THE FIELD MAN'S GREATEST PROBLEMS.

By A.E. Taylor, Scientist in U.S. Bureau of Soils.

The work of the field man lies largely in the preparation of a map, showing the location of the various soils in a given area, and a report describing these soils.

It is particularly desired that a detailed map and report of an area will give to the reader a comprehensive and clear description of the soil conditions for each forty acre tract. To produce a map of this quality it is necessary that the field man should come in close contact with the soil, preferably walk over it, in order that he can be reasonably certain as to its character on practically every acre. The distance between foot trips should be governed by the frequency of soil changes. Where soils run rather uniform one might walk across the area about every quarter of a mile, but where they are very changeable it would be better to cross the area about every forty rods and do much zigzagging so as to be sure of the location of soil boundaries. Accuracy of location is an absolute necessity in mapping the boundaries between soil types.

Coming in contact with all of the soils of an area would be useless unless the field man recognizes differences in the character of the soil material; he should study, most assiduously, many soil sections, making his observations searching and exhaustive as is possible for him under the circumstances. Because of a failure to observe important differences in the soil sections, it has, in cases, required more work to revise than to do the mapping in the first place. For instance silt loam soils having lower subsoils ranging from rather friable silt loams to hard, compact silty clay loams have been mapped as the same type. Farmers knew there was considerable difference in the agricultural value of these soils, and many of them, if asked, would have pointed out the difference in the lower subsoils.

Field men should make inquiries of the county agents and better farmers as to their soil difficulties. Sometimes a satisfactory solution is unknown. The difficulty may be of a nature that the field man by a comparative study of soil sections in relation to productiveness, a study of the various methods of experiments already tried out or by other lines of investigation, might throw new light upon the solution.

Good soil mapping is always characterized by consistency. Inconsistency in mapping labels works as unreliable. It is a good habit for a field man to frequently revisit different parts of the area he is mapping to be sure that he is consistent with himself in the determination of the color, texture, structure and topography variations. The more persons engaged in the mapping of a particular area the more complicated the problem of consistency becomes. The man in charge cannot exercise too much care in going over the work of the other members of the field party to see that the mapping is consistent. A very undesirable practice is where several additional men join in a field party at the last few weeks of a season to help finish the work. This always causes an inconsistency in the mapping, because men who have not been working in the same area cannot possibly adjust themselves to a certain system of mapping within such a brief period. There is considerable difficulty in keeping the work consistent in adjacent counties. After the one county is completed usually some years elapse before another is started. Owing to changes in the nomenclature,