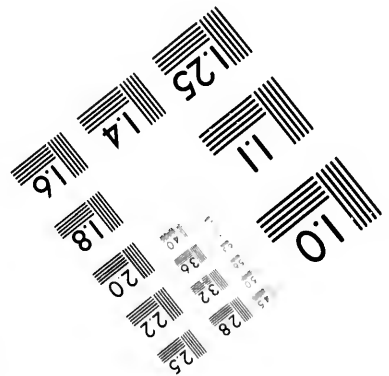
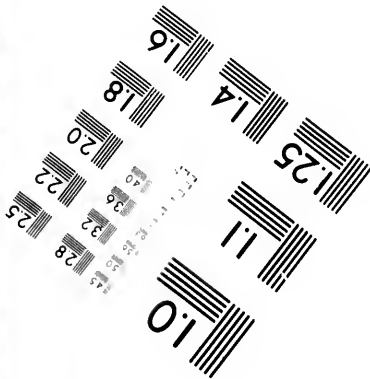
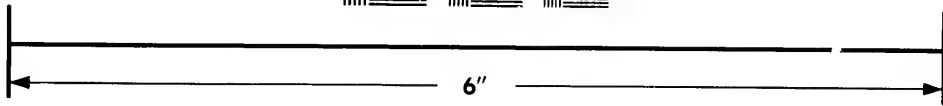
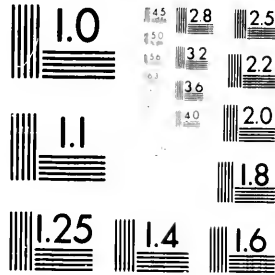


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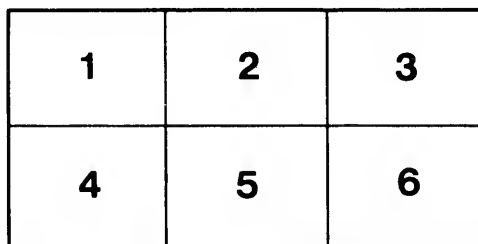
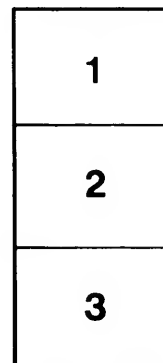
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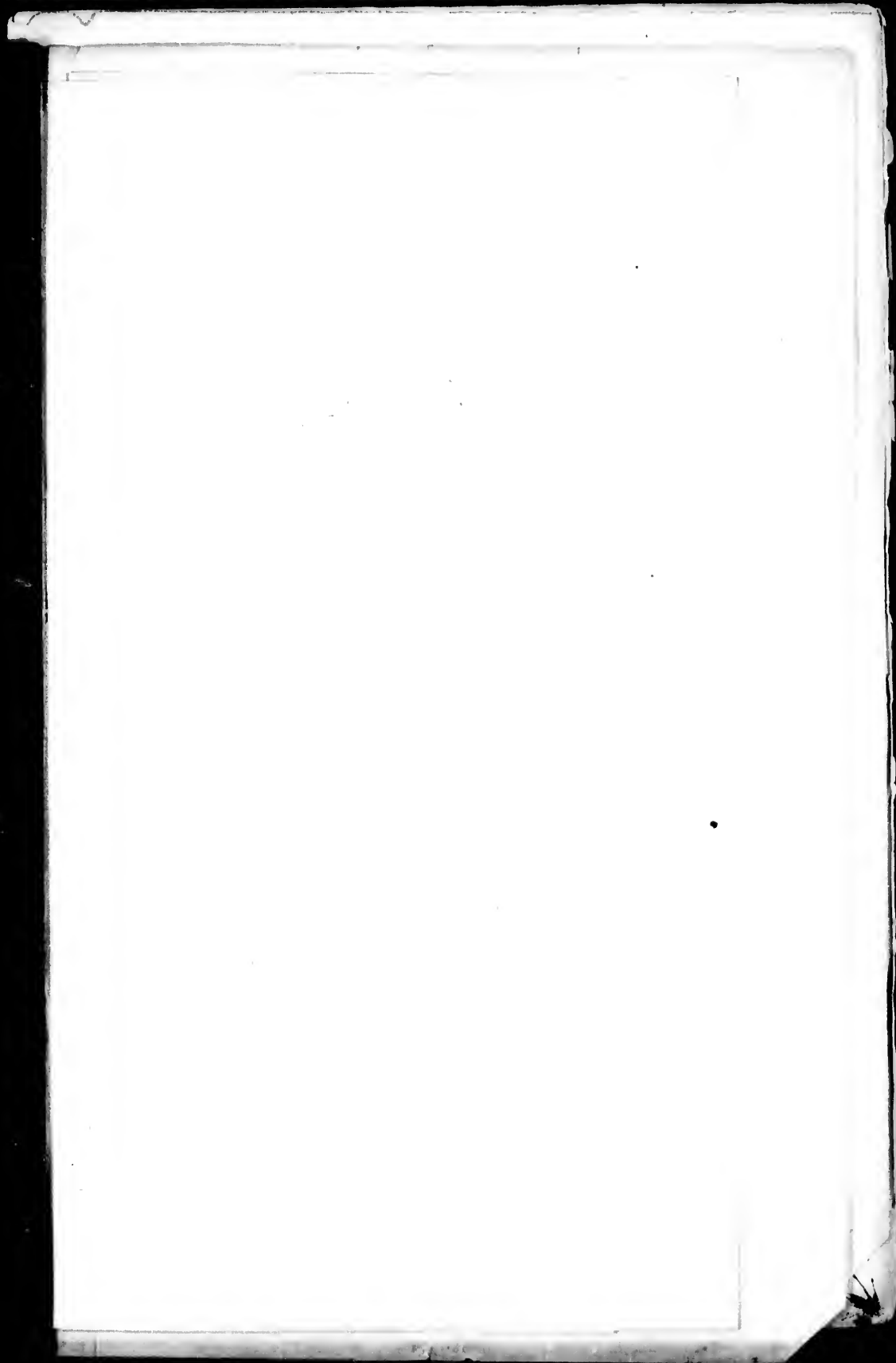
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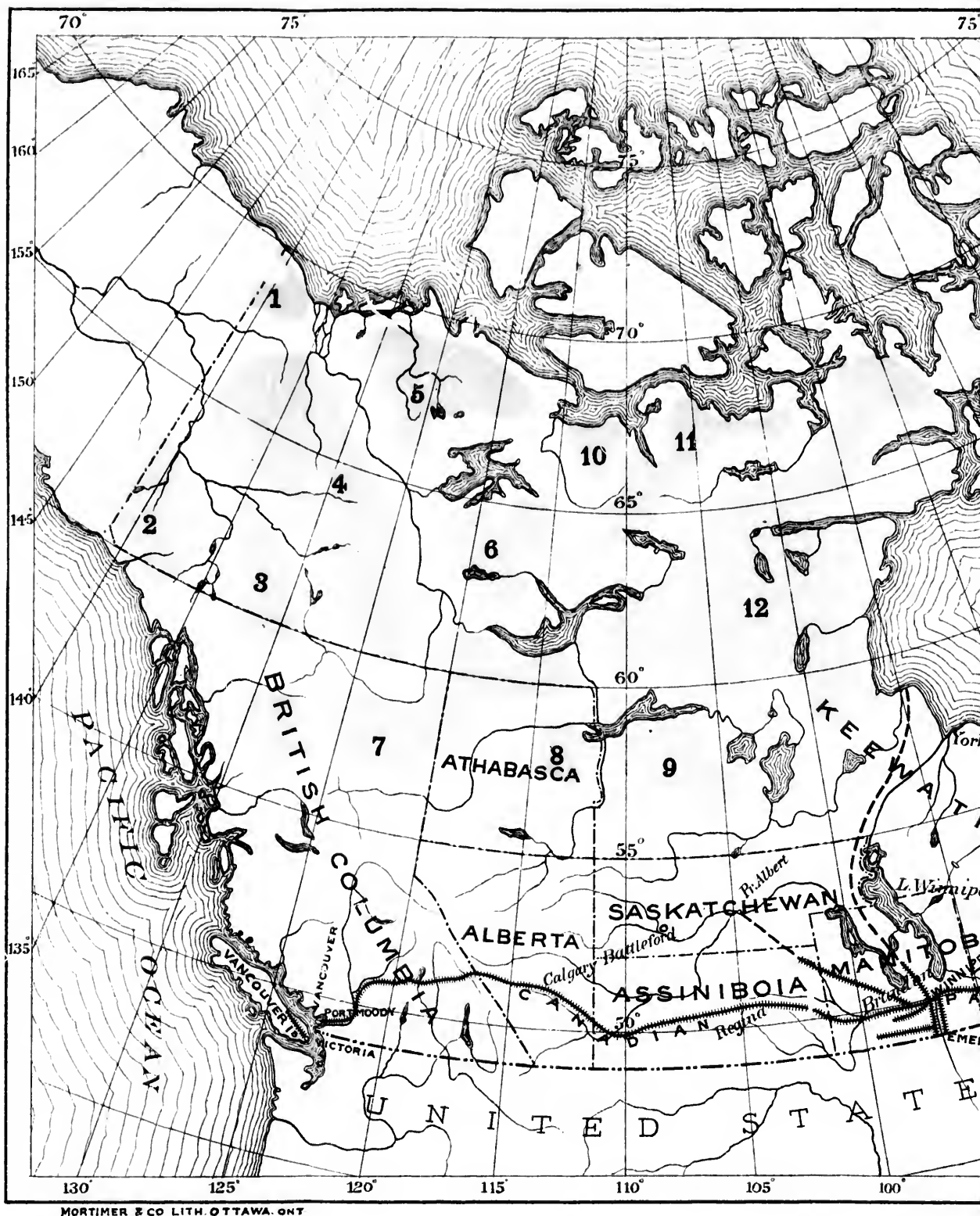
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DOMINION OF CANADA.—OUTLINE MAP SH

(To illustrate paper



LINE MAP SHEWING THE LARGER UNEXPLORED AREAS, 1890.

(Illustrate paper by George M. Dawson.)

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## ON SOME OF THE LARGER UNEXPLORED REGIONS OF CANADA.

(By G. M. Dawson, D.S., Assoc. R.S.M., F.G.S., F.R.S.C.)

*(Read 7th March, 1890.)*

If on reading the title of the paper which I had promised to contribute to the Ottawa Field-Naturalists' Club, any one should have supposed it to be my intention to endeavour to describe or forecast the character of the unexplored areas mentioned, I must, in the first place disclaim any such intention. The very existence of large regions of which little or nothing is known, is of course stimulating to a fertile imagination, ready to picture to itself undiscovered "golden cities a thousand leagues deep in Cathay," but such unscientific use of the imagination is far removed from the position of sober seriousness, in which I ask your attention to the facts which I have to present.

Fortunately, or unfortunately as we may happen to regard it, the tendency of our time is all in the direction of laying bare to inspection and open to exploitation, all parts, however remote, of this comparatively small world in which we live, and though the explorer himself may be impelled by a certain romanticism in overcoming difficulties or even dangers met with in the execution of his task, his steps are surely and closely followed by the trader, the lumberer, or the agriculturist, and not long after these comes the builder of railways with his iron road. It is, therefore, rather from the point of view of practical utility than from any other, that an appeal must be made to the public or to the government for the further extension of explorations, and my main purpose in addressing you to-night is to make such an appeal, and to show cause, if possible, for the exploration of such considerable portions of Canada as still remain almost or altogether unmapped.

What I have to say, in fact, on this subject, resolves itself chiefly into remarks on the map exhibited here, upon which the unexplored areas to which I am about to refer, are clearly depicted in such a manner, I believe, as almost to speak for themselves.

It is very commonly supposed, even in Canada, but to a greater extent elsewhere, that all parts of the Dominion are now so well known that exploration, in the true sense of the term, may be considered as a thing of the past. This depends largely upon the fact that the maps of

the country generally examined are upon a very small scale, and that upon such maps no vast areas yet remain upon which rivers, lakes, mountains or other features are not depicted. If, however, we take the trouble to enquire more closely into this, and consult perhaps one of the geographers whose name may appear on the face of the map which we have examined, asking such awkward questions as may occur to us on the sources of information for this region or that, we may probably by him be referred to another and older map, and so on till we find in the end that the whole topographical fabric of large parts of all these maps rests upon information of the vaguest kind.

Of most of the large areas marked upon the map here shown, this is absolutely true, and the interests of knowledge with respect to these would be better subserved if such areas were left entirely blank, or, at least, if all the geographical features drawn upon them appeared in broken lines, in such a way as to show that none of them are certain. In other regions, the main geographical outlines, such as the courses of the larger rivers, are indicated approximately, with such accuracy as may be possible from accounts or itineraries derived from travellers or from officers of the Hudson Bay Company; or from the descriptions or rough sketches of Indians or other persons by whom the region has been traversed, but who have been unprovided with instruments of any kind and whose knowledge of the country has been incidentally obtained.

There is, in the case of such partially explored regions, more excuse for the delineation of the main features on our maps, as these may be useful in imparting general information of a more or less inexact kind. We can scarcely, however, admit that such regions have been explored in any true sense of that term, while they are certainly unsurveyed, and very little confidence can be placed in maps of this kind as guides in travel. When, ten years ago, I struck across from Fort McLeod, on the west side of the Rocky Mountains, with the purpose of reaching Fort Dunvegan on the Peace, through a country densely forested and without trails or tracks of any kind, I had so much confidence in the existing maps of that region as to assume that Dunvegan was at least approximately correct in position on them. As often as possible I took observations for latitude, and each night

worked out our position by latitude and departure, till at a certain point I was about to turn off to the north of the line previously followed with the confident anticipation of finding Dunvegan. Just here, very fortunately, we fell in with some Indians, and though our means of communicating with them were very imperfect, we gathered enough to lead us to accept the guidance of one of them, who promised to lead us to the fort, but took an entirely different direction from that I had proposed taking. He was right, but Dunvegan proved to be, as shown on the maps, nearly forty miles west of its real position. Fortunately no very great importance attached to our reaching Dunvegan on a given day, but none the less, this practical experience proved to me very conclusively the desirability of showing features in broken lines, or otherwise indicating their uncertainty when they have not been properly fixed.

It must be confessed, however, that most of the travellers ordinarily to be found in these unexplored regions, being Indians or hunters, traders and others travelling under the guidance of Indians do not depend on the latitudes or longitudes of places, or on the respective bearings of one place from another. The Indians follow routes with which they have been familiar since childhood, or when beyond the boundaries of their own particular region of country, go by landmarks, such as mountains, lakes and rivers which have been described to them by their neighbours. Their memory in this respect is remarkable, but it must be remembered that among their principal subjects of conversation when sitting about the camp-fire are the distances in day's journeys from place to place, the routes which they have followed or have known others to follow, the difficulties to be encountered on these, the points at which food of different kinds may be obtained, and the features which strike them as being remarkable in the country traversed. Returning, however, from this digression, which began with the statement that accurate maps of such regions as are at present merely traversed by traders and Indians, are not imperative from the point of view of such travellers, it may with confidence be affirmed that such maps and the explorations upon which they are based, are absolutely essential to civilized society, to show in the first place what the natural resources of these regions are and how they may be

utilized, in the second by what highways such regions may be most easily reached.

A glance at the map will show, that while many of the larger unexplored areas may be affirmed to lie to the north of the limit of profitable agriculture, considerable regions situated to the south of this limit still await examination. Large districts, again, in which no farmer will ever voluntarily settle, may afford timber which the world will be glad to get when the white pine of our nearer forests shall become more nearly exhausted, while with respect to mineral resources, it is probable that in the grand aggregate the value of these which exist in the unexplored regions will be found, area for area, to be equal to those of the known regions, comparing each particular geological formation with its nearest representative. On the grounds alone, therefore, of geographical knowledge, and of the discovery and definition of the reserves of the country in timber and minerals, the exploration of all these unknown or little-known regions may be amply justified.

Taking a line drawn north and south in the longitude of the Red River valley, which is, as nearly as may be, the centre of Canada from east to west, it may confidently be stated that by far the larger part of the country in which agricultural settlement is possible lies to the west, while the great bulk of the actual population lies to the east of this line. Looking to this grand fundamental fact, I believe it may safely be affirmed that some members of this audience will live to see the day when these conditions with respect to population will be boldly reversed and in which the greater number of our representatives in Parliament gathering here will come from this great western region.

This disposition of the cultivable land depends partly upon the physical characteristics of the country, and in part on its climatic conditions. Beyond Winnipeg, and stretching therefrom to the west and north-west, is the great area of prairie, plain and plateau which, wider near the forty-ninth parallel than elsewhere on the continent, runs on in one form or other, though with diminishing width, to the Arctic Ocean. This is, generally speaking, an alluvial region, and one of fertile soils. Very fortunately, and as though by a beneficent provision of nature, the climatic features favour the utilization of this belt.

The summer isothermals, which carry with them the possibility of ripening crops, trend far to the north.

Let us trace, for example, and as a rough and ready index of the northern limit of practicable agriculture of any kind, that isothermal line which represents a mean temperature of 60° Fahrenheit in the month of July. Passing through the southern part of Newfoundland and touching the island of Anticosti, this line runs to the north end of Mistassini Lake, and thence crosses Hudson Bay, striking the west shore a short distance north of York Factory. Thence it runs westward, skirting the north end of Reindeer Lake, and then bending to the north-west, crosses Great Slave Lake, and touches the southern extremity of Great Bear Lake. From this point it resumes a westward course and crosses the Yukon River a considerable distance to the north of the confluence of the Pelly and Lewes, turning south again almost on the east line of Alaska. We need not, however, further follow its course, as owing to peculiar climatic conditions on the West Coast, it ceases there to be any criterion as to the conditions of agriculture.

The character of much of the western interior country is such, that its exploration and survey is comparatively easy, and it will be observed that here the larger unknown regions are to be found only far to the northward, leaving in the more rugged and inhospitable eastern region vast islands of unexplored country in much more southern latitudes.

It may be said, in fact, that comparatively little of the region capable, so far as climate goes, of producing wheat is now altogether unknown; but it may be added, that increasing as the world now is in population, its people cannot much longer expect to find wheat-growing lands unoccupied in large blocks. The time is within measurable distance when lands with a fertile soil though more or less rigorous climate, in which only barley, oats, hemp, flax and other hardy crops can be matured, will be in demand, and we are far from having acquired even a good general knowledge of these lands in Canada.

For many of the unexplored regions marked upon this map, however, we can in reason appeal only to their possible or presumable mineral wealth as an incentive to their exploration, and if some of them should prove wholly or in great part barren when such explora-

tion shall have been carried out, it will not be without utility to acquire even this negative information, and write upon them in characters as large as need be, "No thoroughfare."

I will now ask your further attention for a few moments while I run over and make some remarks in detail on the various unexplored areas as indicated on the map. It must first, however, be explained in what manner the unexplored areas referred to have been outlined. All lines, such as those of rivers, chains of lakes or other travelled routes, along which reasonably satisfactory explorations have been made and of which fairly accurate route-maps are in existence, are given an approximate average width of about fifty miles, or twenty-five miles on each side of the explorer's or surveyor's track. The known lines are thus arbitrarily assumed to be wide belts of explored country, and that which is referred to as unexplored, comprises merely the intervening tracts. By this mode of definition, the unexplored regions are reduced to minimum dimensions. Neither are any comparatively small tracts of country lying between explored routes included in my enumeration, in which the least area mentioned is one of 7,500 square miles; nor are the Arctic islands, lying to the north of the continent, referred to. Because of the empirical mode in which the unexplored areas have thus been delineated, it has not been attempted to estimate with more than approximate accuracy the number of square miles contained in each, my purpose being merely to render apparent the great dimensions of these areas.

In enumerating these areas, I shall not refer to the various explorations and lines of survey by which they are defined and separated one from another, as this would involve mention of nearly all the explorers who have traversed the northern part of the continent. I shall, however, note such excursions as have been made into or across the regions which are characterized as unexplored.

Beginning, then, in the extreme north-west of the Dominion, we find these areas to be as follows :—

1. Area between the eastern boundary of Alaska, the Porcupine River and the Arctic coast, 9,500 square miles, or somewhat smaller than Belgium. This area lies entirely within the Arctic circle.

2. Area west of the Lewes and Yukon rivers and extending to the boundary of Alaska, 32,000 square miles, or somewhat larger than Ireland. This country includes the head-waters of the White and probably of the Tananà rivers, and, being comparatively low and sheltered from the sea by one of the highest mountain ranges on the continent, the St. Elias Alps, doubtless possesses some remarkable peculiarities of climate.

3. Area between the Lewes, Pelly and Stikine rivers and to the east of the Coast Ranges, 27,000 square miles, or nearly as large as Scotland. This has been penetrated only by a few "prospectors" from whom, and from Indians, the courses of rivers shown on my maps published in connection with the Yukon Expedition Report are derived. It lies on the direct line of the metalliferous belt of the Cordillera, and its low lands are capable of producing hardy crops.

4. Area between the Peily and Mackenzie Rivers, 100,000 square miles, or about twice the size of England. This belongs partly to the Yukon basin and partly to that of the Mackenzie, and includes nearly 600 miles in length of the main Rocky Mountain Range. Many years ago, Mr. A. K. Isbister penetrated the northern part of this area for some distance on the line of the Peel River,\* but, owing to the manner in which he had to travel, but little accuracy can be attributed to his sketch of that river. Abbé Petitot also made a short journey into its northern part from the Mackenzie River side, but with these exceptions, no published information exists respecting it.

5. Area between Great Bear Lake and the Arctic coast, 59,000 square miles, or about equal to England in size. Nearly all to the north of the Arctic circle.

6. Area between Great Bear Lake, the Mackenzie and the western part of Great Slave Lake, 35,000 square miles, or larger than Portugal. With respect to this region and that last mentioned, it must be explained that I have felt some doubt whether they should be characterized as unexplored on the basis previously explained as that which is generally applied. Between 1857 and 1865, Mr. R. Macfarlane, of the

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\*Some account of Peel River, North America, by A. K. Isbister, Journ. Roy. Geog. Soc., vol. xv., 1845, p. 332.

Hudson Bay Company, carried out an intelligent and valuable examination of part of the region north of Great Bear Lake, some results of which have lately been published,\* and in both of these areas, between 1864 and 1871, the indefatigable missionary, Abbé Petitot, made numerous journeys, of which he subsequently published an account.† As Petitot's instruments consisted merely of a compass, and a watch which he rated by the meridian passage of the sun, it must be assumed that his mapping of the country does not possess any great accuracy. His work, however, considering the difficulties under which it was performed, is deserving of all praise, and his several descriptions of the character of the country traversed are most valuable. It does not appear from his account of these regions that they are likely to prove of great utility to civilized man, except as fur preserves, or possibly from the minerals which they may contain. He writes: "Ce pays est composé de contrées silencieuses comme le tombeau, des plaines vastes comme des départements, des steppes glacées plus affreux que ceux de la Sibérie, de forêts chétives, rabougriées comme on n'en voit que dans le voisinage des glaciers du Nord."

7. Area between Stikine and Liard rivers to the north and Skeena and Peace rivers to the south, 81,000 square miles, or more than twice as large as Newfoundland. This includes a portion of the western Cordillera, and, between the Liard and Peace rivers, a large tract of the interior plateau region of the continent, parts of which, there is reason to believe, consist of good agricultural land. Its western extremity was crossed in 1866 and 1867 by the exploratory survey of the Western Union or Collins' Telegraph Company, then engaged in an attempt to connect the North American and European telegraph systems through Asia. No details of this part of their exploration have, however, been published, and if we may judge from other parts of their line, since checked, the survey made was of too rough a character to possess much geographical value.

8. Area between Peace, Athabasca and Loon rivers, 7,500 square miles, or about half as large as Switzerland.

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\*Canadian Record of Science, Jan., 1890.

†Bulletin de la Société de Géographie, Tom x, 1875.



9. Area south-east of Athabasca Lake, 35,000 square miles. This again may be compared in extent to Portugal.

10. Area east of the Coppermine River and west of Bathurst Inlet, 7,500 square miles. This again may be compared to half the area of Switzerland.

11. Area between the Arctic coast and Back's River, 31,000 square miles or about equal to Ireland.

12. Area surrounded by Back's River, Great Slave Lake, Athabasca Lake, Hatchet and Reindeer lakes, Churchill River, and the west coast of Hudson Bay, 178,000 square miles. Much larger than Great Britain and Ireland, and somewhat larger than Sweden. The lakes and rivers shown in this great region depend entirely on the result of the three journeys made by Hearne in 1769-1772.\* Hearne really wandered through parts of this region in company with Indians whom he was unable to control, his ultimate object (which he at length accomplished) being to reach the Coppermine River, in order to ascertain for the Hudson Bay Company, whether it was possible to utilize the native copper found there. Not even roughly approximate accuracy can be assigned to his geographical work. Referring to the position of the mouth of the Coppermine, he writes:—"The latitude may be depended upon to within 20 miles at the utmost." In reality it afterwards proved to be 200 miles too far north. This country includes the great "barren grounds" of the continent, and is the principal winter resort of the musk ox as well as of great herds of caribou. Hearne's general characterization of it is not very encouraging, but certainly we shall know more about it. He writes:—"The land throughout the whole track of country is scarcely anything but one solid mass of rocks and stones, and in most parts very hilly, particularly to the westward, among the woods." The extreme north-eastern extremity of this region was also crossed by Lieut. Schwatka in the course of his remarkable journey to King-William Land, but his geographical results possess little value.†

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\*A Journey from Prince of Wales Fort, in Hudson Bay, to the Northern Ocean, 1796.

†Schwatka's Search by H. W. Gilder.

13. Area between Severn and Attawapishkat rivers and the coast of Hudson Bay, 22,000 square miles, or larger than Nova Scotia. Several lakes and rivers are shown upon the maps in this region in practically identical form since Arrowsmith's map of 1850, but I have been unable to ascertain the origin of the information.

14. Area between Trout Lake, Lac Seul and the Albany River, 15,000 square miles, or about half the size of Scotland.

15. Area to the south and east of James Bay, 35,000 square miles, which also may be compared to the area of Portugal. This region is the nearest of those which still remain unexplored to large centres of population. It is probable that much of it consists of low land which may afford merchantable timber.

16. Area comprising almost the entire interior of the Labrador peninsula or North-east Territory, 289,000 square miles. This is more than equal to twice the area of Great Britain and Ireland, with an added area equal to that of Newfoundland. Several lines of exploration and survey have been carried for a certain distance into the interior of this great peninsula, among which may be mentioned those of Professor Hind, Mr. A. P. Low and Mr. R. F. Holme.\* The limits of the unexplored area have been drawn so as to exclude all these. The area regarded as still unexplored has, however, it is true, been traversed in several directions at different times by officers of the Hudson Bay Company, particularly on routes leading from the vicinity of Mingan on the Gulf of St. Lawrence to the head of Hamilton Inlet, and thence to Ungava Bay. These routes have also, according to Mr. Holme, been travelled by a missionary, Père Lacasse; but the only published information which I have been able to find is contained in a book written by J. M'Lean,† and in a brief account of a journey by Rev. E. J. Peck.‡ Mr. M'Lean made several journeys and established trading posts between Ungava and Hamilton Inlet in the years 1838-1841, while Mr. Peck

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\*Explorations in Labrador, 1863, Annual Report Geol. Surv. Can., 1887-88, Part J. Proc. Royal Geog. Soc., 1888. Ott. Nat. Vol. IV.

†Notes of a twenty-five years' service in the Hudson's Bay Territory. London, 1849.

‡Church Missionary Intelligencer, June 1886. Proc. Roy. Geog. Soc., 1887, p. 192.

crossed from Little Whale River, on Hudson Bay, to Ungava in 1884. Something may be gathered as to the general nature of the country along certain lines, from the accounts given by these gentlemen, but there is little of a really satisfactory character, while neither has made any attempt to fix positions or delineate the features of the region on the map. In all probability this entire region consists of a rocky plateau or hilly tract of rounded archæan rocks, highest on the north-east side and to the south, and sloping gradually down to low land towards Ungava Bay. It is known to be more or less wooded, and in some places with timber of fair growth, but if it should be possessed of any real value, this may probably lie in its metalliferous deposits. In this tract of country particularly there is reason to hope that ores like those of Tilt Cove, in Newfoundland, or those of Sudbury, in Ontario, may occur.

To sum up briefly, in conclusion, what has been said as to the larger unexplored areas of Canada, it may be stated that while the entire area of the Dominion is computed at 3,470,257 square miles about 954,000 square miles of the continent, alone, exclusive of the inhospitable detached Arctic portions, is for all practical purposes entirely unknown. In this estimate the area of the unexplored country is reduced to a minimum by the mode of definition employed. Probably we should be much nearer the mark in assuming it as about one million square miles, or between one-third and one fourth of the whole. Till this great aggregate of unknown territory shall have been subjected to examination, or at least till it has been broken up and traversed in many directions by exploratory and survey lines, we must all feel that it stands as a certain reproach to our want of enterprise and of a justifiable curiosity. In order, however, to properly ascertain and make known the natural resources of the great tracts lying beyond the borders of civilization, such explorations and surveys as are undertaken must be of a truly scientific character. The explorer or surveyor must possess some knowledge of geology and botany, as well as such scientific training as may enable him to make intelligent and accurate observations of any natural features or phenomena with which he may come in contact. He must not consider that his duty consists merely in the perfunctory measuring of lines and the de-



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