

### Forestry Schools.

The recognition of this fact has led to the establishment of a number of forestry schools at leading educational centres on this continent. In Canada alone we now have three such schools. In October, 1907, the Faculty of Forestry in the University of Toronto was established with two instructors in forestry and eight students. The number of students is now 47 and the teaching staff in forestry subjects has been increased to four. In the University of New Brunswick, a Department of Forestry was established in October, 1908 with one professor and ten students, and at Laval University, Quebec, a Department of Forestry was established in 1910 with two professors and fifteen students.

### Preliminary Training.

The preliminary training for this profession consists of a four year undergraduate course, supplemented with considerable practical experience in the field. A brief outline of the course at the University of Toronto may be of interest. The first two years work are mainly along the line of an Arts course with Science options, the last two years being almost entirely devoted to technical forestry subjects. There is also a six year combination course, whereby a man gets both his Arts and his Forestry degree. There are now six students taking this course, and it is expected that the proportion of men taking it will increase as time goes on.

In what may be described as the technical part of the regular four-year undergraduate and the six-year combination courses, the students get a thorough drill in elementary phanerogamic and cryptogamic botany, vegetable physiology, physics, chemistry, mineralogy, geology and soil physics. More specialized courses are given in forest botany, biological dendrology, economic forest entomology, and the fungus diseases of trees. The synoptical course takes a general survey of the whole field of forestry science; after which forest geography and the history of forestry are dealt with for the express purpose of letting the men know what is going on in different parts of the forestry world and enlarging their outlook.

Then comes a very complete course in silviculture, or the art of growing wood crops to the best advantage; followed by briefer courses in forest protection, forest surveying, forest mensuration, forest valuation, forest utilization, timber physics and wood technology, forest regulation, forest finance, forest management and the preparation of working plans.

Some of the special lecture courses are on prairie planting and farm forestry, the administration of Canadian timber limits, business methods of the lumber trade, for-

est law, wood preservation, fish culture and game preservation.

From this outline of his academic training, it is evident that the young man who completes his course will have a pretty clear view of the whole field of forestry science.

As regards the field training, there is only one way to acquire it, namely, by experience in the woods. No amount of reading or theorizing will give this experience. It must be learned at first hand, but there can be scarcely any doubt that the men who go into the woods with the broad general outlook that a thorough



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academic training gives them will acquire this kind of knowledge very quickly, and, what is of more importance, know how to apply it in cases where men without similar training would utterly fail, and thus prove themselves thoroughly unpractical.

Before being granted the degree of Forest Engineer, candidates must give at least three years' satisfactory service in the field and present a thesis upon some practical subject prescribed by the Faculty.

### The Forest Engineer's Problems.

It will therefore be in order for us to examine some of the problems that constantly present themselves to the men in the field, and how they grapple with them.

In a young and undeveloped country like this, a considerable portion of the forester's time is taken up with surveying and mapping. At times a rough reconnaissance survey is all that is needed. At others it is necessary to make a topographic map of the region, showing by what routes the timber can be most easily removed. If the property is to be placed under permanent management, it will be necessary to make a complete forest survey of it. This will include (1) A more or less accurate plane and topographic survey, (2) An estimate of the amount