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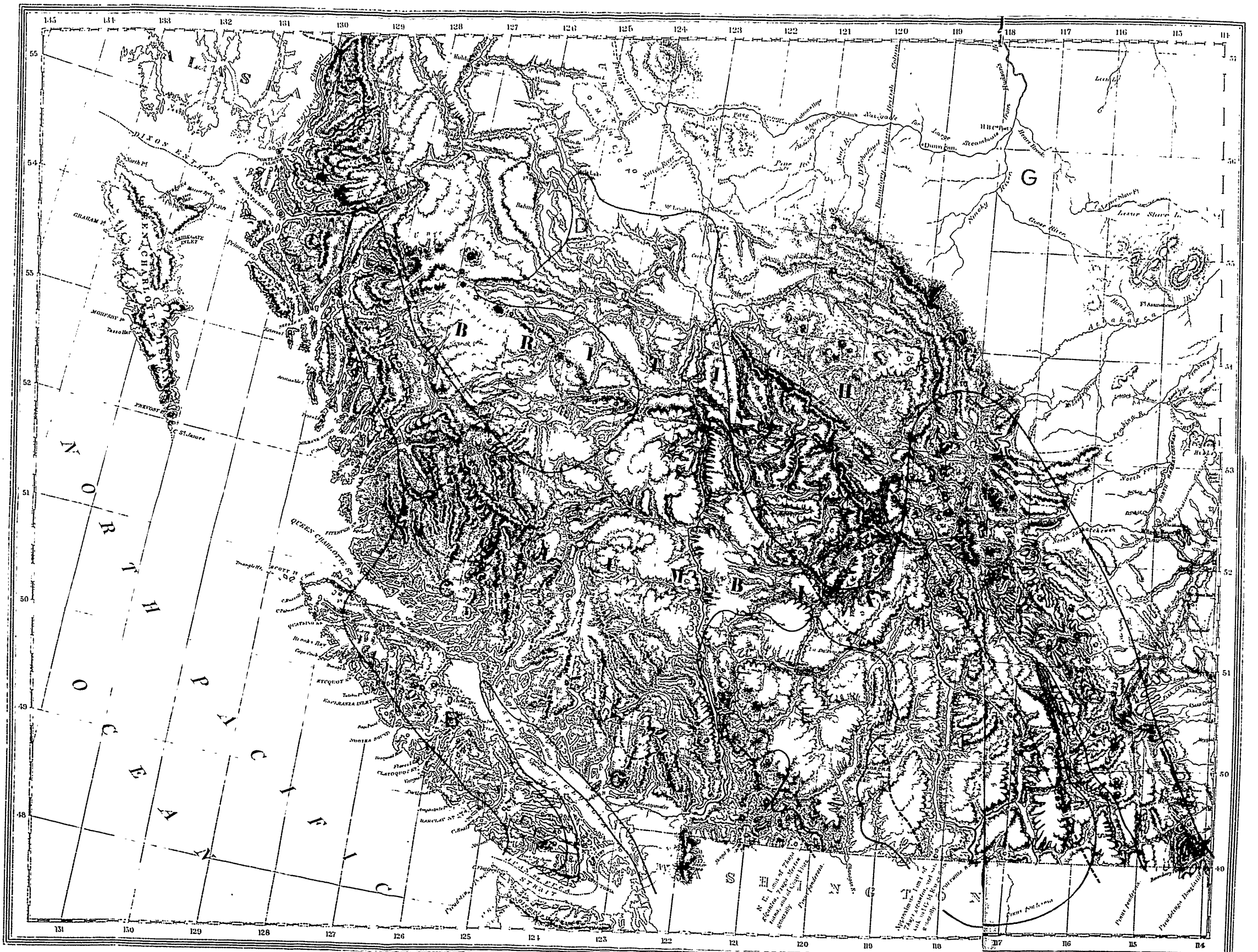
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MAP illustrating the Distribution of some of the more Important Trees in British Columbia, by George M. Dawson.

THE
CANADIAN NATURALIST

AND

Quarterly Journal of Science.

NOTE ON THE DISTRIBUTION OF SOME OF THE
MORE IMPORTANT TREES OF BRITISH
COLUMBIA.

*(Printed in advance of the Report of Progress of the Geological Survey
of Canada for 1879-80.)*

BY GEORGE M. DAWSON, D.S., A.R.S.M., F.G.S.

British Columbia forming a portion of the Cordillera region of the west coast of America, with diversified and bold physical features, the lines indicating the geographical range of the various species of plants do not assume in it the broad rounded forms found in less mountainous districts. The peculiarities in distribution while adding interest to the study, render an intimate knowledge of the topography of the country an essential prerequisite to its prosecution. As large tracts of the province are as yet geographically unknown owing to their remoteness and singular impenetrability, we are far from possessing complete information on the distribution of many of even the more important species. The following notes and map are presented as a contribution towards our knowledge of the range of some of the trees of British Columbia, based on notes and observations made by myself while engaged in the work of the Geological Survey from 1875 to 1879. I am indebted to Mr. H. J. Cambie of the Canadian Pacific Railway for valuable notes on the extension of certain trees from the coast up the valleys of the Homatheo and Dean or Salmon Rivers, and in a few cases have availed myself of facts published in Prof. Macoun's reports. I have also to thank Dr. Engelmann for notes furnished in regard to specimens collected in various parts of the province.

It is not intended to give a description of the orography of the province, though as above indicated this is closely connected with the extension of the various species of plants. The following general statement made by me in a note on agriculture and stock raising and extent of cultivable land in the province,* may, with little alteration, be repeated here, as outlining the conditions to be found within its area:—The flora of British Columbia as a whole may be broadly divided into four great groups, indicating as many varieties of climate, which may be named as follows:—the *West Coast*, the *Western Interior*, the *Canadian*, and the *Arctic*. The first, with an equable climate and heavy rainfall, is characterized by a correspondent luxuriance of vegetation, and especially of forest growth. This region is that west of the Coast Range, and is well marked by the peculiarity of its plants. In a few spots only—and these depending on the dryness of several of the summer months owing to local circumstances—does a scanty representation of the drought-loving flora of the Californian coast occur. The second is that of the southern part of the interior table-land of the province, and presents as its most striking feature a tendency to resemble in its flora the interior basin of Utah and Nevada to the south and the drier plains east of the Rocky Mountains. It may be said to extend northward to about the 51st parallel, while isolated patches of a somewhat similar flora occur on warm hill-sides and the northern banks of rivers to beyond the Blackwater. In the northern part of the interior of the province, just such an assemblage of plants is found as may be seen in many parts of eastern Canada, though mingled with unfamiliar stragglers. This flora appears to run completely across the continent north of the great plains, and characterizes a region with moderately abundant rainfall, summers not excessively warm, and cold winters. The arctic or alpine flora is that of the higher summits of the Coast, Selkirk, Rocky and other mountain ranges, where snow lies late in the summer. Here plants lurk which deploy on the low grounds only on the shores of Hudson Bay, the Icy Sea and Behring's Strait.

In the following notes the Coniferæ are placed first as having the greatest importance both from an economic point of view, and from the vast extent of country which they cover almost to the exclusion of other trees.

* Report Can. Pacific Railway, 1877. Appendix S.

Pseudotsuga Douglasii, Lindl. Douglas spruce, Douglas fir, sometimes commercially named Oregon pine. This is the most important timber tree of British Columbia, and the only one of which the wood has yet become an article of export on a large scale. It is found in all parts of Vancouver Island with the exception of the exposed western coast, but does not occur in the Queen Charlotte Islands or coast archipelago to the north of Vancouver. On the mainland, near the forty-ninth parallel, it extends from the sea to the Rocky Mountains, growing at a height of 6000 feet in a stunted form, and occurring even on the eastern slopes of the Rocky Mountains. In the dry southern portion of the interior of British Columbia it is confined to the higher uplands between the various river valleys. Northward it comes down to the general level of the country. It does not extend into the mountainous and comparatively humid region of Cariboo, and is probably absent from the higher portions of the Selkirk and Gold Ranges generally. Its northern line is singularly irregular. It is found about Fort George, and north-eastward as far as McLeod's Lake, but does not occur on the Parsnip. It extends about half-way up Taela Lake, and on Babine Lake to the bend or knee. A few specimens occur on the Skeena River. It is common about Fraser and François Lakes. It is found from the Fraser to the coast mountains on the line of the Chilcotin and its tributaries, and occurs on the Nazco and up the Blackwater to the mouth of the Iseultaesli, but is absent from an extensive tract of country bounded by the last-named localities to the south and east and extending northward to François Lake. It occurs abundantly on the coast of the mainland as far north as the north end of Vancouver Island, but beyond that point is found only on the shores of the inlets at some distance from the sea. It is found on the upper part of Dean Inlet and on the Salmon River which runs into it, but about forty-five miles from the salt water becomes small and stunted, and as above stated, is not seen in that part of the interior lying to the eastward.

The extent of its range to the north-eastward, in the Rocky Mountain range, though broadly indicated on the map, is still uncertain.

The best grown specimens are found near the coast in proximity to the waters of the many bays and inlets which indent it. Here the tree frequently surpasses eight feet in diameter, at a considerable height above the ground, and reaches a height of

from 200 to over 300 feet, forming prodigious and dark forests. The wood varies considerably in appearance and strength according to its locality of growth and other circumstances. It is admirably adapted for all ordinary purposes of construction, and of late has obtained favourable notice in ship-building, remaining sound in water for a long time. For spars and masts it is unsurpassed both as to strength, straightness and length. Masts for export are usually hewn to octagonal shape from 20 to 32 inches in diameter and 60 to 120 feet in length. On special orders they have been shipped as large as 42 inches in diameter by 120 feet long. Yards are generally hewn out from 12 to 24 inches in diameter and 50 to 102 feet long.

Masts and spars are generally sent to Great Britain; other forms of lumber to South America, Australia, India, China and the Sandwich Islands.

Tsuga Mertensiana, Lindl. Western hemlock. The hemlock occurs everywhere in the vicinity of the coast, and extends up the Fraser and other rivers to the boundary of the region of abundant rainfall. It reappears in the Selkirk and Gold Ranges, where sufficient moisture for its growth is again found. The tree attains a large size on the coast, reaching a height of 200 feet, and yields a good wood, but has not yet been much used. The bark is employed successfully in tanning. *Tsuga Mertensiana* closely resembles the eastern hemlock (*T. Canadensis*) but attains a larger size than that tree ever does.

In the Queen Charlotte Islands it is particularly abundant and large. On the Salmon River, running into Dean Inlet, it is not found in abundance beyond eighteen miles from the sea at an elevation of 600 feet. It occurs again, however, sparingly on the lower part of the Iltasyouco River, a tributary to the last, and within the Coast Range. On the Homatheco River, flowing into Bute Inlet, it ceases at fifty-three miles from the sea at an elevation of 2320 feet. On the Uz-tli-hoos it extends to a point six or ten miles east of the Fraser, on the Coquihalla to the summit between that river and the Coldwater.

Thuja gigantea, Nutt. Western arbor vitæ, giant cedar, red cedar. This tree in its distribution nearly follows that of the hemlock, abounding along the coast and lower parts of the rivers of the Coast Range, being unknown in the dry central plateau, but reappearing abundantly on the slopes of the Selkirk and Gold

Ranges. On the Salmon River the cedar ceases at forty-five miles from the head of Dean Inlet at an elevation of 2400 feet, though like the hemlock it is again found sparingly and in a stunted form in the lower part of the Iltasyouco Valley. On the Homatheo it ceases at a distance of sixty-three miles from the coast at an elevation of 2720 feet. On the Uz-tli-hoos it ends with the hemlock at about six miles east of Boston Bar, on the Coquihalla, just south of the summit between that river and the Coldwater. Cedars are also found sparingly on the Skaist River or east branch of the Skagit, and a few were observed on the banks of the Similkameen, about thirteen miles below Vermilion Forks. It extends westward from the flanks of the Gold Range in the Coldstream Valley sparingly to within eight miles of the head of Okanagan Lake. It abounds round the shores of the north-eastern part of Shuswap Lake, and on the North Thompson Valley to about twenty miles below the mouth of the Clearwater. It is said that there is also a small grove of these trees on the Fraser below Fort George.

On the coast it not unfrequently surpasses fifteen feet in diameter with a height of 100 to 150 feet, but such large trees are invariably hollow. The wood is good, pale yellowish or reddish, and very durable, but it is not yet extensively used except for the manufacture of shingles. From this tree the Indians split out the planks which they use in the construction of their lodges along the coast, and in the north make the carved posts which ornament their villages. They also hollow their large and elegant canoes in it, and use the fibre of the inner bark for rope making and other purposes.

Picea Engelmanni, Parry. Engelmann's spruce. This tree resembles the black spruce of the east, but reaches a larger size, frequently surpassing three feet in diameter, and running up tall and straight. It appears to characterize the interior plateau and eastern part of the province, with the exception of the dry southern portion of the former, and forms dense forests in the mountains. Varieties occur, which, according to Dr. Engelmann, who has examined my specimens, are almost indistinguishable from *Picea alba*, and to the north-eastward these varieties preponderate. Specimens collected on the Peace River plateau (lat. 55° 46' 54", long. 120° 20', altitude 2600 feet) are still referable to *P. Engelmanni*, but trees on the Athabasca (lat. 54° 7' 34",

long. 118° 48') belong to *P. alba*. The northern and north-eastern range of Engelmann's spruce is therefore undetermined.

It borders nearly all the streams and swamps in the northern portion of British Columbia between about 2500 and 3500 feet in elevation. It is probably this tree which forms dense groves in the upper alpine valleys of the Rocky Mountains in the vicinity of the forty-ninth parallel. The wood has not yet been extensively employed, but it is excellent, and in some cases very durable.

Picea Menziesii, Lindl. Menzie's spruce. This tree seems to be confined chiefly to the immediate vicinity of the coast, where it attains a large size, and is to some extent used for lumber. It was, however, observed on the summit between the Coldwater and Coquihalla Rivers (3280 feet); also on the Nicoluma a few miles beyond the summit between that stream and the Sumallow, and on the west side of the Spioos valley near the trail crossing. It was noted (doubtfully) on the summit between the Forks of Skeena and Babeen Lake, and may probably occur in the humid region of the Gold and Selkirk Ranges. The wood is white and free.

Abies grandis, Lindl. Confined to the vicinity of the coast, where its range is even more strictly limited than that of the cedar or hemlock. The wood is said to be white and soft, but too brittle for most purposes, and moreover liable to decay rapidly. Grows to a large size.

Abies subalpina, Engelm. (= *A. lasiocarpa* Hook.) Balsam spruce. Appears to take the place of *Abies grandis* in the region east of the Coast Ranges. It is not found in the southern dry portion of the interior plateau, but occurs abundantly in the Gold and Selkirk Ranges in the Rocky mountain region east of McLeod's Lake. Elsewhere it occurs in scattered groves, in the northern portion of the interior plateau, generally in localities nearly reaching or surpassing 4000 feet, but even in low valleys in the eastern portion of the Coast Ranges. It crosses the Rocky mountains in the Peace River district and occurs in cold damp situations in the county between Lesser Slave Lake and the Athabasca River. The tree often exceeds two feet in diameter, but the wood is said to be almost worthless.

Pinus ponderosa, Dougl. Yellow pine, red pine, pitch pine. A remarkably handsome tree, which grows only in the central

dry region of British Columbia, occurring between the Coast Ranges and Selkirk and Gold Ranges northward from the forty-ninth parallel to latitude $51^{\circ} 30'$ and probably also to about latitude 51° in the valley of the upper portion of the Columbia. Found also I believe sparingly on the east side of the Rocky Mountains near Waterton Lake on the forty-ninth parallel. On the Similkameen this tree is seen furthest east three miles above Nine-mile Creek. On the Coldwater it reaches to eighteen or twenty miles from the Nicola; down the Fraser to thirty miles above Yale, and northward on the main waggon road to "the Chasm" beyond Clinton. It extends about forty miles up the North Thompson, is found on the northern slopes of the Southwestern Arm of Great Shuswap Lake, and also sparingly on the southern part of the Salmon Arm, west of Okanagau Lake towards Cherry Creek nearly to the Camel's Hump Mountain.

It is used pretty extensively in the region which it characterizes, yielding sawn lumber of good appearance, but rather brittle and not very durable when exposed to the weather. It grows in open groves in the valleys, where it often occurs almost to the exclusion of other trees; and stretches up the slopes of the mountains and plateaux to a height of over 3000 feet, where it is replaced by the Douglas fir and *Pinus contorta*. Its diameter in British Columbia does not seem to exceed four feet, though further south it is said to reach a diameter of twelve to fifteen feet.

Pinus contorta, Dougl. Western scrub pine, also called the bull or black pine. Occurs throughout British Columbia from the sea-coast to the eastern slopes of the Rocky Mountains, and from the forty-ninth parallel northward. It is the characteristic tree over the northern part of the interior plateau, and densely covers great areas. In the southern part of the province it is found on those parts of the plateau and hills which rise above about 3500 feet, where the rainfall becomes too great for the healthy growth of *P. ponderosa*. It grows also abundantly on sandy benches and river flats at less elevations. On the coast it occurs rather sparingly on sandy dunes and the most exposed rocky points, becoming gnarled and stunted. In the Queen Charlotte Islands it is scarcely seen except on the western coast, and does not occur near the water level for a considerable distance up the Skeena. In the interior it often forms dense groves, the trees

being 60 to even 100 feet in height, but seldom exceeding a diameter of two feet. It does not extend upward to the timber limit in the higher mountains. The tree characteristic of the interior is *var. latifolia* of Engelmann, and differs considerably in appearance and character of wood from that of the coast to which the name *contorta* may appropriately be applied. Dall states the northern limit of this tree in Alaska to be on the Youkon at Fort Selkirk, latitude 63°. In the Peace River region it crosses the Rocky Mountain range, and occurs more or less abundantly over a great area generally on the higher parts of the plateau with poor soil. It is replaced by the Banksian pine at the watershed between the Athabasca and Saskatchewan.

The wood is seldom used as lumber on account of its small size, but is white and fairly durable. The cambium layer, containing much sugar, is eaten by the Indians in the spring, and in some instances large quantities of it are collected and dried for winter use.

Pinus flexilis, James *var. albicaulis*, Engelm. White pine, white-barked pine. Wood not employed as lumber; the trees being in general small and in inaccessible situations. Observed in the Coast or Cascade Ranges as far north as the Itasyouco River (lat. 53°), occurs in the mountains south of the upper part of the Dean or Salmon River, in the vicinity of Lillooet and at Yale, and on the summit of Iron Mountain at the mouth of the Coldwater. The seeds are collected and used as food by the Indians.

Pinus monticola, Dougl. White pine. This tree is abundant in certain districts of the interior of Vancouver Island, and is also found in all parts of the southern portion of the Coast Range where there is an abundant rainfall. It is found on the Hope-Similkameen trail, some miles beyond the summit on the Summit, about the summit between the Coquihalla and Coldwater on the Hope-Nicola trail; and to the west bank of the Spioos at the trail crossing. On the Homathco River it disappears at fifty-one miles from the sea at an elevation of 2235 feet. It reappears in the region of heavy rainfall of the Gold Range, being abundant about Cherry Creek and on the shores of Great Shuswap and Adam's Lakes. It has not been observed in the Queen Charlotte Islands, though it may exist there. It appears to flourish best in the higher mountain regions. The tree attains sixty to

eighty feet in height with a diameter of two to three feet, but is generally most abundant in situations inaccessible to the lumberer. The wood is coming into use for some purposes. It is not considered equal to that of the eastern white pine (*P. strobus*) which it resembles. The Indians collect and eat the seeds of this tree.

Chamaecyparis Nutkaensis, Lamb. Yellow cypress. Commonly known as the yellow cedar. This tree is confined to the vicinity of the coast and adjacent islands. It is found in the vicinity of Burrard Inlet on the slopes of the mountains, several hundred feet above the sea level. Further north it descends to the coast. It occurs in the interior of Vancouver Island, and is abundant in some parts on the Queen Charlotte Islands, particularly on the west coast. It often exceeds six feet in diameter. This wood is as yet comparatively unknown in commerce, but is strong, free and of fine grain, with a pale golden yellow tint and a slight peculiar resinous smell. It is very durable and has been used to a limited extent in boat-building and for various ornamental purposes.

Larix occidentalis, L. Western larch. Is found in the Rocky mountains and in the valleys of the Selkirk and Gold Ranges, its limit there being co-extensive with that of abundant rainfall. Stretches westward nearly to the head of Okanagan Lake. Not found on the coast. The timber is said to be strong and durable but coarse.

A species of larch, which from imperfect specimens submitted to him Dr. Engelmann supposes to be *L. America*, occurs abundantly in swampy spots on the Peace River plateau and on the Athabasca.

Taxus brevifolia, Nutt. Yew. Occurs on Vancouver Island, and on the shores of the mainland adjacent, attaining sometimes a diameter of two feet. Not found, or very sparingly in the Queen Charlotte Islands. A very tough hard wood of beautiful rose color, employed for various ornamental purposes. Formerly used by the Indians in making bows, spear handles, fish-hooks &c.

Juniperus virginiana, L. Juniper, red cedar, savin. Has been observed assuming an arboreal form along the shores of Kamloops, François and other lakes, and elsewhere, with a diameter of about a foot. Commonly known as pencil cedar.

Acer macrophyllum, Pursh. Maple. Found on Vancouver and adjacent Islands, and on the mainland in the immediate vicinity of the coast northward sparingly to latitude 55°, and in the Queen Charlotte Islands. Never found inland. Occasionally attains a diameter of four feet. A valuable hard wood, sometimes well adapted for cabinet-making, and also used as fuel.

Acer circinatum, Pursh. Vine-maple. Like the last strictly confined to the vicinity of the coast, but does not appear to go far north. A small tree, seldom over a foot in diameter, but yielding a very tough and strong white wood, which is used, in the absence of ash, for the manufacture of helms, &c.

Pyrus rivularis, Dougl. Crab-apple. Occurs along the coast of Vancouver and the Queen Charlotte Islands and the whole coast of the mainland of British Columbia. On the Skeena abundant to the mouth of the Lakelse and a few trees seen at ninety miles from the sea. A small tree or shrub. Wood very hard, susceptible of a good polish, and especially valuable in those parts of mill machinery intended to withstand great wear. Fruit prized by the Indians as food.

Pyrus sambucifolia, Cham. and Schlecht. Mountain ash. Sparingly in various parts of the interior of the Province. A small tree or bush.

Amalanchier alnifolia, Watson. Service-berry, 'la poire.' Occurs on Vancouver Island and very rarely and in a stunted form in the Queen Charlotte Islands. Abundant in some parts of the interior plateau and beyond the Rocky mountains to the north eastward in the Peace River country. Generally a shrub. Under favourable circumstances a small tree. The wood is very hard and is used for various purposes by the Indians. The berries are dried and stored away in large quantities for winter use.

Quercus Garryana, Dougl. Oak. Grows only in the southeastern portion of Vancouver Island, though Mr. A. C. Anderson mentions the existence of a few trees near Yale, on the Fraser River, which have probably now disappeared. Reaches a diameter of three feet and a height of about seventy feet. Used for flooring and other purposes in building, and also in the manufacture of barrels and kegs. A hard wood but not very tough.

Alnus rubra, Bongard. Alder. Attains the dimensions of a small tree, on Vancouver and Queen Charlotte Islands and the coast of the mainland. Wood sometimes employed for making charcoal.

Betula occidentalis, Hook. Birch. Occurs sparingly over almost the entire area of the province. Well grown trees are found in the northern part of the Fraser basin and in the Peace River country.

Populus tremuloides, Michx. Aspen poplar. Abounds over the whole interior of the province, growing everywhere in the north and characterizing some of the most fertile lands. In the southern dry portions of the interior found usually along the borders of streams, and on the higher plateaux. First noticed in abundance on the Skeena at about 110 miles from the sea. It forms the usual second growth after fires in the Peace River country. Attains frequently a diameter of two feet.

Populus trichocarpa, T. & G. Cottonwood. Grows chiefly in the valleys of streams and on the banks of rivers, throughout the province, and north-eastward in the Peace River district. Frequently four to five feet in diameter. Used by the Indians of the interior for the manufacture of canoes. *Populus balsamifera* & *P. monilifera* may also occur in some parts of the region, all going under the general name of Cottonwood.

Arbutus Menziesii, Pursh. Arbutus, madrona. Occurs on Vancouver and the neighbouring islands, but never far from the sea. It is sparingly represented as far north as Seymour Narrows. A very handsome evergreen yielding a white close-grained heavy wood, resembling box. Attains a diameter of from eighteen inches to two feet, and a height of fifty feet.

Cornus Nuttallii, Aud. Dogwood. On Vancouver Island and the coast of the mainland adjacent, attaining the dimensions of a small tree. Wood close-grained and hard.

NEW FACTS, RESPECTING THE GEOLOGICAL RELATIONS AND FOSSIL REMAINS OF THE SILURIAN IRON ORES OF PICTOU, NOVA SCOTIA.

By J. W. DAWSON, LL.D., F.R.S.

(Read before the Natural History Society of Montreal, April 5th, 1880.)

The subject of this paper has already been discussed by me in various previous publications; and most recently in a paper read at the Portland meeting of the Association for the Advancement of Science in 1874, and published in the Journal of this Society; and in the Supplement to the second edition of "Acadian Geology," 1878. In these publications I have described the general arrangement of the Rocks of the Cobequid Series in the rising grounds on both sides of the East Branch of the East River of Pictou, the superposition on these of Upper Silurian rocks holding bedded red hematite, and the occupation of the valley itself by a narrow band of Lower Carboniferous beds.

I may explain that the name "Cobequid group" was proposed in my Acadian Geology, 1868, for the series of schistose and crystalline rocks constituting the axis of the Cobequid hills, and extending eastward from these, with some partial interruption, through the hilly districts of southern Pictou. In the Cobequid hills, where these rocks are well exposed, they consist of two members: (1) an upper series of gray and dark slates and quartzites with a band of crystalline limestone and veins of iron ores; (2) a lower series consisting largely of felsite, porphyry and agglomerate. Both series are penetrated by dykes and masses of red syenite and dark-coloured diabase, the latter cutting also the overlying Silurian rocks. These last, as seen at Wentworth and New Annan, overlie unconformably the Cobequid group, and afford fossils characteristic elsewhere of the Upper Silurian system. The least antiquity that can be assigned to the Cobequid rocks is thus that of the Siluro-Cambrian; and by some, on the ground chiefly of mineral character, they have been regarded as Huronian. I have ventured to suggest, on the evi-

dence of their relations to the Upper Silurian beds, and to the apparently older Cambrian series of the Atlantic coast, that they may be representatives of the Skiddaw and Borrowdale series of England, and of the Quebec group of the Lower St. Lawrence.

These rocks, in their extension into Pictou County, present characters not dissimilar from those seen in the Cobequids. On the high ground on the west side of the east branch of the East River, they consist of thick beds of gray and dark slate and quartzite, having a general strike of N. 20° to 30° W., and with very high dips to the S.W. They include a great vein of specular iron ore, associated with magnetite, ankerite, and limonite, of the same character with that so well known on the south side of the Cobequids in Londonderry.

The river valley, which not improbably occupies an ancient line of fracture, presents a narrow trough of Lower Carboniferous rocks, containing limestone and gypsum; and at the junction of these Carboniferous beds with the older rocks, on the east side of the river, there is a fissure vein, filled with limonite, and in some places attaining to large dimensions.

The hills on the east side of the river consist largely of hard gray slates, nacreous slates, obscure diorites, agglomerate and felsite, with syenitic dykes and masses. They correspond very nearly in mineral character with the Lower Cobequid series, and though rudely parallel to the slates on the opposite side of the river, they have so suffered from fractures and unequal denudation that they present a very irregular surface, in the depressions of which are the Upper Silurian hematites and their associated beds; and these rocks also succeed those of the Cobequid series to the north-eastward, forming a long line of outcrop extending from the East River of Pictou towards Arisaig. Thus the general geological character of the region is similar to that of the Cobequid hills, though locally more irregular and with larger areas of Upper Silurian beds.

So far the structure of the district has been pretty well known for some time, but its somewhat complex details have been little worked out, except in connection with the tracing of the iron deposits, in which some explorations have been made, more especially by Dr. G. M. Dawson, Mr. Gilpin, and the writer. For several years the principal iron properties have been under the care of E. Gilpin, Esq., F.G.S., now Inspector of Mines for Nova Scotia, and his surveys have thrown much light on the

distribution of the strata containing the bedded iron ores, indicating approximately the dimensions and direction of the troughs resting on the Cobequid series, and the distribution of those which flank that series on the north-east. More especially these researches have shewn that there are two horizons of iron ore, separated by a considerable thickness of slaty and quartzose strata,* and underlaid by slate, sandstone, and conglomerate or breccia, differing from those of the Cobequid series. I do not propose here to enter into the details of these observations, but merely to notice their relations to the palæontology of the district.

The fossils collected in the district were obviously referable to the "Arisaig series," ranging from the Clinton to the Lower Helderberg inclusive, but the new facts indicated in Mr. Gilpin's manuscript map, which he has kindly communicated to me, suggested more careful local comparisons; and as my collections, though extensive, had not been made with reference to the new details of distribution, I thought it desirable to supplement them with additional material. This was obtained by Mr. Donald Fraser of Springville, a well known explorer of these rocks, who by my request visited all the exposures of the iron ores, and collected the fossils found in the ore itself and the including beds, keeping the specimens from each locality separate. In this way a large number of additional specimens were obtained, forming a series of local collections representing the different ore horizons.

The general result of the study of these specimens is to show that both sets of ore-beds are Upper Silurian, and approximately of Lower Helderberg age. As compared with the typical Arisaig series, as defined in Acadian geology, they represent the middle and upper part of that series.

The fossils referred to are unfortunately not always in the best state of preservation. They are contained in hard rock, from which they are extracted with difficulty, and are often best studied in the impressions left when they are weathered out. They are also not infrequently distorted. For these reasons it is not always possible to be certain as to their identification; and in cases of doubt I have given a reference to the known species which they most nearly resemble.

* In a work on the "Mines and Mineral Lands of Nova Scotia," received while this paper was in the press, Mr. Gilpin estimates the thickness of intervening beds at 700 feet.

In the lower beds of iron ore, as represented at the Webster and Blanchard locations, the following fossils have been recognized; though in these beds the fossils are neither so abundant nor so well preserved as in the upper beds. Those marked with an asterisk are found also at Arisaig.

* *Stenopora* (*Chaetetes*) (allied to *S. fibrosa*).

* *Crinoid* stems.

* *Chonetes Novascotica*, Hall.

* *C. tenuistriata*, Hall.

* *Spirifer rugae-costa*, Hall.

S. — (a large species allied to *S. arenosa*.)

* *Strophomena profunda*, Hall.

* *S. rhomboidalis*, Wilck.

* *Rhynchonella Saffordi*, Hall.

R. — (large species with about 20 prominent undivided ribs, very characteristic of some parts of the iron ore.)

R. allied to *R. nobilis*, Hall.

Pentamerus (allied to *P. pseudo-galeatus*).

Stricklandinia Billingsi, n. s. (see infra).

Rensselaeria acquiradiata, Conrad.

* *Orthis testudinaria*, Dalman.

Platyceras, sp.

Platystoma depressa, Hall, or allied.

* *Orthoceras*, annulated (allied to *O. ibex*).

* *O. punctostriatum*, Dawson.

* *Cornulites flexuosus*, Hall.

* *Calymene Blumenbachii*, Brong.

* *Homalonotus Dawsoni*, Hall.

Homalonotus (finely banded pygidium? n. s.)

These fossils are not numerous, but they present the same partly Clinton and partly Upper Helderberg facies seen in the middle portion of the Arisaig series.

At the Ross location, East River, at the Holmes location, west side of Sutherland's River, and at the east side of Sutherland's River, in outcrops believed to be those of the upper beds, the following species occur:—

* *Stenopora* (allied to *S. fibrosa*).

Syringopora, sp.

Cladopora (slenderly branching species).

* *Crania Acadiensis*, Hall.

* *Spirifer subsulcatus*, Hall.

* *Sp. rugae-costa*, Hall.

Sp. (large species similar to that in last list.)

* *Chonetes Nova Scotica*, Hall.

* *Strophomena rhomboidalis*, Wilck.

* *S. Gilpini*, n. s. (see infra).

* *Orthis testudinaria*, Dalman.

O. perelegans, Hall (or allied).

O. discus, Hall (or allied).

Strophodonta varistriata, Hall (or allied).

* *Rhynchonella Saffordi*, Hall.

R. vellicata, Hall (or allied).

R. pyramidata, Hall (or allied).

* *Atrypa reticularis*, Linn. (coarsely ribbed variety).

Stricklandinia Billingsiana, n. s. (see infra).

Pentamerus sp.

Discina (smooth conical species like *D. oblongata*, Portlock (see infra).

* *Cytherodon sulcatus*, Billings.

* *Megambonia cancellata*, Hall (see infra).

* *M. striata*, Hall.

* *Pteronitella curta*, Billings.

* *P. oblonga*, Billings.

* *P. venusta*, Billings (or allied).

Avicula textilis, Hall (or allied).

A., new species? (see infra).

* *Clidophorus concentricus*, Hall.

* *C. elongatus*? Hall.

* *Grammysia remota*, Billings.

* *Murchisonia Arisaigensis*, Hall.

* *M. acicula*, Hall.

Platyostoma depressa, Hall (or allied).

Cyrtoceras subrectum, Hall.

Cyrtoceras, n. s. (see infra).

* *Orthoceras punctostriatum*, Dawson.

* *Cornulites flexuosus*, Hall.

C. n. s. (see infra).

* *Homalonotus Dawsoni*.

H. (smooth pygidium, allied to *H. delphinocephalus*).

* *Calymene Blumenbachii* (large and small varieties or sub-species).

Phacops caudatus (or allied).

Dalmania, allied to *D. micrurus*, Hall.

* *D. Logani*, Hall.

It will be seen that, while the majority of the species found in the lower bed occur also in the upper, the latter is much richer in species, and especially in those of the Upper Arisaig or Lower Helderberg proper. It is also remarkable for its much greater number of Lamellibranchiate shells and Trilobites. On the other hand it presents no points of resemblance with the Oriskany fossils which accompany the ore of Nictaux in the western part of Nova Scotia.*

The fossils above referred to are derived from the beds immediately containing the iron ore deposits, or from the ore-beds themselves. But in many parts of the district there are rich fossiliferous beds, the relation of which to the iron ores is not so manifest, though they obviously belong to the same great series of deposits. From these beds I have obtained specimens of nearly all the species above catalogued, and some others in addition. The most important of these latter are the following:

Zaphrentis, sp. not determinable.

Meristella didyma, Dalman. A well-known European Upper Silurian species, plentiful in some beds on the East River, but which I have not yet seen from Arisaig.

Lingula sp.

Rhynchonella transversa, Hall (or allied).

R. allied to *R. acutiplicata*, Hall.

R. equiradiata, Hall (or allied).

Orthis multistriata, Hall (or allied).

* *Atrypa emucrata*, Hall.

* *Trematospira Acadica*, Hall.

* *Goniophora consimilis*, Billings.

* *Grammysia Acadica*, Billings.

* *Clidophorus concentricus*, Hall.

* *C. cuneatus*, Hall.

* *Modiolopsis rhomboidea*, Hall.

* *M. sub-nasutus*, Hall.

* *Bucania trilobita*, Hall.

Bellerophon, allied to *B. carinatus*, Sowerby.

* See paper in this Journal, 1879, on 'Recent Papers on the Geology of Nova Scotia.'

Platyceras, allied to *P. pyramidatum*, Hall.

* *Orthoceras exornatum*, Dawson.

O. Pictoense, n. s. (see infra).

O. elegantulum, Dawson.

* *Beyrichia pustulosa*, Hall.

Acidaspis, a small species allied to *A. tuberculata* of Hall
(see infra.)

Illænus.—pygidium.

In the second edition of *Acadian Geology*, 1868, the author published a list of fossils, including many of the more characteristic species above-named, and summed up his conclusion as to their age, as follows: "On the whole I regard the beds seen on the East River of Pictou as belonging to the same line of outcrop with the Arisaig series; but as probably containing in addition to the Upper member of that series beds somewhat higher in position." The fossils more recently collected so far modify this conclusion, that I cannot affirm the existence of beds upward as far as the Oriskany, but must be content to regard the highest fossiliferous beds of the East River Silurian as about the horizon of the highest of those seen at Arisaig.

It still remains to inquire as to beds older than the Upper and Middle Arisaig series. As to these great caution is necessary, owing to the paucity of fossils, and to the liability to confound the Upper Silurian rocks with those of the Cobequid group.

Coming up in the anticlinals, and along the flanks of the masses of older rock, there are beds of conglomerate, brown and white quartzite and hard slates, which seem to underlie the fossiliferous beds holding the iron ores, and may represent lower members of the Upper Silurian series. In these beds vermicular markings, perhaps fucoidal and perhaps burrows of annelids, occur near Cameron's brook, and in the same beds are fragments of *Lingula*. I have little doubt that these beds are lower than those holding the iron ores, though probably not below the base of the Upper Silurian. On McLellan's Brook, Mr. Fraser has found beds holding casts of *Zaphrentis*, which may not improbably be older than the Lower Helderberg. The tail of *Illænus* referred to above was found in a small ore-bed on the Fraser (Saddler) location, and which I believe to be not improbably lower than the great beds of Hematite. These are the only fossils known to me at present, which indicate a horizon older than the Middle Arisaig. There are, however, great masses of

older rock which have afforded no fossils, and which probably underlie those just referred to and may be Lower Silurian beds tending downward to the Cobequid series and connected with it.

Rocks of this character are well developed in the basin of Lake Murdoch, where, according to Mr. Gilpin, they are cut off from the Blanchard ore-series by a fault on the southern side. They are traceable to the eastward, apparently underlying the beds associated with the "Webster" ore-bed, and are well seen still further to the eastward on the upper waters of the French River. These beds differ considerably in mineral character from any others in the district, though resembling in this respect rocks seen at the Blue Mountain, near Eden Lake, and on the East Branch of the St. Mary's River. They contain thick beds of Nacreous or Hydro-mica slates, coarse slates, sometimes having a conglomerated or brecciated appearance, green chloritic or epidotic rocks, quartzite and agglomerate, and felsitic rocks. They have afforded no fossils, and appear to me to be quite distinct from the Upper Silurian formation. In the meantime they may be connected with the Cobequid series, with the typical rocks of which series they are certainly closely associated further to the eastward.

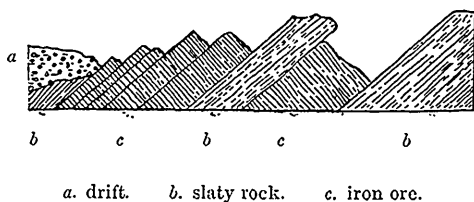
One of the marked features of the Upper Silurian in the district in question is the great development of bedded red hematite, and of rocks more or less impregnated with this ore. With reference to its origin, this ore is evidently a marine deposit, and formed under conditions sufficiently favorable to marine life to enable it to contain many shells of Brachiopods and remains of other animals. It is probably a chemical deposit or precipitate, and often assumes an oolitic structure. In the coarser or more impure beds the little concretions of oxide of iron often surround grains of sand, and the ore passes into a ferruginous sandstone. The following section (p. 340), from a MS. Report of Dr. G. M. Dawson, shows the great development of the lower bed in one of its exposures. These deposits of iron ore apparently began locally in an early part of the Upper Silurian period, and were continued into the Lower Helderberg period, while in the western part of Nova Scotia, in the Nictaux district, we have evidence of their continuance into the Oriskany age.

Another marked feature of these deposits is the absence of any representative of the great Niagara limestone, and the consequent passage upward of Clinton deposits into those of Lower Helder-

berg age. This absence of the Niagara limestone is general in Nova Scotia, and along the Atlantic margin of North America. Farther West, in Northern New Brunswick, and in Gaspé, massive limestones appear, but they attain their greatest development in the interior plateau south of the great lakes.

With reference to the dates and disturbances of these deposits, it may be affirmed that there was much volcanic action at the time of the deposition of the Cobequid series; that this series experienced no little disturbance and alteration before the Upper Silurian rocks were laid down; that the latter were subsequently much folded and fractured before the Carboniferous Period, and that since that period there has been sufficient movement to cause the carboniferous rocks to be locally highly inclined and faulted. In the trappéan beds, interstratified with the Lower Carboniferous conglomerates of the coast to the eastward, there is evidence of the continuance of igneous action up to that time. As to the age of the iron deposits, the formation of the great veins of specular iron and ankerite was probably contemporaneous with the earliest disturbances of the Cobequid series, and previous to the Lower Helderberg age. The great interstratified beds of Hematite are undoubtedly of the latter age, unless the lowest bed should be regarded as between this and the Clinton. The veins of Limonite, mixed with oxide of manganese, are later than the Lower Carboniferous, and constitute here as in the Cobequids a secondary product of the decomposition of the carbonate of iron contained in the ankerite and spathic iron of the Cobequid series.

IRON ORE BED. WEBSTER LOCATION.



NOTES ON FOSSILS.

A few of the species observed are new, and concerning others new facts were brought out in the examinations made. The more important of these points are referred to below.

Chaetetes or *Stenopora* and *Cladopora*.—Two branching corals referable to these genera are very abundant in the East River beds, and the former also occurs plentifully at Arisaig. The former is a coral of the family *Chaetetidae*, very closely resembling *S. fibrosa*, but the specimens are not in such a condition as to permit a close comparison. The latter is found only in the state of casts, and is a large-celled species resembling *C. fibrosa* of Hall.

Stricklandinia Billingsiana, n. s.

This is a large shell, 6 centims. in breadth and 4 in length, with a pointed beak and the sides spreading at an angle of about 120° to the broadly rounded lateral corners, which are united by a nearly straight margin. The surface presents unequal lines of growth, and in the middle of the dorsal valve is a low flat ridge with a slight furrow in the centre. The ventral valve has a corresponding flat sulcus. This shell is closely allied to *L. Davidsoni*, Billings, from the Upper Silurian of Gaspé, but is much broader in form.

Strophomena Gilpini, n. s.

Shell, when full grown, nearly an inch in diameter; length and breadth nearly equal; hinge line equal to breadth; valves little elevated; hinge area narrow. Surface marked with numerous fine radiating elevated lines, between which others are introduced as they diverge from the beak. When the surface is well preserved microscopic concentric striae are seen to cross the radiating lines, and when the outer surface is removed the structure of the shell appears punctate. Muscular impressions oval, elongate and narrow. This shell is very abundant near the Sutherland River ore-bed. It appears to differ from any described American species, but in general form and the style of the muscular impressions resembles *S. ornatella* of Salter from the Upper Ludlow of Britain, though it has finer and sharper superficial sculpture.

Rhynchonella, sp.

In the upper bed of iron ore one of the most frequent shells is a simply ribbed *Rhynchonella*, somewhat resembling *Rh. vellicata* of Hall, but too much distorted and too imperfectly preserved to enable it to be determined with certainty.

Discina, sp.

A small elevated smooth *Discina*, marked only with very delicate lines of growth and near in form to the more elevated varieties of *D. oblongata*, Portlock, from the Middle Silurian of England.

Megambonia cancellata, Hall.

Perfect specimens of this beautiful little shell show that the right valve is flatter than the left, and destitute of the cancellated markings, having only concentric lines. When the valves are closed the basal sulcus has very much the aspect of a byssal aperture. These characters would ally this shell with *Aviculidae* rather than with *Arcadeæ*.

Avicula lamellosa, n. s.

Hinge line somewhat longer than the breadth of the shell, and about equal to its length. Left valve tumid, right valve less so, umbones appressed, base broadly rounded, anterior wing short, but decidedly separated from the body of the shell, posterior wing much larger. Surface smooth, but ornamented with concentric thin raised lamellæ, which are continuous over the wings and body, and are elegantly waved, becoming distant from each other on the lower side. Largest specimen 3 centim. long, 3.5 broad. At first sight this species resembles *A. equilatera* of Hall, but is quite distinct in form and markings.

Avicula, sp.

A single left valve of a well-characterised species with the anterior wing nearly as broad as the posterior, and both flat and smooth, or with microscopic concentric lines on the posterior one. Body of the shell with about 15 radiating ribs, crossed by obscure concentric ridges. I had at first regarded this shell as a variety of *A. Honeymani* of Hall, but the anterior wing, when exposed, showed it to be altogether different. I find it difficult to distinguish the last-named species from *A. emacerata* of Hall, as some specimens show radiating striæ on the posterior wing, and otherwise approach to that species.

Pteronitella curta, Billings.

More perfect specimens of this shell enable me to add to Mr. Billings'* description, that the left valve is considerably more convex than the right, and ornamented with concentric, crowded, raised lamellæ. There are two muscular impressions, the anterior small, oval and near the beak, the posterior large and round.

Murchisonia, sp.

In addition to *M. Arisaigensis* and *M. acicula*, which are common on the East River, there is a third species, much less elongated than the former, and with a single revolving band in the middle of the body whorl. The specimens are not very perfect.

Holopea, sp.

A species not distinguishable from *H. sub-conica* of Hall from the L. Helderberg.

Platyceras, sp.

A small but beautifully perfect specimen of a conical and somewhat pyramidal *Platyceras*, with slight plications on one side. It is not distinguishable from young shells of *P. pyramidatum* of Hall from the Lower Helderberg; and is the only shell of this type I have seen in Nova Scotia.

Orthoceras Pictoense, n. s.

Transverse section oval, perhaps partly a result of pressure. Chambers narrow, 8 in an inch in a specimen 1.5 inch in greatest diameter. Shell scarcely tapering in five inches. Surface when perfectly preserved with delicate longitudinal striæ. Siphuncle not well seen but apparently inflated in the chambers. This is seemingly a representative in our Upper Silurian of *O. bullatum* of England.

Orthoceras (allied to *O. ibex*).

This species has long been known to me from Arisaig, and I have specimens also from the East River, but not sufficient to make absolutely certain its identity or difference.

* Palæozoic Fossils of Canada.

Cyrtoceras, sp.

Two species of this genus occur in the East River collections. One is not distinguishable from the *C. subrectum* of Hall (L. Held.) The second is flattened laterally, distinctly bent, the septa one-third centim. distant, in a specimen one centim. in diameter.

Cornulites.

Shells of this species are very abundant in the East River beds. Hall referred the Arisaig specimens to his species *C. flexuosus*; but from their more slender form named them variety *gracilis*. At the East River the majority of the specimens are of the Arisaig type, but some more robust. There are however others more slender than any found at Arisaig. Specimens 1.3 centimetre in length are only 1 millimetre in breadth at the large end, so that from their slenderness they might be mistaken for *Tentaculites*, though the annulations are those of *Cornulites*. But for the apparent connecting forms, these slender specimens might be regarded as types of a distinct species.

Trilobites.

There appear to occur at the East River no less than three species of *Homalonotus*. The most common is *H. Dawsoni*, Hall, and the others are known to me only by fragments. One has much more numerous annulations on the pygidium than that above named, the other has a nearly smooth pygidium, with about twelve very flat annulations on the axis, and resembling that of *H. Vanuxemii*, Hall, from the Lower Helderberg. The East River collections also add an *Acidaspis* to the Upper Silurian fauna of Nova Scotia; but the single specimen found is unfortunately too imperfect for description.

NOTE.—For information as to the economic geology of this district, I may refer to "Acadian Geology," and to a valuable Report on the "Mines and Mineral Lands of Nova Scotia," by E. Gilpin, A.M., F.G.S. (Halifax, 1880.)

HITTITES IN AMERICA.

By JOHN CAMPBELL, M.A.

Professor in the Presbyterian College, Montreal.

(Continued from page 296.)

In a paper recently read before the Canadian Institute I set forth the radical unity of the Peruvian vocabulary with that of the Iroquois. This well known North American family might naturally be expected to connect with the Basques, since the Huron god Tawiscara and the tribe of the Tuscaroras preserve the Euskara name.* The following table shews how valuable an adjunct to ethnological research mythological and tribal names are, and how great is the vitality of words even under what are generally supposed to be the most unfavourable conditions. Judged by the vocabulary, there are few languages which exhibit relationship more perfectly than those widely separated tongues, the Basque and the Iroquois; and it must be remembered that their grammatical systems, while not agreeing in all points, are far from discordant, as has been proved by that distinguished Basque and Oriental scholar, M. Julien Vinson of Bayonne.

BASQUE.	WYANDOT-IROQUOIS.
all.....gucia	agwegough <i>Mohawk</i> .
basket.....otarra	atere <i>Iroquois</i> .
below.....boherra	karo “
bird.....choria	garioha “
blue.....urdina	horanhiahen <i>J</i> .
brother.....anaya	haenycha <i>Wyandot</i> .
cloud.....edoya	odsadah <i>M</i> .

*The permanence among uncivilized peoples of tribal and even of personal names is a doctrine that has not received the support which the evidence in its favour demands. It is well illustrated among the Hurons, as I have learned from “Historical Notes on the Environs of Quebec,” written by my esteemed colleague, J. M. LeMoine, Esq. Many distinguished chiefs of the Lorette Hurons, from the time when Europeans first became acquainted with them, have borne the name Atsistari or Ahatsistari, *the fearless man*; and at the present day it is the Indian title of M. A. N. Montpetit, an honorary chief of the nation. This Ahatsistari is undoubtedly the Hasisadra of the Acadians, the Ashtar of the Khita, and the Haitor of the Basques. The Hittite proper name Ahashtari, which is that of the brother of Zohar, father of Ephron, who sold Machpelah to Abraham, is almost identical in form with the Huron Ahatsistari of to-day.

BASQUE.

cold	.....otza
come	.....etorri
copper	.....urraida
day	.....eguna
dog	.....ora
	chacurra
drink	.....edan
end	.....ondoa
face	.....ausquia
father	.....aita
fight	.....guda
fire	.....su
fish	.....arraina
flesh	.....oquela
food	.....oquia
girl	.....batsaya
good	.....egun
hair	.....ulea
hand	.....escua
head	.....burua
hear	.....aditu
heart	.....biotza
heaven	.....cerua
hot	.....beroa
husband	.....senarra
kill	.....il
leaf	.....orria
make	.....eguin
man	.....gizon
moon	.....illarguia
mother	.....ama
mountain	.....mendia
nail	.....itzea
name	.....icena
night	.....gau
no	.....ez
rain	.....euria
salt	.....gatza
see	.....ikbus
shoe	.....osquea
sister	.....aizta
small	.....tipia
snow	.....elurra
speak	.....edas
stone	.....arri
sun	.....iguski
	iluzki
tail	.....atzequia
thunder	.....eurciria
tongue	.....mina
tooth	.....hortz
tree	.....arecha
white	.....churia
wind	.....egoa
	aiza
woman	.....emakume
wood	.....egurra, zura

WYANDOT-IROQUOIS.

otoxe	<i>Onondaga</i> .
karo	<i>M.</i>
rawist	<i>I.</i> (metal)
ehnisera	<i>M.</i>
erhar	"
cheer	<i>Nottoway</i> .
uttanote	<i>Seneca</i> .
entas	<i>I.</i>
ookahsah	<i>Tuscarora</i> .
ata	"
kedarioch	<i>I.</i>
seesta	<i>W.</i>
runjih	<i>T.</i>
wauhloo	<i>Oncida</i> .
kakh	<i>I.</i>
yaweetsautho	<i>W.</i>
oogenerle	<i>M.</i>
arochia	<i>W.</i>
shako	<i>M.</i>
anuwara	<i>Onondaga</i> .
hagatonde	<i>I.</i>
yootooshaw	<i>W.</i>
oughruhyai	<i>T.</i>
otorahaute	<i>W.</i>
teakneederoo	<i>M.</i>
kerios	<i>I.</i>
ourata	<i>W.</i>
gonniaha	<i>I.</i>
aquehun	<i>Hochelaga</i> .
kelanquaw	<i>M.</i>
ena	<i>T.</i>
onontah	<i>W.</i>
ohetta	"
chinna	<i>I.</i>
asohe	<i>Capuga</i> .
gwuss	<i>T.</i>
wara	"
hotchiketa	<i>I.</i>
wahikea	<i>M.</i>
ohtahquah	<i>M.</i>
auchtcheo	<i>T.</i> akzia <i>I.</i>
diwatsa	<i>T.</i>
ogera	<i>Onondaga</i> .
atakea	<i>W.</i>
ariesta	"
kachquaw	<i>S.</i>
garachqua	<i>Onondaga</i> , kelanquaw <i>M.</i>
otahsa	<i>I.</i>
kawseras	"
wennasa	"
honozzia	"
oughruhch	<i>T.</i>
kearagea	<i>M.</i>
gao	<i>I.</i>
izuquas	<i>W.</i>
yonkwe	<i>M.</i>
kara	<i>I.</i> (forest), gerec <i>N.</i> (tree)

As the Euskara thus manifest their relationship with the Tuscaroras and the Wyandot devotees of Tawiscara, so the Seepohskah and other Dacotah tribes give unmistakable evidence of a common origin with the Schapsuch and other members of the Circassian family. Although I cannot find that the Circassians make use of any words denoting relation, either as prepositions or postpositions, in all other respects their grammar agrees with that of the Dacotahs and Iroquois. The pronouns, whether in their full or construct state, are prefixed, as the adjective seems to be. The genitive is formed by prefixing the noun possessor to the object; the accusative precedes its governing verb; and the order of the verb is pronoun, verbal root and temporal index. This is thoroughly Japanese or Peninsular, and thus the order of the American languages I have associated with the Peninsular family.

CIRCISSIAN.

DACOTAH.

all.....	cezahk	hooahcasse	<i>Utsaroka.</i>
arm.....	eh	ishto	<i>Dacotah.</i>
bad....	.....bzaghey	pehia	<i>Osage.</i>
	.....bobzaghey	kubbeck	<i>U.</i>
beard.....	shagha	eshaesha	"
belly.....	neehey	ikpi	<i>D.</i>
black.....	shoodzah	sheblah	<i>Winnebago.</i>
blood.....	klch	cehree	<i>Minnetarce.</i>
blue.....	skhautyey	shuahcat	<i>U.</i>
bone.....	kutsha	hidu	<i>Hidatsa.</i>
boy, son.....	siu shagha	shinzoshinga	<i>Omaha.</i>
bread.....	tshakhu	hobhazzsu	<i>U.</i>
chief.....	pshee	bettshettoa	"
clothes.....	shooghoon	sheena	<i>D.</i>
cloud.....	washabshey	apahi	<i>H. mahpiya D.</i>
cold.....	tshceyeh	tasaka	"
come.....	kahkooyeh	kuwa	"
corn.....	bemshesh	wanunuyzah	"
dark.....	mezahshe	pasa	"
day.....	mahpey	mahpail	<i>Min. hampah Seepohskah.</i>
death, die.....	hadeygho, tlagha	tshé	<i>H. tha D.</i>
do, make.....	tshah, sogha	kagha	"
drink.....	yeshwey	yatkang	"
eagle.....	bzoooosh	iphoki	<i>H.</i>
eat.....	tsheshst	duti	"
enemy.....	yedzeesho	toka	<i>D.</i>
evening.....	tshaha	tassetoo	"
face.....	ihtshooz	estah	<i>S.</i>
father.....	yati, taht	ate	<i>D. dadai Om.</i>
finger.....	efkhab	napchoopai	<i>Yankton.</i>
	ebknad	napsukazu	<i>D. buschie U.</i>
fire.....	mahzwa	midahé	<i>H.</i>
fish.....	bbzhch	poh	<i>S.</i>
five.....	tpey	zapetah	<i>D.</i>
flesh.....	ley	arookka	<i>U.</i>
fruit.....	shagbah	waskuyeca	<i>D.</i>

CIRCASSIAN.	DACOTAH.
girl.....sipshaz	submihi <i>S.</i>
go.....yago	za <i>D.</i>
good.... .souy-yeh	shusu <i>S.</i>
shoodet	washtay <i>D.</i>
great..... asoodet	ietia <i>H.</i>
hail..... yeehz	wahsoo <i>D.</i>
hand..... .oyg	shagai <i>Om.</i> onka <i>S.</i>
heaven..... vouafey	apahi <i>H.</i>
heavy..... zaaha	tekay <i>D.</i>
house..... hadsheeshish	tshe <i>Loway,</i> chechah <i>W.</i>
kill..... ooikey	whaquetah <i>D.</i>
knife..... soonee	eesahng "
leg..... thlakoua	sagaugh "
life, live..... nivsh	nec impe <i>Assiniboine.</i>
love..... sidshaz	kideshi <i>H.</i>
moon..... maathe	minmatatche <i>U.</i>
mother..... yan	ina <i>D.</i>
mountain..... mayzee	mahpo <i>U.</i>
mouth..... shey	jhhah <i>Quappan.</i>
nail..... gootshooghoon	shaka haugh <i>Os.</i>
name..... tsah	dazi <i>H.</i>
navel... .neezabtsee	itadehpa <i>H.</i> cekpa <i>D.</i>
neck..... cddee	tahoo <i>D.</i>
paoomey	pahee <i>Om.</i>
night..... tshaytshee	htayetu <i>D.</i>
nose..... pey	pa <i>I.</i> pahoo <i>S.</i>
rain..... keyshoh	hkahoosh "
red..... tleeshee	ishshee <i>Min.</i>
river..... pse	passahah <i>S.</i>
kudagheps	wakpa <i>D.</i>
road..... oghogoo	canguku <i>D.</i>
shoe..... paboosh	opah <i>Min.</i> hoompah <i>S.</i>
sister..... tsheeyakh	itaku <i>H.</i>
skin..... sheh	coku <i>D.</i>
small..... booghoozey	wauhokah <i>Os.</i>
tseegoodet, tjick	ecat <i>U.</i> tseheestin <i>D.</i>
snow..... woaahsee	wahhah <i>W.</i>
weyfsee	mahpai <i>Min.</i> copeaze <i>S.</i>
speak..... sbazhey	bedow <i>U.</i> obraka <i>Os.</i>
star..... ooshaghe	hkake <i>S.</i>
stone..... mushey	mee-ce <i>Min.</i> inniza <i>D.</i>
strong..... peetay	batsats <i>U.</i>
tree..... frah	beeraiechtoet <i>Min.</i>
wash..... ahghee sheehusht	yuzaza <i>D.</i>
water..... psee	pagsah <i>S.</i>
wife..... yeeshuhz	toweetshoo <i>D.</i>
wood..... pkha	pazu <i>D.</i>
yellow..... oghooshi	sehah <i>Os.</i>

By similar vocabularies the relation of the Cherokee-Choctaw, Muisca and Chileno languages to the Basque and Circassian might easily be established; but, as in a previous article I connected these and kindred tongues with the Peninsular family of Asia, it will simplify matters to make this family the basis of comparison. In the following table accordingly, I have com-

pared a limited number of words, Japanese, Loo-Choo, Koriak-Tchuktchi, Aino, Corean and Kamtchatdale, with corresponding forms in the Accad, Basque and Circassian. The grammar of the Circassian, which, lying on the line of Khita migration, should represent the Khupuskian in its purest form, is virtually that of the Japanese and its allied languages.

PENINSULAR.

ACCAD, BASQUE & CIRCASSIAN.

all	oowhoko <i>Loo C.</i> , issai, tshugo <i>Jap.</i>	kak <i>A.</i> gucia <i>B.</i> eezahk <i>C.</i>
axe	masakuri <i>Japanese.</i>	haizeora <i>B.</i>
above	wec <i>L.</i>	ahpsee <i>C.</i>
accomplish	shitoge <i>J.</i>	sit. <i>A.</i>
bad	wasa <i>L.</i>	bzaghey <i>C.</i>
	ashuki <i>J.</i>	su <i>A.</i> gaiztoa <i>B.</i>
basket	teeroo <i>L.</i> zaru <i>J.</i>	otarra <i>B.</i> zarea <i>B.</i>
	cego <i>J.</i>	sasquia <i>B.</i>
bear	kasa <i>Kamtchatka.</i>	sukh <i>A.</i>
beard	kkookat " higo <i>J.</i>	shagha <i>C.</i>
beautiful	utsukushii <i>J.</i>	dahshay <i>C.</i>
bed	coocha <i>L.</i>	sho <i>B.</i>
bee	mitsu-bachi <i>J.</i>	bshay <i>C.</i>
before	koomat <i>Ka.</i>	gab <i>A.</i>
behind	atoni <i>J.</i>	oztean <i>B.</i>
belly	stabara. <i>J.</i>	sabella <i>B.</i>
	nam <i>Koriak</i>	neehey <i>C.</i>
below	stcha <i>L.</i> shita-ni <i>J.</i>	utu, cit <i>A.</i> ayshay <i>C.</i>
	ururu <i>J.</i>	bur <i>A.</i> beherra <i>B.</i>
bird	tori "	choria <i>B.</i>
black	mime " (dark)	mi <i>A.</i>
blood	auka <i>Tchuktchi</i> , chi <i>L. J.</i>	us "
boat	temma <i>J.</i>	ma "
	huni <i>L.</i> penzy <i>Insu.</i>	untzia <i>B.</i>
	cahani <i>Aino</i> , cajak <i>T.</i>	gaha, khassey <i>C.</i>
body	watta <i>L.</i> (belly)	wetshooz "
bone	kutsi "	kutsha "
book	somots <i>J.</i> sheemootzeo <i>L.</i>	sumuk, samak <i>A.</i>
bow	yumi <i>L. J.</i>	bam <i>A.</i> gubia <i>B.</i>
boy	warrabee <i>L.</i> kozo, shoni <i>J.</i>	biru " gaztea, seme <i>B.</i>
bread	quashee "	oquia <i>B.</i>
	shokumotsu <i>J.</i>	tshakhu <i>C.</i>
bright	sayeru <i>J.</i>	sar <i>A.</i>
brother	ani "	anaya <i>B.</i>
	aki <i>T.</i>	cus <i>A.</i>
	ktshidzshi <i>Ka.</i>	istzshe <i>C.</i>
builder	daiku <i>J.</i>	duk <i>A.</i> (build)
burn	akka <i>L.</i> yaku <i>J.</i>	gi "
captain	kashira <i>J.</i>	gurza, "
centre	maru " (circle)	mur "
change	kayeru "	kur "
child	warrabee, <i>L.</i> shoni <i>J.</i>	aurra <i>B.</i> seina <i>B.</i>
chin	ootooga <i>L.</i> otogai "	dsha <i>C.</i>
clothes	chouksa <i>Corea</i> , isho "	sic <i>A.</i> jauai <i>B.</i> shooghoon <i>C.</i>
	choongay <i>C.</i>	sonecoa <i>B.</i>
cloud	kumo <i>J.</i>	gan <i>A.</i>
cold	seedasha <i>L.</i>	otza <i>B.</i> tsheeyetsha <i>C.</i>
come	itari, kitaru <i>J.</i>	etorri <i>B.</i>

PENINSULAR.

	koquasitch <i>Ka.</i>	kahkooyeh <i>C.</i>
country.....	inaka, kouni <i>J.</i>	zan <i>A.</i> una <i>B.</i>
	awhfoo <i>L.</i> hempi <i>J.</i>	ub <i>A.</i> zoppet <i>C.</i>
crown.....	kammuri, zetcho "	mir, sakkad <i>A.</i>
dark.....	kouni <i>A.</i> (black)	can <i>A.</i>
dawn.....	akobono <i>J.</i>	khobso <i>C.</i>
day.....	doh <i>Kurile.</i>	utu <i>A.</i>
	gaunak <i>T.</i>	eguna <i>B.</i>
descend.....	akuma <i>J.</i>	gigim <i>A.</i>
desire.....	kudaru "	tu, turi "
die, death.....	nozomu "	sem "
	gang <i>L.</i>	khan "
	tokok <i>T.</i>	hadoygho <i>C.</i>
dig.....	hojiru <i>J.</i>	engar <i>A.</i>
deep.....	fukai "	kook <i>C.</i>
divide.....	wari "	bar <i>A.</i>
dog.....	kossa <i>Ka.</i>	klah <i>C.</i>
door.....	kado <i>J.</i>	ca <i>A.</i>
	to "	atea <i>B.</i> tshey <i>C.</i>
drop.....	tarashi <i>J.</i>	tal <i>A.</i>
ear.....	qui <i>C.</i>	cagu "
earth.....	nuna <i>T.</i>	ma "
	duro <i>L.</i> hokori <i>J.</i> (dust)	zicura <i>A.</i> lurra <i>B.</i>
	ttati <i>C.</i>	yatto <i>C.</i>
east.....	higashi <i>J.</i>	hahshey <i>C.</i>
eat.....	kamoong <i>L.</i> hamu <i>J.</i>	jan <i>B.</i>
	ku <i>J.</i>	cu, kia <i>A.</i>
egg.....	kuga <i>L.</i>	kanghoy <i>C.</i>
elbow.....	oondee <i>Insu</i> (arm).	ucondoa <i>B.</i>
enclosure.....	kakomi <i>J.</i>	gagunu <i>A.</i>
end.....	hate "	gudu "
	yuku <i>L.</i>	oish <i>C.</i>
face.....	skira <i>L.</i> tsura <i>J.</i>	cir <i>A.</i>
	quaagh <i>Ka.</i> kao "	caca " ausquia <i>B.</i>
father.....	atta <i>T.</i> teti "	ad " aita <i>B.</i> taht <i>C.</i>
fall.....	taore <i>J.</i>	eror <i>B.</i>
	tawshoong <i>L.</i>	yedeesho <i>C.</i>
fight, battle....	ikusa <i>J.</i>	gu <i>A.</i> guda <i>B.</i>
fill.....	aku "	sig "
finger.....	yubi " askippi <i>I.</i>	ofkhab <i>C.</i>
	pkoida <i>Ka.</i>	ebkhad "
fire.....	annak <i>T.</i>	ne <i>A.</i>
	hi. yoke <i>J.</i>	su <i>B.</i>
firmament.....	sora "	gir <i>A.</i>
fish.....	sakkana "	khan "
	ikahluk, ssaljuk <i>T.</i>	hal "
	karasacki <i>A.</i>	araga <i>B.</i>
	etshoo <i>Ka.</i>	zeyshec, tzoy <i>C.</i>
flesh.....	shishi <i>L.</i>	uzu <i>A.</i>
	thaltal <i>Ka.</i>	glli <i>C.</i> guolia <i>B.</i>
foot.....	assi <i>J.</i>	essa <i>A.</i>
	shanna <i>L.</i>	ona <i>B.</i>
forehead.....	muki <i>J.</i>	becoquia <i>B.</i>
forest.....	hayashi "	basoa "
fortress.....	zairo "	car <i>A.</i>
	torido "	durud "
	cegooscoo, gooscecoo <i>L.</i>	gisgal "
fortunate.....	saiwai <i>J.</i>	sa "

ACCAD, BASQUE & CIRCASSIAN.

PENINSULAR.

fowl.....	hotu <i>L.</i>
garden.....	sono <i>J.</i>
girl.....	taekki <i>L.</i>
	ungua " niyoshi <i>J.</i>
	ucipee <i>Ka.</i>
give.....	watasu <i>J.</i>
glory.....	homare "
go.....	kungchung <i>L.</i>
	yuku <i>J.</i>
goat.....	jagi "
god.....	jebisu "
	lutka <i>Ka.</i> hotoko <i>J.</i>
	mitgk <i>Ka.</i>
good.....	jukka <i>J.</i>
	hota <i>C.</i>
goose.....	gocho <i>J.</i>
grass.....	cossa <i>L.</i> kusa <i>J.</i>
great.....	wessa <i>L.</i> bakutai <i>J.</i>
green.....	soo <i>A.</i>
ground.....	tsuchi, tsuchibeta <i>J.</i>
hair.....	kauguy <i>Ko.</i>
	nujak <i>T.</i>
hand.....	ki <i>L.</i>
	to <i>J.</i>
	settoo <i>Ka.</i>
hard.....	katai <i>J.</i> kibishii <i>J.</i>
have.....	ta "
head.....	kashko <i>T.</i> saki <i>J.</i>
	tchusa <i>Ka.</i> dzu "
hear.....	sitchoong <i>L.</i>
heaven.....	cherwol <i>Ko.</i> sora <i>J.</i>
hero.....	goketsu <i>J.</i>
high.....	kooung, <i>Ka.</i>
	takasa, toge <i>J.</i>
	in <i>A.</i>
hold.....	tamotsu <i>J.</i>
hole.....	anna "
horn.....	kaku "
hot.....	atcheeroo <i>L.</i> karai <i>J.</i>
house.....	taku <i>J.</i>
	katchi <i>L.</i> uchi <i>J.</i>
hunger.....	hidaru <i>J.</i>
insects.....	sudaka "
iron.....	furoganni "
	quatshoo <i>Ka.</i> tetsu <i>J.</i>
knife.....	sigo <i>L.</i>
know.....	shira <i>J.</i>
learn.....	kicku <i>J.</i>
leave.....	utcharu, udzuru <i>J.</i>
life, live.....	inochi "
lift.....	ageru "
light.....	feeroo <i>L.</i> karui "
lightning.....	inadzuma, hikari "
lip.....	kkovan <i>Ka.</i> kuchibiru <i>J.</i>
low.....	karui, sagaru <i>J.</i> (lower)
make.....	suru "
man.....	chu <i>L.</i> quaskoo <i>Ka.</i>
	aino <i>A.</i> nin <i>J.</i>
	hito, otoko "
	guru <i>Ku.</i>

ACCAD, BASQUE & CIRCASSIAN.

kattay <i>C.</i>
gana <i>A.</i>
turrak "
nesca <i>B.</i>
sipshaz <i>C.</i>
yettobh "
impar <i>A.</i>
joano <i>B.</i>
jago <i>C.</i>
sikka <i>A.</i>
hubisega " pkhah <i>C.</i>
duk " tkha "
mesitcha <i>C.</i>
khiga <i>A.</i> egun <i>B.</i> souy-yez <i>C.</i>
shoodet <i>C.</i>
kaz "
sizi <i>A.</i>
bahsh <i>C.</i>
sik <i>A.</i>
ciu " zepet <i>C.</i>
shatzeh <i>C.</i>
muz <i>A.</i>
su " escua <i>B.</i> ia, oyg <i>C.</i>
id "
khid "
keytoo <i>C.</i> shafe <i>C.</i>
du <i>A.</i>
sak "
tshkha <i>C.</i>
aditu <i>B.</i>
kharra <i>A.</i> cerua <i>B.</i>
gudhu "
cu "
attaghagh <i>C.</i>
an <i>A.</i>
tab "
oghan <i>C.</i>
sak <i>A.</i>
ur " heroa <i>B.</i>
ziku "
etche <i>B.</i> hadsheeshish <i>C.</i>
sugar <i>A.</i>
sadugucunu <i>A.</i>
burnia, burdina <i>B.</i>
ghootshay <i>C.</i>
soozeo "
ru <i>A.</i>
zu <i>A.</i> ikasi <i>B.</i> ghassa <i>C.</i>
gadataccuru <i>A.</i>
nivsh <i>C.</i>
sur <i>A.</i>
bir " arguia <i>B.</i>
onaztoa, iyurguria <i>B.</i>
okoofaree <i>C.</i>
car, zicura <i>A.</i>
gar <i>A.</i>
ka " guizua <i>B.</i>
nen, un <i>A.</i>
nit, nitakh "
khairu "

PENINSULAR.

measuro	.....shaku, hakari, hodo <i>J.</i>
middle	.....chiuhin “
milk	.....chee <i>L.</i> chichi “
mischief	.....aku “
month	.....wadii <i>L.</i> getsu “
moon	... ..mangets, “
morning	.....kesa “
mother	.....umma <i>L.</i>
mountain	.....aal <i>Ka.</i>
mouth	.....kuzha <i>Ka.</i> kuchi <i>J.</i> jeep <i>C.</i>
much	.....dake <i>J.</i>
nail	.....thimmee <i>L.</i> kouda <i>Ka.</i>
name	.....mei <i>J.</i> hagaach <i>Ka.</i>
navel	.....feso <i>J.</i>
neck	.....kubi <i>L.</i> kwabi <i>J.</i> hitte <i>Ka.</i>
news	.....tayori <i>J.</i>
no	.....ny <i>I.</i> nu <i>J.</i> iski <i>Ka.</i> dzu “
odour	.....ka “
old	.....tassijori, furui <i>J.</i> tishui <i>L.</i>
open	.....aku, hassu <i>J.</i>
paint	.....iru <i>L.</i>
pass, through	..toru <i>J.</i>
place	.....skata <i>L.</i> basho <i>J.</i>
pour out	.....kobosu <i>J.</i>
put	.....oku “
rain	.....ame “ neptschuk <i>T.</i> tshukutshoo <i>Ka.</i>
raise	.....aghe <i>J.</i>
reed	.....aze “
red	.....akassa <i>L.</i> akai <i>J.</i>
rise	.....okiru <i>J.</i>
river	.....wejim <i>Ko.</i> kawa <i>J.</i>
salt	.....shio <i>J.</i>
sea	.....umi “ ooshoo <i>L.</i> kai <i>J.</i>
see	.....quatshquikotsh <i>Ka.</i>
seed	.....nigh <i>L.</i>
seize	.....tsukamu <i>J.</i>
servant	.....iri <i>L.</i> kerai <i>J.</i>
shine	.....terasa <i>J.</i>
shoe	.....kwutsa “ sabock <i>L.</i>
shoulder	.....tanutar <i>Ka.</i>
sickness	.....hotori <i>J.</i>
silk	.....kinno “
sister	.....zia <i>A.</i>
sit	.....zauru <i>J.</i>
skin	.....ka <i>L.</i> kooogh <i>Ka.</i> kawa <i>J.</i>
small	.....kusa <i>L.</i> chiisai <i>J.</i> ekitachtu <i>T.</i>
speak	.....monoju <i>I.</i>
stand	.....tatsi <i>J.</i>

ACCAD, BASQUE & CIRCASSIAN.

sa, kha, gur, id	<i>A.</i> tsshogha <i>C.</i>
guana	<i>A.</i>
shah	<i>C.</i>
su	<i>A.</i>
itu, idu	<i>A.</i>
maathe	<i>C.</i>
goiza	<i>B.</i>
nen	<i>A.</i> ame <i>B.</i> yan <i>C.</i>
tal	“
ka	“ shey <i>C.</i>
pa	“ auba <i>B.</i>
dugu	“
tabin	“
gootshooghoon	<i>C.</i>
mu	<i>A.</i>
tsah	<i>C.</i>
neebiush	<i>C.</i>
gubioa	<i>B.</i>
eddee	<i>C.</i>
ticul	<i>A.</i>
nu	“
cz	<i>B.</i>
quea	<i>B.</i>
zarra, caharra	<i>B.</i>
zey	<i>C.</i>
ooshey	<i>C.</i>
bir	<i>A.</i>
tal	“
khash	“
gam	“
eu, ka	“
aan	“
inotsi	<i>B.</i>
keyshoh	<i>C.</i>
jaike	<i>B.</i> (rise) aca <i>A.</i>
sa	<i>A.</i>
gusci	“
khir	“
ibaya	<i>B.</i>
shoogoo	<i>C.</i>
ab	<i>A.</i>
ichasoa	<i>B.</i> shoo <i>C.</i>
ikhus	“
mecyshey	<i>C.</i>
sukh	<i>A.</i>
eri	“ ghar <i>C.</i>
zir	“
osquea	<i>B.</i>
paboosh	<i>C.</i>
tahneh	“
tura	<i>A.</i>
danee	<i>C.</i>
aizpa, aizta	<i>B.</i> tsheeyakh <i>C.</i>
eseri	<i>B.</i>
shu	<i>A.</i> sheh <i>C.</i>
guchi	<i>B.</i>
guti	“ tseegoodet <i>C.</i>
mintzo	“
zutie	“

PENINSULAR.

stone, rock.....	ishi <i>L.</i> aiyach <i>T.</i>
straight.....	sugui, suguni <i>J.</i>
strike.....	tataku “
strong.....	chicara. shikkari <i>J.</i>
strength.....	riki. yuriki “
sun....	tida <i>L.</i> tiyo “
	quaatsh <i>Ka.</i> hizashi <i>J.</i> (sun's rays)
sweat.....	aekkaddee <i>L.</i>
tail.....	dzoo <i>L.</i> shippo <i>J.</i>
take.....	tonu. orosu “
tempest.....	arashi “
to-morrow.....	acha <i>L.</i> ashita “
tree.....	ki <i>L.</i> <i>J.</i>
water....	ii <i>Ka.</i>
	bool <i>C.</i>
	pi <i>Ko.</i> wakha <i>I.</i> mezo <i>L.</i>
white.....	shiroi <i>J.</i> sheeroosa “
wind.....	kaze “
wing.....	fanne, hagai <i>J.</i>
within.....	naka “
woman.....	imago <i>L.</i> meanoko <i>I.</i> oma <i>J.</i>
	mennokoosi <i>A.</i> newem <i>T.</i> mesu <i>J.</i> emakume <i>B.</i>
	tackki <i>L.</i> jo <i>J.</i>
write.....	shirushi <i>J.</i>
yellow.....	cheeroo <i>L.</i> kiuro <i>J.</i>

ACCAD, BASQUE & CIRCASSIAN.

acha <i>B.</i>
zak <i>A.</i> zacena <i>B.</i>
takh “
sur “ azcarra <i>B.</i>
silik “
ud, utuei <i>A.</i> teygha <i>C.</i>
iguzki <i>B.</i>
shhad <i>C.</i>
atzequia, opa <i>B.</i>
artu <i>B.</i> tzeereeshoh <i>C.</i>
asagara <i>A.</i>
yahoosh <i>C.</i>
gu, gis <i>A.</i>
a “
ur <i>B.</i>
psee, psou <i>C.</i>
churia, zuria <i>B.</i>
egoa, aicea <i>B.</i>
pa <i>A.</i> ogoa “
nigin <i>A.</i>
ui, nin, mak <i>A.</i>
mesu <i>J.</i> emakume <i>B.</i>
sak, turak <i>A.</i> siz, shoos <i>C.</i>
sar <i>A.</i>
khir <i>A.</i> (green)

alone.....	tada <i>Japanese.</i>	du <i>Accad.</i>
back.....	sabira “	guibelean <i>Basque.</i>
bucket.....	oke “	sa <i>A.</i>
bundle.....	taba. tutsumi “	dim. tim <i>A.</i>
burden.....	katsugi “	yitshi <i>Circassian.</i>
carry.....	motsu “	megushey “
destiny.....	temmai “	tzim <i>A.</i>
deviser.....	kuwataru “	dadhru <i>A.</i>
do.....	suru “	gar “
dream.....	yumo “	ametsa <i>B.</i>
empty.....	munashii “	netshey <i>C.</i>
enemy.....	kataki “	yedzeesh “
far.....	toku “	tsheehshey “
fathom.....	hiro “	gar <i>A.</i>
fealty.....	chiugi “	gu “
grief.....	urei “	larria <i>B.</i>
half.....	nakaba “	noohka <i>C.</i>
hour.....	jisetsu “	seesahet “
messenger.....	shisha “	succal <i>A.</i>
plant.....	uyeki “	suk “
plenty.....	takusan “	tak “
power.....	isei “	su “
property.....	kazo “	cuda “
prosperous.....	sakaye “	sakh “
pure.....	kirei, kiyoi “	gur “ chaai <i>B.</i>
remember.....	oboyeru “	par “
rule.....	sadame “	siten “
shade.....	kageboshi “	katabsey <i>C.</i>
shut.....	fusagu “	pazaeesh “
throw.....	taosu “	dzey “
year.....	toshi “	tlaysee “

In the preceding table it will be seen that the Circassian agrees in many words with the Kamtchatdale, which again has much in common with the Dacotah dialects. The Accad, on the other hand, connects more clearly with the Japanese and Loo Choo, not only in the ordinary vocabulary but in certain terms denoting the transmission of culture, such as sar, shirushi, write, sumuk, shomots, book, car, gisgal, durud, siro, gooseescow, toride, fortress, bir, iru, paint, and eri, iri, servant. The civilization of Japan, therefore, is to be regarded, neither as indigenous nor as borrowed from China, but a civilization regularly transmitted along the line of Accadian migration, and sufficiently established to be able to reproduce itself in such distant regions as New Granada and Peru. How it passed from Japan to these countries it is hard to say. Japanese junks have been cast on the western shores of North America, and it may be that navigation had something to do with the transference of the Khita from the one continent to the other. But the other tribes of Hittite origin, the Choctaws, Iroquois and Dacotahs, seem to have entered upon their American home at the far north-west by the stepping stones of the Aleutan chain, and by the same route the semi-civilized Mound Builders must have reached the scenes of their long forsaken labours. Were these Mound Builders not part of the Khita migration, and may they not even have been Quichuas and Muyscas on their way to a South-American home, where, under more favorable conditions, they rose to higher things and emulated the deeds of their ancestors in Japan and Chaldea?

There is a branch of the Khita dispersion which I have merely mentioned, but which deserves fuller attention. It is that which I supposed to have been driven into Nubia by the conquering Pharaohs of the eighteenth dynasty, the stock commonly known as Nubian or Barabra. I do not build anything upon the Barabra name, but simply allow their language to speak for itself. I am also ignorant of its grammatical forms, but these Dr. Lepsius states bear no likeness either to the Semitic or to the Egyptian. They may, therefore, be Turanian. The vocabulary is Hittite, if Basque and the other languages I have connected with it be Hittite; and, on a comparison with these languages, presents some of the most remarkable instances of the vitality of words that philology records. It is worthy of note that the Hittite Sheth or Ashtar was one of the principal divinities of Nubia.

BARABRA.	KHITA.
bad.....milli <i>Barabra</i> . usk <i>Dongola</i> .	manalli <i>Quichua</i> , su <i>Accad</i> , itsehze <i>Circassian</i> , ashiki <i>Japanese</i> , asitok <i>Kadiak</i> , ishia <i>Hidatsa</i> , washuh <i>Tuscarora</i> , ooyohce <i>Cherokee</i> , hueha <i>Quichua</i> .
bird.....okera <i>Schubun</i> , koker <i>Koblesci</i> , kowertag <i>Kensy</i> , kowertyga <i>B.</i> chiroti <i>Aymara</i> .	chiria <i>Basque</i> , garioha <i>Iroquois</i> ,
boat.....kub <i>B.</i>	kauuwau <i>Iroquois</i> , huampu <i>Quichua</i> , sabanne <i>Loo Choo</i> .
boy.....tota <i>B.</i> tot <i>Ke.</i> tondu <i>Ko.</i> du <i>Accad</i> , doji <i>Japanese</i> , tennobakh <i>Kadiak</i> , disi <i>Hidatsa</i> , doyato <i>Huron</i> , atsatsa <i>Cherokee</i> , tesunung <i>Uche</i> , chuta <i>Musca</i> , votum <i>Araucan</i> .	
bread ....kabakka <i>B.</i>	shokumotsu <i>Japanese</i> , popkosu <i>Kamtchatka</i> , wauuskah <i>Oage</i> , puska <i>Choctaw</i> , okhapin <i>Adahi</i> , copque <i>Araucan</i> .
kalg <i>D.</i>	galoa <i>Basque</i> , laak <i>Kadiak</i> , takelygo <i>Muskogee</i> .
brother ....aninga <i>B.</i>	anagea <i>Basque</i> , ani <i>Japanese</i> , angagu <i>Kadiak</i> , soukakoo <i>Duwotah</i> , haenyeha <i>Huron</i> , ungenele <i>Cherokee</i> .
butter.....tes <i>Ko.</i> desk <i>Ke.</i>	tkho <i>Circassian</i> .
day.....aly <i>B.</i> onial <i>Ko.</i>	allo <i>Koriak</i> , angallak <i>Alcutan</i> , weenceslaat <i>Oncida</i> , igl <i>Attacapa</i> , uru <i>Aymara</i> , anoqual <i>Fuegian</i> .
ogreska <i>D.</i> ougresk <i>Ke.</i>	hiru <i>Japanese</i> , yorhuluh <i>Tuscarora</i> , onisrate <i>Cannaga</i> .
dog.....boal <i>Ko.</i> welk <i>Ke.</i>	lig. liku <i>Accad</i> , zabuloa <i>Basque</i> , alehaul <i>Oncida</i> , zele <i>Cherokee</i> , alljo, calatu <i>Quichua</i> loema <i>Atacama</i> , shilake <i>Fuegian</i> .
mokka, <i>B.</i> monka <i>D.</i>	kykmyk <i>Tchuktchi</i> , mones <i>Mandan</i> , mat- shuga. <i>Minetaree</i> , anokara <i>Aymara</i> .
ear.....ukkega <i>B.</i> okuga <i>D.</i>	cagu <i>Accad</i> , qui <i>Corea</i> , ehudhka <i>Kadiak</i> , akui <i>Hidatsa</i> , ohuehta <i>Onondaga</i> , huehko <i>Muskogee</i> , aike <i>Atacama</i> , euhuea <i>Musca</i> , yaxyexko <i>Puelche</i> .
wilge <i>Ko.</i> uluk <i>Ke.</i>	lahoocke <i>Minetaree</i> , haklo <i>Choctaw</i> , gule <i>Cherokee</i> , calat <i>Adahi</i> .
earth.....arykka <i>D.</i>	zieura <i>Accad</i> , sirikata <i>Aino</i> , ahonroch <i>Not- toway</i> , alawhi <i>Cherokee</i> , urakke <i>Aymara</i> .
iskitta <i>B.</i>	yatta <i>Circassian</i> , tjidsi <i>Japanese</i> , tshokak <i>Alcutan</i> , ohetta <i>Iroquois</i> .
eye.....manga <i>B.</i> missigh <i>D.</i>	neh <i>Circassian</i> , ni <i>Loo Choo</i> , manako, moku <i>Japanese</i> , nanit <i>Kamtchatka</i> , meishta <i>Up- saroka</i> , mishkin <i>Choctaw</i> , noekkoehum <i>Caddo</i> , nahui <i>Quichua</i> , nagui <i>Quitena</i> , niyoco <i>Cayubaba</i> , nge <i>Araucan</i> .
father.....abogo <i>B.</i> ambabk <i>D.</i>	jabow <i>Circassian</i> , apay <i>Corea</i> , pepe, empitch <i>Koriak</i> , menoomphhe <i>Upsaroka</i> , abishnisha <i>Natchez</i> , paba <i>Musca</i> , idabapa <i>Cayubaba</i> .
fire.....ika <i>B.</i> eka <i>Ko.</i> yk <i>Ke.</i> ik <i>D.</i>	su <i>Basque</i> , hi, yoke <i>Japanese</i> , tako <i>loway</i> , ocheeah <i>Tuscarora</i> , ioak <i>Choctaw</i> , yachtah <i>Uche</i> , yau <i>Wocoon</i> , iche <i>Itene</i> , aquaeake <i>Puelche</i> .
fish.....karag <i>B.</i>	araga <i>Basque</i> , karasacki <i>Aino</i> , ikahlik <i>Tchuktchi</i> , kullo <i>Choctaw</i> , agaula <i>Cherokee</i> , challua <i>Quichua</i> , khalloua <i>Araucan</i> .
fioh.....arykka <i>B.</i>	aragua <i>Basque</i> , glii <i>Circassian</i> , aroekka <i>Upsaroka</i> , wahra <i>Iroquois</i> .

	BARABRA.	KNITA.
foot.....	oentuga <i>B.</i> oosentuga <i>D.</i>	ona, oina <i>Basque</i> , onchidaseon <i>Hochelaga</i> , sauknuthé <i>Chetimaca</i> , nocat <i>Adahi</i> .
hand.....	iddegh <i>B.</i>	id <i>Accad</i> , te <i>Japanese</i> , tsha <i>Alcutan</i> , istinkeh <i>Muskogee</i> , yta <i>Musca</i> .
	igh <i>D.</i>	su <i>Accad</i> , oyg <i>Circassian</i> , esena <i>Basque</i> , ki <i>Loo Choo</i> , aiche <i>Kadiak</i> , sako <i>Dacotah</i> , shake <i>Mohawk</i> , agwooni <i>Cherokee</i> , nish <i>Atacapa</i> , suyi <i>Atacama</i> , eue, euugh <i>Araucan</i> , ieskup <i>Puelche</i> .
head.....	ourka <i>B. D.</i> oar <i>Ko.</i> ork <i>Ke.</i>	pir <i>Accad</i> , burua <i>Basque</i> , ootaure <i>Tuscarora</i> , anuwara <i>Onondaga</i> , abaracama, mahuaracama <i>Cayubaba</i> .
knife.....	gnadu <i>Ko.</i> kandyg <i>Ke.</i>	sooneo <i>Circassian</i> , katana <i>Japanese</i> , tshanzielk <i>Kadiak</i> , kainatra <i>Cayuga</i> .
	kandyga <i>B.</i>	ka <i>Accad</i> , aga <i>Circassian</i> , guizua <i>Basque</i> , chu, iekkeega <i>Loo Choo</i> , oikyo <i>Inu</i> , okkai <i>Aino</i> , uika <i>Tchuktchi</i> , zewk <i>Kadiak</i> , ugig <i>Alcutan</i> , wica <i>Dacotah</i> , oonquieh <i>Mohawk</i> , chaueh <i>Muskogee</i> , askaya <i>Cherokee</i> , ay-euteh <i>Diepwano</i> shoeh <i>Caddo</i> , ehha <i>Musca</i> , hake <i>Aymura</i> , kosa <i>Quichua</i> , huataki <i>Itensa</i> auea, che <i>Araucan</i> , chia <i>Puelche</i> .
man.....	ogikh <i>D.</i> ogedj <i>Ke.</i>	tas, nitakh <i>Accad</i> , otoko <i>Japanese</i> , tsiech <i>Alcutan</i> , oeteka <i>Dacotah</i> , itaatsin <i>Mine-kussar</i> , hatak <i>Choctaw</i> , atsecai <i>Cherokee</i> , huataki <i>Inu</i> , jadsj <i>Cayubaba</i> , het <i>Fuegian</i> .
	itga <i>B.</i>	karra <i>Accad</i> , guru <i>Kurile</i> , kkari <i>Quichua</i> , eratasi <i>Cayubaba</i> .
	kordu <i>Ko.</i>	shah <i>Circassian</i> , tji <i>Japanese</i> , ittuk <i>Tchuktch</i> , atsi-midi <i>Hidatsa</i> .
milk.....	iddje <i>B.</i>	maathe <i>Circassian</i> , mangets <i>Japanese</i> , kounetson <i>Aino</i> , minnatatche <i>Upsaroka</i> , ezhnida <i>Mohawk</i> , kanaanughquaw <i>Cayuga</i> , nungdohsungnoyee, anantoge <i>Cherokee</i> , nachwaot <i>Adahi</i> , nec-eeish <i>Caddo</i> , weechaw-nootech <i>Catawba</i> , anoko <i>Fuegian</i> .
moon.....	noogy <i>Ke.</i> onateja <i>B.</i>	maroo <i>Loo Choo</i> , sonrekka <i>Iroquois</i> .
	ounatega <i>D.</i>	hahnip-weehah <i>Winnebago</i> , karakkwa <i>Iroquois</i> , kevasip <i>Natchez</i> , shafah <i>Uche</i> .
	norga <i>B.</i>	miyoniehi <i>Japanese</i> , unakak <i>Kadiak</i> , chin-nakshea <i>Upsaroka</i> .
	scharappa <i>D.</i>	nen <i>Accad</i> , yani <i>Circassian</i> , ama <i>Basque</i> , anak <i>Tchuktchi</i> , anaan <i>Alcutan</i> , anaga <i>Kadiak</i> , enah <i>Dacotah</i> , anehch <i>Huron</i> , ehneh <i>Caddo</i> , nuque <i>Araucan</i> .
morning...	mashanak <i>B.</i>	ka <i>Accad</i> , shay <i>Circassian</i> , kuchj <i>Japanese</i> , kuzha <i>Kamtchatka</i> , ekigin <i>Tchuktchi</i> , chaugh <i>Osage</i> , ihah <i>Omaha</i> , ehique <i>Iroquois</i> heche <i>Natchez</i> , cha <i>Chetimaca</i> , ah <i>Diepwano</i> , gnyhica <i>Musca</i> .
mother.....	anenga <i>B.</i> indih <i>D.</i>	ngilik <i>Alcutan</i> , oskawruhweh <i>Tuscarora</i> , tsinawli <i>Cherokee</i> , waatchulak <i>Adahi</i> , lakka <i>Aymura</i> , iapolk <i>Puelche</i> .
mouth.....	akka <i>B.</i>	kandak <i>Tchuktchi</i> , kanhka <i>Kadiak</i> , chaknoh <i>Muskogee</i> , dunchwateha <i>Caddo</i> .
	aul <i>Ko.</i> agilk <i>Ke.</i>	zeymer <i>Circassian</i> , samea <i>Basque</i> , kubi <i>Japanese</i> , yoamuu <i>Kadiak</i> , sunyarlahghey <i>Mohawk</i> , ikunla <i>Choctaw</i> , kunka <i>Quichua</i> , comala <i>Atacama</i> .
	chundoka <i>D.</i>	
neck.....	gummurk <i>B.</i>	

	BARABRA.	KHITA.
night.....	qualal <i>Ko.</i>	kolkwa <i>Kamtchatka</i> , neillhe <i>Muskogee</i> , quilla <i>Quichua</i> (moon).
	awaka <i>B.</i> ougouk <i>Kc.</i>	auoka <i>D.</i> ge <i>Accad.</i> , kayshey <i>Circassian</i> , gau <i>Basque.</i> amgik <i>Alcutan</i> , oche <i>Upsaroka</i> , asohe <i>Cayuga</i> , weechawa <i>Catawba.</i>
noso.....	szurringa <i>B. D.</i>	ar <i>Accad.</i> , surra <i>Basque</i> , kohyoungsahli <i>Cherokee</i> , sol <i>Caddo.</i>
rain.....	omorka <i>B.</i>	muru <i>Accad.</i> , euria <i>Basque</i> , obure <i>Japanese</i> , wara <i>Tuscarora</i> , iokenuores <i>Iroquois</i> , para <i>Quichua.</i>
	anessik <i>Kc.</i>	aan <i>Accad.</i> , inotsi <i>Basque.</i> ame <i>Japanese</i> , neezhuh <i>Winnhago</i> , inaundase <i>Huron</i> , nasnayobie <i>Natchez</i> , ganie <i>Adahi</i> , tlinaci <i>Tchuilche.</i>
	aveh <i>Ko.</i>	washghey <i>Circassian</i> , ami <i>Loo Choo</i> , umpa <i>Choctaw.</i>
river.....	ser <i>Ko.</i>	aria <i>Accad.</i> kuli <i>Choctaw.</i> hahuiru <i>Aymara.</i>
	assig <i>Kc.</i> ossiga <i>D.</i>	kogawa <i>Japanese</i> , kiigh <i>Kamtchatka</i> , kuik <i>Tchuktchi</i> , Tchugaz, kwikh <i>Kadiak</i> , wau-chiscuh <i>Osage</i> , ahesu <i>Upsaroka</i> , azi <i>Hidatsa</i> joke <i>Nottoway</i> , hucha <i>Choctaw</i> , kha <i>Diegano</i> , eesaugh <i>Catawba</i> , sic <i>Musca.</i>
	auanga <i>B.</i>	neeshnougai <i>Oto</i> , anges <i>Minetaree</i> , kneynugh <i>Tuscarora</i> , missi <i>Natchez</i> , mayu <i>Quichua.</i>
salt.....	ombotti <i>B.</i>	jamam <i>Koriak</i> , mashoo <i>Loo Choo</i> , pepum <i>Kamtchatka</i> , amahota <i>Hidatsa</i> , bupi <i>Choctaw.</i>
sheep.....	eget <i>B.</i>	uda <i>Accad.</i> hitsuji <i>Japanese</i> , ehita <i>Quichua.</i>
shoes.....	quare <i>Ko.</i> koresk <i>Kc.</i> derka <i>B.</i>	ihllhuchik <i>Kadiak</i> , oochekoora <i>Tuscarora</i> , ateraki <i>Iroquois</i> , shulush <i>Choctaw</i> , delahsuloh <i>Cherokee.</i>
sister.....	anissega <i>B.</i> onissega <i>D.</i>	ane. onnakiyodai <i>Japanese</i> , oni <i>Loo Choo</i> , angeen <i>Alcutan</i> , tunkshe <i>Dacotah</i> , acnyaha <i>Huron</i> , noeksishtike <i>Choctaw</i> , unggedo <i>Cherokee</i> , nanay <i>Quichua.</i>
sit.....	tiko, <i>B.</i>	tize <i>Circassian</i> , tijay <i>Quichua.</i>
sea.....	essi <i>B.</i>	ichasoa <i>Basque</i> , ehay <i>Circassian</i> , ooshoo <i>Loo Choo</i> , kai <i>Japanese</i> , okhuttah <i>Choctaw.</i>
speak.....	bayn <i>B.</i>	sbaghey <i>Circassian</i> , hanasu <i>Japanese</i> , bedow <i>Upsaroka</i> , owenna <i>Iroquois</i> (speech), gahwonehah <i>Cherokee</i> , pouinyuy <i>Muskogee</i> , eubun <i>Musca</i> , pin <i>Araucan.</i>
star.....	woussik <i>Kc.</i>	hoshi. fosi <i>Japanese</i> , weeweetheestin <i>Dacotah</i> weechahpeo <i>Yankton</i> , ojistok <i>Mohawk</i> , phoutchik <i>Chickasaw</i> , owohchikea <i>Hitchuce</i> wahpeeknu <i>Catawba</i> , pacheta <i>Chetimaca</i> , fazua <i>Musca.</i>
	windjega <i>B.</i> ondou <i>Ko.</i>	dshogha <i>Circassian</i> , ojishonda <i>Cayuga.</i>
sun.....	maschekka <i>B.</i> mashake <i>D.</i>	matschak <i>Tchuktchi</i> , madzshak <i>Kadiak</i> , menakkah <i>Manlan</i> , meeneajai <i>Omaha</i> , nungdobegah <i>Cherokee</i> , neetakhassheh <i>Choctaw</i> , neetahusa <i>Muskogee</i> , nyatch <i>Cuchan</i> , notech <i>Catawba</i> , nagg <i>Adahi</i> , antaigh <i>Araucan.</i>
	es <i>Ko.</i>	iguzki <i>Basque</i> , hi <i>Japanese</i> , ahhiza <i>Upsaroka</i> , kachquaw <i>Seneca</i> , ahceta <i>Nottoway</i> , hushi <i>Choctaw</i> , sako <i>Caddo</i> , sua <i>Musca.</i>

BARABRA.	KHITA.
tooth.....nyta <i>B.</i>	noontinga <i>Tchugaz</i> , onotchia <i>Iroquois</i> , noti <i>Choctaw</i> , innotay <i>Muskogee</i> , int <i>Natchez</i> .
gehl <i>Ko.</i> nelky <i>Ke.</i>	aghalun <i>Alentan</i> , onouwelah <i>Cayuga</i> , olosag <i>Nottoway</i> , kiru <i>Quichua</i> , laeacehaca <i>Aymara</i> .
tongue.....nauka <i>D.</i> narka <i>B.</i>	nutshel <i>Kanatchutka</i> , neighjee <i>Mintaree</i> , emasa <i>Iroquois</i> , undauchshean <i>Huron</i> , yahnohgah <i>Cherokee</i> , nelle <i>Attacapa</i> .
tree.....sahleq <i>Ko.</i> saleyg <i>Ke.</i>	arecha <i>Basque</i> , kerlittie <i>Mohawk</i> , geree <i>Nottoway</i> , yali <i>Atacama</i> , kullu <i>Quichua</i> (wood).
galguela <i>D.</i>	gu <i>Accad</i> , ki <i>Japanese</i> , jaga <i>Alentan</i> , yahak <i>Unalashkan</i> , chaongena <i>Yankton</i> , kaet <i>Seneca</i> , yah <i>Uche</i> , kagz <i>Attacapa</i> , yako <i>Caddo</i> , guye <i>Mussea</i> , haeha <i>Quichua</i> , ecoca <i>Aymara</i> , icheai <i>Atacama</i> .
goui <i>B.</i>	a <i>Accad</i> , aga <i>Circassian</i> , wakha <i>Insu</i> , sui <i>Japanese</i> , hochneak <i>Oncida</i> , uekah <i>Choctaw</i> , okkee <i>Hitchitee</i> , eau <i>Woccon</i> , ejau <i>Catawba</i> , ak <i>Attacapa</i> , ko <i>Chetimaca</i> , koko <i>Caddo</i> , aho <i>Cuchan</i> , haache <i>Mavicopa</i> , sie <i>Mussea</i> , yaku <i>Quichua</i> , <i>Aymara</i> , ko <i>Araucan</i> , yagiy <i>Faegian</i> .
water.....esseg <i>D.</i>	meze <i>Loo Choo</i> , mok <i>Tchukteli</i> , nunak <i>Tchugaz</i> , minne <i>Upsaroka</i> , mini <i>Dacotah</i> , oneegha <i>Minckussar</i> , ommah <i>Cherokee</i> , hunu <i>Aymara</i> , meuke <i>Araucan</i> .
amanga <i>B.</i>	itecheeshoong <i>Loo Choo</i> , ma-thuk <i>Alentan</i> , tshang <i>Dacotah</i> , tattasuggy <i>Osage</i> .
wind.....toug <i>B.</i>	tekawerakwa <i>Iroquois</i> , hotalleye <i>Muskogee</i> .
tourouek <i>Ke.</i> irschu <i>Ko.</i>	ni, min, mak <i>Accad</i> , emakume <i>Basque</i> , in-
kirguinata <i>D.</i>	nago <i>Loo Choo</i> , mennokoosi <i>Aino</i> , meanako <i>Insu</i> , onna <i>Japanese</i> , angagenak <i>Alentan</i> ,
woman.....ing <i>Ke.</i> eng <i>D.</i>	eenah <i>Dacotah</i> , nogahah <i>Winnebago</i> , yonkwo <i>Mohawk</i> , ageyung <i>Cherokee</i> , waunehung <i>Uche</i> , ehneh <i>Caddo</i> , quocheekinok <i>Adahi</i> , seen <i>Dieguo</i> , seenyack <i>Cuchan</i> , anu <i>Sapibocono</i> , nacuna <i>Patagonian</i> , iamokanika <i>Tchulche</i> , iamokhonok <i>Puelche</i> .
eadon <i>Ko.</i> edinga <i>B.</i>	dam <i>Accad</i> , tackki <i>Loo Choo</i> , tawieu <i>Dacotah</i> , utehkeh <i>Huron</i> , tekchi <i>Choctaw</i> , tah-
idingga <i>D.</i>	mahl <i>Natchez</i> , tana <i>Itenez</i> , domo, thamo <i>Araucan</i> .
year.....gemga <i>B.</i>	mogha <i>Circassian</i> , ning <i>Loo Choo</i> .

The vocabulary of the Barabra, judging by the limited specimens of which I have been able to avail myself, thoroughly coincides with those whose resemblances have already been set forth. Some of the Basque analogies are very striking. Thus we have okera Barabra and choria Basque, bird; aninga and anagea, brother; kalg and galoa, bread; arykka and araguaia, flesh; karag and araga, fish (compare the Aino karasacki); igh and escua, hand; oar and burua, head; ogikh and guizua, man; ougouk and gau, night; szurringa and surra, nose; omorka,

anessik and curia, inotsi, rain; enga and emakum, woman; owi and bi, two; bure and amar, ten. What closer resemblance is possible within the domain of comparative philology than that which is presented in the Barabra agilk, chundeka, mouth, on the one hand, and the Aleutan agilak, Tehuktchi kandak, on the other? Such another example is afforded in a comparison of the Barabra mashekka and the Tehuktchi and Kadiak matschak, the Sun. So again the Barabra Kehl is the Aleutan aghalun, tooth, while aly and onial are the Koriak allo and the Aleutan angallak, day. The Aleutan and Kadiak, with the allied Tehuktchi, seem to have preserved almost intact the old Hittite forms, which the Barabra carried into Nubia nearly four thousand years ago. The Aleutans and Barabra agree in being worshippers of the sun like other Hittites, in the manufacture of red waterproof leather, and in their manner of adorning the head, the only difference being that the Aleutans replace with beads the little pellets of yellow clay which the Nubians attach to their flowing locks. Physical ethnology would never have dreamt of uniting white Basques and Circassians, black Nubians, yellow Japanese and red American Indians; but philology, which knows no colour but that of words and constructions, makes them one. It may be that in the Barabra we shall yet find the purest surviving form of the ancient Hittite language. Some of its numerals help to connect those of the Peruvian dialects with other Hittite forms. Such are *tosk* 3 and *kemsou* 4, which the Quichua inverts, taking *kimsa* for 3 and *tahua* for 4; *iseodon* 9 is the Quichua *iscon*, and *dimaga* 10 the Aymara and Sapi-bocono *tunea*, while *bure*, another form of the same number, is the Cayubaba *bururuche*, and, at the same time, the Dacotah *perakuk*.

The subject of numerals, however, takes us into central Africa by way of Darfur as far as Haussa. The Furian and Haussa vocabularies are almost entirely made up of Khitan and Sumerian words, and the grammar of the latter language is virtually that of the Berber. Before I knew that Dr. Hyde Clarke had placed the Haussa among his Vasco-Kolarian languages, I had been struck with the resemblance of its numerals to those of the Basque, which have long been regarded as unique. Thus the Haussa *bu* 2 is the Basque *bi*, *biga*, *bida*, the Accad *bi*, Barabra *owi*, Coreau *fupu*, Cadno *bit*, Muysca *bosa*, Aymara *paya*, Atacama *poya*, Cayubaba *bbeta*, Araucanian *epu* and Peulcho *petci*.

In the Haussa biet, bere 5, we find the Basque bost and borzt, the Accad para, the Iroquois wish, the Quichua and Aymara ppsica and the Sapibocono pissica. The Haussa shiddah 6 appears in the Basque sei, the Uche chto, the Quichua and Aymara soeta and the Sapibocono succuta. For the number 7 the Basque zazpi connects with the Furian szebbe, and thus with the Dacotah shapua, shawcopee and the Maysa euhupqua: while the Haussa bookqua, bukerce furnish analogies to the Caddo bissikka, the Maricopa pakek, the Adahi pacaness and the Aymara pacaleo. Nine in Haussa is farra or turrah, and in these forms we have the elements out of which the Basque bed-eratzi was formed. Ten again is gomar, the Basque hamar and the Araucanian mari. From the Barabra, Furian and Haussa many of the Peruvian forms of the numerals may be recovered and their antiquity established, as well as their relation to the old Khita Sumerian confederacy, which left such extensive traces on the African continent as well as those in Europe, Asia and America.

NUMERALS.

PERUVIAN.	KHITA-SUMERIAN.
1...huc. sue <i>Quichua</i> . (? dik <i>Darfur</i>) mai <i>Aymara</i> . sema <i>Atacama</i> .	gi <i>Accad</i> , aki seka <i>Circassian</i> . ichi <i>Japanese</i> , soquo <i>Cherokee</i> , sah <i>Uche</i> . siha <i>Dieguo</i> . naya <i>Kashua</i> , kemmis <i>Kamtschatka</i> . unji <i>Tascharora</i> . onje <i>Dacotah</i> . meeachehee <i>Omaha</i> , hommai <i>Muskogee</i> , hongo <i>Chetinnaca</i> hamiek, <i>Attacapa</i> . sin <i>Uchian</i> . hina <i>Dieguo</i> , kine <i>Araucan</i> .
2...yeay, iseny <i>Q</i> . paya <i>A</i> . poya <i>At</i> . hbeta <i>Cay- naba</i> .	cas <i>Accad</i> , au <i>Darfur</i> , oh <i>Circassian</i> , hokko <i>Muskogee</i> . bi <i>Accad</i> , bi. bida, biga <i>Basque</i> , bu <i>Haussa</i> , biu <i>Kashua</i> , owi <i>Barabra</i> . wiba <i>Circassian</i> , futatsu <i>Japanese</i> , fupu <i>Corea</i> . ahwetic <i>Natchez</i> , bit <i>Cadla</i> , hupau <i>Chetinnaca</i> , haveka <i>Maricopa</i> , bosa <i>Maysa</i> , epu <i>Araucan</i> , petei <i>Puelche</i> .
mitia <i>Sapibocono</i> .	mittaneo <i>Kamtschatka</i> . mitsu <i>Japanese</i> (3).
3...curapa " quina <i>Q</i> .	raph <i>Aino</i> . san <i>Japanese</i> , sang <i>Loo Choo</i> , kankas <i>Aicutan</i> , aushank <i>Huron</i> .
kimsa <i>Q</i> . <i>A</i> ., kimisa <i>C</i> .	kemsou, kemsoga, kemmisk <i>Barabra</i> (4), hamuc <i>Uchian</i> , hamoka <i>Maricopa</i> , khamoc <i>Dieguo</i> , mica <i>Maysa</i> .
4...chalpa <i>At</i> .	tshopi <i>Winnibago</i> . chapop <i>Uchian</i> . champapa <i>Maricopa</i> . telhapap <i>Dieguo</i> .
pusi <i>A</i> . <i>S</i> . chadda <i>C</i> .	fudu <i>Haussa</i> . psli <i>Circassian</i> , peaweh <i>Cadla</i> . hudlu <i>Kashua</i> , yotsu <i>Japanese</i> , tschitaami <i>Tehuqaz</i> . ushta <i>Choctaw</i> .
tahua <i>Q</i> .	tosk. todje <i>Barabra</i> (3), tshusquat <i>Kamtschatka</i> (3), thaschu <i>Kamt</i> . (4), toua <i>Otto</i> , towac <i>Incay</i> , tssets <i>Attacapa</i> , tacache <i>Adahi</i> .

PERUVIAN.

5 ...ppisca Q. A. pissica S.

6 ...soeta Q. A. succuta S.

carata-rirobo C.

miehato At.

7 ...canchis Q.

pacaleo A. pacaluca S.

8 ...passac Q.

curapa-rirobo C.

kimsa-calco A. kimisa-calco S.

eholma At.

9 ...isoon Q.

teker, tekara At.

pusicalco A.

10 ...bururuhe C.

tunca A. S.

chunea Q.

such, suchi At.

KHITA-SUMERIAN.

beaha *Haussa*, biet *Kashna*, host *Basque*,
itsutsu *Japanese*, wisk *Mohawk*, &c., wiks
Onondaga, wish *Cayuga*, hiskee *Cherokee*,
seppacan *Adahi*, dissickka *Caddo*, hussa
Chetimaca, hisca *Musca*, kechu *Araucan*.
shiddah *Haussa*, shaweo *Dwentah*, soodallih
Cherokee, ehtoo *Uche*.

gordjou *Barabra*, roku *Japanese*.mutsu *Japanese*, mohok *Maricopa*.ganah *Tuscarora*, pawness *Adahi*.

bookqua, buckeree *Haussa*, kalo-pagy *Musk-*
ogee, paghu *Attacapa*, pacaleon *Adahi* (8),
bissickka *Caddo*, pakek *Maricopa*, passac
Quichwa (8), puasa *Tehnitché* (8), posa
Puelche (8).

fakoa *Kashna*, fatchee *Loo Choo*, faz *Japan-*
ese, pigajunga *Teluketchi*, peefah *Uche*,
upkutepish *Natchez* (see 7).

kraerabane *Otto*, kraerapane *loway*, chinna-
bah *Muskogee*.

kamtsing *Aleutan*.kollemgaen *Kadiak* (9).

iiskodk, iskodon *Barabra*, kokonotsu *Jap-*
anese, sickiniish *Adahi*.

tarra *Kashna*, turrah *Haussa*, chakali *Cho-*
ctaw, pewesickka *Caddo*.

pur *Accad*, bure *Barabra*, amar *Basque*,
gomar *Haussa*, oyerih *Mohawk*, perug
Mundan, peeraga *Minutree*, perakuk *Up-*
saroka, pahlen *Muskogee*, pocoli *Choctaw*,
mari *Araucan*.

dimaga, dimega, dunning *Barabra*, team-
atska *Puelche*.

siou *Japanese*, hækuk, aëik *Aleutan*, ausai
Huron, uhokohhik *Cherokee*, heissigu *Att-*
acapa, shahoke *Maricopa*.

The *Haussa* and *Kashna* connection of the *Sumerians* is valuable as aiding to establish the *Biblical* relations of that ancient stock. In a paper read before the *Society of Biblical Archæology*, I endeavoured to connect the *Zimri* of *Jeremiah xxv. 25* and of the *Assyrian inscriptions* (*Records of the Past*, I. 22, V. 34, 41) with the *Sumerian* people, and these again with *Zimran*, the eldest son of *Abraham* by *Keturah*.* *Zama-*

* I have alluded to the same subject in an article which appeared in the January part of the "*British and Foreign Evangelical Review*." Since that article was in press, however, I have discovered that the *Sumerian* family was in existence prior to the time of *Zimran*, being that of the *Yorham* mentioned by many *Arabian* historians. The universal tradition is that the *Katoorah*, or descendants of *Abraham* by *Keturah*, united with the *Jorham*, from whom the original *Aumri* and *Zemirai* descended. As one of their ancestors, *Beer*, was commemorated

reni dwelt in Arabia in the neighborhood of megalithic structures, concerning one of which Palgrave, referring at the same time to Stonehenge, says: "There is little difference between the stone wonder of Kasseem and that of Wiltshire, except that one is in Arabia, and the other, more perfect, in England." According to Philostorgius, the Homeritæ were the descendants of Abraham by Keturah; and the relation between the Hebrew zimran a song, and the Erse amhran, having the same meaning, enables us to understand not only the connection of the forms Zimri and Homeritæ, but other pairs of words like Sumer and Aymara, and Zimuhr and Amor. The Celtic dialects again, both as regards their grammar and vocabulary, present many Semitic features, such as might be expected to exist in the speech of an Arabian family and the descendants of the patriarch Abraham. It is worthy of note that the people of Homeir or the Homeritæ were notorious for speaking a very corrupted dialect. In the Arabian historians, Homeir appears as a descendant of Kahtan, from whose son Saba the Kahtanites were called Sabeans; but many old writers, Arabian and others, distinguish between Sabeans and Homeritæ; and the conclusion of Dr. Russell, in his Connection of Sacred and Profane History, is that they were two distinct peoples, distinct yet closely related. Allowing the truth of the statement of Philostorgius that the Homeritæ were the descendants of Keturah, a fact rendered probable by their possession of the rite of circumcision, the most natural solution of the relation between Homeritæ and Kahtanite Sabeans is that the latter were the descendants, not of Joktan, the son of Eber, but of Jokshan, the son of Abraham, and brother of Zimran, who also had a son Sheba, his eldest son, while the Sheba of Joktan occupies a very subordinate place in the family of that patriarch. The language of the Himyaritic inscriptions confirms this, for we find that, like the Aramaean, it often replaces *shin*

in Bokhara, it is natural to suppose that the Zemirai of his line were the originators of the name Samarcand. The Ait Amor of Africa with the Aymarans of Peru would naturally connect with this Becherite line rather than with that of Zimran, through the Aumri. I have not yet found the precise relation sustained by the posterity of Zimran, represented probably by the Zamareni of Arabia, to the family of Yorham. Yet from the intimate connection of the Zimri with the Matiani of Media as set forth in the Bible and in the Assyrian inscriptions, and of these again with tribes of Jorhamite descent, it would seem that the two stocks had amalgamated.

by *tau*. If Ashtar and Yasha can become Athtar and Yatha, Jokshan may certainly be changed to Joktan. These Jokshanites seem to have been driven by the Homeritæ into Ethiopia, where they founded the kingdom of Axum, and were known to the ancient geographers as the Auxumitæ or Hexumitæ, still retaining the rite of circumcision and manifesting the same hostility towards the Homeritæ that characterized them in Yemen. Being allowed to give their own version of their name instead of Himyaritic, the Kahtan disappears and is replaced by Jokshan, which Greek travellers hellenized into Auxum. These Jokshanites, with Zimrites or Himyarites, made their way across the African continent, for the traditions of Bornou ascribe the foundation of its ancient kingdom to the Himyarites of Arabia; and, adjoining Bornou, lies the state of Kashna or Katsena, which, more perfectly than the Kahtan of the Arabs, preserves the name of the second son of Keturah. The language of Kashna is that of Haussa, which I have already associated with the Khita-Sumerian confederacy. Leo Africanus informs us that the Berbers were generally thought to be the descendants of the Sabeans, and Alexander Polyhistor, quoted by Josephus, tells the same story. There are many other authorities that might be quoted, did space permit, to the same effect. To link them with the Sumerians of Babylonia is an easy task. Sir Henry Rawlinson gives many proofs for an early connection of the Lower Euphrates with the people of Southern Arabia, and speaks of a brick from Hymar, a suburb of Babylon, as the only probable relic of the Arabian dynasty of Berosus, which Mr. Baldwin holds to be the same as the Median dynasty of that author, the word Madian or Midianite replacing the term Median. These Arabians, the leader of whom, according to the late George Smith, was Hammurabi, who built a city at Hymar, must have been the Homeritæ, Himyarites, Zimri or Sumeriaus, a Semito-Celtic people, and the constant allies of the Turanian Khita. The gods of Yemen were those of Babylonia. It is also worthy of note that Merodach, the name of a god introduced by Hammurabi and generally associated with Babylonian monarchy, enters as a constituent into the title of a king of the Zimri, Merodach-Mudammik. Samarcand was supposed by many Arabian historians to have been the seat of Arabian (Himyaritic) monarchs, and Humboldt favoured their view. It was no doubt a stage in the eastward journeyings of the

Sumerians with their Khita confederates. They left their traces in Media, as at Ujan, where druidical circles are found which "M. D. Hancarville regarded as resembling and probably coeval with the stupendous British monument Stonehenge." Dr. Ferguson, in his "Rude Stone Monuments in all Countries," finds these stonehenges in Northern Africa, Asia Minor, and even in India, and maintains their common origin. In Peru we have found them as the work of a Sumerian people; and I am firmly convinced that, wherever else they may be discovered, such, philology, coming to the aid of archaeology, will show to have been their origin.

It may appear a somewhat improbable thing that a people speaking a Semitic language, such as was the ancient Himyaritic, should connect with the so-called Aryan Cymri and other Celts. Sir Gardner Wilkinson, however, speaking of that sub-Semitic language, the Egyptian, states that it has affinities with the Celtic and the languages of Africa, and adds: "Dr. Oh. Meyer thinks that Celtic in all its non-Sanscritic features most strikingly corresponds with the old Egyptian." We have already seen that the Berber and Haussa, both in point of grammar and vocabulary, present much in common with the Celtic, and that there are well defined Celtic traces in the Accad arising from the Sumerian relations of that language. The Sumerian seems to have been from the beginning a language peculiarly susceptible of surrounding influences, so that, while in Arabia and Africa it retained a Semitic character, in Europe it approached the Aryan, and in Chaldea and Peru became thoroughly Turanian. The Celtic dialects contain a great many Semitic roots, in the possession of which they differ entirely from the Indo-European languages, as they also differ from them, while agreeing with the Semitic tongues, in several grammatical forms of no small importance.

The occurrence of megalithic structures, so much resembling the Cymric erection called Stonehenge as to call for comparison with that monument from many different writers, in constant connection with Sumerian forms, is an argument that applies to the Arabian Himyarites as well as to other peoples whose language agrees better with the Celtic. Stonehenge itself was known as the work of Eurys and was a Cymric structure; those erections of a similar nature, referred to by Ferguson, Catherwood and Pegot-Ogier, as found in Northern Africa, relate to the

tribal and geographical names Amor, Zimuhr and Gomera; the monument of Kasseem, which Palgrave compared with that of Wiltshire, lies under the Shammar mountains in the land of the ancient Zamareni; that of Ujan in Media, called a stonehenge by D'Hancarville, is situated where Zimri and Gimirrai, doubtless the same people, once dwelt; and the great group of Tihuanaco, which Mr. F. A. Allen has named "a sort of Peruvian Stonehenge," was the work of the Aymaras. It would be a pleasing and satisfactory task to follow the track of the Sumerians and their Hittite allies from Media to the confines of America, but this my present knowledge of the intermediate countries and peoples, with their antiquities and languages, does not permit me to attempt. I have perhaps already, in seeking a fuller acquaintance with the Sumerian family, strayed too far away from my subject, the Hittites in America.

For the intermediate members of the Khita family between the Circassian and the Peninsular peoples of north-eastern Asia, I can only present the Kariens of Burmah and Siam, whom Dr. Hyde Clarke places on the line of Khita migration. The Karien Passuko are undoubtedly Hupuskians or Eastern Basques. The following short vocabulary shows their Hittite relationships:

KARIEN.	HITTITE.
all ahmak.	shimmete matakū, <i>Japanese</i> , ahhcok <i>Uper-oka</i> , naka <i>Quichua</i> .
arm tchoobah, tchoobauh.	ipik <i>Kadiak</i> , idaspa <i>Hidatsa</i> (shoulder), shukba <i>Choctaw</i> , shukbah <i>Chicasaw</i> , sakpa <i>Muskogee</i> , ieskup <i>Puelche</i> .
below hoko.	go <i>Accad</i> , ayshay <i>Circassian</i> , uchi <i>Japanese</i> , iehcu <i>Atacama</i> .
bad gyia.	gaiztoa <i>Basque</i> , ashiki <i>Japanese</i> , cheja <i>Dacotah</i> , ooyohoc <i>Cherokee</i> , hucha <i>Quichua</i> .
boy, son possa, possaho, aposo.	bosan <i>Japanese</i> , paca <i>Kamtchatka</i> , pooskoos <i>Chickasaw</i> , ehbonosi <i>Muskogee</i> .
death mathi.	mutu <i>Haussa</i> , bat <i>Accad</i> , amaya <i>Aymara</i> .
ear nakhu.	nakohu <i>Melan</i> , noghe <i>Dacotah</i> , noeksoo <i>Catawba</i> , hinchu <i>Aymara</i> .
fish ya.	kha <i>Accad</i> , zoyshoc <i>Circassian</i> , eo <i>Loo Choo</i> , giyo <i>Japanese</i> , ho <i>Otto</i> , huh <i>Quapp</i> , haugh <i>Osage</i> , yee <i>Catawba</i> , gua <i>Musca</i> .
nga.	genjoh <i>Froquois</i> , mna <i>Hidatsa</i> , nune <i>Choctaw</i> , makehe <i>Chetimacu</i> .
fire me.	midaho <i>Hidatsa</i> , pajah <i>Osage</i> , epec <i>Catawba</i> , aima <i>Yuracares</i> , maja <i>Patagonian</i> .
foot kaw	sau <i>Haussa</i> , essa <i>Accad</i> , assa <i>Japanese</i> , jeo <i>Tchugaz</i> , siha <i>Dacotah</i> , auchseo <i>Tuscarora</i> , saseeko <i>Nottoway</i> , yeyeh <i>Chickasaw</i> , quicha <i>Musca</i> , kazu <i>Aymara</i> , chaui <i>Quichua</i> , ahei <i>Cayubaba</i> , khocho <i>Atacama</i> .

	KARIEN.	HITTITE.
good.....	gha	khi, <i>Accad</i> , souyey <i>Circassian</i> , yoi <i>Japanese</i> , shusu <i>Mandan</i> , cho <i>Muysea</i> , khaya <i>Atacama</i> .
great.....	do. uddo. tau.	tak <i>Accad</i> , atto <i>Circassian</i> , andia <i>Basque</i> tai dai, <i>Japanese</i> , itia <i>Hidatsa</i> , toazo <i>Dacotah</i> , tatchanawikie <i>Nottoway</i> , ishto, chito <i>Choctaw</i> , tocat <i>Adabi</i> , hatun <i>Quichua</i> vuta <i>Araucan</i> , hati <i>Puelche</i> .
hair.....	khosu.	uz, sik <i>Accad</i> , ke <i>Japanese</i> , kaenguy <i>Koriak</i> , hi <i>Hidatsa</i> , issi <i>Choctaw</i> , kuttteks <i>Chetimara</i> , zye <i>Muysea</i> , chuecha <i>Quichua</i> , eehau <i>Sapibocomo</i> .
hand.....	su, kozu.	su, kat <i>Accad</i> , oyg <i>Circassian</i> , igh <i>Barabra</i> , esena <i>Basque</i> , ki <i>Loo Choo</i> , aicha <i>Kadiak</i> , tsha <i>Aleutan</i> , sake <i>Dacotah</i> , shagai <i>Omaha</i> , shake <i>Mohawk</i> , kashuchta <i>Seneca</i> , uish <i>Attacapa</i> , seent <i>Adahi</i> , suyi <i>Atacama</i> , eue euugh <i>Araucan</i> .
head.....	ko.	ku <i>Accad</i> , shkha <i>Circassian</i> , kai <i>Hauusa</i> , kobe <i>Japanese</i> , kashko <i>Tchuktchi</i> , isehigi <i>Aleutan</i> , scotau <i>Huron</i> , ekuh <i>Muskogee</i> , aehkaw <i>Cherokee</i> , iska <i>Catawba</i> , ashhat <i>Attacapa</i> , zysquy <i>Muysea</i> , eehuja <i>Sapibocomo</i> , eacea <i>Puelche</i> , iagoha <i>Tchuilche</i> .
leg.....	poka.	buchoope <i>Ursaroka</i> , hepapeeah <i>Catawba</i> , (foot), hatpeshi <i>Natchez</i> (foot), goea <i>Muysea</i> , ebbachi <i>Sapibocomo</i> (foot), iagpit <i>Puelche</i> , onerlacha <i>Mohawk</i> , oogahlogy <i>Cherokee</i> , ilaka <i>Aymara</i> .
leaf.....	lah, thola.	lid <i>Accad</i> , illarguia <i>Basque</i> , igaluk <i>Kadiak</i> , *ladicha <i>Huron</i> , kelanquaw <i>Mohawk</i> , halhisie <i>Muskogee</i> , tegidlesht <i>Attacapa</i> , hullash <i>Muricopa</i> , hullyar <i>Cuchan</i> , quilla <i>Quichua</i> .
moon.....	luh.	mu <i>Accad</i> , ninna <i>Koriak</i> , mei, miyomoku <i>Japanese</i> .
name.....	maing.	gusei <i>Accad</i> , akai <i>Japanese</i> , akassa <i>Loo Choo</i> , shah <i>Dacotah</i> , quechtaha <i>Seneca</i> , keekahgeh <i>Cherokee</i> , sikechuh <i>Catawba</i> .
red.....	gau.	tshukutshoo <i>Kamtchatka</i> , tshiotakik <i>Aleutan</i> , hade <i>Hidatsa</i> , oostaha <i>Seneca</i> , atan <i>Muysea</i> , tzick <i>Circassian</i> , chiquia <i>Basque</i> , chiisai <i>Japanese</i> , tshukudak <i>Kadiak</i> , tscheestin <i>Dacotah</i> , chotgoose <i>Muskogee</i> , iseca <i>Aymara</i> , icheni <i>Atacama</i> , agietee <i>Puelche</i> .
rain.....	tatchu, tchatchang.	sa <i>Accad</i> , oosnaghe <i>Circassian</i> , hoshi <i>Japanese</i> , aghia <i>Kadiak</i> , sthak <i>Aleutan</i> , icka <i>Hidatsa</i> , hkaka <i>Mandan</i> , teghsbu <i>Huron</i> , owohchikea <i>Hitchitee</i> , ish <i>Attacapa</i> , tsokas <i>Caddo</i> , gau <i>Araucan</i> .
small.....	tchoka.	dzeh <i>Circassian</i> , sui <i>Japanese</i> , tana <i>Aleutan</i> , tsach <i>Uche</i> , ata <i>Muysea</i> , ikita <i>Cajubaba</i> .
star.....	shia, sa, za, tsah.	jan <i>Basque</i> , hamu <i>Japanese</i> , kaangen <i>Aleutan</i> , nukhwha <i>Kadiak</i> , hongawhooh <i>Huron</i> , mancatha <i>Aymara</i> , in <i>Araucan</i> , akenech <i>Puelche</i> .
water.....	ti.	aca <i>Accad</i> , agho <i>Japanese</i> , haca <i>Aymara</i> .
e t.....	ang.	
raise.....	hoca.	

My excuse for burdening these pages with so many comparative vocabularies is that this is the only way in which I can make patent to the ordinary student of comparative philology in its ethnological connections the relations which the various peoples I have had in review sustain to one another. The whole argument for a Hittite population in America turns, first of all, upon Dr. Hyde Clarke's identification of the Accadians with the Khita; and, secondly, upon my supposition that the Khuyuskai of Mesopotamia and Armenia were of the same stock. By this as it may, I contend that there has been established a relationship of the most intimate kind between the Basques of Europe, the Nubians of Africa, the Circassians, on the borders of Europe and Asia, the Karicns, the Japanese and other Peninsular peoples of Asia, the Aleutans, Kaniagmites (of Kadiak), the Dacotahs, Iroquois, Cherokee-Choctaws, Muyscas, Peruvian and Chilenos of America. Also I hold that the Celtic origin of the African Berbers and Guanches and of the Peruvian Aymaras has been demonstrated. To Dr. Hyde-Clarke belongs the merit of the discovery which bids fair to revolutionize the science of ethnology, a discovery which it has been a pleasure to me, as a labourer in the same field with that accomplished and veteran philologist, to confirm by new, and, I trust, not unimportant, evidence.

TIDAL EROSION IN THE BAY OF FUNDY.

BY G. F. MATTHEW, M.A., F.G.S.

The causes which produced the phenomena of the Post-pliocene period in the northern parts of Europe and America have been the subject of controversy for many years; and even now, so far as some of them are concerned, are open to debate. Among the deposits whose origin seems obscure, may be classed the isolated ponds, gravel mounds, and "moraine ridges" met with in gravelly tracts in Canada and New England. By some geologists these deposits are attributed to the sudden melting of glaciers of great extent which once covered the northern parts of the continent; by others to heavy spring-floods from snow-clad regions, and by a third class to strong marine currents. Where such deposits are found in the neighborhood of mountains it may be supposed that one or other of the first two causes has produced the beds. But the absence of mountain chains from all parts of the Maritime provinces of Canada except the north, is an objection to the use of these hypotheses in explanation of the conditions of the deposits which exist there. Supposing from the condition of the gravel and sand beds spread over parts of southern New Brunswick that such accumulations may have been due to ocean currents, I was led to examine the effects of tidal currents in the Bay of Fundy in removing and rearranging the sediments on its bottom. The action of the tides in these respects was found to present phenomena analogous to those which ocean currents would have produced; though of course not identical with them, or on so large a scale.

The following results of observations on tidal erosion are based chiefly on an examination of the soundings in various parts of the Bay of Fundy obtained by the British Admiralty Survey, with supplementary data embodied in the map obtained from an article in the report of the Smithsonian Institution of 1874 by Prof. J. E. Hilgard, and results of the deep sea explorations of the Challenger expedition on this coast.

Investigations into the condition of the sea-bottom made in recent years, show that except where it is swept by currents, the ocean-floor is covered by a fine mud or even a flocculent ooze; while on the shallows along the coast are strewn the sand, gravel

and boulders swept from the land. But though the Bay of Fundy is deep and is sheltered from the great ocean currents, the bottom in its deeper parts does not usually consist of mud, but of sand and coarser materials. The cause of this anomaly is apparent when we examine the action of the tidal currents upon the bottom of the Bay.

The sections of the North Atlantic between New York and Bermuda, and Halifax and Bermuda respectively, projected from the soundings of the Challenger, shew where the tidal impulse passing through the ocean is converted into a wave pressing up along the submerged border of the continent; and the form of the bight or indentation of the coast between Cape Cod and Cape Sable, called the Gulf of Maine, has the effect of compressing this wave laterally and driving it onward toward the entrance to the Bay of Fundy. From the shallowness of the sea from George's Banks westward toward Cape Cod, it is evident that the power of the rising tide is greatly broken in the western part of the Gulf of Maine; and that the tidal impulse which gives rise to the Bay of Fundy tides is propagated chiefly through the deep channel between George's and La Have banks. Off Cape Sable the tide attains a speed of $1\frac{1}{2}$ knots (which in tides is a wearing pace), and thence sweeps around into the Bay of Fundy.*

The apparent width of the Bay at its mouth is considerable, but the actual width of the deep-water passage is not great, as the shoals and reefs connected with the island of Grand Manan, block a large part of the opening. Owing to this the great tidal wave which enters the Bay twice a-day, is compressed between the Old Proprietor Ledge off Grand Manan and the North-west Ledge off Bryer Island into a space of 24 geographical miles, of which 20 miles has an average depth of 100 fathoms, with a bottom of rock, sand and gravel. Here the tide runs at the rate of three miles an hour, but immediately the strait is passed moderates its pace, the rocks and gravel disappear and the bottom becomes more sandy. On the north side of the Bay, this sandy condition of the bottom is found only in the deeper parts, and

* The influence of the Gulf of Maine on the tides of the Bay of Fundy may be inferred from the fact that unusually high tides in the Bay are generally accompanied by S.E. winds, not by S.W. winds as might be supposed likely from the direction towards which the Bay of Fundy opens.

up to the 40-fathom contour line; but on the south side the sand and gravel extend up to the shore. Of still coarser material is the bottom composed in Minas Channel, where the current pours over submarine ledges with great swiftness and force.

Such is the condition of the bottom of the Bay of Fundy as a whole, in the deeper parts; but both in the deep water and along the shores gravel banks have been formed or exposed by the currents which traverse it. Such are those which lie on each side of the deep water area off Grand Manan and in places along the Nova Scotian shore. The most considerable gravel-bank in the Bay is that which begins on the eastern side of Saint John Harbour, and extends, mostly in soundings of from 20 to 30 fathoms, nearly to Quaco Head. The tidal current along this shore, having escaped the in-draft of the Saint John River, runs at the rate of two knots an hour. A small gravel-bank also extends along the western shore of Grand Manan, where the tide runs at the rate of three knots an hour.

The New Brunswick shore has the greatest area of muddy bottom, for on that side the largest rivers enter the sea, and the tidal current is more sluggish than on the south side of the Bay. The *great mud bed* is chiefly an accumulation of the sediment which the Saint John River carries into the sea, and is spread along the New Brunswick shore by the ebb-tide. It begins at the harbour of Saint John and extends westward to the Wolves Islands. The outer limit of this bed is nearly coincident with the 50-fathom contour line. At the Wolves it connects by a narrow neck of clayey bottom with another deposit of mud, composed of the mingled sediment of the Saint John River and the rivers of Charlotte County. This extension of the mud-bed is in the deepest part of the Bay of Fundy, just eastward of Grand Manan. This island shields it from the rush of the great tidal wave which enters the Bay between the Old Proprietor and the North-west Ledge. Opposite the Old Proprietor Ledge the mud-bed narrows, and terminates at the last submerged ledge in the sea-bottom southwestward of that reef.

Less extensive mud-banks are found further up the Bay, fringing its northern shores. The chief of these is a narrow one extending from Quaco to Cape Enragé.* A knowledge of the

* These shores being now occupied mostly by an English-speaking population, the French names have been corrupted: C. Enragé, becomes C. "Rozhee," C. Maringuin, C. "Mangwin," C. Demoiselle, C. "Muzzle," or "Mussel," C. d'Or, C. "Dory;" &c., &c.

position of these mud-beds and of the gravel banks is of great practical value to navigators in the Bay, owing to the prevalence of summer fogs, which make necessary a frequent use of the sounding lead.

While the tides have evidently affected the condition of the *surface* of the sea-bottom in the Bay of Fundy they have also cut deeply into its *substance*. At the mouth of the Bay where the run of the tide is moderate and the water deep, this result is not very noticeable; but at the head of the Bay its power in cutting and removing the soft mud and sand at the bottom is very great. Near the mouth of the Bay, however, this scouring action of the tide is seen in the shallow basin, called Passamaquoddy Bay. At all the entrances to this sheet of water the bottom is very rocky, and the channels are full of deep holes and pointed ledges, exposed by the constant churning of the current in these narrow passages. The rush of the tide causes a roaring sound that may be heard for many miles, and the whirlpools are strong enough to upset boats and career larger vessels. Its great power in this shallow bay is also shown in the production of channels extending from these passages nearly across the Bay, while the largest rivers which enter the bay do not show channels even at their mouths, except such as the tide has helped to excavate. The Magaguadavic River, for instance, one of the largest which enters Passamaquoddy Bay, has not cut a channel in the bottom of that bay deeper than the 5-fathom contour-line; but right athwart the mouth of this stream runs a tidal channel that extends up into Bocabec Bay (an indentation of Passamaquoddy Bay).

None of the rivers from the Magaguadavic eastward to the Saint John has a heavy in-draft of tide, and so the work of the current at the mouth of these smaller streams has been slight. But at the mouth of the Saint John River very deep channels have been made by the ebb and flow of the tide in the narrow passage by which this river enters the sea. Although there is a depth of 36 feet only, at low water, on the reef which causes the rapid at the mouth of the Saint John called "The Falls," such is the force of the current that a trench 150 feet deep has been produced below "The Falls," and one of 200 feet deep above them.

But if the deeper part of the Bay of Fundy be examined, evidences of tidal erosion will be observed even more remarkable than those which the river mouths present. The first well de-

finest trough lies in the middle of the Bay between Quaco and Margaretville, where there is a depression outlined by the 40 fathom contour line, nine miles long and three miles wide. In Chignecto Channel off Cape Enragé there is a trough scooped out by the tide to the depth of 30 fathoms, and further up the same arm of the bay in Cumberland Channel another, through which the tide runs at the rate of four miles an hour.

But it is in the eastern arm of the Bay of Fundy—Minas Channel and Basin—that the scouring action of the tide is most conspicuous. The curve of this arm of the bay to the eastward throws the weight of the current on the northern shore, where under Cape D'Or lies a trough scooped out to a depth equal to that of the deepest part of the Bay of Fundy between Saint John and Digby. Passing Cape D'Or and going further up, the bottom again rises to within 25 fathoms of the surface, but soon sinks into another trough 40 fathoms deep.

This extends to Cape Split where another sharp barrier reef comes to within 25 fathoms of the surface. Over this the tide runs swiftly, plunging down on the opposite side into a trench 50 fathoms deep, and rushes through the Parrsboro' Passage at the great velocity of 10 miles an hour. Beyond this the trough becomes shallower and branches off toward the Cornwallis, Avon and Shubenacadie Rivers.

A sudden elevation of the sea-bottom in the region of the Bay of Fundy to the extent of 250 feet would therefore now expose to view a chain of lakes varying from 50 to 150 feet deep, besides others of less extent and depth, all due to tidal erosion. If such a movement were continued till the whole of the basin of the Bay of Fundy were raised above the sea, there would then be, in addition, at the mouth of the Bay, a large lake, partly, but not entirely, the result of tidal wear. With such palpable results before us, of the cutting power of the tides, we cannot refuse to give weight to the similar action of deep-seated and powerful ocean currents as factors in modifying the surface of the earth in Post Pliocene times.

Wherever in the upper part of the Bay of Fundy the current has been confined by projecting headlands, or concealed submarine ridges, and hindered in its semi-diurnal impulse to enter the remotest creek at the head of the Bay, there it began like a wild beast to chafe and surge and roar against the obstacles in its path. Century after century the tide has thus been gnawing

at the bottom of this remarkable arm of the Atlantic, and during all these years has been spreading its spoil of muddy sediment over the flats and marshes at its head; millions of tons of mud have been thus deposited since these flats began to grow, and it is said that there are now 80,000 acres of marsh-land at the head of the Bay of Fundy produced by this agency.*

The growth of these marshes has become possible owing to the slow but steady and continuous sinking of the land in the Bay of Fundy area. Those of Annapolis, Minas and Cumberland Basins along the Nova Scotian shore conceal the buried remains of hardwood and softwood trees. The trunks of these trees have fallen among stumps whose roots are still buried in the soil in which they grew, and are now covered with a great thickness of marsh mud. Although this land surface was once above the sea, the tide now rises over it to the height in some places of 40 feet. Similar indications of the sinking of the land are found on the New Brunswick side. In sheltered coves among the islands of Charlotte County, there are places where peat bogs may be seen to extend below low water mark (the rise of tides being 25 feet) and Dr. Abraham Gesner in his report on the Geology of New Brunswick (1840-43), mentions the fact that the anchors of vessels were sometimes caught in the buried stumps at the bottom of one of the harbours of Grand Manan. Another indication of depression of the land is obtained from the existence of a submerged channel of the Saint John River, outside of Partridge Island at the entrance of St. John Harbour. While these facts shew that a depression has occurred the condition of certain deposits within the coves near the mouth of the St. John, proves that the sinking of the land was slow and continuous, admitting of the accumulation between tide marks of the sediment carried in suspension by the agitated waters of the Bay. In these marshes and the extensive mud-flats connected with them is to be sought the place of deposit for much of the mud and fine sand of which the sea-bottom in most of the deeper parts of the Bay of Fundy is found to be deficient.

* P. S. Haliburton. *Proceed. N. Scotian Inst. Nat. Sci.* Vol. 2, Part 1.

NATURAL HISTORY SOCIETY.

ANNUAL MEETING, MAY 18, 1880.

The Annual Meeting of the Society was held on the evening of Thursday, 18th May. In the absence of the President, Principal Dawson occupied the chair.

The minutes of the last Annual Meeting were read and approved. The Chairman addressed the meeting, giving a very interesting sketch of the last visit of the American Association for the Advancement of Science to this city, which was in the year 1857. The preceding meeting was held in Albany, when all the delegates from the Montreal Society, including Sir William Logan, Dr. Smallwood, Dr. Hingston, Mr. Rennie, the then Secretary, himself and others, were requested to represent the Association at the meeting in this city. Three invitations were received by the Association, but the one from Montreal was preferred and accepted. The Society here succeeded in inducing two delegates from England to be present also, viz:—Professor Ramsay, representing the Geological Society, and Dr. Seaman representing the Linnæan Society. Owing to the difficulty of finding a suitable place to hold the meeting—the public halls, with the exception of Mechanics', not being built—the meeting was held in the Court House. Welcomes were tendered on behalf of the city and country, and the visitors were entertained by the Natural History Society, by the College, and by the Corporation of the city. Two excursions were organized, one to St. Helen's Island by Colonel Munro, and the other to Ste. Anne's and Beauharnois. Altogether it was a most successful meeting. In correspondence with the Secretary he learned an invitation from Montreal would be very popular now—among the members of the Association. It should be borne in mind that if the invitation were given, it should be carried out with the same spirit and generosity as it was then. For various reasons it had been considered unwise to extend the invitation before the summer of 1882.

It was then moved by Dr. De Sola, seconded by Dr. Hingston, and unanimously resolved: "That the Council now to be elected take measures to invite the American Association for the Ad-

vancement of Science to meet in Montreal in the summer of 1882, if on enquiry this should be found practicable and expedient."

Major Latour then addressed the meeting as follows :

ANNUAL ADDRESS.

In the absence of our learned and worthy President, I have been asked as ex 1st Vice-President, and as one of the oldest members of the Montreal Natural History Society, to deliver an address at this annual meeting. I could wish indeed that a more fitting and competent person had been chosen to represent the Society on this our fifty-third anniversary; for I fear I shall be able to satisfy neither myself nor you, nor do justice to the work of the Society. However I will do my best, and I ask your kind attention rather to what I say than to my manner of saying it.

I would first take a retrospective survey of the Society, that from seeing what it has been in the past we may the better understand its present position and its future prospects. In the year 1827 the Natural History Society was founded. The Earl of Dalhousie was its first Patron, and its first President was Stephen Sewell, Esq. In 1832 the Society was incorporated by an Act of the Provincial Parliament, and in 1833 this Act received the Royal sanction. In the beginning the members were few but they were earnest and devoted men, determined to make up for their lack of numbers by ardent zeal and honest work. Wishing to show signs of life and earnest action from the very beginning, the Society determined to give proof of its existence and its worth by having essays on scientific subjects read at its meetings and afterwards given to the public. Accordingly in 1835 two very interesting and instructive essays were prepared; one "On the Physical History of Rivers in general, and the St. Lawrence in particular," and another "On the circumstances affecting Climate in general and Canada in particular." The Society would show that it was interested in national as well as natural history and science, and therefore it had circulars sent to the various corresponding members and to the Governor of the Hudson's Bay Territory, calling attention to the subject of Meteorology in British North America. It was also partly at the suggestion of the Society that the Government thought of founding the Geological Survey of the Province; and this I may

incidentally observe is at least one reason why the Society and the Survey should be permitted to continue to live together in Montreal.

In 1841 the Government thought of uniting the Society, the Mechanics' Institute, and the Montreal Library, and of forming one Institution to be known as the "Montreal Institution of Literature, Science and Arts." This new association was to have its home in the Bonsecours market building, and to receive from the city an annual donation of £300, but the intention of the Government was never carried out, and our Society still lives alone.

Its life was considerably strengthened and its length of days secured by a generous donation of £1000 given by the Rev. Mr. James Sommerville, in 1845, to establish and perpetuate a regular course of public lectures. In 1846 the Society, wishing to interest the citizens in its work, opened its museum to the public; and in the following year, when Lord Elgin was patron, the Society resolved to publish all the approved essays it possessed. To encourage the essayists and to increase the numbers, three prizes were voted for the best essays on subjects of natural history. That year the members numbered 144.

From the Report of the Chairman of Council you will learn what the Society has done during the past year. But I think I may supplement that report with some facts and reflections that will not be without interest. You will doubtless be gratified to learn that the Society has made considerable progress during the year. This progress indeed has not been perhaps all that could be desired, yet it has been steady and sure, and such as gives promise of lasting success. The monthly meetings have been regularly held, and many most interesting and valuable papers have been read, showing exact and extensive original research.

We believe that there is at present sufficient ability in our Society to raise it to the foremost rank of scientific and literary excellence. We need only to concentrate our mental energy and so to divide our forces that wise distribution may increase our strength. I would therefore suggest that committees be formed to consider the distinct and various subjects of the different departments.

Such a judicious division of labor would be likely to secure greater interest in individual work, and greater order in general

arrangement. Would it not be well, for instance, to make a careful collection of duplicate specimens from our museum and to present them to kindred institutions in and beyond the Dominion? This act would no doubt be cordially reciprocated, and our museum would be enriched and enlarged thereby. But for such work it would be well to have a committee.

It is a matter of congratulation that our Society has accomplished so much for our city and our people, with pecuniary resources so limited. We have been fortunate in securing numerous and valuable exchanges with nearly all the countries of Europe, with the United States, and with the Provinces, and various parts of the Dominion. But we must now learn how best to preserve what we have acquired and how to complete and perfect our arrangement. Besides, to make our collection practically available a full and correct catalogue is indispensable—which need be only a reprint of our admirably named collection.

The losses by death and other causes, since our last annual meeting have been severely felt, and we are sorry to include the names of the Hon. L. S. Holton, M. P., life-member, and of Andrew Robertson, advocate, active ordinary member. We regret to be called upon to record also the demise of a distinguished honorary member, Professor Joseph Henry. Some of the members of the Society here present had the pleasure of meeting him at Montreal in 1857, at the general meeting of the American Association for the Advancement of Science (of which you have heard from Principal Dawson).

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I think it would be advisable to petition the Government for a copyright law making it obligatory on all publishers to contribute a copy of every publication to the several literary and scientific institutions of the Province.

I wish to remind you that members are not denied the privilege of contributing to the library and museum, a privilege I need scarcely say that is cordially extended to the public. We are ready to do our part in the work of the Society, but it will ever be a great inducement to earnest and continued labor that the members of the Society feel that they are not working alone. The records of the past show what has been done, and I think the Society has no reason to be ashamed of its history. But while past success gives hope of future progress, this very success shows, in its shortcoming, how that progress may be best secured.

Our library and museum are not yet what they should be in a city such as ours. It is in these two departments especially that we expect the practical co-operation of the public. The smallest contributions will be gratefully acknowledged. But may we not also hope that some of our more wealthy citizens may here leave monuments worthy of their memory.

The report of the past year's proceedings clearly proves that the Society is now established on a sure and solid foundation. Its future scientific success would seem secured if proofs from the past can be trusted. But we who have watched its early struggles and who take a pardonable pride in its present position, would earnestly desire that it may continue to prosper and always tend towards greater perfection. This Society should be as it were an index of our country's ever increasing prosperity. In its museum should be seen the results of the geological enterprise of Canadian scientists, and some tokens at least of the untold treasures of Canadian soil; while its well-selected and well-stocked library should prove to the world that Canada's mineral wealth is equalled if not surpassed by her mental worth and work.

It is sometimes said that ours is a scientific age; and the wonderful progress of the present century in the physical sciences and the useful arts would seem to warrant the assertion. But it would be well to remember that mere discovery is not science, and that theory is not always truth. The scientist must indeed begin by observation, go on to discovery, make nature disclose and yield up her secret sources of knowledge; he must learn to read the writing written on the walls of the world. But the true scientist must know more than his alphabet, he must not be content with the mere elementary characters. His observations may be extensive and profound and his collections rich and rare, and as yet he may have only specimens of nature and of nature's work, but specimens of nature are not necessarily specimens of knowledge, neither are they always proof of science acquired. In a word, nature will give the materials, but from these materials the scientist must build his system by honest and earnest work.

Now the object of our society is not merely to gather the materials—this, indeed, it will do—but it aims at doing more than this; its end is not merely manual labor, it is principally and primarily mental work, and this mental work is useful not merely to the worker but to all his fellow-countrymen, to all his fellow-

men. It is this thought, indeed, that gives a dignity to his scientific labor, and cheers the scientist in researches that are sometimes weary. But this thought too should gain for him the sympathy and support of the public—he is working for them, he is working for his country. And speaking of our country reminds me of a special and recent relation of our city and our Society with our country's government and our country's capital. You are probably aware that the Federal Government has decided to transfer the Geological Survey of Canada from Montreal to Ottawa. We must express our deep regret that the Government should have thought it necessary or judicious to bring about this change of site; Montreal is the natural centre and the domicile of such a body, and hence it is that since its foundation the Survey has here made its home. Its removal to Ottawa will certainly injure our city, and will not, we think, in any way benefit the Survey itself. But what we have especially to regret is the loss this removal will inflict on our Society. In consequence of this act of the Federal Government we shall be partially deprived of the presence and assistance of some of our most active and efficient members. I say this privation will be only partial, for I hope and believe that our worthy president Mr. Selwyn, our learned scientific curator Mr. Whiteaves, and our respected members Professor Bell, Dr. G. M. Dawson, and Mr. Ellis, who are about to leave us for Ottawa, will not altogether sever their connection with the Montreal Natural History Society. They have each and all done good work in the past, they have contributed much to make this Society what it is, and I hope that although their services may now be needed in Ottawa, they will be frequently seen at our meetings in Montreal, that we may again have the pleasure of listening to their learned lectures and papers, and that they may by their presence enliven our scientific discussions. Their occasional visits will be some compensation for the loss we shall sustain in their leaving us. And in appreciating their loss we have a further call upon the members of the Society to more active exertion in sustaining the Society and enlarging its collections.

On motion of Dr. De Sola, seconded by Dr. Edwards, it was resolved "that the thanks of the Society are due to Major Huguet Latour for his carefully prepared address, and that the bronze medal of the Society be conferred on him for the various important services he has rendered to the Society."

Mr. Whiteaves then read the report of the retiring Council.

REPORT OF THE CHAIRMAN OF COUNCIL.

Session 1879-80.

At the conclusion of their year of office your Council beg to report as follows :

The Sommerville Course of free public lectures, has also been duly delivered, to good audiences ; the following being the titles of the lectures, the names of the lecturers and the dates at which the lectures were delivered :

- 1880.
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| February | 5th. | Weights and Measures, with a plea for the Metric System. By Dr. J. B. Edwards, F.C.S., &c. |
| February | 20th. | Women in Canadian History. By Professor F. W. Hicks, M.A. |
| February | 26th. | Money. By H. Mott, Esq. |
| March | 11th. | Claims of Pictorial Art. By John Popham, Esq. |
| March | 18th. | Cosmic Matter. By Dr. T. Sterry Hunt, F.R.S. |
| April | 8th. | Timber trees and their economic uses. By G. L. Marler, Esq. |

An hour previous to each lecture, the Museum of the Society was lighted up and thrown open to the public, the latter privilege being taken advantage of by numbers who probably would not have visited the premises otherwise.

The Society accepted an invitation from the Ottawa Naturalists' Field Club to meet them at Calumet on the 12th of June last to hold a field-day together. The excursion proved to be an eminently enjoyable one, and four prizes were awarded for the best botanical and zoological collections made on the spot.

Your Council has also to report that the number of new members elected in the past session is seven, and that about 1500 persons have visited the Museum since the last Annual Meeting.

The Annual grant of \$750 has been received, as usual, from the Legislature of the Province of Quebec.

The premises have been put in a thorough state of repair, a new gravel roof or metal covering has been provided, the woodwork inside and outside of the building has been repainted, the two furnaces have been repaired and put in good working

order, and various other small but necessary repairs have been effected.

Out of the \$750 received from the local legislature, \$500 have been devoted to paying off a portion of the Society's indebtedness, and the debt previously existing upon its building has been thus reduced to \$500.

The lecture room, library and committee room have been rented to Mr. T. M. Taylor, to the Medico-Chirurgical, Horticultural, Numismatic and Philharmonic Societies, at regular intervals, and the proceeds accruing therefrom, amounting to \$461, will be found credited by the Treasurer in his report to be submitted this evening.

After mature consideration, but with much regret, your Council decided to terminate Mr. Passmore's engagement, as cabinet keeper and taxidermist to the Society, on the first of May, 1880; and this action of the Council having been duly endorsed at one of the monthly meetings, notice of the termination of the said engagement was given to Mr. Passmore, in writing, early in February. In consideration, however, of his long and valuable services, your Council has recommended that a gratuity of \$200, (a sum equal to one year's salary in advance) be paid to Mr. Passmore on his leaving, and this recommendation has been adopted by the Society.

Since the first of May, your Council has temporarily employed Mr. Potts as resident janitor, cabinet keeper, and custodian of the premises, leaving it to their successors in office to take such action as they may see fit, in reference to filling the situation formerly held by Mr. Passmore.

The number of donations to the Museum, during the past session, has been unusually small, an evil which can best be remedied by the active personal efforts of individual members of the Society.

Thanks to the diligence of our Treasurer, the financial position of the Society, during the past twelve months, may be looked upon as eminently satisfactory.

In retiring from office your Council venture to offer the following brief suggestions to their successors:

1. That special and vigorous efforts be made to improve the collections in the Museum, and more particularly to obtaining new and choice specimens of Canadian mammals and birds.

2. That, with this object in view, a sum of not less than fifty dollars be judiciously expended every year on the purchase of rare specimens of local interest, and that, from time to time, as such specimens are obtained, descriptive articles respecting them be published in the daily press.

3. That pains be taken, as heretofore, to secure the prompt publication of accurate abstracts of the papers read at the monthly meetings in each of the city papers, and to bring the whole proceedings of the Society as prominently before the public as possible.

4. To urge upon the Membership Committee the necessity for immediate action in order to recruit the ranks of the Society and to fill up vacancies in the list of members which are constantly being caused by removal, death, and a variety of causes.

The whole respectfully submitted.

Mr. Marler, the Treasurer reported :

TREASURER'S REPORT.

Your Treasurer has to report on the financial position of your Society for the past year, which is satisfactory. Notwithstanding that your Society has paid to the Royal Institution of Learning the sum of \$585.00 capital and interest, there remains to the credit of your Society the sum of \$268.61. That in order to pay off the Royal Institution we had to borrow a sum of \$500. from Mr. H. Joseph at six per cent. That the total receipts of your Society during the year including the Government grant and the loan from Mr. Joseph amounted to \$2166.97 and the disbursements including extensive repairs amounted to \$1898.36. Leaving the above balance in hand. The repairs consisted in a thorough overhauling of the building—a new roof, painting the building, windows, &c., putting the furnaces in good repair. That the renting of the rooms produced \$461.00 besides the amount due by the Horticultural and Numismatic Societies which up to this time are unpaid. Your Treasurer has full confidence in being able during the ensuing year to refund Mr. Joseph the sum so kindly loaned, if such is the case your Society will be free from debt.

G. L. MARLER, in account with THE NATURAL HISTORY SOCIETY OF MONTREAL,

from 18th May, 1879, to 18th May, 1880.

Dr.

Cr.

Paid Insurance Company.....	\$35.00	Balance on Hand 18th May, 1879.....	\$237.22
" Royal Institution (Capital and Interest).....	1083.08	Government Grant.....	750.00
" Notarial fees for discharge.....	2.50	By Aquarium sold.....	12.00
" Gas, Water, and Coal.....	175.00	" Rent of Rooms.....	461.00
" Printing, Express charges, &c.....	57.18	" Members' Fees.....	182.00
" Salaries, Commission.....	191.67	" Entrance Fees to Museum.....	24.75
" Painting, Glazing, and Repairs.....	254.47	" Loan from Hy. Joseph.....	500.00
" Labor, Repairs, &c.....	99.46		
By Balance on Hand.....	268.61		
	<u>\$2166.97</u>		<u>\$2166.97</u>

DEBTS OUTSTANDING.

Loan to Hy. Joseph.....	\$500.00		
To Dawson Brothers.....	53.00	Balance on Hand.....	\$268.61
	<u>\$553.00</u>		

Montreal, 29th April, 1880.

(Signed) M. H. BRISSETTE, } Auditors.
 " L. A. HUGUET LATOUR. }

G. L. MARLER,
 Treasurer.

With regard to the *Naturalist* the Editors report that since the last annual meeting the publication of the *Journal* has been continued, four numbers having been issued during the year. They regret, however, the scantiness of material supplied for publication by members of the Society and would urge upon them the importance not only of doing more scientific work but of recording the results of their labors in the pages of the *Naturalist*. This, indeed, is an absolute necessity if the *Journal* is to be continued at all.

REPORT OF LIBRARY COMMITTEE.

The Library Committee have but little of importance to report at the close of the present session. There have been few additions to the Library proper, and the efforts of the Committee have been directed more to improving the condition of the present contents of the shelves than to adding to them. Much good work has been done by Mr. Curry in the arrangement and classification of the contents of the cupboards under the library cases. These contain a very large collection of the transactions of various learned societies and of periodicals, etc., received in exchange for the *Canadian Naturalist*. They have all been carefully arranged and labelled, and an alphabetical index has been prepared showing the contents of each cupboard. A considerable number of very valuable and important volumes of these works is now ready for the binder, and the Committee would recommend that an effort be made to have them bound as soon as possible and placed in the Library.

It was then moved by Mr. Joseph, seconded by Major Latour, and resolved "that the reports read be adopted and printed in the *Naturalist*, as usual."

The election of Officers then took place with the following results:

President—Principal Dawson, LL.D., F.J.S.

Vice-Presidents—Mr. A. R. C. Selwyn, F.R.S.; Dr. De Sola, Dr. T. Sterry Hunt, Mr. H. Joseph, Mr. Whiteaves, Dr. Hingston, Prof. P. J. Darey, Prof. B. J. Harrington, B.A., Ph.D.; Dr. J. B. Edwards, F.C.S.

Corresponding Secretary—Dr. Edwards.

Recording Secretary—Mr. Frank W. Hicks.

Treasurer—Mr. G. L. Marler.

Cabinet-Keeper—Mr. Wm. Muir.

Council—Messrs. Brissette, Sanborn, Bemrose, Donald, Dr. Bell, Dr. G. M. Dawson, Rev. Mr. Empson, and Major Latour.

Library Committee—Messrs. Hicks, Donald, Brissette, Bemrose and Brown.