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NOTES

ON

NORTH-WESTERN AMERICA.

BY

ALEXANDER CAULFIELD ANDERSON, J.P.

(Formerly of the Hudson's Bay Company.)

MONTREAL:

MITCHELL & WILSON, PRINTERS, 192 ST. PETER STREET.

1876.

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NOTES ON NORTH-WESTERN AMERICA.*

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WATERSHEDS.—The main continental watershed is of course the general line of the Rocky Mountains (tinted red), which continue through Alaska to the extreme point, near Cape Lisburne. There is, however, an exception to this general rule near the heads of Peace River, where the main chain is disrupted, and the waters originate in the Peak Range of Arrowsmith's Map, which range here forms an extraordinary loop with the main line. Both afterwards unite with the N.W. Coast Range, and continue as one, nearly as far as the 60th parallel, where a divergence again takes place, and the Southern Coast Range of Alaska originates.

The *Sierra Nevada*, the chief range of California, separates near the frontier of Oregon; the eastern branch, known as the Blue Mountains, dividing the waters of the main Columbia River from those of its great tributary, the Snake; the western, under the name of the Cascade Range, continuing north-westward into British Columbia, as far as the junction of the Thompson with the Fraser in $50^{\circ} 13'$, where it terminates. The Cascade Range is disrupted at a point between Mounts Hood and St. Helens; the Columbia River then breaking through and forming a strong rapid known as the "Cascades," whence the name given to the range. This name, however, originates not from any peculiarity in the rapid itself, but from several lofty waterfalls, formed by streamlets pouring down the perpendicular face of the disrupted mountain in the immediate vicinity. The height of the passes in this range varies from 3,000 to 5,000 feet; the peaks sometimes rising to an altitude of 15,000. Mount Rainier, the most lofty of the northern portion, has an elevation of 12,360 feet. Most if not all of these summits are volcanoes, either extinct or in partial eruption at distant intervals. It may here be mentioned that the term "Cascade Range," through a total misapprehension of the leading features of the country, has of late years been extended

* Descriptive matter intended to accompany a "Skeleton Map of North-West America," prepared by Mr. Anderson to send to the Philadelphia International Exhibition of 1876.

so as to include also the North-West Coast Range, from which the true Cascade Range is geographically quite distinct. Hence much confusion has arisen. Against this perversion I have always protested; and now once more endeavour to restore the distinction before most properly made by the original explorers, and established on their maps.

The *North-West Coast Range* (tinted yellow), just referred to, originates opposite to Langley near the mouth of Fraser River, and continues north-westward, nearly parallel with the coast, till it is merged in the Rocky Mountains between 56° and 57° —thus forming the whole western watershed of Fraser River, as the northern part of the Cascade Range, with its offset connected with the Rocky Mountain Columbian spur, does the eastern. The contour of this range, especially on the coast-ward side, is extremely broken and irregular; its rugged spurs forming the sub-divisions between the numerous arms with which the north-west coast is indented. As we advance northward, however, the summit itself is not of a broken nature; but exhibits a vast plateau, yielding lichens and other congenial vegetation, together with a stunted growth of pines in parts. This portion of the range is the resort of innumerable Rein-deer of the mountain variety, and abounds also with Ptarmigan. Its elevation opposite to Bentinck Arm, between lat. 52° and 53° , is 4,360 feet, and at the head of Bute Inlet Pass, where the characteristics are somewhat different, 3,117 feet; but there are other points where depressions occur, as for instance between Stuart and Babine Lakes, where the altitude does not probably much exceed 2,000 feet above the sea level. The highest summits rise in places to about 10,000 feet; but amid the general ruggedness of contour there are no strikingly conspicuous peaks as on the Cascade Range.

Diverging from the Rocky Mountains near the 49th parallel is the ridge forming the *Southern and Eastern Watershed of Hudson's Bay*.—Under the varying cognominations of Coteau de la Missouri, Coteau des Prairies, &c., this watershed, passing the heads of the Red River, continues beyond the area of the map, forms the northern and western boundaries of the Provinces of Ontario and Quebec, and, dividing Labrador, terminates at Hudson's Strait, opposite to Southampton Island, shown on the map. The average elevation of the Prairie portion of this ridge, as given by Mr. G. M. Dawson, is 2,000 feet. The western and

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northern portions of this vast watershed are the Rocky Mountains as far as the head of the North Saskatchewan and the line as shown. From this portion of the watershed, in about lat. 64° , the range forming the Arctic watershed diverges, terminating at the mouth of the Mackenzie.

ALASKA.—The Kwitchook or Yukon is the principal stream of this extensive region—a river of very considerable magnitude. The Hudson's Bay Company have long had posts on the upper waters of this stream, within the British territory; but it is chiefly from the reports of the party sent for exploration in connection with the projected telegraph through Siberia that our knowledge of the lower portion is derived. Thence it appears that the river is navigable for steamers for 1,000 miles or more; that the ice breaks up about the 23rd of May, and that navigation is practicable about the 25th. The length of the Yukon, including its windings, I compute to be about 1,600 English miles. The volume of water ejected by it, according to the accounts received, is probably not less than that emitted by the Mackenzie; but the area drained by it and its tributaries (about 229,000 square miles) is very much smaller. Hence it may be inferred that the snow-fall in the mountains of Alaska is proportionately heavy, a result readily conceivable from its geographical position—directly interceptive of the vapour-drift from the Pacific. The upper portions of the Yukon and its tributaries, the Porcupine and other streams, are well wooded, and abound with animals yielding furs of a quality peculiarly fine. Moose-deer are numerous along the rivers and in the lower elevations. In the more precipitous ridges of the mountains the Wild Goat is found; on the sloping spurs the Mountain Sheep or Bighorn. Rein-deer are numerous; the larger variety frequenting the interior parts, the smaller, or Barren-ground Rein-deer the coastward tracts. Fish of various kinds are numerous in the waters; and among these, two varieties, at least, of Salmon periodically ascend from the sea. The larger of these (*Salmo dermatinus*, of Richardson) attains a weight of from forty to fifty pounds; the smaller (*S. consuetus*) from twenty to twenty-five pounds. The natives of the interior of Alaska, distinguished as the Koochin tribes, are a branch of the great *Dinee* (or "*Tinneh*") family, the general boundaries of which are indicated by a line (red and blue) on the map. The Koochins have the character of being industrious, and are in many respects a somewhat superior race. They are

divided into some twenty or more different septs, each bearing a specific cognomen with the general affix "Koochin," meaning I believe "people." Approaching the coast the country assumes the generally desolate aspect of the Arctic Ocean confines, and the Esquimaux occupy the immediate sea-board. It is probable that with time mineral deposits of various kinds may be developed in Alaska. So far copper is known to exist in parts; and during the past summer some gold-seekers have been working upon streams falling into Cook's Inlet, the daily yield of whose labours is reported to have been moderately productive, averaging from \$4.00 to \$5.00 per man. Fossil ivory, as on the Siberian shore, is known to exist in the northern part of Alaska, adjoining Behring's Strait.* The name Alaska I believe to be a modification of the term for this coast employed by the natives of Kamtchatka; who, according to Benyowski (Voyages et Mémoires, &c. Paris 1791) distinguished the main shore of America as Alacsina (or Alacsa), the termination being apparently an affix. The Point "Le Grande Alacsina" mentioned at page 413 of vol I, I identify with what is now known as Cape Prince of Wales.

MACKENZIE RIVER.—This river, with its tributaries, drains an area of about 520,000 square miles, or more than double that drained by the Yukon. Its length from the mouth on the Arctic Ocean to its remote heads in the Rocky Mountains, by the line of Peace River, and including windings, is little, if at all, short of 2,000 miles. Unlike the Yukon, there are several lakes of very large dimensions connected with it. The lower part of the Mackenzie shares the generally barren and inhospitable nature of the Arctic coast; and there is little vegetation beyond a few stunted willows, the cranberry, the widely distributed "Labrador Tea" (*Ledum palustre*) and other products of a congenial class. Yet even amid this scene of desolation, Mackenzie noticed, in July, tracts of luxuriant grasses mingled with gay flowers, covering the ice-bound soil; just as navigators have noticed the same seeming anomaly in Kotzebue Sound and elsewhere along the Strait of Behring. Rein-deer are the only species of the family found here; Foxes of several varieties, including the white (*Vulpes Lagopus*) occur; also the Marmot, the Bear,

* Kotzebue, in 1816, when landed on Chamissa Island in Kotzebue Sound, discovered the remains of *Elephas primigenius*, apparently portions of a large deposit, imbedded in the land ice.

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&c. In addition to the many kinds of migratory water-fowl that resort to these localities to breed, the white Grouse or Ptarmigan (*Lagopus albus*) appears abundantly as a permanent resident, as indeed along the whole Arctic watershed and the shores of Hudson's Bay. The White-fish (*Coregonus*), several varieties of Carp, Trout, and other fish, including the Inconnu (probably grayling, *Thymallus signifer*, of Richardson?), are common to the stream and its tributaries. The Pike also is found, but no Salmon ascend this river; which in this respect forms probably the solitary exception among all the larger streams from California upwards to this point. For the deficiency of this valuable fish there is no apparent cause; nor does there seem to exist any reason why it should not be artificially introduced at some future day. Higher up, as we approach the discharge of the Great Bear Lake, the evidences of an improving climate appear. The Service-berry (*Amelanchier*), the Wild Gooseberry and other fruits are common; the country throughout is well timbered, chiefly with varieties of fir and pine; and a greater variety of beasts of the chase, including the Moose, the Beaver, &c., appear. Little has been ascertained of the mineral characteristics of the lower Mackenzie; but Sir Alex. Mackenzie, whose name it bears, mentions a seam of coal (or lignite?) which was on fire when he passed in 1789; and which was noticed by Dr. Richardson, still in a state of ignition, as late as the year 1848. Upon the heads of the Rivière aux Liards, an extensive tributary joining from the southward, productive gold-beds have been wrought for the last three years; and here, within the limits of British Columbia, under the name of "Cassiare," a settlement has been formed in connexion with this alluring, if precarious, industry. This river, it may be mentioned, derives its name from the profusion along the banks of its lower portion, of the Cotton-wood Poplar (Liard = *Populus balsamifera*.) It is needless to add that in the mouths of the many, the name has already been wonderfully transformed.

PEACE RIVER.—The lower portion of this tributary of the Mackenzie, after its junction with the Athabasca, where it is upwards of a mile in breadth, is known as the Slave River; a name originating with the Cree Indians, who applied the designation (*Awâh-can*, or slave) in derision of the lower Chipewyans, who were formerly treated by them as enemies, and whom they had driven from their lands. Towards the end of the last

century a general pacification of the hitherto hostile tribes took place, a treaty of amity having been concluded at the spot since known as Peace Point. Hence the name of La Rivière a la Paix, now translated into "Peace River," given to the stream by the first explorers. Its original name, however, is Unjigah, the signification of which, if haply it have a signification, I have never been able to ascertain. The whole extent of country through which this noble river flows, from the point where it breaks through the Rocky Mountains (*vide supra*) to its junction with the Athabasca, is very attractive, and a vast area for future settlement is presented. The want of space will prevent my dwelling on the charming features exhibited by this beautiful region; and I merely remark that its general characteristic is that of extensive plains, stretching on either side clear up to the foot-hills of the Rocky Mountains and their several spurs, and amid which groups of aspens, &c., are picturesquely interspersed. With reference to the climate of this portion of the country, the mere consideration of latitude would, if entertained, mislead the uninformed enquirer very gravely. A glance at the isothermal lines will show that leaving the Atlantic coast they trend abruptly northward till they reach the vicinity of the Rocky Mountains; and finally the actual difference of the mean temperature as between positions on the Atlantic and the Pacific, may be stated in approximate terms as about ten degrees Fahrenheit in favour of the latter. Hence the denizens of the Peace River country and the Saskatchewan enjoy a climate far more genial than might be supposed. The confined space at my disposal prevents my entering upon any prolonged discussion of this interesting theme, to which, however, I may again incidentally refer. I content myself by remarking that the snow, in most parts, seldom accumulates to a greater depth than eighteen inches on the levels, the warm south-west winds, of frequent recurrence during the winter, at once diminishing it, or at times removing it almost entirely from all the lower land. The river opens about the 25th of April, and is closed for navigation at the beginning of November. I shall here, however, avail myself of the valuable notes of Professor J. C. Macoun, drawn from the railway reports and other sources. At Fort Vermilion on the 6th of August (1875), lat 56°. 42', barley ripe and cut, and on the 12th wheat and oats fit for reaping. At Fort McMurray at the forks of the Athabasca, an excellent garden

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containing many kinds of vegetables, including fine cucumbers. At Isle à la Crosse (English River) potatoes still in the ground on the 22nd September, there not having been any frost up to that date. Mr. Selwyn, Director of the Canadian Geological Survey, is reported to have brought down samples which will doubtless appear at the Centennial Exhibition; viz.: Spring wheat from Fort Chipewyan (Athabasca Lake), lat. 58° 45', weighing sixty-eight pounds to the bushel—sown May 22nd, reaped in August. Barley from the same place weighing fifty-eight pounds to the bushel; and oats from Fort St. John on the Peace River, on the verge of the Rocky Mountains. The leading vegetable forms observed by Mr. Macoun in the Prairie section around Dunvegan, are as under:—

Anemone Virginiana.	Oxytropis splendens.
“ patens.	Elæagnus argentea (Silver-berry.)
Geum triflorum (Bennet.)	Vicia Americana (Vetch).
Potentilla arguta.	Artemisia frigida.
“ Pennsylvanica.	“ discolor.
Amelanchier Canadensis, (Service berry.)	Bromus Kalmii.
Achillea millefolium, (Yarrow or Millefoil).	Triticum repens, &c.
Rumex blanda.	Aira cæspitosa.
Hedysarum boreale.	Lathyrus ochroleucus.
Solidago (Golden Rod), two species.	Poa serotina.
Aster multiflorus.	Stipa Richardsonii.
“ lævis.	“ membranacea.
Orthocarpus luteus.	Trisetum subspicatum.
Troximon glaucum.	Calamagrostis Canadensis.
	“ stricta.

Mr. Macoun adds that every plant on this list grows also at Edmonton, on the Saskatchewan, and all grow where wheat will come to perfection. But nothing, perhaps, can more satisfactorily prove the true prairie character of the country than the fact mentioned by Mr. Macoun, that at Dunvegan he found growing the Disc-leaved Cactus (*Opuntia Missouriensis*) which is always indicative of a dry locality with a considerable degree of mean annual heat. The whole of this region once abounded with herds of Bison, as still do parts of the Saskatchewan; but the remnants are now found only in remote places on the outskirts of the Rocky Mountains. Other beasts of the chase, such as the Red-deer and the Moose, are still numerous; while in the mountainous parts the Rein-deer, the Goat, the Mountain Sheep, the ordinary varieties of the Bear (black, brown and grizzly), &c., abound.

ATHABASCA RIVER.—This is reached on crossing the divide (indicated on the map) between it and Peace River. The summit of this divide, composed of a swampy plateau with a vegetation of corresponding nature, does not probably exceed 2,000 feet in height—that of Lesser Slave Lake, on the one hand, and Dunvegan on the other, being estimated, the former at 1,800, the latter at 1,000 feet above the sea-level. The banks of the Athabasca River generally less inviting in appearance than those of the Peace. The lower portions, however, present many attractive features; and the climate, as indicated by the extract given above, is encouraging for agriculture. The borders upwards, are for the most part thickly wooded with the Spruce and *Cyprés* (*Pinus Banksiana*) interspersed with the Balsam Poplar, the White Birch, and other deciduous trees. Animals of the various kinds mentioned abound throughout in their fitting localities, while fish of the finest description are yielded by the lakes. Athabasca Lake, it may be here mentioned, is noted for the innumerable flocks of water-fowl which resort thither as a favorite breeding place, and which at the proper seasons yield store of food to the inhabitants. The mineral riches of the tract drained by these large rivers are varied; at the head of the Peace, on the borders of the Peak Range, there are extensive gold diggings, known as Omineca, which are moderately productive, though now partially abandoned for richer fields. Coal, reported to be of good quality, is found at several points upon the Athabasca; while favourable indications appear upon the Peace. Bituminous pits exist in several places along the lower Athabasca; yielding an apparently inexhaustible supply of pure mineral tar. The product of some of these, duly prepared by boiling, &c., has long been used for pitching the boats employed for transport. Smoky River, falling into the Peace above Dunvegan, has its name from beds of coal or lignite, which were on fire when Europeans first visited the country, if indeed yet extinct. Mineral Salt is found between Athabasca and Great Slave Lakes. Near the mouth of the "Salt River" it appears in the form of a thick incrustation on the borders of the springs, and requires merely to be shovelled into bags. The salt thus procured has from the first been the sole resource of the European residents, and is of an excellent quality for all domestic purposes.

The Barren Grounds may be defined as extending from the watershed immediately north of Churchill River to the

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Mackenzie, along the slopes towards Hudson's Bay and the Arctic Ocean. As shown in a previous note, referring to Isle à la Crosse, the soil and climate along the upper portion of the former stream are sufficiently favourable for agriculture; but lower down, and proceeding northward and westward, the whole region is extremely desolate and inhospitable. This, as shown on the map, is occupied by a portion of the great Chipewyan or Tinneh tribe, who regard it as the cradle of their race, whence they claim to have spread in other directions. Little description of this desolate region is necessary, beyond that information which the general reader will already have acquired from other sources. A few stunted shrubs of the hardest kinds—dwarf birch, willows and the like—scantly clothe the more favoured spots along the water-courses; while elsewhere various lichens, the peculiar food of the Rein-deer, interspersed with stones and stagnant water-pools, alone characterize the dreary scene. Yet amid these unattractive wilds the natives obtain an abundant, if at times precarious, subsistence, by fishing and the chase. Rein-deer (of the smaller variety) are extremely numerous during the period of their northern migration, commencing in March; and the Musk-Ox (*Ovibos Moschatus*) finds in these solitudes a congenial and perennial field. On the immediate sea-frontier the Polar Bear appears; but no other of the larger quadrupeds than those enumerated I believe is found. The Beaver, common to nearly every portion of North America, shuns a scene where all its industry would fail to procure its living; and it is not till the hunters reach the line of about the 65th parallel that they are able to procure the fur of this animal for the purposes of barter. The Ptarmigan is found in abundance, as also the White Fox; with Wolves, some of which are white, and in parts the Arctic Hare (*Lepus variabilis*). Most of the lakes are well stocked with White-fish and other kinds; and probably Salmon, of some of the numerous varieties, ascend all the larger rivers between the Churchill and the Mackenzie, in neither of which do they appear. A variety called the "Copper Mine River Salmon" (*Salmo Hearnii* of Richardson) is known to ascend the river of that name; and the native name of the Back River—*Thleu-e-chodezeth* (or *tesse*)—lead some to infer that that also is frequented either by this or some other variety. (*Thleu-e-cho*, literally "big-fish," employed by the *Tâh-cully* of the upper Fraser to designate the sturgeon, is on the Mackenzie applied to the salmon of the

Yukon). Of the minerals in this quarter little can be said ; but from the name of one of the rivers before mentioned, and from report, we may be justified in believing that rich deposits of copper, at least, exist. The Esquimaux occupy the whole sea-board, as indicated on the map.

The Portage à la Loche, or Methy Portage, (Methy = Loche = Fresh Water Cod = *Gadus barbatula* ?) is on the dividing ridge between the waters flowing to Hudson's Bay by the valley of the Missinipi, and those tributary to the Mackenzie through the Athabasca. The summit of this portage, which is elevated very considerably above the general level, has an altitude above the sea, as given by Mr. G. M. Dawson on the authority of Dr. Richardson, of 1566 feet ; but this estimate strikes me as somewhat underrated. The length of the portage is thirteen miles, over a level sandy plateau, stony in parts, and wooded with the Banksian Pine, the Spruce, and other trees. The northern side is a steep escarpment, descending by eight successive stages, all more or less precipitous, to the borders of the Clear-water, which flows by a course of some eighty miles, through a charming valley of mingled plain and forest, to the Athabaska, the breadth of the united stream being about three-fourths of a mile at the point of the union, called "The Forks." It is by this route, and the Portage de la Traite on the opposite side of the Missinipi Valley, that the transport is effected between Athabasca and Lake Winnipeg via the Saskatchewan. This last portage has its name from the circumstance that Mr. Frobisher, the pioneer trader from Canada, here intercepted a large party of Indians on their way to Churchill in 1774, and secured their hunts. By the Crees this portage, from an old tradition, is called *Athikesi-pichégan* Portage—i. e. Portage of the Stretched Frog-Skin. Hence, I presume, the name applied to it in some recent maps "Frog Portage"—but it is better known by the name given above.

SASKATCHEWAN.—The general features of the tract drained by this river and the other tributaries to Lake Winnipeg are so well known that any attempt at description would be superfluous. The total area so drained, and discharged through the Nelson River, I compute at 376,000 English square miles : the length, including windings, from the mouth of the Nelson to the heads of the Saskatchewan, about 1,500 miles, as will be perceived by the map. The descent for a certain distance from Lake Winnipeg towards the

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sea, by the series of lakes terminating in Split Lake, is necessarily very gradual; thence, consequently, to its mouth the Nelson rushes with great impetuosity. It is owing to the series of rapids thus formed that the navigation of the lower parts is avoided; and the ordinary boat route from York Factory to Lake Winnipeg is through Hayes' River and its connected waters, and over the divide by portage, striking the waters of Lake Winnipeg below Norway House. Thence to Edmonton on the Saskatchewan there are no impediments to the navigation of any moment, save the Coles' Rapids, near the confluence of the north and south branches, some twelve miles in length, which are navigable with care and skill, and the Grand Rapid near the mouth, where the river bursts through the ridge of limestone which forms the north-western boundary of Lake Winnipeg. The Saskatchewan becomes free from ice about the same time as the Peace River; but the navigation from Edmonton is rarely attempted before the middle of May, when the waters have usually risen enough to float the loaded bateaux over the frequent shoals. Much of what has been said of the Peace River might be repeated of this region. The vegetation has the same general characteristics, and the climate is not dissimilar. Of minerals it may be remarked that coal has been discovered in thick seams in the vicinity of Edmonton; and Mr. Selwyn is of opinion that, by boring, the seams may be struck at a small depth at various points, at least as low as Carlton near the confluence of the two branches. I may here incidentally mention that both at Edmonton and at Carlton the development of *goître* in the permanent residents is not uncommon. At the last mentioned post I have seen a whole family thus afflicted—the children exhibiting the marks of advanced cretinism. I am induced to think that the constant use of the river water, which is extremely turbid for the greater part of the year, without filtering or other preparation, is the proximate cause of this affliction, which does not attack the roving population, who are not confined to the use of the river water. The digging of wells, in such case, suggests the obvious remedy. I may add that I arrive at the conclusion stated the more readily, because that on Peace River, where the evil is also manifested in less marked degree, I have known a family who had partially contracted the disease during a long residence at Fort Vermilion, to entirely recover after a comparatively short residence at McLeod's Lake, at the head of Peace

River, where the waters are pure and limpid. There may, however, be deeper latent causes; but I suggest these which appear to me the more obvious. Yet even under this view there is a difficulty; for on Fraser River, where a similar condition of the water might be argued to produce a similar effect, no case of the kind has ever appeared. The Saskatchewan, like the Mackenzie, the Churchill, and I believe all the rivers falling into Hudson's Bay, is destitute of Salmon.

THE WEST SIDE OF THE ROCKY MOUNTAINS.—This region must be noticed very briefly. The lengths of the Fraser flowing entirely, and of the Columbia partially, within the limits of British Columbia, are respectively, including windings, the former about 800, the latter 1,200 miles; the approximate areas of drainage being, by the Fraser 66,400, by the Columbia 215,900 square English miles. Immediately on crossing the Rocky Mountains by the heads of the latter river, after the autumn frosts have already invaded the eastern side, a great improvement in the temperature is perceptible, while all the external evidences of a warmer climate appear. Descending the Grande Côte, within twenty miles of the summit, huge trees of the "Red Cedar" (*Thuja gigantea* of Nuttall) are for the first time seen; and lower down the timber and other vegetation are also different. About Colville the Columbian Red Pine (*Pinus ponderosa*) and the Larch (*Larix occidentalis*) of large dimensions are seen—the latter confined apparently to the vicinity of the 49th parallel, the former extending north-westward nearly to the great divide beyond the Thompson, and westward to the head of Anderson Lake near the Coast Range. About one hundred miles below Colville the borders of the great Columbia Desert are reached; extending thence, with occasional oases, as far as the Dalles of the Wascopum; and by the Snake River finally meeting with the deserts of the Youtah. *Artemisia*, the Cactus, and other congenial plants, characterise the whole of this arid tract; while the more favoured spots, near the water-courses, yield abundant pasture of rich Bunch-grass, and are extremely fertile. At one point upon the Okinâgan River, this arid waste extends for a short distance into British Columbia; and I do not question that, acting as a great reservoir of heat, the vast expanse exercises a marked influence on the temperature of the whole vicinity; and to the extension of this influence, partly, in conjunction with the warm winds from the Pacific, I ascribe

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the general mildness of the climate upon the Peace River. On the lower Columbia, and through Oregon to California, the country is too well known for its fertility and resources to require comment.

British Columbia.—In British Columbia proper, the general features may be thus briefly summed up. Westward of the North-West Coast Range the whole tract is excessively mountainous, and penetrated by numerous inlets of the ocean. Eastward of the Coast Range (besides the intervening portion of the Cascade Mountains in the southern part), numerous ridges of moderate elevation appear, between which are broad valleys of great fertility, abounding with rich pasture, and partaking generally of the prairie character. The upper portion is more densely wooded, with fertile openings at intervals. The lower portions, along the line of the Fraser, with a generally dense growth of gigantic timber, present openings in parts of great fertility. The whole of the north-west coast, with a portion of Vancouver Island, is richly clothed with valuable timber of stupendous growth. In minerals the whole province is extremely rich. Nearly all the eastern coast of Vancouver Island abounds with coal; the most southern portion yet discovered being at Saanich near Victoria, where there is an apparently rich seam. The coal is esteemed of excellent quality, the chief export at present being from Nanaimo and its vicinity; and though some mines are wrought upon the neighbouring mainland, bordering on Puget Sound, the product does not command an equal price in San Francisco, nor is it apparently in demand. Iron ore, of the finest quality and easily accessible, with limestone for smelting purposes in the vicinity, exists in inexhaustible quantity on Texada Island near Nanaimo. Gold is found at the well known "Caribou Mines"; at the "Omineca" (i.e. "Mountain Whortleberry") diggings at the head of Peace River; at the head of the Dease tributary of the Rivière aux Liards, called "Cassiare" from the name of the reputed discoverer; on the upper waters of the Columbia near the Big Bend; on the Koutanais and elsewhere both on the mainland and Vancouver Island*. Silver, not yet productively worked, exists in various parts of the Pro-

* The total yield of gold, however, from British Columbia in 1875 did not probably exceed three millions of dollars, of which about five-sixths only passed directly through the Banks.

vince, and especially at Cherry Creek near the head of the Okinagan Lake, and at a point near Hope on the Lower Fraser. Copper is generally distributed along the north-west coast, in some parts very abundantly; but so far has not been effectually wrought. A very rich deposit of galena, yielding a moderate percentage of silver, exists on the Flat-bow Lake (Koutanais), but the position is too remote and inaccessible for its profitable working. The Islands of Queen Charlotte, from what is already known, will probably be found extremely rich in all the metals mentioned, iron perhaps excepted. A seam of Anthracite coal of excellent quality was for a time worked there; but for some reason has been abandoned.*

Prominent Vegetation in this Section.—(1.) Along the north-west coast: Douglas Fir (*A. Douglassii*, Lindl.); Spruce Fir (*A. Menziesii*); Hemlock Fir (*A. Canadensis* or *Mertensiana* ?); "Red Cedar" (*Thuja gigantea*, Nutt.); "Yellow Cedar" or Cypress (*Cupressus thyoides*, Doug.) &c.: all of gigantic growth. Undergrowth: various shrubby *Vaccinia*; the "Sallal" (*Gualtheria shallon*); varieties of *Rubus*, *Ribes*, &c. In rare positions low specimens of Mountain Ash (*Sorbus aucuparia*) and Service-berry (*Amelanchier*).

(2.) Along the vicinity of the 49th parallel as far as the Rocky Mountains. I here adopt the list of Dr. Lyall of the British Boundary Commission, reported in the proceedings of the Linnæan Society (Botany, vol. VII.) including my own occasional and purely unprofessional notes in brackets, thus [].

(a). In the vicinity of Victoria and Esquimault, Vancouver Island:—*Pinus contorta*, Doug.; *Taxus baccata* [*brevifolia*, Doug.]; *Abies Douglasii*, Lindl.; *A. Menziesii*, Lamb; *Thuja gigantea*, Nutt.; *Cerasus mollis*, Doug.; *Arbutus Menziesii*, Pursh [*laurifolia*, Doug. ?]; *Quercus Garryana*, Doug. [In a pamphlet recently sent to me by Dr. Robert Brown (Campster), of Edinburgh, he describes a second variety of Oak nearly allied to that mentioned, which, after Sir James Douglas, K.C.B., the late Governor, he calls *Q. Jacobi*. I may here mention that the oak, which is common in the north-east parts of Van-

* To the vast mineral riches of certain Territories south of the Boundary Line, I make no allusion, regarding these as entirely beyond my ken.

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couver and the adjacent Islands, is not found in any part of the mainland of British Columbia.* The Oak (*Q. Garryana*) is common on the lower parts of the Columbia River somewhat remote from the ocean; ceasing abruptly at the Dalles of the Wasco-pum, above which there are none]. Species of *Acer*, *Betula*, *Alnus* and *Salix* are plentiful. Among the common shrubs are *Mahonia*, *Ceanothus*, *Nuttalia*, *Spiræa*, *Rosa*, *Ribes*, *Vaccinium*, *Salix*, *Gaultheria*, &c. Among the most conspicuous flowering plants in the early part of the season are several species of *Ranunculus*, of *Claytonia*, of *Potentilla*, and *Saxifraga*; *Plectritis congesta*, *Collonia gracilis*, *Collinsia violacea*, *Dodecatheon Meadia*, species of *Fritillaria* and *Trillium*, *Camassia esculenta* (*Scilla esculenta*, of Douglas). &c.

(b.) Along the lower Fraser: the several firs mentioned as found on the north-west coast, with also *Thuja gigantea* [but not *Cupressus thyoides*, which is peculiar to the coast vicinity, north of 49°, extending far into Alaska.] The circumference of a Douglas fir measured by Dr. Lyall was nearly thirty feet at five feet from the ground, and the length of a fallen tree measured, 250 feet, but neither an extraordinary specimen. [The height frequently exceeds 300 feet.]* Circumference of a *Thuja* measured 26 feet 9 inches, at six feet from the ground; estimated height 250 feet [frequently exceeds this]. Interspersed among the trees mentioned are specimens of *Acer macrophyllum*, Pursh [*Platanus acerifolia*, of Douglas?] sometimes attaining a height estimated at 150 feet—circumference of one measured twenty feet. Along with these the Vine-leaved Maple, *Acer circinatum*, Pursh; Dog wood (*Cornus Nuttallii*); *Alnus viridis*, &c.; *Betula occidentalis*, Hooker, and *Populus balsamifera* of large size. [To these I may add that the White Pine (*P. strobus*), of magnificent dimensions, is common towards the summits of the southern portion of the Coast Range, and is found also, but of smaller size and more rarely, in the mountains of Vancouver Island. I have also noticed it in abundance and of fine size on the Cascade Range, about the skirts of Mount Rainier]. The under-shrubs consist chiefly of the fol-

* I noticed about a score of small trees in the portages above Yale on the Fraser River, as far back as 1847; but it is questionable if any one of these now remains.

lowing: *Mahonia*, two species, *Acer glabrum*; *Spiræa*, several species; "Sallal" (*Gaultheria shallon*, of Pursh); *Rubus* and *Ribes*, several species; *Lonicera*, two species; *Viburnum opulus*; *Vaccinium*, several species; *Panax horridus*. [By this last I conceive to be meant the *Bois piquant*, or "Prickly ash," a species of *Aralia* (?) Common in the damp vallies of the north-west coast, and re-appearing near the heads of Peace River and elsewhere along the verge of the Rocky Mountains.]

(c). On the Cascade Range: *Abies amabilis*, Dougl. [also found on the lower lands]; *A. grandis*; *Picea nobilis*, Don. [balsamea, Dougl. ?], &c. [In this section are also noticeable a fine red-flowering *Rhododendron (macrophyllum* of Don.); two varieties of *Menziesia* (often mistaken for Heath); and among the numerous cyperaceous plants and Equisetæ the American Hellebore (*Veratrum viride*) is very common.]

(d). [Approaching the Columbia River: As the valleys assume the Prairie character *Pinus ponderosa* and *Larix occidentalis* become common, as already mentioned (Supra). Dr. Lyall remarks: "The vegetation here is of a very different character "from that on the other side of the Cascade Mountains, and "bears indications of much drier climate. A good many of the "plants found in this region are strictly local in their distribution. Some of the orders such as *Ranunculaceæ*, *Vacciniaceæ*, "*Liliaceæ*, &c., of which species are so plentiful in the first "region, have here comparatively few representatives; whilst "others, such as *Leguminosæ*, *Onagraceæ*, *Polemoniaceæ*, &c. "are more common in this district and give a character to the "vegetation."

I may mention cursorily that the Dwarf Sunflower (*Helianthus petiolaris*, Nutt.), here very common and characteristic, extends into British Columbia, as far nearly as Alexandria, the natives gathering its seed, and also preparing its root for food. The Flat-leaved Cactus, (*Opuntia Missouriensis*) too, extends to a point some miles above Alexandria, and downwards along the Fraser as far back as the Forks of the Thompson. It is also found in small patches on dry knolls on certain islands in the Gulf of Georgia; but not elsewhere in the northern section except, as before mentioned, on Peace River, near Dunvegan, where it was noticed by Mr. Macoun.]

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DISTRIBUTION OF THE MORE PROMINENT QUADRUPEDS, &c.
 —Bison (*Bos Americanus*) — plains of the Missouri, and of the Saskatchewan as low down as Carlton. Formerly abounded on the Peace River plains, but now rare and confined to the outskirts. Not found in British Columbia, save perhaps casually in parts of the Rocky Mountain frontier, nor on the Columbia River. Formerly used to descend the Snake River as far as Boisé River, and sometimes even lower. Will soon be all destroyed I fear. Caribou or Rein-deer (*Cervus tarandus*); the larger variety or "Rocky Mountain Rein-deer"; found in all the mountainous parts of the interior down to a certain latitude. Along the Rocky Mountains this limit I judge to be about lat. 49°; on the North-West Coast Range probably about 51°. The smaller variety, classed by Richardson as the Rein-deer of the Barren Grounds, is confined to the Arctic watershed during its northward migration (March to the beginning of November); frequenting the country around Hudson's Bay, &c., during the remainder of the year. The Moose or Elk (*C. alces*) is found generally throughout the northern parts of the country, except the Barren Grounds, and the immediate sea-board of Hudson's Bay, &c.; on the Pacific watershed along the verge of the Rocky Mountains as low as about 49°; on the upper Fraser, and as low down sometimes, but very rarely, as Fort George. The Chevreuil or Virginian deer is found along the Saskatchewan, but not in the mountainous parts, nor on the north-west coast, where the "Black Tail," (*C. macrotis*) is abundant. The last is not found on the Fraser higher than Fort George. The Red-deer or Biche (generally, but of course erroneously called "the Elk") is found in large herds over a wide extent of country. A large variety of *C. Elaphus*, it is classed as *C. Canadensis*, or the Wapiti. It is common along the Saskatchewan, Peace River, &c., and was so formerly upon the middle Fraser, but is now rarely, if ever, seen there. On Vancouver Island and the adjacent mainland very numerous. It is questionable whether there be any specific difference between these and those of the prairies. Bears, Black and Brown, (*Ursus Americanus*); generally throughout the country, except the immediate Arctic shores, where the Polar Bear appears. Grizzly Bear (*U. ferox*); plains of the Saskatchewan, &c., southwards; along the Rocky Mountains and in most parts of British Columbia, except Vancouver Island, and the north-west coast. Musk

Ox (*Ovibos Moschatus*); barren grounds of the Arctic Ocean. Probably frequents a portion of the Arctic slope of Alaska. Not found elsewhere. Lynx of two varieties, the spotted and the grey; the former confined to the lower country, the latter to the interior. Raccoon (*Procyon lotor*); east of the Rocky Mountains, as far north as Manitoba; west-coast as high up as about 51°. Mountain Goat (*Aplocerus montanus*); Precipitous parts of the Rocky Mountains, coast range, &c., and north-west coast; not found east of the Mackenzie.* Mountain Sheep or Big-horn (*Ovis Montana*); along the slopes of the Rocky Mountains and their offsets. Marmot (*Arctomys*); several species, including the Rocky Mountain variety or "Siffleur" (*A. pruinosus*, Rich'n.) found in the Rocky Mountains, the Cascade Range and North-West Coast Range. A black variety appears to be found about the heads of the Rivière aux Liards, which I have not noticed elsewhere. Foxes, Red, Black, Cross, &c., are very generally found except on the north-west coast, which, owing probably to the humidity of the climate, they do not appear to frequent. The Arctic or White Fox (*Vulpes lagopus*) is confined to the Arctic regions and the shores of Hudson's Bay. [The Arctic Hare (*Lepus variabilis*) appears throughout the interior of the mainland, north of 49°, in moderately elevated positions; periodically in excessive numbers. A large variety, more resembling the European Hare, frequents the arid plains of the Columbia, &c.] The Marten (*Mustela martes*, Rich'n.), the Pekan or Fisher, and others of the same family, throughout the woodland regions. The Common Beaver (*Fiber Americanus*) and the Musquash (*Fiber zibethicus*, Rich'n) generally distributed, except in the Barren Grounds and other similar Arctic positions. The Carcajou or Wolverine, (*Gulo luscus*, Cuv.): very generally north of 49°. Wolves of divers varieties, Grey, Black, &c., generally throughout; a pure white variety being found on the "Barren Grounds." The Common Otter (*Lutra Canadensis*) throughout. The Sea Otter (*Enhydra marina*) is found only on the Pacific Coast, from California up to the Kodiak, &c., in which tract the Hair Seal and a large variety of other *Phocidæ*, are also common; especially in Alaska, where the chase of the Fur-Seal has long been systematically regulated.

* These are the animals described to Mackenzie by the Indians as "White Buffaloes."

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BIRDS.—Exclusively of innumerable migratory birds, from the Swan and the Eagle down to the Humming Bird (the last confined to the Pacific slope, where it is found as high, at least, as $54^{\circ} 26'$, and doubtless beyond), the following permanent residents of utility may be noticed: Ruffed Grouse (*Bonasa umbellus*, Linn.); almost everywhere near streams, &c. Dusky Grouse (*Tetrus obscurus*, Say), dry stony ridges, Vancouver Island, and mainland interior north of about 49° on western slope, as high as the vicinity of Alexandria. Spotted Grouse or "Spruce Partridge" (*T. Canadensis*, Linn.); dry uplands within certain limits on both sides of the Rocky Mountains. White Grouse or Ptarmigan (*Lagopus albus*); mountainous parts, Vancouver Island and northern mainland; very numerous throughout the Arctic slopes and Hudson's Bay. Sharp-tailed Grouse (*Pedioecetes phasianellus*, Linn.); throughout the great Prairies; in the prairie-valleys of British Columbia, as high as the vicinity of Alexandria; and on the Plains of Peace River. Cock of the Plains or "Sage-Cock," (*Centrocercus urophasianus*, Bon.); borders of the Columbia River, from above Okinagan to the Dalles of Wasco, and throughout the Wormwood deserts.

FISH.—Trout of many different kinds; varieties of Carp and other *Cyprinidae*; the Methy or Loche; and many others, including that Prince of fresh-water fishes the White-fish (*Coregonus*), are general distributed. The last named (peculiarly a northern fish) appears to be almost universal in the boreal regions, even the lakes of the dreary "Barren Grounds" having their share. Westward of the Rocky Mountains, they are found as low, at least, as lat. 52° ; and probably even somewhat south of that limit. Two varieties of Sturgeon are found, one (*Acipenser Sturio*?) in the waters of Lake Winnipeg, the other (*A. transmontanus* of Richards) a fish of enormous dimensions, in the Columbia and the Fraser. Salmon, chiefly of large size, and of many varieties, ascend all the principal streams between the Sacramento and Yukon, including both those rivers; and probably several of the streams discharging into the Arctic Ocean; but as before remarked they do not frequent either the Mackenzie or the Saskatchewan; nor indeed any of the rivers communicating with the Hudson's Bay. The Pike (*Esox lucius*), common to the eastern waters, is unknown on the western watershed. To the above list may be added, as frequenting the waters of Manitoba, the Cat-Fish, the Sun-fish, and divers others, some of which are found elsewhere.

INDIANS.—The Chipewyan race, who for convenience sake are now classed as the “Dinnee” or “Tinneh” tribes, occupy as will be seen a very extensive tract. They have evidently been great wanderers; for to them the isolated sept of the Sarcees of the Saskatchewan owes its origin; and a similar offset, the *Klatskanai* (now extinct), not very long ago inhabited the highlands beyond the mouth of the Columbia River, while traces of the language appear even farther south. *Dinnee* means literally a man, but is sometimes applied in the plural sense, as *Abahtodinnee*, the Mountain-men, &c.; and Sir A. Mackenzie’s interpreters, who were from Peace River, so applied it, calling *Nascudinnee* those whom we now know as the *Nascotin*, i. e. People of the *Nas-accôh* (Mackenzie’s “West-road River.”) Generally, however, the term is pluralized by changing it, eastward of the Rocky Mountains, into *hânie*, westward into *otin*, as *Sik-hanie* (or rather *Tsack-hânie*) People of the stones or rocks, &c. *Nascotin* (as above): *Chilo-otin*, People of the *Chil-accôh* (River), &c. In the Alaska-section this affix is changed into *Koochin*, having the same obvious signification. The Tâh-Cully-(otin) Branch, i. e. “People of the deep” (waters being probably understood) inhabit the upper waters of the Fraser, bounded southward by the *Shewhaphmuch* (ch guttural) or *Sacliss* connexion (Atnah or “chin” of Mackenzie). Eastward of the Rocky Mountains the Chipewyans are bounded on the east by the Crees, who pass round the south end of Lake Winnipeg, and continue round the circuit of Hudson’s Bay and through Labrador, to Hudson’s Strait. Adjoining the Crees, and following along the upper Lakes and down the Ottawa River, &c., are the Algonquins or Sautaux, called also Ojibways or Chippeways. These are merely a branch of the Crees, and talk a dialect of the same language. The Assineboines are a branch of the Nadowasis or Sioux, and bound the Crees on the south along the course of the upper north Saskatchewan; succeeded on the west by the Sarcees, the small isolated tribe already noticed. A few families of Assineboines, abandoning the Prairie habit of the rest, frequent the heads of the Athabasca, among the “strong woods” (whence their distinctive appellation) and are now intercepted by the neighbouring tribes from the remainder of their race. The Black-feet, divided into several septs, as Gros Ventres, Blood Indians, &c., inhabit the prairie tract along the heads of the Saskatchewan and Missouri towards the border of the Sioux.

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Opposite to them, west of the Rocky Mountains, in a small angle at the heads of the branch of the Columbia, are the Koutananais, a small tribe, numbering in 1848 in all 829 souls. These are isolated from all the surrounding races, and I have never been able to trace their connexion. Adjoining them are the Sacliss (called by the Black-feet "Flatheads") who with their congeners the Shewhampmuch extend nearly to Alexandria, meeting the Táh-Cully branch of the Tinneh race as already mentioned. To the Shewhampmuch the Tah-Cully apply the same name of "Atnah" (= Stranger Race); to their neighbors wesward Atnah-yore. Mackenzie who descended the Fraser no lower than the Táh-Cully frontier, and had with him no interpreters through whom to communicate freely with the few men of the lower nation whom he there met. He was thus led to adopt the term "Atnah" as the true name of the tribe—adding, however, the alternative "Chin" which has in reality no existence. The late Mr. Geo. Gibbs, shortly before his death, wrote to enquire the origin of the latter name. To this enquiry I had no opportunity of replying; and may now state that I believe it to have arisen from misapprehension of the meaning of the Indians while referring to the principal village, or at least that in the most prominent position, at the confluence of the Thompson with the Fraser. This is called *Thlik-um cheen* (or-chin), the first two syllables very rapidly pronounced, and the last strongly dwelt upon. To this village the natives, both above and below, are fond of referring, apparently with some pride, as the chief seat of their section of the general tribe: and the conspicuous syllable dwelling on the ear of Mackenzie, led him, I imagine, to suppose it was the name given by themselves to their nation. I notice that the late Mr. Simon Fraser, who with Mr. John Stuart first descended the river, now named after the former, in 1808, and a M.S. copy of whose Journal is now before me, was partially misled in the same probable way. He gives the name of the village (but not as of the people) as *Cum-chin*. The whole ordinary nomenclature of Indian tribes, however, such connexion invariably giving a different, and derisive name, originating in some imputed or imagined characteristic (e.g. Blackfoot, Flathead, Slave, &c.), requires to be received with much caution. For this reason, and to avoid the endless confusion of names, I have along the north-west coast reduced them in the map as much as

possible to classes, on the principle of the "Tinneh." Thus along Paget Sound, &c., I comprise the numerous *homish*, *âmish*, and *wâmish*, all modifications of the same general affix, under one head as the *âmish* tribes; and along the west coast of Vancouver's Island, and the adjacent coast southward, the *âht* tribes, this being the general affix, *Nootk-âht*, *Clayo-qu-âht*, &c. Northward of these the *Hâi-dah* occupy Queen Charlotte's Islands and the Prince of Wales portion of the Archipelago. On the mainland north of Vancouver's Island and in the Islands of Milbank Sound and connected waters, is the *Hâiltza* connexion; succeeded northward by the *Chimseyan* tribes, who occupy as far as Observatory Inlet, near the southern line of Alaska Territory. Thence the *Thlinkitt* connexion to beyond the Tâh-Co River, who are succeeded by the tribe called by the Russians "Kaliuches"; and finally, beyond Cook's Inlet, the Esquimaux.