

**Gray's New Manual of Botany.**

GRAY'S NEW MANUAL OF BOTANY. Seventh Edition. Illustrated. Cloth, pages 926, price \$2.50; A Handbook of the Flowering Plants and Ferns of the Central and Northeastern United States and Adjacent Canada. Rearranged and extensively revised by Benjamin Lincoln Robinson, Asa Gray Professor of Systematic Botany in Harvard University and Merritt Lyndon Fernald, Assistant Professor of Botany in Harvard University. American Book Company, New York, Cincinnati, Chicago, 1908.<sup>1</sup>

Never, probably, in the history of botanical science in America has a book been awaited with such eagerness, and even impatience, as the one before us. It is not simply that great progress has been made in the detailed knowledge of our flora since the sixth edition of Gray's Manual appeared in 1890, but in the interval a new classification has come into use, an unprecedentedly critical spirit has been infused into the study of American plants, and a great controversy over the nomenclature of those plants has arisen, been fought to an issue, and settled. And at last we can open a book which has passed the refining fires of so many and so diverse experiences.

A first glance shows, to our deep satisfaction, that the familiar typography of the sixth edition has been retained in essentials, though with some changes of detail conducive to greater mechanical condensation. But a striking and welcome difference stands forth in the abundance of clear and accurate little cuts. These, while distributed throughout the work, yet necessarily segregate about certain families, for they are designed to illustrate difficult or crucial structural points which words alone cannot make wholly clear. There will be but one opinion as to the great value of this feature of the new book.

The metric system replaces the English for measurements, a wholly desirable feature. The sequence of families follows the evolutionary system now coming into general use; it begins with the lowest forms (Ferns and allies), and ends with the highest (Compositae). Many additional keys, for the difficult genera, also appear for the first time. Ranges and other details are given with greater fulness, and everywhere is evidence of that increasing precision and critical balance characteristic of present-day systematic work. The geographical range has been extended to cover practically all of Eastern Canada, which makes the work as useful to the East Canadian Botanists as if it had been written expressly for them. Large numbers of new species and varieties make their appearance (4885 in comparison with 3298 of the sixth edition), some of them new discoveries, a few the result of extension of range (though in number these are balanced by some loss from contraction of range in the west), but most of them the result of critical investigation, which is showing that many of our supposed single species are really aggregates of elementary species whose differences, though obscure, are yet real and must be recognized. Despite, however, the great amount of additional matter, including the illustrations,

the arrangement is such that, aided by the omission of the Liverworts (and the plates at the end of the sixth edition), the book contains only about 150 pages more than the former edition, and is actually less bulky, than the cloth-bound sixth edition. And this bulk will of course be reduced in the leather-bound, thin-paper, tourist edition, which is announced as soon to be ready.

But there is one difference between this and the sixth edition, which deserves special comment,—and that is the change of a considerable number of names. Some of these changes represent real progress in knowledge of plant classification, but others have a different origin. In an earlier number of the REVIEW (Vol. XVII, 1906) the present writer tried to explain the causes for the existence of two schools of plant nomenclature in America, and in a later number (Vol. XX, II), I described the attempts to settle this question through the International Botanical Congress, held at Vienna in June, 1905. As explained in the latter article, the Congress decided in the main for the principles represented in Gray's Manual, going thus heavily against the Neo-American School (represented by Britton's Manual), but on one point it went against the Grayan usage. The revisers of the Manual, however, announced immediately after the Congress that they would relinquish their usage upon this point, for the general good and in the interests of a settlement of this vexatious matter, and conform to the decisions of the Congress in every particular. This they have done in the new Manual, and in consequence, have had to make some changes. But these we can adopt with a full assurance that no further alteration will be necessary; for the acceptance of the results of the Congress by all the leading botanical establishments of the world gives every possible indication that substantial stability has at length been reached in the nomenclature of American plants. And a great interest, and a great importance of this book, lies in the fact that not only does it conform in every particular to the Vienna decisions, but it is the first work to appear in print applying those decisions to our American plants.

From a book which went through five editions under the hand of the great master Asa Gray, through another under his distinguished successor Sereno Watson, and now reaches a seventh under two scholars, who, for critical scientific acumen, careful and accurate taxonomic execution, and extensive and sympathetic knowledge of the American flora are unsurpassed by any living students of classification,—from such a book we are entitled to expect much. And our high expectation is justified, for the new Manual is a great book. For the botanists of Eastern Canada in particular it provides an invaluable compendium of knowledge of our plants, an indispensable foundation for further work on our flora, and a stimulus to renewed and more careful work along the lines it so worthily exemplifies.

W. F. GANONG.

A Danish electrical engineer has succeeded in working a typewriter by wireless telegraph. He claims that it will be possible to work a typesetting machine in a similar way.