

else. I advocate the speedy definition, registration, and, wherever possible, buying up or commutation of all such rights; and I think an Act and the appointment of a joint commission are necessary to enable us to do it; but I think I take a much broader and more liberal view of what constitute rights and privileges than I held when I left India; and since I have seen and read that the same sort of thing has been universal in Europe, and that it is only now in some States that a settlement is being arrived at, and that the people are becoming alive to the fact that it is to their own interest to commute privileges often vague and ill-defined for a money payment, a fixed quantity of wood per annum to be handed over to them by the forest department, or the right of pasture within a limited area. I think we cannot well take too broad a view in settling and defining the servitudes, even when the right is doubtful, but I am convinced that they should be defined, and as much as possible cancelled by liberal money compensation or annual allotment of timber or firewood. With regard to pasture, I would hope to be able to throw open all the forests, as they grew out of danger of damage from legitimate grazing, to the public at large, with certain well-considered restrictions and not easily evaded punishments in the event of mischief being done by the owners or herdsmen, and, if thought advisable, on payment of some small annual fee; but I deprecate the extension of any special rights to particular villages and persons, and consider it expedient to commute or endeavour to commute them where they already exist. No more analogous position to that which we are now in, and no better guide for settling matters justly and to the best advantage of all parties concerned, can be found than in the history of the progress of State forest administration and legislation in many of the German States.

Servitudes to be liberally construed, but defined and, if possible, commuted.

Nothing struck me more wherever I went than the entire absence of fencing and enclosures, considered so imperatively necessary in our Indian and English forest management. Bunches of dry grass tied to the branches of the outer trees suffice to denote forbidden ground, and to deter people from entering or driving in their cattle. And I am informed that trespass in such places is very rare and generally inadvertent. There is, of course, a staff of watchers, and punishment follows detection; but considering the extensive area and consequent comparatively small chance of detection, it must be something else which exercises a deterrent effect, and I am inclined to look for it in the knowledge that the whole question has been thoroughly inquired into and settled, and that Government or its forest officers will not exclude man or beast unless absolutely necessary for the good of the forests, of which all classes have learnt to know and appreciate the value.

Absence of all enclosing in German forests and plantations.

I do not think we have much to learn from the Germans with regard to the planting and rearing of young trees, but it is with regard to the best methods of managing groups of plantations or masses of forests that I consider we may with advantage take a leaf out of their book. For instance, I would certainly introduce in a tentative manner, and at first on a very small scale, their system of rotation, clearing, and periods, and endeavour to bring forward a second crop before the first is off the ground, encourage the growth of the better descriptions, and keep down the less valuable, and to improve our "Planter-betrieb," or selection of single trees to be felled, so as gradually to arrive at groups of trees of the same age, description, and class, and eventually at blocks worked in rotation, and containing always a sufficient stock of crop coming on to meet the requirements of future years. To arrive at all this the most careful observations and experiments will have to be made as to the rate of growth and yield per acre of each description of forest, the condition under which trees grow best and form the most timber, some requiring close and some open planting, some nurses and some not, some, like the oak, requiring a great deal of light, whilst others, like the beech, do well for many years in shade. All these points, and many more, demand attention, and till they are settled we shall be merely groping in the dark. In fact, I think it may be taken for granted that all we do in the way of forestry in the Madras Presidency, during the present century at least, will, after all, be but experimentalizing, which fact, however, need in no way delay the demarcation, survey, and settlement of the forests. These are, in fact, the first steps towards the initiation of systematic experiments, from the results of which valuable statistical data may be compiled for future guidance. Having said so much with regard to the chief points which have suggested themselves in connection with forest administration, legislation, and management as applicable to India, and regarding which, I think, I learnt not a little during my tour, I proceed to refer to the establishments employed.

Points on which the German system may serve as a model for India.

Nothing that I can say or write can convey too high an idea of the attainments and thorough knowledge of their work possessed by German forest officers of all grades. I confess that, prior to and during the first few weeks of my visit, I was inclined to class a great deal of German forestry as much theory and little practice, and perhaps mountains are sometimes made of molehills, and more is written than the subject demands or justifies, but this may be said with equal truth of every science or profession, and a very little time served to convince me that the practice of the German foresters was as good, if not better, than their theory, and that they were, in fact, perfect masters of their duties in all their details. An Oberforster, and even many of the Forsters and overseers, can tell the name, local and botanical, of every tree, shrub, and plant, classify it, and state its uses; name and classify every beetle and insect in the forest, and know whether they are harmless or destructive to trees, in what shape they do damage, and what are the best known preventive measures; inform you of the nature of the soil, and to what period the formation belongs, what trees will grow best, and why. All this is known thoroughly, theoretically, and practically.

German forest officers and their attainments.

Then as to the revier, the exact yield, rate of growth, and annual increase in value of each block is thoroughly known and can be put down at any moment in figures by the Oberforster, who can tell at the commencement of each year how much timber he is going to cut and sell, and from what parts of the forest it is to come, how many acres have to be partially cleared for natural re-production, planted, sown, thinned, or planted up. The mere details of all this are left, as a rule, entirely to the subordinates, who thoroughly understand them.

The *Forstmeisters* in charge of divisions possess not only the theoretical and scientific knowledge acquired in the forest academy, and the practical experience gained whilst they were Oberforsters in charge of a revier, but the more extended knowledge and wider views from their larger field for observation and comparison of causes and results. They are thus qualified to decide most points, revise working plans, and supervise operations generally, whilst settling complaints and complications