

cism of foresters in this country that they are insufficiently acquainted with the life and form of plants—with botany, in fact—and the pages of this book seem to justify the criticism, at least there is occasionally a looseness of expression regarding botanical points which should not appear in a manual for students such as this. Take, for instance, the statement, "the atmosphere overlying the soil furnishes certain nourishing substances—heat, light and moisture" (p. 7), or again, "certain plants (Leguminosæ) can take nitrogen direct from the air by means of tubercles or nodules" (p. 11). The mention of the name *Acacia* up to p. 52 of the book instead of *False-Acacia* is botanically wrong and misleading, and the statement that elm does not ripen its seed in the north of England (p. 66) is also wrong because botanically unqualified. The identification of mistletoe with *Loranthus europæus* (p. 324) is, we take it, a slip.

As regards silviculture the book has been entirely brought up to date, and is eminently practical and suggestive. It may, with every confidence, be warmly recommended alike to the student, landed proprietor, forester and nurseryman. All doubtful or controversial matter has been carefully avoided, and every view stated, or method recommended, is founded upon the author's own direct observation and experience, as well as on that of others.

The various silvicultural systems are clearly and concisely described, and their advantages and disadvantages amply criticised, so that the forester need have no difficulty in choosing the one best suited to his own locality and the objects of management. In the important sections dealing with the raising of plants in the nursery, much valuable and useful advice is given. The ultimate success of a wood depends, to a large extent, upon the health and vigour of the plants from which it originated—hence it is very important that young seedlings should be grown and handled with the greatest possible care. On p. 191, Prof. Schlich gives a timely warning to nurserymen in regard to the pernicious practice of laying down seedlings, when they are pricked out, into shallow trenches, involving the bending of the root-system to one side—a defect from which the tree does not recover for many years. He says, "unless nurserymen give up that vicious practice they must be prepared to see landed proprietors revert to the system of home nurseries."

Part iv. of the volume is replete with information. In fact, it is a condensed volume on silviculture in itself. The notes on the Douglas Fir have been considerably extended, but in regard to the fungus enemies of this species, *Phoma Douglasii* might have been included, as this disease has been known in Scotland now for several years.

ENGINEERING IN SOUTH AFRICA.

The Engineer in South Africa. By Stafford Ransome, M.Inst.C.E. Pp. xx+319. (Westminster: Archibald Constable and Co., Ltd., 1903.) Price 7s. 6d.

AT the close of the war the author was appointed by the *Engineer* to visit all the British possessions in Africa south of the Zambesi River, and to write frankly and fully to that journal on the various problems which

have been evolved by recent events. The result was a series of articles on "South Africa from an Engineer's Point of View." These articles were of a highly interesting nature, and were much appreciated at the time.

The volume before us combines the most interesting portions of these articles with much additional matter as well as most of the illustrations. Mr. Ransome is well known as a successful author of books of this type, and we are not surprised at the able way he handles the subject.

Any man seriously thinking of going to South Africa, be he an artisan or a trained engineer, should most certainly obtain a copy of this book; the information given on the cost of living and travelling, as well as on the prospects of employment, is very much to the point.

Chapter vi. deals with the labour question, a subject very much to the fore at the present time. Our author, after pointing out the prohibitive cost of white unskilled labour, discusses three alternatives, which are as follows:—(1) the importation of Asiatic labour; (2) the trusting to Providence to induce the Kaffir to work; (3) the taking of measures to make the Kaffir work, his conclusion being that the third alternative should be adopted, and that legislation should be introduced to this end. Chapter xiii. deals with the theory and practice of the railways, one of the most interesting in the book. The railway mileage at present open for traffic is 5457, under construction 2636, making a total of 8093 miles. Our author has much to say about the long delivery and high prices paid for railway plant when ordered in Britain, and no doubt has formed these views from conversations with men on the spot; he also compares American delivery of such material to our detriment. It is only fair to point out that the average locomotive built in Britain for these railways is the most expensive of its kind; its design usually emanates from the colony, and the locomotive builder here has to do what he is told. On the other hand, the American locomotive builder works with a much freer hand in every way. He supplies what he thinks best, and is not handicapped by a rigid specification; no wonder he can deliver sooner!

Judging from chapter xiv.; the harbours of British South Africa are in a bad way, more especially those in Cape Colony, where for political reasons their development has been remarkably slow; and the author very reasonably argues that since the majority of imports are likely to be for the Transvaal, the harbours further up the coast are more likely to develop in the future; this applies to the Port of Natal, Durban.

Mr. Ransome gives us an excellent description of diamond mining in Kimberley in chapter xvi., tracing the development of the De Beers Company from the commencement, and explaining the various methods from beginning to end, and the same can be said of chapter xvii., which has for its subject "Underground at the Rand Mines."

This volume is of interest to all connected with South Africa, and Mr. Ransome may be congratulated on the production of so excellent a book.

N. J. L.