

## BOOK REVIEWS

*New Records for Illinois Vascular Plants.* Winterringer, G. S. and Evers, R. A. (Eds.). Pp. 135. Illinois State Museum, Scientific Papers Series, Vol. XI. 1960.

The State of Illinois is comparable in area with England and Wales, being about 400 miles long and 200 miles wide. It is divided into 102 counties and these, the basic unit of plant recording, are thus almost equivalent in area to the British vice-county.

This work is essentially a topographical botany and first supplement rolled into one, and is the sort of work H. C. Watson would have liked to have produced if the printing processes of today had been available 100 years ago. Instead of a printed list of counties, there is a map for each species (sometimes two rare species share one map) showing by a symbol, conventionally placed in the centre, those counties from which a species has been reliably recorded. In all there are 1,375 maps dealing with over 1,500 species; the number of vascular plants in Illinois is of the same order as the number found in England and Wales.

*Vascular Plants of Illinois* by G. N. Jones and G. D. Fuller was published in 1954, and the present work is proof of the stimulus which it gave to the study of the Illinois Flora. Within 6 years 70 species have been added, an increase of about 5%, and details of these finds are listed. Many of them are European species, introduced into the United States, which are still spreading, and a British botanist visiting Illinois will feel more at home in the future now that he can expect to find *Butomus umbellatus*, *Calamagrostis epigejos*, *Puccinellia distans*, *Epipactis helleborine*, *Cerastium atrovirens*, *Rosa micrantha*, *Trifolium fragiferum*, *Myosotis sylvatica*, *Verbascum virgatum*, *Carduus acanthoides*, *Hypochaeris radicata* and *Senecio viscosus*. All of these have been recently recorded for the first time in the State.

The number of new county records made in the same period is phenomenal. In some cases the number of county records has doubled in 6 years and this suggests that botanical recording in this part of the United States has now reached the position in which we found ourselves in Britain over 100 years ago. Further evidence for this is obtained from an assessment of the number of species which are known from every county in Illinois—the total is only about 20, whereas in England and Wales with a similar area and number of counties the total is at least ten times as great. It seems that, if new county records are your special pleasure, you stand a better chance of success in Montgomery and Cumberland, Illinois, than in v.cs 47 and 70, Great Britain.

Considering the level of knowledge of the flora which has been achieved, then the use of maps to show species distribution on a county basis is understandable. However, the value of the work is less great than it might be for a foreign botanist whose main interest in the flora is likely to be the distribution of species he knows elsewhere in relation to climate, geology, and topography, for no maps of these features are included. It would have increased the cost of production very little for such maps, on the same scale, to have been added. Then we might have understood why *Geum rivale* is confined to the north-east of the State and *Arabidopsis thaliana* to the south and what combination of factors determines that in distribution *Silene vulgaris* and *Myosurus minimus* are almost mutually exclusive. The omission is particularly frustrating for the British botanist for Illinois is in the part of North America which has a climate most similar to our own to judge from maps of Thornthwaite's climatic regions.

The greatest difficulty which presents itself to a British plant geographer is status. One assumes that the same difficulty applies in the United States: yet no attempt is made in the work to distinguish between native and non-native distributions: another hazard which confronts the would-be interpreter and somewhat reduces the reliance which can be placed upon the maps.

F. H. PERRING.

*A California Flora.* Philip A. Munz (in collaboration with David D. Keck). Pp. 1681, with 2 maps, 134 text figures and colour frontispiece. California University Press, Berkeley and Los Angeles; and Cambridge University Press, 1959. Price 86s. 6d.

It is tempting for a European botanist to consider California in relation to Spain, which is of similar size, lies nearly in the same latitude, and has a similar huge total (nearly 6,000 species) of vascular plants, but the physical features and geological history of the two countries are so different that, in the end, it is perhaps best for him to confine any comparison to the plants of the drier, desert areas in California and the more arid Spanish provinces. Some British botanists will be interested in California from a different motive: many of our aliens or garden plants, for instance in the *Compositae*, *Polemoniaceae*, *Boraginaceae* and *Rhamnaceae* (*Ceanothus*), are natives of this State while, in reverse, several hundreds of European and North African species are completely naturalised there. Others, plant geographers, will perhaps concentrate on the extension south (or the failure to extend south) from the Rocky Mountains into the Californian

sierras of familiar genera and even species of northern, sometimes alpine or subalpine, distribution; while tree-lovers will be most interested in the great Redwood and Douglas Fir forests of the moist coastal region.

Professor Munz's excellent new flora of California, with its brief but lucid introductory sections, can be warmly recommended to European taxonomists, ecologists and plant geographers. It discards the 6 Merriam Life Zones recognized by the late W. L. Jepson, whose large-scale *Flora of California*, begun in 1909, is due to be completed. Instead, the author has 5 Biotic Provinces, 11 major Vegetation Types, and 29 Plant Communities, which are fully classified, and throughout the text the native species are assigned to one or more of these, with a description of habitat, altitudinal range and distribution within the State. The body of the work follows customary lines, with indented keys, and text figures illustrating characters of orders, families or subdivisions of families, not of lower ranks. Chromosome numbers (with author citations) are given when known, and references to revisions follow generic descriptions. The order of the families is unconventional and was prepared by Professor Munz's collaborator, Dr. David D. Keck. There are two small maps, for counties and main topographical features; European readers could have wished for a larger, coloured, folding map with place-names. Thin paper, like that of Fernald's edition of Gray's 'Manual', was inevitable or the book would have needed two volumes.

The author does not give a summary of the composition of the flora, but a statistical report on his book was published in *Leaflets of Western Botany*, vol. ix, No. 8, pp. 117-123 (November 1960), by Gladys L. Smith and Anita M. Noldeke, and this was followed by a summary of the endemism prepared by A. M. Noldeke and J. T. Howell (l.c., pp. 124-127). These writers provide a total of 5,675 native species, with 1,414 (or 29.02%) endemic species and 29 endemic genera. Some idea of the extent of evolution within Californian genera may be gathered from the large representation of *Carex* (144 species), *Astragalus* (93), *Phacelia* (87), *Lupinus* (82), *Mimulus* (77), *Eriogonum* (76), *Cryptantha* (59), *Trifolium* (49) and *Arctostaphylos* (43). The high endemism is explained, as Professor Munz points out, partly by the nature of the region, so broken up into separate mountain ranges and low-lying valleys, and partly by changes in climate and migrations both north and south and from altitude to altitude. With such a field of exploration before them, and such a nice book to work with, British botanists might soon give up their exhausting climbs in the Scottish Highlands, and even skip the more rewarding limestone cliffs of Asiatic Turkey.

N. Y. SANDWITH.