

hazels, oak shoots, ash, birch, &c. They are about one inch thick, and split up for hoops for sugar and other barrels. There is a large demand for this hooping, which is exported to the West Indies and other places.

Natural Beech Forests of Buckinghamshire.—In Buckinghamshire, on the chalk hills, the oak is not the natural timber, but the beech takes its place and springs just as freely, and without artificial means, as the oak does in the stiff clay. The system is one of selection. The rule is to cut the best trees, but there is a regular rotation. The mature age of the beech is considered to be thirty to fifty years only; the timber is used for chair-making. There is a great manufacture, by hand principally, of kitchen and barrack chairs. The chairmakers have great skill in this work, and can do it at so low a cost that they almost monopolize a very large trade, and export chairs to all parts of the world. The beech woods of Buckinghamshire are considerable, and supply this manufacture at a fair profit.

VII.

SUGGESTIONS CONCERNING THE PROFESSIONAL STUDIES OF FOREST OFFICERS ON FURLOUGH IN EUROPE.

Object and limits of these remarks.

THE object of the following remarks is to offer suggestions for the consideration of Indian forest officers on leave in Europe, who may desire to make themselves acquainted with the management of public and private woodlands in this country and on the Continent. In February, 1867, I prepared a memorandum with the same object in view, and that paper is referred to in some of the preceding reports. In drawing up the present remarks, which are now intended to replace the original memorandum, I have been guided by the experience gained by forest officers who have, in accordance with the arrangements made in 1866 and 1867, endeavoured to complete their professional studies during their furlough in Europe.

The present remarks will, with few exceptions, be limited to those forest districts with which I am personally acquainted, and I desire to state at the outset that I am not at present in a position to exhaust the subject, for of continental countries I have sufficient personal acquaintance with forest management in France and Germany only, and in a few districts of Italy and Austria; I must, therefore, leave it to others to indicate those points to which forest officers should devote special attention who may desire to go further. The organization of the Forest Department in Russia, the system of timber transport in Sweden and Norway, the great differences which existed formerly, and which partly still exist, in the forest legislation of the different cantons of Switzerland, and the effect which this state of things has had upon the condition, not of the woodlands only, but also of the fields and pastures in the different valleys of the Swiss Alps, the gradual denudation of many districts of Spain, the influence of this denudation in diminishing the fertility and the wealth of the country, and the attempts which have been made to counteract these effects; all these will form instructive subjects for the study of such forest officers as may have an opportunity of visiting those countries and learning their language. In Turkey, too, the attempts made some time ago, under the guidance of a number of able French forest officers, to establish a regular forest administration, may be found suggestive in many respects to Indian foresters. Nor is the field of useful studies for Indian forest officers confined to Europe, or to those countries where the management of natural woodlands and plantations is an old-established and recognized profession. The gigantic lumber trade of Canada, the extraction of resin in Florida and Carolina, the effects which forest clearings on the largest scale have had in several of the United States,* all this would afford a vast amount of instructive information to those who are entrusted with the working and the preservation of our forest resources in India. The study of the conditions under which the *Wellingtonia* of California, and the *Encalyptus* of Tasmania, attain dimensions far exceeding anything known in the most luxuriant of our Indian forests, would be a task which an Indian forester, who has the needful knowledge of climate and the growth of trees, might undertake with great advantage. Arboriculture in Japan also will, I feel convinced, eventually prove a source to us of much practically useful information.

Existing arrangements how utilized.

The present arrangements which facilitate the professional studies in Europe of forest officers on leave, were made in 1866. Captaid Seaton, the present Conservator of Forests in Burmah, and Captain W. Stenhouse, at present officiating in Oudh, were the first to avail themselves of them. With great perseverance and industry these officers went through a regular course of studies in the mixed beech and oak forests of Villers-Cotterets in France, at Nancy, and in the spruce and silver fir forests of the Western Vosges near Remiremont. They derived great benefit from what they learnt, and their example has been followed by a number of forest officers from different provinces of India. Some of these have, I believe, profited much, and the reports which precede these remarks afford ample proof of the great importance of such studies, when undertaken in the right spirit and in a proper methodical manner. Others may have returned to India dissatisfied with the result of their professional studies at home; if so, the reason probably was that they went to work in a *dilettanti* sort of fashion, and that instead of going through the labour of mastering the details of forestry, they imagined that their experience in India entitled them at once to come to conclusions of a general and sweeping nature after a hurried journey through the country. On this account I am anxious at the outset to state my opinion in unmistakeable terms, that those only should avail themselves of the facilities now offered for their professional studies, who are able and willing to devote sufficient time to them.

Studies on the Continent demand some knowledge of the language.

I will now briefly indicate those points to which the attention of an Indian forest officer on furlough should be specially directed. The first point to be decided seems to be, whether he should attempt a course of studies on the Continent, or whether he had better confine his attention to what may be learnt in this country. Some knowledge of either French or German is an indispensable condition of successful studies on the Continent, and familiarity with the language will enable him to get through the work in much less time and in a more satisfactory manner. Should any one desire to study on the Con-

* G. P. Marsh. "Man and Nature." London, 1864, pp. 51, 300.