the map on page 381, and there is no mention on page 225 of the abundant naturalisation of *Quercus cerris* in parts of Britain. The map of the distribution of *Polygonum viviparum* on page 412 is no doubt intended to show its limits, but the result is very misleading so far as Britain and France are concerned. These, however, are matters of detail and hardly affect the general distribution over the wide areas in question.

The new Hegi is an expensive work. The volume under review costs about £8 10s. in Britain. It can be obtained on a subscription basis at the rate of about 25s. per part, of which five parts made up the present book, which helps to spread the expense but does little to reduce the cost when allowance is made for binding. Even so, it is a book which every botanist who can afford it should acquire. There is no other work which gives so much information about so many aspects of plants which occur in Britain and it is excellent value for the money. No botanical library of any consequence can afford to be without it. The post-war Hegi is more than a new edition, it is essentially a new work to an improved pattern, and Dr. Rechinger has set a very high standard indeed. The replacement of further parts of the old work will be awaited with keen interest.

J. E. LOUSLEY

*Handbook of the Rubi of Great Britain and Ireland.* W. C. R. Watson. Pp. 274, with 50 drawings by Ruth M. Ball and A. W. Darnell. Foreword by P. D. Sell and J. E. Woodhead. Cambridge University Press, 1958. Price 63s.

All who study brambles will welcome this important book and will be grateful not only to the author, who struggled to write it when his health was failing, but also to Messrs. P. D. Sell and J. E. Woodhead for the time and care they have spent on the MS. and to the Cambridge University Press for the excellent format. It is a pleasure to read a book with such firm pages. The printing is clear and very few misprints have been noticed. On p. 6 (line 20) 'bush' should be 'brush.' The main part of the work is preceded by an Introduction of 28 pages and an Analytical Key and followed by 50 pages of drawings. The Introduction ranges briefly over many topics. The sections on environmental variations and on classification and identification are particularly important and should be read carefully by those who wish to use the book for its primary purpose.

A perfect classification of the genus *Rubus* is perhaps impossible because there are so many cross affinities between the species. The main divisions, based on the quality of the stem armature, seem clear enough.

but even so there are several species which could be assigned to more than one of the main groups with almost equal propriety. For example, *R. chaerophyllus*, which was placed with the *Silvatici* in the 'Check-List of British Vascular Plants' (*J. Ecol.*, **33**, 337-344, 1946), is here at home with the *Mucronati*. The classification adopted in this book is much the same as that of the 'Check-List' with a few name changes and a more complicated ranking system. If it is intended to reflect "the situation that exists in nature" (p. 18), it possibly succeeds, but the Analytical Key is not easy to follow.

The descriptions of the species are admirable. Watson was an acute observer in the field and the experience of many years is summarised in this part of the book. In spite of the brevity of the descriptions there is a close attention to detail. Many of the author's observations are original and picturesque, as, for example, when he says that the calyx of *R. scissus* has usually one pricklet, that the petals of *R. mercicus* become patent with the sides reflexed, that the stem of *R. neomalacus* is striate with scintillating particles, that there is usually a short pricklet against a very long one on a stem of *R. heterobelus* and that the calyx of *R. rufescens* has a flat base with shouldered sides. When once a bramble is known it is often quickly spotted in the field by just such individual characteristics as these. Brambles differ from one another in colour and Watson succeeds better than most of his predecessors in using colour as a guide to identification. He describes the colour of stem and foliage very well and gives a consistent and detailed account of the floral organs of nearly every species.

Those who have had the privilege of being with Watson on his walks know that when he came upon a difficult bramble he always spent a long time examining the flowers. This is reflected in his book. The petals of a bramble are often described in as much detail as the leaves. To give one example, he writes thus of *R. podophyllus*: "Petals roundish ovate, obovate-cuneate or narrow elliptic, pointed or apiculate, remote when expanded, usually faint pink to white." He was also a connoisseur of fruit. The fruit of *R. morganwagensis* he tells us is "ovoid, well developed, delicious."

Another feature of the descriptions which should be noticed is the author's avoidance of unnecessary technical terms. For example, readers will look in vain for that ugly phrase "ultra-axillary part" which Rogers used so often when he was describing a flowering branch.

But descriptions alone of a critical group with so many complexities as *Rubus* are insufficient. As Sudre, the French batologist, said, "dans le genre *Rubus* les meilleures descriptions ne permettent que rarement une interprétation certaine." It is therefore a serious omission that there are no references in Watson's book to herbarium specimens. A set of exsiccatae prepared by the author himself to illustrate his species would have been of the greatest value. Failing that there are surely plants at the British Museum which could have been cited as typical. Mr. J. E. Woodhead has done much to supply this lack and has built up at the South London Botanical Institute a collection of British *Rubi* arranged according to the *Handbook* from Watson's private herbarium. But there is, of course, no reference to this in the *Handbook* and there is no guarantee that the specimens Mr. Woodhead has selected would have been chosen by Watson himself as the best to represent his species.

The need to cite authentic specimens is all the greater because Watson's views about many species changed considerably during his lifetime. The reader who tries to collate the *Rubi* of the 'Check-List' with those of the *Handbook* will soon find that even during the last years his judgment was still fluid. Some species are re-arranged, some closely related species are combined, and twelve names, *viz.* *polioclados*, *spurius*, *hemistemon*, *subopacus*, *senticosus*, *piletostachys*, *splendidus*, *cordifolius*, *rhenanus*, *pygmaeus*, *vepallidus* and *semipyramidalis*, which stand as good species in the 'Check-List,' disappear altogether from the *Handbook*. It is a misfortune that the *Handbook* does not tell us what the plants which formerly went by these names should now be called.

The record of distribution by vice-counties should be read with caution. Several species are recorded for Staffordshire on the strength of specimens which I now know were incorrectly determined and several more rest on insufficient evidence. For example, the plant which Watson named *R. axillaris* and published as a first record for Britain was a single imperfect bush which bore no fruit and produced no current year shoots and which accordingly could not be found at all the following season. Perhaps even the expert batologist should respect the rule "no stem-piece, no name" (p. 18) before claiming a new British record.

The *Handbook* describes 391 species and in view of that, many people would call its author a 'splitter,' but he was in fact, at least in his later years, a 'lumper.' The quarrel between Watson and some of his older contemporaries was not that he described so many new species himself, but that he would not always accept theirs. For example, in the *Handbook* *R. cornubiensis* is equated with *R. bifrons*, an identification which Rilstone would never allow. Watson may be right. Until we can compare the Cornish plant with a good series of authentic *R. bifrons*, who can say? I think Watson was certainly right to combine *R. buttii* and the so-called eglandular form of *R. pyramidalis*, which grows at Bere Wood, under the new name *R. favonii*. When I gathered these plants I was puzzled to find any difference between them and it was a great satisfaction afterwards to discover that Watson had reached the same conclusion about them. But is *R. castrensis* really the same thing as *R. villicaulis*, is the southern *R. purbeckensis* no different from the northern *R. danicus* and is

Watson right to equate not only *R. dummoniensis* with *R. altiarcuratus* (*R. cariensis* sensu Rogers) but both of them with the Continental *R. rotundatus*?

When the student of English brambles finds a new bush which he knows has not been described in any English work, there are two alternatives to leaving it alone. He can either give it a new name or he can hunt through the descriptions of foreign brambles until he finds one which fits his bush. Watson preferred the second alternative. He did not like to multiply names nor did he like to admit defeat. There is much virtue in that attitude, but it is nevertheless fraught with danger. A description must be very good and the student must have an exceptionally acute and wary mind, if mistakes are to be avoided. It can be assumed, of course, that whenever possible Watson compared cuttings of the new bramble with authentic specimens of the species he thought it to be. But his first hand experience of the Continental flora and his acquaintance with Continental herbaria were not extensive enough to be a bulwark against error. For example, he found a distinctive bramble in two localities in Kent which he called *R. concolor*, because he thought they matched two bushes which once grew on a sunny mountain near Eupen (Belgium) more than a hundred years ago, but which have not been seen either there or anywhere else in Europe for more than eighty years. When we compare Watson's description of *R. concolor* with that of the author of the name, we notice that they are not quite the same. Watson would probably say that the differences are too slight to matter, but they open the door to suspicion.

We are grateful to the artists for fifty splendid drawings at the end of the book. Fault can be found with details here and there. For example, the petals of *R. balfourianus* should be broad and notched, the terminal leaflet of *R. sciocharis* should have a cordate base and what has happened to the petals of *R. villicaulis*, if Watson's description of them in the text is correct? But it is better to commend the general excellence. The leaf and stem prickles of *R. londinensis* are particularly good.

The *Handbook of the Rubi of Great Britain and Ireland* is regrettably Watson's last work, but it is a good thing that we should have in one volume his final judgment on the British species. It consummates the work of a lifetime. If I were asked to give my opinion of the book in a single sentence, I should say simply this: Some of the names are doubtful; most of the descriptions are excellent.

E. S. EDEES