

section of the river from the data of the latitude, longitude, and direction from each other of a given number of points in its course. Hence his outline of the course of a river or creek, or of the form of a lake or pond, was only as accurate as might be expected from a trained explorer, whose eye was accustomed to take in and measure distance, direction, and form, on a large scale, and under a thousand varying conditions. In the matter of general relief forms, and the general trend and drainage of the country, he was, without doubt, the best equipped and most competent single explorer who has undertaken the study of our country; and his work has been of inestimable value to hundreds of thousands who never heard of his name. So far as relates to the subdivision of areas, and the surveying and platting of the surface of the land, considered as a horizontal plane, his work did not profess to have any accuracy or value whatever.

On the other hand, this last is the chief, if not the only, object of the Government Land Surveyors. Their instructions are limited and specific. They take no note whatever of relief forms, they follow up and trace only the streams and ponds intercepted by the boundary-lines of sections. In the matter of horizontal area, in the meandering of lakes and navigable streams, and in the general platting of the land, they are proverbially reliable; but there is absolutely no account taken of elevation, and the drainage or trend of the land can only be inferred from the course and direction of the streams encountered in running the section lines.

Nicollet's exploration was made in 1836, before a surveyor's stake had been set within the limits of Minnesota. The Government Surveyors of 1875 perhaps never heard of Nicollet, and certainly had no thought of supplementing or verifying his work.

#### WHAT REMAINS TO BE DONE.

In general, therefore, the best sort of work that can be done by the explorer of to-day is to reconcile and adjust these two sets of data to each other. And, as applied to the head-waters of the Mississippi, the main thing to do is to determine and locate the exact water-shed which separates the Itasca basin from the sources of the Red River of the North on the one hand, and from the head-springs of tributaries of the Mississippi on the other.