formative manner. It is at first sight curious that such a peculiarly English subject should have been left to be dealt with by an American. But not the least interesting part of the book are the pages which show the political aspects of the forest policy which resulted in the development of the first colonies both in the United States (before the War of Independence) and in Canada. For the Admiralty supplemented their Baltic supplies of masts and other naval stores with the produce from the forests across the Atlantic.

For a considerable part of the two centuries the big timber, in the form of oak, was obtained from England, and the author traces the methods by which it was obtained. He depicts the hand-to-mouth policy of successive regimes and the 'muddle through' measures which appear to have persisted in the Supply Department of the Admiralty throughout the period, and might well have spelt disaster on three distinct occasions—the Dutch Wars, the American Revolution, and the Napoleonic Wars. A criticism is permissible on the subject of the action of the Admiralty in supplementing the failing English oak supplies by teak timber. This receives but a cursory mention from the author. In his list of references no allusion is made to the Records of the Honourable the East India Company, which appear not to have been consulted. From the end of the eighteenth century and throughout the first four decades of the nineteenth, the Admiralty pressed upon the Court of Directors the necessity of procuring increasing supplies of teak timber from India and Burma. A voluminous correspondence took place, and as is shown in Stebbing's "Forests of India," vol. 1, Pt. 2 (1922), enormous areas of teak forests were cut out to supply these demands.

To all interested in a study of the development of the British Empire, as based on the growth of our naval power, this book may be commended as of absorbing interest. Moreover, it is not without some bearing upon afforestation problems within the British Empire at the present day.

Our Bookshelf.

Photochimie. Par Prof. A. Berthoud. (Collection de physique et chimie.) Pp. viii + 323. (Paris: Gaston Doin et Cie, 1928.) 40 francs.

THE rapid development of molecular physics during the last twenty years has stimulated interest in photochemical processes, which are now being studied with renewed vigour. No little advance is to be recorded in this domain in interpreting the mechanism of photochemical action in terms of the Stark-Einstein law of quantum excitation, the conception of both molecules and atoms in excited states and of collisions of the second kind. Whilst from many points of view the physical processes occurring in gases or liquids when subjected to radiation of wave-lengths lying within a band of their absorption spectrum are obscure and the mathematical formulation still in a state of flux, yet in many directions we may trace the influence of these investigations in rendering the subject of photochemistry more precise and quantitative.

During the last two years a number of monographs and textbooks on photochemistry have been published, but many of them are disappointing, in that whilst giving exhaustive résumés of the products obtained on irridation of complex organic compounds with ultra-violet light, but little attention is devoted to the correlation of recent information derived from physical sources with the chemical changes involved in the simpler photochemical reactions. Prof. Berthoud's book is in many ways one of the most satisfactory volumes published on the subject, for a not unsuccessful attempt has been made to weld the two aspects, physical and chemical, into a homogeneous whole.

The volume is conveniently divided into two sections, the physical and the chemical. In the first section the laws of radiation and the theories of light absorption and emission, the photoelectric effect, as well as phosphorescence and fluorescence, are described, whilst the second is devoted to a detailed consideration of the varieties of photochemical change. Especially interesting are the chapters on optical sensitisation and on chlorophyll. Prof. Berthoud appears to incline to the belief that in all cases of halogenation the primary reaction of light absorption is the dissociation of the molecule of the halogen into atoms. Whilst it is true that many reactions are readily explicable on this hypothesis, in other cases such as the chlorination of hydrogen or the bromination of hexahydrobenzene, this assumption leads to somewhat arbitrary assumptions. The printing of the book, judged by English standards, is rather poor, and the absence of a subject and name index is to be regretted. ERIC K. RIDEAL.

Railway Signalling, Theory and Practice: a Practical Manual for Engineers, Transportation Officers, and Students. By S. T. Dutton. (Lockwood's Manuals.) Pp. viii + 148. (London: Crosby Lockwood and Son, 1928.) 7*s.* 6*d.* net.

WHILE the travelling public is well acquainted with the locomotives and trains which transport them from place to place, much less is generally known of the no less important means by which the safe operation of railway traffic is assured. Such a manual as this is therefore welcome, as it clearly sets forth the theoretical requirements of signalling and the practical means of carrying them out.

The work is concerned entirely with the fixed signals themselves, their connexion with the operating levers in the signal box, and the interlocking apparatus which harmonises the movements