

Our Bookshelf.

The Cultivated Evergreens: a Handbook of the Coniferous and most important Broad-leaved Evergreens planted for Ornament in the United States and Canada.

Edited by L. H. Bailey. Pp. xvii + 434 + 48 plates. (London: Macmillan and Co., Ltd., 1923.) 31s. 6d. net.

THIS handsome volume was compiled for use in the United States and Canada by fourteen American experts in botany, horticulture, and allied subjects; but it will also be of service on the eastern side of the Atlantic, as nearly all the species dealt with can be seen in English parks and gardens. The great diversity of the British climate allows us to grow, in one part or another of these islands, an amazing number of exotic plants, imported from almost every region outside the tropics.

The greater part of the text is concerned with one class of evergreens, the Coniferae; but the five genera, Larix, Pseudolarix, Taxodium, Glyptostrobus, and Ginkgo, which happen to have deciduous foliage, are not excluded on this account. The other class, comprising the broad-leaved evergreen trees and shrubs, seems to be more sparingly cultivated in the United States than in Great Britain; and only 25 species are selected for description, though some others are briefly mentioned. Acid soils, which are an essential requirement for the proper growth of a considerable number of broad-leaved evergreens, are the subject of a special article by Prof. F. V. Coville, whose experiments should greatly interest cultivators of Rhododendrons.

In the main part of the book, conifers are considered from nearly all points of view, except that of timber production. The use of the different species and varieties for ornament and shelter is the main consideration. A series of articles deal with their effects in the landscape, and their adaptability to different soils and situations. Other articles are concerned with modes of propagation, nursery management, cultivation, attacks of insects, diseases, injuries of all kinds, fungicides, tree surgery, etc. The information given on these subjects by the various experts contains many valuable hints on the choice, cultivation, and care of coniferous trees.

The botanical part of the work is due to Alfred Rehder, the systematist of the Arnold Arboretum. In this establishment there are fine collections, both of living trees and of dried specimens, which have enabled him to draw up accurate descriptions of the conifers in cultivation. He has also provided keys for the genera and species, which render identification easy, even in the absence of flowers and cones. The botanical descriptions are elucidated by nearly 100 engravings in the text. Conifers are very varied in form and colour; and their choice for landscape effect depends largely on a proper knowledge of the habit of each species and variety when fully grown. This is well illustrated by 48 full-page plates, which depict groups and individual specimens growing in New England. These plates are worthy of study by landscape gardeners.

A check-list of all the woody evergreens that are offered for sale in the United States is given at the

end of the book, which will serve as a suggestive planting list. There is also an adequate index. We have no hesitation in characterising this handbook as a useful addition to the literature of conifers.

The Modern Theory and Practice of Pumping: a Treatise on the Application of the Reynolds-Stanton Law of Viscous Flow to Modern Pumping Problems and the Flow of Liquids through Pipes. By Norman Swindin. Pp. 364. (London: Ernest Benn, Ltd., 1924.) 42s. net.

THE first part of this work is devoted to a general consideration of viscosity, of the motion of viscous fluids, and of the resistance to flow in pipes, with special reference to the relationship between the many empirical formulæ of the exponential type which have been evolved in the past, and the dimensional formula of Reynolds.

The introduction deals briefly with the history of modern hydrodynamics, outlining the relationship between the behaviour of the perfect fluid of the mathematician and of a viscous fluid. Chapter ii. deals with industrial viscometry, with special reference to the liquids with which the chemical engineer may be required to deal. Chapter iii. gives a précis of Reynolds's discussion of the two manners of motion of a fluid, together with later extensions of the theory, and Chapter iv. gives examples of the application of the Reynolds's function in industrial problems. The treatment of this part of the book is excellent, and the various points of application to the problems of the chemical engineer are well brought out.

The second part of the work deals with the many types of pump in use for pumping corrosive, gritty, solid-laden, and viscous liquids such as are not in general handled by the hydraulic engineer. Chapters are devoted to the ram pump, the centrifugal pump, the rotary pump, the air-lift, the displacement pump, and to miscellaneous pumping appliances, particular attention being paid to those types which have been devised to meet special conditions.

While no great space has been devoted to a discussion of the theory of operation, this is adequate for the purpose in view. Special reference must be made to the section dealing with the air-lift pump. This forms one of the most satisfactory discussions yet published of this important but somewhat neglected type of installation. A chapter is devoted to pipe lines and fittings, and another to the pumping of oil for the oil fuel and petroleum industry. In view of the special difficulties involved in pumping such fluids through long pipe lines, this chapter is likely to be of much value.

The book should certainly find a place in the library of every chemical engineer, while engineers in general hydraulic practice will find much that is stimulating and of interest in its pages. It is well printed and excellently illustrated.

A. H. G.

Thermochimie. Par Prof. F. Bourion. (Collection de Physique et Chimie.) Pp. xii + 363. (Paris: Gaston Doin, 1924.) 25 francs.

THE science of thermochemistry owes most of its experimental data to the work of Thomsen, from 1853 onwards, in Copenhagen, and to the work of Berthelot in Paris from 1865. It was originally inspired by the