

## ***From The Indian Forester- One Hundred Years Ago***

### **THE INDIAN FORESTER**

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#### **THE PRINCIPLES OF HANDLING WOODLANDS\***

(by Henry Solon Graves, Chief Forester, Forest Service, U. S. Department of Agriculture).

This volume, as the author explains in his preface, has been written to supply the need felt in America of a work dealing with the silvicultural treatment of woodlands. It is by no means a complete treatise on silviculture, nor is it intended to be such, but it deals with conditions existing in American forests to-day and endeavors to show what is the best silvicultural treatment which may be applied to them while those conditions exist. As many of these conditions are identical with those met with in India at the present time, such, for instance, as widespread damage from reckless cutting in the past, prevalence of forest fires, poor markets and lack of data, it will readily be understood that the methods of treatment recommended by the author are extremely simple, practical rather than ideal, and he wisely resists the temptation to describe in detail the more intricate European methods which he appears to have studied.

The book falls naturally into three parts. The first chapter contains the Introduction, the next five deal with the Silvicultural Methods of Treatment and the Improvement of the Forest, while - the last two chapters are devoted to Forest Protection.

In his introduction the author states that at the first settlement of America there were about 850 million acres of forest, and he estimates that since 1870 an average area of 50 million acres has been burnt annually. So great indeed has been the damage to the forests from fire and other causes that at the present day "the actual growth upon them is less than one-third of what is actually used in the country." A number of forests are in the hands of private owners, who have not the means to protect or treat them systematically, and to these people the author holds out the hope of State aid in various ways at no distant date.

After explaining the objects of silviculture, the financial aspect of forestry and other introductory matters, the author proceeds to discuss the chief silvicultural systems as applicable to American forests, giving one chapter each to the selection, clear cutting, shelterwood and coppice systems.

The systems are on the whole well described, but here and there occur statements which invite criticism. For instance when describing the selection system the author lays down on page 50 that "unless all age classes are normally represented the cutting must be at irregular intervals." Practically however this is not so; the representation of age classes in selection forests is frequently abnormal, but it is quite possible (and usual) to arrange for annual fellings of an approximately equal amount of material without at all interfering with the proper silvicultural treatment of the forest. We think, too, that a little more might have been said about the cutting cycle in selection forests. It is an important matter to fix the length of this correctly, and although the reader is told on page 47 that it may vary from 10 to 50 years he is rather left in the dark as to why the variation should be so great. The conditions which should guide the Forester in fixing the length of the cutting cycle might, we think, have been clearly enumerated.

The clear cutting system is discussed in considerable detail, and a number of modifications of the system are described. The shelterwood system appears, with some exceptions, to be applied in a very primitive way in America. Regeneration is secured and the crop removed by means of two cuttings only, one of which is called the "first or seed cutting," the object of which is to encourage reproduction, and the other the "second cutting," in which the remainder of the old crop is removed. It is stated on page 145 that "usually the second cutting will not be made until the first cuttings have been completed through the whole forest." Presumably, however, the whole forest would not be regenerated at once, but would be divided into periodic blocks, each of which would be taken in hand separately. We quote this instance to show that the author has not thought it necessary to say much about the manner in which forests are divided into working circles, blocks, compartments, etc., and, although it is true that a detailed description of the various divisions and subdivisions belongs rather to a work dealing with Working-plans, yet the silvicultural systems are dealt with at such length in the book under review that we think an elementary description of the manner in which the forest is subdivided is necessary in order to enable the

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reader thoroughly to understand them.

The coppice system is treated under four heads-Simple Coppice, Holding over Reserves, Pole wood Coppice and Coppice with Standards. Under the system of holding over reserves the standards are to be left for two rotations only, but under coppice with standards for several rotations. There seems to be no advantage in treating these as two separate systems, and in our opinion they should both be classed as coppice with standards. The polewood coppice system is recommended for forests in which a short rotation is impracticable on account of the lack of demand or small material. The trees are therefore allowed to grow to such a size that when they are cut reproduction from the stool cannot be relied on and regeneration must be supplemented by establishing many seedlings. A method of this nature should not, in our opinion, be included among the coppice systems at all, for in coppice forests it is a *sine qua non* that the rotation should be short enough to ensure reproduction from the stool. A forest cannot be called a coppice simply because, by design or otherwise, there is a proportion of stool shoots in the crop, and the type of forest classed by the author as polewood coppice should, we think, be treated under the clear cutting or one of the shelterwood systems; in fact he states on page 181 that "this system is in reality, therefore, the shelterwood system with a short rotation."

In the chapter on "Improvement of the Forest" the author deals with various kinds of improvement cuttings, thinnings, pruning, etc. He does not distinguish clearly between cutting for the improvement of crops to which, on account of immaturity or some other reason, no silvicultural method has been applied and cuttings carried out for the improvement of young crops which are being worked under a definite system. No doubt both ideas are present in the chapter, but no distinction is drawn between them, and all the cuttings are classed as "improvement cuttings" (page 90). The two kinds of cuttings are however quite distinct, and in India the first class are known as "improvement fellings" and the second as "tending of the crop."

The author then passes to the consideration of forest protection, and it is significant that out of 96 pages allotted to this subject 84 are devoted to fire protection. He first describes the nature of fires, their causes, and the damage done by them, and then discusses the steps which may be taken to prevent them and to extinguish them when kindled. The subject is fully dealt with, but calls for no particular comment, as fire protection must of necessity follow very much the same lines in all countries. The author notes that in fully 75 per cent. of the private forests there is no attempt whatever at systematic protection.

We would suggest that in the next edition a glossary of technical terms should be inserted, as some of the words and phrases used are very puzzling to the uninitiated. Some terms, it is true, are explained in the text and others by footnotes, but of many no explanation is given.

The author has always endeavoured where possible to give an idea of the average cost of various operations, and this is a very useful feature of the book.

The book itself is well got up, and printed on paper of good quality. It contains a large number of very excellent photographs explanatory of the subjects dealt with, and these will certainly be of the greatest help to the student.

We think that the volume on the whole is well adapted to the purpose for which it has been written.

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