

such a methodical grasp of the available astrophysical literature that it is difficult to understand how the main contention of Lockyer's Kensington classification can have been thus lost sight of. The opposite behaviour of the two classes of lines has been repeatedly explained, in text and by diagram, in both solar and stellar spectra. The explanation may possibly be related to that involving the special note of prominent names connected with investigations in the laboratory being correlated to observations on the sun itself, without any reference to Lockyer and his staff at the institution usually regarded as the original home of the application of laboratory methods to astrophysical research.

The author's explanation of the weakness of $\lambda 4481$, the prominent enhanced line of magnesium, in the chromospheric spectrum, does not agree with laboratory data. The writer's experience is that $\lambda 4481$ is most difficult to suppress, being shown with the slightest capacity in the spark circuit.

The corona is treated in two chapters, very full details being given of the progress of study at various eclipses, dealing with the form, structure, spectrum, and various theories proposed for its explanation. The numerous references in this section are a welcome feature.

The book concludes with a discussion of the relativity theory, with special reference to its solar significance in the deflexion of starlight passing through the sun's gravitational field, and in the change of wave-length of the solar spectrum lines towards the red. The deflexion of starlight has received confirmation at the eclipses of 1919 and 1922, and the spectroscopic effect is now admitted to be shown by results obtained by St. John at Mount Wilson and Evershed at Kodaikanal.

In so large a work it is a pleasant experience to find so few misprints. Mention may be made of the misidentification on the lower chromospheric spectrum facing page 230, where the line $\lambda 4471$ (He) is indicated as H γ .

The volume is clearly printed, and the numerous illustrations very satisfactorily reproduced. A more detailed index would have made reference easier. It is a very welcome publication, and should prove a valuable help to teachers and students of astrophysics.

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A Handbook of Conifers.

A Handbook of Coniferae: including Ginkgoaceae. By W. Dallimore and A. Bruce Jackson. Pp. xi+570 + 32 plates. (London: E. Arnold and Co., 1923.) 42s. net.

THE authors of this textbook on conifers, who are in close touch with Kew Gardens and the Imperial Institute, have brought together into one

handsome volume a copious mass of information about the 380 living species. Those cultivated in Great Britain, some three-fourths of the total number, are naturally treated more fully than the natives of subtropical regions, that have not been introduced. The botanical descriptions of the former are adequate and expressed in simple botanical language, while artificial keys are provided to render identification easy. The numerous sports which have arisen are clearly distinguished, and their cultural value is pointed out. Scarcely any mutation of a utilitarian character has occurred in this great class of plants, and coniferous sports are planted either as objects of ornament or of curiosity. The student is further helped by the admirable series of 120 drawings, made by Miss G. Lister from fresh material, which faithfully depict the branches, foliage, buds, cones, and seeds of the more important trees and shrubs. The æsthetic value of the book is also enhanced by 32 plates of forest scenes in America, plantations in Scotland, and well-grown trees on English lawns.

Mr. Dallimore, who has long been in charge of the Forest Museum at Kew, is responsible for the economic part of the book, and gives under each species the results of his own investigations on timbers and other forest products. He also frequently quotes from recent official and commercial reports, so that the information is brought up-to-date. The common fungus diseases and insect attacks are shortly described under the important silvicultural genera, like pine, spruce, larch, silver fir, and Douglas fir. Useful notes on cultivation and choice of soil are dispersed throughout the volume; and directions about propagation are given in the case of rare species and varieties, of which seed is not obtainable.

The genera and species are arranged alphabetically under the two families of Taxaceæ and Pinaceæ, into which conifers are divided; but one alphabetical arrangement would have been simpler. Easy reference would also have been facilitated if every right-hand page had been headed with the name of the genus and species treated in the text beneath. The introductory matter occupies only 17 pages, and could have been enlarged with advantage, as a difficult subject like conifers requires considerable preliminary study. The key to the genera given in the introduction also could be much improved.

The merits of this handbook outweigh any slight imperfections; and it will supersede most if not all of the English textbooks which have been published on similar lines. It satisfies the needs of gardeners, foresters and landowners, for whom it was primarily written, and will prove useful to out-of-door botanists.