

## NEED FOR FOREST SURVEYS.

The third great problem will naturally be to gradually place all the reserves under management designed to make them perpetual producers of wood crops, improve their condition, and make them regulate the flow of water in our streams for irrigation and industrial purposes. Before they can be placed under such management, however, it will be necessary to study their condition, i.e., to make regular Forest Surveys. In conducting these surveys it will be impossible to lay down cast iron rules, because of the widely varying conditions. The important thing is to thoroughly understand the different methods of making such surveys, and to know which one gives the best solution of the particular problem presented.

## QUALIFICATIONS NECESSARY FOR A FOREST ENGINEER.

Thus it appears that the Forest Engineer is constantly called upon to deal with problems of a decidedly practical nature. He is not a mere botanist let loose to air his knowledge at the expense of others; neither is he a fire ranger, a lumberman, a sportsman, an arboriculturist, a dendrologist, a silviculturist or a political economist. He must understand *all* these phases of the questions he is constantly called upon to deal with—many of them of tremendous magnitude and far-reaching importance. His profession touches life at many points, and it would be decidedly unsafe to follow his recommendations if they were not based upon a careful consideration of the factors likely to affect the general result. From this, I think it should be plain that the academic training of a forest engineer should be so designed that it will give him a clear view of the whole field of Forestry Science, and thus enable him to get a proper conception of the relationships of things that at first sight do not seem to be related—even in the remotest degree. Without this conception he will be decidedly impractical; with it, he will be thoroughly practical, in the larger and better sense of the term. Regarding his field training, there is only one way to acquire it, namely, by experience in the woods. No amount of reading or theorizing can give him this experience. It must be learned at first hand, but there can scarcely be any doubt that the man who goes into the woods with the broad general outlook that a thorough academic training in the science of Forestry gives him, will acquire this kind of knowledge very quickly, and, what is of more importance, know how to apply it in cases where the man without similar training would utterly fail, and thus prove himself thoroughly impractical.

Such then, is the argument in favor of placing technically trained men in charge of all important surveys made for the purpose of studying the condition of our Forest Reserves, so