

its gizzard by coughing. These lining membranes are light yellow pouch-like objects with the consistency of thin rubber, rolled up by the muscular coat of the gizzard wall before ejection. To Mr. Macintyre falls the credit of being the discoverer of this curious habit, now well attested.

The author, in a short chapter on the kite, suggests that it might be possible to reintroduce this bird into Scotland by placing its eggs in buzzards' nests. It is possible that, were a sufficient number of kites' eggs available, this might be done, but in Wales, the last nesting haunt of the species in Britain, the kite is still so scarce that I am very doubtful whether a clutch of eggs would be spared for the experiment. That is also the difficulty in the re-introduction of the osprey in the Highlands—the rareness of its eggs. Were some wealthy ornithologist to transport by air after the War a clutch of fresh osprey's eggs from Scandinavia to Scotland, and were these eggs to be placed in a nest of a buzzard already earmarked for this purpose, a brood of ospreys might be reared that would re-populate some Highland loch where the species formerly nested.

Mr. Macintyre is a keen angler, which is not surprising when one remembers his distinguished Highland ancestry. He is familiar not only with salmon, sea trout and brown trout, but also with the fish of Highland sea lochs and of the Atlantic. He describes the life-history of a pollack (or lythe as it is named in Scotland) which when caught turned the scales at 19 lb. That is a great weight for a pollack, but the fishermen who at times fish for these strong fish around the ocean rock of Sgeir nam Maol, in the Minch off northern Skye (where the owner of an ocean-going yacht told me that he caught heavier lythe than anywhere else off the British coasts) say that a 20-lb. lythe is not unknown here. My heaviest lythe was just over 16 lb., and my wife caught one of 16½ lb., but recently these fish have been much smaller.

SETON GORDON.

COMMERCIAL FORESTRY IN THE UNITED STATES

American Silvics and Silviculture

By Prof. Edward G. Cheyney. Pp. x+472. (Minneapolis: University of Minnesota Press; London: Oxford University Press, 1942.) 30s. net.

PROF. EDWARD G. CHEYNEY has written in this volume a very useful and comprehensive compilation on the American aspects of the silviculture of some hundred and fifty commercially important forest species. His book is said to be—and many will agree—the first attempt at treating this branch of forestry in America from the fully practical side. Silviculture, he explains, has been developed in Europe as an art through centuries of experience with European species of trees. "Out of that experience has come a series of silvicultural patterns that can be useful in America when we have learned to adapt and apply them to our own species. In themselves the patterns mean but little. To use them we must have knowledge of the factors that influence the growth of trees in competition with each other, of the types in which American species group themselves, and of the silvical characteristics of our more important species." It has been the aim of the author to deal as fully as present informa-

tion permits with his definition, and his book discloses how admirably he has carried out his object.

In connexion with silviculture as gradually developed in Europe, the author correctly says that what he terms the silvicultural patterns, that is, the various silvicultural systems, will have to be adapted in order to apply them to American species. The recognition of this important factor applies, where forestry is one of the national assets, to almost every country in the world outside Europe. India would appear to be the first country to which this realization, through its Forest Service, came—but only after a period of years during which rigid copies of purely European practice had shown their fallibilities. In that country for many years past the silviculturist has recognized the necessity of modifying and adapting to local and varying conditions the text-book definitions, perfectly sound ones for Europe, of the silvicultural systems. It appears curious, therefore, that Prof. Cheyney, in the careful research and consideration he has given to his subject, should have apparently ignored the great amount of work carried out in this direction throughout India and Burma during the past forty years. It is the reviewer's belief that America could find some adaptations or modifications of the systems now adopted in India as forms of practical management which could be of use to conditions in parts of the country, especially in the transition from virgin forest to a forest under a correct and detailed management.

The book is divided into four parts. The first three are written as a text-book on forestry. Part 4 deals with the silvicultural description of all the important species. In Part 1, silvicultural factors are dealt with. Part 2, which is very informative, discusses the forest regions of the United States under forests of the Northern Region, forests of the Appalachian Region, forests of the Atlantic and Gulf Coastal Plains, forests of the Lake States, forests of the Rocky Mountains, forests of the Northern Pacific Coast and forests of the Southern Pacific Coast. Part 3 treats of silviculture in its elementary aspects, the silvicultural systems, the application of the systems to the various forest types, thinnings and the disposal of slash. In Part 4 the species of trees given alphabetically are dealt with under range, types and associates, soil, moisture, light, and seed-production, growth management and resistance (to fire, pests and so forth).

In America, Prof. Cheyney's book is hailed as the first attempt to place silviculture in its application to a correct management of the forests in its practical position. "His book deals with American silviculture and constitutes the only discussion of its kind."

It is rightly said that the natural forests of the United States have contributed greatly to the country's development. It is equally true that in the past they have been greatly and often ignorantly exploited by the lumberman, with at times disastrous after-effects. Unfortunately this type exploitation has not ceased. "In the first year of World War II," it is said, "three-fourths of the entire cut lumber of the United States was absorbed by the War effort. All this indicates the immediate need for better forest management." In spite of the above statement, paper stocks are obviously still fairly abundant, for Prof. Cheyney's book is beautifully got up and is illustrated by many photographs lent for the purpose by the United States Forest Service.

E. P. STEBBING.