

vation any portion, although it is exclusively their property, and the State derives no benefit from it beyond the preservation of the timber and clothing the hill sides, which is considered, even in this temperate climate, a matter of paramount importance. The burghers cut up and cart away their allotments of timber at their own cost, and are free to dispose of or retain it for their own use as they may think best. Some such system might, I think, be adopted with advantage in India for the management and preservation of our village forests.

The Lauterberg Revier is situated on the lower slopes of the Harz Mountains, and is 15,000 morgen (about 9,400 English acres) in extent. The geological formation is of the Silurian period, consisting mainly of clayslate and grauwacke, and the soil is formed from the decomposition of the underlying rock more or less mixed with vegetable mould. The low-lying portions of the revier are covered with beech forests, which, as one ascends, give place to spruce intermixed with Scotch fir, and here and there a little larch. There is but little oak in the revier, but a good deal of hornbeam (*Carpinus Betulus*) interspersed with the beech.

The revier is particularly interesting and instructive from the opportunities it presents of observing the growth and treatment of both hardwood and coniferæ in the plains and on the hill sides. In fact, almost every variety of treatment, sowing, planting, felling, and preparation may be met with and studied advantageously in this and the adjoining reviers in the Hanoverian Harz. The Oberforster, Herr Ohnesorge, is most painstaking, and ever anxious to explain and make things clear, which he is particularly well qualified to do, from his extensive and varied knowledge of forestry and the sciences connected with it. I have to thank him heartily for the trouble he took, to which I am mainly indebted for the insight I obtained into the details of German forest management and the object of each particular treatment or plan of operations. Several of our forest probationers have already benefited by his teaching, and all speak in the highest terms of his never-varying kindness and desire to get them on with their studies.

I spent three weeks on the revier along with Mr. Amery, a forest officer from the Punjâb. The forests are almost entirely Hochwald, and the annual growth or increase of wood is estimated at as high as 50 cubic feet per morgen (80 cubic feet per English acre), the umtrieb being 120 years (for beech). This annual increment represents a total yield during this period of 6,000 cubic feet per morgen, or upwards of 9,500 cubic feet per acre, which is a high average. It is estimated that from one-fourth to one-fifth of the total yield is removed by thinning, but this varies much according to description of tree and situation.

We visited the Oberforster portions of the forest, representing all the periods of growth; nurseries and schools for seedlings; and witnessed planting being carried on in many different ways to suit the necessities of soil and situation; felling by the axe and with the crosscut saw; squaring of hard wood and barking of pine stems to facilitate removal from the forest; slipping in log and on sledges—in fact, every variety of forest operations; and I only wish some of our Indian overseers had been present to learn a few practical lessons and useful hints to be applied in our hill forests. The natural reproduction of hard wood is carried on in the same manner as described at Springe, but little or no damage is done here by game. The tracts of Scotch fir and spruce are generally replanted two or three years after being cleared, the roots having meanwhile been carefully dug up, and for the most part used for the manufacture of charcoal, which is extensively carried on.

The young trees (spruce and fir) are scarcely ever *slitted* in as in Scotland, but pitted and transplanted with a ball. This is naturally more expensive, but, coupled with the careful previous cleaning of the soil, prevents the ravages of the beetle, which was formerly a very deadly enemy here. In marshy ground a plan called *Hügel* or *hill* planting is often adopted, which consists in merely laying the young plant, which has been removed with a ball, on the top of the turf or spongy grass, and placing round it another turf removed from the adjoining ground (thus forming a mound, whence the name). This plan appears to answer well, and I saw many hundreds of acres which had been planted by it on the upper plateau of the Harz.

There are many other methods of planting adopted, too numerous to detail here. The steepest and most rocky sides of the hills are covered with forests which have been, so to speak, created by the ingenuity and labours of the Forest Department. In many such places, where even the few handfuls of soil placed round the young tree have had to be carried some distance, it is not contended that the first plantations will yield a direct pecuniary profit, but the improvement in climate by retention of the moisture, and reclamation of large tracts formerly barren and unproductive, is taken into account, besides which the droppings of leaves and needles from the trees will ere long create a soil and vegetation, and insure the success of plantations in future years, and consequent surplus.

The Harz forests have from time to time suffered great damage from the attacks of insects, probably increased by the great dearth of small birds, which is most marked. Large sums have been expended in destroying the insects and beetles, and of late years these have proved successful, and the damage been reduced to a minimum. The knowledge which German forest officers possess on this and kindred subjects is very great. The Oberforsters and even the forsters and overseers can generally identify every beetle or insect met with in the forest, know whether it is destructive or harmless, and in the former case how it attacks the trees, and what measures are most effective in preventing or checking its ravages.

We visited several other reviers in the neighbourhood of Lauterberg, and thus obtained a good general idea of the forests of the Harz Mountains, the portion of which situated in the Province of Hanover extends over 204,000 morgen, and yielded, according to the forest budgets of 1864 to 1866, an annual surplus revenue of thalers 316,957, or about 4s. per morgen of the planted area, after deducting all charges for establishment, working, land tax, &c. Four-fifths of the forest area is spruce, and the remainder for the most part beech hochwald. The department maintained in 1864 270 miles (English) of forest roads in the Harz, and 480 miles throughout the whole province; and great attention is paid in each revier to the important matter of communications, without which the finest forest becomes comparatively worthless, save in so far as it affects the general welfare of the country.

In the adjoining revier to Lauterberg is a fine saw-mill (water power) erected some years ago at Saw-mills.

Lauterberg
Revier.

Planting out of
conifers.

Damage done by
insects.