

Mr. Tripp. The cook tent, of course, must be of larger size, depending on circumstances, as it must have room for supplies, and, in cold weather, serve as a dining room. Some parties have a cook stove, and some have not. Bread is usually baked in a "reflector," in front of an open fire, and the beans are generally cooked in the ground.

The bed is commonly made somewhat after this style: A "foot-log," from 6 to 9 in. through and about as long as the width of the tent, is laid down at the proper distance from the closed end of the tent, and the straw, hay or boughs, as the case may be, put down in the space thus enclosed, then should come a rubber sheet large enough to cover the whole berth, then some cheap blankets doubled and wadded with cotton. For covering, each man should be furnished with a pair of good woolen blankets. Upon the advent of cold weather these are commonly made into a bag, by folding them into half their width and then sewing them across the foot and about two-thirds the way up the open side. This gives flaps to fold closely around the shoulders, and allows each man to have one, two or three thicknesses over him, as the weather may demand. Over all is laid a "spread" large enough to cover the whole berth, with ample allowance for "tucking in." This spread should be of two thicknesses of the "spreading" used by lumbermen, and heavily wadded with cotton. This outfit will allow men to sleep comfortably when the outside temperature is  $-20^{\circ}$ , as the writer can testify from experience.

It is not customary to provide a table for dining purposes, though of course it is very desirable when means of transportation will permit. Dishes are usually of tin, and spoons of the same (or similar) material.

When there is sufficient daylight, parties are supposed to work 10 hours on the line, which, of course, sometimes means a day of 12 or 13 hours from camp. Dinner is carried to the party, and, of course, it is necessary to reduce the weight of dishes, etc., as much as possible.

The writer's experience forces him to dissent from Mr. Gould's views in regard to the use of salt provisions, no party with which the writer has ever been connected having been for any length of time at all satisfied without fresh meat; and it is unnecessary to suggest that it never pays to have any feeling of dissatisfaction among the men, if it can be avoided, as it soon shows in the work, and very plainly. Of course, there are many times when fresh meat and vegetables cannot be had, and canned goods, although a poor substitute, are a great help. Milk, as well as fresh meat and vegetables, should be provided when practicable; in fact, the writer believes that the fare in camp should be, as nearly as possible, like good home fare, for with such fare the men will do more work and do it much more cheerfully.

The party is made up of chief of party, transitman, leveler, rod-  
man, two chainmen, back-sight man, and from three to five axemen. Mr. Tripp.  
The practice of adding a topographer, etc., is on the increase. The camp force is made up of commissary, cook and "cookee" (or cook's helper), and it is needless to say that on their faithfulness and ability the comfort and, in a great measure, the efficiency of the whole party depend. It is not always easy, however, to get good men, the woods cook too frequently being actuated apparently by a desire to see how much lard he can possibly put in everything he cooks.

On moving day (which may vary from once to four or five times a week) a team is procured from the most convenient place, the men pack up their personal belongings before leaving camp in the morning, and, generally, the tents are up, beds made and everything in its proper place when the party reaches the new camp at night.

Methods of work are as varied as the men who have charge, but it should always be remembered that methods which are advisable in one region may be utterly out of place (in fact entirely impracticable) in other regions. In the northern portion of Maine the reconnaissance must be made on foot, and usually through forest or, what is much worse, through the brush and debris left by lumbering operations, or, worst of all, through and over the all-too-frequent "blow-down," and the engineer must bear in mind the fact that a slip in his idea of the country may mean, not only days, but weeks, of a party's time later on; and, with the best man and all the pains he can take, such slips sometimes occur. Of course, no one moves without the ever-present pocket compass; this, with a hand-level and a small aneroid, is about all the instrumental outfit that is of use ordinarily, and but little dependence can be placed on the aneroid unless another is kept in camp and the records compared.

As to the preliminary survey, it is probable that sufficient time is never given to it, as the chief engineer is generally hurried, from the time the first stake is driven until the last rail is laid, and, of course, the effects are to be seen forever after. There can be no doubt as to the advisability of making the map of the country traversed as full and complete as practicable—and the more complete the better—but, at the same time, the writer is a firm believer in the (sometimes sneered at) "eye for country" which has been mentioned in this discussion. This, however, would be more in evidence in exploring than afterward. The plane-table might be of great service for topographical work in some regions, but the attempt to use it in a densely wooded region would seem somewhat like the much-talked-of "horizontal stadia," and not worth while.

The transit used should be of such size as not to wear out the transitman in carrying it—a 5-in. limb is ample, and, in many (if