to 0·4 of a minute. We suspect that Mr. Goodwin knows a good deal more about the capacity of the men for whom he is writing than we do.

W. E. P.

The Horticultural Note Book. Compiled by J. C. Newsham. Pp. xx+418. (London: Crosby Lockwood and Son, 1906.) Price 7*s.* 6*d.* net.

THE contents of this book are as disconnected as are the words in a dictionary. Anything like a "review" is, therefore, out of the question. We can only state the general nature of its contents and give an opinion as to the way in which the compiler has accomplished his task. As to its contents, they comprise "practical rules, data, and tables for the use of students, gardeners, nurserymen, and others interested in flower, fruit, and vegetable culture, or in the laying out and management of gardens."

This is a fairly comprehensive enumeration, but it is not complete, for we also find various tables which will be of service to those who have to deal with woodcraft or the sale of timber. The compiler has done his work well; he is evidently familiar with the ordinary requirements of his readers, and he has fulfilled them with judgment and accuracy.

With such a mass of detail to deal with it would be wonderful if misprints did not occur, but they are remarkably few. On p. 299 there is, however, a crop of such blemishes which should be removed in a future edition. We may suggest also that the tables on pp. 251, 252 be expunged as inadequate, and in point of accuracy not equal to the rest of the volume. We are glad to see various metrical tables added. No one who compares the regular definite proportions of the metrical system with the confusion of the ordinary lineal and land measures, to take one instance, can doubt the advantages of regular system over chaos. It is permissible to envy the next generation, whose labours will be so materially lightened by the general adoption of the new system.

The author has given not a few "miscellaneous" weights and measures, but he might have added more from the Covent Garden repertory, where cabbages are sold by the "mat," carrots by the "pad," cauliflowers by the "tally," to say nothing of "bundles," "bunches," "cases," and other indeterminate measures. A book of this kind is intended for reference purposes, and its value must be tested by frequent consultation. Tried by this test, we may say that we have found the book very serviceable. In a future edition a list of the commoner fungi and the plants on which they are parasitic would be desirable; for instance, we find no reference either to the ordinary or the American mildew attacking gooseberries, or to the fungous pests which commit such havoc with grapes, tomatoes, and cucumbers.

Funzioni poliedriche e modulari. By G. Vivanti. Pp. viii+437. Manuali Hoepli, 366–367. (Milano: Ulrico Hoepli, 1906.) Price 3 lire.

THE author tells us in his preface that he found Klein's "Vorlesungen über das Ikosaeder" and Klein and Fricke's "Theorie der elliptischen Modulfunctionen" "pretty stiff reading." Probably most students will sympathise with him and will give a ready welcome to this little book, which is intended to prepare the reader for the study of these classical treatises. The ground covered is approximately that of the last four chapters of Forsyth's "Theory of Functions" (excluding automorphism), but the subject-matter is discussed in much greater detail. The first part of the book deals with groups formed by substitutions of the form $z' = (\alpha z + \beta) \div (\gamma z + \delta)$, especially with the five finite (polyhedral) types of group and with the infinite (modular) group in which $\alpha, \beta, \gamma, \delta$ are integers such that $\alpha\delta - \beta\gamma = 1$. In the first few pages a group is defined and some of its more elementary properties proved. It must be confessed that these introductory sections are not quite satisfactory, and it is doubtful whether they would be readily intelligible to anyone who had no previous knowledge of group-theory. For instance, the author fails to make clear the distinction between a group and a semi-group, or that between an abstract group and the particular application he has in mind. The rest of part i. is, however, clear and readable, and should serve effectively the purpose intended by the author.

In the second half of the treatise the author discusses the invariants of the polyhedral and modular groups, the connection of the Schwarzian equation with polyhedral and modular equations, and the application of the polyhedral groups to the solution of algebraic equations. This part appeals to a very different class of readers; in fact, the author assumes a knowledge of elliptic functions, Riemann's surfaces, the existence theorem, Noether's curve, the Galois field theory, &c. The lack of balance between the two parts in this respect is unfortunate, if unavoidable. There are a few errors; for instance, the statement of § 104 seems to require modification when $n=6$, while on pp. 208 and 209 the difference between (n), $[n]$, and $\{n\}$ is not at all clear.

Hermann von Helmholtz. By Leo Koenigsberger. Translated by Frances A. Welby, with a preface by Lord Kelvin. Pp. xvii+440. (Oxford: Clarendon Press, 1906.) Price 16*s.* net.

THE German original of this book appeared in 1903, and was reviewed at some length in NATURE of July 2 in the same year (vol. lxviii., p. 193). The work of translation is admirably done in every way, and the English public owes a debt of gratitude to the translator for enabling it to study in its own language one of the most interesting careers of the nineteenth century. A moderate all-round scientific training is necessary and sufficient to enable the reader to follow the description of the greater part of Helmholtz's work; but, though mathematical symbols are avoided, probably no one who has not specialised to some extent in applied mathematics will find intelligible the account of his more abstruse mathematical researches.

Though Herr Koenigsberger makes the very most of the space at his disposal, yet the reader lays aside a book of 440 pages with a feeling that he has seen the merest sketch of Helmholtz's life. Probably no better comment could be made on the industry of the great man of science or on the versatility of his genius. To do full justice to his career a treatise of three times the length would perhaps be needed. As it is, the reader is bewildered at the rapidity with which his attention is turned from one epoch-making discovery to another, and tries in vain to follow the steps by which Helmholtz was led from one subject to another when, during the space of three years largely occupied with his professorial duties, he discussed in turn optics, nerve transmission, acoustics, hydrodynamics, geometry, electricity, hay-fever, and so on.

Though, on the whole, the book lays more stress on Helmholtz's work than on the details of personal interest, yet the author has a true instinct for recording just those incidents of Helmholtz's life which throw most light on his character and ideals, and reveal most clearly the influences which surrounded him. We lay down the book with a feeling of very real sympathy for the frequent illness and bereavement which cast a perpetual shadow over the plea-