SUMMARY REPORT

OF THE

OPERATIONS OF THE GEOLOGICAL SURVEY.

FOR THE YEARS 1884 AND 1885.

The last published Report of Progress of the Survey, that of 1882-83-84 is prefaced by a summary report for the year 1883 to which are added observations on the work of 1884. The present summary report constitutes a statement of work carried on by the survey to the close of 1885, and is practically a reprint of the summary reports forming part III in the reports of the Department of the Interior for 1884 and 1885. Facts of interest noticed in the summary report are thus placed in the hands of the public in advance of the completion of detailed reports and maps, which frequently require to embody the field work of several years. The summary reports also form a connected historical outline of the field and office work of the survey, and a record of the progress of the museum.

1884.

Publications.

The Report of Progress for 1882-83-84 is a royal octavo volume of 783 pages, containing fifteen separate reports and is accompanied by thirty-four maps of which all but two are geologically coloured.

Besides the annual report, a sketch geological map of the whole of the Dominion, on a scale of 40 miles to 1 inch, was prepared, and was published for the meeting of the British Association, together with an explanatory descriptive sketch of the physical geography and geology of the Dominion, in a pamphlet of 55 pages, royal 8vo., by the writer and Dr. G. M. Dawson. This map and pamphlet was

so far as I can judge, precisely similar to those observed at some of the older mines around Thunder Bay. These latter, have, however, been successively abandoned, presumably, because they proved unprofitable; but whether this arose from mismanagement, lack of enterprise, or some other cause, it is not easy now to determine, and we can only hope that a similar result will not attend those prospects now being developed in the district referred to. Mr. Ingall is preparing a detailed report on this district, based on his examinations and surveys made during the seasons of 1884 and 1885. The veins are well defined, and have a most promising appearance, and there seems no reason whatever why they should not continue to yield ore in depth as rich as any that has been found on the outcrops.

British Columbia.

Dr. G. M. Dawson has been engaged during the past summer in the geological exploration of a portion of the coast of British Columbia. The work so far carried out by the survey on the seaboard of this province, has been comparatively limited. The late Mr. James Richardson visited and cursorily examined a number of points, but his detailed and connected surveys were practically confined to the part of the Cretaceous coal-bearing rocks which extend south-eastward from Comox. Dr. Dawson had previously (in 1878) explored and surveyed the greater part of the coast-line of the Queen Charlotte Islands, and in the same year carried out some reconnaisance work in the northern part of Vancouver Island; but this, being of a preliminary character, and incomplete, was not published in detail. The exploration of the past season was undertaken with a view of adding to and extending the area of this work with special reference to the definition of the areas of coal-bearing rocks known to exist in the region in question. Dr. Dawson's summary report on the operations of the season is as follows:—

"Accompanied by Mr. D. B. Dowling, as assistant, I left Ottawa on the 3rd of June, arriving in Victoria on the 11th. It had been intended, if found practicable, to hire a steam-launch or small schooner with auxiliary steam-power; the experience of previous years having shown that much loss of time was likely to occur if dependence had to be placed on a sailing craft for locomotion, while work carried on by boat or canoe along shore entails frequent long return journeys to the few points at which supplies can be obtained on this coast. It was, however, found that no suitable craft with steam-power was available in Victoria within the necessary limitations of expenditure, and after ex-

hausting enquiries in this direction, the schooner "Carolena" (32 tons) was eventually chartered for use during the season. We sailed from Victoria on the 21st June, some days having been necessarily employed in procuring equipment for an absence of several months. Two days were also devoted, before leaving, to the examination of a deposit of iron ore at Sooke, near Victoria.

"The examination of the coast was begun at Comox, where Mr. Richardson's work had terminated, and the Cretaceous coal-bearing rocks were traced thence along the coast of Vancouver Island for about thirty miles. These rocks were at this point—a short distance north of Cape Mudge—found to be replaced on the shore by an older trappean series on which they rest unconformably, and it would appear from information received from timber explorers, and as the result of our subsequent examination, that the continuation of the Cretaceous trough or basin of the Comox region here trends inland, having a breadth of several miles on the Campbell River, and, very probably, running through behind the ranges which border the coast as far as the headwaters of the Salmon River.

"Having examined the shores of Discovery Passage as far as Seymour Narrows, it became important to ascertain whether there was any recurrence of the coal-bearing rocks of the Comox basin on the north-eastern shores of the Gulf of Georgia. These, together with Malaspina Inlet and both shores of Malaspina Strait as far south-eastward as the entrance to Jarvis Inlet, were next systematically explored—the number of islands and intricacy in outline of the coast, rendering it necessary to traverse a great aggregate length of shore-line. Coal, which had been vaguely reported as occurring on Valdez Islands and in Malaspina Inlet, was not found in either place, nor were any outliers of the Cretaceous sandstones observed. It had also been supposed that the coal-bearing rocks might underlie Mary, Hernando, Savary, or Harwood Islands, the low, flat appearance of these favoring this view. It was, however, found that this appearance arises from the fact that these islands are composed of boulder-clay and other drift deposits, below which granite rocks come to the surface at a few places. A small area of sandstone rocks was, however, observed running inland from the north-east shore of Malaspina Strait, which is probably Cretaceous, but contains, so far as observed, no coal seams of any value. Several large lakes exist in this vicinity in the promontory between Desolation Sound and Jarvis Inlet. From one of these, a river of considerable size issues, and forms a fine fall within half a mile of the shore. The existence of these lakes is not indicated on the published charts, and though I had intended to devote some days to their exploration in the autumn, the project had eventually to be abandoned for lack of time.

"A portion of the north-eastern shore of Texada Island (forming the south-western side of Malaspina Strait) was next examined, including a locality at which openings had been made on copper ore, one at which marble had been quarried, and an important occurrence of iron ore. No work is now being prosecuted at any of these places, but there is in this vicinity an immense quantity of grey, banded and blotched marble, which passes into a nearly white variety, in some places. The marble is very well situated for quarrying, forming low cliffs along the shore for several miles. Later in the season the whole remaining shore of Texada Island, with that of Lasqueti and neighboring islands, was traversed, and the iron mine near Gillies Bay visited. To avoid reverting to this district, it may be stated that one locality of Cretaceous rocks, in addition to those indicated on Mr. Richardson's map, was discovered. It also appears probable, from the extent of low drift-covered country in that vicinity, that the Cretaceous area at Gillies Bay may be somewhat larger than shown on the map, and it may some day be worth while to bore either at this place or on Sangster Island, in order to ascertain definitely whether any coal seams occur in these small borders of the sandstone series which have here escaped denudation.

"Beyond Seymour Narrows, the shores of Johnston and Broughton Straits, with portions of those of adjacent water-ways to the northward were examined and found to consist of granitic rocks, with areas of an overlying series, which is for the most part volcanic in origin, but which has been much altered, and is at least in part of Triassic age.

"From Alert Bay, while Mr. Dowling continued the examination of the coast, I made an excursion up the Nimpkish River to Nimpkish or Karmutsen Lake, and finding the lake to be very imperfectly represented on the map, made a survey of the entire shore-line with Massy's floating boat-log. Marble occurs in considerable quantity on the shores of the lake, but as the same stone is found much more conveniently situated for shipment at the head of Beaver Cove, where some blocks have already been quarried, it cannot be regarded as of immediate importance.

"The Cretaceous coal-bearing rocks which extend along the coast from Port McNeill to Fort Rupert—a distance of 16 miles—which had been cursorily inspected by me on the way back from the Queen Charlotte Islands in 1878, were now more closely examined. This area is that in which coal was first discovered in British Columbia, and worked to a small extent by the Hudson Bay Company, which, also, as far back as 1852, caused some borings to be sunk to a limited depth. Though work was abandoned here on the discovery of the Nanaimo deposits, and the seams so far discovered are not thick, the regularity and light degree of inclination of the rocks are such as to promise well for the