

the selection and treatment of seeds and the management of nurseries, it will be well to spend some time at the great nursery of the Lawson Seed Company, near Edinburgh, or any other large forest nursery. Plantations are often made by contract, and I have seen extensive and very successful plantations in the North which had been raised in that manner. A study of the conditions usual in such contracts will be found instructive. For the planting of oak with the aid of nurses of coniferous trees, no better school could be recommended than Windsor Park, the New Forest, and Dean Forest. The procedure in each of these has its peculiar points, which must be studied on the spot. For larch and Scotch fir plantations, Strathspey, the estates of the Duke of Athol and the Earl of Mansfield, in Perthshire,* are particularly instructive, but forest officers should not confine their studies to these localities. Indian foresters will naturally desire to inform themselves regarding the cost of plantations, as compared with the value of the thinnings and the final crop per acre, and on many estates these figures are readily available, but it may not be out of place to guard against publishing such information, or inserting it in an official report, without due authority from the proprietor or his agent.

Their manage-
ment.

The formation and management of plantations comprises a wide range of subjects: it will be sufficient to mention a few to which attention should specially be directed. The different descriptions of fences can be studied better in this country than I believe anywhere else. The great mass of the public forests in India will probably remain unfenced, just as with few exceptions, the large public and most of the private forests in France and Germany are not surrounded with fences, but in certain special cases fencing will be found indispensable in India.

The comparative merits of pit planting and notch planting, L and T slit under different circumstances, the use of the spade or hand iron † in different soils and with different kinds of trees; these are matters the study of which will be of direct practical use in India. Early and oft-repeated thinnings are to a certain extent a peculiar feature of Scotch and English forestry, and much may be learnt in this respect by Indian foresters. I am well aware that under the powerful light and sun of Indian latitudes (10° to 34°), forests and plantations require to be kept more close and compact, and the ground more completely covered, than is desirable in latitude 55°, but then there is hardly any operation of forestry which can with advantage be mechanically copied in another country or even in another county. The object of studies like those here recommended is not to acquire empirical knowledge of planting and thinning as done in Perthshire or Gloucestershire, but to understand the principles which guide foresters in the successful management of their plantations.

Working of the
forest and forest
rights.

Much may be learnt in the matter of timber sales and working of forests. Notices and conditions of sales should be studied, and information collected regarding the prices realized in different localities and under different circumstances. The valuation of standing timber for sale and for other purposes will afford much instruction. The construction and use of portable saw mills and of water power saw mills of simple construction can nowhere be studied more advantageously than in Strathspey and elsewhere in Scotland.

Regarding the important subject of forest rights, it will suffice to refer to Captain Walker's account of the history of the New Forest and Dean Forest, and to add that those who may desire to study the legal bearings of this subject, should consult a small book by Wingrove Cooke, "The Acts for facilitating the Inclosure of Commons, with a Treatise on the Law of Rights of Commons," London, 1864. An old work by John Manwood, "A Treatise of the Laws of the Forest," London, 1665, contains much information concerning the history of forest rights. The "Register of the Decisions of the Commissioners for the Settlement of Claims upon and over the New Forest, appointed in 1854," has also been printed, under the authority of the Treasury, in a small octavo volume, which gives a detailed account of every forest right allowed in that forest.

Most branches
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The preceding remarks will show that there is hardly any branch of forestry which cannot to a certain extent be studied in this country. There is, however, this difference, that in France or Germany the public, that is, the State or communal forests, and those large private forest properties which are managed on the same principles, are much more extensive, and form large compact masses, which are managed by great and well-organized departments, the officers of which have all received a special professional education, practically and theoretically. The great branches of forest business, the settlement of forest rights, the protection of the forests, their working and regeneration by natural or artificial means, and their improvement and extension, all this has, during a long series of years, gradually come to be arranged in a methodical and systematic manner in the public forests. Complete financial results of their management are periodically made public, and are constantly discussed and criticized by professional foresters. Thus it is easier to acquire correct general notions and principles by studying the management of the large continental forests, and on this account I have recommended to those who can afford it to commence by going abroad, because their studies abroad will enable them to utilize their time better when completing their studies in this country.

Introduction of
exotic forest
trees.

There are numerous other subjects connected with forestry to which forest officers on furlough in this country may with great advantage direct their attention. Foremost stands the introduction of exotic trees. In this respect Great Britain has always taken the lead. Indian foresters will naturally in the first instance direct their attention to the cultivation of the *deodar* and other Himalayan conifers. In that respect the experience gained in Windsor Park, at Dropmore, Ealing Park, and Kew, is exceedingly instructive, but the growth of the *deodar* may be studied in almost any park in England and the south of Scotland. The practical lesson which Indian foresters will probably draw from the study of this subject will most likely be, that such trees as the cedar of Lebanon, the *deodar*, the Douglas pine, succeed wonderfully well as ornamental trees in this climate, but that their value as forest trees for the production of timber in this country is doubtful. Studies of this kind will serve to make them cautious in acting upon the numerous well-meant suggestions which are offered on all sides for the introduction of foreign trees into India, and for the cultivation of Indian trees beyond the range of their natural distribution. On the other hand, the larch itself is a striking example of the successful

* It may be useful here to state that in Scotland the best seasons for studying planting work are, in Perthshire, early spring, from February to April; and in Strathspey, April to July.

† A remarkable kind of spade, with a triangular blade, which ends in a narrow prong 16 inches long, is used in the New Forest for planting hard-wood and coniferous trees.