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A NATIONAL SCHOOL OF FORESTRY.

I need probably make no apology for calling attention to the subject of our Woods and Forests; or at any rate, if any is due, it certainly is not from any want of importance in the subject, but because I am not so well qualified as I would wish to discuss it effectively. The losses which have recently pressed with so much weight upon landowners, will not be altogether without some compensating advantages if they induce us to devote more attention to subjects connected with the land, to consider whether our system of agriculture may not be improved, to establish agricultural schools, to facilitate the transfer of land, and, last not least, to examine into our system of management of woodlands and forests.

So much, indeed, has forestry been neglected, that in Scotland the word suggests deer rather than trees, while in England it is associated with one of our greatest provident institutions.

In endeavouring to call the attention of my countrymen to the present condition and possible improvement of our woodlands, I am not referring only, or even mainly, to Crown forests, which form but a small part of the subject. There are altogether in round numbers 2,800,000 acres of woods and plantations in this country, so that the subject is one of vast importance. Even, however, as regards Crown forests, the subject is one of considerable interest. In the year 1854 a committee of the House of Commons sat to inquire into the management of the Crown forests, and the state of things they found was most deplorable. They reported that in the New Forest, out of 2,535 loads felled, consisting of 3,115 trees, only 936 loads were accepted by the Surveyor of the Navy; so large was the proportion of faulty to sound trees. Again, with regard to Delamere Forest, they reported that "the committee feel themselves bound to report that the condition is most unsatisfactory." In the Forest of Dean "a very large proportion indeed of timber..... was unfit for the service of the navy; it was rotten and deficient." This latter forest now appears to be much better managed, although the New Forest is, economically speaking, in a very sad condition. This is to a great extent due no doubt to previous mismanagement and neglect. It would be satisfactory to have every ten, or at any rate every twenty years, some independent report on the present state of our national forests. This, however, is but a small part of the question, and it is much more important to consider whether the general management of woodlands in this country might not be improved; whether we might not profit by the experience and valuable information of the great foreign forest schools.

It is estimated, as I have already mentioned, that there are altogether in this country some 2,800,000 acres of woodlands, but our own pro-

duction is very far short of our requirements, and the annual imports of wood are no less than 3,000,000 cubic feet, worth from £15,000,000 to £20,000,000 sterling. Now Mr. Howitz, in his interesting report, for which we are indebted to Dr. Lyons, estimates the amount of land which might be profitably planted in Ireland at 5,000,000 acres, and Mr. Boppe, in his memoir, recently prepared for the India Office, calculates that, notwithstanding the great extent of land which has been of late years planted in Scotland, there "still remains 5,000,000 to 6,000,000 acres capable of furnishing valuable forests." Lastly, the extent of forest land in India and the colonies has been estimated at no less than three hundred and forty millions of acres.

A remarkable illustration of what may be done by judicious and systematic planting is afforded by the French "Landes." This region, which thirty years ago was one of the poorest and most miserable in France, is now one of the most prosperous. The increased value is estimated at no less than 1,000,000,000 francs. Where there were thirty years ago only a few thousand poor and unhealthy shepherds whose flocks pastured on the scanty herbage, there are now saw mills, charcoal kilns, and turpentine works, interspersed with thriving villages and fertile agricultural land.

Our own experience in India is another striking case. The institution of the forest department in India was first placed on a scientific footing in 1863, when Dr. Brandis was appointed Inspector-General of forests; but it was not till 1867 that his plans for the training of foresters for India were matured and adopted. And what has been the result? In 1870, the forest revenue of India was £357,000, with the net income of £52,000. In 1880 the gross revenue had reached £545,000, while the net income had increased from £52,000 to £215,000.

In the science of forestry we are, I fear, far behind many foreign countries, especially France and Germany; and it is surely very desirable that our landed proprietors should benefit by the experience which other nations have accumulated. In Scotland it is possible that the management of forests is better understood than in England; but it is very questionable whether, even if Scotch foresters were available in sufficient numbers, an English land owner would be wise to place his woods under any one whose whole knowledge had been acquired by the practical management of Scotch forests, because the condition of the two countries are so different. Moreover, it is probable that even Scotch foresters have much to learn.

M. Boppe, one of the highest French authorities on forestry, has recently visited our English and Scotch forests, and his report, though short, is most suggestive. On the whole, he concludes that even in Scotland, though in that

country forestry may be more advanced than in England, "rien n'a été fait pour donner à la propriété boisée sa véritable situation économique." His expression deserves all the more attention, because from the kindness and hospitality he everywhere experienced, from the pleasant character of his visit, and his natural courtesy, he evidently wished to make the best of everything. Still it is easy to read between the lines, and while his report is full of praise of the soil and the climate, the ability and hospitality, the industry and skill of the people, it is clear that in his judgment the system of forestry is archaic, expensive and obsolete.

I am aware that Scotch foresters would dispute many of M. Boppe's criticisms; but the very differences between these high authorities are additional reasons for further study.

Moreover, as regards the main recommendation contained in M. Boppe's report—namely, that one or more forest schools should be erected—our highest authorities entirely concur. The *Journal of Forestry* has ably and repeatedly called attention to the subject. The *Journal of Horticulture*, of May 3, 1883 observes "that it is little less than deplorable to witness the miles of woods that are practically valueless from a commercial point of view, whereas under skilled supervision they might yield a substantial revenue to their owners, and in addition be an advantage to the trading and agricultural community." Colonel Pearson, who speaks with much authority on the subject, because he has for some years represented the India Office at the great French School at Nancy, in an able paper, read before the Society of Arts, has strongly advocated the same view. He observes that in his opinion our forests and woodlands are very far from being in a satisfactory condition. There is no provision for the renewal of the timber. When the existing trees are cut down there are none to replace them, and when once a forest disappears, it can only be reinstated at a very large expense and great loss of time.

Mr. Brown, in his standard work on Forestry, observes:—"If our forests had been judiciously managed, we should not find so great a part of the woodlands of Great Britain in the unprofitable state in which they are..... The subject under consideration may be summoned up thus: Foresters, generally speaking, are not possessed of sufficient education to give them capacity for carrying out improvements in arboriculture; and until we have a better educated class of men reared to the profession, a large portion of our woods must remain a comparatively unprofitable part of the resources of landed property." Mr. Cruickshank, in his "Practical Planter," sums up the matter very tersely when he says:—

"Nothing is more common than to see trees, which are proper only for moist soils, placed in

the most parched situations, and those which nature has adapted for dry ground alone, planted in swamps and morasses. Those species that would flourish on a light soil, are often absurdly stationed in the most tenacious clays, where they can make little progress; while those that would have attained a large size in stiff land, are planted in gravel or sandy loam, as if for the express purpose of making them dwarfish, unsightly, and entirely worthless."

Mr. Boulger observes that as regards the New Forest, 49,000 acres will before very long be nothing but a worthless barren heath, unless a change of system is introduced. Mr. Grigor, in his work on Arboriculture, mentions many cases in which heavy losses have been incurred through ignorance of the management and formation of woods. He tells us that, in the last twenty years, many tons of seed of the larch and Scotch fir have been imported from the Continent and sown in Scotland, though such seed produces plants which are too delicate for the severer climate of the North. When we consider what a ton of seed is, we see what a loss of time and labor is here indicated. He mentions cases of large plantations, belonging to different owners, in which the American spruce, a dwarf tree, was planted by mistake for the common or Norway spruce; another in which the *Pinus montana*, another dwarf species, was carefully planted at regular distances, as the trees which were ultimately to form the forest after the nurses had been removed. He tells us that he has seen acres and acres absolutely ruined by mismanagement, by bad methods of planting, of pruning, and of thinning.

M. Boppe, in the report to which I have already referred, admits that in Scotland arboriculture, as opposed to forestry, has been brought to great perfection; and he adduces the case of a wood of splendid oaks with an undergrowth of rhododendron, constituting at present quite a fairy-like domain; but his experienced eye could not but look forward to the time when the oaks would all be felled, and there would be nothing to take their place. In fact, one fundamental difference between the management of woods and forests in England and France seems to be that we plant, then thin, and then finally cut down the trees. The French foresters, on the contrary, make it an essential part of their system that the forest should renew itself. In our country they observe there does not exist "aucun lien entre la forêt du passé et celle à refaire pour l'avenir."

M. Boppe mentions with much pathos such a forest in ruins which he visited. The trees had all been cut down for railway-sleepers; the ground was covered with the blackened remains of roots torn up and burned, reminding him of an "iamense ossuary," and the proprietor was replanting at a great expense, and with much loss of time both of which might, in his opinion,