

The dotted lines on the map show those parts of the country which were not visited, and the data upon which they are laid down is derived chiefly from the large manuscript Map of the North-West in the Crown Lands Office, by the late excellent but neglected geographer, David Thompson,* or from reliable information obtained in the country. While the Itinerary gives a general idea of the mode in which the time was occupied when in the field, our field books themselves contain the record of every hour's, and often of every five minutes' employment. They have been kept in strict accordance with the regulations established at starting,† and they supply a full and complete record of the manner in which the several parties were employed. A reference to any part or parts of the continuous lines on the Topographical Map can be found in the field books at once, together with the hour and minute at which the observation was made; a remark which applies to the whole time we were in the field, from the 14th June to the last day of October. All portions of the map drawn with a continuous line were plotted according to instructions, on a scale of two miles to one inch, or $\frac{1}{125000}$ and afterwards reduced by pentagraph to a scale of six miles to one inch, or $\frac{1}{380000}$.

THE SECTIONS.

The dimensions of valleys were ascertained either trigonometrically, or by the level and chain. The breadth of the Saskatchewan was ascertained by triangulation. Rivers such as the Assiniboine, the Souris, the Qu'Appelle, were measured by a line stretched across, and the depth ascertained by a sounding pole at stated intervals. The depth of the Saskatchewan was determined by paddling at a uniform rate across the stream and sounding at stated intervals, performing the operation two or three times and taking the mean. The fall of different rivers was frequently observed with the level. Tables showing the leading dimensions of valleys, rivers and lakes, determined by these methods will be found on pages 35, and 58 —of the volume of water discharged, pages 29 and 66, —and of the depth, rate of current, temperature, etc., in the text and on the map, where a line of soundings through the Great Lakes and their connecting rivers is also shown. These measurements were made in accordance with the instructions contained in paragraph 8, page 2.

THE GEOLOGICAL MAP AND SECTIONS.

The geographical outlines are reduced from the Topographical Map of the Expedition. The scale is 24 miles to an inch, or $\frac{1}{152000}$. The manner in which the approximate limits of formations were obtained, is explained and discussed in the

* The labours of this remarkable man are only now beginning to be appreciated. His map of the Boundary Line, according to the Treaty of Ghent, between British America and the United States, from Lake Superior to the Lake of the Woods, is an admirable piece of work. We recognized every portage as we came to it last year, although Thompson's Survey was made in 1826. It is much to be hoped that his numerous works, the results of thirty years labour in the North-West, will soon be published by the Government.

† See Appendix.

text. For the determination of the Cretaceous fossils, I am indebted to Mr. F. B. Meek, who ranks as the highest authority on this continent on fossils from the secondary rocks. I am happy to have this opportunity of expressing my thanks to Mr. Meek for his very valuable co-operation. The excellent paper contained in chapter XIX, proceeding from such an authority, gives a value to that portion of the Report and Map which will be appreciated by Geologists.

Mr. Billings, the distinguished palæontologist of the Canadian Geological Survey has not only determined the Silurian and Devonian specimens, and described some new species, but he has also lent his invaluable assistance in superintending the preparation of the drawings and wood-cuts of the specimens figured at the close of this Report. Mr. Smith, the artist in connection with the Geological Survey of Canada, has executed the drawings under the superintendence of Mr. Billings.

THE PHOTOGRAPHS.

Arrangements have been made to publish a number of copies of some of the photographs taken during the exploration. It is, however, much to be regretted that the negatives of those taken on the Souris, the Assiniboine and Qu'Appelle were left at Selkirk Settlement, in direct opposition to my expressed wishes. An effort to procure them during the last summer has not been successful; the box in which they were stated to have been placed, has arrived, but without containing the photographic negatives.

I am indebted to Professor Hincks of University College, Toronto, for the names of a small collection of plants illustrating the prevailing prairie flora in some fertile districts.

Paragraph No. 15 of the Instructions calls for a short notice: "It is hardly necessary to state that you will be held responsible for the conduct, diligence and fidelity of the party under your charge." To say the least, this is a difficult responsibility; the party it is known, consisted besides myself, of Mr. Dickinson, surveyor and engineer, Mr. Fleming, assistant surveyor and draughtsman, and Mr. Hime, photographer. The excellent Reports of Mr. Dickinson and Mr. Fleming, and the maps at the close of this volume, speak for themselves; but I should feel that I was neglecting an important duty if I did not specify more particularly my obligations to these gentlemen. Both Mr. Dickinson and Mr. Fleming conducted important branch explorations, and it is with perfect confidence I refer to their narratives and reports. Associated with them almost hourly since July, 1857, it is with much regret on my part that the completion of this volume closes our present connection. Few but those who have been engaged in a responsible work, in a wild and distant country, can appreciate the worth of conscientious, talented and most trustworthy friends, and there are equally few who can conceive the pain and anxiety which the absence or temporary suppression of these qualities in a companion, is capable of inflicting, when circumstances will not permit avoidance or separation.

H. Y. H.

Toronto, 1859.